HELUKABEL®



Edition 27

CABLES, WIRES & ACCESSORIES

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www.helukabel.com/10001en*

*** Instead of 10001 please insert the wanted part number.**

helukabel.co.uk

CW&A Edition 27 (published 01.04.2015)

INTRODUCTION

With our new main catalog "Cables & Wires" you are holding in your hands a version that has been revised in visual presentation as well as in content. Our objective was and is to guide you more quickly to your desired product. The tabular overviews that precede each product chapter should help in this regard. Futhermore, we have developed additional selection tables that facilitate navigation between the chapters.

We are proud of the fact that in the areas of industrial and infrastructure cables we are uniformly well-positioned with high in-stock availability. True to our motto, "All from One Source", in addition to the "Data, network & BUS technology" section, we also included a selection of accessory products in the main catalog for the first time. New products created since our last catalog are placed in their respective chapters.

In cases where more than 33,000 standard products are not enough to find the right cable product for a unique application our engineers are at your side to develop both a technically and economically superior solution. Your advancement is our driving force!



Helmut Luksch
Chief Executive Officer, HELUKABEL® GmbH



HELUKABEL® AT A GLANCE

FAMILY FOCUSED

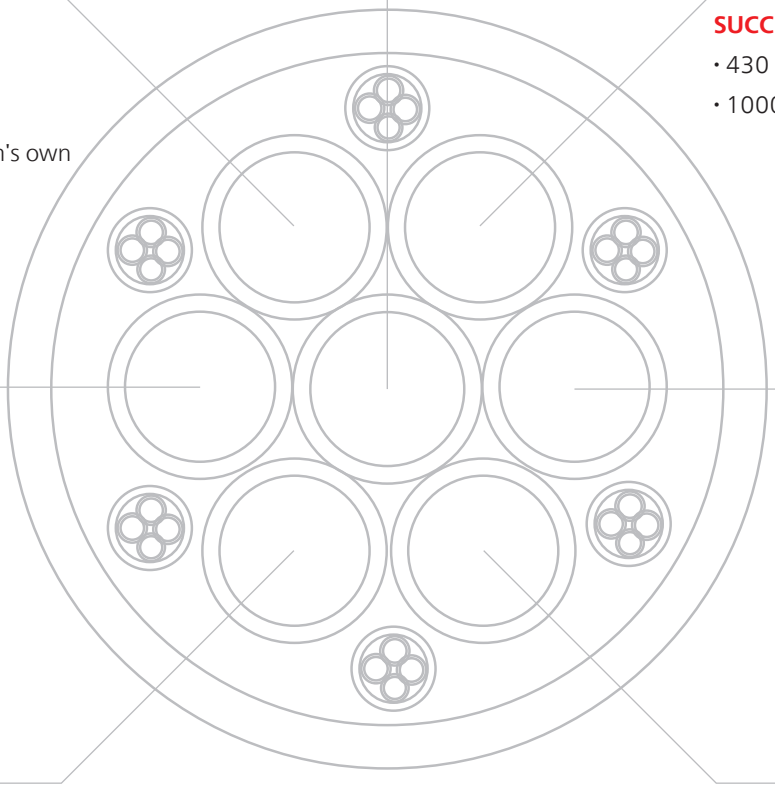
- Family enterprise since 1978

QUALITY-MINDED AND ECO-FRIENDLY

- ISO 9001 & 14001
- Energy supplied by the firm's own solar and bio-gas plant

SUCCESSFUL

- 430 million Euro turnover
- 1000 employees



GLOBAL

- 41 locations in 24 countries

PRODUCTION

- 6 manufacturing and assembly locations worldwide

LOGISTICS

- 33,000 products in stock, from the cable gland to the 2.40 m cable drum
- 24 h delivery service
- State-of-the-art logistics facility

PRODUCTS

Cables, wires and cable accessories

- single-source supplier for industry and infrastructure

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RESEARCH & DEVELOPMENT

We develop optimal, tailored cable solutions for our customers.



Torsion test apparatus

Our test facilities:

- Test systems for bending and torsion requirements
- Drag chain test systems with movement distances of 1 m, 3 m, 5 m, 6 m, 18 m, and 40 m
- Fire testing systems
- Abrasion testing systems
- Torsion test tower for wind turbine cables
- Aging ovens in accordance with UL, VDE, CSA, HAR, TÜV & CCC

Research and development are the foundation of our work and are an important engine for growth. In interdisciplinary teams we continuously push the boundaries to enhance our products and develop solutions to meet the latest technological demands. Moreover, we value our customer interactions and partnerships with regional colleges and research institutes to stay on top of emerging technologies.

The materials that we use are an important starting point of our work. In this regard, we place as much emphasis on searching for and utilizing new materials, as we do on manufacturing our plastic mixtures (granulates) ourselves, and influencing the improvement of technical characteristics, such as oil-resistance, temperature range or chemical compatibility. Moreover, we are capable of pulling a majority of the copper ourselves, thus ensuring a uniform, high-quality product relative to properties and workmanship.

With continuous optimization of our manufacturing processes and systems we take into consideration both efficient and economical production, and the complex requirements of various applications (such as cables for industrial robots or for applications under cleanroom conditions) into account.

A crucial stage in the development process of our products is the work done at our Test Center. For example, cables suitable for drag chain implementation, can be tested using equipment that accelerates cables up to 10 g.

Temperature ranges from -50° to +250° are simulated in a special climate-controlled environment so that drag chain cables can be tested for series production readiness in applications such as refrigerated warehouses or steel mills.



Drag chain test system



PRODUCTION

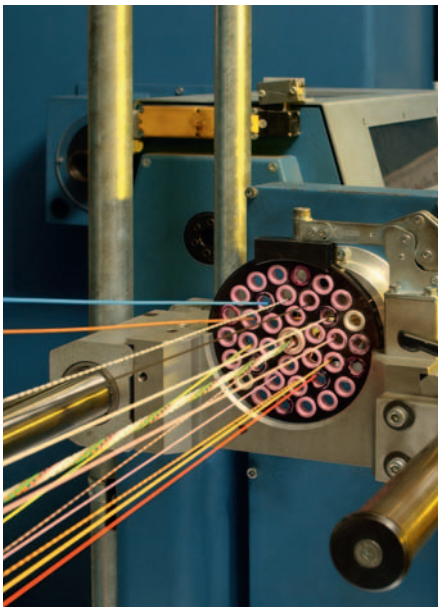
We specialize in the production of high-quality cables and wires.

Using the latest production methods, our two German plants manufacture approximately one million kilometers of conductors each year (= 77 times around the world). More than 300 qualified employees are specialized in the production of high-quality standard and custom cables. Through the use of the latest materials and collaboration with international test institutes, we drive innovation in the areas of automation, data technology, building system technology, and renewable energy.

Since 2014, in a 7,000 m² facility in the Chinese city of Taicang (approx. 50 km northwest of Shanghai) HELUKABEL® has been producing cable and wires, primarily for the Asian market. As is with our German plants, the focus is on high-quality, flexible and highly-flexible cables and wires that are manufactured in accordance with Chinese and international standards. The use of flexible manufacturing cells enable short delivery times.



Braiding machine



Stranding machine

Our production in numbers:

- 40,000 m² production area
- 23 extruder systems
- 19 stranding machines
- 50 braiding machines
- Cables & wires from 0.05 to 1,000 mm² (30 AWG to 2,000 kcmil)
- Manufacturing in accordance with: VDE, EAC (GOST-R), UL, CSA, HAR, CCC, Germanischer Lloyd, TÜV or customer specification



LOGISTICS

Redefining logistics in the cable industry.

INDUSTRIAL CABLE
Our logistics center – Hemmingen/Stuttgart

- 40,500 Euro-pallet racks
  16 aisles with 16 storage and retrieval devices
- 35,900 bin locations in the automatic small parts warehouse with a capacity of 1,000 bins per hour
- 670 storage spaces in the heavy load warehouse with max. reels of 4,000 kg and 2.20 m diameter
- 2 km conveyor line for pallets
- Conveyer connects direct to the cable-cutting machines
- Manual processes reduced to merely packing

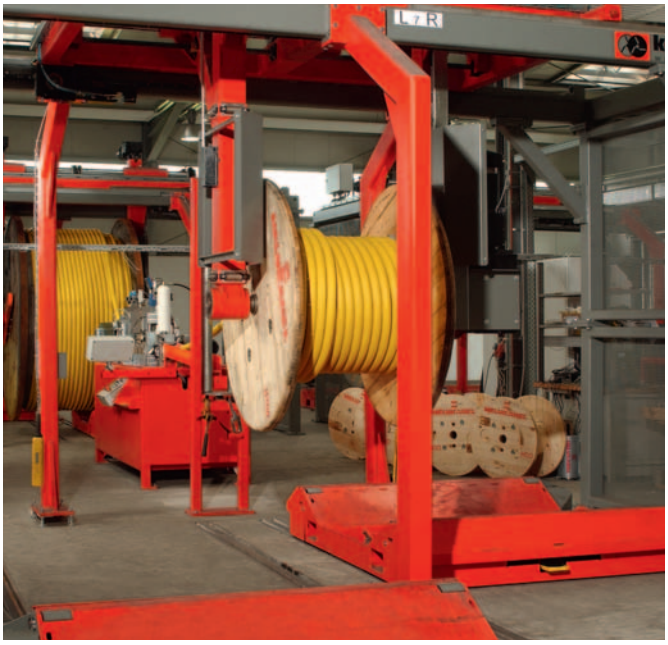
INFRASTRUCTURE CABLES
Our logistics center – Neuenhagen/Berlin

- 11,000 cable reels in stock
- Automatic processing of reels up to 2.80 m Ø and 10 t
- 10 rewinding machines
- Cut to length with state-of-the-art 1,200 mm² cutting tools
- 24-hr delivery is possible

At its corporate headquarters in the Swabian town of Hemmingen/Stuttgart, HELUKABEL® operates Europe's largest distribution center for cables and wires. Here a majority of the more than 33,000 products are located in a storage area of 160,000 m². Through the use of state-of-the-art conveyor and control technology, more than 1,000 orders can be picked and dispatched daily to destinations around the world.

Neuenhagen/Berlin is the central warehouse location for underground, medium-voltage, and other infrastructure cables. Storage capacities of more than 5,000 m² (indoor) and 50,000 m² (outdoor) enable fast delivery of cable, configured from 1 – 30 kV, to construction sites and major projects. The patented heavy-load cable-cutting machines with a load capacity of more than 10 tons are the largest of their kind in Germany.

The new logistics center at the Taicang (Shanghai, China) production facility serves as a product distribution hub for the Asian market, and offers incredible advantages, particularly for servicing time- and volume-critical customer projects.



Heavy-load, cable-cutting facility



Small parts warehouse



SUCCESS THROUGH QUALITY AND INNOVATION

Quality and environmental principles

HELUKABEL® GmbH is an independent enterprise that manufactures and sells cables, wires, and accessories. HELUKABEL® has a high commitment to quality and the environment. For this reason the executive board has introduced an integrated management system for quality and the environment based on DIN EN ISO 9001:2008 and DIN EN ISO 14001:2009 standards.

HELUKABEL® GmbH's quality and environmental policy is oriented to meet market needs and fulfill customer requirements, as well as corporate environmental protection. Our standard is customer satisfaction and trust. Indicators of this are the economic success of the enterprise and long-standing customer relationships.

Fulfillment of our quality and environmental principles is an obligation and ongoing task of the executive board and each individual employee. Our high standards are expressed in the following criteria:

Environment
Environmental protection in the enterprise is a principle of our work and is not only oriented to comply with legal requirements, but rather to avoid or minimize pollution and its effects on the environment.

Employees
Qualified employees who work cooperatively in teams and combine a high level of individual responsibility and autonomy with a marked awareness of quality and the environment ensure the success of the management system at HELUKABEL® GmbH.

Quality
Reliable products that meet the specifications to satisfy customer requirements.



Suppliers
Develop partnerships with suppliers who will work together with us to satisfy our quality and environmental standards.

Objectives
Products complying with requirements and timely order processing, whereby environmental impact is avoided or kept to a minimum.

Conduct
Cost awareness and environmental awareness are maintained by every employee to satisfy customer requirements, while maintaining the ability to react effectively to changing circumstances.

Approach
Upright action to maintain credibility in collaboration with our customers.

Continuous improvement
Continuously develop and implement enhancements of the products, processes, environmental protection procedures, and occupational health and safety.

The integrated quality and environmental management system supports the success factors of HELUKABEL® GmbH and documents how we work; this is described in the management manual, which is binding for all employees.


alt

OUR BRANDED PRODUCTS

Cables & wires

• BIOFLEX-500®	bio-oil resistant cables
• CLEANFLEX®	cleanroom data and control cables
• DATAFLAMM®	data and computer cables, halogen free
• DATAPUR-C®	data and computer cables
• GALVANICABLE®	high-voltage cathode cable
• HELUFLON®	heat-resistant cables
• HELUTHERM®	heat-resistant cables
• HELUTRAIN®	train cables
• HELUTRUCK®	vehicle cables/truck cables
• HELUWIND®	wind power cables
• KOMPOFLEX®	microbe-resistant cables
• KOMPOSPEED®	bio-oil resistant drag chain cables
• LIFT-TRAGO®	elevator control cables
• MEGAFLEX®	flexible control cables, halogen free, UL/CSA
• MULTIFLEX 512®	PUR drag chain cables
• MULTISPEED®	drag chain cables
• NANOFLEX®	PUR special control and data cables
• ROBOFLEX®	robot cables
• SENSORFLEX®	sensor cables
• SHIPFLEX®	drag chain cables
• SOLARFLEX®	photovoltaic cables
• SUPER-PAAR-TRONIC-C-PUR®	drag chain cables, halogen free
• SUPERTRONIC®	drag chain cables
• THERMFLEX®	heat-resistant cables
• TOPFLEX®	servo, feedback and motor cables
• TOPSERV®	servo, feedback and motor cables
• TRAYCONTROL®	exposed run cable
• TROMMPUR®	easy-to-wind cables
• UNIPUR®	PUR, flexible control cables

Cable accessories

• HELUCHAIN®	drag chain product line
• HELUTEC®	industrial connector series
• HELUTOP®	cable gland product line

Data, network & bus technology

• HELUCOM®	fiber optic cables fiber optic connection technology
• HELUKAT®	copper data cable copper connection technology

Media technology

• HELUEVENT®	high-powered cable for TV studios
• HELULIGHT®	cables for lighting control systems
• HELUSOUND®	audio cable

ALWAYS CLOSE TO YOU - 41 LOCATIONS IN 24 COUNTRIES

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info@helukabel.de

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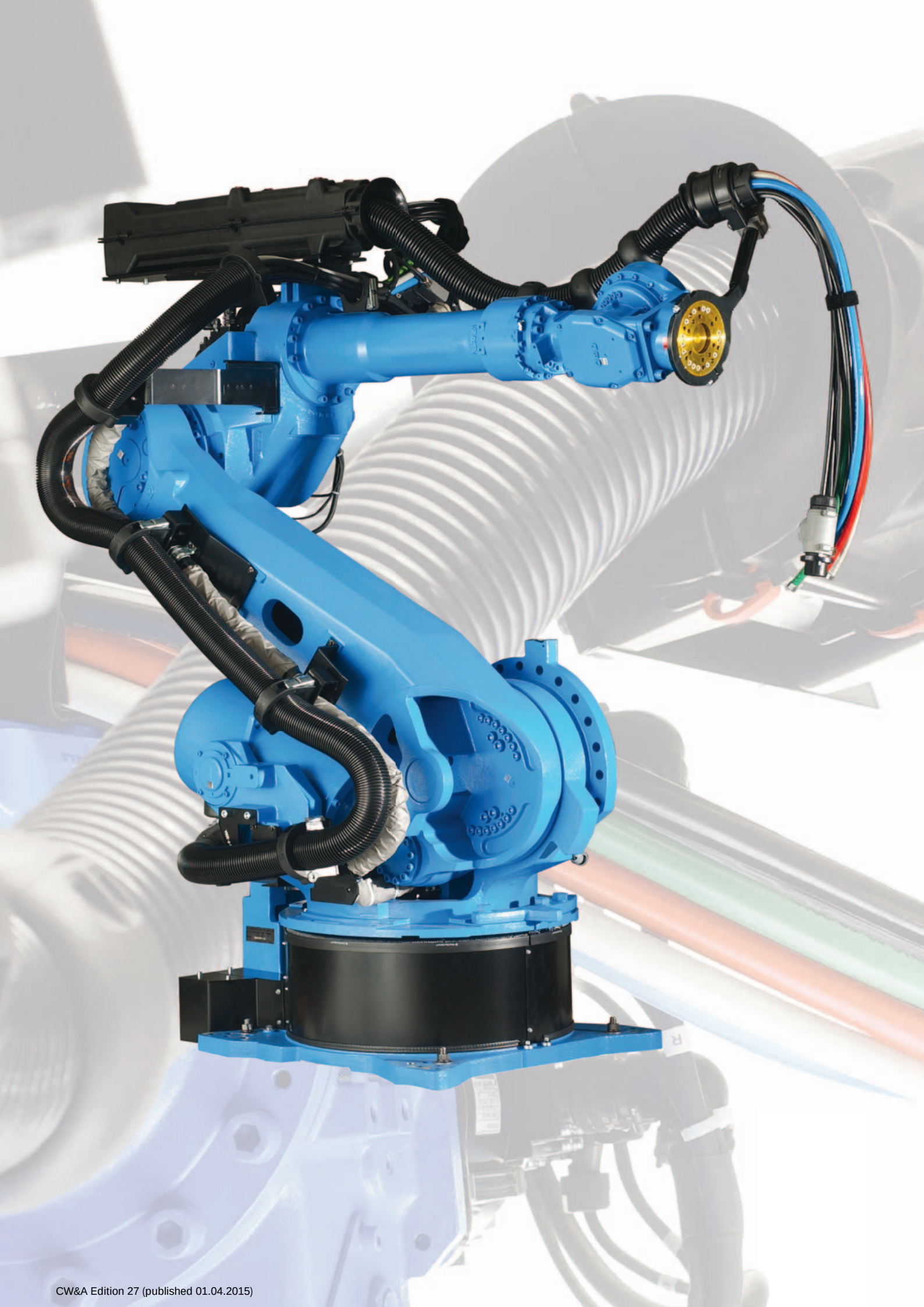
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ROBOTEC SYSTEMS - UNMATCHED ROBOTIC COMPETENCE

Since its founding in 1998, Robotec Systems GmbH, headquartered in Kamp-Lintfort, Germany, has become one of the leading European companies for robot hose packages and associated fastening systems as well as for custom robot cables, cable assemblies, power screwdriver technology, controllers for measurement instrumentation and media systems such as air hoses and water hoses. The company has been a 100% subsidiary of HELUKABEL® GmbH since July 2012.

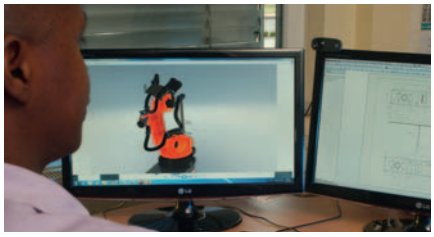
Robotec Systems develops tailored energy-supply systems that are pre-assembled and ready to install. From the development of various design concepts to prototyping, to final installation and on-site service, Robotec is a single source for all robotic services.

Through the use of first-class components, as well as superstructures and material compositions tailored for the respective application, the highest level of reliability and productivity is achieved.

Robotec's products are used in applications, such as spot, laser and inert gas welding, robot handling, and tool changing systems.



Concept



Development



Prototyping



Installation/optimization



Documentation



Repair/maintenance

Our components:

- Fastening elements & accessories
- Pivot bearings
- Spring clamps
- Protector/impact protection
- Trumpet & accessories
- Precision pipes
- Self-fastening hoses & accessories
- Cable protection hoses
- Attachment parts
- Primary cables
- Control cables
- BUS system cables
- Pre-assembled special cables

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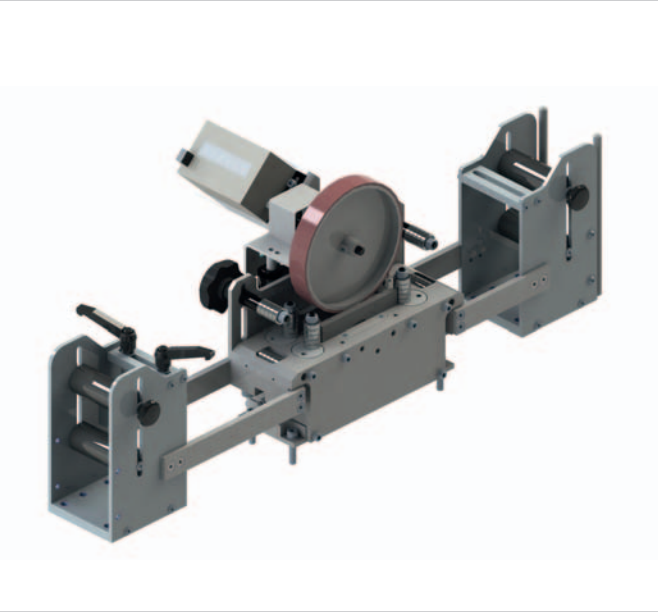
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kabelmat
WICKELTECHNIK

KABELMAT WICKELTECHNIK GMBH

Kabelmat Wickeltechnik GmbH's history goes back to the 1960s and since then the company has been among the market leaders for winding systems in the cable and wire industry.
Customers include manufacturers, retailers, cable and wire processors, as well as cable assemblers, electricians, machine manufacturing companies, and many more.
The product range includes virtually all devices and machines for storing, winding and cutting cables, wires, rope, tubes, hoses, and profiles.
Winding from and onto drums, as well as from drums to rings are among the tasks that are efficiently executed worldwide with Kabelmat products.
We would be pleased to show you our products in our showroom. You are cordially invited to visit us at our facility.

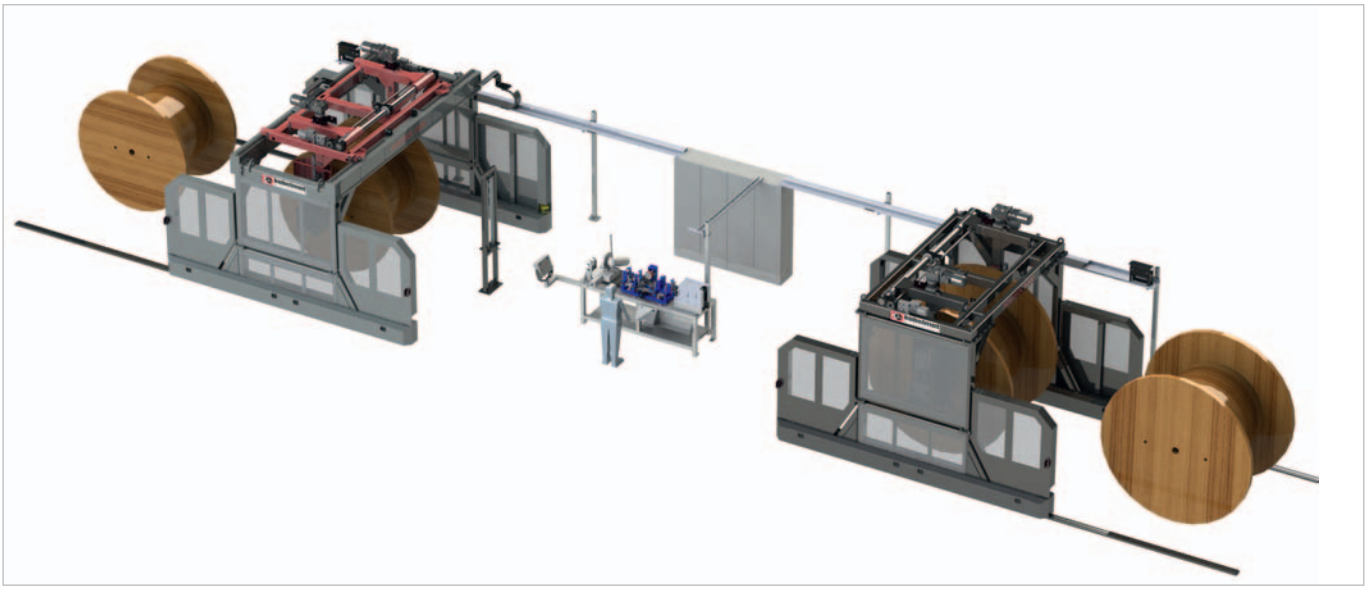


MESSBOI® 40

We offer:
- Manual winding technology
- Automatic winding technology
- Measuring technology
- Storage technology

Our services:
- Project planning & engineering
- Manufacturing & final assembly
- Service & maintenance

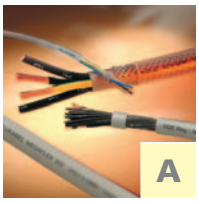
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PORTROL® 2600 - 3000

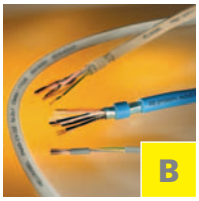
CHAPTER OVERVIEW

INDUSTRIAL CABLES & WIRES



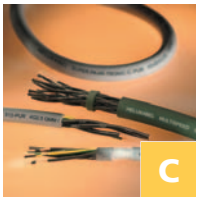
Flexible control cables
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with international approvals
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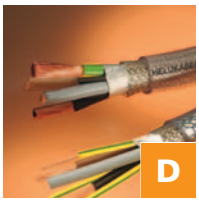
Data and computer cables
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with international approvals
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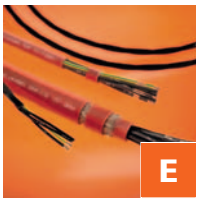
Drag chain cables
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Motor, servo & feedback cables
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Heat-resistant cables
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Allweather & rubber cables
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with international approvals
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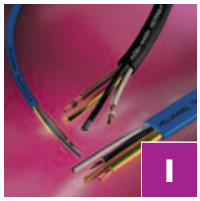
Trailing cables
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with international approvals
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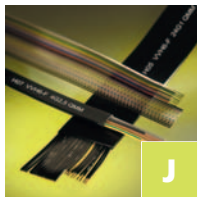
Robot cables

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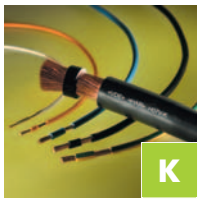
Water-resistant cables

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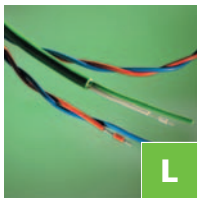
Flat & ribbon cables

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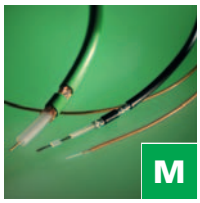
Single Conductors
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with international approvals
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Compensating cables

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Coaxial cables

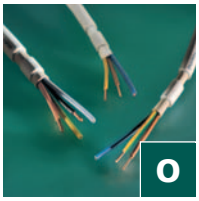
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Cables according to International Approvals

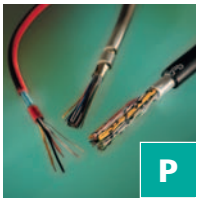
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INFRASTRUCTURE CABLES & WIRES



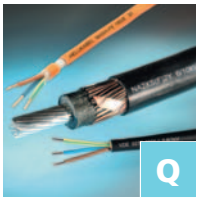
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CHAPTER OVERVIEW

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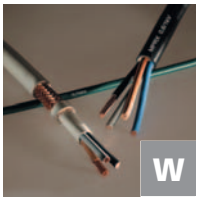
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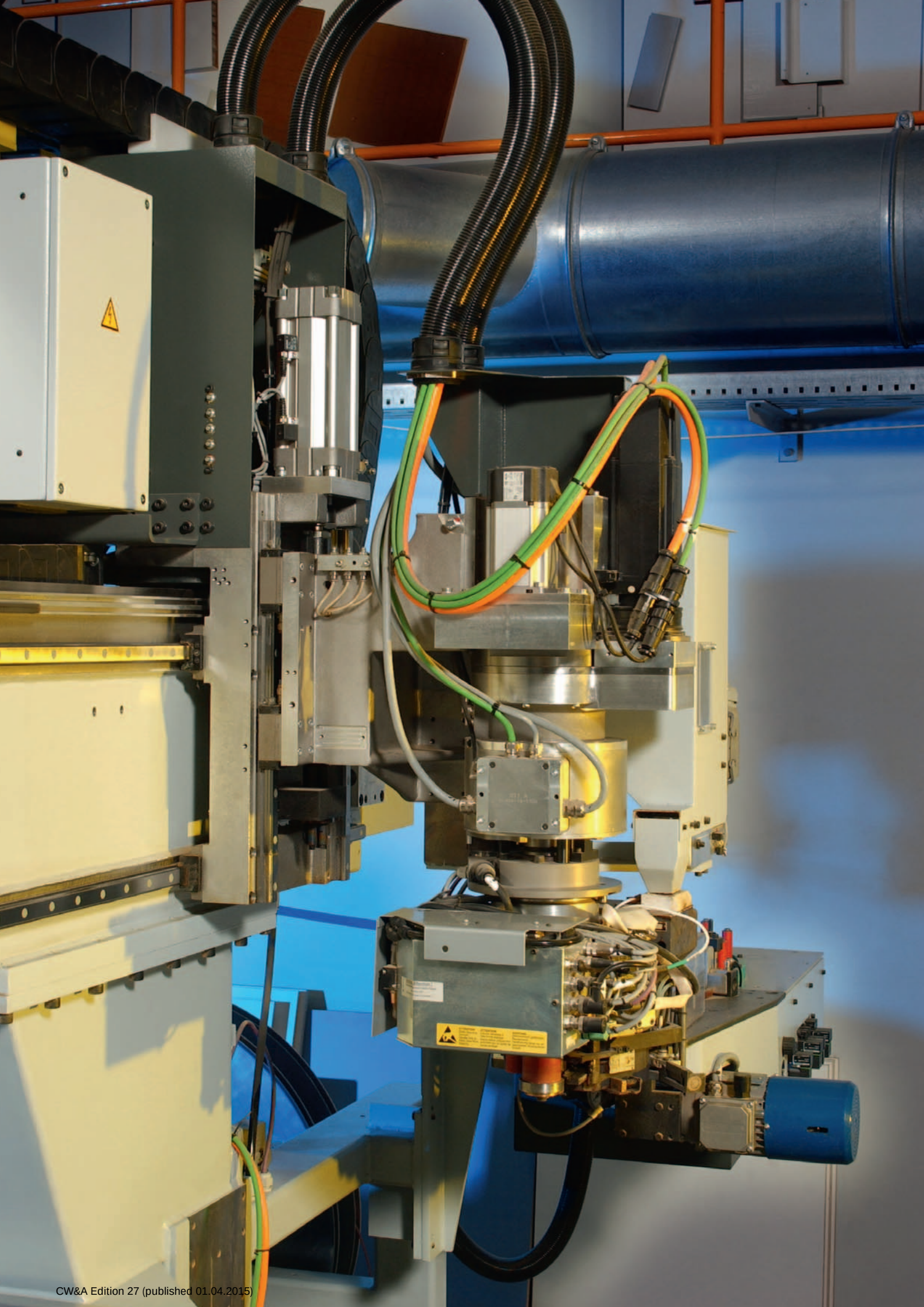
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H05VV-F

H03VV-F JZ-500 black

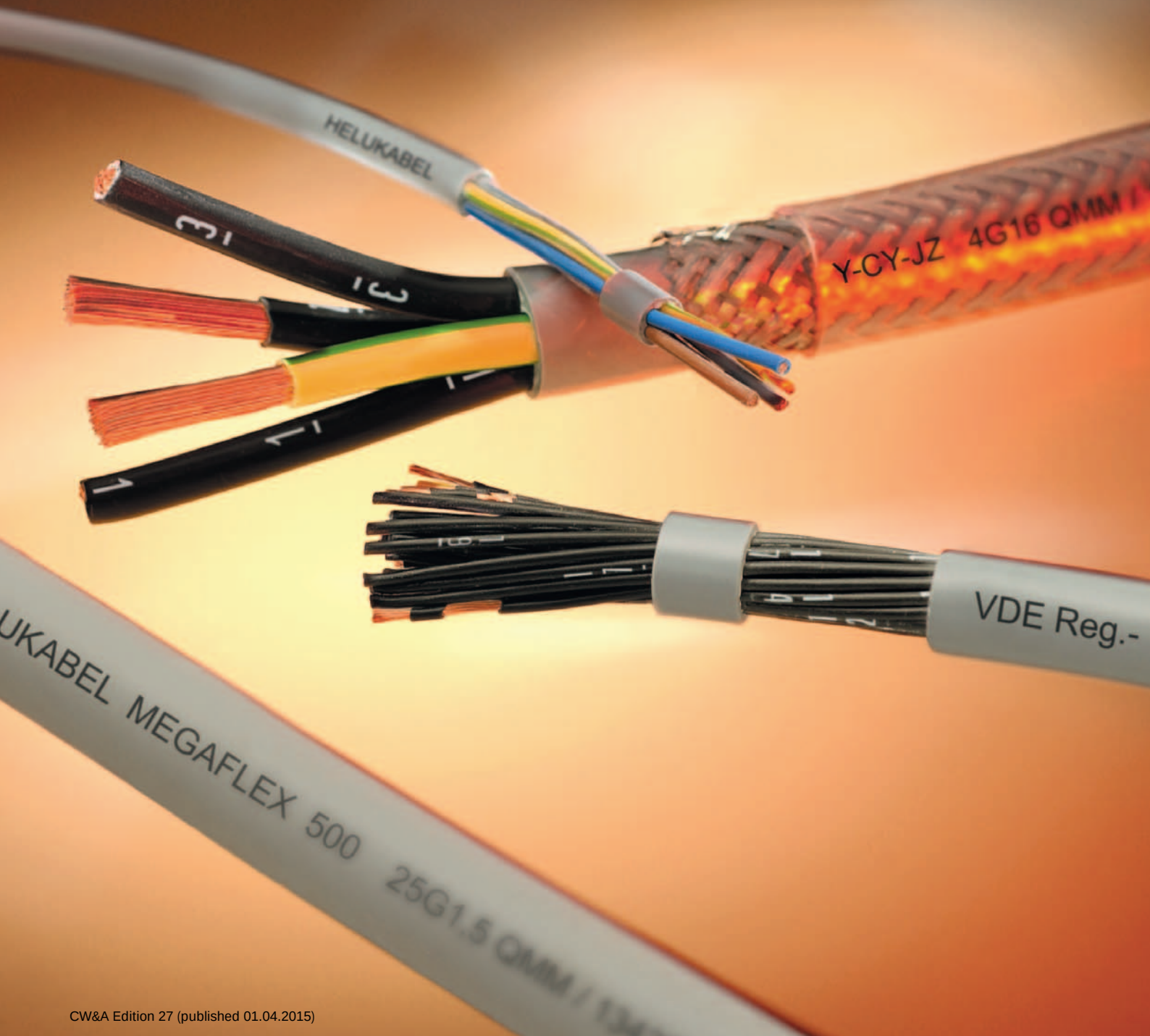
JZ-500 COLD JB-500

JZ-500

H05VV5-F (NYSLYÖ-JZ) JB-750

JB-750 yellow

JZ-600



FLEXIBLE CONTROL CABLES

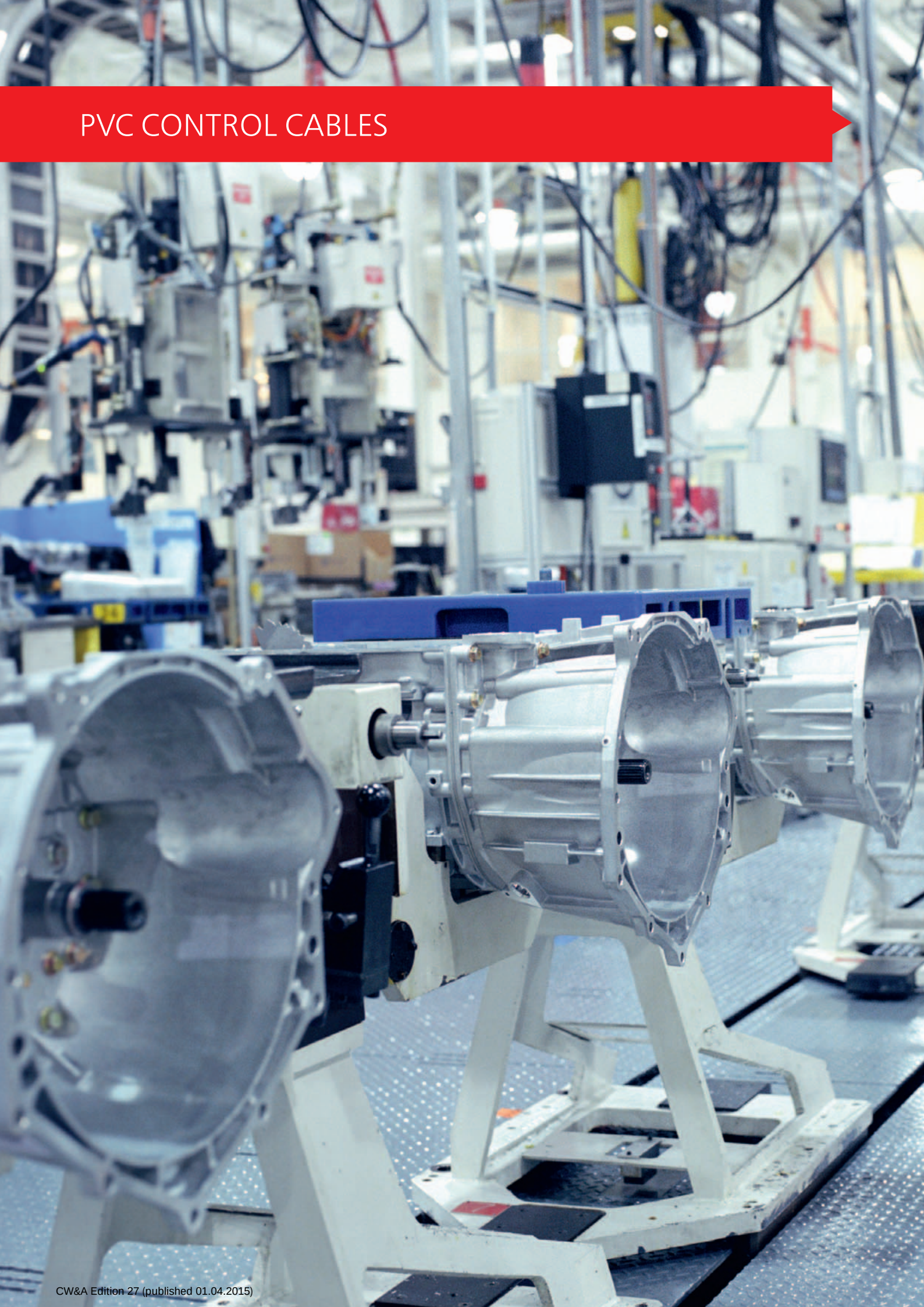
	Temperature (°C) - flexing	Temperature (°C) - fixed	Nominal voltage U_0/U	Bending radius - flexing x Ø	Bending radius - fixed x Ø	Halogen-free	UV-resistant	Outdoor use	Drag chain	Colored cores/VDE 0293	Screened/shielded	HAR/VDE REG no./VDE	UL/CSA	Page
PVC control cables														
JZ-500	-15 to +80	-40 to +80	300/500	7.5x	4x							X		30
JZ-500 black	-15 to +80	-40 to +80	300/500	7.5x	4x		X	X						32
JZ-500 orange	-15 to +80	-40 to +80	300/500	7.5x	4x							X		33
JZ-500 COLD	-30 to +80	-40 to +80	300/500	7.5x	4x			X						34
H05VV5-F (NYSLYÖ-JZ)	-5 to +70	-40 to +70	300/500	7.5x	4x							X		35
(H)05VV5-F ((N) YSLYÖ-JZ)	-5 to +70	-40 to +70	300/500	7.5x	4x							X		37
JZ-750	-15 to +80	-40 to +80	450/750	7.5x	4x									38
JZ-600	-15 to +80	-40 to +80	0.6/1 kV	7.5x	4x		X	X						40
JB-500	-15 to +80	-40 to +80	300/500	7.5x	4x					X		X		42
JB-750	-15 to +80	-40 to +80	450/750	7.5x	4x					X				43
JB-750 yellow	-15 to +80	-40 to +80	450/750	7.5x	4x					X				44
H03VV-F	-5 to +70	-40 to +70	300/300	7.5x						X		X		45
H05VV-F	-5 to +70	-40 to +70	300/500	7.5x						X		X		46
H05VV-F	-5 to +70	-40 to +70	300/500	7.5x						X		X		47
F-CY-OZ (LiY-CY)	-10 to +80	-40 to +80	300/500	10x	5x						X	X		48
F-CY-JZ	-10 to +80	-40 to +80	300/500	10x	5x						X	X		50
JZ-500 C black	-10 to +80	-40 to +80	300/500	10x	5x		X	X			X			52
Y-CY-JZ	-15 to +80	-40 to +80	300/500	10x	5x						X	X		53
SY-JZ	-15 to +80	-40 to +80	300/500	20x	6x						X	X		55
H05VVC4V5-K (NYSLYCYÖ-JZ)	-5 to +70	-40 to +70	300/500	10x	5x						X	X		57
(H)05VVC4V5-K ((N)YSLYCYÖ-JZ	-5 to +70	-40 to +70	300/500	10x	5x						X	X		59
JZ-600-Y-CY	-15 to +80	-40 to +80	0.6/1 kV	10x	5x		X	X			X			60
Y-CY-JB	-15 to +80	-40 to +80	300/500	10x	5x					X	X	X		62
SY-JB	-15 to +80	-40 to +80	300/500	20x	6x					X	X	X		64
PUR control cables														
JZ-500 PUR	-15 to +80	-40 to +80	300/500	7.5x	4x		X	X						67
PURö-JZ	-20 to +80	-40 to +80	300/500	7.5x	4x		X	X						68
PUR-ORANGE	-15 to +80	-40 to +80	300/500	7.5x	4x		X	X		X				70
PUR-YELLOW	-15 to +80	-40 to +80	300/500	7.5x	4x		X	X		X				71
H05 BQ-F / H07 BQ-F (NGMH11YÖ)	-40 to +80	-50 to +90	300/500	5x	3x		X	X		X		X		72
UNIPUR®	-40 to +90		300/500	10x	5x	X	X	X		X		X		73
PUR-750	-40 to +80		300/500	10x	5x	X	X	X		X				75
JZ 500-FC-PUR	-10 to +80	-40 to +80	300/500	10x	5x		X	X			X			76
F-C-PURö-JZ	-20 to +80	-40 to +80	300/500	10x	5x		X	X			X			78
Yö-C-PURö-JZ	-20 to +80	-40 to +80	300/500	10x	5x		X	X			X			80
UNIPUR®-CP	-40 to +90		300/500	12.5x	7.5x	X	X	X		X	X			82
PUR-C-PUR	-40 to +80		300/500	10x	5x	X	X	X		X	X			84

FLEXIBLE CONTROL CABLES

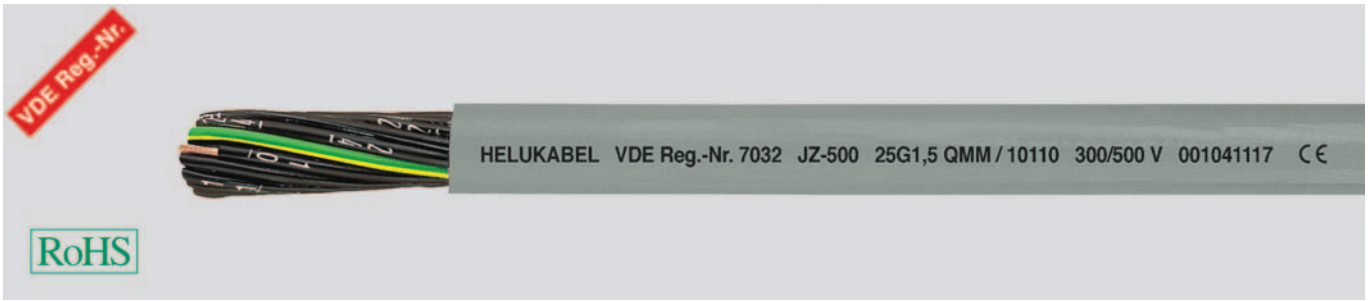
	Temperature (°C) - flexing	Temperature (°C) - fixed	Nominal voltage U_0/U Operating peak voltage	Bending radius - flexing x Ø	Bending radius - fixed x Ø	Halogen-free	UV-resistant	Outdoor use	Drag chain	Colored cores/VDE 0293	Screened/shielded	HAR/VDE REG no./VDE	UL/CSA	Page
Halogen-free control cables														
JZ-500 HMH	-15 to +70	-40 to +70	300/500	12.5x	4x	X								86
MEGAFLEX® 500	-30 to +80	-40 to +80	300/500	10x	4x	X	X	X					X	88
H07 ZZ-F	-5 to +70	-20 to +70	450/750	10x	4x	X						X		90
JZ-600 HMH	-15 to +70	-40 to +70	0.6/1 kV	15x	7.5x	X		X						91
JB-750 HMH	-15 to +70	-40 to +70	450/750	12.5x	4x	X				X				93
(H)03 Z1Z1-F	-5 to +70	-40 to +70	300/500	7.5x		X				X				94
(H)05 Z1Z1-F	-5 to +70	-40 to +70	300/500	7.5x		X				X				95
JZ-500 HMH-C	-15 to +70	-40 to +70	200/500	12.5x	4x	X					X			96
MEGAFLEX® 500-C	-30 to +80	-40 to +80	300/500	10x	4x	X	X	X			X		X	98
JZ-600 HMH-C	-15 to +70	-40 to +70	0.6/1 kV	15x	7.5x	X		X			X			100
JB-750 HMH-C	-15 to +70	-40 to +70	450/750	12.5x	4x	X				X	X			102
Inherently safe PVC control cables														
OZ-BL	-15 to +80	-40 to +80	300/500	7.5x	4x							X		105
OZ-BL-CY	-10 to +80	-40 to +80	300/500	10x	5x						X	X		106
OB-BL-PAAR-CY	-10 to +80	-30 to +80	900	10x	5x					X	X			107
Bio-oil & microbe-resistant cables														
BIOFLEX-500®-JZ	-20 to +80	-40 to +80	300/500	15x	4x			X						109
BIOFLEX-500®-JZ-C	-20 to +80	-40 to +80	300/500	20x	6x			X			X			110
KOMPOFLEX® JZ-500	-30 to +90	-40 to +100	300/500	7.5x	4x	X	X	X						112
KOMPOFLEX® JZ-500-C	-30 to +90	-40 to +100	300/500	7.5x	4x	X	X	X			X			113
Hygienic cable														
NANOFLEX® HC*500	-5 to +80	-40 to +80	300/500	7.5x	4x		X	X						116
NANOFLEX® HC*500-C	-5 to +80	-40 to +80	300/500	10x	5x		X	X			X			117
NANOFLEX® HC*TRONIC	-5 to +80	-40 to +80	350	7.5x	4x		X	X		X	X			118
NANOFLEX® HC*TRONIC-C	-5 to +80	-40 to +80	350	10x	5x		X	X		X	X			120

The selection table is intended as an initial orientation.
Please see the relevant page of the catalogue for detailed information on the product properties.

PVC CONTROL CABLES



JZ-500 flexible, number coded, meter marking



Technical data

- Special-PVC control cable adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51
- **Temperature range** flexing -15°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10^6 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type Z 7225
- Core identification to DIN VDE 0293 black cores with continuous white numbering (also available in other colours on request)
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-lenght
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- conditional drag chain compatible
- conditional suitability for torsion
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- We supply any "desired length" of stranded cores without outer sheath, core insulation colour acc. RAL 9005 with number combination acc. customers requirement.
- Please note the cleanroom qualification when ordering.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **F-CY-JZ,** confer page 50 **F-CY-OZ (LiY-CY),** confer page 48 **Y-CY-JB,** confer page 62 **Y-CY-JZ**, confer page 53

Application

These cables are used for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms but not suitable for open air, as measuring and control cables in tool machines, conveyor belts, production lines in machinery production, in air-conditioning and in steel production.
Selected PVC-compounds guarantee a good flexibility as well as an economic and fast installation.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
10001	2 x 0,5	4,8	9,6	40,0	20
10002	3 G 0,5	5,1	14,4	46,0	20
10003	3 x 0,5	5,1	14,4	46,0	20
10004	4 G 0,5	5,5	19,0	56,0	20
10005	4 x 0,5	5,5	19,0	56,0	20
10006	5 G 0,5	6,2	24,0	65,0	20
10007	5 x 0,5	6,2	24,0	65,0	20
10008	6 G 0,5	6,7	29,0	75,0	20
10009	7 G 0,5	6,7	33,6	80,0	20
10010	7 x 0,5	6,7	33,6	80,0	20
10011	8 G 0,5	7,4	38,0	97,0	20
10172	8 x 0,5	7,4	38,0	97,0	20
10012	10 G 0,5	8,3	48,0	116,0	20
10013	12 G 0,5	8,7	58,0	135,0	20
10014	12 x 0,5	8,7	58,0	135,0	20
10015	14 G 0,5	9,5	67,0	150,0	20
10183	16 G 0,5	10,0	76,0	175,0	20
10016	18 G 0,5	10,7	86,0	196,0	20
10017	20 G 0,5	11,3	96,0	215,0	20
10018	21 G 0,5	11,3	101,0	240,0	20
10019	25 G 0,5	12,6	120,0	270,0	20
10020	30 G 0,5	13,5	144,0	310,0	20
10021	32 G 0,5	14,0	154,0	323,0	20
10022	34 G 0,5	14,3	163,0	362,0	20
10023	40 G 0,5	15,3	192,0	434,0	20
10024	42 G 0,5	15,8	202,0	449,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
10025	50 G 0,5	17,5	240,0	513,0	20
10169	52 G 0,5	17,5	252,0	534,0	20
10026	61 G 0,5	18,5	293,0	625,0	20
10027	65 G 0,5	19,4	312,0	682,0	20
10028	80 G 0,5	21,4	384,0	780,0	20
10029	100 G 0,5	24,0	480,0	980,0	20
10030	2 x 0,75	5,3	14,4	46,0	19
10031	3 G 0,75	5,6	21,6	54,0	19
10032	3 x 0,75	5,6	21,6	54,0	19
10033	4 G 0,75	6,3	28,8	66,0	19
10034	4 x 0,75	6,3	29,0	66,0	19
10035	5 G 0,75	6,9	36,0	80,0	19
10036	5 x 0,75	6,9	36,0	80,0	19
10037	6 G 0,75	7,5	43,0	99,0	19
10177	6 x 0,75	7,5	43,0	99,0	19
10038	7 G 0,75	7,5	50,0	110,0	19
10039	7 x 0,75	7,5	50,0	110,0	19
10040	8 G 0,75	8,3	58,0	130,0	19
10173	8 x 0,75	8,3	58,0	130,0	19
10041	9 G 0,75	8,9	65,0	153,0	19
10042	10 G 0,75	9,2	72,0	162,0	19
10043	12 G 0,75	9,8	86,0	179,0	19
10044	12 x 0,75	9,8	86,0	179,0	19
10045	14 G 0,75	10,6	101,0	214,0	19
10046	15 G 0,75	11,4	108,0	218,0	19
10047	18 G 0,75	12,2	130,0	257,0	19

Continuation ▸

JZ-500 flexible, number coded, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
10533	19 G 0,75	12,2	137,0	264,0	19
10048	20 G 0,75	12,7	144,0	286,0	19
10049	21 G 0,75	12,7	151,0	320,0	19
10050	25 G 0,75	14,3	180,0	365,0	19
10534	27 G 0,75	14,6	195,0	382,0	19
10051	32 G 0,75	15,9	230,0	455,0	19
10052	34 G 0,75	16,5	245,0	510,0	19
10182	37 G 0,75	16,7	266,0	537,0	19
10053	40 G 0,75	17,2	288,0	595,0	19
10054	41 G 0,75	18,1	296,0	607,0	19
10055	42 G 0,75	18,1	302,0	612,0	19
10056	50 G 0,75	19,8	360,0	735,0	19
10057	61 G 0,75	21,2	439,0	845,0	19
10178	65 G 0,75	21,8	468,0	895,0	19
10058	80 G 0,75	24,3	576,0	1070,0	19
10059	100 G 0,75	27,0	720,0	1322,0	19
10060	2 x 1	5,6	19,2	60,0	18
10061	3 G 1	5,9	29,0	72,0	18
10062	3 x 1	5,9	29,0	72,0	18
10063	4 G 1	6,6	38,4	86,0	18
10064	4 x 1	6,6	38,4	86,0	18
10065	5 G 1	7,3	48,0	104,0	18
10066	5 x 1	7,3	48,0	104,0	18
10067	6 G 1	8,1	58,0	125,0	18
10068	7 G 1	8,1	67,0	141,0	18
10069	7 x 1	8,1	67,0	141,0	18
10070	8 G 1	8,8	77,0	175,0	18
10071	9 G 1	9,7	86,0	200,0	18
10180	10 G 1	9,8	96,0	217,0	18
10170	10 x 1	9,8	96,0	217,0	18
10072	12 G 1	10,4	115,0	230,0	18
10073	12 x 1	10,4	115,0	230,0	18
10074	14 G 1	11,4	134,0	271,0	18
10075	16 G 1	12,3	154,0	300,0	18
10076	18 G 1	12,9	173,0	343,0	18
10174	18 x 1	12,9	173,0	343,0	18
10197	19 G 1	12,9	182,0	355,0	18
10077	20 G 1	13,8	192,0	375,0	18
10184	20 x 1	13,8	192,0	375,0	18
10179	21 G 1	13,8	205,0	420,0	18
10175	24 G 1	15,1	230,0	440,0	18
10078	25 G 1	15,4	240,0	485,0	18
10176	25 x 1	15,4	240,0	485,0	18
10196	26 G 1	15,5	252,0	500,0	18
10198	27 G 1	15,6	259,0	534,0	18
10168	30 x 1	16,4	308,0	550,0	18
10079	34 G 1	17,7	326,0	650,0	18
10080	36 G 1	17,9	346,0	668,0	18
10199	37 G 1	17,9	355,0	701,0	18
10081	40 G 1	18,5	384,0	755,0	18
10167	40 x 1	18,5	384,0	755,0	18
10082	41 G 1	19,5	394,0	770,0	18
10083	42 G 1	19,5	403,0	810,0	18
10084	50 G 1	21,3	480,0	936,0	18
10085	56 G 1	21,9	538,0	920,0	18
10086	61 G 1	22,5	586,0	1100,0	18
10087	65 G 1	23,6	628,0	1180,0	18
10088	80 G 1	26,1	768,0	1294,0	18
10089	100 G 1	28,8	960,0	1644,0	18
10090	2 x 1,5	6,4	29,0	70,0	16
10091	3 G 1,5	6,8	43,0	90,0	16
10092	3 x 1,5	6,8	43,0	90,0	16
10093	4 G 1,5	7,4	58,0	109,0	16
10094	4 x 1,5	7,4	58,0	109,0	16
10095	5 G 1,5	8,3	72,0	131,0	16
10096	5 x 1,5	8,3	72,0	131,0	16
10097	6 G 1,5	9,2	86,0	157,0	16
10098	7 G 1,5	9,2	101,0	184,0	16
10099	7 x 1,5	9,2	101,0	184,0	16
10100	8 G 1,5	10,0	115,0	216,0	16
10101	9 G 1,5	10,9	129,0	259,0	16
10181	10 G 1,5	10,9	144,0	275,0	16
10102	11 G 1,5	11,6	158,0	300,0	16
10103	12 G 1,5	11,8	173,0	309,0	16
10104	12 x 1,5	11,8	173,0	309,0	16
10105	14 G 1,5	13,0	202,0	345,0	16
10106	16 G 1,5	13,9	230,0	386,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
10107	18 G 1,5	14,6	259,0	440,0	16
10185	19 G 1,5	14,6	279,0	445,0	16
10108	20 G 1,5	15,6	288,0	490,0	16
10109	21 G 1,5	15,6	302,0	555,0	16
10110	25 G 1,5	17,4	360,0	620,0	16
10535	27 G 1,5	17,5	389,0	670,0	16
10111	32 G 1,5	19,5	461,0	790,0	16
10112	34 G 1,5	20,0	490,0	830,0	16
10536	37 G 1,5	20,2	533,0	892,0	16
10113	41 G 1,5	21,8	591,0	996,0	16
10114	42 G 1,5	21,8	605,0	1007,0	16
10115	50 G 1,5	24,2	720,0	1250,0	16
10116	56 G 1,5	24,9	806,0	1332,0	16
10117	61 G 1,5	25,8	878,0	1440,0	16
10187	65 G 1,5	26,8	936,0	1602,0	16
10118	80 G 1,5	29,8	1152,0	1871,0	16
10119	100 G 1,5	33,2	1440,0	2353,0	16
10120	2 x 2,5	7,8	48,0	112,0	14
10121	3 G 2,5	8,3	72,0	148,0	14
10122	3 x 2,5	8,3	72,0	148,0	14
10123	4 G 2,5	9,2	96,0	178,0	14
10124	4 x 2,5	9,2	96,0	178,0	14
10125	5 G 2,5	10,1	120,0	221,0	14
10126	5 x 2,5	10,1	120,0	221,0	14
10127	7 G 2,5	11,2	168,0	306,0	14
10128	7 x 2,5	11,2	168,0	306,0	14
10129	8 G 2,5	12,3	192,0	363,0	14
10548	10 G 2,5	14,1	240,0	429,0	14
10130	12 G 2,5	14,8	288,0	498,0	14
10131	14 G 2,5	16,0	336,0	569,0	14
10132	18 G 2,5	18,2	432,0	764,0	14
10133	21 G 2,5	19,2	504,0	914,0	14
10134	25 G 2,5	21,6	600,0	1044,0	14
10135	34 G 2,5	24,8	816,0	1470,0	14
10136	42 G 2,5	27,4	1008,0	1790,0	14
10137	50 G 2,5	30,0	1200,0	2095,0	14
10138	61 G 2,5	32,0	1464,0	2750,0	14
10139	100 G 2,5	41,4	2400,0	4450,0	14
10140	2 x 4	9,2	77,0	195,0	12
10141	3 G 4	9,8	115,0	230,0	12
10142	4 G 4	10,9	154,0	295,0	12
10143	5 G 4	12,1	192,0	361,0	12
10144	7 G 4	13,2	269,0	458,0	12
10145	8 G 4	14,7	307,0	590,0	12
10549	10 G 4	16,8	384,0	687,0	12
10146	12 G 4	17,7	461,0	790,0	12
10147	3 G 6	11,9	173,0	355,0	10
10148	4 G 6	13,0	230,0	424,0	10
10149	5 G 6	14,5	288,0	525,0	10
10150	7 G 6	16,2	403,0	625,0	10
10151	3 G 10	14,9	288,0	540,0	8
10152	4 G 10	16,5	384,0	701,0	8
10153	5 G 10	18,3	480,0	858,0	8
10154	7 G 10	20,2	672,0	1106,0	8
10190	3 G 16	18,3	461,0	827,0	6
10155	4 G 16	20,1	614,0	1035,0	6
10156	5 G 16	22,6	768,0	1259,0	6
10157	7 G 16	24,8	1075,0	1780,0	6
10191	3 G 25	22,3	720,0	1186,0	4
10158	4 G 25	25,0	960,0	1582,0	4
10159	5 G 25	27,7	1200,0	1999,0	4
10160	7 G 25	30,6	1680,0	2825,0	4
10192	3 G 35	25,9	1008,0	1585,0	2
10161	4 G 35	28,7	1344,0	2105,0	2
10162	5 G 35	31,9	1680,0	2633,0	2
10193	3 G 50	30,8	1440,0	2550,0	1
10163	4 G 50	34,1	1920,0	2940,0	1
10188	5 G 50	38,1	2400,0	2936,0	1
10194	3 G 70	36,4	2016,0	3180,0	2/0
10164	4 G 70	40,2	2688,0	4090,0	2/0
10189	5 G 70	44,7	3360,0	5443,0	2/0
10195	3 G 95	41,3	2736,0	4680,0	3/0
10165	4 G 95	46,0	3648,0	5540,0	3/0
10333	5 G 95	50,7	4560,0	6931,0	3/0
10166	4 G 120	51,0	4608,0	7000,0	4/0
13139	4 G 150	57,2	5760,0	8340,0	300 kcmil
13140	4 G 185	63,0	7104,0	9904,0	350 kcmil

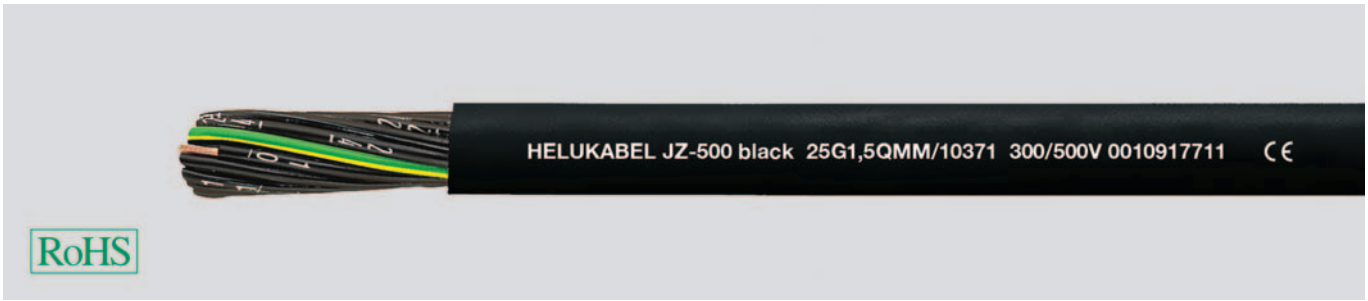
Dimensions and specifications may be changed without prior notice. (RA01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS

JZ-500 black flexible, metermarking



Technical data

- Special-PVC control cable adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51
- **Temperature range** flexing -15°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type Z 7225
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- **UV- resistant**

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **JZ-500-C black**, confer page 52

Application

These cables are used for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms and **in open air**. Must not be laid directly in soil or water. When screened for measurement, control and control line etc. in mechanical and plant engineering, machine tools, production lines and conveyor belts.

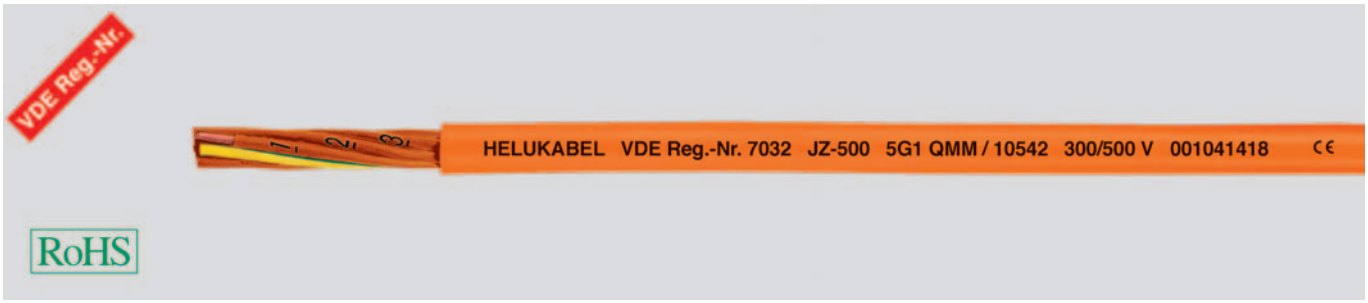
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
10340	2 x 0,5	5,4	9,6	40,0	20
10341	3 G 0,5	5,7	14,4	46,0	20
11630	3 x 0,5	5,7	14,4	46,0	20
10342	4 G 0,5	6,1	19,0	56,0	20
11631	4 x 0,5	6,1	19,0	56,0	20
10343	5 G 0,5	6,8	24,0	65,0	20
11632	5 x 0,5	6,8	24,0	65,0	20
10344	7 G 0,5	7,3	33,6	80,0	20
11633	7 x 0,5	7,3	33,6	80,0	20
10345	12 G 0,5	9,6	58,0	135,0	20
11634	12 x 0,5	9,6	58,0	135,0	20
10346	18 G 0,5	11,5	86,0	196,0	20
10347	25 G 0,5	13,5	120,0	270,0	20
10348	2 x 0,75	5,9	14,4	46,0	19
10349	3 G 0,75	6,2	21,6	54,0	19
11635	3 x 0,75	6,2	21,6	54,0	19
10350	4 G 0,75	6,7	28,8	66,0	19
11636	4 x 0,75	6,7	28,8	66,0	19
10351	5 G 0,75	7,5	36,0	80,0	19
11637	5 x 0,75	7,5	36,0	80,0	19
10352	7 G 0,75	8,3	50,0	110,0	19
11638	7 x 0,75	8,3	50,0	110,0	19
10353	12 G 0,75	10,8	86,0	179,0	19
11639	12 x 0,75	10,8	86,0	179,0	19
10354	18 G 0,75	12,8	130,0	257,0	19
10355	25 G 0,75	15,1	180,0	365,0	19
10356	2 x 1	6,2	19,2	60,0	18
10357	3 G 1	6,5	29,0	72,0	18
11640	3 x 1	6,5	29,0	72,0	18
10358	4 G 1	7,2	38,4	86,0	18
11641	4 x 1	7,2	38,4	86,0	18
10359	5 G 1	8,1	48,0	104,0	18
11642	5 x 1	8,1	48,0	104,0	18
10360	7 G 1	8,7	67,0	141,0	18
11643	7 x 1	8,7	67,0	141,0	18
10361	12 G 1	11,4	115,0	230,0	18
11644	12 x 1	11,4	115,0	230,0	18
10362	18 G 1	13,7	173,0	343,0	18

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
10363	25 G 1	16,2	240,0	485,0	18
10543	34 G 1	18,7	326,0	690,0	18
10364	2 x 1,5	7,0	29,0	70,0	16
10365	3 G 1,5	7,4	43,0	90,0	16
11645	3 x 1,5	7,4	43,0	90,0	16
10366	4 G 1,5	8,2	58,0	109,0	16
11646	4 x 1,5	8,2	58,0	109,0	16
10367	5 G 1,5	9,1	72,0	131,0	16
11647	5 x 1,5	9,1	72,0	131,0	16
10368	7 G 1,5	9,8	101,0	184,0	16
11648	7 x 1,5	9,8	101,0	184,0	16
10369	12 G 1,5	13,2	173,0	309,0	16
11649	12 x 1,5	13,2	173,0	309,0	16
10370	18 G 1,5	15,6	259,0	440,0	16
10371	25 G 1,5	18,6	360,0	620,0	16
10372	2 x 2,5	8,4	48,0	112,0	14
10373	3 G 2,5	8,9	72,0	148,0	14
11650	3 x 2,5	8,9	72,0	148,0	14
10374	4 G 2,5	9,8	96,0	178,0	14
11651	4 x 2,5	9,8	96,0	178,0	14
10375	5 G 2,5	10,9	120,0	221,0	14
11652	5 x 2,5	10,9	120,0	221,0	14
10376	7 G 2,5	12,0	168,0	306,0	14
11653	7 x 2,5	12,0	168,0	306,0	14
10377	12 G 2,5	15,9	288,0	498,0	14
11654	12 x 2,5	15,9	288,0	498,0	14
10378	18 G 2,5	19,0	432,0	764,0	14
10379	25 G 2,5	22,6	600,0	1044,0	14
10380	4 G 4	11,5	154,0	295,0	12
10381	5 G 4	12,8	192,0	361,0	12
10382	4 G 6	13,6	230,0	424,0	10
10383	5 G 6	15,1	288,0	525,0	10
10384	4 G 10	17,1	384,0	701,0	8
10388	5 G 10	18,9	480,0	909,0	8
10385	4 G 16	20,9	614,0	1035,0	6
10386	4 G 25	25,6	960,0	1582,0	4
10387	4 G 35	29,4	1344,0	2105,0	2

Dimensions and specifications may be changed without prior notice. (RA01)

JZ-500 orange flexible, orange cores, control cable for interlocking purposes, meter marking



Technical data

- Special-PVC control cable for interlocking purposes adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51
- **Temperature range** flexing -15°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type Z 7225
- Core identification to DIN VDE 0293 orange cores with continuous black numbering
- JZ-version with GN-YE conductor 3 cores and above OZ-version without GN-YE conductor
- Cores stranded in layers with optimal lay-length
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour orange (RAL 2003)
- with meter marking

Properties

- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

These cables are used for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms but not suitable for open air, as control cable acc. to EN 60204 part 1 and VDE 0113 part 1. As per recommendation of the specified standards the insulated conductors of control current circuits should be coloured orange, when they are used for interlocking purposes. These control circuits are supplied with an external power and remain active under current when the main switch is disconnected or switched off.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
10537	2 x 1	5,6	19,2	60,0	18
10538	3 G 1	5,9	29,0	72,0	18
10539	3 x 1	5,9	29,0	72,0	18
10541	4 x 1	6,6	38,4	86,0	18
10540	4 G 1	6,6	38,4	86,0	18
10542	5 G 1	7,3	48,0	104,0	18
10544	2 x 1,5	6,4	29,0	70,0	16
10545	3 G 1,5	6,8	43,0	90,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
10546	4 G 1,5	7,4	58,0	109,0	16
10547	5 G 1,5	8,3	72,0	131,0	16
10747	3 G 2,5	8,3	72,0	148,0	14
10748	4 G 2,5	9,2	96,0	178,0	14
10749	5 G 2,5	10,1	120,0	221,0	14

Dimensions and specifications may be changed without prior notice. (RA01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS

JZ-500 COLD flexible at low temperature, number coded, meter marking



Technical data

- Special-PVC control cable adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51
- **Temperature range** flexing -30°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10^6 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type YI4
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of cold flexible special PVC
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

This cold-flexible PVC hose cable is used under average stress for flexible applications with free movement, without tensile load and without forced motion guide in dry, moist, wet rooms and outside, as measuring and control cable at machine tools, conveyor belts and transport belts, production streets, in plant construction, in air condition construction and in refrigerated warehouses. Selected PVC mixtures guarantee good flexibility, efficient and fast installation.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
10750	2 x 0,5	4,8	9,6	40,0	20
10751	3 G 0,75	5,6	21,6	54,0	19
10752	3 x 0,75	5,6	21,6	54,0	19
10753	4 G 0,75	6,3	28,8	66,0	19
10754	4 x 0,75	6,3	29,0	66,0	19
10755	5 G 0,75	6,9	36,0	80,0	19
10756	5 x 0,75	6,9	36,0	80,0	19
10757	7 G 0,75	7,5	50,0	110,0	19
10758	7 x 0,75	7,5	50,0	110,0	19
10759	12 G 0,75	9,8	86,0	179,0	19
10760	18 G 0,75	12,2	130,0	257,0	19
10761	25 G 0,75	14,3	180,0	365,0	19
10762	2 x 1	5,6	19,2	60,0	18
10763	3 G 1	5,9	29,0	72,0	18
10764	3 x 1	5,9	29,0	72,0	18
10765	4 G 1	6,6	38,4	86,0	18
10766	4 x 1	6,6	38,4	86,0	18
10767	5 G 1	7,3	48,0	104,0	18
10768	5 x 1	7,3	48,0	104,0	18
10769	7 G 1	8,1	67,0	141,0	18
10770	7 x 1	8,1	67,0	141,0	18
10771	12 G 1	10,4	115,0	230,0	18
10772	18 G 1	12,9	173,0	343,0	18
10773	25 G 1	15,4	240,0	485,0	18

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
10774	2 x 1,5	6,4	29,0	70,0	16
10775	3 G 1,5	6,8	43,0	90,0	16
10776	3 x 1,5	6,8	43,0	90,0	16
10777	4 G 1,5	7,4	58,0	109,0	16
10778	4 x 1,5	7,4	58,0	109,0	16
10779	5 G 1,5	8,3	72,0	131,0	16
10780	5 x 1,5	8,3	72,0	131,0	16
10781	6 G 1,5	9,2	86,0	157,0	16
10782	7 G 1,5	9,2	101,0	184,0	16
10783	7 x 1,5	9,2	101,0	184,0	16
10784	12 G 1,5	11,8	173,0	309,0	16
10785	18 G 1,5	14,6	259,0	440,0	16
10786	25 G 1,5	17,4	360,0	620,0	16
10787	2 x 2,5	7,8	48,0	112,0	14
10788	3 G 2,5	8,3	72,0	148,0	14
10789	3 x 2,5	8,3	72,0	148,0	14
10790	4 G 2,5	9,2	96,0	178,0	14
10791	4 x 2,5	9,2	96,0	178,0	14
10792	5 G 2,5	10,1	120,0	221,0	14
10793	5 x 2,5	10,1	120,0	221,0	14
10794	7 G 2,5	11,2	168,0	306,0	14
10795	7 x 2,5	11,2	168,0	306,0	14
10796	4 G 6	13,0	230,0	424,0	10
10797	5 G 6	14,5	288,0	525,0	10

Dimensions and specifications may be changed without prior notice. (RA01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS

H05VV5-F (NYSLYÖ-JZ) flexible, number coded, oil resistant, meter marking



Technical data

- Spezial-PVC control cable with oil resistant outer sheath acc. to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51 and IEC 60227/75
- **Temperature range** flexing -5°C to +70°C fixed installation -40°C to +70°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 2 kV, 5 minutes **Breakdown voltage** min. 4000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Outer sheath of special PVC compound type TM5 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Oil resistant to DIN EN 60811-404

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **H05VVC4V5-K (NYSLYCYÖ-JZ)**, confer page 57

Application

These cables are used for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms but not suitable for open air. These are designed as control and connecting cables to machines, tool machineries, conveyor belts and production lines.
These cables are not effected to the chemical influences. Cables for moist and wet rooms, specially used for machines in breweries, bottling plants and car washing stations.
These cables may be allowed to move once installed provided that the cables are not mechanically stressed during movement.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
13122	2 x 0,5	5,2 - 6,6	9,7	46,0	20
13001	3 G 0,5	5,5 - 7,0	14,4	54,0	20
13002	4 G 0,5	6,2 - 7,9	19,0	65,0	20
13003	5 G 0,5	6,8 - 8,6	24,0	80,0	20
13004	6 G 0,5	7,6 - 9,6	29,0	104,0	20
13005	7 G 0,5	8,3 - 10,4	33,6	119,0	20
13920	8 G 0,5	9,2 - 11,5	38,0	134,0	20
13006	9 G 0,5	10,1 - 12,5	43,0	136,0	20
13921	10 G 0,5	10,9 - 13,6	48,0	166,0	20
13007	12 G 0,5	10,4 - 12,9	58,0	186,0	20
13922	14 G 0,5	10,9 - 13,6	67,0	215,0	20
13008	18 G 0,5	12,3 - 15,3	86,0	251,0	20
13009	25 G 0,5	14,8 - 18,2	120,0	349,0	20
13923	27 G 0,5	15,1 - 18,6	129,6	373,0	20
13010	34 G 0,5	17,2 - 21,2	163,0	480,0	20
13924	36 G 0,5	17,0 - 20,9	172,0	510,0	20
13125	41 G 0,5	18,8 - 23,1	196,0	570,0	20
13011	50 G 0,5	20,5 - 25,2	240,0	658,0	20
13012	61 G 0,5	22,0 - 26,9	293,0	780,0	20
13925	65 G 0,5	22,8 - 28,0	312,0	810,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
13123	2 x 0,75	5,7 - 7,2	14,1	52,0	19
13013	3 G 0,75	6,0 - 7,6	21,6	68,0	19
13014	4 G 0,75	6,6 - 8,3	29,0	82,0	19
13015	5 G 0,75	7,4 - 9,3	36,0	107,0	19
13016	6 G 0,75	8,1 - 10,1	43,0	132,0	19
13017	7 G 0,75	9,0 - 11,3	50,0	145,0	19
13926	8 G 0,75	9,9 - 12,3	58,0	189,0	19
13018	9 G 0,75	10,6 - 13,2	65,0	194,0	19
13019	12 G 0,75	11,0 - 13,7	86,0	231,0	19
13927	14 G 0,75	11,7 - 14,5	101,0	274,0	19
13020	18 G 0,75	13,2 - 16,4	130,0	313,0	19
13021	25 G 0,75	15,8 - 19,5	180,0	461,0	19
13928	27 G 0,75	16,2 - 19,9	195,0	493,0	19
13022	34 G 0,75	18,4 - 22,6	245,0	614,0	19
13929	36 G 0,75	18,2 - 22,4	259,0	646,0	19
13126	41 G 0,75	20,1 - 24,6	295,0	730,0	19
13023	50 G 0,75	21,9 - 26,8	360,0	896,0	19
13024	61 G 0,75	23,4 - 28,7	439,0	1030,0	19
13930	65 G 0,75	24,4 - 29,8	468,0	1071,0	19

Continuation ▸

H05VV5-F (NYSLYÖ-JZ) flexible, number coded, oil resistant, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
13119	2 x 1	5,9 - 7,5	19,0	66,0	18
13025	3 G 1	6,3 - 8,0	29,0	78,0	18
13026	4 G 1	6,9 - 8,7	38,0	104,0	18
13027	5 G 1	7,8 - 9,8	48,0	123,0	18
13028	6 G 1	8,7 - 10,8	58,0	152,0	18
13029	7 G 1	9,5 - 11,8	67,0	183,0	18
13931	8 G 1	10,5 - 13,0	77,0	220,0	18
13030	9 G 1	11,4 - 14,0	86,0	230,0	18
13031	12 G 1	11,8 - 14,6	115,0	269,0	18
13932	14 G 1	12,6 - 14,6	134,0	361,0	18
13032	18 G 1	14,0 - 17,2	173,0	400,0	18
13933	19 G 1	13,6 - 16,8	183,0	413,0	18
13033	25 G 1	16,9 - 20,8	240,0	546,0	18
13934	27 G 1	17,0 - 21,0	259,0	582,0	18
13034	34 G 1	19,7 - 24,1	326,0	724,0	18
13124	36 G 1	19,4 - 23,8	348,0	775,0	18
13935	37 G 1	19,4 - 23,8	355,0	785,0	18
13127	41 G 1	21,4 - 26,2	392,0	822,0	18
13035	50 G 1	23,3 - 28,5	480,0	1052,0	18
13036	61 G 1	25,0 - 30,6	586,0	1265,0	18
13936	65 G 1	25,2 - 30,8	624,0	1315,0	18
13120	2 x 1,5	6,8 - 8,6	29,0	77,0	16
13037	3 G 1,5	7,4 - 9,4	43,0	97,0	16
13038	4 G 1,5	8,2 - 10,2	58,0	128,0	16
13039	5 G 1,5	9,1 - 11,4	72,0	149,0	16
13040	6 G 1,5	10,2 - 12,6	86,0	196,0	16
13041	7 G 1,5	11,3 - 14,1	101,0	216,0	16
13937	8 G 1,5	12,2 - 15,1	115,0	271,0	16
13042	9 G 1,5	13,3 - 16,5	130,0	282,0	16
13043	12 G 1,5	13,8 - 17,0	173,0	324,0	16
13121	14 G 1,5	14,7 - 18,1	202,0	372,0	16
13044	18 G 1,5	16,5 - 20,3	259,0	485,0	16
13938	19 G 1,5	16,7 - 20,5	274,0	495,0	16
13045	25 G 1,5	19,9 - 24,4	360,0	671,0	16
13939	27 G 1,5	20,3 - 24,9	389,0	695,0	16
13046	32 G 1,5	22,2 - 27,1	461,0	820,0	16
13047	34 G 1,5	23,0 - 28,2	490,0	881,0	16
13940	36 G 1,5	23,0 - 28,2	518,0	905,0	16
13941	37 G 1,5	23,0 - 28,2	532,0	920,0	16
13128	41 G 1,5	25,2 - 30,9	590,0	1085,0	16
13048	50 G 1,5	27,7 - 33,9	720,0	1381,0	16
13049	61 G 1,5	29,4 - 35,8	878,0	1640,0	16
13942	65 G 1,5	30,3 - 37,0	963,0	1730,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
13943	2 x 2,5	8,4 - 10,6	48,0	110,0	14
13050	3 G 2,5	9,2 - 11,4	72,0	154,0	14
13051	4 G 2,5	10,1 - 12,5	96,0	212,0	14
13052	5 G 2,5	11,2 - 13,9	120,0	242,0	14
13053	7 G 2,5	13,6 - 16,8	168,0	350,0	14
13945	8 G 2,5	14,9 - 18,3	192,0	379,0	14
13054	12 G 2,5	16,8 - 20,6	288,0	543,0	14
13946	14 G 2,5	17,8 - 20,6	336,0	611,0	14
13055	18 G 2,5	20,2 - 24,8	432,0	787,0	14
13056	25 G 2,5	24,2 - 29,6	600,0	1175,0	14
13947	27 G 2,5	24,7 - 30,2	648,0	1280,0	14
13057	34 G 2,5	28,2 - 34,5	816,0	1529,0	14
13948	36 G 2,5	28,0 - 34,2	864,0	1791,0	14
13949	41 G 2,5	30,4 - 37,1	984,0	1905,0	14
13058	50 G 2,5	33,0 - 40,3	1200,0	2290,0	14
13059	61 G 2,5	35,0 - 42,7	1464,0	2724,0	14

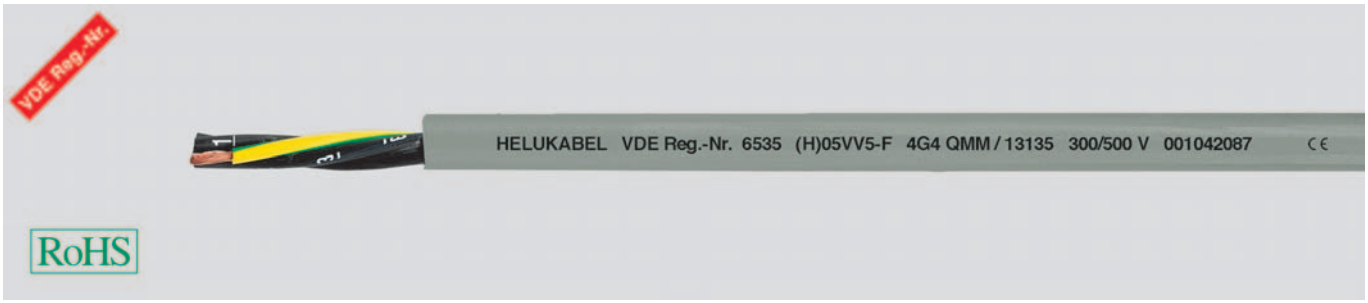
Dimensions and specifications may be changed without prior notice. (RA01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS

(H)05VV5-F ((N)YSLYÖ-JZ) flexible, number coded, oil resistant, meter marking



Technical data

- Spezial-PVC control cable with oil resistant outer sheath adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51 and IEC 60227/75 deviation of conductor cross sections
- **Temperature range** flexing -5°C to +70°C fixed installation -40°C to +70°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 2 kV, 5 minutes
- **Breakdown voltage** min. 4000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10^6 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of special PVC compound type TM5 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Oil resistant to DIN EN 60811-404

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **(H)05VVC4V5-K**, confer page 59

Application

These cables are used for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms but not suitable for open air. These are designed as control and connecting cables to machines, tool machineries, conveyor belts and production lines.
These cables are not effected to the chemical influences. Cables for moist and wet rooms, specially used for machines in breweries, bottling plants and car washing stations.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
13133	2 x 4	10,7	77,0	195,0	12
13134	3 G 4	11,3	115,0	230,0	12
13135	4 G 4	12,4	154,0	295,0	12
13136	5 G 4	13,9	192,0	361,0	12
13138	7 G 4	16,6	269,0	466,0	12
13141	12 G 4	20,8	461,0	810,0	12
13142	2 x 6	12,0	116,0	280,0	10
13143	3 G 6	12,9	173,0	358,0	10
13144	4 G 6	14,2	230,0	424,0	10
13145	5 G 6	15,9	288,0	525,0	10
13146	7 G 6	18,9	403,0	625,0	10
13148	3 G 10	16,3	288,0	540,0	8
13149	4 G 10	18,1	384,0	701,0	8
13150	5 G 10	20,3	480,0	858,0	8
13151	7 G 10	24,3	672,0	1106,0	8

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
13153	3 G 16	18,8	461,0	827,0	6
13154	4 G 16	20,9	614,0	1035,0	6
13155	5 G 16	23,4	768,0	1259,0	6
13156	7 G 16	28,5	1075,0	1780,0	6
13159	4 G 25	26,3	960,0	1582,0	4
13160	5 G 25	29,5	1200,0	1852,0	4
13161	3 G 35	26,5	1008,0	1614,0	2
13162	4 G 35	29,5	1344,0	2110,0	2
13163	5 G 35	32,8	1680,0	2652,0	2
13164	3 G 50	32,2	1440,0	2560,0	1
13165	4 G 50	36,1	1920,0	2972,0	1
13166	5 G 50	40,3	2400,0	3948,0	1

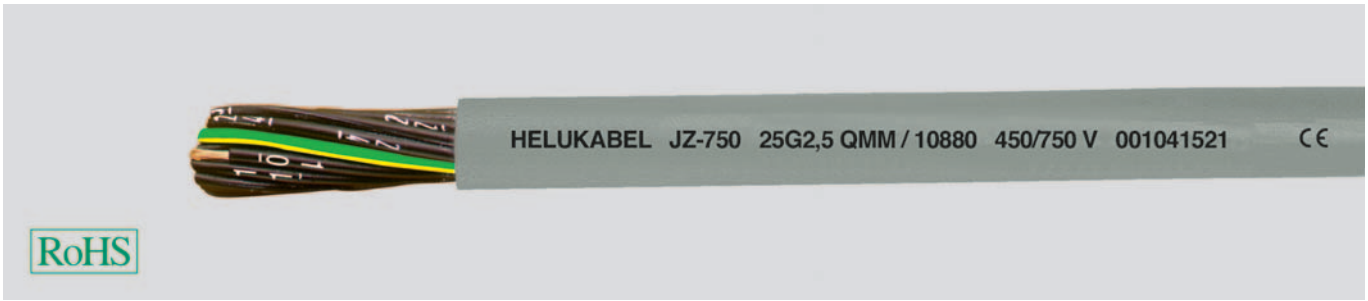
Dimensions and specifications may be changed without prior notice. (RA01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS

JZ-750 flexible, number coded, 750 V, meter marking



Technical data

- Special-PVC control cable adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51
- **Temperature range** flexing -15°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 450/750 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10^6 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3/DIN EN 50363-3
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- Cleanroom qualification tested with analog type. Please note "cleanroom qualified" when ordering.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

These cables are used for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms but not suitable for open air, wherever internationally recognized PVC cables are required. E. g. as a control or measurements cable on industrial machinery, on conveyor systems or in industrial plants, etc. The number coding has been brought onto the cores in such a way that it is easily identifiable and the core numbers are individually underlined to avoid confusion. The green-yellow earth core is laid in the outer layer.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
10800	2 x 0,5	5,7	9,6	48,0	20
10801	3 G 0,5	6,0	14,5	65,0	20
10802	4 G 0,5	6,8	20,0	81,0	20
10803	5 G 0,5	7,4	24,0	98,0	20
10804	7 G 0,5	8,3	34,0	123,0	20
10805	8 G 0,5	9,1	38,0	155,0	20
10806	10 G 0,5	10,0	48,0	180,0	20
10807	12 G 0,5	10,8	58,0	208,0	20
10808	14 G 0,5	11,7	67,0	248,0	20
10809	16 G 0,5	12,5	76,0	260,0	20
10810	18 G 0,5	13,2	87,0	285,0	20
10811	21 G 0,5	13,8	96,0	375,0	20
10812	25 G 0,5	15,5	118,0	400,0	20
10813	30 G 0,5	16,6	144,0	475,0	20
10814	40 G 0,5	18,7	192,0	590,0	20
10815	50 G 0,5	21,5	240,0	710,0	20
10816	61 G 0,5	23,0	293,0	880,0	20
10817	2 x 0,75	6,2	15,0	60,0	19
10818	3 G 0,75	6,5	22,0	78,0	19
10819	4 G 0,75	7,3	29,0	104,0	19
10820	5 G 0,75	8,0	36,0	116,0	19
10821	7 G 0,75	8,9	51,0	148,0	19
10822	8 G 0,75	9,6	58,0	160,0	19
10823	10 G 0,75	10,7	72,0	195,0	19
10824	12 G 0,75	11,6	87,0	248,0	19
10825	15 G 0,75	13,2	108,0	295,0	19
10826	18 G 0,75	14,1	130,0	346,0	19
10827	21 G 0,75	14,8	151,0	395,0	19
10828	25 G 0,75	16,6	180,0	505,0	19
10829	34 G 0,75	19,3	245,0	684,0	19
10830	41 G 0,75	20,9	296,0	780,0	19
10831	50 G 0,75	22,9	360,0	940,0	19
10832	61 G 0,75	24,5	440,0	1125,0	19
10833	2 x 1	6,6	20,0	80,0	18

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
10834	3 G 1	7,0	29,0	92,0	18
10835	3 x 1	7,0	29,0	92,0	18
10836	4 G 1	7,8	39,0	122,0	18
10837	4 x 1	7,8	39,0	122,0	18
10838	5 G 1	8,6	48,0	137,0	18
10839	7 G 1	9,5	68,0	186,0	18
10840	7 x 1	9,5	68,0	186,0	18
10841	8 G 1	10,3	77,0	240,0	18
10842	12 G 1	12,7	116,0	293,0	18
10843	14 G 1	13,4	134,0	340,0	18
10844	16 G 1	14,4	154,0	400,0	18
10845	18 G 1	15,1	173,0	437,0	18
10846	21 G 1	16,1	205,0	505,0	18
10847	25 G 1	18,0	240,0	606,0	18
10848	34 G 1	20,9	326,0	770,0	18
10849	41 G 1	22,6	394,0	880,0	18
10850	50 G 1	24,8	480,0	1400,0	18
10851	61 G 1	26,5	586,0	1450,0	18
10852	2 x 1,5	7,2	29,0	90,0	16
10853	3 G 1,5	7,8	43,0	120,0	16
10854	3 x 1,5	7,8	43,0	120,0	16
10855	4 G 1,5	8,5	58,0	150,0	16
10856	4 x 1,5	8,5	58,0	155,0	16
10857	5 G 1,5	9,6	72,0	177,0	16
10858	7 G 1,5	10,4	101,0	220,0	16
10859	8 G 1,5	11,4	115,0	248,0	16
10860	9 G 1,5	12,5	130,0	278,0	16
10861	12 G 1,5	14,1	173,0	364,0	16
10862	14 G 1,5	14,9	202,0	390,0	16
10863	16 G 1,5	16,0	230,0	490,0	16
10864	18 G 1,5	17,0	259,0	550,0	16
10865	21 G 1,5	18,0	302,0	670,0	16
10866	25 G 1,5	20,2	360,0	745,0	16
10867	32 G 1,5	22,6	461,0	810,0	16

Continuation ▸

JZ-750 flexible, number coded, 750 V, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
10868	34 G 1,5	23,4	490,0	1010,0	16
10869	42 G 1,5	25,5	605,0	1115,0	16
10870	50 G 1,5	27,9	720,0	1430,0	16
10871	61 G 1,5	30,0	878,0	1750,0	16
10872	2 x 2,5	8,6	48,0	110,0	14
10873	3 G 2,5	9,3	72,0	190,0	14
10874	4 G 2,5	10,2	96,0	240,0	14
10875	5 G 2,5	11,4	120,0	270,0	14
10876	7 G 2,5	12,6	168,0	350,0	14
10877	12 G 2,5	16,9	288,0	600,0	14
10878	14 G 2,5	18,2	336,0	870,0	14
10879	18 G 2,5	20,4	432,0	1050,0	14
10880	25 G 2,5	24,4	600,0	1170,0	14

Dimensions and specifications may be changed without prior notice. (RA01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS

JZ-600 flexible, number coded, 0,6/1kV, meter marking



Technical data

- Special PVC control cable adapted to DIN VDE 0262 and DIN VDE 0285-525-2-51 / DIN EN 50525-2-51, with insulation wall thickness for 1 kV
- **Temperature range** flexing -15°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- **UV- resistant**

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **JZ-600-Y-CY**, confer page 60

Application

Wiring cable for measuring and controlling purposes in tool machinery, conveyor belts and production lines, for plant installations, air conditioning and in steel production plants and rolling mills. Suitable for installation for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms as well as outside (fixed installation). Is not suitable to be used as direct burria (suitable from an outer diameter of 18,0 mm for direct burial) or as underwater cable. The cores have been numbered in such a way that the numbers are easily identifiable, even if the cable has only been stripped back a few cm. The core numbers have been underlined to avoid confusion. The earth core is located in the outer layer. The black, special PVC outer sheath is resistant to the ultra violet radiation. Mainly used in South-European, Eastern and Arabian countries.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
10550	2 x 0,5	6,3	9,6	56,0	20
10551	3 G 0,5	6,6	14,4	68,0	20
10552	3 x 0,5	6,6	14,4	68,0	20
10553	4 G 0,5	7,2	19,0	100,0	20
10554	4 x 0,5	7,2	19,0	100,0	20
10555	5 G 0,5	8,0	24,0	117,0	20
10556	5 x 0,5	8,0	24,0	117,0	20
10557	6 G 0,5	8,7	29,0	126,0	20
10558	7 G 0,5	8,7	33,6	138,0	20
10559	7 x 0,5	8,7	33,6	138,0	20
10560	8 G 0,5	9,5	38,0	150,0	20
10561	8 x 0,5	9,5	38,0	150,0	20
10562	10 G 0,5	10,3	48,0	176,0	20
10563	12 G 0,5	11,2	58,0	200,0	20
10564	12 x 0,5	11,2	58,0	200,0	20
10565	14 G 0,5	12,3	67,0	230,0	20
10566	16 G 0,5	12,9	76,0	250,0	20
10567	18 G 0,5	13,8	86,0	276,0	20
10568	20 G 0,5	14,4	96,0	293,0	20
10569	21 G 0,5	14,4	96,0	305,0	20
10570	25 G 0,5	16,1	120,0	335,0	20
10571	30 G 0,5	17,2	144,0	348,0	20
10572	32 G 0,5	18,0	154,0	355,0	20
10573	34 G 0,5	18,7	163,0	520,0	20
10574	40 G 0,5	19,5	192,0	590,0	20
10575	42 G 0,5	20,1	202,0	595,0	20
10576	50 G 0,5	22,1	240,0	715,0	20
10577	52 G 0,5	22,1	252,0	740,0	20
10578	61 G 0,5	23,6	293,0	840,0	20
10579	65 G 0,5	24,4	312,0	880,0	20
10580	80 G 0,5	27,2	384,0	960,0	20
10581	100 G 0,5	31,2	480,0	1050,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
10582	2 x 0,75	6,6	14,4	66,0	19
10583	3 G 0,75	6,9	21,6	74,0	19
10584	3 x 0,75	6,9	21,6	74,0	19
10585	4 G 0,75	7,5	29,0	126,0	19
10586	4 x 0,75	7,5	29,0	126,0	19
10587	5 G 0,75	8,4	36,0	140,0	19
10588	5 x 0,75	8,4	36,0	140,0	19
10589	6 G 0,75	9,3	43,0	170,0	19
10590	6 x 0,75	9,3	43,0	170,0	19
10591	7 G 0,75	9,3	50,0	190,0	19
10592	7 x 0,75	9,3	50,0	190,0	19
10593	8 G 0,75	10,3	58,0	212,0	19
10594	8 x 0,75	10,3	58,0	212,0	19
10595	9 G 0,75	11,0	65,0	227,0	19
10596	10 G 0,75	11,0	72,0	238,0	19
10597	12 G 0,75	12,0	86,0	257,0	19
10598	12 x 0,75	12,0	86,0	257,0	19
10599	14 G 0,75	12,9	101,0	286,0	19
10600	15 G 0,75	13,8	108,0	319,0	19
10601	18 G 0,75	14,5	130,0	362,0	19
10602	20 G 0,75	15,4	144,0	394,0	19
10603	21 G 0,75	15,4	151,0	422,0	19
10604	25 G 0,75	17,2	180,0	486,0	19
10605	32 G 0,75	19,0	230,0	595,0	19
10606	34 G 0,75	19,9	245,0	638,0	19
10607	37 G 0,75	19,9	260,0	696,0	19
10608	40 G 0,75	20,7	288,0	726,0	19
10609	41 G 0,75	21,6	296,0	750,0	19
10610	42 G 0,75	21,6	302,0	770,0	19
10611	50 G 0,75	23,7	360,0	895,0	19
10612	61 G 0,75	25,3	439,0	1070,0	19
10613	65 G 0,75	26,3	468,0	1110,0	19
10614	80 G 0,75	28,9	576,0	1500,0	19
10615	100 G 0,75	32,2	720,0	1889,0	19

Continuation ▸

JZ-600 flexible, number coded, 0,6/1kV, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
10616	2 x 1	7,0	19,2	80,0	18
10617	3 G 1	7,4	29,0	96,0	18
10618	3 x 1	7,4	29,0	96,0	18
10619	4 G 1	8,2	38,4	100,0	18
10620	4 x 1	8,2	38,4	100,0	18
10621	5 G 1	9,2	48,0	130,0	18
10622	5 x 1	9,2	48,0	130,0	18
10623	6 G 1	9,9	58,0	150,0	18
10624	7 G 1	9,9	67,0	170,0	18
10625	7 x 1	9,9	67,0	170,0	18
10626	8 G 1	10,9	77,0	230,0	18
10627	9 G 1	11,9	86,0	250,0	18
10628	10 G 1	11,9	96,0	270,0	18
10629	10 x 1	11,9	96,0	270,0	18
10630	12 G 1	12,8	115,0	290,0	18
10631	12 x 1	12,8	115,0	290,0	18
10632	14 G 1	14,0	134,0	320,0	18
10633	16 G 1	14,8	154,0	360,0	18
10634	18 G 1	15,7	173,0	405,0	18
10635	18 x 1	15,7	173,0	405,0	18
10636	20 G 1	16,7	192,0	450,0	18
10637	20 x 1	16,7	192,0	480,0	18
10638	21 G 1	16,7	205,0	510,0	18
10639	24 G 1	18,4	236,0	550,0	18
10640	25 G 1	18,6	240,0	570,0	18
10641	25 x 1	18,6	240,0	570,0	18
10642	26 G 1	18,8	252,0	590,0	18
10643	30 x 1	19,8	308,0	650,0	18
10644	34 G 1	21,5	326,0	750,0	18
10645	36 G 1	21,5	346,0	790,0	18
10646	40 G 1	22,5	384,0	850,0	18
10647	40 x 1	22,5	384,0	850,0	18
10648	41 G 1	23,3	394,0	890,0	18
10649	42 G 1	23,3	403,0	900,0	18
10650	50 G 1	25,6	480,0	1100,0	18
10651	56 G 1	26,4	538,0	1190,0	18
10652	61 G 1	27,3	586,0	1266,0	18
10653	65 G 1	28,3	628,0	1560,0	18
10654	80 G 1	31,4	786,0	1810,0	18
10655	100 G 1	35,0	960,0	1950,0	18
10656	2 x 1,5	8,2	29,0	95,0	16
10657	3 G 1,5	8,6	43,0	112,0	16
10658	3 x 1,5	8,6	43,0	112,0	16
10659	4 G 1,5	9,6	58,0	139,0	16
10660	4 x 1,5	9,6	58,0	139,0	16
10661	5 G 1,5	10,7	72,0	170,0	16
10662	5 x 1,5	10,7	72,0	170,0	16
10663	6 G 1,5	11,6	86,0	190,0	16
10664	7 G 1,5	11,6	101,0	225,0	16
10665	7 x 1,5	11,6	101,0	225,0	16
10666	8 G 1,5	12,9	115,0	250,0	16
10667	9 G 1,5	13,9	130,0	280,0	16
10668	10 G 1,5	13,9	144,0	300,0	16
10669	11 G 1,5	14,8	158,0	330,0	16
10670	12 G 1,5	15,0	173,0	370,0	16
10671	12 x 1,5	15,5	173,0	370,0	16
10672	14 G 1,5	16,6	202,0	400,0	16
10673	16 G 1,5	17,5	230,0	450,0	16
10674	18 G 1,5	18,6	259,0	520,0	16
10675	19 G 1,5	18,6	279,0	550,0	16
10676	20 G 1,5	19,7	288,0	600,0	16
10677	21 G 1,5	19,7	302,0	600,0	16
10678	25 G 1,5	22,5	360,0	730,0	16
10679	32 G 1,5	24,3	461,0	880,0	16
10680	34 G 1,5	25,3	490,0	950,0	16
10681	40 G 1,5	26,6	576,0	990,0	16
10682	42 G 1,5	27,4	605,0	1120,0	16
10683	50 G 1,5	30,2	720,0	1400,0	16
10684	56 G 1,5	31,2	806,0	1530,0	16
10685	61 G 1,5	32,2	878,0	1700,0	16
10686	65 G 1,5	33,5	936,0	1900,0	16
10687	80 G 1,5	36,9	1152,0	2300,0	16
10688	100 G 1,5	41,3	1440,0	2700,0	16
10689	2 x 2,5	9,6	48,0	160,0	14

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
10690	3 G 2,5	10,1	72,0	175,0	14
10691	3 x 2,5	10,1	72,0	175,0	14
10692	4 G 2,5	11,2	96,0	203,0	14
10693	4 x 2,5	11,2	96,0	203,0	14
10694	5 G 2,5	12,5	120,0	251,0	14
10695	5 x 2,5	12,5	120,0	251,0	14
10696	7 G 2,5	13,8	168,0	330,0	14
10697	7 x 2,5	13,8	168,0	330,0	14
10698	8 G 2,5	15,1	192,0	400,0	14
10699	12 G 2,5	18,3	288,0	553,0	14
10700	14 G 2,5	19,6	336,0	630,0	14
10701	18 G 2,5	22,0	432,0	795,0	14
10702	21 G 2,5	23,3	504,0	930,0	14
10703	25 G 2,5	26,2	600,0	1110,0	14
10704	34 G 2,5	30,4	816,0	1450,0	14
10705	42 G 2,5	33,0	1008,0	1750,0	14
10706	50 G 2,5	36,2	1200,0	2100,0	14
10707	61 G 2,5	38,8	1464,0	2540,0	14
10708	100 G 2,5	49,8	2400,0	3850,0	14
10709	2 x 4	11,0	77,0	180,0	12
10710	3 G 4	11,7	115,0	230,0	12
10711	4 G 4	12,9	154,0	310,0	12
10712	5 G 4	14,4	192,0	410,0	12
10713	7 G 4	15,8	269,0	540,0	12
10714	8 G 4	17,5	307,0	710,0	12
10715	12 G 4	21,0	461,0	860,0	12
10716	3 G 6	13,1	173,0	370,0	10
10717	4 G 6	14,5	230,0	430,0	10
10718	5 G 6	16,2	288,0	650,0	10
10719	7 G 6	18,0	403,0	860,0	10
10720	3 G 10	16,8	288,0	660,0	8
10721	4 G 10	18,5	384,0	790,0	8
10722	5 G 10	20,5	480,0	960,0	8
10723	7 G 10	22,5	672,0	1300,0	8
10724	3 G 16	20,2	461,0	700,0	6
10725	4 G 16	22,4	614,0	1100,0	6
10726	5 G 16	25,0	768,0	1600,0	6
10727	7 G 16	27,4	1075,0	1890,0	6
10728	3 G 25	24,8	720,0	1450,0	4
10729	4 G 25	27,4	960,0	1600,0	4
10730	5 G 25	30,5	1200,0	2050,0	4
10731	7 G 25	33,8	1680,0	2900,0	4
10732	3 G 35	27,4	1008,0	1900,0	2
10733	4 G 35	30,3	1344,0	2400,0	2
10734	5 G 35	33,6	1680,0	2900,0	2
10735	3 G 50	32,4	1440,0	2700,0	1
10736	4 G 50	35,8	1920,0	3400,0	1
10742	5 G 50	40,0	2400,0	4361,0	1
10737	3 G 70	36,8	2016,0	3300,0	2/0
10738	4 G 70	40,8	2688,0	4400,0	2/0
10743	5 G 70	45,2	3360,0	5807,0	2/0
10739	3 G 95	41,7	2736,0	5050,0	3/0
10740	4 G 95	46,2	3648,0	6010,0	3/0
10744	5 G 95	51,7	4560,0	7752,0	3/0
10741	4 G 120	51,6	4608,0	7500,0	4/0
10745	4 G 150	58,5	5760,0	8640,0	300 kcmil
10746	4 G 185	63,3	7104,0	10380,0	350 kcmil

Dimensions and specifications may be changed without prior notice. (RA01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS

JB-500 flexible, colour coded, metermarking



Technical data

- Adapted to DIN VDE 0285-525-2-11/ DIN EN 50525-2-11
- **Temperature range** flexing -15°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type Z 7225
- Core identification to JB/OB colour code
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7001)
- with meter marking
- from 5 cores with VDE-Reg-Nr.

Properties

- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor x = without green-yellow conductor (OB).
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **Y-CY-JB** , confer page 62

Application

These cables are used for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms but not suitable for open air, as measuring and control cables in tool machinery, conveyor belts, production lines, as well as in machinery production, in air-conditioning and steel production plants. The earth core is located immediately below the outer sheath. JB cables are suitable for use in all electrical equipment either in dry or damp areas. They should not, however, be installed in the open air.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11001	2 x 0,5	4,8	9,6	40,0	20
11002	3 G 0,5	5,1	14,4	46,0	20
11003	3 x 0,5	5,1	14,4	46,0	20
11004	4 G 0,5	5,5	19,2	56,0	20
11005	4 x 0,5	5,5	19,2	56,0	20
11006	5 G 0,5	6,2	24,0	65,0	20
11007	5 x 0,5	6,2	24,0	65,0	20
11008	6 G 0,5	6,7	29,0	75,0	20
11009	7 G 0,5	6,7	34,0	80,0	20
11010	7 x 0,5	6,7	34,0	84,0	20
11011	8 G 0,5	7,4	38,0	97,0	20
11012	10 G 0,5	8,2	48,0	116,0	20
11013	12 G 0,5	8,7	58,0	135,0	20
11014	14 G 0,5	9,5	67,0	150,0	20
11015	16 G 0,5	10,0	77,0	172,0	20
11019	30 G 0,5	13,5	144,0	310,0	20
11026	2 x 0,75	5,3	14,4	46,0	19
11027	3 G 0,75	5,6	21,6	54,0	19
11028	3 x 0,75	5,6	21,6	54,0	19
11029	4 G 0,75	6,3	28,8	66,0	19
11030	4 x 0,75	6,3	28,8	66,0	19
11031	5 G 0,75	6,9	36,0	80,0	19
11032	5 x 0,75	6,9	36,0	80,0	19
11033	6 G 0,75	7,5	43,2	99,0	19
11034	7 G 0,75	7,5	50,0	110,0	19
11035	7 x 0,75	7,5	50,0	110,0	19
11036	8 G 0,75	8,3	58,0	130,0	19
11037	9 G 0,75	8,9	65,0	153,0	19
11038	10 G 0,75	9,2	72,0	162,0	19
11039	12 G 0,75	9,8	86,0	179,0	19
11040	15 G 0,75	11,4	108,0	218,0	19
11041	18 G 0,75	12,2	130,0	257,0	19
11042	21 G 0,75	12,7	151,0	320,0	19
11043	25 G 0,75	14,3	180,0	365,0	19
11050	2 x 1	5,6	19,2	60,0	18
11051	3 G 1	5,9	29,0	72,0	18
11052	3 x 1	5,9	29,0	72,0	18
11053	4 G 1	6,6	38,4	86,0	18
11054	4 x 1	6,6	38,4	86,0	18
11055	5 G 1	7,3	48,0	104,0	18
11056	5 x 1	7,3	48,0	104,0	18

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11057	6 G 1	8,1	58,0	125,0	18
11058	6 x 1	8,1	58,0	125,0	18
11059	7 G 1	8,1	67,0	141,0	18
11060	7 x 1	8,1	67,0	141,0	18
11061	8 G 1	8,8	77,0	175,0	18
11062	9 G 1	9,7	87,0	200,0	18
11063	10 G 1	9,8	96,0	207,0	18
11064	12 G 1	10,4	115,0	230,0	18
11065	14 G 1	11,4	134,0	271,0	18
11066	16 G 1	12,3	154,0	300,0	18
11067	18 G 1	12,9	173,0	343,0	18
11068	20 G 1	13,8	192,0	375,0	18
11069	24 G 1	15,1	230,0	468,0	18
11070	25 G 1	15,4	240,0	485,0	18
11077	2 x 1,5	6,4	29,0	70,0	16
11078	3 G 1,5	6,8	43,0	90,0	16
11079	3 x 1,5	6,8	43,0	90,0	16
11080	4 G 1,5	7,4	58,0	109,0	16
11081	4 x 1,5	7,4	58,0	109,0	16
11082	5 G 1,5	8,3	72,0	131,0	16
11083	5 x 1,5	8,3	72,0	131,0	16
11084	6 G 1,5	9,2	86,4	157,0	16
11085	7 G 1,5	9,2	101,0	184,0	16
11086	7 x 1,5	9,2	101,0	184,0	16
11087	8 G 1,5	10,0	115,0	216,0	16
11088	11 G 1,5	11,6	158,0	300,0	16
11089	12 G 1,5	11,8	173,0	309,0	16
11090	14 G 1,5	13,0	202,0	345,0	16
11091	16 G 1,5	13,9	230,0	386,0	16
11092	18 G 1,5	14,6	259,0	440,0	16
11093	20 G 1,5	15,6	288,0	490,0	16
11094	25 G 1,5	17,4	360,0	620,0	16
11104	2 x 2,5	7,8	48,0	112,0	14
11105	3 G 2,5	8,3	72,0	148,0	14
11106	3 x 2,5	8,3	72,0	148,0	14
11107	4 G 2,5	9,2	96,0	178,0	14
11108	4 x 2,5	9,2	96,0	178,0	14
11109	5 G 2,5	10,1	120,0	221,0	14
11110	5 x 2,5	10,1	120,0	221,0	14
11111	6 G 2,5	11,2	144,0	293,0	14
11112	7 G 2,5	11,2	168,0	306,0	14

Dimensions and specifications may be changed without prior notice. (RA01)

JB-750 flexible, colour coded, 750 V, meter marking



Technical data

- Special-PVC control cable adapted to DIN VDE 0285-525-2-11 / DIN EN 50525-2-11 and IEC 60227-5
- **Temperature range** flexing -15°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 450/750 V fixed installation, under protection U_0/U 600/1000 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to JB/OB colour code
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor x = without green-yellow conductor (OB).
- Cleanroom qualification tested with analog type. Please note "cleanroom qualified" when ordering.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **Y-CY-JB**, confer page 62

Application

These cables are used for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms but not suitable for open air, as measuring and control cables in tool machinery, conveyor belts, production lines, as well as in machinery production, in air-conditioning and steel production plants. The earth core is located immediately below the outer sheath. JB cables are suitable for use in all electrical equipment either in dry or damp areas. They should not, however, be installed in the open air.

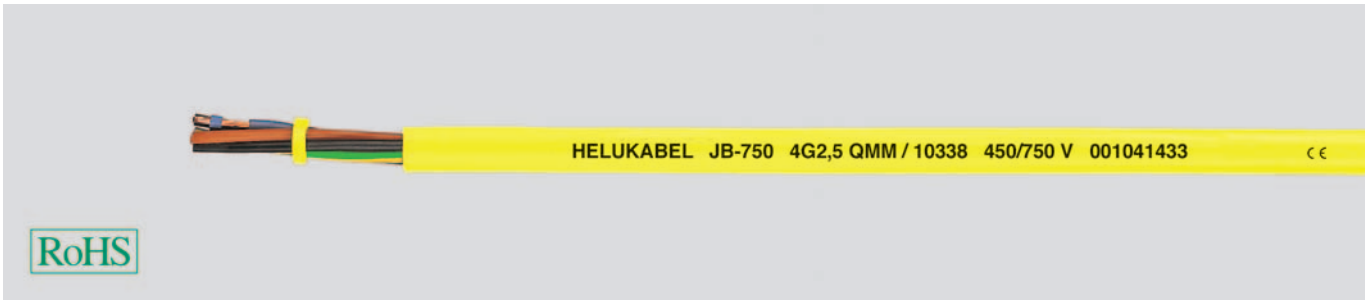
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11161	2 x 2,5	8,6	48,0	130,0	14
11162	3 G 2,5	9,3	72,0	164,0	14
11163	3 x 2,5	9,3	72,0	164,0	14
11164	4 G 2,5	10,2	96,0	200,0	14
11165	4 x 2,5	10,2	96,0	200,0	14
11166	5 G 2,5	11,4	120,0	247,0	14
11167	5 x 2,5	11,4	120,0	247,0	14
11168	6 G 2,5	12,6	144,0	301,0	14
11169	7 G 2,5	12,6	168,0	321,0	14
11121	2 x 4	10,6	76,8	195,0	12
11144	3 G 4	11,3	115,0	235,0	12
11122	4 G 4	12,5	154,0	295,0	12
11123	5 G 4	13,9	192,0	361,0	12
11124	7 G 4	15,4	269,0	498,0	12
11125	11 G 4	20,2	422,0	767,0	12
11126	3 G 6	12,8	173,0	355,0	10
11127	4 G 6	14,2	230,0	424,0	10
11128	5 G 6	15,8	288,0	525,0	10
11129	7 G 6	17,4	403,0	625,0	10
11153	3 G 10	16,2	290,0	611,0	8
11130	4 G 10	18,1	384,0	701,0	8
11131	5 G 10	20,1	480,0	858,0	8
11132	7 G 10	22,2	672,0	1106,0	8
11154	3 G 16	19,8	461,0	912,0	6
11133	4 G 16	22,0	614,0	1035,0	6
11134	5 G 16	24,4	768,0	1259,0	6
11135	7 G 16	27,0	1075,0	1780,0	6

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11155	3 G 25	24,4	720,0	1388,0	4
11136	4 G 25	27,1	960,0	1581,0	4
11137	5 G 25	30,1	1200,0	1997,0	4
11156	3 G 35	27,0	1008,0	1767,0	2
11138	4 G 35	29,9	1344,0	2105,0	2
11139	5 G 35	33,4	1680,0	2636,0	2
11157	3 G 50	31,9	1440,0	2556,0	1
11140	4 G 50	35,5	1920,0	2940,0	1
11145	5 G 50	39,2	2400,0	3936,0	1
11158	3 G 70	36,4	2016,0	3182,0	2/0
11141	4 G 70	40,2	2688,0	4090,0	2/0
11146	5 G 70	44,9	3360,0	5443,0	2/0
11159	3 G 95	41,5	2736,0	4676,0	3/0
11142	4 G 95	46,0	3648,0	5540,0	3/0
11147	5 G 95	51,3	4560,0	6931,0	3/0
11160	3 G 120	45,9	3456,0	5630,0	4/0
11143	4 G 120	51,3	4608,0	7000,0	4/0
11148	4 G 150	58,7	5760,0	8340,0	300 kcmil
11149	4 G 185	64,3	7104,0	9904,0	350 kcmil

Dimensions and specifications may be changed without prior notice. (RA01)

JB-750 yellow 750 V, connection cable für warning indication, flexible, colour coded, meter marking



Technical data

- Special-PVC connection cable for warning indication adapted to DIN VDE 0285-525-2-11 / DIN EN 50525-2-11
- **Temperature range** flexing -15°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 450/750 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293
- GN-YE conductor
- Cores stranded in layers with optimal lay-length
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour yellow (RAL 1016)
- with meter marking

Properties

- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

These cables are used for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms but not suitable for open air, as connection cable with yellow outer sheath as a special warning indication. Recommendation in accordance to EN 60204 part 1 and DIN VDE 0113 part 1.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
10334	3 G 1,5	7,8	43,0	100,0	16
10335	4 G 1,5	8,5	58,0	121,0	16
10336	5 G 1,5	9,6	72,0	148,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
10337	3 G 2,5	9,3	72,0	154,0	14
10338	4 G 2,5	10,2	96,0	208,0	14
10339	5 G 2,5	11,4	120,0	229,0	14

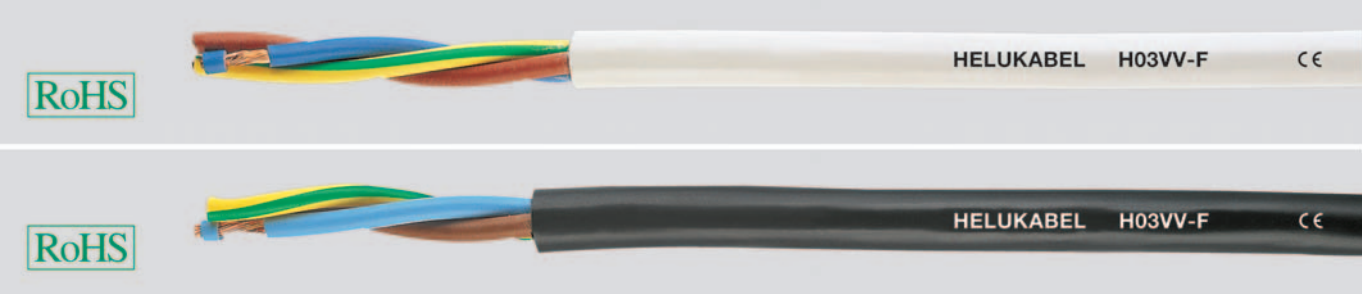
Dimensions and specifications may be changed without prior notice. (RA01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS

H03VV-F



Technical data

- PVC control cable acc. to DIN VDE 0285-525-2-11 / DIN EN 50525-2-11 and IEC 60227-5
- **Temperature range** flexing -5°C to +70°C fixed installation -40°C to +70°C
- **Nominal voltage** U_0/U 300/300 V
- **Test voltage** 2000 V
- **Breakdown voltage** min. 4000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293-308
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Outer sheath of PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour black, white or in accordance to the customer

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- 5 core and above in adaption (H).
- The above list contains a selection of the types we carry es stock. Other sizes available on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

These cable types are especially suited to use on small appliances with low mechanical stress and for connection for light household appliances, e. g. kitchen utensils, desk lamps, floor lamps, vacuum cleaners, office machines, radios, etc. , as far as this cable is admitted to the relevant specifications of the equipment.
These cables are not permitted to use with cooking or heating apparatus.
Cables with cross-section 0,75 mm² are not suitable for outdoor use or use of industrial or farmer machineries.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Sheath colour	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
29736	2 x 0,5	black	4,6 - 5,9	9,6	40,0	20
29737	2 x 0,5	white	4,6 - 5,9	9,6	40,0	20
29738	2 x 0,5	other colours	4,6 - 5,9	9,6	40,0	20
29739	3 G 0,5	black	4,9 - 6,3	14,4	49,0	20
29740	3 G 0,5	white	4,9 - 6,3	14,4	49,0	20
29741	3 G 0,5	other colours	4,9 - 6,3	14,4	49,0	20
29742	4 G 0,5	black	5,4 - 6,9	19,2	61,0	20
29743	4 G 0,5	white	5,4 - 6,9	19,2	61,0	20
29744	4 G 0,5	other colours	5,4 - 6,9	19,2	61,0	20
29400	2 x 0,75	black	4,9 - 6,3	14,4	49,0	19
29401	2 x 0,75	white	4,9 - 6,3	14,4	49,0	19
29402	2 x 0,75	other colours	4,9 - 6,3	14,4	49,0	19
29403	3 G 0,75	black	5,2 - 6,7	21,6	59,0	19
29404	3 G 0,75	white	5,2 - 6,7	21,6	59,0	19
29405	3 G 0,75	other colours	5,2 - 6,7	21,6	59,0	19

Part no.	No.cores x cross-sec. mm²	Sheath colour	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
29406	4 G 0,75	black	5,7 - 7,3	29,0	72,0	19
29407	4 G 0,75	white	5,7 - 7,3	29,0	72,0	19
29408	4 G 0,75	other colours	5,7 - 7,3	29,0	72,0	19
29409	5 G 0,75	black	6,5 - 8,2	36,0	87,0	19
29410	5 G 0,75	white	6,5 - 8,2	36,0	87,0	19
29411	5 G 0,75	other colours	6,5 - 8,2	36,0	87,0	19
29412	6 G 0,75	black	7,1 - 9,0	43,0	98,0	19
29413	6 G 0,75	white	7,1 - 9,0	43,0	98,0	19
29414	6 G 0,75	other colours	7,1 - 9,0	43,0	98,0	19
29415	7 G 0,75	black	7,1 - 9,0	50,0	108,0	19
29416	7 G 0,75	white	7,1 - 9,0	50,0	108,0	19
29417	7 G 0,75	other colours	7,1 - 9,0	50,0	108,0	19

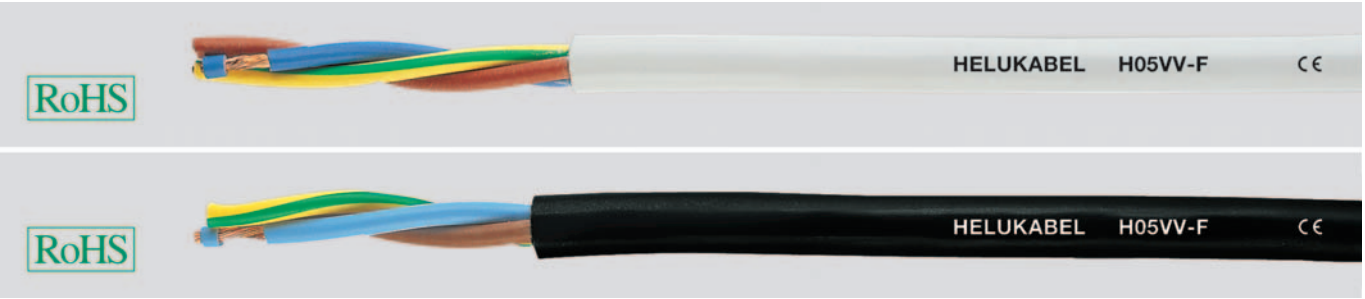
Dimensions and specifications may be changed without prior notice. (RA01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS

H05VV-F



Technical data

- PVC control cable acc. to DIN VDE 0285-525-2-11 / DIN EN 50525-2-11 and IEC 60227-5
- **Temperature range** flexing -5°C to +70°C fixed installation -40°C to +70°C
- **Nominal voltage** U_0/U 300/500 V
- Max. permissible **operating voltage** in three-phase and one-phase a.c. system U_0/U 318/550 V in direct current system U_0/U 413/825 V
- **Test voltage** 2000 V
- **Breakdown voltage** min. 4000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293-308
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Outer sheath of PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour black or white

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- These types are also available with UL-approbation.
- The above list contains a selection of the types we carry as stock.
  Other sizes available on request.
- Cables with 7 cores and cross-sec. 6 mm² are only available in adaption designation 05VV-F.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

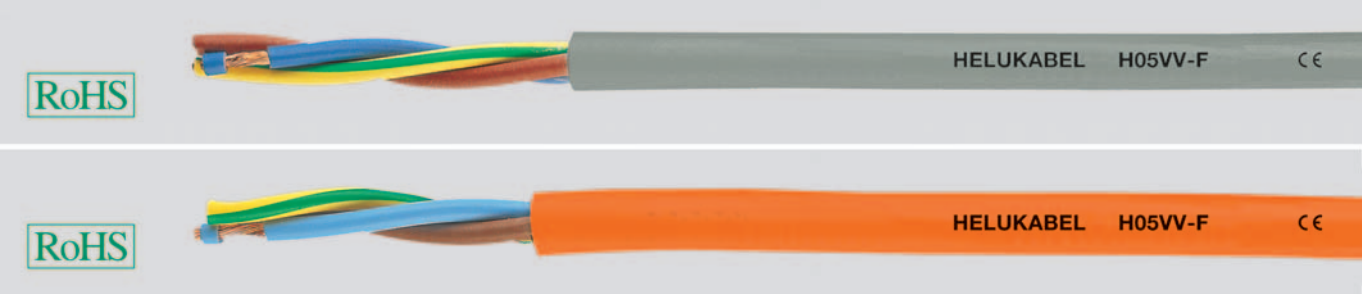
These cables are especially suited to use for the appliance with medium mechanical stress in households, kitchens and offices, also for household appliances in damp and wet areas, e. g. refrigerators, washing machines, spin-driver etc. As far as this cable is admitted to the relevant specifications of the equipment.
These cables are suited to be used for cooking and heating apparatus under the condition that cable does not come in direct contact with hot parts of the apparatus and no other influences of heat.
The cables are suitable for fixed installation in furnitures, partition walls, decoration covering and in hollow spaces of prefabricated building parts. They are not qualified for use in outdoors or for use with industrial and farmer machineries, exceptionally in tailoring, etc.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Sheath colour	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
29450	2 x 0,75	black	5,7 - 7,2	14,4	50,0	19
29451	2 x 0,75	white	5,7 - 7,2	14,4	50,0	19
29452	3 G 0,75	black	6,0 - 7,6	21,6	60,0	19
29453	3 G 0,75	white	6,0 - 7,6	21,6	60,0	19
29454	4 G 0,75	black	6,6 - 8,3	29,0	73,0	19
29455	4 G 0,75	white	6,6 - 8,3	29,0	73,0	19
29456	5 G 0,75	black	7,4 - 9,3	36,0	88,0	19
29457	5 G 0,75	white	7,4 - 9,3	36,0	88,0	19
29458	2 x 1	black	5,9 - 7,5	19,0	57,0	18
29459	2 x 1	white	5,9 - 7,5	19,0	57,0	18
29460	3 G 1	black	6,3 - 8,0	29,0	73,0	18
29461	3 G 1	white	6,3 - 8,0	29,0	73,0	18
29462	4 G 1	black	7,1 - 9,0	38,0	85,0	18
29463	4 G 1	white	7,1 - 9,0	38,0	85,0	18
29464	5 G 1	black	7,8 - 9,8	48,0	105,0	18
29465	5 G 1	white	7,8 - 9,8	48,0	105,0	18
29466	7 G 1	black	9,7 - 12,1	67,0	131,0	18
29467	7 G 1	white	9,7 - 12,1	67,0	131,0	18
29484	2 x 1,5	black	6,8 - 8,6	29,0	82,0	16
29485	2 x 1,5	white	6,8 - 8,6	29,0	82,0	16
29468	3 G 1,5	black	7,4 - 9,4	43,0	95,0	16
29469	3 G 1,5	white	7,4 - 9,4	43,0	95,0	16
29470	4 G 1,5	black	8,4 - 10,5	58,0	117,0	16
29471	4 G 1,5	white	8,4 - 10,5	58,0	117,0	16
29472	5 G 1,5	black	9,3 - 11,6	72,0	144,0	16
29473	5 G 1,5	white	9,3 - 11,6	72,0	144,0	16

Part no.	No.cores x cross-sec. mm²	Sheath colour	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
29474	7 G 1,5	black	11,3 - 14,0	101,0	183,0	16
29475	7 G 1,5	white	11,3 - 14,0	101,0	183,0	16
29478	3 G 2,5	black	9,2 - 11,4	72,0	152,0	14
29479	3 G 2,5	white	9,2 - 11,4	72,0	152,0	14
29480	4 G 2,5	black	10,1 - 12,5	96,0	192,0	14
29481	4 G 2,5	white	10,1 - 12,5	96,0	192,0	14
29482	5 G 2,5	black	11,2 - 13,9	120,0	243,0	14
29483	5 G 2,5	white	11,2 - 13,9	120,0	243,0	14
29486	7 G 2,5	black	13,8 - 17,1	168,0	316,0	14
29487	7 G 2,5	white	13,8 - 17,1	168,0	316,0	14
29825	3 G 4	black	10,5 - 13,1	115,0	235,0	12
29826	3 G 4	white	10,5 - 13,1	115,0	235,0	12
29488	4 G 4	black	11,5 - 14,3	154,0	300,0	12
29489	4 G 4	white	11,5 - 14,3	154,0	300,0	12
29490	5 G 4	black	13,0 - 16,1	192,0	361,0	12
29491	5 G 4	white	13,0 - 16,1	192,0	361,0	12
29492	4 G 6	black	12,9 - 15,9	230,0	490,0	10
29493	4 G 6	white	12,9 - 15,9	230,0	490,0	10

Dimensions and specifications may be changed without prior notice. (RA01)

H05VV-F



Technical data

- PVC-control cables to DIN VDE 0285-525-2-11 / DIN EN 50525-2-11 and IEC 60227-5
- **Temperature range** flexing -5°C to +70°C fixed installation -40°C to +70°C
- **Nominal voltage** U_0/U 300/500 V
- Max. permissible **operating voltage** in three-phase and one-phase a.c. system U_0/U 318/550 V in direct current system U_0/U 413/825 V
- **Test voltage** 2000 V
- **Breakdown voltage** min. 4000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293-308
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Outer sheath of PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour by request

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- Please add the individual part no. for order with the identification colour code:
  0 = approx.RAL 5015 blue
  1 = approx.RAL 6018 green
  2 = approx.RAL 8003 brown
  3 = approx.RAL 1021 yellow
  4 = approx.RAL 3000 red
  5 = approx.RAL 2003 orange
  6 = approx.RAL 4005 violet
  7 = approx.RAL 7001/7032 grey
  8 = gold
  9 = dusty gold
  Further colours on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

These cable are especially suited to use for the appliance with medium mechanical stress in households, kitchens and offices, also for household appliances in damp and wet areas, e. g. refrigerators, washing machines, spin-driver etc. As far as this cable is admitted to the relevant specifications of the equipment. These cables are suited to be used for cooking and heating apparatus under the condition that cable does not come in direct contact with hot parts of the apparatus and no other influences of heat. The cables are suitable for fixed installation in furnitures, partition walls, decoration covering and in hollow spaces of prefabricated building parts.
They are not qualified for use in outdoors or for use with industrial and farmer machineries, exceptionally in tailoring, etc.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
3011x	2 x 0,75	5,7 - 7,2	14,4	50,0	19
3012x	3 G 0,75	6,0 - 7,6	21,6	60,0	19
3013x	4 G 0,75	6,6 - 8,3	29,0	73,0	19
3014x	5 G 0,75	7,4 - 9,3	36,0	88,0	19
3015x	2 x 1	5,9 - 7,5	19,0	57,0	18
3016x	3 G 1	6,3 - 8,0	29,0	73,0	18
3017x	4 G 1	7,1 - 9,0	38,0	85,0	18
3018x	5 G 1	7,8 - 9,8	48,0	105,0	18

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
3020x	2 x 1,5	6,8 - 8,6	29,0	82,0	16
3021x	3 G 1,5	7,4 - 9,4	43,0	95,0	16
3022x	4 G 1,5	8,4 - 10,5	58,0	117,0	16
3023x	5 G 1,5	9,3 - 11,6	72,0	144,0	16
3024x	3 G 2,5	9,2 - 11,4	72,0	152,0	14
3025x	4 G 2,5	10,1 - 12,5	96,0	192,0	14
3026x	5 G 2,5	11,2 - 13,9	120,0	243,0	14

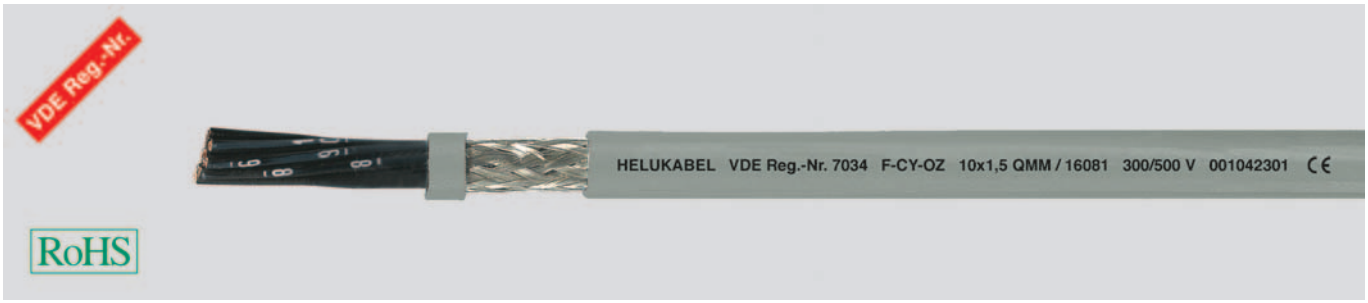
Dimensions and specifications may be changed without prior notice. (RA01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS

F-CY-OZ (LiY-CY) flexible, Cu-screened, EMC-preferred type, meter marking



Technical data

- Special-PVC data cable adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51
- **Temperature range** flexing -10°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** for 1-core (LiYDY) 1200 V from 2-cores U_0/U 300/500 V
- **Test voltage** core/core 4000 V core/screen 2000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Mutual capacitance** acc. to different cross-sections core/core approx. 150 nF/km core/screen approx. 270 nF/km
- **Coupling resistance** max. 250 Ohm/km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type Z 7225
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- Cores stranded in layers with optimal lay-length
- Core wrapping with foil
- - for **1-core** (LiYDY) copper screen of helically wound, approx. 85% coverage - from **2-cores** tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- x = without green-yellow conductor (OZ)
- Designation: LiYDY for **1-core** cable.
- Cleanroom qualification tested with analog type. Please note "cleanroom qualified" when ordering. For more information, see introduction
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **JZ-500**, confer page 30

Application

For flexible use with free movement without tensile stress or forced movements in dry, moist and wet rooms but not in open air, as data cable in the control and regulation technology, tool and machinery, in computer systems, as well as signal line in the electronic. A stabilizing foil separator between wire bound and braid reduces the outer diameter essentially and allows smaller bending radius, lower weight etc. The disturbance free transmission of signals and impulses is ensured due to the high degree of screening. This is an ideal disturbance-free control cable for the above applications.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
16531	1 x 0,5	3,7	15,0	41,0	20
16532	2 x 0,5	5,7	35,0	45,0	20
16533	3 x 0,5	5,9	42,0	55,0	20
16534	4 x 0,5	6,4	47,0	61,0	20
16535	5 x 0,5	6,9	56,0	74,0	20
16536	6 x 0,5	7,6	67,0	89,0	20
16537	7 x 0,5	7,6	69,0	98,0	20
16538	8 x 0,5	8,1	80,0	117,0	20
16539	10 x 0,5	9,6	94,0	135,0	20
16540	12 x 0,5	9,7	108,0	157,0	20
16541	14 x 0,5	10,2	116,0	190,0	20
16542	16 x 0,5	11,0	129,0	210,0	20
16543	18 x 0,5	11,5	145,0	217,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
16544	20 x 0,5	12,3	172,0	240,0	20
16545	21 x 0,5	12,3	188,0	250,0	20
16546	24 x 0,5	13,6	235,0	300,0	20
16547	25 x 0,5	13,7	240,0	314,0	20
16548	30 x 0,5	14,4	295,0	360,0	20
16549	32 x 0,5	14,9	301,0	425,0	20
16550	34 x 0,5	15,5	312,0	433,0	20
16551	36 x 0,5	15,5	318,0	446,0	20
16552	40 x 0,5	16,5	343,0	475,0	20
16553	50 x 0,5	18,5	406,0	573,0	20
16554	61 x 0,5	19,7	508,0	653,0	20
16555	80 x 0,5	22,6	680,0	784,0	20
16556	100 x 0,5	24,9	804,0	995,0	20

Continuation ▸

F-CY-OZ (LiY-CY) flexible, Cu-screened, EMC-preferred type, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
16557	1 x 0,75	4,0	19,0	44,0	19
16558	2 x 0,75	6,1	40,0	59,0	19
16559	3 x 0,75	6,3	52,0	66,0	19
16560	4 x 0,75	6,8	60,0	77,0	19
16561	5 x 0,75	7,4	71,0	93,0	19
16562	6 x 0,75	8,2	80,0	113,0	19
16563	7 x 0,75	8,2	91,0	130,0	19
16564	8 x 0,75	9,0	110,0	145,0	19
16565	10 x 0,75	10,3	137,0	180,0	19
16566	12 x 0,75	10,5	142,0	202,0	19
16567	14 x 0,75	11,3	180,0	225,0	19
16568	16 x 0,75	11,9	200,0	275,0	19
16569	18 x 0,75	12,7	212,0	292,0	19
16570	19 x 0,75	12,7	230,0	308,0	19
16571	20 x 0,75	13,6	238,0	320,0	19
16572	21 x 0,75	13,6	246,0	378,0	19
16573	24 x 0,75	14,9	270,0	435,0	19
16574	25 x 0,75	15,0	281,0	415,0	19
16575	27 x 0,75	15,1	304,0	435,0	19
16576	30 x 0,75	16,0	320,0	450,0	19
16577	32 x 0,75	16,7	342,0	484,0	19
16578	34 x 0,75	17,2	345,0	502,0	19
16579	36 x 0,75	17,4	350,0	535,0	19
16580	37 x 0,75	17,4	361,0	592,0	19
16581	40 x 0,75	18,1	369,0	610,0	19
16582	50 x 0,75	20,3	461,0	777,0	19
16583	61 x 0,75	22,0	540,0	900,0	19
16584	80 x 0,75	25,3	711,0	1210,0	19
16585	100 x 0,75	28,0	900,0	1445,0	19
16050	1 x 1	4,1	21,0	47,0	18
16051	2 x 1	6,4	50,0	65,0	18
16052	3 x 1	6,7	60,0	81,0	18
16053	4 x 1	7,2	71,0	98,0	18
16054	5 x 1	8,0	88,0	127,0	18
16055	6 x 1	8,7	97,0	144,0	18
16056	7 x 1	8,7	111,0	158,0	18
16057	8 x 1	9,6	127,0	197,0	18
16058	10 x 1	11,2	150,0	232,0	18
16059	12 x 1	11,4	184,0	260,0	18
16060	14 x 1	12,0	196,0	302,0	18
16061	16 x 1	12,8	209,0	345,0	18
16062	18 x 1	13,6	260,0	380,0	18
16063	20 x 1	14,3	317,0	440,0	18
16064	24 x 1	16,0	320,0	495,0	18
16065	25 x 1	16,2	349,0	534,0	18
16066	28 x 1	17,0	408,0	595,0	18
16067	30 x 1	17,2	441,0	616,0	18
16068	34 x 1	18,5	486,0	741,0	18
16069	40 x 1	19,4	510,0	835,0	18
16070	50 x 1	22,0	625,0	1025,0	18
16071	61 x 1	23,5	702,0	1200,0	18
16072	80 x 1	26,9	920,0	1440,0	18
16073	100 x 1	30,2	1120,0	1610,0	18

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
16074	1 x 1,5	4,6	27,0	70,0	16
16075	2 x 1,5	7,0	63,0	88,0	16
16076	3 x 1,5	7,4	80,0	100,0	16
16077	4 x 1,5	8,1	97,0	126,0	16
16078	5 x 1,5	9,0	119,0	160,0	16
16079	7 x 1,5	9,8	147,0	208,0	16
16080	8 x 1,5	10,8	170,0	244,0	16
16081	10 x 1,5	12,6	193,0	316,0	16
16082	12 x 1,5	12,8	267,0	338,0	16
16083	14 x 1,5	13,5	283,0	383,0	16
16084	16 x 1,5	14,6	315,0	424,0	16
16085	18 x 1,5	15,6	374,0	479,0	16
16086	20 x 1,5	16,6	396,0	545,0	16
16087	24 x 1,5	18,1	458,0	690,0	16
16088	25 x 1,5	18,4	526,0	705,0	16
16089	28 x 1,5	19,3	541,0	810,0	16
16090	30 x 1,5	19,6	555,0	830,0	16
16091	35 x 1,5	21,2	645,0	890,0	16
16092	40 x 1,5	22,0	725,0	1060,0	16
16093	50 x 1,5	25,0	885,0	1440,0	16
16094	61 x 1,5	26,8	1100,0	1700,0	16
16095	80 x 1,5	30,8	1324,0	2000,0	16
16096	100 x 1,5	34,1	1641,0	2500,0	16
16097	1 x 2,5	5,4	39,0	50,0	14
16098	2 x 2,5	8,4	96,0	130,0	14
16099	3 x 2,5	8,8	144,0	167,0	14
16100	4 x 2,5	9,8	148,0	195,0	14
16101	5 x 2,5	10,8	181,0	223,0	14
16102	7 x 2,5	11,9	255,0	344,0	14
16103	12 x 2,5	15,8	441,0	522,0	14
16104	2 x 4	10,0	120,0	185,0	12
16105	3 x 4	10,6	174,0	240,0	12
16106	4 x 4	11,6	230,0	310,0	12
16107	5 x 4	12,8	273,0	400,0	12
16108	7 x 4	14,2	316,0	500,0	12
16109	2 x 6	11,7	173,0	268,0	10
16110	3 x 6	12,5	240,0	330,0	10
16111	4 x 6	13,8	305,0	415,0	10
16112	5 x 6	15,4	439,0	509,0	10
16113	7 x 6	17,0	505,0	672,0	10
16114	2 x 10	14,5	255,0	425,0	8
16115	3 x 10	15,6	350,0	500,0	8
16116	4 x 10	17,2	535,0	783,0	8
16117	5 x 10	19,1	592,0	856,0	8
16118	7 x 10	21,2	810,0	1300,0	8

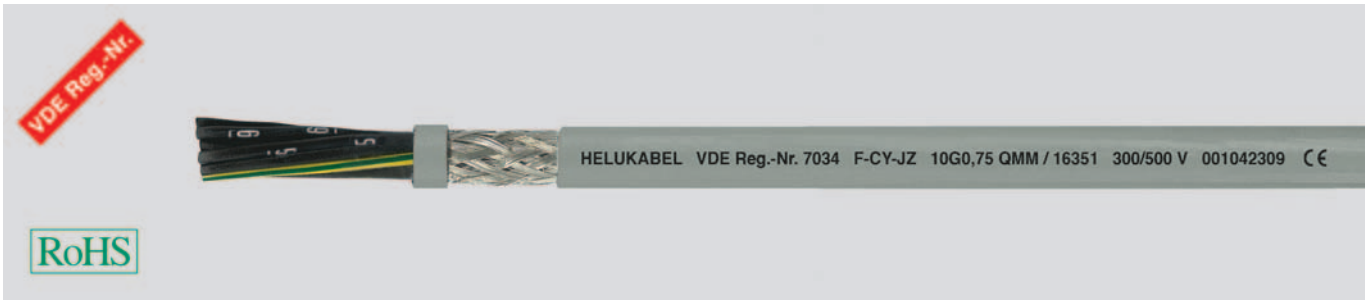
Dimensions and specifications may be changed without prior notice. (RA01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

F-CY-JZ flexible, Cu-screened, EMC-preferred type, meter marking



Technical data

- Special-PVC control cable adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51
- **Temperature range** flexing -10°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** core/core 4000 V core/screen 2000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Mutual capacitance** acc. to different cross-sections 0,5 up to 2,5 mm²: core/core approx. 150 nF/km core/screen approx. 270 nF/km
- **Coupling resistance** max. 250 Ohm/km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type Z 7225
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Foil separator
- Tinned copper braided screening, approx. 85% coverage
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7001)
- With meter marking

Properties

- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- Please note the cleanroom qualification when ordering. For more information, see introduction.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **JZ-500**, confer page 30

Application

For use as a data cable in control circuits, in tool-making and machine industries as well as a signal cable in computer systems and electronics. The more usual PVC inner sheath has been replaced in these cables by a stabilising foil separator, thus reducing the total diameter of the cables considerably and thereby reducing the bending radius, total weight etc. The high covering percentage of the copper screening offers interference-free signal transfer etc. The dense screening assures disturbance-free transmission of all signals and impulses. An ideal disturbance-free control cable for the above application.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
16320	2 x 0,5	5,7	35,0	45,0	20
16321	3 G 0,5	5,9	42,0	55,0	20
16322	4 G 0,5	6,4	47,0	61,0	20
16323	5 G 0,5	6,9	56,0	74,0	20
16324	6 G 0,5	7,6	67,0	89,0	20
16325	7 G 0,5	7,6	69,0	98,0	20
16326	8 G 0,5	8,1	80,0	117,0	20
16327	10 G 0,5	9,6	94,0	135,0	20
16328	12 G 0,5	9,7	108,0	157,0	20
16329	14 G 0,5	10,2	116,0	190,0	20
16330	16 G 0,5	11,0	129,0	210,0	20
16331	18 G 0,5	11,5	145,0	217,0	20
16332	20 G 0,5	12,3	172,0	240,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
16333	21 G 0,5	12,3	188,0	250,0	20
16334	24 G 0,5	13,6	235,0	300,0	20
16335	25 G 0,5	13,7	240,0	314,0	20
16336	30 G 0,5	14,4	295,0	360,0	20
16337	32 G 0,5	14,9	301,0	425,0	20
16165	34 G 0,5	15,6	312,0	433,0	20
16338	36 G 0,5	15,6	318,0	446,0	20
16339	40 G 0,5	16,4	343,0	475,0	20
16490	41 G 0,5	16,5	348,0	486,0	20
16340	50 G 0,5	18,5	406,0	573,0	20
16341	61 G 0,5	19,7	508,0	653,0	20
16342	80 G 0,5	22,6	680,0	784,0	20
16343	100 G 0,5	24,9	804,0	995,0	20

Continuation ▸

F-CY-JZ flexible, Cu-screened, EMC-preferred type, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
16344	2 x 0,75	6,1	40,0	59,0	19
16345	3 G 0,75	6,3	52,0	66,0	19
16346	4 G 0,75	6,8	60,0	77,0	19
16347	5 G 0,75	7,4	71,0	93,0	19
16348	6 G 0,75	8,2	80,0	113,0	19
16349	7 G 0,75	8,2	91,0	130,0	19
16350	8 G 0,75	9,0	110,0	145,0	19
16351	10 G 0,75	10,3	137,0	180,0	19
16353	12 G 0,75	10,5	142,0	202,0	19
16354	14 G 0,75	11,3	180,0	225,0	19
16355	16 G 0,75	11,9	200,0	275,0	19
16356	18 G 0,75	12,7	212,0	292,0	19
16447	19 G 0,75	12,7	230,0	308,0	19
16357	20 G 0,75	13,6	238,0	320,0	19
16358	21 G 0,75	13,6	246,0	378,0	19
16359	24 G 0,75	14,9	270,0	435,0	19
16360	25 G 0,75	15,0	281,0	415,0	19
16361	27 G 0,75	15,0	304,0	435,0	19
16362	30 G 0,75	16,0	320,0	450,0	19
16363	32 G 0,75	16,7	342,0	484,0	19
16166	34 G 0,75	17,2	345,0	502,0	19
16364	36 G 0,75	17,4	350,0	535,0	19
16448	37 G 0,75	17,4	361,0	592,0	19
16365	40 G 0,75	18,1	369,0	610,0	19
16491	41 G 0,75	18,2	400,0	622,0	19
16366	50 G 0,75	20,3	461,0	777,0	19
16367	61 G 0,75	22,0	540,0	900,0	19
16368	80 G 0,75	25,3	711,0	1210,0	19
16369	100 G 0,75	28,0	900,0	1445,0	19
16370	2 x 1	6,4	50,0	65,0	18
16371	3 G 1	6,7	60,0	80,0	18
16372	4 G 1	7,2	71,0	98,0	18
16373	5 G 1	8,0	88,0	127,0	18
16374	6 G 1	8,7	97,0	144,0	18
16375	7 G 1	8,7	111,0	158,0	18
16376	8 G 1	9,6	127,0	197,0	18
16377	10 G 1	11,2	150,0	232,0	18
16378	12 G 1	11,4	184,0	260,0	18
16379	14 G 1	12,0	196,0	302,0	18
16380	16 G 1	12,8	209,0	346,0	18
16381	18 G 1	13,6	260,0	380,0	18
16352	19 G 1	13,6	280,0	412,0	18
16382	20 G 1	14,3	317,0	440,0	18
16383	24 G 1	16,0	320,0	493,0	18
16384	25 G 1	16,2	349,0	534,0	18
16439	27 G 1	16,4	400,0	562,0	18
16385	28 G 1	17,0	408,0	595,0	18
16386	30 G 1	17,2	441,0	616,0	18
16387	34 G 1	18,5	486,0	741,0	18
16446	37 G 1	18,6	519,0	790,0	18
16388	40 G 1	19,4	510,0	835,0	18
16492	41 G 1	19,5	531,0	843,0	18
16389	50 G 1	22,0	625,0	1025,0	18
16390	61 G 1	23,5	702,0	1205,0	18
16391	80 G 1	26,9	920,0	1445,0	18
16392	100 G 1	30,2	1120,0	1613,0	18

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
16393	2 x 1,5	7,0	63,0	88,0	16
16394	3 G 1,5	7,4	80,0	100,0	16
16395	4 G 1,5	8,1	97,0	126,0	16
16396	5 G 1,5	9,0	119,0	160,0	16
16397	7 G 1,5	9,8	147,0	208,0	16
16398	8 G 1,5	10,8	170,0	244,0	16
16399	10 G 1,5	12,6	193,0	315,0	16
16400	12 G 1,5	12,8	267,0	338,0	16
16401	14 G 1,5	13,5	283,0	383,0	16
16402	16 G 1,5	14,6	315,0	424,0	16
16403	18 G 1,5	15,6	374,0	479,0	16
16449	19 G 1,5	15,6	386,0	508,0	16
16404	20 G 1,5	16,6	396,0	545,0	16
16405	21 G 1,5	16,6	425,0	560,0	16
16406	24 G 1,5	18,1	458,0	690,0	16
16407	25 G 1,5	18,4	526,0	705,0	16
16450	27 G 1,5	18,5	531,0	774,0	16
16408	28 G 1,5	19,6	541,0	810,0	16
16409	30 G 1,5	19,6	555,0	830,0	16
16410	35 G 1,5	21,4	645,0	890,0	16
16451	37 G 1,5	21,4	674,0	945,0	16
16411	40 G 1,5	22,0	725,0	1060,0	16
16493	41 G 1,5	22,2	801,0	1071,0	16
16412	50 G 1,5	25,0	885,0	1290,0	16
16413	61 G 1,5	26,8	1100,0	1705,0	16
16414	80 G 1,5	30,8	1324,0	2010,0	16
16415	100 G 1,5	34,1	1641,0	2505,0	16
16416	2 x 2,5	8,4	96,0	130,0	14
16417	3 G 2,5	8,8	144,0	167,0	14
16418	4 G 2,5	9,8	148,0	195,0	14
16419	5 G 2,5	10,8	181,0	223,0	14
16420	7 G 2,5	11,9	255,0	344,0	14
16421	10 G 2,5	15,5	340,0	460,0	14
16438	12 G 2,5	15,8	441,0	570,0	14
16452	18 G 2,5	19,0	570,0	681,0	14
16422	2 x 4	10,0	120,0	185,0	12
16423	3 G 4	10,6	174,0	240,0	12
16424	4 G 4	11,6	230,0	310,0	12
16425	5 G 4	12,8	273,0	385,0	12
16426	7 G 4	14,2	316,0	500,0	12
16427	2 x 6	11,7	173,0	268,0	10
16428	3 G 6	12,5	240,0	330,0	10
16429	4 G 6	13,8	305,0	415,0	10
16430	5 G 6	15,4	439,0	509,0	10
16431	7 G 6	17,0	505,0	672,0	10
16432	2 x 10	14,5	255,0	425,0	8
16433	3 G 10	15,6	350,0	500,0	8
16434	4 G 10	17,2	535,0	783,0	8
16435	5 G 10	19,1	592,0	856,0	8
16436	7 G 10	21,2	810,0	1305,0	8
16440	4 G 16	20,3	740,0	880,0	6
16437	5 G 16	22,2	895,0	1295,0	6
16441	4 G 25	24,7	1140,0	1570,0	4
16442	5 G 25	27,4	1380,0	1965,0	4
16443	4 G 35	28,4	1576,0	2070,0	2
16444	5 G 35	31,6	1930,0	2690,0	2
16445	4 G 50	34,2	2155,0	3015,0	1

Dimensions and specifications may be changed without prior notice. (RA01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

JZ-500-C black EMC-preferred type, Cu-screened. flexible, meter marking



Technical data

- Special-PVC control cable adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51
- **Temperature range** flexing -10°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** core/core 4000 V core/screen 2000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Coupling resistance** max. 250 Ohm/km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type Z 7225
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Foil separator
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- **UV- resistant**

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type **JZ-500 black**, confer page 32

Application

For medium mechanical stress for flexible use with free movement without tensile stress or forced movements in dry, damp, wet rooms and **in open air**. Must not be laid directly in soil or water. When screened for measurement, control and control line etc. in mechanical and plant engineering, machine tools, production lines and conveyor belts.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
10934	2 x 0,5	6,1	35,0	45,0	20
10935	3 G 0,5	6,4	42,0	55,0	20
11479	3 x 0,5	6,4	42,0	55,0	20
10936	4 G 0,5	6,8	47,0	61,0	20
11480	4 x 0,5	6,8	47,0	61,0	20
10937	5 G 0,5	7,5	56,0	74,0	20
11481	5 x 0,5	7,5	56,0	74,0	20
10938	7 G 0,5	8,1	69,0	98,0	20
11482	7 x 0,5	8,1	69,0	98,0	20
10939	12 G 0,5	10,6	108,0	157,0	20
11483	12 x 0,5	10,6	108,0	157,0	20
10940	18 G 0,5	12,4	145,0	217,0	20
10941	25 G 0,5	14,7	240,0	314,0	20
10942	2 x 0,75	6,7	40,0	59,0	19
10943	3 G 0,75	7,0	52,0	66,0	19
11484	3 x 0,75	7,0	52,0	66,0	19
10944	4 G 0,75	7,7	60,0	77,0	19
11485	4 x 0,75	7,7	60,0	77,0	19
10945	5 G 0,75	8,2	71,0	93,0	19
11486	5 x 0,75	8,2	71,0	93,0	19
10946	7 G 0,75	9,0	91,0	130,0	19
11487	7 x 0,75	9,0	91,0	130,0	19
10947	12 G 0,75	11,6	142,0	202,0	19
11488	12 x 0,75	11,6	142,0	202,0	19
10948	18 G 0,75	13,7	212,0	292,0	19
10949	25 G 0,75	16,4	281,0	415,0	19
10950	2 x 1	7,0	50,0	65,0	18
10951	3 G 1	7,5	60,0	80,0	18
11493	3 x 1	7,5	60,0	80,0	18
10952	4 G 1	8,0	71,0	98,0	18
11495	4 x 1	8,0	71,0	98,0	18
10953	5 G 1	8,8	88,0	127,0	18
11496	5 x 1	8,8	88,0	127,0	18
10954	7 G 1	9,5	111,0	158,0	18
11497	7 x 1	9,5	111,0	158,0	18
10955	12 G 1	12,4	184,0	260,0	18

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11499	12 x 1	12,4	184,0	260,0	18
10956	18 G 1	14,7	260,0	380,0	18
10957	25 G 1	17,5	349,0	534,0	18
10958	2 x 1,5	7,8	63,0	88,0	16
10959	3 G 1,5	8,2	80,0	100,0	16
11500	3 x 1,5	8,2	80,0	100,0	16
10960	4 G 1,5	8,9	97,0	126,0	16
11502	4 x 1,5	8,9	97,0	126,0	16
10961	5 G 1,5	9,8	119,0	160,0	16
11503	5 x 1,5	9,8	119,0	160,0	16
10962	7 G 1,5	10,8	147,0	208,0	16
11520	7 x 1,5	10,8	147,0	208,0	16
10963	12 G 1,5	14,0	267,0	338,0	16
11522	12 x 1,5	14,0	267,0	338,0	16
10964	18 G 1,5	16,8	374,0	479,0	16
10965	25 G 1,5	19,8	526,0	705,0	16
10966	2 x 2,5	9,2	96,0	130,0	14
10967	3 G 2,5	9,8	144,0	167,0	14
11523	3 x 2,5	9,8	144,0	167,0	14
10968	4 G 2,5	10,6	148,0	195,0	14
11524	4 x 2,5	10,6	148,0	195,0	14
10969	5 G 2,5	11,7	181,0	223,0	14
11526	5 x 2,5	11,7	181,0	223,0	14
10970	7 G 2,5	12,8	255,0	344,0	14
11527	7 x 2,5	12,8	255,0	344,0	14
10971	12 G 2,5	17,0	441,0	570,0	14
11550	12 x 2,5	17,0	441,0	570,0	14
10972	18 G 2,5	19,8	570,0	681,0	14
10973	4 G 4	12,4	230,0	310,0	12
10974	5 G 4	13,7	273,0	385,0	12
10975	4 G 6	14,7	305,0	415,0	10
10976	5 G 6	16,2	439,0	509,0	10
10977	4 G 10	18,2	535,0	783,0	8
10978	4 G 16	21,1	740,0	880,0	6
10979	4 G 25	25,8	1140,0	1570,0	4
10980	4 G 35	29,7	1576,0	2070,0	2

Dimensions and specifications may be changed without prior notice. (RA01)

Y-CY-JZ flexible, Cu-screened, transparent, EMC-preferred type, meter marking



Technical data

- Special-PVC control cable adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51
- **Temperature range** flexing -15°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Mutual capacitance** acc. to different cross-sections 0,5 up to 2,5 mm²: core/core approx. 150 nF/km core/screen approx. 270 nF/km
- **Coupling resistance** max. 250 Ohm/km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type Z 7225
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Inner sheath of PVC, grey
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC
- Sheath colour transparent
- with meter marking

Properties

- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **JZ-500**, confer page 30

Application

For use as a data and control cable in machinery, computer systems etc. as well as a signal cable for electronics. The high level of screening ensures a high degree of interference protection. The screening density assures disturbancefree transmission of all signals and impulses. The PVC-inner sheaths of those cables raise the mechanical stress. The applied clear transparent PVC outer sheath accentuates the optical view of the tinned copper braid.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
16200	2 x 0,5	7,0	41,0	67,0	20
16201	3 G 0,5	7,3	45,0	83,0	20
16169	3 x 0,5	7,3	45,0	83,0	20
16202	4 G 0,5	7,9	54,0	94,0	20
16170	4 x 0,5	7,9	54,0	94,0	20
16203	5 G 0,5	8,4	66,0	108,0	20
16171	5 x 0,5	8,4	66,0	108,0	20
16204	6 G 0,5	9,1	73,0	125,0	20
16205	7 G 0,5	9,1	79,0	136,0	20
17172	7 x 0,5	9,1	79,0	136,0	20
16206	8 G 0,5	9,7	82,0	150,0	20
16207	10 G 0,5	10,7	107,0	170,0	20
16208	12 G 0,5	11,5	137,0	195,0	20
16209	14 G 0,5	12,2	142,0	223,0	20
16210	16 G 0,5	12,7	147,0	250,0	20
16211	18 G 0,5	13,5	156,0	277,0	20
16212	20 G 0,5	14,2	173,0	310,0	20
16315	21 G 0,5	14,2	189,0	331,0	20
16213	24 G 0,5	15,5	236,0	390,0	20
16214	25 G 0,5	15,7	250,0	407,0	20
16215	30 G 0,5	16,2	297,0	520,0	20
16216	32 G 0,5	17,0	312,0	550,0	20
16217	36 G 0,5	17,7	320,0	585,0	20
16218	40 G 0,5	18,4	345,0	654,0	20
16453	41 G 0,5	18,9	348,0	671,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
16219	50 G 0,5	20,7	407,0	740,0	20
16220	61 G 0,5	22,0	520,0	850,0	20
16221	80 G 0,5	25,0	690,0	1080,0	20
16222	100 G 0,5	27,4	805,0	1350,0	20
16223	2 x 0,75	7,7	46,0	87,0	19
16224	3 G 0,75	8,0	57,0	98,0	19
16173	3 x 0,75	8,0	57,0	98,0	19
16225	4 G 0,75	8,5	63,0	113,0	19
16196	4 x 0,75	8,5	63,0	113,0	19
16226	5 G 0,75	9,3	76,0	130,0	19
16174	5 x 0,75	9,3	76,0	130,0	19
16227	6 G 0,75	9,9	82,0	156,0	19
16228	7 G 0,75	9,9	100,0	184,0	19
16175	7 x 0,75	9,9	100,0	184,0	19
16229	8 G 0,75	10,6	112,0	221,0	19
16230	10 G 0,75	11,8	140,0	270,0	19
16231	12 G 0,75	12,7	175,0	292,0	19
16232	14 G 0,75	13,3	190,0	315,0	19
16233	16 G 0,75	14,1	204,0	335,0	19
16234	18 G 0,75	14,9	240,0	358,0	19
16235	20 G 0,75	15,4	262,0	420,0	19
16316	21 G 0,75	15,4	274,0	454,0	19
16236	24 G 0,75	17,3	291,0	480,0	19
16237	25 G 0,75	17,5	306,0	508,0	19
16238	27 G 0,75	17,7	326,0	535,0	19
16239	30 G 0,75	18,3	340,0	640,0	19

Continuation ▸

Y-CY-JZ flexible, Cu-screened, transparent, EMC-preferred type, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
16240	32 G 0,75	18,9	349,0	688,0	19
16241	36 G 0,75	19,7	358,0	730,0	19
16242	40 G 0,75	20,4	371,0	950,0	19
16454	41 G 0,75	21,0	403,0	971,0	19
16243	50 G 0,75	23,2	470,0	1100,0	19
16244	61 G 0,75	24,6	550,0	1290,0	19
16245	80 G 0,75	28,3	715,0	1510,0	19
16246	100 G 0,75	31,1	910,0	1640,0	19
16248	2 x 1	8,0	54,0	97,0	18
16249	3 G 1	8,3	64,0	103,0	18
16176	3 x 1	8,3	64,0	103,0	18
16250	4 G 1	9,0	76,0	146,0	18
16177	4 x 1	9,0	76,0	146,0	18
16251	5 G 1	9,7	89,0	169,0	18
16178	5 x 1	9,7	89,0	169,0	18
16252	6 G 1	10,3	101,0	199,0	18
16253	7 G 1	10,3	114,0	219,0	18
16179	7 x 1	10,3	114,0	219,0	18
16254	8 G 1	11,2	130,0	270,0	18
16255	10 G 1	12,6	156,0	330,0	18
16256	12 G 1	13,3	186,0	350,0	18
16257	14 G 1	14,1	198,0	400,0	18
16258	16 G 1	14,8	214,0	422,0	18
16259	18 G 1	15,6	284,0	514,0	18
16260	20 G 1	16,4	325,0	545,0	18
16261	24 G 1	18,2	366,0	640,0	18
16262	25 G 1	18,5	387,0	689,0	18
16263	28 G 1	19,1	421,0	710,0	18
16264	30 G 1	19,2	457,0	762,0	18
16265	34 G 1	20,9	500,0	910,0	18
16266	40 G 1	21,5	536,0	1070,0	18
16455	41 G 1	22,2	578,0	1092,0	18
16267	50 G 1	24,8	681,0	1315,0	18
16268	61 G 1	26,0	710,0	1370,0	18
16269	80 G 1	30,0	940,0	1610,0	18
16270	100 G 1	33,1	1180,0	1840,0	18
16271	2 x 1,5	8,6	64,0	130,0	16
16272	3 G 1,5	9,2	82,0	152,0	16
16180	3 x 1,5	9,2	82,0	152,0	16
16273	4 G 1,5	9,8	99,0	168,0	16
16181	4 x 1,5	9,8	99,0	168,0	16
16274	5 G 1,5	10,8	123,0	202,0	16
16182	5 x 1,5	10,8	123,0	202,0	16
16275	7 G 1,5	11,7	148,0	304,0	16
16183	7 x 1,5	11,7	148,0	304,0	16
16276	8 G 1,5	12,6	172,0	336,0	16
16277	10 G 1,5	14,2	198,0	420,0	16
16278	12 G 1,5	14,9	274,0	434,0	16
16279	14 G 1,5	15,8	294,0	480,0	16
16280	16 G 1,5	16,7	318,0	525,0	16
16281	18 G 1,5	17,4	386,0	640,0	16
16282	20 G 1,5	18,5	401,0	690,0	16
16317	21 G 1,5	18,5	447,0	720,0	16
16283	24 G 1,5	20,4	487,0	770,0	16
16284	25 G 1,5	20,8	531,0	805,0	16
16285	28 G 1,5	21,4	562,0	900,0	16
16286	30 G 1,5	21,6	598,0	950,0	16
16287	35 G 1,5	23,2	685,0	1100,0	16
16288	40 G 1,5	24,5	759,0	1350,0	16
16456	41 G 1,5	25,0	840,0	1381,0	16
16289	50 G 1,5	27,4	997,0	1675,0	16
16290	61 G 1,5	29,2	1120,0	1800,0	16
16291	80 G 1,5	33,4	1360,0	2300,0	16
16292	100 G 1,5	36,8	1690,0	2600,0	16
16293	2 x 2,5	10,1	110,0	180,0	14
16294	3 G 2,5	10,8	148,0	216,0	14
16295	4 G 2,5	11,5	169,0	267,0	14
16296	5 G 2,5	12,8	220,0	347,0	14
16297	7 G 2,5	14,0	284,0	407,0	14
16298	10 G 2,5	16,8	369,0	660,0	14
16318	12 G 2,5	17,9	470,0	722,0	14
16299	2 x 4	11,6	124,0	302,0	12
16300	3 G 4	12,5	178,0	340,0	12
16301	4 G 4	13,7	234,0	410,0	12
16302	5 G 4	14,9	284,0	502,0	12
16303	7 G 4	16,2	321,0	638,0	12
16304	2 x 6	13,7	176,0	350,0	10
16305	3 G 6	14,4	245,0	450,0	10
16306	4 G 6	15,7	316,0	559,0	10
16307	5 G 6	17,3	442,0	702,0	10
16308	7 G 6	19,0	530,0	907,0	10
16309	2 x 10	16,6	260,0	500,0	8
16310	3 G 10	17,6	367,0	750,0	8
16311	4 G 10	19,4	549,0	1020,0	8
16312	5 G 10	21,3	604,0	1115,0	8
16313	7 G 10	23,4	820,0	1500,0	8
16460	4 G 16	23,4	807,0	1380,0	6
16314	5 G 16	26,0	940,0	1553,0	6
16461	4 G 25	28,3	1169,0	1890,0	4
16462	5 G 25	31,5	1420,0	2270,0	4
16463	4 G 35	32,9	1680,0	2390,0	2
16464	5 G 35	36,9	2020,0	2885,0	2
16465	4 G 50	38,6	2370,0	3315,0	1
16157	5 G 50	43,5	2880,0	4150,0	1
16466	4 G 70	46,1	3257,0	4600,0	2/0
16158	5 G 70	50,5	4032,0	5750,0	2/0
16467	4 G 95	51,1	4060,0	6060,0	3/0
16159	5 G 95	56,0	5244,0	7580,0	3/0
16468	4 G 120	56,5	5231,0	7315,0	4/0
16160	5 G 120	62,1	6624,0	9150,0	4/0
16167	4 G 150	64,6	7760,0	9680,0	300 kcmil
16168	5 G 150	70,6	8496,0	10170,0	300 kcmil

Dimensions and specifications may be changed without prior notice. (RA01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

SY-JZ flexible, number coded, with steel wire braiding, meter marking



Technical data

- Special-PVC control cable adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51
- **Temperature range** flexing -15°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 20x cable Ø fixed installation 6x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type Z 7225
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Inner sheath of special PVC
- Galvanized steel wire braid
- Outer sheath of special PVC
- Sheath colour transparent
- with meter marking

Properties

- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- Further dimensions available on request.
- These cables con be also delivered with coloured conductors (SY-JB).
- Cleanroom qualification tested with analog type. Please note "cleanroom qualified" when ordering.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **SY-JB**, confer page 64

Application

SY-JZ cables are used as measuring and control cables in tool machinery, plant installation, power stations and in data equipment. The braided screen offers best possible protection against mechanical damage. The galvanized coating on the steel wire braiding not only helps protect against corrosion, but also notably improves the soldering performance.
The clear transparent outer sheath gives the cable in addition an optical revaluation.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
12001	2 x 0,5	7,2	9,6	80,0	20
12002	3 G 0,5	7,5	14,4	92,0	20
12003	4 G 0,5	8,1	19,2	102,0	20
12004	5 G 0,5	8,6	24,0	119,0	20
12005	7 G 0,5	9,3	33,6	157,0	20
12006	10 G 0,5	10,7	48,0	205,0	20
12007	12 G 0,5	11,7	58,0	218,0	20
12008	14 G 0,5	12,3	67,0	242,0	20
12009	18 G 0,5	13,4	86,0	340,0	20
12010	21 G 0,5	14,2	101,0	370,0	20
12114	25 G 0,5	15,7	120,0	406,0	20
12012	30 G 0,5	16,2	144,0	439,0	20
12013	35 G 0,5	17,5	168,0	500,0	20
12014	40 G 0,5	18,2	192,0	565,0	20
12015	42 G 0,5	19,0	202,0	593,0	20
12016	50 G 0,5	20,7	240,0	690,0	20
12017	61 G 0,5	22,0	293,0	843,0	20
12018	80 G 0,5	25,0	384,0	1050,0	20
12011	100 G 0,5	27,4	480,0	1240,0	20
12019	2 x 0,75	7,9	14,4	98,0	19
12020	3 G 0,75	8,2	21,6	103,0	19
12021	4 G 0,75	8,7	28,8	122,0	19
12022	5 G 0,75	9,5	36,0	142,0	19
12112	6 G 0,75	10,1	43,2	180,0	19
12023	7 G 0,75	10,1	50,0	185,0	19
12188	8 G 0,75	10,8	57,6	201,0	19
12024	9 G 0,75	11,8	65,0	249,0	19
12113	10 G 0,75	12,0	72,0	252,0	19
12025	12 G 0,75	12,8	86,0	292,0	19
12026	15 G 0,75	14,2	108,0	335,0	19

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
12027	18 G 0,75	15,0	130,0	388,0	19
12028	21 G 0,75	15,5	151,0	474,0	19
12029	25 G 0,75	17,5	180,0	503,0	19
12030	32 G 0,75	18,9	230,0	644,0	19
12031	34 G 0,75	19,9	245,0	663,0	19
12032	41 G 0,75	21,2	296,0	741,0	19
12033	50 G 0,75	23,2	360,0	925,0	19
12034	61 G 0,75	25,2	439,0	1082,0	19
12035	2 x 1	8,2	19,2	112,0	18
12036	3 G 1	8,5	28,8	132,0	18
12037	4 G 1	9,2	38,4	143,0	18
12038	5 G 1	9,9	48,0	166,0	18
12039	6 G 1	10,5	58,0	22,0	18
12040	7 G 1	10,5	67,0	227,0	18
12041	8 G 1	11,4	77,0	277,0	18
12042	9 G 1	12,8	86,0	295,0	18
12043	12 G 1	13,4	115,0	340,0	18
12044	14 G 1	14,2	134,0	420,0	18
12045	18 G 1	15,7	173,0	500,0	18
12046	20 G 1	16,4	192,0	532,0	18
12047	25 G 1	18,4	240,0	664,0	18
12048	34 G 1	20,8	326,0	845,0	18
12049	36 G 1	20,9	346,0	857,0	18
12050	41 G 1	22,2	394,0	993,0	18
12051	50 G 1	24,4	480,0	1112,0	18
12052	56 G 1	25,5	538,0	1225,0	18
12053	61 G 1	26,1	586,0	1306,0	18
12054	65 G 1	26,9	624,0	1504,0	18
12055	80 G 1	30,0	768,0	1750,0	18
12056	100 G 1	33,1	960,0	1950,0	18

Continuation ▸

SY-JZ flexible, number coded, with steel wire braiding, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
12057	2 x 1,5	8,8	29,0	129,0	16
12058	3 G 1,5	9,4	43,0	149,0	16
12059	4 G 1,5	10,0	58,0	185,0	16
12060	5 G 1,5	10,9	72,0	205,0	16
12109	6 G 1,5	11,8	87,0	255,0	16
12061	7 G 1,5	11,8	101,0	285,0	16
12062	8 G 1,5	12,7	115,0	340,0	16
12063	9 G 1,5	13,9	130,0	347,0	16
12064	10 G 1,5	14,3	144,0	418,0	16
12065	11 G 1,5	14,8	158,0	430,0	16
12066	12 G 1,5	15,0	173,0	444,0	16
12067	14 G 1,5	15,8	202,0	533,0	16
12068	18 G 1,5	17,4	259,0	593,0	16
12069	25 G 1,5	20,8	360,0	781,0	16
12070	32 G 1,5	22,3	461,0	1015,0	16
12071	34 G 1,5	23,2	490,0	1124,0	16
12072	42 G 1,5	25,2	605,0	1401,0	16
12073	50 G 1,5	27,6	720,0	1583,0	16
12074	61 G 1,5	29,4	878,0	1810,0	16
12075	80 G 1,5	33,8	1152,0	2316,0	16
12076	100 G 1,5	37,2	1440,0	2900,0	16
12077	2 x 2,5	10,2	48,0	185,0	14
12078	3 G 2,5	10,9	72,0	248,0	14
12079	4 G 2,5	11,6	96,0	290,0	14
12080	5 G 2,5	12,9	120,0	347,0	14
12081	7 G 2,5	14,2	168,0	420,0	14
12082	12 G 2,5	17,7	288,0	660,0	14
12083	14 G 2,5	18,8	336,0	750,0	14
12084	18 G 2,5	21,0	432,0	893,0	14
12085	20 G 2,5	22,3	480,0	1169,0	14
12086	25 G 2,5	24,8	600,0	1458,0	14
12087	30 G 2,5	26,0	720,0	1686,0	14
12088	34 G 2,5	28,4	816,0	1869,0	14
12089	50 G 2,5	34,0	1200,0	2200,0	14
12090	61 G 2,5	36,2	1464,0	3000,0	14

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
12115	3 G 4	12,6	117,0	350,0	12
12091	4 G 4	13,7	154,0	428,0	12
12092	5 G 4	14,9	192,0	504,0	12
12093	7 G 4	16,2	269,0	640,0	12
12094	11 G 4	21,2	422,0	1204,0	12
12095	4 G 6	15,8	230,0	571,0	10
12096	5 G 6	17,3	288,0	671,0	10
12097	7 G 6	19,0	403,0	845,0	10
12098	4 G 10	19,4	384,0	943,0	8
12099	5 G 10	21,3	480,0	1065,0	8
12100	7 G 10	23,4	672,0	1551,0	8
12101	4 G 16	23,6	614,0	1360,0	6
12102	5 G 16	26,4	768,0	1740,0	6
12103	7 G 16	29,0	1075,0	2166,0	6
12104	4 G 25	28,5	960,0	2020,0	4
12105	5 G 25	31,7	1200,0	2465,0	4
12106	4 G 35	32,9	1344,0	2570,0	2
12107	5 G 35	36,9	1680,0	3185,0	2
12108	4 G 50	38,8	1920,0	3513,0	1
12116	5 G 50	43,7	2400,0	4248,0	1
12111	4 G 70	46,3	2688,0	4810,0	2/0
12117	5 G 70	50,5	3360,0	5880,0	2/0
12110	4 G 95	51,2	3648,0	6360,0	3/0
12118	5 G 95	56,1	4560,0	8071,0	3/0
12119	4 G 120	56,6	4608,0	8170,0	4/0
12327	4 G 150	64,7	5760,0	9970,0	300 kcmil

Dimensions and specifications may be changed without prior notice. (RA01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

H05VVC4V5-K (NYSLYCYÖ-JZ) flexible, number coded, oil resistant, EMC-preferred type



Technical data

- Spezial-PVC control cable with oil resistant outer sheath acc. to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51 and IEC 60227/74
- **Temperature range** flexing -5°C to +70°C fixed installation -40°C to +70°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** core/core 2 kV, 5 minutes core/screen 2 kV, 5 minutes
- **Breakdown voltage** min. 4000 V
- **Coupling resistance** at 30 MHz 250 Ohm/km
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Radiation resistance** up to 80x10^6 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Inner sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Tinned copper braided screening, covering approx. 85%
- Outer sheath of special PVC compound type TM5 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7001)

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Oil resistant to DIN EN 60811-404

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **H05VV5-F (NYSLYÖ-JZ)**, confer page 35

Application

These cables are used for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms but not suitable for open air. These are designed as control and connecting cables to machines, tool machineries, conveyor belts and production lines.
These cables are not effected to the chemical influences. Cables for moist and wet rooms, specially used for machines in breweries, bottling plants and car washing stations.
These cables may be allowed to move once installed provided that the cables are not mechanically stressed during movement. The interconnection of parts of machines used for manufacturing purposes including machine tools where some degree of protection against electromagnetic interference is required.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
13951	2 x 0,5	7,7 - 9,6	41,0	92,0	20
13060	3 G 0,5	8,0 - 10,0	45,0	109,0	20
13061	4 G 0,5	8,5 - 10,7	54,0	126,0	20
13062	5 G 0,5	9,3 - 11,6	66,0	156,0	20
13063	6 G 0,5	9,9 - 12,4	73,0	176,0	20
13064	7 G 0,5	10,8 - 13,5	79,0	192,0	20
13952	8 G 0,5	11,7 - 14,5	82,0	211,0	20
13065	9 G 0,5	12,8 - 15,8	94,0	230,0	20
13066	12 G 0,5	13,3 - 16,5	137,0	280,0	20
13953	14 G 0,5	13,4 - 16,6	142,0	302,0	20
13067	18 G 0,5	15,1 - 18,6	156,0	384,0	20
13068	25 G 0,5	17,7 - 21,7	250,0	556,0	20
13954	27 G 0,5	18,0 - 22,1	255,0	599,0	20
13069	34 G 0,5	20,1 - 24,7	316,0	634,0	20
13955	36 G 0,5	20,1 - 24,7	320,0	620,0	20
13129	41 G 0,5	21,7 - 26,6	348,0	770,0	20
13070	50 G 0,5	24,0 - 29,3	407,0	970,0	20
13071	61 G 0,5	25,5 - 31,1	520,0	1072,0	20
13956	65 G 0,5	26,1 - 31,9	563,0	1198,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
13957	2 x 0,75	8,0 - 10,0	46,0	102,0	19
13072	3 G 0,75	8,3 - 10,4	57,0	115,0	19
13073	4 G 0,75	9,1 - 11,3	63,0	150,0	19
13074	5 G 0,75	9,7 - 12,1	76,0	173,0	19
13075	6 G 0,75	10,5 - 13,1	82,0	195,0	19
13076	7 G 0,75	11,5 - 14,3	100,0	235,0	19
13958	8 G 0,75	12,1 - 15,0	112,0	268,0	19
13077	9 G 0,75	13,3 - 16,5	130,0	285,0	19
13078	12 G 0,75	13,9 - 17,2	175,0	327,0	19
13959	14 G 0,75	14,4 - 17,7	190,0	362,0	19
13079	18 G 0,75	16,2 - 19,9	240,0	488,0	19
13080	25 G 0,75	18,7 - 22,6	306,0	654,0	19
13960	27 G 0,75	19,3 - 23,7	326,0	708,0	19
13081	34 G 0,75	21,3 - 26,2	346,0	821,0	19
13961	36 G 0,75	21,3 - 26,2	358,0	899,0	19
13130	41 G 0,75	23,1 - 28,3	403,0	970,0	19
13082	50 G 0,75	25,3 - 31,0	470,0	1160,0	19
13083	61 G 0,75	27,0 - 32,9	550,0	1402,0	19
13962	65 G 0,75	27,8 - 34,0	594,0	1504,0	19

Continuation ▸

H05VVC4V5-K (NYSLYCYÖ-JZ) flexible, number coded, oil resistant, EMC-preferred type

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
13963	2 x 1	8,2 - 10,3	54,0	114,0	18
13084	3 G 1	8,8 - 11,0	64,0	142,0	18
13085	4 G 1	9,4 - 11,7	76,0	175,0	18
13086	5 G 1	10,3 - 12,8	89,0	205,0	18
13087	6 G 1	11,0 - 13,6	101,0	236,0	18
13088	7 G 1	12,2 - 15,1	114,0	264,0	18
13964	8 G 1	13,1 - 16,2	130,0	301,0	18
13089	9 G 1	13,9 - 17,2	144,0	335,0	18
13090	12 G 1	14,7 - 18,1	186,0	420,0	18
13965	14 G 1	15,3 - 18,8	198,0	433,0	18
13091	18 G 1	16,9 - 20,8	284,0	561,0	18
13966	19 G 1	16,9 - 20,8	307,0	584,0	18
13092	25 G 1	19,8 - 24,2	387,0	766,0	18
13967	27 G 1	20,2 - 24,7	410,0	822,0	18
13093	34 G 1	22,5 - 27,6	500,0	996,0	18
13968	36 G 1	22,5 - 27,6	511,0	1001,0	18
13969	37 G 1	22,5 - 27,6	523,0	1018,0	18
13131	41 G 1	24,7 - 30,2	578,0	1155,0	18
13094	50 G 1	26,8 - 32,7	681,0	1300,0	18
13095	61 G 1	28,5 - 34,7	710,0	1500,0	18
13970	65 G 1	29,4 - 35,8	769,0	1510,0	18
13971	2 x 1,5	9,3 - 11,6	64,0	146,0	16
13096	3 G 1,5	9,7 - 12,1	82,0	176,0	16
13097	4 G 1,5	10,7 - 13,2	99,0	207,0	16
13098	5 G 1,5	11,8 - 14,7	123,0	235,0	16
13099	6 G 1,5	12,7 - 15,7	125,0	279,0	16
13100	7 G 1,5	14,1 - 17,4	148,0	314,0	16
13972	8 G 1,5	14,9 - 18,3	172,0	345,0	16
13101	9 G 1,5	16,0 - 19,7	187,0	380,0	16
13102	12 G 1,5	16,7 - 20,5	274,0	500,0	16
13973	14 G 1,5	17,6 - 21,6	294,0	560,0	16
13103	18 G 1,5	19,6 - 24,1	386,0	707,0	16
13974	19 G 1,5	19,6 - 24,1	394,0	723,0	16
13104	25 G 1,5	22,7 - 27,8	531,0	950,0	16
13975	27 G 1,5	23,4 - 28,6	546,0	1014,0	16
13105	32 G 1,5	25,4 - 31,1	638,0	1133,0	16
13106	34 G 1,5	26,6 - 32,5	671,0	1204,0	16
13976	36 G 1,5	26,6 - 32,5	700,0	1261,0	16
13977	37 G 1,5	26,6 - 32,5	720,0	1300,0	16
13132	41 G 1,5	28,5 - 34,8	840,0	1453,0	16
13107	50 G 1,5	31,2 - 38,0	997,0	1663,0	16
13108	61 G 1,5	32,7 - 39,9	1120,0	1852,0	16
13978	65 G 1,5	33,4 - 40,7	1197,0	1971,0	16
13985	2 x 2,5	10,7 - 13,3	110,0	190,0	14
13109	3 G 2,5	11,3 - 14,0	148,0	243,0	14
13110	4 G 2,5	12,6 - 15,5	169,0	280,0	14
13111	5 G 2,5	13,9 - 17,2	220,0	342,0	14
13112	7 G 2,5	16,5 - 20,3	284,0	439,0	14
13979	8 G 2,5	17,7 - 21,8	314,0	489,0	14
13113	12 G 2,5	19,9 - 24,4	470,0	760,0	14
13980	14 G 2,5	20,9 - 25,6	504,0	890,0	14
13114	18 G 2,5	23,3 - 28,5	572,0	1052,0	14
13115	25 G 2,5	27,4 - 33,5	740,0	1375,0	14
13981	27 G 2,5	28,2 - 34,5	971,0	1507,0	14
13116	34 G 2,5	31,5 - 38,5	1179,0	1892,0	14
13982	36 G 2,5	31,5 - 38,5	1268,0	1998,0	14
13983	41 G 2,5	33,5 - 40,8	1473,0	2286,0	14
13117	50 G 2,5	36,5 - 44,4	1660,0	2673,0	14
13118	61 G 2,5	38,8 - 47,2	1992,0	3085,0	14

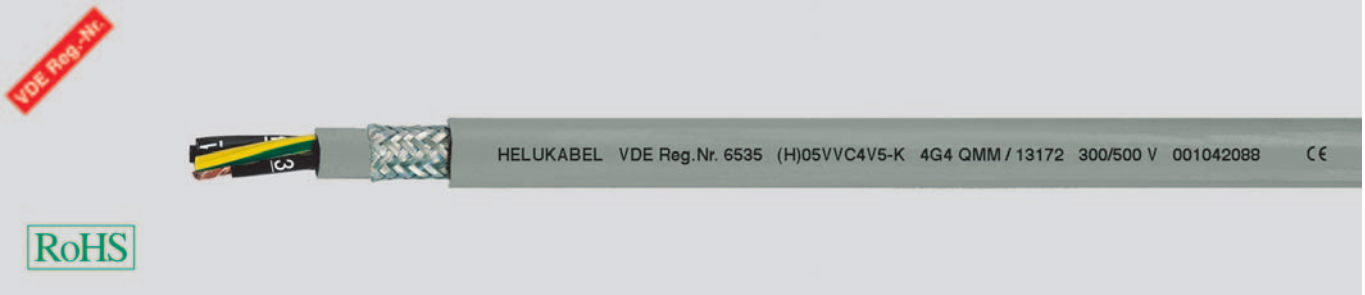
Dimensions and specifications may be changed without prior notice. (RA01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

(H)05VVC4V5-K ((N)YSLYCYÖ-JZ) number coded, screened, oil resistant, EMC-preferred type



Technical data

- Spezial-PVC control cable with oil resistant outer sheath adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51 and IEC 60227/74 deviation of conductor cross-sections
- **Temperature range** flexing -5°C to +70°C fixed installation -40°C to +70°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** core/core 2 kV, 5 min core/screen 2 kV, 5 min
- **Breakdown voltage** min. 4000 V
- **Coupling resistance** at 30 MHz 250 Ohm/km
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Inner sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC compound type TM5 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Oil resistant to DIN EN 60811-404

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **(H)05VV5-F (N)YSLYÖ-JZ**, confer page 37

Application

These cables are used for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms but not suitable for open air. These are designed as control and connecting cables to machines, tool machineries, conveyor belts and production lines.
These cables are not effected to the chemical influences. Cables for moist and wet rooms, specially used for machines in breweries, bottling plants and car washing stations.
These cables may be allowed to move once installed provided that the cables are not mechanically stressed during movement.
The interconnection of parts of machines used for manufacturing purposes including machine tools where some degree of protection against electromagnetic interference is required.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
13170	2 x 4	12,8	124,0	236,0	12
13171	3 G 4	13,8	178,0	361,0	12
13172	4 G 4	14,9	234,0	430,0	12
13173	5 G 4	16,3	284,0	509,0	12
13175	7 G 4	19,5	321,0	660,0	12
13178	12 G 4	23,5	581,0	979,0	12
13179	2 x 6	14,2	176,0	296,0	10
13180	3 G 6	15,2	245,0	420,0	10
13181	4 G 6	16,5	316,0	579,0	10
13182	5 G 6	18,3	442,0	719,0	10
13183	7 G 6	21,7	530,0	1031,0	10
13185	3 G 10	18,8	367,0	655,0	8
13186	4 G 10	20,7	549,0	894,0	8
13187	5 G 10	22,7	604,0	927,0	8
13188	7 G 10	27,8	820,0	1518,0	8

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
13190	3 G 16	23,0	653,0	993,0	6
13191	4 G 16	25,2	807,0	1340,0	6
13192	5 G 16	27,8	940,0	1626,0	6
13193	7 G 16	33,9	1345,0	2080,0	6
13196	4 G 25	30,7	1169,0	1692,0	4
13197	5 G 25	34,1	1420,0	1972,0	4
13198	3 G 35	31,0	1250,0	1704,0	2
13199	4 G 35	34,1	1680,0	2320,0	2
13189	5 G 35	37,3	2020,0	2780,0	2
13194	3 G 50	35,7	1887,0	2661,0	1
13195	4 G 50	37,7	2370,0	3194,0	1
13184	5 G 50	42,7	2880,0	4247,0	1

Dimensions and specifications may be changed without prior notice. (RA01)

JZ-600-Y-CY flexible, number coded, 0,6/1kV, Cu screened meter marking, EMC-preferred type



Technical data

- Adapted to DIN VDE 0262 and DIN VDE 0285-525-2-51/ DIN EN 50525-2-51
- **Temperature range** flexing -15°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Coupling resistance** max. 250 Ohm/km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Radiation resistance** up to 80x10^6 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of Special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Inner sheath of PVC
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- **UV resistant**

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- Further sizes are available on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **JZ-600**, confer page 40

Application

Wiring cable for measuring and controlling purposes in tool machinery, conveyor belts and production lines, for plant installations, air conditioning and in steel production plants and rolling mills. Suitable for installation for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms as well as outside (fixed installation). Is not suitable to be used as direct burial- or as underwater cable. The cores have been numbered in such a way that the numbers are easily identifiable, even if the cable has only been stripped back a few cm. The core numbers have been underlined to avoid confusion. The earth core is located in the outer layer. The black, special PVC outer sheath is resistant to the ultra violet radiation. Mainly used in South-European, Eastern and Arabian countries. Interference-free transmission of signals and pulses is assured by the high degree of screening.

EMC = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11464	2 x 0,5	8,5	41,0	129,0	20
11465	3 G 0,5	8,8	45,0	150,0	20
11466	4 G 0,5	9,4	54,0	170,0	20
11467	5 G 0,5	10,2	66,0	199,0	20
11469	7 G 0,5	10,8	79,0	235,0	20
11472	12 G 0,5	14,3	137,0	320,0	20
11475	18 G 0,5	16,4	156,0	428,0	20
11478	25 G 0,5	19,3	250,0	503,0	20
11489	2 x 0,75	8,8	46,0	143,0	19
11490	3 G 0,75	9,1	57,0	155,0	19
11491	4 G 0,75	9,9	63,0	190,0	19
11492	5 G 0,75	10,6	76,0	228,0	19
11494	7 G 0,75	11,5	100,0	323,0	19
11498	12 G 0,75	15,0	175,0	410,0	19
11501	18 G 0,75	17,2	240,0	560,0	19
11504	25 G 0,75	20,6	306,0	730,0	19

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11516	2 x 1	9,2	54,0	150,0	18
11517	3 G 1	9,8	64,0	163,0	18
11518	4 G 1	10,4	76,0	200,0	18
11519	5 G 1	11,4	89,0	239,0	18
11521	7 G 1	12,3	114,0	289,0	18
11525	12 G 1	15,9	186,0	464,0	18
11528	18 G 1	18,2	284,0	628,0	18
11532	25 G 1	22,0	387,0	855,0	18
11546	2 x 1,5	10,4	64,0	162,0	16
11547	3 G 1,5	10,8	82,0	187,0	16
11548	4 G 1,5	11,5	99,0	240,0	16
11549	5 G 1,5	13,0	123,0	289,0	16
11551	7 G 1,5	14,2	148,0	383,0	16
11556	12 G 1,5	18,4	274,0	592,0	16
11559	18 G 1,5	21,3	386,0	806,0	16
11563	25 G 1,5	25,4	531,0	1241,0	16

Continuation ▸

JZ-600-Y-CY flexible, number coded, 0,6/1kV, Cu screened meter marking,

EMC-preferred type

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11574	2 x 2,5	11,8	110,0	272,0	14
11575	3 G 2,5	12,8	148,0	298,0	14
11576	4 G 2,5	13,8	169,0	345,0	14
11577	5 G 2,5	15,0	220,0	427,0	14
11578	7 G 2,5	16,3	284,0	561,0	14
11580	12 G 2,5	21,6	470,0	857,0	14
11582	18 G 2,5	25,2	572,0	1355,0	14
11584	25 G 2,5	30,0	740,0	1995,0	14
11590	2 x 4	13,6	124,0	306,0	12
11591	3 G 4	14,6	178,0	391,0	12
11592	4 G 4	15,7	234,0	527,0	12
11593	5 G 4	17,2	284,0	700,0	12
11594	7 G 4	18,9	321,0	920,0	12
11596	12 G 4	24,5	581,0	1510,0	12
11597	2 x 6	14,9	176,0	420,0	10
11598	3 G 6	15,9	245,0	629,0	10
11599	4 G 6	17,4	316,0	731,0	10
11600	5 G 6	19,2	442,0	1105,0	10
11601	7 G 6	20,9	530,0	1465,0	10
11602	2 x 10	18,6	260,0	845,0	8
11603	3 G 10	19,8	367,0	1125,0	8
11604	4 G 10	21,5	549,0	1345,0	8
11605	5 G 10	23,5	604,0	1635,0	8
11606	7 G 10	25,6	820,0	2210,0	8
11607	2 x 16	21,8	491,0	1150,0	6
11608	3 G 16	23,4	653,0	1395,0	6
11609	4 G 16	25,7	807,0	1870,0	6
11610	5 G 16	28,5	940,0	2720,0	6
11611	7 G 16	31,4	1345,0	3213,0	6
11612	3 G 25	28,2	920,0	2465,0	4
11613	4 G 25	31,3	1169,0	2750,0	4
11614	5 G 25	34,5	1420,0	3490,0	4
11615	7 G 25	37,8	1921,0	4980,0	4
11616	3 G 35	31,2	1250,0	3230,0	2
11617	4 G 35	34,5	1680,0	4100,0	2
11618	5 G 35	38,0	2020,0	4950,0	2
11619	3 G 50	36,5	1887,0	4590,0	1
11620	4 G 50	40,5	2370,0	5780,0	1
11621	5 G 50	45,2	2880,0	7210,0	1
11622	3 G 70	41,8	2516,0	5610,0	2/0
11623	4 G 70	46,0	3257,0	7480,0	2/0
11624	5 G 70	50,4	4032,0	9390,0	2/0
11625	3 G 95	46,8	3086,0	8585,0	3/0
11626	4 G 95	51,3	4060,0	10220,0	3/0
11627	5 G 95	56,1	5244,0	13800,0	3/0
11628	3 G 120	51,8	4176,0	11105,0	4/0
11629	4 G 120	56,3	5231,0	13750,0	4/0
13137	4 G 150	64,4	7760,0	15990,0	300 kcmil
13147	4 G 185	69,5	8104,0	18470,0	350 kcmil

Dimensions and specifications may be changed without prior notice. (RA01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

Y-CY-JB flexible, Cu-screened, transparent, EMC-preferred type, meter marking



Technical data

- Special-PVC control cable adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51
- **Temperature range** flexing -15°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** up to 1,5 mm² U_0/U 300/500 V from 2,5 mm² U_0/U 450/750 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Mutual capacitance** acc. to different cross-sections 0,5 up to 2,5 mm²: core/core approx. 150 nF/km core/screen approx. 270 nF/km
- **Coupling resistance** max. 250 Ohm/km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, fine wire conductors, bunch stranded to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of special PVC compound type Z 7225
- Core identification to JB/OB colour code
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Inner sheath of PVC
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC
- Sheath colour transparent
- with meter marking

Properties

- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor x = without green-yellow conductor (OB).
- up to 5 cores and cunductor cross-section up to 1,5 mm² with VDE-Reg. No.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **JB-500**, confer page 42 **JB-750**, confer page 43

Application

For use as a data and control cable in machinery, computer systems etc. as well as a signal cable for electronics. The high level of screening ensures a high degree of interference protection. The screening density assures disturbance-free transmission of all signals and impulses. The PVC-inner sheaths of those cables raise the mechanical stress. The applied clear transparent PVC outer sheath accentuates the optical view of the tinned copper braid. These cables are suitable for flexible use for medium mechanical stresses with free movements. The dense screening assures disturbance-free transmission of all signals and impulses. An ideal disturbance-free control cable for the above application.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
16121	2 x 0,5	7,0	41,0	67,0	20
16122	3 G 0,5	7,3	45,0	83,0	20
16123	4 G 0,5	7,9	54,0	94,0	20
16124	5 G 0,5	8,4	66,0	108,0	20
16125	2 x 0,75	7,7	46,0	87,0	19
16126	3 G 0,75	8,0	57,0	98,0	19
16127	4 G 0,75	8,5	63,0	113,0	19
16128	5 G 0,75	9,3	76,0	130,0	19
16129	2 x 1	8,0	54,0	97,0	18
16130	3 G 1	8,3	64,0	103,0	18
16131	4 G 1	9,0	76,0	146,0	18
16132	5 G 1	9,7	89,0	169,0	18
16133	2 x 1,5	8,6	64,0	130,0	16
16134	3 G 1,5	9,2	82,0	152,0	16
16135	4 G 1,5	9,8	99,0	168,0	16
16136	5 G 1,5	10,8	123,0	202,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
16137	2 x 2,5	11,1	110,0	180,0	14
16138	3 G 2,5	11,6	148,0	216,0	14
16139	4 G 2,5	12,7	169,0	267,0	14
16140	5 G 2,5	14,1	220,0	347,0	14
16141	2 x 4	13,3	124,0	302,0	12
16142	3 G 4	14,0	178,0	340,0	12
16143	4 G 4	15,3	234,0	410,0	12
16144	5 G 4	16,7	284,0	502,0	12
16145	2 x 6	14,7	176,0	350,0	10
16146	3 G 6	15,6	245,0	450,0	10
16147	4 G 6	17,0	316,0	559,0	10
16148	5 G 6	18,6	442,0	702,0	10
16149	2 x 10	18,0	260,0	500,0	8
16150	3 G 10	19,0	367,0	750,0	8
16151	4 G 10	21,1	549,0	1020,0	8
16152	5 G 10	23,1	604,0	1115,0	8

Continuation ▸

Y-CY-JB flexible, Cu-screened, transparent, EMC-preferred type, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
16153	4 G 16	25,3	807,0	1380,0	6
16154	5 G 16	28,0	940,0	1553,0	6
16469	4 G 25	31,1	1169,0	1890,0	4
16155	5 G 25	34,3	1420,0	2270,0	4
16470	4 G 35	33,9	1680,0	2390,0	2
16156	5 G 35	37,8	2020,0	2885,0	2

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
16471	4 G 50	40,1	2370,0	3315,0	1
16119	5 G 50	45,0	2880,0	4150,0	1
16472	4 G 70	46,0	3257,0	4600,0	2/0
16473	4 G 95	51,2	4060,0	6060,0	3/0
16474	4 G 120	56,3	5231,0	7315,0	4/0
16247	4 G 150	64,7	7760,0	9340,0	300 kcmil
16319	4 G 185	69,5	8104,0	11120,0	350 kcmil

Dimensions and specifications may be changed without prior notice. (RA01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

SY-JB flexible, colour coded, with steel wire braiding, meter marking



Technical data

- Special-PVC control cable adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51
- **Temperature range** flexing -15°Cto +80°C fixed installation -40°C to +80°C
- **Nominal voltage** up to 2,5 mm² U_0/U 300/500 V from 4,0 mm² U_0/U 450/750 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 20x cable Ø fixed installation 6x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type Z 7225
- Core identification to JB/OB colour code
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Inner sheath of special PVC
- Galvanized steel wire screening
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour transparent
- with meter marking

Properties

- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor x = without green-yellow conductor (OB).
- up to 5 cores and conductor cross-section up to 2,5 mm² with VDE Reg.-No.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- Please note the cleanroom qualification when ordering.
- screened analogue type: **SY-JZ**, confer page 55

Application

SY-JB cables are used as measuring and control cables in tool machinery, plant installation, power stations and in data equipment. The braided screen offers best possible protection against mechanical damage. The galvanized coating on the steel wire braiding not only helps protect against corrosion, but also notably improves the soldering performance.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
12200	2 x 0,5	7,2	9,6	80,0	20
12201	3 G 0,5	7,5	14,4	92,0	20
12202	4 G 0,5	8,1	19,2	102,0	20
12203	5 G 0,5	8,6	24,0	119,0	20
12204	7 G 0,5	9,3	33,6	157,0	20
12205	10 G 0,5	10,7	48,0	205,0	20
12206	12 G 0,5	11,7	58,0	218,0	20
12218	2 x 0,75	7,9	14,4	98,0	19
12219	3 G 0,75	8,2	21,6	103,0	19
12220	4 G 0,75	8,7	28,8	122,0	19
12221	5 G 0,75	9,5	36,0	142,0	19
12312	6 G 0,75	10,1	43,2	180,0	19
12222	7 G 0,75	10,1	50,0	185,0	19
12223	9 G 0,75	11,8	65,0	249,0	19
12313	10 G 0,75	12,0	72,0	252,0	19
12224	12 G 0,75	12,8	86,0	292,0	19
12234	2 x 1	8,2	19,2	112,0	18
12235	3 G 1	8,5	28,8	132,0	18
12236	4 G 1	9,2	38,4	143,0	18
12237	5 G 1	9,9	48,0	166,0	18
12238	6 G 1	10,5	58,0	220,0	18
12239	7 G 1	10,5	67,0	227,0	18
12240	8 G 1	11,4	77,0	277,0	18
12241	9 G 1	12,8	86,0	295,0	18
12242	12 G 1	13,4	115,0	340,0	18
12256	2 x 1,5	8,8	29,0	129,0	16
12257	3 G 1,5	9,4	43,0	149,0	16
12258	4 G 1,5	10,0	58,0	185,0	16
12259	5 G 1,5	10,9	72,0	205,0	16
12260	6 G 1,5	11,8	87,0	255,0	16
12261	7 G 1,5	11,8	101,0	285,0	16
12262	8 G 1,5	12,7	115,0	340,0	16
12263	9 G 1,5	13,9	130,0	347,0	16
12264	10 G 1,5	14,3	144,0	418,0	16
12265	11 G 1,5	14,8	158,0	430,0	16
12266	12 G 1,5	15,0	173,0	444,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
12277	2 x 2,5	10,2	48,0	185,0	14
12278	3 G 2,5	10,9	72,0	248,0	14
12279	4 G 2,5	11,6	96,0	290,0	14
12280	5 G 2,5	12,9	120,0	347,0	14
12281	7 G 2,5	14,2	168,0	420,0	14
12282	12 G 2,5	17,7	288,0	660,0	14
12291	2 x 4	13,6	77,0	330,0	12
12318	3 G 4	14,3	115,0	375,0	12
12292	4 G 4	15,4	154,0	428,0	12
12293	5 G 4	16,9	192,0	504,0	12
12294	7 G 4	18,4	269,0	640,0	12
12295	3 G 6	15,6	173,0	543,0	10
12296	4 G 6	17,0	230,0	571,0	10
12297	5 G 6	18,6	288,0	671,0	10
12298	7 G 6	20,6	403,0	845,0	10
12319	3 G 10	19,2	288,0	735,0	8
12299	4 G 10	21,1	384,0	943,0	8
12300	5 G 10	23,3	480,0	1065,0	8
12301	7 G 10	25,4	672,0	1551,0	8
12320	3 G 16	23,0	461,0	1080,0	6
12302	4 G 16	25,5	614,0	1360,0	6
12303	5 G 16	28,2	768,0	1740,0	6
12304	7 G 16	30,8	1075,0	2166,0	6
12321	3 G 25	28,2	720,0	1630,0	4
12305	4 G 25	31,0	960,0	2020,0	4
12306	5 G 25	34,3	1200,0	2465,0	4
12322	3 G 35	31,0	1008,0	1932,0	2
12307	4 G 35	34,0	1344,0	2570,0	2
12308	5 G 35	38,0	1680,0	3185,0	2
12323	3 G 50	36,7	1440,0	2679,0	1
12309	4 G 50	40,4	1920,0	3513,0	1
12314	5 G 50	45,2	2400,0	4248,0	1
12324	3 G 70	42,3	2016,0	2790,0	2/0
12310	4 G 70	46,2	2688,0	4810,0	2/0
12315	5 G 70	50,5	3360,0	5880,0	2/0

Continuation ▸

SY-JB flexible, colour coded, with steel wire braiding, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
12325	3 G 95	47,2	2736,0	4870,0	3/0
12311	4 G 95	51,3	3648,0	6360,0	3/0
12316	5 G 95	56,3	4560,0	8071,0	3/0
12326	3 G 120	51,9	3456,0	6230,0	4/0
12317	4 G 120	56,4	4608,0	8170,0	4/0
12328	4 G 150	64,4	5760,0	9970,0	300 kcmil

Dimensions and specifications may be changed without prior notice. (RA01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

PUR CONTROL CABLES



JZ-500 PUR tear and coolant resistant, meter marking



Technical data

- Special-PUR control cable adapted to DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range** flexing -15°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3/ DIN EN 50363-3
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of special **full-polyurethane** compound type TMPU to DIN EN 50363-10-2
- Sheath colour grey (RAL 7001) also available in other colours
- with meter marking

Properties

- **Resistant to** UV-Radiation, Oxygene, Ozone and Hydrolysis, Microbes
- Low adhesion, matt surface
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **JZ-500-FC-PUR**, confer page 76

Application

JZ-500 PUR is an extremely robust control cable with high abrasion and tear resistant properties. Due to its high resistance coolant emulsions, it is especially suited for use in the machine, tool making and plant industries as well as in the steel industry for difficult and problem areas. The high flexibility of this cable type makes it quick and easy to install. Suitable for outdoor lying.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
23314	2 x 0,5	4,8	9,6	45,0	20
23315	3 G 0,5	5,1	14,4	55,0	20
23316	3 x 0,5	5,1	14,4	55,0	20
23317	4 G 0,5	5,5	19,0	65,0	20
23318	4 x 0,5	5,5	19,0	65,0	20
23319	5 G 0,5	6,2	24,0	75,0	20
23320	5 x 0,5	6,2	24,0	75,0	20
23321	7 G 0,5	6,7	33,6	90,0	20
23322	7 x 0,5	6,7	33,6	90,0	20
23323	10 G 0,5	8,3	48,0	120,0	20
23324	12 G 0,5	8,7	58,0	135,0	20
23325	18 G 0,5	10,7	86,0	205,0	20
23326	25 G 0,5	12,6	120,0	270,0	20
23327	34 G 0,5	14,3	163,0	380,0	20
23328	42 G 0,5	15,8	202,0	415,0	20
23329	2 x 0,75	5,3	14,4	44,0	19
23330	3 G 0,75	5,6	21,6	53,0	19
23331	3 x 0,75	5,6	21,6	53,0	19
23332	4 G 0,75	6,3	29,0	64,0	19
23333	4 x 0,75	6,3	29,0	64,0	19
23334	5 G 0,75	6,9	36,0	76,0	19
23335	5 x 0,75	6,9	36,0	76,0	19
23336	7 G 0,75	7,5	50,0	96,0	19
23337	7 x 0,75	7,5	50,0	96,0	19
23338	10 G 0,75	9,2	72,0	140,0	19
23339	12 G 0,75	9,8	86,0	170,0	19
23340	18 G 0,75	12,2	130,0	260,0	19
23341	25 G 0,75	14,3	180,0	282,0	19
23342	34 G 0,75	16,5	245,0	475,0	19
23343	42 G 0,75	18,1	302,0	600,0	19
23344	2 x 1	5,6	19,0	53,0	18
23345	3 G 1	5,6	29,0	63,0	18
23346	3 x 1	5,9	29,0	63,0	18
23347	4 G 1	6,6	38,0	75,0	18
23348	4 x 1	6,6	38,0	75,0	18
23349	5 G 1	7,3	48,0	89,0	18
23350	5 x 1	7,3	48,0	89,0	18
23351	7 G 1	8,1	67,0	115,0	18

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
23352	7 x 1	8,1	67,0	115,0	18
23353	10 G 1	9,8	96,0	166,0	18
23354	12 G 1	10,4	115,0	201,0	18
23355	18 G 1	12,9	173,0	289,0	18
23356	25 G 1	15,4	240,0	380,0	18
23357	34 G 1	17,7	326,0	645,0	18
23358	42 G 1	19,5	403,0	730,0	18
23359	50 G 1	21,3	480,0	890,0	18
23360	2 x 1,5	6,4	29,0	68,0	16
23361	3 G 1,5	6,8	43,0	87,0	16
23362	3 x 1,5	6,8	43,0	87,0	16
23363	4 G 1,5	7,4	58,0	106,0	16
23364	4 x 1,5	7,4	58,0	106,0	16
23365	5 G 1,5	8,3	72,0	131,0	16
23366	5 x 1,5	8,3	72,0	131,0	16
23367	7 G 1,5	9,2	101,0	173,0	16
23368	7 x 1,5	9,2	101,0	173,0	16
23369	12 G 1,5	11,8	173,0	293,0	16
23370	18 G 1,5	14,6	259,0	454,0	16
23371	25 G 1,5	17,4	360,0	641,0	16
23372	30 G 1,5	18,6	410,0	800,0	16
23373	2 x 2,5	7,8	48,0	110,0	14
23374	3 G 2,5	8,3	72,0	146,0	14
23375	4 G 2,5	9,2	96,0	183,0	14
23376	5 G 2,5	10,1	120,0	222,0	14
23377	7 G 2,5	11,2	168,0	293,0	14
23378	12 G 2,5	14,8	288,0	512,0	14
23379	4 G 4	10,9	154,0	291,0	12
23380	5 G 4	12,1	192,0	355,0	12
23381	7 G 4	13,2	269,0	503,0	12
23382	4 G 6	13,0	230,0	468,0	10
23383	5 G 6	14,5	288,0	570,0	10
23384	7 G 6	16,2	403,0	808,0	10
23385	4 G 10	16,5	384,0	720,0	8
23386	5 G 10	18,3	480,0	894,0	8
23387	7 G 10	20,2	672,0	1295,0	8
23388	4 G 16	20,1	614,0	1063,0	6

Dimensions and specifications may be changed without prior notice. (RA02)

PURö-JZ tear and coolant resistant, increased oil resistant, meter marking



Technical data

- Special-PUR control cable adapted to DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range** flexing -20°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insualtion of **oil resistant** PVC compound type TI2 adapted to DIN VDE 0207-363-3 / DIN EN 50363-3, for better sliding abilities
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of special **full-polyurethane** compound type TMPU to DIN EN 50363-10-2
- Sheath colour grey (RAL 7001) also available in other colours on request
- with meter marking

Properties

- **Resistant to** UV-Radiation, Oxygene, Ozone Hydrolysis, Microbes
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **F-C-PURö-JZ**, confer page 78, **Yö-C-PURö-JZ**, confer page 80

Application

PURö-JZ is an extremely robust control cable with high abrasion and tear resistant properties. With high-grade oil resistant PVC core insulation. Due to its high resistance to mineral oils and especially to coolant emulsions, it is especially suited for use in the machine, tool making, plant construction as well as in the steel industry for difficult and problem areas. For medium mechanical stress for flexible use with free movement without tensile stress or forced movements in dry, damp and wet rooms and in open air. The high flexibility of this cable type makes it quick and easy to install.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22100	2 x 0,5	4,8	9,6	45,0	20
22101	3 G 0,5	5,1	14,4	55,0	20
22102	4 G 0,5	5,5	19,0	65,0	20
22103	5 G 0,5	6,2	24,0	75,0	20
22104	7 G 0,5	6,7	33,6	90,0	20
22105	8 G 0,5	7,4	38,0	105,0	20
22106	10 G 0,5	8,3	48,0	120,0	20
22107	12 G 0,5	8,7	58,0	135,0	20
22108	14 G 0,5	9,5	67,0	170,0	20
22109	18 G 0,5	10,7	86,0	205,0	20
22110	21 G 0,5	11,3	96,0	225,0	20
22111	25 G 0,5	12,6	120,0	270,0	20
22112	30 G 0,5	13,5	144,0	315,0	20
22113	34 G 0,5	14,3	163,0	380,0	20
22114	42 G 0,5	15,8	202,0	415,0	20
22115	50 G 0,5	17,5	240,0	550,0	20
22116	2 x 0,75	5,3	14,4	44,0	19
22117	3 G 0,75	5,6	21,6	53,0	19
22118	4 G 0,75	6,3	29,0	64,0	19
22119	5 G 0,75	6,9	36,0	76,0	19
22120	7 G 0,75	7,5	50,0	96,0	19
22121	8 G 0,75	8,3	58,0	111,0	19
22122	10 G 0,75	9,2	72,0	140,0	19
22123	12 G 0,75	9,8	86,0	170,0	19
22124	14 G 0,75	10,6	101,0	202,0	19
22125	18 G 0,75	12,2	130,0	260,0	19
22126	21 G 0,75	12,7	151,0	269,0	19
22127	25 G 0,75	14,3	180,0	282,0	19
22128	30 G 0,75	15,3	216,0	400,0	19
22129	34 G 0,75	16,5	245,0	475,0	19
22130	42 G 0,75	18,1	302,0	600,0	19
22131	50 G 0,75	19,8	360,0	720,0	19

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22132	2 x 1	5,6	19,0	53,0	18
22133	3 G 1	5,9	29,0	63,0	18
22134	4 G 1	6,6	38,0	75,0	18
22135	5 G 1	7,3	48,0	89,0	18
22136	7 G 1	8,1	67,0	115,0	18
22137	8 G 1	8,8	77,0	131,0	18
22138	10 G 1	9,8	96,0	166,0	18
22139	12 G 1	10,4	115,0	201,0	18
22140	14 G 1	11,4	134,0	230,0	18
22141	18 G 1	12,9	173,0	289,0	18
22142	21 G 1	13,8	196,0	306,0	18
22143	25 G 1	15,4	240,0	380,0	18
22144	32 G 1	17,1	308,0	620,0	18
22145	34 G 1	17,7	326,0	645,0	18
22146	42 G 1	19,5	403,0	730,0	18
22147	50 G 1	21,3	480,0	890,0	18
22148	2 x 1,5	6,4	29,0	68,0	16
22149	3 G 1,5	6,8	43,0	87,0	16
22150	4 G 1,5	7,4	58,0	106,0	16
22151	5 G 1,5	8,3	72,0	131,0	16
22152	7 G 1,5	9,2	101,0	173,0	16
22153	8 G 1,5	10,0	115,0	199,0	16
22154	10 G 1,5	10,9	144,0	245,0	16
22155	12 G 1,5	11,8	173,0	293,0	16
22156	14 G 1,5	13,0	202,0	347,0	16
22157	18 G 1,5	14,6	259,0	454,0	16
22158	21 G 1,5	15,6	302,0	534,0	16
22159	25 G 1,5	17,4	360,0	641,0	16
22160	30 G 1,5	18,6	410,0	800,0	16
22161	34 G 1,5	20,0	490,0	945,0	16
22162	42 G 1,5	21,8	605,0	1100,0	16
22163	50 G 1,5	24,2	720,0	1250,0	16

Continuation ▸

PURö-JZ tear and coolant resistant, increased oil resistant, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22164	2 x 2,5	7,8	48,0	110,0	14
22165	3 G 2,5	8,3	72,0	146,0	14
22166	4 G 2,5	9,2	96,0	183,0	14
22167	5 G 2,5	10,1	120,0	222,0	14
22168	7 G 2,5	11,2	168,0	293,0	14
22169	12 G 2,5	14,8	288,0	512,0	14
22170	18 G 2,5	18,2	432,0	740,0	14
22171	25 G 2,5	21,6	600,0	940,0	14
22172	2 x 4	9,2	77,0	147,0	12
22173	3 G 4	9,8	115,0	228,0	12
22174	4 G 4	10,9	154,0	291,0	12
22175	5 G 4	12,1	192,0	355,0	12
22176	7 G 4	13,2	269,0	503,0	12
22177	3 G 6	11,9	173,0	362,0	10
22178	4 G 6	13,0	230,0	468,0	10
22179	5 G 6	14,5	288,0	570,0	10
22180	7 G 6	16,2	403,0	808,0	10

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22181	3 G 10	14,9	288,0	555,0	8
22182	4 G 10	16,5	384,0	720,0	8
22183	5 G 10	18,3	480,0	894,0	8
22184	7 G 10	20,2	672,0	1295,0	8
22185	4 G 16	20,1	614,0	1063,0	6
22186	5 G 16	22,6	768,0	1400,0	6
22187	7 G 16	24,8	1075,0	1800,0	6
22188	4 G 25	25,0	960,0	1590,0	4
22189	4 G 35	28,7	1344,0	2200,0	2
22190	4 G 50	34,1	1920,0	2400,0	1
22191	4 G 70	40,2	2688,0	4400,0	2/0
22192	4 G 95	46,0	3648,0	6000,0	3/0

Dimensions and specifications may be changed without prior notice. (RA02)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS
- Cable Gland - HELUTOP® HT-E

PUR-ORANGE high abrasion, coolant resistant, meter marking



Technical data

- Special-PVC/PUR control cable adapted to DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range** flexing -15°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Breakdown voltage** min. 6000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 adapted to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293-308 JZ/OZ-version: black cores with continuous white numbering JB/OB-version: coloured cores
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Inner sheath of PVC guarantees easy cable stripping
- Outer sheath of PUR comapound type TMPU to DIN EN 50363-10-2
- Sheath colour orange (RAL 2003)
- with meter marking

Properties

- High flexibility at low temperature
- High abrasion resistance
- **Resistant to**
  Oils and fats
  Non-alcoholic fuels and kerosene
  Atmospheric influences
  UV-radiation
  Oxygene and ozone
  Microbes and rotting
  Sea and waste water
  Vibrations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ/OB).
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Robust control cable with an outstanding resistance to oil and abrasion. Suitable for use in tool making and machine industries, steel works, on building sites and in the oil and coal industries. The cable can also be used for portable tools etc. To be recommended if the cable comes into contact with chemical agents.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

JZ/OZ-version: cores numbered

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22001	2 x 0,75	6,4	14,4	50,0	19
22002	3 G 0,75	6,8	21,6	70,0	19
22003	4 G 0,75	7,3	28,8	80,0	19
22004	5 G 0,75	8,2	36,0	100,0	19
22005	7 G 0,75	9,2	50,0	140,0	19
22006	2 x 1	7,2	19,2	63,0	18
22007	3 G 1	7,6	29,0	76,0	18
22008	4 G 1	8,0	38,0	95,0	18
22009	5 G 1	8,8	48,0	120,0	18
22010	7 G 1	10,0	67,0	170,0	18
22015	2 x 1,5	7,8	29,0	80,0	16
22016	3 G 1,5	8,3	43,0	105,0	16
22017	4 G 1,5	9,0	58,0	135,0	16
22018	5 G 1,5	9,7	72,0	158,0	16
22019	7 G 1,5	11,2	101,0	221,0	16
22025	2 x 2,5	9,2	48,0	150,0	14
22026	3 G 2,5	9,6	72,0	173,0	14
22027	4 G 2,5	11,0	96,0	203,0	14
22028	5 G 2,5	12,0	120,0	253,0	14
22029	7 G 2,5	13,7	168,0	356,0	14
22033	3 G 4	11,8	115,0	250,0	12
22034	4 G 4	13,2	154,0	300,0	12
22035	5 G 4	14,8	192,0	370,0	12
22036	7 G 4	16,4	269,0	500,0	12
22037	4 G 6	15,4	230,0	480,0	10
22038	5 G 6	17,0	288,0	583,0	10
22039	7 G 6	20,8	403,0	780,0	10
22040	4 G 10	20,8	384,0	740,0	8
22041	5 G 10	22,6	480,0	920,0	8
22042	4 G 16	23,0	614,0	1100,0	6
22043	5 G 16	27,4	768,0	1400,0	6

JB/OB-version: cores colour coded

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22250	2 x 0,75	6,4	14,4	50,0	19
22251	3 G 0,75	6,8	21,6	70,0	19
22252	4 G 0,75	7,3	28,8	80,0	19
22253	5 G 0,75	8,2	36,0	100,0	19
22254	2 x 1	7,2	19,2	63,0	18
22255	3 G 1	7,6	29,0	76,0	18
22256	4 G 1	8,0	38,0	95,0	18
22257	5 G 1	8,8	48,0	120,0	18
22258	2 x 1,5	7,8	29,0	80,0	16
22259	3 G 1,5	8,3	43,0	105,0	16
22260	4 G 1,5	9,0	58,0	135,0	16
22261	5 G 1,5	9,7	72,0	158,0	16
22262	2 x 2,5	9,2	48,0	150,0	14
22263	3 G 2,5	9,6	72,0	173,0	14
22264	4 G 2,5	11,0	96,0	203,0	14
22265	5 G 2,5	12,0	120,0	253,0	14
22266	4 G 4	13,2	154,0	300,0	12
22267	5 G 4	14,8	192,0	370,0	12
22268	4 G 6	15,4	230,0	480,0	10
22269	5 G 6	17,0	288,0	583,0	10
22270	4 G 10	20,8	384,0	740,0	8
22271	5 G 10	22,6	480,0	920,0	8
22272	4 G 16	23,0	614,0	1100,0	6
22273	5 G 16	27,4	768,0	1400,0	6
22044	4 G 25	30,0	960,0	1600,0	4
22045	5 G 25	32,2	1200,0	2000,0	4
22046	4 G 35	33,0	1344,0	2100,0	2

Dimensions and specifications may be changed without prior notice. (RA02)

PUR-YELLOW PVC-inner sheath, high abrasion, coolant resistant, meter marking



Technical data

- Special-PVC/PUR control cable adapted to DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range** flexing -15°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Breakdown voltage** min. 6000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 adapted to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293-308
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Inner sheath of PVC guarantees easy cable stripping
- Outer sheath of PUR compound type TMPU to DIN EN 50363-10-2
- Sheath colour yellow (RAL 1021) also available in other colours on request
- with meter marking

Properties

- High flexibility at low temperature
- High abrasion resistance
- **Resistant to**
  Oils and fats
  Non-alcoholic fuels and kerosene
  Atmospheric influences
  UV-radiation
  Oxygene and ozone
  Microbes and rotting
  Sea and waste water
  Vibrations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OB).
- Art.no. 22212 = JB-version.
- Art.no. 22220 = JZ-version.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Robust control cable with an outstanding resistance to oil and abrasion. Suitable for use in tool making and machine industries, steel works, on building sites and in the oil and coal industries. The cable can also be used for portable tools. etc. To be recommended if the cable comes into contact with chemical agents.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22200	2 x 0,75	6,4	14,4	50,0	19
22201	3 G 0,75	6,8	21,6	70,0	19
22202	4 G 0,75	7,3	28,8	80,0	19
22203	5 G 0,75	8,2	36,0	100,0	19
22204	7 G 0,75	9,2	50,0	140,0	19
22205	2 x 1	7,2	19,2	63,0	18
22206	3 G 1	7,6	29,0	76,0	18
22207	4 G 1	8,0	38,0	95,0	18
22208	5 G 1	8,8	48,0	120,0	18
22209	7 G 1	10,0	67,0	170,0	18
22210	2 x 1,5	7,8	29,0	80,0	16
22211	3 G 1,5	8,3	43,0	105,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22212	4 G 1,5	9,0	58,0	135,0	16
22220	4 G 1,5	9,7	58,0	135,0	16
22213	5 G 1,5	11,2	72,0	158,0	16
22214	7 G 1,5	9,2	101,0	221,0	16
22215	2 x 2,5	9,6	48,0	150,0	14
22216	3 G 2,5	11,0	72,0	173,0	14
22217	4 G 2,5	12,0	96,0	203,0	14
22218	5 G 2,5	13,7	120,0	253,0	14
22219	7 G 2,5	9,0	168,0	356,0	14
22221	4 G 4	14,6	153,6	310,0	12
22222	5 G 4	14,8	192,0	370,0	12
22233	4 G 35	33,0	1344,0	2100,0	2

Dimensions and specifications may be changed without prior notice. (RA02)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS
- Cable Gland - HELUTOP® HT-E

H05BQ-F / H07BQ-F (NGMH11YÖ)



Technical data

- EPR/PUR-insulated power cable acc. to DIN VDE 0285-525-2-21 / DIN EN 50525-2-21
- **Temperature range**
  flexing -40°C to +80°C
  fixed installation -50°C to +90°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage**
  H05BQ-F U_0/U 300/500 V
  H07BQ-F U_0/U 450/750 V
- **Test voltage**
  H05BQ-F 2000 V
  H07BQ-F 2500 V
- **Minimum bending radius**
  flexing 5x cable Ø
  fixed installation 3x cable Ø
- **Radiation resistance**
  up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of rubber compound type EI6 to DIN VDE 0207-363-1 / DIN EN 50363-1
- Core identification to DIN VDE 0293-308
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length (inner fill compound permissible *)
- Outer sheath of PUR compound type TMPU to DIN EN 50363-10-2
- Sheath colour orange (RAL 2003)

Properties

- Abrasion resistant
- Notch resistant
- Resistant to tearing and cutting
- **Resistant to**
  Oils, fats, Petrol
  Water and weathering effects
  Oxygene and ozone
  UV-radiation, Hydrolysis and Microbial attack
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- adapted to VDE
  7G1,5 mm², 12G1,5 mm² and cross-section > 16 mm²
  designation 07BQ-F
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- *) Version with filler compound

Application

These cables can be used for medium mechanical loads in dry, damp or wet environments, e. g. for connecting agricultural and commercial equipment and heaters provided there is no danger of contact with the hot parts or by radiation of heat. These robust and flexible cables are used for electrical tools such as drills and hand-held circular saws, as well as for portable motors and machinery in agriculture, at building sites, docks and refrigeration plants.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

H05BQ-F

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22050	2 x 0,75	5,7 - 7,4	14,4	52,0	19
22051	3 G 0,75	6,2 - 8,1	21,6	63,0	19
22052	4 G 0,75	6,8 - 8,8	29,0	80,0	19
22053	5 G 0,75	7,6 - 9,9	36,0	96,0	19
22054	2 x 1	6,1 - 8,0	19,2	59,0	18
22055	3 G 1	6,5 - 8,5	29,0	71,0	18
22056	4 G 1	7,1 - 9,3	38,4	89,0	18
22057	5 G 1	8,0 - 10,3	48,0	112,0	18

H07BQ-F

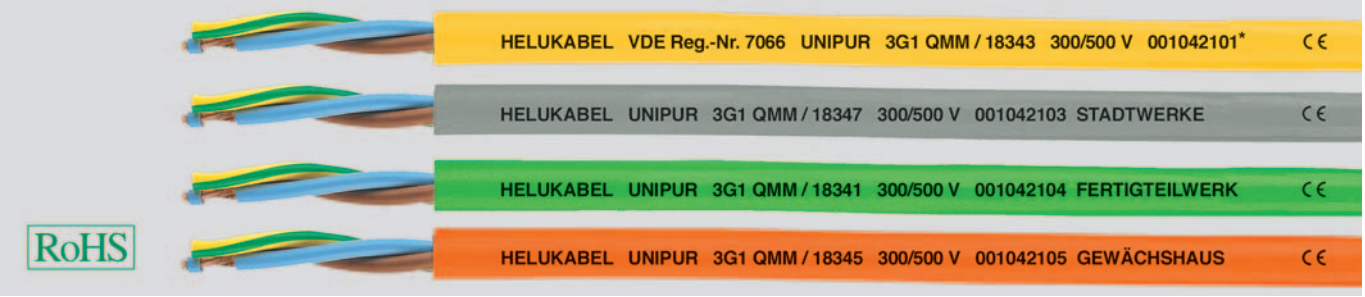
Part no.	*)	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22058	220958	2 x 1,5	7,6 - 9,8	29,0	92,0	16
22059	220959	3 G 1,5	8,0 - 10,4	43,0	109,0	16
22060	220960	4 G 1,5	9,0 - 11,6	58,0	145,0	16
22061	220961	5 G 1,5	9,8 - 12,7	72,0	169,0	16
22062	220962	7 G 1,5	12,2 - 15,1	101,0	230,0	16
22063	220963	12 G 1,5	15,0 - 18,4	173,0	398,0	16
22064	220964	2 x 2,5	9,0 - 11,6	48,0	121,0	14
22065	220965	3 G 2,5	9,6 - 12,4	72,0	164,0	14
22066	220966	4 G 2,5	10,7 - 13,8	96,0	207,0	14
22067	220967	5 G 2,5	11,9 - 16,3	120,0	262,0	14
22072	220972	2 x 4	10,6 - 13,7	77,0	194,0	12
22068	220968	3 G 4	11,3 - 14,5	115,0	224,0	12
22069	220969	4 G 4	12,7 - 16,2	154,0	327,0	12
22080	220980	5 G 4	14,1 - 17,9	192,0	415,0	12
22073	220973	2 x 6	11,8 - 15,1	115,0	311,0	10
22070	220970	3 G 6	12,8 - 16,3	173,0	310,0	10
22071	220971	4 G 6	14,2 - 18,1	230,0	496,0	10
22081	220981	5 G 6	15,7 - 20,0	288,0	586,0	10

H07BQ-F

Part no.	*)	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22074	220974	2 x 10	15,6 - 19,9	192,0	428,0	8
22076	220976	3 G 10	16,8 - 21,4	288,0	640,0	8
22078	220978	4 G 10	18,6 - 23,6	384,0	738,0	8
22082	220982	5 G 10	20,4 - 25,9	480,0	968,0	8
22075	220975	2 x 16	17,9 - 22,8	307,0	600,0	6
22077	220977	3 G 16	19,5 - 24,7	461,0	758,0	6
22079	220979	4 G 16	21,3 - 27,0	614,0	1187,0	6
22083	220983	5 G 16	23,7 - 30,0	768,0	1475,0	6
22828	228928	4 G 25	26,7 - 32,6	960,0	1550,0	4
22829	228929	5 G 25	29,6 - 36,1	1220,0	1920,0	4
22830	228930	4 G 35	31,3 - 38,2	1344,0	2120,0	2
22831	228931	5 G 35	34,5 - 42,0	1680,0	2600,0	2
22832	228932	4 G 50	34,9 - 42,6	1920,0	2920,0	1
22833	228933	5 G 50	38,6 - 47,0	2400,0	3700,0	1
22835	228935	4 G 70	38,9 - 47,3	2688,0	3900,0	2/0
22836	228936	5 G 70	43,0 - 52,3	3368,0	5020,0	2/0
22837	228937	4 G 95	44,9 - 54,6	3648,0	5150,0	3/0
22838	228938	5 G 95	49,7 - 60,4	4560,0	6520,0	3/0
22839	228939	4 G 120	47,9 - 58,2	4608,0	6550,0	4/0
22840	228940	5 G 120	53,1 - 64,5	5760,0	8050,0	4/0
22841	228941	4 G 150	53,5 - 65,0	5760,0	7950,0	300 kcmil
22842	228942	5 G 185	65,6 - 79,6	7104,0	9350,0	350 kcmil
22843	228943	4 G 240	68,1 - 82,6	9216,0	12200,0	500 kcmil

Dimensions and specifications may be changed without prior notice. (RA02)

UNIPUR® flexible at low temperature, with customer markings, halogen-free, wear resistant, robust, meter marking



Technical data

- Spezial TPE/PUR connecting cable adapted to DIN VDE 0285-525-2-21/ DIN EN 50525-2-21
- **Temperature range** flexing -40°C to +90°C
- **Nominal voltage** up to 1 mm² U_0/U 300/500 V from 1,5 mm² U_0/U 450/750 V
- **Test voltage** 3000 V
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Radiation resistance** up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of termoplastic elastomere (TPE)
- Core identification to DIN VDE 0293-308
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Outer sheath of PUR compound type TMPU adapted to DIN EN 50363-10-2
- Sheath colour by request
- with meter marking

Properties

- Abrasion resistant, Notch resistant
- Resistant to tearing and cutting
- Good flexibility at low temperatures down to -40°C
- **Resistant to**
  Oils and fats
  Water and weathering effects
  Ozone and oxygen
  UV-radiation
  Hydrolysis
  Microbial attack
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OB).
- Please add the individual part no. for order with the identification colour code:
  0 = approx.RAL 5015 blue
  1 = approx.RAL 6018 green
  2 = approx.RAL 8003 brown
  3 = approx.RAL 1021 yellow*
  4 = approx.RAL 3000 red
  5 = approx.RAL 2003 orange
  6 = approx.RAL 4005 violet
  7 = approx.RAL 7001/7032 grey
  Further colours on request.
  *with yellow outer sheath as storage types
- VDE-Reg.No. cable with 2-7 cores
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **UNIPUR®-CP**, confer page 82

Application

These robust and flexible cables are used for electrical tools such as drills, hand-held circular saws, and garden equipment as well as for portable motors and machinery in agriculture, at building sites, for hobbies, docks and refrigeration plants.
Extremely good mechanical characteristies e. g. compressive load, good abrasion and near-resistant.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
1812x	2 x 0,5	5,8	9,6	40,0	20
1813x	3 G 0,5	6,1	14,4	47,0	20
1814x	4 G 0,5	6,7	19,0	57,0	20
1815x	5 G 0,5	7,5	24,0	65,0	20
1816x	7 G 0,5	9,0	33,6	94,0	20
1817x	12 G 0,5	10,7	58,0	150,0	20
1818x	18 G 0,5	13,0	86,0	208,0	20
1819x	25 G 0,5	15,6	120,0	276,0	20
1820x	34 G 0,5	17,9	163,0	393,0	20
1821x	41 G 0,5	19,6	197,0	460,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
1822x	2 x 0,75	6,3	14,0	52,0	19
1823x	3 G 0,75	6,9	21,6	62,0	19
1824x	4 G 0,75	7,5	28,8	80,0	19
1825x	5 G 0,75	8,3	36,0	94,0	19
1826x	6 G 0,75	9,0	43,0	111,0	19
1827x	7 G 0,75	9,8	50,0	160,0	19
1828x	12 G 0,75	11,6	86,0	191,0	19
1829x	18 G 0,75	14,1	130,0	267,0	19
1830x	25 G 0,75	17,0	180,0	376,0	19
1831x	34 G 0,75	19,5	245,0	506,0	19
1832x	41 G 0,75	21,2	296,0	596,0	19

Continuation ▸

UNIPUR® flexible at low temperature, with customer markings, halogen-free, wear resistant, robust, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
1833x	2 x 1	6,8	19,2	59,0	18
1834x	3 G 1	7,2	29,0	70,0	18
1835x	4 G 1	7,8	38,0	87,0	18
1836x	5 G 1	8,8	48,0	100,0	18
1837x	6 G 1	9,7	58,0	131,0	18
1838x	7 G 1	10,6	67,0	182,0	18
1839x	12 G 1	12,6	115,0	230,0	18
1840x	18 G 1	15,3	173,0	325,0	18
1841x	25 G 1	18,3	240,0	476,0	18
1842x	34 G 1	21,0	326,0	616,0	18
1843x	41 G 1	22,9	394,0	724,0	18
1844x	2 x 1,5	8,3	29,0	92,0	16
1845x	3 G 1,5	8,8	43,0	108,0	16
1846x	4 G 1,5	9,7	58,0	144,0	16
1847x	5 G 1,5	10,7	72,0	168,0	16
1848x	6 G 1,5	11,8	86,0	201,0	16
1849x	7 G 1,5	12,9	101,0	230,0	16
1850x	12 G 1,5	15,5	173,0	306,0	16
1851x	18 G 1,5	18,7	259,0	464,0	16
1852x	25 G 1,5	22,9	360,0	641,0	16
1853x	34 G 1,5	25,9	490,0	857,0	16
1854x	41 G 1,5	28,3	590,0	1010,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
1855x	2 x 2,5	9,9	48,0	120,0	14
1856x	3 G 2,5	10,5	72,0	148,0	14
1857x	4 G 2,5	11,6	96,0	184,0	14
1858x	5 G 2,5	13,0	120,0	224,0	14
1859x	7 G 2,5	15,5	168,0	301,0	14
1860x	12 G 2,5	19,2	288,0	489,0	14
1861x	2 x 4	11,5	77,0	149,0	12
1862x	3 G 4	12,2	115,0	240,0	12
1863x	4 G 4	13,5	154,0	297,0	12
1864x	5 G 4	15,0	192,0	360,0	12
1865x	7 G 4	18,3	268,0	540,0	12
1866x	2 x 6	13,1	115,0	240,0	10
1867x	3 G 6	14,1	173,0	370,0	10
1868x	4 G 6	15,6	230,0	472,0	10
1869x	5 G 6	17,3	288,0	581,0	10
1870x	7 G 6	21,0	403,0	698,0	10
1871x	3 G 10	18,0	288,0	560,0	8
1872x	4 G 10	20,1	384,0	718,0	8
1873x	5 G 10	22,2	480,0	896,0	8
1874x	3 G 16	23,4	461,0	940,0	6
1875x	4 G 16	25,5	614,0	1068,0	6
1876x	5 G 16	28,3	768,0	1810,0	6

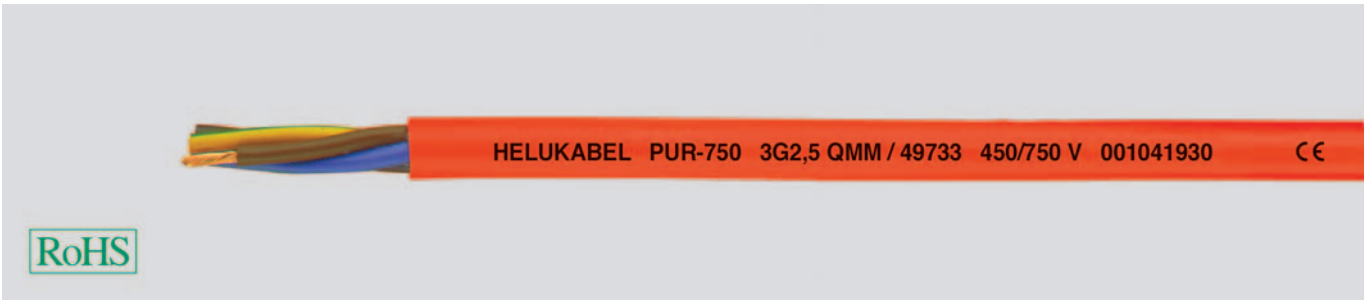
Dimensions and specifications may be changed without prior notice. (RA02)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS
- Cable Gland - HELUTOP® HT-E

PUR-750 halogen-free, meter marking



Technical data

- Special-PUR control cable adapted to DIN VDE 0285-525-2-21/ DIN EN 50525-2-21
- **Temperature range**
  flexing -40°C to +80°C
  (up to +100°C for short periods)
- **Nominal voltage**
  up to 1 mm² U_0/U 300/500 V
  from 1,5 mm² U_0/U 450/750 V
- **Test voltage**
  up to 1 mm² 2000 V
  from 1,5 mm² 2500 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Radiation resistance**
  up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation PUR
- Core identification to DIN VDE 0293-308
  - for 2 cores, BN, BU
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of halogen-free PUR
- Sheath colour orange (RAL 2004)
- with meter marking

Properties

- High flexibility at low temperature
- Usable for foodstuffs
- High abrasion resistance
- **Resistant to**
  Oils and fats
  Non-alcoholic fuels and kerosene
  Atmospheric influences, UV-radiation
  Oxygene and ozone
  Microbes and rotting
  Sea and waste water
  vibrations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

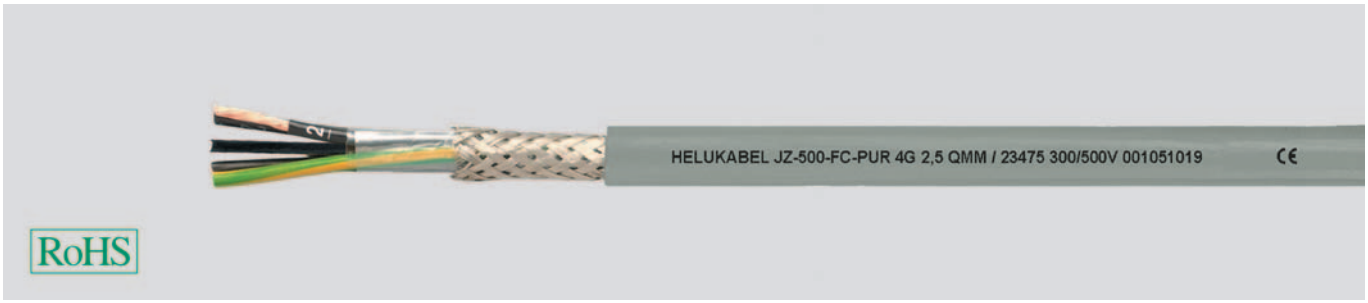
Especially suited for installation in all areas demanding good performance under extreme conditions. These cable types have been successfully in use in areas such as steel works, heating and air-conditioning systems, in machinery and industrial plant equipment and on building sites etc.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
49700	2 x 0,75	6,3	15,0	44,0	19
49701	3 G 0,75	6,8	22,0	55,0	19
49702	4 G 0,75	7,4	29,0	70,0	19
49703	5 G 0,75	8,3	36,0	91,0	19
49704	7 G 0,75	9,7	50,0	130,0	19
49705	12 G 0,75	12,1	86,0	192,0	19
49706	18 G 0,75	14,2	130,0	290,0	19
49707	25 G 0,75	17,6	180,0	405,0	19
49708	2 x 1	6,8	20,0	50,0	18
49709	3 G 1	7,2	29,0	65,0	18
49710	4 G 1	7,8	38,0	87,0	18
49711	5 G 1	8,8	48,0	106,0	18
49712	6 G 1	9,5	58,0	135,0	18
49713	7 G 1	10,4	67,0	160,0	18
49714	8 G 1	11,4	77,0	185,0	18
49715	10 G 1	12,8	96,0	210,0	18
49716	12 G 1	12,8	115,0	240,0	18
49717	16 G 1	14,4	154,0	310,0	18
49718	18 G 1	15,3	173,0	353,0	18
49719	20 G 1	16,4	192,0	390,0	18
49720	25 G 1	18,8	240,0	495,0	18
49721	2 x 1,5	8,2	29,0	70,0	16
49722	3 G 1,5	8,7	43,0	95,0	16
49723	4 G 1,5	9,7	58,0	120,0	16
49724	5 G 1,5	10,6	72,0	164,0	16
49725	7 G 1,5	12,8	101,0	210,0	16
49726	10 G 1,5	15,8	150,0	290,0	16
49727	12 G 1,5	15,8	172,0	340,0	16
49728	16 G 1,5	17,9	230,0	440,0	16
49729	18 G 1,5	18,8	259,0	508,0	16
49730	20 G 1,5	20,0	300,0	560,0	16
49731	25 G 1,5	23,5	360,0	722,0	16
49732	2 x 2,5	9,8	48,0	110,0	14
49733	3 G 2,5	10,5	72,0	150,0	14
49734	4 G 2,5	11,6	96,0	180,0	14
49735	5 G 2,5	13,0	120,0	240,0	14
49736	7 G 2,5	15,5	168,0	340,0	14
49737	12 G 2,5	19,3	288,0	520,0	14
49738	16 G 2,5	21,6	394,0	680,0	14

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
49739	18 G 2,5	23,0	432,0	778,0	14
49740	20 G 2,5	24,4	480,0	860,0	14
49741	25 G 2,5	28,5	600,0	1083,0	14
49742	3 G 4	12,2	115,0	220,0	12
49743	4 G 4	13,4	154,0	280,0	12
49744	5 G 4	15,1	192,0	350,0	12
49745	7 G 4	18,2	269,0	470,0	12
49746	4 G 6	15,8	230,0	400,0	10
49747	5 G 6	17,3	288,0	500,0	10
49748	7 G 6	21,0	403,0	700,0	10
49749	4 G 10	20,4	384,0	640,0	8
49750	5 G 10	22,5	480,0	800,0	8
49751	7 G 10	26,6	672,0	1180,0	8
49752	4 G 16	23,3	614,0	920,0	6
49753	5 G 16	25,9	768,0	1180,0	6
49754	4 G 25	27,3	960,0	1400,0	4
49755	5 G 25	30,4	1200,0	1740,0	4
49756	4 G 35	31,0	1344,0	1870,0	2
49757	5 G 35	34,8	1680,0	2320,0	2
49758	4 G 50	36,8	1920,0	2700,0	1
49759	5 G 50	41,2	2400,0	3300,0	1
49760	4 G 70	43,2	2688,0	3700,0	2/0
49761	5 G 70	48,2	3660,0	4900,0	2/0
49918	4 G 95	48,7	3648,0	4850,0	3/0
49762	5 G 95	54,5	4560,0	6000,0	3/0
49763	4 G 120	54,9	4610,0	6005,0	4/0

Dimensions and specifications may be changed without prior notice. (RA02)

JZ-500-FC-PUR EMC-preferred type, tear and coolant resistant, screened, without inner sheath, meter marking



Technical data

- Special-PUR control cable adapted to DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range** flexing -10°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Breakdown voltage** min. 6000 V
- **Coupling resistance** max. 250 Ohm/km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Separating foil
- Tinned copper braided screen, approx. 85% coverage
- Core wrapping of fleece guarantees easy cable stripping
- Outer sheath from special **full polyurethane** compound type TMPU to DIN EN 50363-10-2
- Sheath colour grey (RAL 7001) also available in other colours on request
- with meter marking

Properties

- **Resistant to** UV-radiation, Oxygen, Ozone,Hydrolyse and Microbes
- Low adhesion, matt surface
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **JZ-500-PUR**, confer page 67

Application

Extremely robust cable noted for its good abrasion resistance and notch resistance. Due to its resistance to coolant emulsions, this cable is well suited for use in mechanical engineering, tool making, and systems engineering, and in steel mills and rolling mills in particularly critical areas. Good flexibility means that installation is quick and easy. Suitable for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms, and in open air (fixed installation). The dense screening assures interference-free transmission of all signals and impulses. An ideal interference-free control cable for the above applications.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
23414	2 x 0,5	5,7	35,0	47,0	20
23415	3 G 0,5	5,9	42,0	57,0	20
23416	3 x 0,5	5,9	42,0	57,0	20
23417	4 G 0,5	6,4	47,0	60,0	20
23418	4 x 0,5	6,4	47,0	60,0	20
23419	5 G 0,5	6,9	56,0	75,0	20
23420	5 x 0,5	6,9	56,0	75,0	20
23421	7 G 0,5	7,6	69,0	97,0	20
23422	7 x 0,5	7,6	69,0	97,0	20
23423	10 G 0,5	9,6	94,0	133,0	20
23424	12 G 0,5	9,7	108,0	158,0	20
23425	18 G 0,5	11,5	145,0	218,0	20
23426	25 G 0,5	13,7	240,0	315,0	20
23427	34 G 0,5	15,5	312,0	420,0	20
23428	42 G 0,5	16,9	355,0	487,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
23429	2 x 0,75	6,1	40,0	60,0	19
23430	3 G 0,75	6,3	52,0	67,0	19
23431	3 x 0,75	6,3	52,0	67,0	19
23432	4 G 0,75	6,8	60,0	76,0	19
23433	4 x 0,75	6,8	60,0	76,0	19
23435	5 x 0,75	7,4	71,0	92,0	19
23434	5 G 0,75	7,4	71,0	92,0	19
23437	7 x 0,75	8,2	91,0	131,0	19
23436	7 G 0,75	8,2	91,0	131,0	19
23438	10 G 0,75	10,3	137,0	180,0	19
23439	12 G 0,75	10,5	142,0	204,0	19
23440	18 G 0,75	12,7	212,0	290,0	19
23441	25 G 0,75	15,0	281,0	413,0	19
23442	34 G 0,75	17,2	345,0	492,0	19
23443	42 G 0,75	18,8	407,0	624,0	19

Continuation ▸

JZ-500-FC-PUR EMC-preferred type, tear and coolant resistant, screened, without inner sheath, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
23444	2 x 1	6,4	50,0	66,0	18
23445	3 G 1	6,7	60,0	82,0	18
23446	3 x 1	6,7	60,0	82,0	18
23447	4 G 1	7,2	71,0	100,0	18
23448	4 x 1	7,2	71,0	100,0	18
23449	5 G 1	8,0	88,0	128,0	18
23450	5 x 1	8,0	88,0	128,0	18
23451	7 G 1	8,7	111,0	157,0	18
23452	7 x 1	8,7	111,0	157,0	18
23453	10 G 1	11,2	150,0	230,0	18
23454	12 G 1	11,4	184,0	262,0	18
23455	18 G 1	13,6	260,0	381,0	18
23456	25 G 1	16,2	349,0	535,0	18
23457	34 G 1	18,5	486,0	740,0	18
23458	42 G 1	20,2	545,0	867,0	18
23459	50 G 1	22,0	625,0	1027,0	18
23460	2 x 1,5	7,0	63,0	87,0	16
23461	3 G 1,5	7,4	80,0	102,0	16
23462	3 x 1,5	7,4	80,0	102,0	16
23463	4 G 1,5	8,1	97,0	127,0	16
23464	4 x 1,5	8,1	97,0	127,0	16
23465	5 G 1,5	9,0	119,0	159,0	16
23466	5 x 1,5	9,0	119,0	159,0	16
23467	7 G 1,5	9,8	147,0	207,0	16
23468	7 x 1,5	9,8	147,0	207,0	16
23469	12 G 1,5	12,8	267,0	340,0	16
23470	18 G 1,5	15,6	374,0	480,0	16
23471	25 G 1,5	18,4	526,0	704,0	16
23472	30 G 1,5	19,6	555,0	817,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
23473	2 x 2,5	8,4	96,0	131,0	14
23474	3 G 2,5	8,8	144,0	168,0	14
23475	4 G 2,5	9,8	148,0	194,0	14
23476	5 G 2,5	10,8	181,0	222,0	14
23477	7 G 2,5	11,9	255,0	345,0	14
23478	12 G 2,5	15,8	441,0	570,0	14
23479	4 G 4	11,6	230,0	310,0	12
23480	5 G 4	12,9	273,0	386,0	12
23481	7 G 4	14,2	316,0	498,0	12
23482	4 G 6	13,8	305,0	414,0	10
23483	5 G 6	15,4	439,0	510,0	10
23484	7 G 6	17,0	505,0	673,0	10
23485	4 G 10	17,2	535,0	591,0	8
23486	5 G 10	19,1	592,0	768,0	8
23487	7 G 10	21,2	810,0	976,0	8
23488	4 G 16	20,3	740,0	1196,0	6

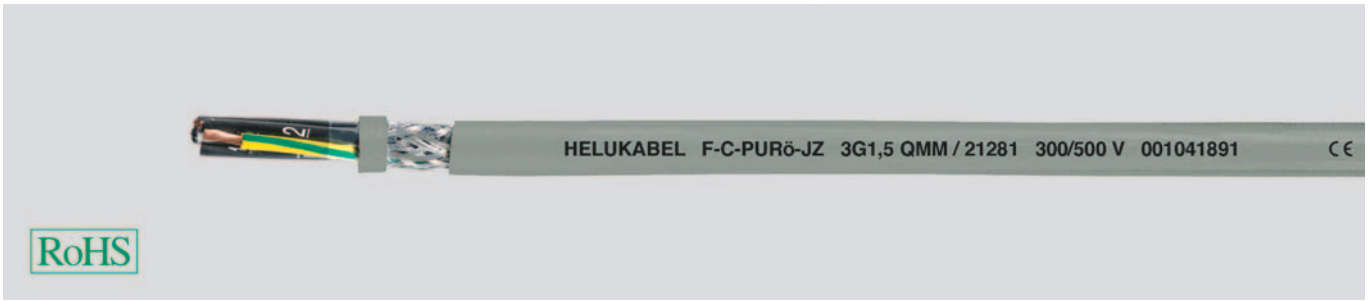
Dimensions and specifications may be changed without prior notice. (RA02)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS
- Cable Gland - HELUTOP® HT-E

F-C-PURö-JZ tear and coolant resistant, Cu-screened, without inner sheath, increased oil resistant, EMC-preferred type, meter marking



Technical data

- Special-PUR control cable adapted to DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range** flexing -20°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Breakdown voltage** min. 6000 V
- **Coupling resistance** max. 250 Ohm/km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of **oil resistant** PVC compound type TI2 adapted to DIN VDE 0207-363-3 / DIN EN 50363-3 for better sliding abilities
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Separating foil
- Tinned copper braided screen, approx. 85% coverage
- Core wrapping of fleece guarantees easy cable stripping
- Outer sheath of special **full-polyurethane** compound type TMPU to DIN EN 50363-10-2
- Sheath colour grey (RAL 7001) also available in other colours on request
- with meter marking

Properties

- **Resistant to**
  UV-Radiation
  Oxygene
  Ozone
  Hydrolysis
  Microbes
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **PURö-JZ**, confer page 68

Application

Extremely robust control cable characterised by high abrasion and notch resistance properties. Used for critical areas in such applications as machinery, tooling and plant construction, in rolling mills and steel works because of the resistance to mineral oils and to coolant emulsions in particular. Rapid and safe installation assured by the good flexibility of the cable. Suitable for outdoor installation.
An interference-free transmission of signals and pulses is assured by the high screening density. The ideal interference-protected control cable for such applications as given above.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
21200	2 x 0,5	5,7	35,0	44,0	20
21201	3 G 0,5	5,9	42,0	56,0	20
21202	4 G 0,5	6,4	47,0	60,0	20
21203	5 G 0,5	6,9	56,0	75,0	20
21205	7 G 0,5	7,6	69,0	97,0	20
21207	10 G 0,5	9,6	94,0	133,0	20
21208	12 G 0,5	9,7	108,0	158,0	20
21209	14 G 0,5	10,2	116,0	190,0	20
21211	18 G 0,5	11,5	145,0	218,0	20
21213	21 G 0,5	12,3	188,0	252,0	20
21215	25 G 0,5	13,7	240,0	315,0	20
21217	30 G 0,5	14,4	295,0	362,0	20
21220	36 G 0,5	15,6	318,0	447,0	20
21221	40 G 0,5	16,4	343,0	475,0	20
21224	50 G 0,5	18,5	406,0	572,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
21227	2 x 0,75	6,1	40,0	60,0	19
21228	3 G 0,75	6,3	52,0	67,0	19
21229	4 G 0,75	6,8	60,0	76,0	19
21230	5 G 0,75	7,4	71,0	92,0	19
21232	7 G 0,75	8,2	91,0	131,0	19
21234	10 G 0,75	10,3	137,0	180,0	19
21235	12 G 0,75	10,5	142,0	204,0	19
21236	14 G 0,75	11,3	180,0	226,0	19
21238	18 G 0,75	12,7	212,0	290,0	19
21240	21 G 0,75	13,6	246,0	376,0	19
21242	25 G 0,75	15,0	281,0	413,0	19
21245	32 G 0,75	16,7	342,0	485,0	19
21249	41 G 0,75	18,2	400,0	611,0	19
21251	50 G 0,75	20,3	461,0	775,0	19

Continuation ▸

F-C-PURö-JZ tear and coolant resistant, Cu-screened, without inner sheath, increased oil resistant, EMC-preferred type, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
21253	2 x 1	6,4	50,0	66,0	18
21254	3 G 1	6,7	60,0	82,0	18
21255	4 G 1	7,2	71,0	100,0	18
21256	5 G 1	8,0	88,0	128,0	18
21257	6 G 1	8,7	97,0	145,0	18
21258	7 G 1	8,7	111,0	157,0	18
21259	8 G 1	9,6	127,0	198,0	18
21261	10 G 1	11,2	150,0	230,0	18
21262	12 G 1	11,4	184,0	262,0	18
21263	14 G 1	12,0	196,0	302,0	18
21264	16 G 1	12,8	209,0	345,0	18
21265	18 G 1	13,6	260,0	381,0	18
21267	21 G 1	14,3	319,0	480,0	18
21268	25 G 1	16,2	349,0	535,0	18
21273	34 G 1	18,5	486,0	740,0	18
21276	41 G 1	19,5	531,0	855,0	18
21278	50 G 1	22,0	625,0	1027,0	18
21280	2 x 1,5	7,0	63,0	87,0	16
21281	3 G 1,5	7,4	80,0	102,0	16
21282	4 G 1,5	8,1	97,0	127,0	16
21283	5 G 1,5	9,0	119,0	159,0	16
21285	7 G 1,5	9,8	147,0	207,0	16
21286	8 G 1,5	10,8	170,0	245,0	16
21287	10 G 1,5	12,6	193,0	313,0	16
21288	12 G 1,5	12,8	267,0	340,0	16
21290	14 G 1,5	13,5	283,0	384,0	16
21291	16 G 1,5	14,6	315,0	425,0	16
21292	18 G 1,5	15,6	374,0	480,0	16
21295	21 G 1,5	16,6	425,0	563,0	16
21296	25 G 1,5	18,5	526,0	704,0	16
21297	34 G 1,5	21,2	629,0	870,0	16
21298	42 G 1,5	22,2	819,0	1040,0	16
21299	50 G 1,5	25,0	885,0	1292,0	16
21300	2 x 2,5	8,4	96,0	131,0	14
21301	3 G 2,5	8,8	144,0	168,0	14
21302	4 G 2,5	9,8	148,0	194,0	14
21303	5 G 2,5	10,8	181,0	222,0	14
21304	7 G 2,5	11,9	255,0	345,0	14
21305	10 G 2,5	15,5	340,0	462,0	14
21306	12 G 2,5	15,8	441,0	570,0	14
21313	2 x 4	10,0	120,0	187,0	12
21314	3 G 4	10,6	174,0	243,0	12
21315	4 G 4	11,6	230,0	310,0	12
21316	5 G 4	12,8	273,0	386,0	12
21317	7 G 4	14,2	316,0	498,0	12
21319	3 G 6	12,5	240,0	333,0	10
21320	4 G 6	13,8	305,0	414,0	10
21321	5 G 6	15,4	439,0	510,0	10
21322	7 G 6	17,0	505,0	673,0	10

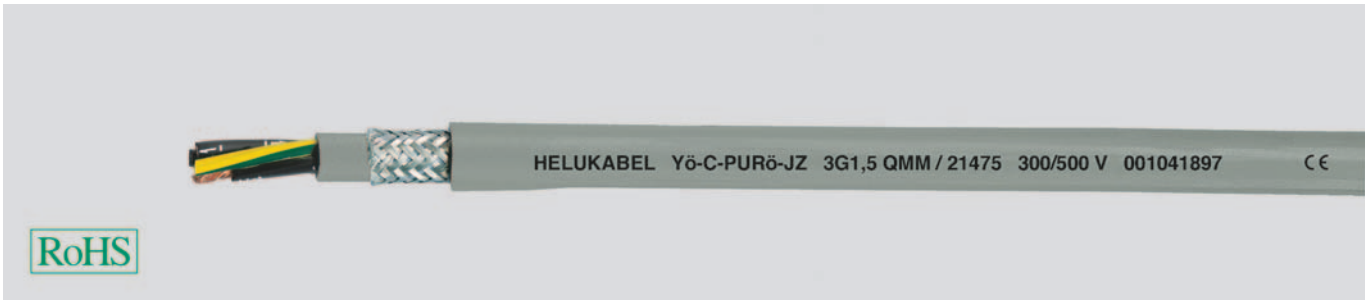
Dimensions and specifications may be changed without prior notice. (RA02)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

Yö-C-PURö-JZ tear and coolant resistant, Cu-screened, with inner sheath, increased oil resistant, EMC-preferred type, meter marking



Technical data

- Special-PUR sheathed multicore cable adapted to DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range**
  flexing -20°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage**
  up to 2,5 mm² U_0/U 300/500 V
  from 4 mm² U_0/U 450/750 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Coupling resistance**
  max. 250 Ohm/km
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Outer sheath of **oil resistant** PVC compound type TI2 adapted to DIN VDE 0207-363-3 / DIN EN 50363-3 for better sliding abilities
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Inner sheath of **oil resistant** PVC
- Tinned copper braided screen, approx. 85% coverage
- Core wrapping of fleece guarantees easy cable stripping
- Outer sheath of special **full-polyurethane** compound type TMPU to DIN EN 50363-10-2
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- **Resistant to**
  UV-Radiation
  Oxygene
  Ozone
  Hydrolysis
  Microbes
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type:
  PURö-JZ, confer page 68

Application

Extremely robust control cable characterised by high abrasion and notch resistance properties. Used for critical areas in such applications as machinery, tooling and plant construction, in rolling mills and steel works because of the resistance to mineral oils and to coolant emulsions in particular. The mechanical strength of the cable is increased by the additional oil-resistant inner sheath. The ideal interference-protected control cable for such applications as given above. Suitable for outdoor installation.
These screened cables are particularly suitable for the interference-free transmission in instrumentation and control engineering applications (electromagnetic compatibillity).
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
21400	2 x 0,5	7,0	41,0	68,0	20
21401	3 G 0,5	7,3	45,0	84,0	20
21402	4 G 0,5	7,9	54,0	95,0	20
21403	5 G 0,5	8,4	66,0	107,0	20
21405	7 G 0,5	9,1	79,0	135,0	20
21407	10 G 0,5	10,7	107,0	170,0	20
21408	12 G 0,5	11,5	137,0	195,0	20
21409	14 G 0,5	12,2	142,0	222,0	20
21411	18 G 0,5	13,5	156,0	278,0	20
21413	21 G 0,5	14,2	189,0	330,0	20
21415	25 G 0,5	15,7	250,0	406,0	20
21416	30 G 0,5	16,2	297,0	520,0	20
21419	36 G 0,5	17,7	320,0	587,0	20
21420	40 G 0,5	18,4	345,0	655,0	20
21421	50 G 0,5	20,7	407,0	742,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
21425	2 x 0,75	7,7	46,0	88,0	19
21426	3 G 0,75	8,0	57,0	98,0	19
21427	4 G 0,75	8,5	63,0	112,0	19
21428	5 G 0,75	9,3	76,0	130,0	19
21430	7 G 0,75	9,9	100,0	185,0	19
21432	10 G 0,75	11,8	140,0	270,0	19
21433	12 G 0,75	12,7	175,0	294,0	19
21434	14 G 0,75	13,3	190,0	317,0	19
21436	18 G 0,75	14,9	240,0	357,0	19
21438	21 G 0,75	15,4	274,0	455,0	19
21440	25 G 0,75	17,5	306,0	510,0	19
21443	32 G 0,75	18,9	349,0	688,0	19
21446	41 G 0,75	21,0	403,0	951,0	19
21447	50 G 0,75	23,1	470,0	1100,0	19

Continuation ▸

Yö-C-PURö-JZ tear and coolant resistant, Cu-screened, with inner sheath, increased oil resistant, EMC-preferred type, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
21451	2 x 1	8,0	54,0	98,0	18
21452	3 G 1	8,3	64,0	102,0	18
21453	4 G 1	9,0	76,0	145,0	18
21454	5 G 1	9,7	89,0	170,0	18
21456	7 G 1	10,3	114,0	220,0	18
21457	8 G 1	11,2	130,0	270,0	18
21458	10 G 1	12,6	156,0	330,0	18
21459	12 G 1	13,3	186,0	350,0	18
21460	14 G 1	14,1	198,0	402,0	18
21461	16 G 1	14,8	214,0	420,0	18
21462	18 G 1	15,6	284,0	515,0	18
21463	20 G 1	16,4	325,0	545,0	18
21465	25 G 1	18,5	387,0	690,0	18
21468	34 G 1	20,9	500,0	912,0	18
21469	41 G 1	21,5	578,0	1070,0	18
21470	50 G 1	24,8	681,0	1318,0	18
21474	2 x 1,5	8,6	64,0	130,0	16
21475	3 G 1,5	9,2	82,0	152,0	16
21476	4 G 1,5	9,8	99,0	167,0	16
21477	5 G 1,5	10,8	123,0	203,0	16
21479	7 G 1,5	11,7	148,0	305,0	16
21480	8 G 1,5	12,6	172,0	335,0	16
21481	10 G 1,5	14,2	198,0	422,0	16
21482	12 G 1,5	14,9	274,0	435,0	16
21483	14 G 1,5	15,8	294,0	480,0	16
21484	16 G 1,5	16,7	318,0	525,0	16
21485	18 G 1,5	17,4	386,0	642,0	16
21487	21 G 1,5	18,5	447,0	722,0	16
21489	25 G 1,5	20,8	531,0	803,0	16
21492	34 G 1,5	23,2	671,0	1068,0	16
21494	42 G 1,5	25,0	890,0	1370,0	16
21495	50 G 1,5	27,4	997,0	1677,0	16
21499	2 x 2,5	10,1	110,0	180,0	14
21500	3 G 2,5	10,8	148,0	215,0	14
21501	4 G 2,5	11,5	169,0	268,0	14
21502	5 G 2,5	12,8	220,0	349,0	14
21503	7 G 2,5	14,0	284,0	406,0	14
21504	12 G 2,5	17,9	470,0	720,0	14

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
21507	2 x 4	13,3	124,0	300,0	12
21508	3 G 4	14,0	178,0	340,0	12
21509	4 G 4	15,3	234,0	408,0	12
21510	5 G 4	16,7	284,0	504,0	12
21511	7 G 4	18,4	321,0	640,0	12
21512	3 G 6	15,6	245,0	453,0	10
21513	4 G 6	17,0	316,0	560,0	10
21514	5 G 6	18,6	442,0	700,0	10
21515	7 G 6	20,4	530,0	905,0	10
21516	3 G 10	19,0	367,0	750,0	8
21517	4 G 10	21,1	549,0	1023,0	8
21518	5 G 10	23,1	604,0	1114,0	8
21519	7 G 10	25,6	820,0	1505,0	8
21521	4 G 16	25,3	807,0	1385,0	6
21522	5 G 16	28,0	940,0	1550,0	6
21524	4 G 25	31,1	1169,0	1894,0	4
21525	5 G 25	34,3	1420,0	2272,0	4
21526	4 G 35	33,9	1680,0	2395,0	2
21527	5 G 35	37,8	2020,0	2890,0	2
21528	4 G 50	40,1	2370,0	3312,0	1
21529	5 G 50	45,0	2880,0	4100,0	1
21530	4 G 70	46,0	3257,0	4605,0	2/0
21531	5 G 70	50,6	4032,0	5710,0	2/0
21532	4 G 95	51,2	4060,0	6055,0	3/0
21533	5 G 95	56,5	5244,0	7520,0	3/0
21534	4 G 120	56,3	5231,0	7318,0	4/0

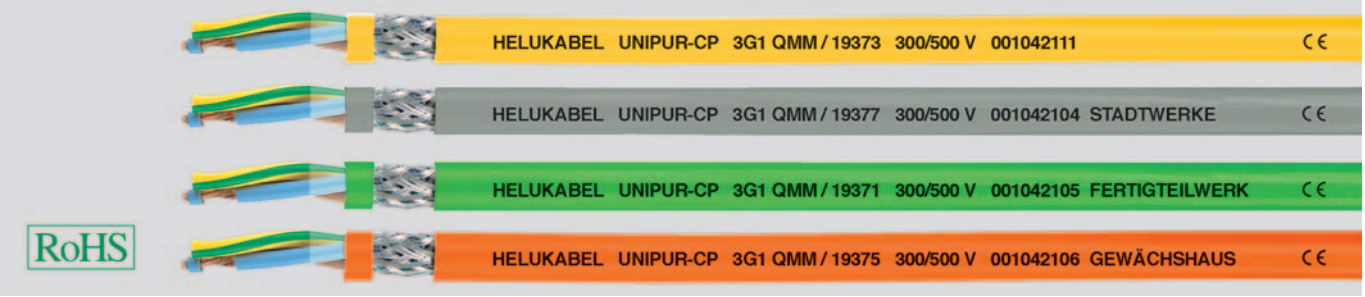
Dimensions and specifications may be changed without prior notice. (RA02)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

UNIPUR®-CP flexible at low temperature, with customer markings, halogen-free, wear resistant, robust, screened, EMC-preferred type, meter marking



Technical data

- Special TPE/PUR screened connecting cable adapted to DIN VDE 0285-525-2-21 / DIN EN 50525-2-21
- **Temperature range** flexing -40°C to +90°C
- **Nominal voltage** up to 1 mm² U_0/U 300/500 V from 1,5 mm² U_0/U 450/750 V
- **Test voltage** 3000 V
- **Coupling resistance** max. 250 Ohm/km
- **Minimum bending radius** flexing 12,5x cable Ø fixed installation 7,5x cable Ø
- **Radiation resistance** up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of termoplastic elastomere (TPE)
- Core identification to DIN VDE 0293-308
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Separating foil
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of PUR compound type TMPU adapted to DIN EN 50363-10-2
- Sheath colour by request
- with meter marking

Properties

- Resistant to
- Oils and fats
  Water and weathering effects
  Ozone and oxygen
  UV-radiation
  Hydrolysis
  Microbial attack
- Abrasion resistant
- Notch resistant
- Resistant to tearing and cutting
- Good flexibility at low temperatures down to -40°C
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OB).
- Please complete the part number for these cables by adding the suffix for the colour required as per the list:
  0 = approx.RAL 5015, blue
  1 = approx.RAL 6018, green
  2 = approx.RAL 8003, brown
  3 = approx.RAL 1021, yellow
  4 = approx.RAL 3000, red
  5 = approx.RAL 2003, orange
  6 = approx.RAL 4005, violet
  7 = approx.RAL 7001/7032, grey
  Further colours on request.
- unscreened analogue type: **UNIPUR®,** confer page 73

Application

These robust and flexible cables are used for electrical tools such as drills, hand-held circular saws, and garden equipment as well as for portable motors and machinery in agriculture, at building sites, for hobbies, docks and refrigeration plants.
Extremely good mechanical characteristies e. g. compressive load, good abrasion and near-resistant.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
1915x	2 x 0,5	6,4	35,0	46,0	20
1916x	3 G 0,5	6,8	42,0	56,0	20
1917x	4 G 0,5	7,3	47,0	62,0	20
1918x	5 G 0,5	7,9	56,0	75,0	20
1919x	7 G 0,5	9,4	69,0	98,0	20
1920x	12 G 0,5	11,3	108,0	158,0	20
1921x	18 G 0,5	13,7	145,0	216,0	20
1922x	25 G 0,5	16,3	240,0	315,0	20
1923x	34 G 0,5	18,6	312,0	371,0	20
1924x	41 G 0,5	20,4	348,0	442,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
1925x	2 x 0,75	6,8	40,0	60,0	19
1926x	3 G 0,75	7,1	52,0	68,0	19
1927x	4 G 0,75	7,7	60,0	78,0	19
1928x	5 G 0,75	8,6	71,0	95,0	19
1929x	6 G 0,75	9,3	80,0	112,0	19
1930x	7 G 0,75	10,3	91,0	138,0	19
1931x	12 G 0,75	12,5	142,0	207,0	19
1932x	18 G 0,75	14,8	212,0	293,0	19
1933x	25 G 0,75	17,9	281,0	413,0	19
1934x	34 G 0,75	20,3	345,0	523,0	19
1935x	41 G 0,75	22,1	400,0	609,0	19

Continuation ▸

UNIPUR®-CP flexible at low temperature, with customer markings, halogen-free, wear resistant, robust, screened, EMC-preferred type, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
1936x	2 x 1	7,2	50,0	65,0	18
1937x	3 G 1	7,6	60,0	76,0	18
1938x	4 G 1	8,4	71,0	89,0	18
1939x	5 G 1	9,2	88,0	108,0	18
1940x	6 G 1	10,1	97,0	141,0	18
1941x	7 G 1	11,2	111,0	187,0	18
1942x	12 G 1	13,5	184,0	240,0	18
1943x	18 G 1	16,1	260,0	335,0	18
1944x	25 G 1	19,4	349,0	484,0	18
1945x	34 G 1	22,2	486,0	627,0	18
1946x	41 G 1	24,0	531,0	738,0	18
1947x	2 x 1,5	8,6	63,0	97,0	16
1948x	3 G 1,5	9,1	80,0	119,0	16
1949x	4 G 1,5	10,1	97,0	152,0	16
1950x	5 G 1,5	11,2	119,0	168,0	16
1951x	6 G 1,5	12,1	121,0	218,0	16
1952x	7 G 1,5	13,6	147,0	243,0	16
1953x	12 G 1,5	16,3	267,0	317,0	16
1954x	18 G 1,5	19,6	374,0	481,0	16
1955x	25 G 1,5	23,8	526,0	674,0	16
1956x	34 G 1,5	27,0	629,0	881,0	16
1957x	41 G 1,5	29,3	801,0	1027,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
1958x	2 x 2,5	10,2	96,0	129,0	14
1959x	3 G 2,5	10,9	144,0	158,0	14
1960x	4 G 2,5	11,9	148,0	196,0	14
1961x	5 G 2,5	13,2	181,0	241,0	14
1962x	7 G 2,5	16,3	255,0	317,0	14
1963x	12 G 2,5	20,0	441,0	496,0	14
1964x	2 x 4	11,8	120,0	158,0	12
1965x	3 G 4	12,7	174,0	261,0	12
1966x	4 G 4	14,2	230,0	316,0	12
1967x	5 G 4	15,7	273,0	384,0	12
1968x	7 G 4	19,3	316,0	592,0	12
1969x	2 x 6	13,6	173,0	259,0	10
1970x	3 G 6	14,6	240,0	394,0	10
1971x	4 G 6	16,1	305,0	483,0	10
1972x	5 G 6	18,0	439,0	592,0	10
1973x	7 G 6	21,8	505,0	714,0	10
1974x	3 G 10	18,0	350,0	576,0	8
1975x	4 G 10	19,9	535,0	729,0	8
1976x	5 G 10	22,2	592,0	914,0	8
1977x	3 G 16	20,8	585,0	960,0	6
1978x	4 G 16	23,1	740,0	1813,0	6
1979x	5 G 16	25,5	895,0	1827,0	6

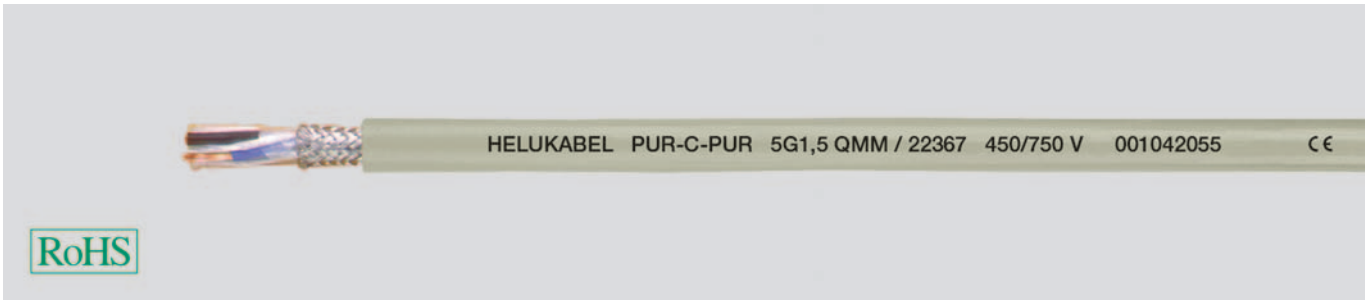
Dimensions and specifications may be changed without prior notice. (RA02)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

PUR-C-PUR Cu-screened, extrem conditions, halogen-free, EMC-preferred type, meter marking



Technical data

- Special PUR control cables, screened, adapted to DIN VDE 0250
- **Temperature range**
  -40°C to +80°C
- **Nominal voltage**
  up to 1 mm² U_0/U 300/500 V
  from 1,5 mm² U_0/U 450/750 V
- **Test voltage**
  to 1 mm² 2000 V
  from 1,5 mm² 2500 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Mutual capacitance**(800 Hz)
  core/core approx. 150 pF/m
  core/screen approx. 320 pF/m
- **Coupling resistance**
  max. 250 Ohm/km
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Aderisolatio aus special PUR
- Core identification to DIN VDE 0293-308
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Core wrapping with foil
- Tinned copper braided screen, approx. 85% coverage
- PUR outer sheath
- Sheath colour grey (RAL 7032)
- with meter marking

Properties

- High flexibility at low temperatures
- High abrasion resistance
- Break and cut resistant
- Tear resistant
- Halogen-free
- **Resistant to**
  Oils and fats
  Coolant and chemicals
  Non-alcoholic fuels and kerosene
  Atmospheric influences
  UV-radiation
  Oxygene and ozone
  Microbes and rotting
  Sea and waste water
  Vibrations
  Acids and Lyes
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (O).
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

PUR-C-PUR screened cables are well suited as data transfer and connection cables for the machine and motor industries due to the good level of copper screening which blocks strong electrical disturbances.
This cable type has proven to be especially suited to use in extreme weather and environmental conditions due to its good thermal and chemical properties (Temperature range -40°C to +80°C). In addition to this it also possesses excellent mechanical properties, e. g. pressure resistance and good abrasive resistant qualities, all of which go to guarantee a long life.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22315	2 x 0,75	6,8	40,0	65,0	19
22316	3 G 0,75	7,2	52,0	80,0	19
22317	4 G 0,75	8,0	60,0	95,0	19
22318	5 G 0,75	8,6	71,0	126,0	19
22319	6 G 0,75	9,5	80,0	150,0	19
22339	2 x 1	7,2	50,0	80,0	18
22340	3 G 1	7,8	60,0	95,0	18
22341	4 G 1	8,4	71,0	106,0	18
22342	5 G 1	9,5	88,0	149,0	18

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22364	2 x 1,5	8,6	63,0	101,0	16
22365	3 G 1,5	9,3	80,0	125,0	16
22366	4 G 1,5	10,1	97,0	150,0	16
22367	5 G 1,5	11,2	119,0	210,0	16
22385	2 x 2,5	10,4	96,0	142,0	14
22386	3 G 2,5	11,0	144,0	169,0	14
22387	4 G 2,5	12,2	148,0	225,0	14
22388	5 G 2,5	13,6	181,0	275,0	14

Dimensions and specifications may be changed without prior notice. (RA02)



Suitable accessories can be found in Chapter X.

• Cable Gland - HELUTOP® HT-MS-EP4

HALOGEN-FREE CONTROL CABLES



JZ-500 HMH flexible control cable, halogen-free, extremely fire resistant, oil resistant[1], meter marking



Technical data

- Halogen-free flexible control cable adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51 and DIN VDE 0285-525-3-11 / DIN EN 50525-3-11
- **Temperature range** flexing -15°C to +70°C fixed installation -40°C to +70°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 2000 V
- **Minimum bending radius** flexing 12,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of halogen-free polymer compound type TI6 to DIN VDE 0207-363-7 / DIN EN 50363-7
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of halogen-free polymer compound type TM7 to DIN VDE 0207-363-8 / DIN EN 50363-8
- Outer Sheath colour grey (RAL 7001)
- with meter marking
- **LS0H**= Low Smoke Zero Halogen

Properties

- [1]) For the critical applications we advise for consultation
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- Please note the cleanroom qualification when ordering.
- screened analogue type: **JZ-500 HMH-C**, confer page 96

Application

Used as measuring, monitoring and control cables in tool machinery, conveyor belts, production lines, in plant, in air-conditioning, in foundries and steel mills. For fixed installation or flexible application, casual, not constantly recurring free movement without forced motion and without tensile stress, for medium mechanical stress. The cable is suitable for use in dry, damp and wet locations and on plaster.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11201	2 x 0,5	4,8	9,6	43,0	20
11202	3 G 0,5	5,1	14,4	50,0	20
11332	3 x 0,5	5,1	14,4	50,0	20
11203	4 G 0,5	5,6	19,0	60,0	20
11333	4 x 0,5	5,5	19,0	60,0	20
11204	5 G 0,5	6,2	24,0	71,0	20
11334	5 x 0,5	6,2	24,0	71,0	20
11205	7 G 0,5	6,7	33,6	84,0	20
11206	8 G 0,5	7,4	38,0	101,0	20
11207	10 G 0,5	8,3	48,0	121,0	20
11208	12 G 0,5	8,7	58,0	142,0	20
11209	16 G 0,5	10,0	76,0	183,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11210	18 G 0,5	10,7	86,0	204,0	20
11211	20 G 0,5	11,3	96,0	227,0	20
11212	25 G 0,5	12,6	120,0	283,0	20
11213	30 G 0,5	13,5	144,0	324,0	20
11214	34 G 0,5	14,3	163,0	367,0	20
11215	37 G 0,5	14,5	178,0	381,0	20
11216	41 G 0,5	15,8	197,0	417,0	20
11217	42 G 0,5	15,8	202,0	454,0	20
11218	50 G 0,5	17,5	240,0	519,0	20
11219	61 G 0,5	18,5	293,0	635,0	20
11220	65 G 0,5	19,4	312,0	694,0	20

Continuation ▸

JZ-500 HMH flexible control cable, halogen-free, extremely fire resistant, oil resistant[1)], meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11221	2 x 0,75	5,3	14,4	47,0	19
11222	3 G 0,75	5,6	21,6	56,0	19
11335	3 x 0,75	5,6	21,6	56,0	19
11223	4 G 0,75	6,3	29,0	69,0	19
11336	4 x 0,75	6,3	29,0	69,0	19
11224	5 G 0,75	6,9	36,0	83,0	19
11337	5 x 0,75	6,9	36,0	83,0	19
11225	7 G 0,75	7,5	50,0	114,0	19
11338	7 x 0,75	7,5	50,0	114,0	19
11226	8 G 0,75	8,3	58,0	136,0	19
11227	10 G 0,75	9,2	72,0	172,0	19
11228	12 G 0,75	9,8	86,0	183,0	19
11229	16 G 0,75	11,4	115,0	241,0	19
11230	18 G 0,75	12,2	130,0	266,0	19
11231	20 G 0,75	12,7	144,0	291,0	19
11232	25 G 0,75	14,3	180,0	374,0	19
11233	30 G 0,75	15,3	216,0	450,0	19
11234	34 G 0,75	16,5	245,0	517,0	19
11235	37 G 0,75	16,7	260,0	541,0	19
11236	41 G 0,75	18,1	296,0	611,0	19
11237	42 G 0,75	18,1	302,0	621,0	19
11238	50 G 0,75	19,8	360,0	742,0	19
11239	61 G 0,75	21,2	439,0	853,0	19
11240	65 G 0,75	21,8	468,0	909,0	19
11241	2 x 1	5,6	19,2	63,0	18
11242	3 G 1	5,9	29,0	74,0	18
11339	3 x 1	5,9	29,0	74,0	18
11243	4 G 1	6,6	38,4	90,0	18
11340	4 x 1	6,6	38,4	90,0	18
11244	5 G 1	7,3	48,0	109,0	18
11245	7 G 1	8,1	67,0	151,0	18
11246	8 G 1	8,8	77,0	184,0	18
11247	10 G 1	9,8	96,0	224,0	18
11248	12 G 1	10,4	115,0	243,0	18
11249	16 G 1	12,3	154,0	314,0	18
11250	18 G 1	12,9	173,0	361,0	18
11251	20 G 1	13,8	192,0	387,0	18
11252	25 G 1	15,4	240,0	496,0	18
11253	34 G 1	17,7	326,0	670,0	18
11254	37 G 1	17,9	355,0	713,0	18
11255	41 G 1	19,5	394,0	784,0	18
11256	42 G 1	19,5	403,0	824,0	18
11257	50 G 1	21,3	480,0	952,0	18
11258	61 G 1	22,5	586,0	1140,0	18
11259	65 G 1	23,6	628,0	1201,0	18
11260	2 x 1,5	6,4	29,0	70,0	16
11261	3 G 1,5	6,8	43,0	94,0	16
11341	3 x 1,5	6,8	43,0	94,0	16
11262	4 G 1,5	7,4	58,0	112,0	16
11263	5 G 1,5	8,3	72,0	141,0	16
11264	7 G 1,5	9,2	101,0	191,0	16
11265	8 G 1,5	10,0	115,0	224,0	16
11266	10 G 1,5	10,9	144,0	282,0	16
11267	12 G 1,5	11,8	173,0	311,0	16
11268	16 G 1,5	13,9	230,0	392,0	16
11269	18 G 1,5	14,6	259,0	450,0	16
11270	20 G 1,5	15,6	288,0	497,0	16
11271	25 G 1,5	17,4	360,0	630,0	16
11272	34 G 1,5	20,2	490,0	842,0	16
11273	37 G 1,5	20,2	533,0	897,0	16
11274	50 G 1,5	24,2	720,0	1277,0	16
11275	61 G 1,5	25,8	878,0	1460,0	16
11276	65 G 1,5	26,8	936,0	1612,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11277	2 x 2,5	7,8	48,0	118,0	14
11278	3 G 2,5	8,3	72,0	151,0	14
11279	4 G 2,5	9,2	96,0	181,0	14
11280	5 G 2,5	10,1	120,0	224,0	14
11281	7 G 2,5	11,2	168,0	316,0	14
11282	8 G 2,5	12,3	192,0	370,0	14
11283	10 G 2,5	14,0	240,0	451,0	14
11284	12 G 2,5	14,8	288,0	499,0	14
11285	16 G 2,5	17,1	384,0	720,0	14
11286	18 G 2,5	18,2	432,0	769,0	14
11287	20 G 2,5	19,2	480,0	911,0	14
11288	25 G 2,5	21,6	600,0	1047,0	14
11289	30 G 2,5	23,0	720,0	1280,0	14
11290	2 x 4	9,3	77,0	199,0	12
11291	3 G 4	9,8	115,0	247,0	12
11292	4 G 4	10,9	154,0	299,0	12
11293	5 G 4	12,1	192,0	369,0	12
11294	7 G 4	13,2	269,0	463,0	12
11295	8 G 4	14,7	307,0	601,0	12
11296	10 G 4	17,5	384,0	698,0	12
11297	12 G 4	17,7	461,0	790,0	12
11298	16 G 4	20,3	614,0	1130,0	12
11299	18 G 4	21,6	691,0	1280,0	12
11300	2 x 6	11,0	115,0	266,0	10
11301	3 G 6	11,9	173,0	360,0	10
11302	4 G 6	13,0	230,0	429,0	10
11303	5 G 6	14,5	288,0	529,0	10
11304	7 G 6	16,2	403,0	631,0	10
11305	2 x 10	13,8	192,0	440,0	8
11306	3 G 10	14,9	288,0	550,0	8
11307	4 G 10	16,5	384,0	708,0	8
11308	5 G 10	18,3	480,0	862,0	8
11309	7 G 10	20,2	672,0	1124,0	8
11310	2 x 16	16,8	307,0	642,0	6
11311	3 G 16	18,3	461,0	830,0	6
11312	4 G 16	20,1	614,0	1060,0	6
11313	5 G 16	22,6	768,0	1270,0	6
11314	7 G 16	24,8	1075,0	1794,0	6
11315	3 G 25	22,3	720,0	1190,0	4
11316	4 G 25	25,0	960,0	1594,0	4
11317	5 G 25	27,7	1200,0	2014,0	4
11318	3 G 35	25,9	1008,0	1590,0	2
11319	4 G 35	28,7	1344,0	2200,0	2
11320	5 G 35	31,9	1680,0	2693,0	2
11321	3 G 50	30,8	1440,0	2571,0	1
11322	4 G 50	34,1	1920,0	3087,0	1
11323	5 G 50	38,1	2400,0	3980,0	1
11324	3 G 70	36,4	2016,0	3207,0	2/0
11325	4 G 70	40,2	2688,0	4077,0	2/0
11326	5 G 70	44,7	3360,0	5501,0	2/0
11327	3 G 95	41,3	2736,0	4708,0	3/0
11328	4 G 95	46,0	3648,0	5590,0	3/0
11329	5 G 95	50,7	4560,0	6972,0	3/0
11330	3 G 120	47,0	3456,0	5515,0	4/0
11331	4 G 120	51,0	4608,0	7100,0	4/0

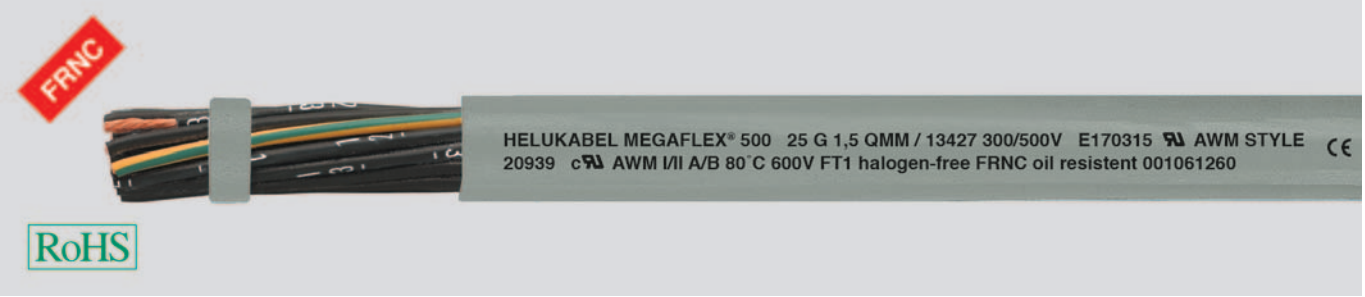
Dimensions and specifications may be changed without prior notice. (RA03)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

MEGAFLEX® 500 halogen-free, flame retardant, oil-resistant, UV-resistant, flexible, meter marking



Technical data

- Halogen-free flexible control cable adapted to DIN VDE 0285-525-3-11/ DIN EN 50525-3-11, to UL-Style 20939, UL-Std.758
- **Temperature range** flexing -30°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V UL/CSA 600 V
- **Test voltage** 3000 V
- **Minimum bending radius** flexing 10x cable Ø fixed installation 4x cable Ø
- **Flexible** Alternate bending test acc. to DIN VDE 0473-396 / DIN EN 50396

Approved to UL/CSA
see section N, page 394

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of halogen-free special polymer
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of halogen-free special polymer
- Sheath colour grey (RAL 7001)
- with meter marking
- **LS0H**= Low Smoke Zero Halogen

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- Also available as a 0,6/1 kV cable MEGAFLEX® 600
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **MEGAFLEX® 500-C**, confer page 98

Properties

- Highly flame-retardant
- Resistant to oils and greases
- Resistant to UV and weathering
- Hydrolysis resistant
- Flexible, abrasion- and wear-resistant
- Ozone-resistant, recycleable
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2 / IEC 60332-1 (previously DIN VDE 0472 part 804 test method B), CSA FT1
- Corrosiveness of combustion gases acc. to NF X 10-702
- Halogen-free acc. to DIN VDE 0482 part 267 / DIN EN 50267-2-1 / IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)
- Oil-resistant to DIN VDE 0473-811-404/ DIN EN 60811-404
- Hydrolysis-resistant to DIN EN 61234-1
- Ozone-resistant to DIN VDE 0473-811-403/DIN EN 60811-403

Application

For fixed installation or flexible application, with free movements without forcing which do not constantly recur and without tensile stress, for high mechanical strain. As a measuring and control cable primarily in machinery and plant construction, in air-conditoning systems, at the warehouse and conveyor systems, in ship-building and in the renewable energies such as in the construction of wind power stations.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
13344	2 x 0,5	20	5,0	9,6	43,0
13345	3 G 0,5	20	5,3	14,4	50,0
13346	3 x 0,5	20	5,3	14,4	50,0
13347	4 G 0,5	20	5,7	19,0	60,0
13348	4 x 0,5	20	5,7	19,0	60,0
13349	5 G 0,5	20	6,2	24,0	71,0
13350	5 x 0,5	20	6,2	24,0	71,0
13351	7 G 0,5	20	7,4	33,6	84,0
13352	8 G 0,5	20	8,0	38,0	101,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
13353	10 G 0,5	20	8,8	48,0	121,0
13354	12 G 0,5	20	9,1	58,0	142,0
13355	16 G 0,5	20	10,0	76,0	183,0
13356	18 G 0,5	20	10,7	86,0	204,0
13357	20 G 0,5	20	11,2	96,0	227,0
13359	25 G 0,5	20	12,7	120,0	283,0
13360	30 G 0,5	20	13,5	144,0	324,0
13361	34 G 0,5	20	14,5	163,0	367,0
13362	37 G 0,5	20	14,5	178,0	381,0

Continuation ▸

MEGAFLEX® 500 halogen-free, flame retardant, oil-resistant,

UV-resistant, flexible, meter marking

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
13363	41 G 0,5	20	15,8	197,0	417,0
13364	42 G 0,5	20	15,8	202,0	454,0
13365	50 G 0,5	20	17,3	240,0	519,0
13366	61 G 0,5	20	18,5	293,0	635,0
13367	65 G 0,5	20	19,4	312,0	694,0
13368	2 x 0,75	19	5,4	14,4	47,0
13369	3 G 0,75	19	5,7	21,6	56,0
13370	3 x 0,75	19	5,7	21,6	56,0
13371	4 G 0,75	19	6,2	29,0	69,0
13372	4 x 0,75	19	6,2	29,0	69,0
13373	5 G 0,75	19	6,8	36,0	83,0
13374	5 x 0,75	19	6,8	36,0	83,0
13375	7 G 0,75	19	8,1	50,0	114,0
13376	7 x 0,75	19	8,1	50,0	114,0
13377	8 G 0,75	19	8,9	58,0	136,0
13378	10 G 0,75	19	9,6	72,0	172,0
13379	12 G 0,75	19	9,9	86,0	183,0
13380	16 G 0,75	19	11,2	115,0	241,0
13381	18 G 0,75	19	11,9	130,0	266,0
13382	20 G 0,75	19	12,6	144,0	291,0
13383	25 G 0,75	19	14,1	180,0	374,0
13384	30 G 0,75	19	15,4	216,0	450,0
13385	34 G 0,75	19	16,4	245,0	517,0
13386	37 G 0,75	19	16,4	260,0	541,0
13387	41 G 0,75	19	17,6	296,0	611,0
13388	42 G 0,75	19	17,6	302,0	621,0
13389	50 G 0,75	19	19,8	360,0	742,0
13390	61 G 0,75	19	20,9	439,0	853,0
13392	65 G 0,75	19	21,8	468,0	909,0
13393	2 x 1	18	5,7	19,2	63,0
13394	3 G 1	18	6,0	29,0	74,0
13395	3 x 1	18	6,0	29,0	74,0
13396	4 G 1	18	6,6	38,4	90,0
13397	4 x 1	18	6,6	38,4	90,0
13398	5 G 1	18	7,2	48,0	109,0
13399	7 G 1	18	8,6	67,0	151,0
13400	8 G 1	18	9,4	77,0	184,0
13401	10 G 1	18	10,4	96,0	224,0
13402	12 G 1	18	10,7	115,0	243,0
13403	16 G 1	18	12,0	154,0	314,0
13404	18 G 1	18	12,7	173,0	361,0
13405	20 G 1	18	13,5	192,0	387,0
13406	25 G 1	18	15,2	240,0	496,0
13407	34 G 1	18	17,4	326,0	670,0
13408	37 G 1	18	17,4	355,0	713,0
13409	41 G 1	18	18,9	394,0	784,0
13410	42 G 1	18	18,9	403,0	824,0
13411	50 G 1	18	21,0	480,0	952,0
13412	61 G 1	18	22,2	586,0	1140,0
13413	65 G 1	18	23,2	628,0	1201,0
13414	2 x 1,5	16	6,3	29,0	70,0
13415	3 G 1,5	16	6,6	43,0	94,0
13416	3 x 1,5	16	6,6	43,0	94,0
13417	4 G 1,5	16	7,2	58,0	112,0
13418	5 G 1,5	16	7,9	72,0	141,0
13419	7 G 1,5	16	9,5	101,0	191,0
13420	8 G 1,5	16	10,4	115,0	224,0
13421	10 G 1,5	16	11,3	144,0	282,0
13422	12 G 1,5	16	11,7	173,0	311,0
13423	16 G 1,5	16	13,3	230,0	392,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
13425	18 G 1,5	16	14,0	259,0	450,0
13426	20 G 1,5	16	14,9	288,0	497,0
13427	25 G 1,5	16	16,8	360,0	630,0
13428	34 G 1,5	16	19,4	490,0	842,0
13429	37 G 1,5	16	19,4	533,0	897,0
13430	50 G 1,5	16	23,4	720,0	1277,0
13431	61 G 1,5	16	24,8	878,0	1460,0
13432	65 G 1,5	16	25,8	936,0	1612,0
13433	2 x 2,5	14	7,6	48,0	118,0
13434	3 G 2,5	14	8,3	72,0	151,0
13435	4 G 2,5	14	9,1	96,0	181,0
13436	5 G 2,5	14	10,2	120,0	224,0
13437	7 G 2,5	14	12,1	168,0	316,0
13438	8 G 2,5	14	13,2	192,0	370,0
13439	10 G 2,5	14	14,6	240,0	451,0
13440	12 G 2,5	14	15,2	288,0	499,0
13441	16 G 2,5	14	16,8	384,0	720,0
13442	18 G 2,5	14	18,1	432,0	769,0
13443	20 G 2,5	14	19,0	480,0	911,0
13444	25 G 2,5	14	22,2	600,0	1047,0
13445	30 G 2,5	14	22,9	720,0	1280,0
13446	2 x 4	12	9,2	77,0	199,0
13447	3 G 4	12	9,9	115,0	247,0
13448	4 G 4	12	11,0	154,0	299,0
13449	5 G 4	12	12,1	192,0	369,0
13450	7 G 4	12	13,3	269,0	463,0
13451	8 G 4	12	15,9	307,0	601,0
13452	10 G 4	12	17,3	384,0	698,0
13453	12 G 4	12	18,3	461,0	790,0
13454	16 G 4	12	20,2	614,0	1130,0
13455	18 G 4	12	21,8	691,0	1280,0
13456	2 x 6	10	10,8	115,0	266,0
13457	3 G 6	10	11,7	173,0	360,0
13458	4 G 6	10	13,0	230,0	429,0
13459	5 G 6	10	14,5	288,0	529,0
13460	7 G 6	10	16,0	403,0	631,0
13461	2 x 10	8	14,0	192,0	440,0
13462	3 G 10	8	15,0	288,0	550,0
13463	4 G 10	8	16,8	384,0	708,0
13464	5 G 10	8	18,7	480,0	862,0
13465	7 G 10	8	20,6	672,0	1124,0
13466	2 x 16	6	16,5	307,0	642,0
13467	3 G 16	6	17,6	461,0	830,0
13468	4 G 16	6	19,7	641,0	1060,0
13469	5 G 16	6	21,9	768,0	1270,0
13470	7 G 16	6	24,4	1075,0	1794,0
13471	3 G 25	4	22,5	720,0	1190,0
13472	4 G 25	4	25,2	960,0	1594,0
13473	5 G 25	4	27,9	1200,0	2014,0
13474	3 G 35	2	26,3	1008,0	1590,0
13475	4 G 35	2	28,5	1344,0	2200,0
13476	5 G 35	2	31,2	1680,0	2693,0
13477	3 G 50	1	30,2	1440,0	2571,0
13478	4 G 50	1	34,0	1920,0	3087,0
13479	5 G 50	1	37,8	2400,0	3980,0
13480	3 G 70	2/0	37,0	2016,0	3207,0
13481	4 G 70	2/0	41,5	2688,0	4077,0
13482	5 G 70	2/0	46,2	3360,0	5501,0
13483	3 G 95	3/0	41,4	2736,0	4708,0
13484	4 G 95	3/0	46,2	3648,0	5590,0
13485	5 G 95	3/0	51,5	4560,0	6972,0
13486	3 G 120	4/0	45,7	3456,0	5515,0
13487	4 G 120	4/0	51,2	4608,0	7100,0
13488	3 G 150	300 kcmil	52,8	4320,0	6279,0
13489	4 G 150	300 kcmil	58,3	5760,0	7781,0

Dimensions and specifications may be changed without prior notice. (RA03)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS

H07ZZ-F control cable, cross linked, halogen-free



Technical data

- halogen-free cross-linked control cable to DIN VDE 0285-525-3-21 / DIN EN 50525-3-21
- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -20°C to +70°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage**
  flexing U_0/U 450/750 V
  fixed installation U_0/U 0,6/1 kV
  Test voltage 2500 V
- **Permanent tensile load**
  max. 15 N/mm²
  under consideration of total copper cross-sections
- **Minimum bending radius**
  flexing 10x cable Ø
  for fixed installation 4x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5, HD 383
- Core insulation of halogen-free, cross-linked EI8 to DIN VDE 0207-363-5/DIN EN 50363-5
- Core identification to DIN VDE 0293-308
- Cores stranded in layers with optimal lay-length
- Outer sheath of halogen-free, cross-linked EM8 to DIN VDE 0207-363-6/DIN EN 50363-6
- Sheath colour black

Properties

Test

- **Behaviour in fire** to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 and IEC 60332-3-24
- Corrosiveness of combustion gases acc. to EN 50267-2-2
- Smoke density to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2
- **Ozone resistant** of single core the insulation to DIN VDE 0473-811-403 / DIN EN 60811-403

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Single and multicore sheathed cable, with low smoke and corrosive gas production in case of fire for interior use. Not suitable for continuous outside use. In this case, cable with a special tested covering should be used. Skin contact should be avoided when the cable is used in high temperatures.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
37176	1 x 1,5	5,7 - 7,1	14,4	58,0	16
37177	1 x 2,5	6,3 - 7,9	24,0	71,0	14
37178	1 x 4	7,2 - 9,0	38,0	100,0	12
37179	1 x 6	7,9 - 9,8	58,0	130,0	10
37180	1 x 10	9,5 - 11,9	96,0	230,0	8
37181	1 x 16	10,8 - 13,4	154,0	290,0	6
37182	1 x 25	12,7 - 15,8	240,0	420,0	4
37183	1 x 35	14,3 - 17,9	336,0	530,0	2
37184	1 x 50	16,5 - 20,6	480,0	750,0	1
37185	1 x 70	18,6 - 23,3	672,0	960,0	2/0
37186	1 x 95	20,8 - 26,0	912,0	1250,0	3/0
37187	1 x 120	22,8 - 28,6	1152,0	1560,0	4/0
37188	1 x 150	25,2 - 31,4	1440,0	1900,0	300 kcmil
37189	1 x 185	27,6 - 34,4	1776,0	2300,0	350 kcmil
37190	1 x 240	30,6 - 38,3	2304,0	2950,0	500 kcmil
37191	1 x 300	33,5 - 41,9	2880,0	3600,0	600 kcmil
37192	1 x 400	37,4 - 46,8	3840,0	4600,0	750 kcmil
37193	1 x 500	41,3 - 52,0	4800,0	6000,0	1000 kcmil
37194	2 x 1	7,7 - 10,0	19,0	95,0	18
37195	2 x 1,5	8,5 - 11,0	29,0	119,0	16
37196	2 x 2,5	10,2 - 13,1	48,0	172,0	14
37197	2 x 4	11,8 - 15,1	77,0	239,0	12
37198	2 x 6	13,1 - 16,8	115,0	319,0	10
37199	2 x 10	17,7 - 22,6	192,0	572,0	8
37200	2 x 16	20,2 - 25,7	307,0	767,0	6
37201	2 x 25	24,3 - 30,7	480,0	1154,0	4
37202	3 G 1	8,3 - 10,7	29,0	115,0	18
37203	3 G 1,5	9,2 - 11,9	43,0	144,0	16
37204	3 G 2,5	10,9 - 14,0	72,0	211,0	14
37205	3 G 4	12,7 - 16,2	115,0	290,0	12
37206	3 G 6	14,1 - 18,0	173,0	391,0	10
37207	3 G 10	19,1 - 24,2	288,0	706,0	8
37208	3 G 16	21,8 - 27,6	461,0	961,0	6
37209	3 G 25	26,1 - 33,0	720,0	1438,0	4
37210	3 G 35	29,3 - 37,1	1008,0	1814,0	2
37211	3 G 50	34,1 - 42,9	1440,0	2550,0	1
37212	3 G 70	38,4 - 48,3	2016,0	3210,0	2/0
37213	3 G 95	43,3 - 54,0	2736,0	4423,0	3/0
37214	3 G 120	47,4 - 60,0	3456,0	5405,0	4/0
37215	3 G 150	52,0 - 66,0	4320,0	6725,0	300 kcmil
37216	3 G 185	57,0 - 72,0	5328,0	8222,0	350 kcmil
37217	3 G 240	65,0 - 82,0	6192,0	10224,0	500 kcmil

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
37218	3 G 300	72,0 - 90,0	8640,0	12620,0	600 kcmil
37219	4 G 1	9,2 - 11,9	38,0	141,0	18
37220	4 G 1,5	10,2 - 13,1	58,0	176,0	16
37221	4 G 2,5	12,1 - 15,5	96,0	235,0	14
37222	4 G 4	14,0 - 17,9	154,0	365,0	12
37223	4 G 6	15,7 - 20,0	230,0	501,0	10
37224	4 G 10	20,9 - 26,5	384,0	872,0	8
37225	4 G 16	23,8 - 30,1	614,0	1194,0	6
37226	4 G 25	28,9 - 36,6	960,0	1822,0	4
37227	4 G 35	32,5 - 41,1	1344,0	2307,0	2
37228	4 G 50	37,7 - 47,5	1920,0	3253,0	1
37229	4 G 70	42,7 - 54,0	2688,0	4130,0	2/0
37230	4 G 95	48,4 - 61,0	3648,0	5720,0	3/0
37231	4 G 120	53,0 - 66,0	4608,0	6965,0	4/0
37232	4 G 150	58,0 - 73,0	5760,0	8644,0	300 kcmil
37233	4 G 185	64,0 - 80,0	7104,0	10598,0	350 kcmil
37234	4 G 240	72,0 - 91,0	9216,0	12100,0	500 kcmil
37235	4 G 300	80,0 - 101,0	11520,0	15200,0	600 kcmil
37236	5 G 1	10,2 - 13,1	48,0	170,0	18
37237	5 G 1,5	11,2 - 14,4	72,0	214,0	16
37238	5 G 2,5	13,3 - 17,0	120,0	316,0	14
37239	5 G 4	15,6 - 19,9	192,0	448,0	12
37240	5 G 6	17,5 - 22,2	288,0	607,0	10
37241	5 G 10	22,9 - 29,1	480,0	1075,0	8
37242	5 G 16	26,4 - 33,3	768,0	1480,0	6
37243	5 G 25	32,0 - 40,4	1200,0	2255,0	4
37244	6 G 1,5	13,4 - 17,2	84,0	287,0	16
37245	6 G 2,5	15,7 - 20,0	144,0	420,0	14
37246	6 G 4	18,2 - 23,2	230,0	583,0	12
37247	7 G 1,5	11,4 - 14,4	101,0	303,0	16
37248	7 G 2,5	13,4 - 17,0	168,0	448,0	14
37249	12 G 1,5	17,6 - 22,4	173,0	496,0	16
37250	12 G 2,5	20,6 - 26,2	288,0	724,0	14
37251	12 G 4	24,4 - 30,9	461,0	1042,0	12
37252	18 G 1,5	20,7 - 26,3	259,0	702,0	16
37253	18 G 2,5	24,4 - 30,9	432,0	1045,0	14
37254	18 G 4	28,8 - 36,4	691,0	1430,0	12
37255	24 G 1,5	24,3 - 30,7	346,0	935,0	16
37256	24 G 2,5	28,8 - 36,4	576,0	1325,0	14
37257	36 G 1,5	27,8 - 35,2	518,0	1297,0	16
37258	36 G 2,5	33,2 - 41,8	864,0	1949,0	14

Dimensions and specifications may be changed without prior notice. (RF01)

JZ-600 HMH flexible control cable, halogen-free, extremely fire resistant, oil resistant[1], 0,6/1kV, meter marking



Technical data

- Halogen-free, flexible control cable, adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51 and DIN VDE 0285-525-3-11/ DIN EN 50525-3-11
- **Temperature range** flexing -15°C to +70°C fixed -40°C to +70°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4000 V
- **Minimum bending radius** flexing 15x cable Ø fixed installation 7,5x cable Ø
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of halogen-free polymer compound type TI6 to DIN VDE 0207-363-7 / DIN EN 50363-7
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of halogen-free polymer compound type TM7 to DIN VDE 0207-363-8 / DIN EN 50363-8
- Sheath colour black (RAL 9005)
- with meter marking
- **LS0H**= Low Smoke Zero Halogen

Properties

- [1] For critical applications, we recommend that you consult
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 Part 267/ DIN EN 50267-2-1 / IEC 60754-1 (as per DIN VDE 0472, Part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **JZ-600 HMH-C**, confer page 100

Application

Halogen-free, flame retardant cables are used as measuring and control cable in machine tools, conveyor belts, production lines as well as in plant installations, in heating and air-conditioning systems and steel production works. For fixed installation or flexible application, directed without forcing by casual, constantly recurring free movements and without tensile stress, for medium mechanical strain. This cable is suitable for the application in dry, damp and wet environments, outdoors (fixed installation) and for laying on plaster.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
12723	2 x 0,5	6,3	9,6	57,0	20
12724	3 G 0,5	6,6	14,4	69,0	20
12725	3 x 0,5	6,6	14,4	69,0	20
12726	4 G 0,5	7,2	19,0	104,0	20
12727	4 x 0,5	7,2	19,0	104,0	20
12728	5 G 0,5	8,0	24,0	121,0	20
12729	5 x 0,5	8,0	24,0	121,0	20
12730	7 G 0,5	8,7	33,6	145,0	20
12731	10 G 0,5	10,3	48,0	186,0	20
12732	12 G 0,5	11,2	58,0	224,0	20
12733	18 G 0,5	13,8	86,0	292,0	20
12734	25 G 0,5	16,1	120,0	357,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
12735	2 x 0,75	6,6	14,4	68,0	19
12736	3 G 0,75	6,9	21,6	77,0	19
12737	3 x 0,75	6,9	21,6	77,0	19
12738	4 G 0,75	7,5	29,0	136,0	19
12739	4 x 0,75	7,5	29,0	136,0	19
12740	5 G 0,75	8,4	36,0	152,0	19
12741	5 x 0,75	8,4	36,0	152,0	19
12742	7 G 0,75	9,3	50,0	208,0	19
12743	10 G 0,75	11,4	72,0	250,0	19
12744	12 G 0,75	12,2	86,0	271,0	19
12745	18 G 0,75	14,5	130,0	387,0	19
12746	25 G 0,75	17,2	180,0	498,0	19

Continuation ▸

JZ-600 HMH flexible control cable, halogen-free, extremely fire resistant, oil resistant[1], 0,6/1kV, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
12747	2 x 1	7,0	19,2	82,0	18
12748	3 G 1	7,4	29,0	99,0	18
12749	3 x 1	7,4	29,0	99,0	18
12750	4 G 1	8,2	38,4	140,0	18
12751	4 x 1	8,2	38,4	140,0	18
12752	5 G 1	9,2	48,0	160,0	18
12753	5 x 1	9,2	48,0	160,0	18
12754	7 G 1	9,9	67,0	217,0	18
12755	10 G 1	11,9	96,0	271,0	18
12756	12 G 1	12,8	115,0	301,0	18
12757	18 G 1	15,7	173,0	417,0	18
12758	25 G 1	18,6	240,0	576,0	18
12759	2 x 1,5	8,2	29,0	97,0	16
12760	3 G 1,5	8,6	43,0	119,0	16
12761	3 x 1,5	8,6	43,0	119,0	16
12762	4 G 1,5	9,6	58,0	148,0	16
12763	4 x 1,5	9,6	58,0	148,0	16
12764	5 G 1,5	10,7	72,0	172,0	16
12765	5 x 1,5	10,7	72,0	172,0	16
12766	7 G 1,5	11,6	101,0	243,0	16
12767	10 G 1,5	15,2	144,0	311,0	16
12768	12 G 1,5	15,5	173,0	392,0	16
12769	18 G 1,5	18,6	259,0	529,0	16
12770	25 G 1,5	22,5	360,0	741,0	16
12771	2 x 2,5	9,6	48,0	160,0	14
12772	3 G 2,5	10,1	72,0	177,0	14
12773	3 x 2,5	10,1	72,0	177,0	14
12774	4 G 2,5	11,2	96,0	209,0	14
12775	4 x 2,5	11,2	96,0	209,0	14
12776	5 G 2,5	12,5	120,0	272,0	14
12777	5 x 2,5	12,5	120,0	272,0	14
12778	7 G 2,5	13,8	168,0	340,0	14
12779	10 G 2,5	16,6	288,0	561,0	14
12780	12 G 2,5	18,3	432,0	799,0	14
12781	18 G 2,5	22,0	480,0	940,0	14
12782	25 G 2,5	26,2	600,0	1121,0	14
12783	3 G 4	11,7	115,0	255,0	12
12784	4 G 4	12,9	154,0	319,0	12
12785	5 G 4	14,4	192,0	423,0	12
12786	3 G 6	13,1	173,0	380,0	10
12787	4 G 6	14,5	230,0	441,0	10
12788	5 G 6	16,2	288,0	657,0	10
12789	3 G 10	16,8	288,0	668,0	8
12790	4 G 10	18,5	384,0	796,0	8
12791	5 G 10	20,5	480,0	972,0	8
12792	3 G 16	20,2	461,0	832,0	6
12793	4 G 16	22,4	614,0	1122,0	6
12794	5 G 16	25,0	768,0	1604,0	6
12795	3 G 25	24,8	720,0	1457,0	4
12796	4 G 25	27,4	960,0	1611,0	4
12797	5 G 25	30,5	1200,0	2070,0	4
12798	3 G 35	27,4	1008,0	1914,0	2
12799	4 G 35	30,3	1344,0	2424,0	2
12800	5 G 35	33,6	1680,0	2970,0	2
12801	4 G 50	35,8	1920,0	3467,0	1
12802	4 G 70	40,8	2688,0	4491,0	2/0
12803	4 G 95	46,2	3648,0	6170,0	3/0
12804	4 G 120	51,6	4608,0	7618,0	4/0

Dimensions and specifications may be changed without prior notice. (RA03)



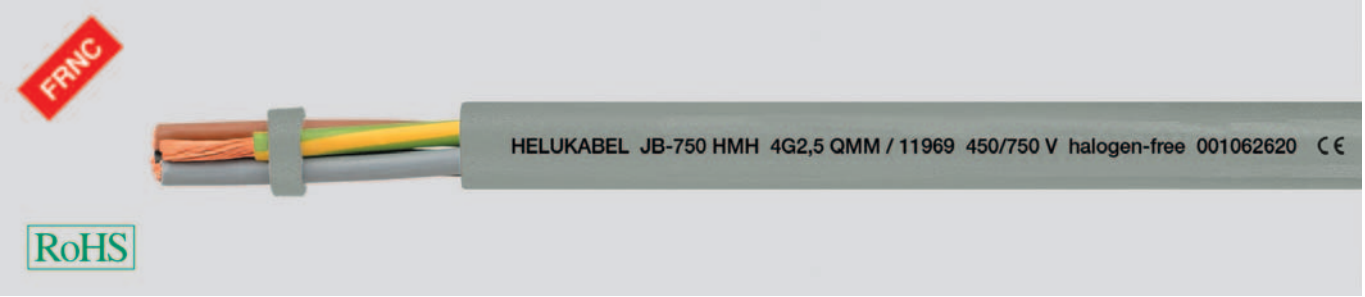
Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS

JB-750 HMH flexible control cable, coloured core, halogen-free, extremely fire resistant, oil resistant[1)], meter marking

IPA

A



Technical data

- Halogen-free flexible control cable, adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51 and DIN VDE 0285-525-3-11/ DIN EN 50525-3-11
- **Temperature range** flexing -15°C to +70°C fixed installation -40°C to +70°C
- **Nominal voltage** U_0/U 450/750 V
- **Test voltage** 3000 V
- **Minimum bending radius** flexing 12,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of halogen-free polymer compound type TI6 to DIN VDE 0207-363-7 / DIN EN 50363-7
- Core identification to DIN VDE 0293-308
- GN-YE conductor
- Cores stranded in layers with optimal lay-length
- Outer sheath of halogen-free polymer compound type TM7 to DIN VDE 0207-363-8 / DIN EN 50363-8
- Sheath colour grey (RAL 7001)
- with meter marking
- **LS0H**= Low Smoke Zero Halogen

Properties

- [1)] We recommend you for critcal applications a consultation
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267 / DIN EN 50267-2-1 / IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- Please note the cleanroom qualification when ordering.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **JB-750 HMH-C**, confer page 102

Application

Halogen-free, flame retardant cables are used as measuring and control cable in machine tools, conveyor belts, production lines as well as in plant installations, in air-conditioning and steel production works. For fixed installation or flexible application, directed without forcing by casual, not constantly recurring free movements and without tensile stress, for medium mechanical strain. This cable is suitable for the application in dry, damp and wet environments and also for laying on plaster.

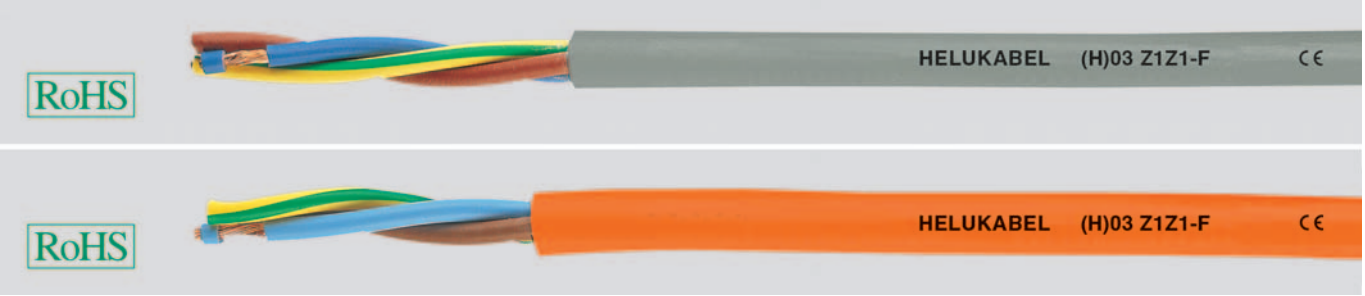
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11965	3 G 1,5	7,8	43,0	110,0	16
11966	4 G 1,5	8,5	58,0	140,0	16
11967	5 G 1,5	9,6	72,0	181,0	16
11968	3 G 2,5	9,3	72,0	181,0	14
11969	4 G 2,5	10,2	96,0	223,0	14
11970	5 G 2,5	11,4	120,0	269,0	14
11971	3 G 4	11,3	115,0	238,0	12
11972	4 G 4	12,5	154,0	292,0	12
11973	5 G 4	13,9	192,0	357,0	12
11974	4 G 6	14,2	230,0	392,0	10
11975	5 G 6	15,8	288,0	501,0	10

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11976	4 G 10	18,1	384,0	750,0	8
11977	5 G 10	20,1	480,0	916,0	8
11978	4 G 16	22,0	614,0	1037,0	6
11979	5 G 16	24,4	768,0	1280,0	6
11980	4 G 25	27,1	960,0	1504,0	4
11981	5 G 25	30,1	1200,0	1883,0	4
11982	4 G 35	29,9	1344,0	2057,0	2
11983	5 G 35	33,4	1680,0	2575,0	2
11984	4 G 50	35,5	1920,0	2808,0	1
11985	4 G 70	40,2	2688,0	3964,0	2/0
11986	4 G 95	46,0	3648,0	4951,0	3/0
11987	4 G 120	51,3	4608,0	6387,0	4/0

Dimensions and specifications may be changed without prior notice. (RA03)

(H)03Z1Z1-F halogen-free, meter marking



Technical data

- flexible halogen-free control cable adapted to DIN VDE 0285-525-3-11 / DIN EN 50525-3-11
- **Temperature range** flexing -5°C to +70°C fixed installation -40°C to +70°C
- **Nominal voltage** U_0/U 300/300 V
- **Test voltage** 2000 V
- **Breakdown voltage** min. 4000 V
- **Minimum bending radius** 7,5x cable Ø
- **Radiation resistance** up to 20x10⁶ cJ/kg (up to 20 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of thermoplastic compound
- Core identification to DIN VDE 0293-308
- GN-YE conductor, 3 cores and above
- Outer sheath of thermoplastic compound
- Sheath colour by request
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Tested for flame retardation acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Smoke density acc. to DIN VDE 0482-1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2
- Halogen-free acc. to DIN VDE 0285-525-1, DIN EN 50525-1

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- Please complete the part number for these cables by adding the suffix for the colour required as per the list:
  0 = ca.RAL 9005 black
  1 = ca.RAL 9003 withe
  2 = ca.RAL 5015 blue
  3 = ca.RAL 6018 green
  4 = ca.RAL 8003 brown
  5 = ca.RAL 1021 yellow
  6 = ca.RAL 3000 red
  7 = ca.RAL 2003 orange
  8 = ca.RAL 4005 violet
  9 = ca.RAL 7001/7032 grey
  Further colours on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

These cables may be used when halogen-free, low smoke and corrosive gas properties are required in case of fire. For low mechanical demands in the house, kitchen and office, for small equipment such as, for example, office machines, radios, table and stranded lamps.
Not suitable for:
Cooking and heating equipment, use in high temperature areas (for example, in lighting equipment), outside use, industrial use or idustrial electrical tools, cables with a nominal cross-section of 0,75 mm² comply with the same recommendations as for cable (H)05Z1Z1-F.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
3233x	2 x 0,5	5,1	9,6	39,0	20
3234x	3 G 0,5	5,4	14,4	46,0	20
3235x	4 G 0,5	5,9	19,2	56,0	20

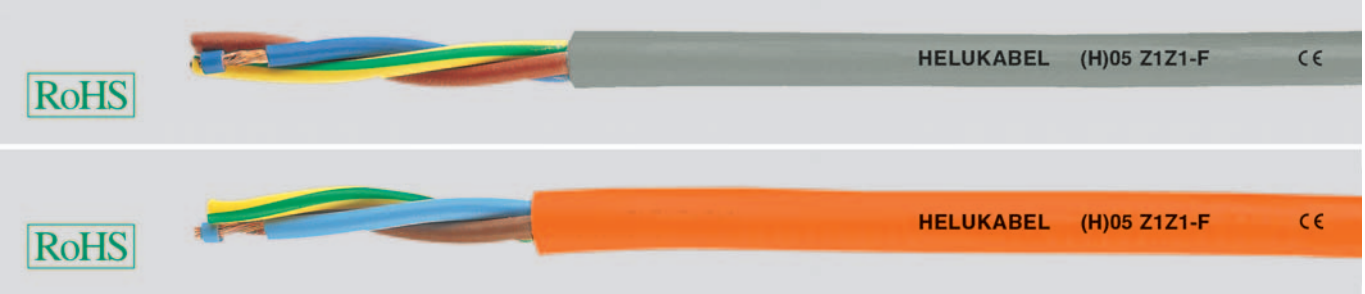
Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
3236x	2 x 0,75	5,4	14,4	47,0	19
3237x	3 G 0,75	5,7	21,6	55,0	19
3238x	4 G 0,75	6,3	29,0	69,0	19

Dimensions and specifications may be changed without prior notice. (RA03)



Suitable accessories can be found in Chapter X.
• Cable Gland - HELUTOP® HT-PA
• Cable Gland - HELUTOP® HT-MS

(H)05Z1Z1-F halogen-free, meter marking



Technical data

- flexible halogen-free control cable adapted to DIN VDE 0285-525-3-11/ DIN EN 50525-3-11
- **Temperature range** flexing -5°C to +70°C fixed installation -40°C to +70°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 2000 V
- **Breakdown voltage** min. 4000 V
- **Minimum bending radius** 7,5x cable Ø
- **Radiation resistance** up to 20x10⁶ cJ/kg (up to 20 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulaion thermoplastic compound
- Core identification to DIN VDE 0293-308
- GN-YE conductor, 3 cores and above
- Cores stranded with optimal lay-length
- Outer sheath of thermoplastic compound
- Sheath colour by request
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Tested for flame retardation acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Smoke density acc. to DIN VDE 0482-1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2
- Halogen-free acc. to DIN VDE 0285-525-1, DIN EN 50525-1

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- Please complete the part number for these cables by adding the suffix for the colour required as per the list:
  0 = ca.RAL 9005 black
  1 = ca.RAL 9003 withe
  2 = ca.RAL 5015 blue
  3 = ca.RAL 6018 green
  4 = ca.RAL 8003 brown
  5 = ca.RAL 1021 yellow
  6 = ca.RAL 3000 red
  7 = ca.RAL 2003 orange
  8 = ca.RAL 4005 violet
  9 = ca.RAL 7001/7032 grey
  Further colours on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

These cables may be used when halogen-free, low smoke and corrosive gas properties are required in case of fire. For moderate mechanical demands in the house, kitchen and office, for house equipment in damp rooms (for example: washing machines, spin-dryers and refrigerators).
Suitable for cooking and heating equipment, providing the cable is not in contact with hot components or heat radiation.
Not suitable for:
in high temperature areas (for example, in lighting equipment), outside buildings, in industrial or agricultural buildings, connection of electrical power tools.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
3027x	2 x 0,75	6,3	14,4	58,0	19
3028x	3 G 0,75	6,6	21,6	68,0	19
3029x	4 G 0,75	7,2	29,0	81,0	19
3030x	5 G 0,75	8,0	36,0	102,0	19
3031x	2 x 1	6,5	19,0	67,0	18
3032x	3 G 1	6,9	29,0	81,0	18
3034x	4 G 1	7,7	38,0	101,0	18
3035x	5 G 1	8,4	48,0	107,0	18
3036x	2 x 1,5	7,4	29,0	87,0	16
3037x	3 G 1,5	8,0	43,0	109,0	16
3038x	4 G 1,5	9,1	58,0	117,0	16
3039x	5 G 1,5	10,0	72,0	169,0	16
3040x	2 x 2,5	9,1	48,0	138,0	14
3041x	3 G 2,5	9,9	72,0	172,0	14
3042x	4 G 2,5	10,8	96,0	210,0	14

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
3043x	5 G 2,5	12,0	120,0	260,0	14
3044x	2 x 4	10,4	76,8	190,0	12
3045x	3 G 4	11,3	115,2	242,0	12
3046x	4 G 4	12,3	153,6	298,0	12
3047x	5 G 4	13,9	192,0	371,0	12

Dimensions and specifications may be changed without prior notice. (RA03)

JZ-500 HMH-C flexible control cable, halogen-free, extremely fire resistant, oil resistant[1], Cu-screened, EMC-preferred type, meter marking



Technical data

- Halogen-free core flexible control cable adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51 and DIN VDE 0285-525-3-11/ DIN EN 50525-3-11
- **Temperature range** flexing -15°C to +70°C fixed installation -40°C to +70°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 2000 V
- **Coupling resistance** max. 250 Ohm/km
- **Minimum bending radius** flexing 12,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of halogen-free polymer compound type TI6 to DIN VDE 0207-363-7 / DIN EN 50363-7
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Separating foil
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of halogen-free spolymer compound type TM7 to DIN VDE 0207-363-8 / DIN EN 50363-8
- Sheath colour grey (RAL 7001)
- with meter marking
- **LS0H**= Low Smoke Zero Halogen

Properties

- [1]) We recommend you for critical applications a consultation
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1(equivalent DIN VDE 0472 part 804 test method B)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- Cleanroom qualification tested with analog type. Please note "cleanroom qualified" when ordering.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **JZ-500 HMH**, confer page 86

Application

Halogen-free, flame retardant control cables are used for instrumentation and control cables in tooling machinery, conveyor and transportation belts, production lines, in plant construction, air-conditioning systems as well as in iron and steel works. For fixed installation or for flexing applications, for casual, not constantly recurring free movement without forced motion and without tensile stress for medium mechanical loads. The cable is suitable for use in dry, damp and wet environments and on plaster. An interference-free transmission of signals and pulse in assured by the high degree of screening.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11656	2 x 0,5	5,7	35,0	46,0	20
11657	3 G 0,5	5,9	42,0	56,0	20
11342	3 x 0,5	5,9	42,0	56,0	20
11658	4 G 0,5	6,4	47,0	62,0	20
11343	4 x 0,5	6,4	47,0	62,0	20
11659	5 G 0,5	6,9	56,0	75,0	20
11660	7 G 0,5	7,6	69,0	98,0	20
11663	12 G 0,5	9,7	108,0	158,0	20
11665	18 G 0,5	11,5	145,0	216,0	20
11667	25 G 0,5	13,7	240,0	315,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11678	2 x 0,75	6,1	40,0	60,0	19
11679	3 G 0,75	6,3	52,0	68,0	19
11344	3 x 0,75	6,3	52,0	68,0	19
11680	4 G 0,75	6,8	60,0	78,0	19
11345	4 x 0,75	6,8	60,0	78,0	19
11681	5 G 0,75	7,4	71,0	95,0	19
11346	5 x 0,75	7,4	71,0	95,0	19
11682	7 G 0,75	8,2	91,0	130,0	19
11347	7 x 0,75	8,2	91,0	130,0	19
11685	12 G 0,75	10,5	142,0	203,0	19

Continuation ▸

JZ-500 HMH-C flexible control cable, halogen-free, extremely fire resistant, oil resistant[1)], Cu-screened, EMC-preferred type, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11687	18 G 0,75	12,7	212,0	290,0	19
11689	25 G 0,75	15,0	281,0	413,0	19
11700	2 x 1	6,4	50,0	66,0	18
11701	3 G 1	6,7	60,0	80,0	18
11348	3 x 1	6,7	60,0	80,0	18
11702	4 G 1	7,2	71,0	100,0	18
11349	4 x 1	7,2	71,0	100,0	18
11703	5 G 1	8,0	88,0	130,0	18
11704	7 G 1	8,7	111,0	160,0	18
11707	12 G 1	11,4	184,0	260,0	18
11709	18 G 1	13,6	260,0	382,0	18
11711	25 G 1	16,2	349,0	540,0	18
11722	2 x 1,5	7,0	63,0	88,0	16
11723	3 G 1,5	7,4	80,0	100,0	16
11350	3 x 1,5	7,4	80,0	100,0	16
11724	4 G 1,5	8,1	97,0	125,0	16
11725	5 G 1,5	9,0	119,0	158,0	16
11726	7 G 1,5	9,8	147,0	210,0	16
11729	12 G 1,5	12,8	267,0	340,0	16
11731	18 G 1,5	15,6	374,0	480,0	16
11733	25 G 1,5	18,4	526,0	702,0	16
11744	2 x 2,5	8,4	96,0	132,0	14
11745	3 G 2,5	8,8	144,0	168,0	14
11746	4 G 2,5	9,8	148,0	195,0	14
11747	5 G 2,5	10,8	181,0	222,0	14
11748	7 G 2,5	11,9	255,0	345,0	14
11751	12 G 2,5	15,8	441,0	572,0	14
11766	2 x 4	10,0	120,0	184,0	12
11768	3 G 4	10,6	174,0	238,0	12
11769	4 G 4	11,6	230,0	305,0	12
11770	5 G 4	12,8	273,0	388,0	12
11771	7 G 4	14,2	316,0	504,0	12

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11781	2 G 6	11,7	173,0	270,0	10
11782	3 G 6	12,5	240,0	328,0	10
11783	4 G 6	13,8	305,0	416,0	10
11784	5 G 6	15,4	439,0	510,0	10
11785	7 G 6	17,0	505,0	670,0	10
11786	2 x 10	14,5	255,0	420,0	8
11787	3 G 10	15,6	350,0	495,0	8
11788	4 G 10	17,2	535,0	785,0	8
11789	5 G 10	19,1	592,0	855,0	8
11790	7 G 10	21,2	810,0	1308,0	8
11793	4 G 16	20,3	740,0	882,0	6
11794	5 G 16	22,2	895,0	1293,0	6
11812	7 G 16	24,8	1282,0	2149,0	6
11795	3 G 25	22,5	1070,0	1432,0	4
11796	4 G 25	25,0	1140,0	1911,0	4
11797	5 G 25	27,5	1380,0	2414,0	4
11798	3 G 35	25,7	1240,0	1914,0	2
11799	4 G 35	28,5	1576,0	2542,0	2
11800	5 G 35	31,7	1930,0	3180,0	2
11801	3 G 50	30,8	1675,0	3080,0	1
11802	4 G 50	34,1	2155,0	3550,0	1
11803	5 G 50	38,1	2794,0	4753,0	1
11804	3 G 70	36,0	2288,0	3840,0	2/0
11805	4 G 70	40,0	3120,0	4939,0	2/0
11806	5 G 70	44,5	3705,0	6572,0	2/0
11807	3 G 95	41,1	3010,0	5651,0	3/0
11808	4 G 95	45,6	4043,0	6690,0	3/0
11809	5 G 95	50,7	5026,0	8370,0	3/0
11810	3 G 120	45,2	3812,0	6342,0	4/0
11811	4 G 120	50,1	5069,0	8453,0	4/0
11813	4 G 185	63,0	8040,0	10800,0	350 kcmil

Dimensions and specifications may be changed without prior notice. (RA03)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

MEGAFLEX® 500-C halogen-free, flame retardant, oil-resistant,

UV-resistant, flexible, screened, EMC-preferred types, meter marking



Technical data

- Halogen-free flexible control cable adapted to DIN VDE 0285-525-3-11 / DIN EN 50525-3-11, to UL-Style 20939, UL-Std.758
- **Temperature range** flexing -30°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V UL/CSA 600 V
- **Test voltage** 3000 V
- **Coupling resistance** max. 250 Ohm/km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 4x cable Ø
- **Flexible** Alternate bending test acc. to DIN VDE 0473-396 / DIN EN 50396

Approved to UL/CSA
see section N, page 398

Cable structure

- Bare copper, fine wire conductors, to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of halogen-free special polymer
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Separating foil
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of halogen-free special polymer
- Sheath colour grey (RAL 7001)
- with meter marking
- **LS0H**= Low Smoke Zero Halogen

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **MEGAFLEX® 500**, confer page 88

Properties

- Halogen-free
- Highly flame-retardant
- Resistant to oils and greases
- Resistant to UV and weathering
- Flexible, abrasion- and wear-resistant
- Ozone-resistant
- Recycleable
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (previously DIN VDE 0472 part 804 test method B) CSA FT1
- Corrosiveness of combustion gases acc. to NF X 10-702
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)
- Oil-resistant to DIN VDE 0473-811-404 / DIN EN 60811-404
- Hydrolysis resistant to DIN EN 61234-1
- Ozone-resistant to DIN VDE 0473-811-403/ DIN EN 60811-403

Application

For fixed installation or flexible application that does not permanently recurring free movement without forced motion and without tensile stress, for high mechanical strain. As a measuring and control cable e. g. in machine and plant engineering, air conditioning in the warehouse and materials handling, shipbuilding and in the newable energies such as wind power stations.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
13500	2 x 0,5	20	5,7	35,0	46,0
13501	3 G 0,5	20	6,0	42,0	56,0
13502	3 x 0,5	20	6,0	42,0	56,0
13504	4 x 0,5	20	6,5	47,0	62,0
13503	4 G 0,5	20	6,5	47,0	62,0
13505	5 G 0,5	20	7,0	56,0	75,0
13506	5 x 0,5	20	7,0	56,0	75,0
13507	7 G 0,5	20	7,9	69,0	98,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
13508	8 G 0,5	20	8,5	80,0	116,0
13509	10 G 0,5	20	9,3	94,0	135,0
13510	12 G 0,5	20	9,6	108,0	158,0
13511	16 G 0,5	20	10,7	129,0	210,0
13512	18 G 0,5	20	11,2	145,0	216,0
13514	20 G 0,5	20	11,9	172,0	240,0
13515	25 G 0,5	20	13,4	240,0	315,0

Continuation ▸

MEGAFLEX® 500-C halogen-free, flame retardant, oil-resistant,

UV-resistant, flexible, screened, EMC-preferred types, meter marking

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
13516	2 x 0,75	19	6,1	40,0	60,0
13517	3 G 0,75	19	6,4	52,0	68,0
13518	3 x 0,75	19	6,4	52,0	68,0
13519	4 G 0,75	19	6,9	60,0	78,0
13520	4 x 0,75	19	6,9	60,0	78,0
13521	5 G 0,75	19	7,4	71,0	95,0
13522	5 x 0,75	19	7,4	71,0	95,0
13523	7 G 0,75	19	8,6	91,0	130,0
13524	7 x 0,75	19	8,6	91,0	130,0
13525	8 G 0,75	19	9,4	110,0	145,0
13526	10 G 0,75	19	10,2	137,0	180,0
13527	12 G 0,75	19	10,4	142,0	203,0
13528	16 G 0,75	19	11,6	200,0	275,0
13529	18 G 0,75	19	12,4	212,0	290,0
13530	20 G 0,75	19	12,9	238,0	320,0
13531	25 G 0,75	19	14,8	281,0	413,0
13532	2 x 1	18	6,4	50,0	66,0
13533	3 G 1	18	6,7	60,0	80,0
13534	3 x 1	18	6,7	60,0	80,0
13535	4 G 1	18	7,3	71,0	100,0
13536	4 x 1	18	7,3	71,0	100,0
13537	5 G 1	18	7,8	88,0	130,0
13538	7 G 1	18	9,1	111,0	160,0
13539	8 G 1	18	9,9	127,0	197,0
13540	10 G 1	18	10,8	150,0	232,0
13541	12 G 1	18	11,2	184,0	260,0
13542	16 G 1	18	12,3	209,0	346,0
13543	18 G 1	18	13,2	260,0	382,0
13544	20 G 1	18	13,8	317,0	440,0
13545	25 G 1	18	15,8	349,0	540,0
13546	2 x 1,5	16	7,0	63,0	88,0
13547	3 G 1,5	16	7,3	80,0	100,0
13548	3 x 1,5	16	7,3	80,0	100,0
13549	4 G 1,5	16	7,9	97,0	125,0
13550	5 G 1,5	16	8,6	119,0	158,0
13552	7 G 1,5	16	10,2	147,0	210,0
13554	8 G 1,5	16	11,1	170,0	244,0
13556	10 G 1,5	16	12,0	193,0	315,0
13557	12 G 1,5	16	12,5	267,0	340,0
13558	16 G 1,5	16	13,8	315,0	424,0
13559	18 G 1,5	16	15,0	374,0	480,0
13560	20 G 1,5	16	15,7	396,0	545,0
13561	25 G 1,5	16	18,0	526,0	702,0
13562	2 x 2,5	14	8,3	96,0	132,0
13563	3 G 2,5	14	9,0	144,0	168,0
13565	4 G 2,5	14	9,8	148,0	195,0
13566	5 G 2,5	14	10,9	181,0	256,0
13567	7 G 2,5	14	12,9	255,0	345,0
13568	8 G 2,5	17	13,8	285,0	390,0
13569	10 G 2,5	14	15,8	340,0	482,0
13570	12 G 2,5	14	15,9	441,0	572,0
13571	2 x 4	12	9,8	120,0	220,0
13572	3 G 4	12	10,6	174,0	251,0
13573	4 G 4	12	11,5	230,0	305,0
13574	5 G 4	12	12,7	273,0	388,0
13575	7 G 4	12	13,9	316,0	504,0
13576	2 x 6	10	11,5	173,0	270,0
13577	3 G 6	10	12,4	240,0	351,0
13578	4 G 6	10	13,8	305,0	464,0
13579	5 G 6	10	15,7	439,0	546,0
13580	7 G 6	10	16,6	505,0	670,0
13581	2 x 10	8	14,9	255,0	461,0
13582	3 G 10	8	15,9	350,0	574,0
13583	4 G 10	8	17,8	535,0	785,0
13584	5 G 10	8	19,6	592,0	914,0
13585	7 G 10	8	21,6	810,0	1308,0
13586	2 x 16	6	17,3	422,0	670,0
13587	3 G 16	6	18,5	585,0	911,0
13588	4 G 16	6	20,8	740,0	1105,0
13589	5 G 16	6	22,9	895,0	1293,0
13590	7 G 16	6	25,0	1282,0	2149,0
13591	4 G 25	4	26,2	1140,0	1911,0
13592	4 x 35	2	30,4	1576,0	2542,0
13593	4 G 50	1	34,6	2155,0	3550,0
13594	4 G 70	2/0	41,3	3120,0	4939,0
13595	4 G 95	3/0	46,2	4043,0	6690,0
13596	4 G 120	4/0	51,0	5069,0	8453,0
13597	4 G 150	300 kcmil	59,0	5792,0	9104,0

Dimensions and specifications may be changed without prior notice. (RA03)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

JZ-600 HMH-C flexible control cable, halogen-free, extremely fire resistant, oil resistant[1], 0,6/1kV, screened, EMC-preferred type, meter marking



Technical data

- Halogen-free, flexible control cable, core construction adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51 and DIN VDE 0285-525-3-11/ DIN EN 50525-3-11
- **Temperature range** flexing -15°C to +70°C fixed -40°C to +70°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4000 V
- **Coupling resistance** max. 250 Ohm/km
- **Minimum bending radius** flexing 15x cable Ø fixed installation 7,5x cable Ø
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of halogen-free polymer compound type TI6 to DIN VDE 0207-363-7 / DIN EN 50363-7
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Inner sheath
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of halogen-free polymer compound type, TM7 to DIN VDE 0207-363-8 / DIN EN 50363-8
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- [1] For critical applications recommend you request a consultation
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- Self-extinguishing and flame-resistant acc. to DIN VDE 0482 Part 265-2-1/ EN 50265-2-1/IEC 60332-1 (equivalent DIN VDE 0472 Part 804 test method B)
- Corrosiveness of corrosive gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 607542 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482, Part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Note

- G = with green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **JZ-600 HMH**, confer page 91

Application

Halogen-free, flame retardant cables are used as measuring and control cable in machine tools, conveyor belts, production lines as well as in plant installations, in heating and air-conditioning systems and steel production works. For fixed installation or flexible application, directed without forcing by casual, constantly recurring free movements and without tensile stress, for medium mechanical strain. This cable is suitable for the application in dry, damp and wet environments, outdoors (fixed installation) and for laying on plaster. The dense screening assures interference-free transmission of all signals and impulses.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
12850	3 G 0,5	8,8	45,0	150,0	20
12851	4 G 0,5	9,4	54,0	170,0	20
12852	5 G 0,5	10,2	66,0	199,0	20
12853	7 G 0,5	10,8	79,0	235,0	20
12854	12 G 0,5	14,3	137,0	320,0	20
12855	18 G 0,5	16,4	156,0	428,0	20
12856	25 G 0,5	19,3	250,0	503,0	20
12857	3 G 0,75	9,1	57,0	155,0	19
12858	4 G 0,75	9,9	63,0	190,0	19
12859	5 G 0,75	10,6	76,0	228,0	19
12860	7 G 0,75	11,5	100,0	323,0	19
12861	12 G 0,75	14,9	175,0	410,0	19
12862	18 G 0,75	17,2	240,0	560,0	19
12863	25 G 0,75	20,6	306,0	730,0	19

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
12864	3 G 1	9,8	64,0	163,0	18
12865	4 G 1	10,4	76,0	200,0	18
12866	5 G 1	11,4	89,0	239,0	18
12867	7 G 1	12,3	114,0	289,0	18
12868	12 G 1	15,9	186,0	464,0	18
12869	18 G 1	18,2	284,0	628,0	18
12870	25 G 1	22,0	387,0	855,0	18
12871	3 G 1,5	10,8	82,0	187,0	16
12872	4 G 1,5	11,5	99,0	240,0	16
12873	5 G 1,5	13,0	123,0	289,0	16
12874	7 G 1,5	14,2	148,0	383,0	16
12875	12 G 1,5	18,4	274,0	592,0	16
12876	18 G 1,5	21,3	386,0	806,0	16
12877	25 G 1,5	25,4	531,0	1241,0	16

Continuation ▸

JZ-600 HMH-C flexible control cable, halogen-free, extremely fire resistant, oil resistant[1)], 0,6/1kV, screened, EMC-preferred type, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
12878	3 G 2,5	12,8	148,0	298,0	14
12879	4 G 2,5	13,8	169,0	345,0	14
12880	5 G 2,5	15,0	220,0	427,0	14
12881	7 G 2,5	16,3	284,0	561,0	14
12882	12 G 2,5	21,6	470,0	857,0	14
12883	18 G 2,5	25,2	572,0	1355,0	14
12884	25 G 2,5	30,0	740,0	1995,0	14
12885	3 G 4	14,6	178,0	391,0	12
12886	4 G 4	15,7	234,0	527,0	12
12887	5 G 4	17,2	284,0	700,0	12
12888	3 G 6	15,9	245,0	629,0	10
12889	4 G 6	17,4	316,0	731,0	10
12890	5 G 6	19,2	442,0	1105,0	10
12891	3 G 10	19,8	367,0	1125,0	8
12892	4 G 10	21,5	549,0	1345,0	8
12893	5 G 10	23,5	604,0	1635,0	8

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
12894	4 G 16	25,7	807,0	1395,0	6
12895	5 G 16	28,5	940,0	1870,0	6
12896	7 G 16	31,4	1345,0	2720,0	6
12897	3 G 25	28,2	920,0	2465,0	4
12898	4 G 25	31,3	1169,0	2750,0	4
12899	5 G 25	34,5	1420,0	3490,0	4
12900	3 G 35	31,2	1250,0	3230,0	2
12901	4 G 35	34,5	1680,0	4100,0	2
12902	5 G 35	38,0	2020,0	4950,0	2
12903	4 G 50	40,5	2370,0	5780,0	1
12904	4 G 70	46,0	3257,0	7480,0	2/0
12905	4 G 95	51,3	4060,0	10220,0	3/0
12906	4 G 120	56,4	5231,0	13750,0	4/0
12907	4 G 150	64,4	6794,0	15900,0	4/0

Dimensions and specifications may be changed without prior notice. (RA03)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

JB-750 HMH-C flexible control cable, coloured core, halogen-free, screened, extremely fire resistant, oil resistant[1)], EMC-preferred type, meter marking



Technical data

- Halogen-free core flexible control cable, adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51 and DIN VDE 0285-525-3-11 / DIN EN 50525-3-11
- **Temperature range** flexing -15°C to +70°C fixed installation -40°C to +70°C
- **Nominal voltage** U_0/U 450/750 V
- **Test voltage** 3000 V
- **Coupling resistance** max. 250 Ohm/km
- **Minimum bending radius** flexing 12,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of halogen-free polymer compound type TI6 to DIN VDE 0207-363-7 / DIN EN 50363-7
- Core identification to DIN VDE 0293-308
- GN-YE conductor
- Cores stranded in layers with optimal lay-length
- Separating foil
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of halogen-free polyner compound type TM7 to DIN VDE 0207-363-8 / DIN EN 50363-8
- Sheath colour grey (RAL 7001)
- with meter marking
- **LS0H**= Low Smoke Zero Halogen

Properties

- [1)] For the critical applications we advise for consultation
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- Self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2 / IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267/ DIN EN 50267-2-2/ IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267/DIN EN 50267-2-1/ IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Note

- G = with green-yellow conductor
- Cleanroom qualification tested with analog type. Please note "cleanroom qualified" when ordering.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **JB-750 HMH**, confer page 93

Application

Halogen-free, flame retardant control cables are used for instrumentation and control cables in tooling machinery, conveyor and transportation belts, production lines, in plant construction, air-conditioning systems as well as in iron and steel works. For fixed installation or for flexing applications, for casual, not constantly recurring free movement without forced motion and without tensile stress for medium mechanical loads. The cable is suitable for use in dry, damp and wet environments and for installation on plaster An interference-free transmission of signals and pulse in assured by the high degree of screening.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11942	3 G 1,5	8,4	80,0	125,0	16
11943	4 G 1,5	9,3	97,0	160,0	16
11944	5 G 1,5	10,2	119,0	193,0	16
11945	3 G 2,5	9,9	144,0	198,0	14
11946	4 G 2,5	11,0	148,0	240,0	14
11947	5 G 2,5	12,2	181,0	280,0	14

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11948	3 G 4	12,1	174,0	251,0	12
11949	4 G 4	13,3	230,0	315,0	12
11950	5 G 4	14,7	273,0	396,0	12
11951	4 G 6	15,0	305,0	430,0	10
11952	5 G 6	16,6	439,0	524,0	10

Continuation ▸

JB-750 HMH-C flexible control cable, coloured core, halogen-free, screened, extremely fire resistant, oil resistant[1)], EMC-preferred type, meter marking

IPA

A

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11953	4 G 10	18,9	535,0	804,0	8
11954	5 G 10	21,1	592,0	942,0	8
11955	4 G 16	21,9	740,0	1190,0	6
11956	5 G 16	24,3	895,0	1370,0	6
11957	4 G 25	27,0	1140,0	1968,0	4
11958	5 G 25	30,0	1380,0	2514,0	4

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
11959	4 G 35	29,6	1576,0	2540,0	2
11960	5 G 35	32,9	1930,0	3260,0	2
11961	4 G 50	35,3	2155,0	3668,0	1
11962	4 G 70	39,0	3120,0	5076,0	2/0
11963	4 G 95	45,6	4043,0	6807,0	3/0
11964	4 G 120	50,8	5069,0	8612,0	4/0

Dimensions and specifications may be changed without prior notice. (RA03)



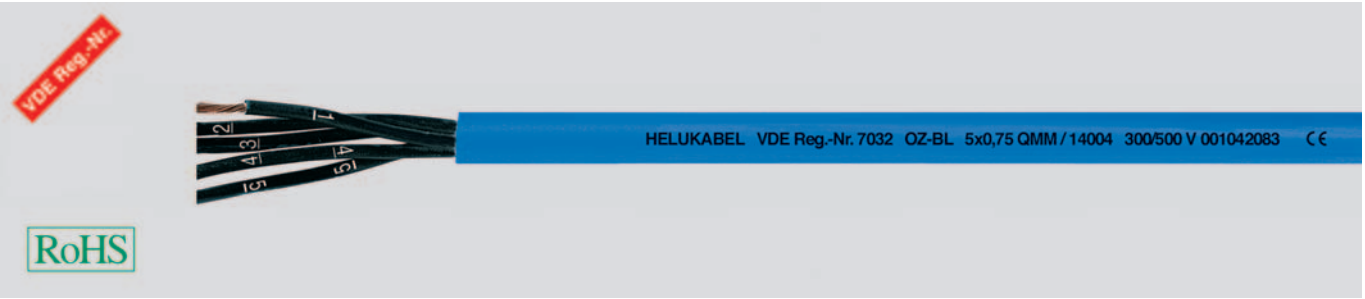
Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

INHERENTLY SAFE PVC CONTROL CABLES



OZ-BL outer sheath blue, intrinsic safety, flexible, meter marking



Technical data

- Control cable, special PVC with blue outer sheath for hazardous areas to hazard type -i- (= intrinsically safe)
- For intrinsically safe installation acc. to DIN EN 60079-14 and IEC 60079-14 section 12.2.2 (VDE 0165 part 1)
- **Temperature range** flexing -15°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Breakdown voltage** min. 6000 V
- **Insulation resistance** min. 20 MOhm x km
- **Mutual capacitance** core/core approx. 120 nF/km
- **Inductance** approx. 0,68 mH/km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type Z 7225
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- without GN-YE conductor
- Cores stranded in layers with optimal lay-length
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour blue (RAL 5015)
- with meter marking

Properties

- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- For underground laying use NYY with blue outer sheath.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- Instrumentation cable RE-2Y(St)Yv with blue outer sheath see Data and Computer Cables

Application

For hazardous areas the cables with special marking (blue) (hazard type-i-) used as flexible control and measuring cables to meet the requirements for the installation of electrical apparatus. These installations are not earthed and require a separate power circuit. Those cables are not suitable for underground laying.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
14001	2 x 0,75	5,3	14,4	46,0	19
14002	3 x 0,75	5,6	21,6	54,0	19
14003	4 x 0,75	6,3	29,0	66,0	19
14004	5 x 0,75	6,9	36,0	80,0	19
14075	7 x 0,75	7,5	52,0	110,0	19
14005	8 x 0,75	8,3	58,0	130,0	19
14076	12 x 0,75	9,8	88,0	179,0	19
14006	18 x 0,75	12,2	130,0	257,0	19
14007	25 x 0,75	14,3	180,0	365,0	19
14008	30 x 0,75	15,3	215,0	448,0	19
14009	34 x 0,75	16,5	245,0	510,0	19
14010	41 x 0,75	18,1	298,0	607,0	19
14011	2 x 1	5,6	19,0	60,0	18
14012	3 x 1	5,9	29,0	72,0	18
14013	4 x 1	6,6	38,0	86,0	18
14014	5 x 1	7,3	48,0	104,0	18
14015	7 x 1	8,1	67,0	141,0	18
14016	12 x 1	10,4	115,0	230,0	18
14017	18 x 1	12,9	173,0	343,0	18
14018	25 x 1	15,4	240,0	485,0	18

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
14019	2 x 1,5	6,4	29,0	70,0	16
14020	3 x 1,5	6,8	43,0	90,0	16
14021	4 x 1,5	7,4	58,0	109,0	16
14022	5 x 1,5	8,3	72,0	131,0	16
14023	7 x 1,5	9,2	101,0	184,0	16
14024	12 x 1,5	11,8	173,0	309,0	16
14025	18 x 1,5	14,6	259,0	440,0	16
14026	25 x 1,5	17,4	360,0	620,0	16
14027	30 x 1,5	18,6	440,0	842,0	16
14100	3 x 2,5	8,3	72,0	148,0	14
14101	4 x 2,5	9,2	96,0	178,0	14
14102	5 x 2,5	10,1	120,0	221,0	14

Dimensions and specifications may be changed without prior notice. (RA04)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA-EX
- Cable Gland - HELUTOP® HT-MS-EX-d

OZ-BL-CY outer sheath blue, intrinsic safety, flexible, meter marking



Technical data

- Control cable, special PVC with blue outer sheath for hazardous areas to hazard type -i- (=intrinsically safe)
- For intrinsically safe installation acc. to DIN EN 60079-14 and IEC 60079-14 section 12.2.2. (VDE 0165 part 1)
- **Temperature range** flexing -10°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Breakdown voltage** min. 6000 V
- **Insulation resistance** min. 20 MOhm x km
- **Mutual capacitance** core/core approx. 140 nF/km core/screen approx. 187 nF/km
- **Inductance** approx. 0,68 mH/km
- **Coupling resistance** max. 250 Ohm/km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Radiation resistance** up to 80x10^6 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type Z 7225
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- without GN-YE conductor
- Cores stranded in layers with optimal lay-length
- Separating foil
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour blue (RAL 5015)
- with meter marking

Properties

- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2 / IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- For underground laying use NYY with blue outer sheath.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- Instrumentation cable RE-2Y(St)Yv with blue outer sheath see Data and Computer cables

Application

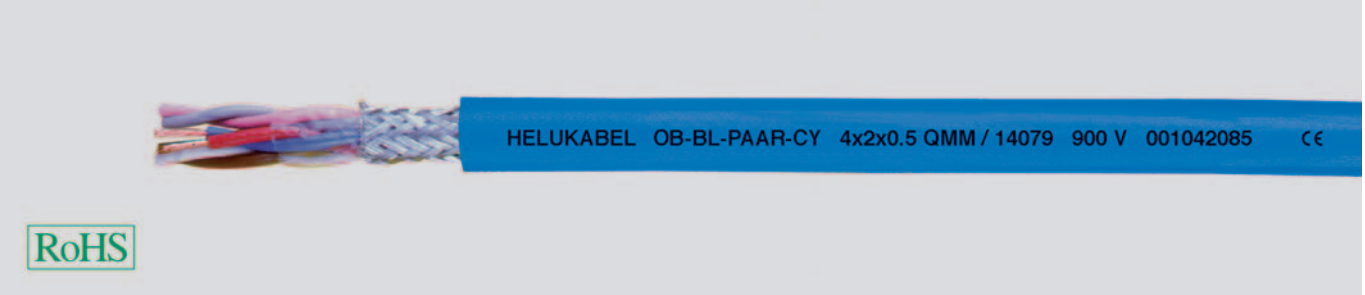
For hazardous areas the cables with special marking (blue) (hazard type-i-) used as flexible control and measuring cables to meet the requirements for the installation of electrical apparatus. These installations are not earthed and require a separate power circuit. Those cables are not suitable for underground laying. The copper braided screening ensures the transmission of data signals and free from interference.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
14028	2 x 0,75	6,1	40,0	59,0	19
14029	3 x 0,75	6,3	52,0	66,0	19
14030	4 x 0,75	6,8	60,0	77,0	19
14031	5 x 0,75	7,4	71,0	93,0	19
14088	7 x 0,75	8,2	91,0	130,0	19
14032	8 x 0,75	9,0	110,0	145,0	19
14033	10 x 0,75	10,3	137,0	180,0	19
14034	12 x 0,75	10,5	142,0	202,0	19
14035	18 x 0,75	12,7	212,0	292,0	19
14036	20 x 0,75	13,6	238,0	362,0	19
14037	25 x 0,75	15,0	281,0	415,0	19
14038	30 x 0,75	16,0	320,0	486,0	19
14039	34 x 0,75	17,2	345,0	523,0	19
14040	41 x 0,75	18,1	400,0	680,0	19
14041	2 x 1	6,4	50,0	65,0	18
14042	3 x 1	6,7	60,0	81,0	18
14043	4 x 1	7,2	71,0	98,0	18
14044	5 x 1	8,0	88,0	127,0	18
14045	7 x 1	8,7	111,0	158,0	18
14046	12 x 1	11,4	184,0	260,0	18
14047	18 x 1	13,6	260,0	380,0	18
14048	25 x 1	16,2	349,0	534,0	18
14049	34 x 1	18,5	486,0	741,0	18

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
14050	2 x 1,5	7,0	63,0	88,0	16
14051	3 x 1,5	7,4	80,0	100,0	16
14052	4 x 1,5	8,1	97,0	126,0	16
14053	5 x 1,5	9,0	119,0	160,0	16
14054	7 x 1,5	9,8	147,0	208,0	16
14055	12 x 1,5	12,8	267,0	338,0	16
14056	18 x 1,5	15,6	374,0	479,0	16
14057	25 x 1,5	18,4	526,0	705,0	16
14058	30 x 1,5	19,6	555,0	830,0	16
14059	34 x 1,5	21,2	629,0	900,0	16

Dimensions and specifications may be changed without prior notice. (RA04)

OB-BL-PAAR-CY outer sheath blue, intrinsic safety, EMC-preferred type, meter marking



Technical data

- Special PVC control cable with blue outer sheath for hazardous areas to hazard type -i- for intrinsically safe installation acc. to DIN EN 60079-14 and IEC 60079-14 section 12.2.2. (VDE 0165 part 1)
- **Conductor resistance**
  at 0,5 mm² 37,8 Ohm/km
  at 0,75 mm² 25,3 Ohm/km
- **Temperature range**
  flexing -10°C to +80°C
  fixed installation -30°C to +80°C
- **Operating peak voltage**
  (not for heavy current installation purposes)
  900 V
- **Test voltage**
  core/core 2000 V
  core/screen 1000 V
- **Breakdown voltage** min. 4000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Mutual capacitance**
  core/core approx. 105 nF/km
  core/screen approx. 145 nF/km
- **Inductance**
  approx. 0,68 mH/km
- **Characteristic impedance**
  approx. 80 Ohm
- **Coupling resistance**
  max. 250 Ohm/km
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification (pair) to DIN 47100
- Cores twisted in pairs
- Pairs stranded in layers with optimal lay-length
- Separating foil
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour blue (RAL 5015)
- with meter marking

Properties

- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- Instrumentation cable RE-2Y(St)Yv with blue outer sheath see Data and Computer Cables

Application

For hazardous areas this flexible control cable has been constructed for closed circuit systems in accordance with VDE 0165 part 1, part 12. 2. 2. 6, which covers the requirements for the special marking (blue) of this type (hazard type -i-). The paired construction and the copper screening afford a good protection against electrical interference and ensure the transmission of data signals.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
14077	2 x 2 x 0,5	7,6	47,0	89,0	20
14078	3 x 2 x 0,5	8,2	67,0	104,0	20
14079	4 x 2 x 0,5	9,0	80,0	126,0	20
14080	6 x 2 x 0,5	10,9	108,0	171,0	20
14081	8 x 2 x 0,5	12,3	129,0	251,0	20
14082	10 x 2 x 0,5	14,2	172,0	282,0	20
14083	12 x 2 x 0,5	14,7	235,0	261,0	20
14084	16 x 2 x 0,5	16,3	301,0	445,0	20
14085	20 x 2 x 0,5	17,7	343,0	525,0	20
14086	24 x 2 x 0,5	20,2	394,0	590,0	20
14087	25 x 2 x 0,5	20,6	406,0	622,0	20

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
14089	2 x 2 x 0,75	8,6	60,0	105,0	19
14090	3 x 2 x 0,75	9,1	80,0	128,0	19
14091	4 x 2 x 0,75	10,1	110,0	156,0	19
14092	6 x 2 x 0,75	12,4	142,0	216,0	19
14093	8 x 2 x 0,75	14,2	200,0	309,0	19
14094	10 x 2 x 0,75	16,0	238,0	355,0	19
14095	12 x 2 x 0,75	16,8	270,0	405,0	19
14096	16 x 2 x 0,75	18,6	342,0	560,0	19
14097	20 x 2 x 0,75	21,2	369,0	671,0	19
14098	24 x 2 x 0,75	22,8	451,0	795,0	19
14099	25 x 2 x 0,75	23,2	461,0	803,0	19

Dimensions and specifications may be changed without prior notice. (RA04)

BIO-OIL & MICROBE-RESISTANT CABLES



BIOFLEX-500®-JZ Bio-fuel resistant, abrasion resistant, recyclable environment friendly, bio-oil resistant[1], meter marking



Technical data

- Bio-oil resistant, abrasion resistant special control cable in adapted to DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range** flexing -20°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 15x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special polymer
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of special polymer compound
- Sheath colour dark green
- with meter marking

Properties

- **Resistant to** Bio-fuel (diesel and petrol), highly resistant to biologically decomposable oils, Oxygene, Ozone, Hydrolysis and Microbes
- Low adhesion

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- [1] For the critical applications we advise for consultation.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **BIOFLEX-500®-JZ-C**, confer page 110

Application

HELUKABEL® BIOFLEX-500®-JZ is an extremely robust control cable with high abrasion and tear resistant properties. Due to its high resistance to Bio-fuel, Bio-oil and coolant emulsions. It is especially suited for use in the machine, tool making and plant industries as well as in the steel industry for difficult and problem areas. The high flexibility of this cable type makes it quick and easy to install. Suitable for outdoor lying.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
25620	2 x 0,5	5,4	9,6	45,0	20
25621	3 G 0,5	5,9	14,4	55,0	20
25622	4 G 0,5	6,3	19,0	65,0	20
25623	5 G 0,5	6,9	24,0	75,0	20
25624	7 G 0,5	7,8	33,6	90,0	20
25625	10 G 0,5	9,6	48,0	120,0	20
25626	12 G 0,5	10,0	58,0	135,0	20
25627	14 G 0,5	10,3	67,0	170,0	20
25628	18 G 0,5	11,5	86,0	205,0	20
25629	25 G 0,5	13,6	120,0	270,0	20
25630	2 x 0,75	5,4	14,4	44,0	19
25631	3 G 0,75	6,2	21,6	53,0	19
25632	4 G 0,75	6,7	29,0	64,0	19
25633	5 G 0,75	7,3	36,0	76,0	19
25634	7 G 0,75	8,8	50,0	96,0	19
25635	10 G 0,75	10,5	72,0	140,0	19
25636	12 G 0,75	11,0	86,0	170,0	19
25637	14 G 0,75	11,4	101,0	202,0	19
25638	18 G 0,75	12,6	130,0	260,0	19
25639	25 G 0,75	15,2	180,0	282,0	19
25640	41 G 0,75	18,0	296,0	600,0	19
25641	42 G 0,75	18,5	310,0	620,0	19
25642	2 x 1	6,6	19,0	53,0	18
25643	3 G 1	7,0	29,0	63,0	18
25644	4 G 1	7,6	38,0	75,0	18
25645	5 G 1	8,2	48,0	89,0	18
25646	7 G 1	9,6	67,0	115,0	18
25647	10 G 1	11,6	96,0	166,0	18
25648	12 G 1	12,0	115,0	201,0	18
25649	14 G 1	13,2	134,0	230,0	18
25650	18 G 1	14,5	173,0	289,0	18
25651	25 G 1	17,6	240,0	380,0	18
25652	41 G 1	21,1	394,0	720,0	18
25653	42 G 1	21,5	403,0	740,0	18

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
25654	2 x 1,5	7,2	29,0	68,0	16
25655	3 G 1,5	7,6	43,0	87,0	16
25656	4 G 1,5	8,2	58,0	106,0	16
25657	5 G 1,5	9,0	72,0	131,0	16
25658	7 G 1,5	10,7	101,0	173,0	16
25659	10 G 1,5	13,0	144,0	245,0	16
25660	12 G 1,5	13,4	173,0	293,0	16
25661	14 G 1,5	14,5	202,0	347,0	16
25662	18 G 1,5	16,0	259,0	454,0	16
25663	25 G 1,5	19,5	360,0	641,0	16
25664	42 G 1,5	23,8	605,0	1100,0	16
25665	2 x 2,5	8,6	48,0	110,0	14
25666	3 G 2,5	9,3	72,0	146,0	14
25667	4 G 2,5	10,3	96,0	183,0	14
25668	5 G 2,5	11,5	120,0	222,0	14
25669	7 G 2,5	13,4	168,0	293,0	14
25670	12 G 2,5	17,0	288,0	512,0	14
25671	18 G 2,5	20,0	432,0	740,0	14
25672	25 G 2,5	24,1	600,0	940,0	14
25673	2 x 4	10,4	77,0	147,0	12
25674	3 G 4	11,2	115,0	228,0	12
25675	4 G 4	12,5	154,0	291,0	12
25676	5 G 4	13,8	192,0	355,0	12
25677	3 G 6	13,0	173,0	362,0	10
25678	4 G 6	14,7	230,0	468,0	10
25679	5 G 6	16,0	288,0	570,0	10
25680	3 G 10	16,7	288,0	555,0	8
25681	4 G 10	18,3	384,0	720,0	8
25682	5 G 10	20,5	480,0	894,0	8
25683	4 G 16	21,1	614,0	1063,0	6
25684	5 G 16	23,6	768,0	1400,0	6
25685	4 G 25	29,4	960,0	1590,0	4
25686	4 G 35	32,8	1344,0	2200,0	2
25687	4 G 50	38,9	1920,0	2400,0	1
25688	4 G 70	44,7	2688,0	4400,0	2/0
25689	4 G 95	59,6	3648,0	6000,0	3/0
25690	4 G 120	64,5	4608,0	7400,0	4/0

Dimensions and specifications may be changed without prior notice. (RA05)

BIOFLEX-500®-JZ-C Bio-fuel resistant, abrasion resistant, recyclable environment friendly, bio-oil resistant[1)], Cu-screened, EMC-preferred type, meter marking



Technical data

- Bio-oil resistant, abrasion resistant special control cable in adapted to DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range** flexing -20°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Insulation resistance** min. 20 MOhm x km
- **Coupling resistance** max. 250 Ohm/km
- **Minimum bending radius** flexing 20x cable Ø fixed installation 6x cable Ø
- **Radiation resistance** up to 100x10⁶cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insualtion of special polymer
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Special inner sheath
- Tinned copper braided screen, approx. 85% coverage
- Core wrapping of fleece guarantees easy cable stripping
- Outer sheath of special polymer compound
- Sheath colour dark green
- with meter marking

Properties

- **Resistant to** Bio-fuel (diesel and petrol), highly resistant to biologically decomposable oils, Oxygene, Ozone, Hydrolysis and Microbes
- Low adhesion

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- [1)] For the critical applications we advise for consultation.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **BIOFLEX-500®-JZ**, confer page 109

Application

HELUKABEL® BIOFLEX-500®-JZ-C is an extremely robust control cable with high abrasion and tear resistant properties. Due to its high resistance to Bio-fuel, Bio-oil and coolant emulsions. It is especially suited for use in the machine, tool making and plant industries as well as in the steel industry for difficult and problem areas. The inner sheaths of those cables raise the mecanical stress. The high flexibility of this cable type makes it quick and easy to install. Suitable for outdoor lying. These screened cables are particularly suitable for the interference-free transmission in instrumentation and control engineering applications (electromagnetic compatibillity). [1)] For the critical applications we advise for consultation.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
25691	2 x 0,5	6,6	41,0	68,0	20
25692	3 G 0,5	7,1	45,0	84,0	20
25693	4 G 0,5	7,6	54,0	95,0	20
25694	5 G 0,5	8,2	66,0	107,0	20
25695	7 G 0,5	9,4	79,0	135,0	20
25696	10 G 0,5	11,2	107,0	170,0	20
25697	12 G 0,5	11,3	137,0	195,0	20
25698	14 G 0,5	11,9	142,0	222,0	20
25699	18 G 0,5	12,9	156,0	278,0	20
25700	25 G 0,5	15,9	250,0	406,0	20
25701	2 x 0,75	7,2	46,0	88,0	19
25702	3 G 0,75	7,7	57,0	98,0	19
25703	4 G 0,75	8,2	63,0	112,0	19
25704	5 G 0,75	8,8	76,0	130,0	19
25705	7 G 0,75	10,1	100,0	185,0	19
25706	10 G 0,75	12,2	140,0	270,0	19
25707	12 G 0,75	12,3	175,0	294,0	19
25708	14 G 0,75	13,0	190,0	317,0	19
25709	18 G 0,75	14,6	240,0	357,0	19
25710	25 G 0,75	17,8	306,0	510,0	19
25711	41 G 0,75	21,5	403,0	951,0	19
25712	42 G 0,75	22,0	410,0	975,0	19

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
25713	2 x 1	8,1	54,0	98,0	18
25714	3 G 1	8,5	64,0	102,0	18
25715	4 G 1	9,0	76,0	145,0	18
25716	5 G 1	9,9	89,0	170,0	18
25717	7 G 1	11,6	114,0	220,0	18
25718	10 G 1	14,0	156,0	330,0	18
25719	12 G 1	14,4	186,0	350,0	18
25720	14 G 1	15,0	198,0	402,0	18
25721	18 G 1	17,0	284,0	515,0	18
25722	25 G 1	20,6	387,0	690,0	18
25723	41 G 1	25,0	578,0	1070,0	18
25724	42 G 1	25,5	590,0	1096,0	18
25725	2 x 1,5	8,5	64,0	130,0	16
25726	3 G 1,5	8,9	82,0	152,0	16
25727	4 G 1,5	9,7	99,0	167,0	16
25728	5 G 1,5	10,8	123,0	203,0	16
25729	7 G 1,5	12,5	148,0	305,0	16
25730	10 G 1,5	15,1	198,0	422,0	16
25731	12 G 1,5	15,5	274,0	435,0	16
25732	14 G 1,5	16,1	294,0	480,0	16
25733	18 G 1,5	18,6	386,0	642,0	16
25734	25 G 1,5	22,1	531,0	803,0	16

Continuation ▸

BIOFLEX-500®-JZ-C Bio-fuel resistant, abrasion resistant, recyclable environment friendly, bio-oil resistant[1)], Cu-screened, EMC-preferred type, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
25735	41 G 1,5	27,2	840,0	1360,0	16
25736	42 G 1,5	27,5	890,0	1375,0	16
25737	2 x 2,5	10,6	110,0	180,0	14
25738	3 G 2,5	11,1	148,0	215,0	14
25739	4 G 2,5	12,1	169,0	268,0	14
25740	5 G 2,5	13,2	220,0	349,0	14
25741	7 G 2,5	15,9	284,0	406,0	14
25742	12 G 2,5	19,5	470,0	720,0	14
25743	2 x 4	12,6	124,0	300,0	12
25744	3 G 4	13,4	178,0	340,0	12
25745	4 G 4	15,0	234,0	408,0	12
25746	5 G 4	16,4	284,0	504,0	12
25747	3 G 6	15,2	245,0	453,0	10

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
25748	4 G 6	17,0	316,0	560,0	10
25749	5 G 6	18,6	442,0	700,0	10
25750	3 G 10	19,5	367,0	750,0	8
25751	4 G 10	21,5	549,0	1023,0	8
25752	5 G 10	23,9	604,0	1114,0	8
25753	4 G 16	24,6	807,0	1385,0	6
25754	5 G 16	27,3	940,0	1550,0	6
25755	4 G 25	30,6	1169,0	1894,0	4
25756	4 G 35	36,9	1680,0	2395,0	2
25757	4 G 50	41,3	2370,0	3312,0	1
25758	4 G 70	48,8	3257,0	4605,0	2/0
25759	4 G 95	61,8	4060,0	6055,0	3/0
25760	4 G 120	65,7	5231,0	7318,0	4/0

Dimensions and specifications may be changed without prior notice. (RA05)

KOMPOFLEX® JZ-500 halogen-free, microbes resistant, low adhesion, meter marking



Technical data

- Microbes resistant, halogen-free special control cable in adapted to DIN VDE 0285-525-2-51 /
- DIN EN 50525-2-51
- **Temperature range** flexing -30°C to +90°C fixed installation -40°C to +100°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Tinned copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special thermoplastic polymer
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outher sheath of special thermoplastic polymer
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- **Resistant to** UV-radiation, Oxygene, Ozone, Microbes,
- Hydrofluoric acid, Hydrochloric acid and diluted sulfuric acid
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- Low adhesion

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **KOMPOLEX® JZ-500-C**, confer page 113

Application

Extremly robust universal cable. This cable is specially installed in rubbish, sewage-treatment plants, composting works, animal stalls and greenhouses. Suitable for installation for flexible use for medium mechanical, stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms as well as outside.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
26125	2 x 0,5	4,8	9,6	41,0	20
26126	3 G 0,5	5,1	14,4	50,0	20
26127	4 G 0,5	5,7	19,0	61,0	20
26128	5 G 0,5	6,2	24,0	72,0	20
26129	7 G 0,5	7,4	33,6	86,0	20
26130	12 G 0,5	9,1	58,0	130,0	20
26131	18 G 0,5	10,7	86,0	198,0	20
26132	20 G 0,5	11,2	96,0	211,0	20
26133	25 G 0,5	13,0	120,0	260,0	20
26135	34 G 0,5	14,5	163,0	361,0	20
26136	42 G 0,5	15,8	202,0	405,0	20
26137	50 G 0,5	17,3	240,0	541,0	20
26138	61 G 0,5	19,4	293,0	670,0	20
26139	2 x 0,75	5,2	14,4	42,0	19
26140	3 G 0,75	5,5	21,6	49,0	19
26141	4 G 0,75	6,2	29,0	60,0	19
26142	5 G 0,75	6,8	36,0	71,0	19
26143	7 G 0,75	8,1	50,0	88,0	19
26144	12 G 0,75	9,9	86,0	161,0	19
26145	18 G 0,75	11,9	130,0	250,0	19
26146	20 G 0,75	12,6	144,0	266,0	19
26147	25 G 0,75	14,5	180,0	273,0	19
26149	34 G 0,75	16,4	245,0	501,0	19
26150	42 G 0,75	17,6	302,0	591,0	19
26151	50 G 0,75	19,8	360,0	712,0	19
26152	61 G 0,75	20,9	439,0	820,0	19
26153	2 x 1	5,5	19,0	48,0	18
26154	3 G 1	6,0	29,0	56,0	18
26155	4 G 1	6,6	38,0	70,0	18
26156	5 G 1	7,2	48,0	81,0	18
26157	7 G 1	8,6	67,0	109,0	18
26158	12 G 1	10,7	115,0	191,0	18
26159	18 G 1	12,7	173,0	274,0	18
26160	20 G 1	13,5	192,0	314,0	18
26162	30 G 1	16,0	288,0	492,0	18
26163	34 G 1	17,4	326,0	640,0	18
26164	42 G 1	18,9	403,0	804,0	18
26165	50 G 1	21,0	480,0	932,0	18
26166	61 G 1	22,2	586,0	1102,0	18
26167	2 x 1,5	6,3	29,0	60,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
26168	3 G 1,5	6,7	43,0	79,0	16
26169	4 G 1,5	7,3	58,0	98,0	16
26170	5 G 1,5	8,2	72,0	112,0	16
26171	7 G 1,5	9,8	101,0	159,0	16
26172	12 G 1,5	12,1	173,0	280,0	16
26173	18 G 1,5	14,5	259,0	420,0	16
26174	20 G 1,5	15,2	288,0	480,0	16
26175	25 G 1,5	17,8	360,0	604,0	16
26176	34 G 1,5	19,8	490,0	812,0	16
26177	42 G 1,5	21,4	605,0	1002,0	16
26178	50 G 1,5	23,7	720,0	1240,0	16
26179	61 G 1,5	25,3	878,0	1421,0	16
26180	2 x 2,5	7,6	48,0	99,0	14
26181	3 G 2,5	8,3	72,0	136,0	14
26182	4 G 2,5	9,1	96,0	170,0	14
26183	5 G 2,5	10,2	120,0	204,0	14
26184	7 G 2,5	12,1	168,0	281,0	14
26185	12 G 2,5	15,2	288,0	487,0	14
26186	18 G 2,5	18,1	432,0	704,0	14
26187	25 G 2,5	22,2	600,0	909,0	14
26189	3 G 4	9,9	115,0	224,0	12
26190	4 G 4	11,0	154,0	289,0	12
26191	5 G 4	12,1	192,0	357,0	12
26192	7 G 4	13,3	269,0	451,0	12
26193	12 G 4	18,3	461,0	782,0	12
26195	3 G 6	11,7	173,0	345,0	10
26196	4 G 6	13,0	230,0	417,0	10
26197	5 G 6	14,5	288,0	521,0	10
26198	7 G 6	16,0	403,0	622,0	10
26199	3 G 10	15,0	288,0	537,0	8
26200	4 G 10	16,8	384,0	699,0	8
26201	5 G 10	18,7	480,0	851,0	8
26202	7 G 10	20,6	672,0	1102,0	8
26204	4 G 16	19,7	614,0	1028,0	6
26206	7 G 16	24,4	1075,0	1772,0	6
26208	4 G 25	25,2	960,0	1577,0	4
26212	4 G 35	29,0	1344,0	2097,0	2
26215	4 G 50	33,4	1920,0	2914,0	1
26216	5 G 50	37,2	2400,0	3919,0	1

Dimensions and specifications may be changed without prior notice. (RA05)

KOMPOFLEX® JZ-500-C halogen-free, microbes resistant, Cu-screened, EMC-preferred type, meter marking



Technical data

- Screened microbes resistant, halogen-free special control cable in adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51
- **Temperature range** flexing -30°C to +90°C fixed installation -40°C to +100°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** core/core 4000 V core/screen 2000 V
- **Insulation resistance** min. 20 MOhm x km
- **Coupling resistance** max. 250 Ohm/km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Tinned copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special thermoplastic polymer
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Inner sheath of special thermoplastic polymer
- Tinned copper braided screen, approx. 85% coverage
- Core wrapping of fleece guarantees easy cable stripping
- Outer sheath of special thermoplastic polymer
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- **Resistant to** UV-radiation, Oxygene, Ozone, Microbes, Hydrofluoric acid, Hydrochloric acid and diluted sulfuric acid
- Low adhesion
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalen values. The actual cross-section is in mm².
- unscreened analogue type: **KOMPOFLEX® JZ-500**, confer page 112

Application

Extremly robust universal cable. This cable is specially installed in rubbish, sewage-treatment plants, composting works, animal stalls and greenhouses. The inner sheaths of those cables raise the mechanical stress. Suitable for installation for flexible use for medium mechanical, stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms as well as outside. The high flexibility of this cable type makes it quick and easy to install. This screened cable is ideal for use in data signal transmission free from interferences for measurement and control engineering technology.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
26217	2 x 0,5	6,9	41,0	68,0	20
26218	3 G 0,5	7,2	45,0	84,0	20
26219	4 G 0,5	7,8	54,0	95,0	20
26220	5 G 0,5	8,3	66,0	107,0	20
26221	7 G 0,5	9,5	79,0	135,0	20
26222	12 G 0,5	11,3	137,0	195,0	20
26223	18 G 0,5	13,1	156,0	278,0	20
26224	20 G 0,5	13,8	173,0	310,0	20
26225	25 G 0,5	15,7	250,0	406,0	20
26226	30 G 0,5	16,0	297,0	520,0	20
26227	34 G 0,5	17,4	316,0	571,0	20
26228	42 G 0,5	18,9	360,0	651,0	20
26229	50 G 0,5	20,9	407,0	760,0	20
26230	61 G 0,5	22,9	520,0	911,0	20
26231	2 x 0,75	7,6	46,0	88,0	19
26232	3 G 0,75	7,8	57,0	98,0	19
26233	4 G 0,75	8,3	63,0	112,0	19
26234	5 G 0,75	9,1	76,0	130,0	19
26235	7 G 0,75	10,4	100,0	185,0	19
26236	12 G 0,75	12,5	175,0	294,0	19
26237	18 G 0,75	14,3	240,0	357,0	19
26238	20 G 0,75	15,2	262,0	404,0	19
26239	25 G 0,75	17,6	306,0	510,0	19
26240	30 G 0,75	18,1	340,0	561,0	19
26241	34 G 0,75	19,5	346,0	670,0	19
26242	42 G 0,75	20,9	410,0	960,0	19
26243	50 G 0,75	23,2	470,0	1104,0	19
26244	61 G 0,75	25,0	550,0	1270,0	19

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
26245	2 x 1	7,9	54,0	98,0	18
26246	3 G 1	8,2	64,0	102,0	18
26247	4 G 1	8,9	76,0	145,0	18
26248	5 G 1	9,5	89,0	171,0	18
26249	7 G 1	11,0	114,0	210,0	18
26250	12 G 1	13,1	186,0	330,0	18
26251	18 G 1	15,4	284,0	488,0	18
26252	20 G 1	16,0	325,0	545,0	18
26253	25 G 1	18,3	387,0	690,0	18
26254	30 G 1	18,8	457,0	770,0	18
26255	34 G 1	20,3	500,0	811,0	18
26256	42 G 1	21,8	590,0	996,0	18
26257	50 G 1	24,0	681,0	1320,0	18
26258	61 G 1	26,2	710,0	1480,0	18
26259	2 x 1,5	8,4	64,0	130,0	16
26260	3 G 1,5	9,0	82,0	154,0	16
26261	4 G 1,5	9,6	99,0	165,0	16
26262	5 G 1,5	10,5	123,0	197,0	16
26263	7 G 1,5	12,1	148,0	305,0	16
26264	12 G 1,5	14,9	274,0	435,0	16
26265	18 G 1,5	17,1	386,0	642,0	16
26266	20 G 1,5	18,0	401,0	718,0	16
26267	25 G 1,5	20,7	531,0	803,0	16
26268	30 G 1,5	21,1	598,0	961,0	16
26269	34 G 1,5	22,7	671,0	1060,0	16
26270	42 G 1,5	24,4	890,0	1300,0	16
26271	50 G 1,5	26,8	997,0	1677,0	16
26272	61 G 1,5	29,6	1120,0	1971,0	16

Continuation ▸

KOMPOFLEX® JZ-500-C halogen-free, microbes resistant, Cu-screened,

EMC-preferred type, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
26273	2 x 2,5	10,0	110,0	180,0	14
26274	3 G 2,5	10,7	148,0	215,0	14
26275	4 G 2,5	11,4	169,0	268,0	14
26276	5 G 2,5	12,5	220,0	349,0	14
26277	7 G 2,5	15,0	284,0	404,0	14
26278	12 G 2,5	18,0	470,0	710,0	14
26279	18 G 2,5	21,2	572,0	891,0	14
26280	25 G 2,5	25,5	740,0	1104,0	14
26281	2 x 4	11,6	124,0	300,0	12
26282	3 G 4	12,3	178,0	340,0	12
26283	4 G 4	13,4	234,0	408,0	12
26284	5 G 4	14,8	284,0	504,0	12
26285	7 G 4	16,2	321,0	640,0	12
26286	12 G 4	21,8	581,0	894,0	12
26287	2 x 6	13,5	176,0	391,0	10
26288	3 G 6	14,2	245,0	453,0	10
26289	4 G 6	15,6	316,0	560,0	10
26290	5 G 6	17,0	442,0	680,0	10
26291	7 G 6	18,7	530,0	891,0	10

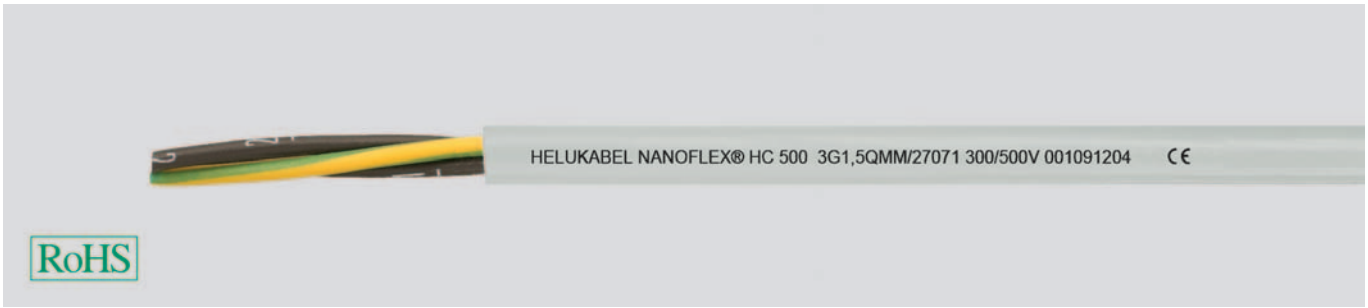
Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
26292	3 G 10	17,8	367,0	730,0	8
26293	4 G 10	19,7	549,0	1004,0	8
26294	5 G 10	21,6	604,0	1170,0	8
26295	7 G 10	24,0	820,0	1405,0	8
26296	3 G 16	20,7	653,0	894,0	6
26297	4 G 16	22,6	807,0	1311,0	6
26298	5 G 16	25,2	940,0	1550,0	6
26299	7 G 16	27,6	1345,0	1820,0	6
26300	3 G 25	26,0	920,0	1430,0	4
26301	4 G 25	28,9	1169,0	1894,0	4
26302	5 G 25	31,8	1420,0	2272,0	4
26303	4 G 35	33,4	1680,0	2310,0	2
26304	5 G 35	37,2	2020,0	2740,0	2
26305	4 G 50	38,2	2370,0	3270,0	1
26306	5 G 50	43,0	2880,0	4080,0	1

Dimensions and specifications may be changed without prior notice. (RA05)

HYGIENIC CABLE



NANOFLEX® HC*500 cut-resistant, meter marking



Technical data

- Special PUR sheathed cable acc. to DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range** flexing -5°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of special **full-polyurethane** compound type TMPU to DIN EN 50363-10-2
- Sheath colour light grey (RAL 7035)
- with meter marking

Properties

- Resistant to UV radiation, Oxygen, Ozone, Hydrolysis, Microbes
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- Good cleaning properties
- Resistent to all standard detergents

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **NANOFLEX®HC 500-C**, confer page 117
- *Hygienic Cable

Application

Special PUR cable for the food and beverage industry; outer sheath with antimicrobial properties increases process reliability in all applications in which food and beverages are processed unpacked and unsealed, e. g. processing of dairy products, meat, fish; production of convenience foods, brewery and beverage industry.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
27031	2 x 0,5	4,8	10,0	45,0	20
27032	3 G 0,5	5,1	14,0	55,0	20
27033	3 x 0,5	5,1	14,0	55,0	20
27034	4 G 0,5	5,5	19,0	65,0	20
27035	4 x 0,5	5,5	19,0	65,0	20
27036	5 G 0,5	6,2	24,0	75,0	20
27037	5 x 0,5	6,2	24,0	75,0	20
27038	7 G 0,5	7,2	34,0	90,0	20
27039	7 x 0,5	7,2	34,0	90,0	20
27040	10 G 0,5	8,3	48,0	120,0	20
27041	12 G 0,5	8,7	58,0	135,0	20
27042	18 G 0,5	10,7	86,0	205,0	20
27043	25 G 0,5	12,6	120,0	270,0	20
27044	2 G 0,75	5,3	14,0	44,0	19
27045	3 G 0,75	5,6	22,0	53,0	19
27046	3 G 0,75	5,6	22,0	53,0	19
27047	4 G 0,75	6,3	29,0	64,0	19
27048	4 x 0,75	6,3	29,0	64,0	19
27049	5 G 0,75	6,9	36,0	76,0	19
27050	5 x 0,75	6,9	36,0	76,0	19
27051	7 G 0,75	7,5	50,0	96,0	19
27052	7 x 0,75	7,5	50,0	96,0	19
27053	10 G 0,75	9,2	72,0	140,0	19
27054	12 G 0,75	9,8	86,0	170,0	19
27055	18 G 0,75	12,2	130,0	260,0	19
27056	25 G 0,75	14,3	180,0	282,0	19
27057	2 x 1	5,6	19,0	53,0	18
27058	3 G 1	5,9	29,0	63,0	18
27059	3 x 1	5,9	29,0	63,0	18
27060	4 G 1	6,6	38,0	75,0	18

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
27061	4 x 1	6,6	38,0	75,0	18
27062	5 G 1	7,3	48,0	89,0	18
27063	5 x 1	7,3	48,0	89,0	18
27064	7 G 1	8,1	67,0	115,0	18
27065	7 x 1	8,1	67,0	115,0	18
27066	10 G 1	9,8	96,0	166,0	18
27067	12 G 1	10,4	115,0	201,0	18
27068	18 G 1	12,9	173,0	289,0	18
27069	25 G 1	15,4	240,0	380,0	18
27070	2 x 1,5	6,4	29,0	68,0	16
27071	3 G 1,5	6,8	43,0	87,0	16
27072	3 x 1,5	6,8	43,0	87,0	16
27073	4 G 1,5	7,4	58,0	106,0	16
27074	4 x 1,5	7,4	58,0	106,0	16
27075	5 G 1,5	8,3	72,0	131,0	16
27076	5 x 1,5	8,3	72,0	131,0	16
27077	7 G 1,5	10,9	101,0	173,0	16
27078	7 x 1,5	10,9	101,0	173,0	16
27079	12 G 1,5	11,8	173,0	293,0	16
27080	18 G 1,5	14,6	259,0	454,0	16
27081	25 G 1,5	17,4	360,0	641,0	16
27082	2 x 2,5	7,8	48,0	110,0	14
27083	3 G 2,5	8,3	72,0	146,0	14
27084	4 G 2,5	9,2	96,0	183,0	14
27085	5 G 2,5	10,1	120,0	222,0	14
27086	7 G 2,5	11,2	168,0	293,0	14
27087	12 G 2,5	14,8	288,0	512,0	14
27088	4 G 4	10,9	154,0	291,0	12
27089	5 G 4	12,1	192,0	355,0	12

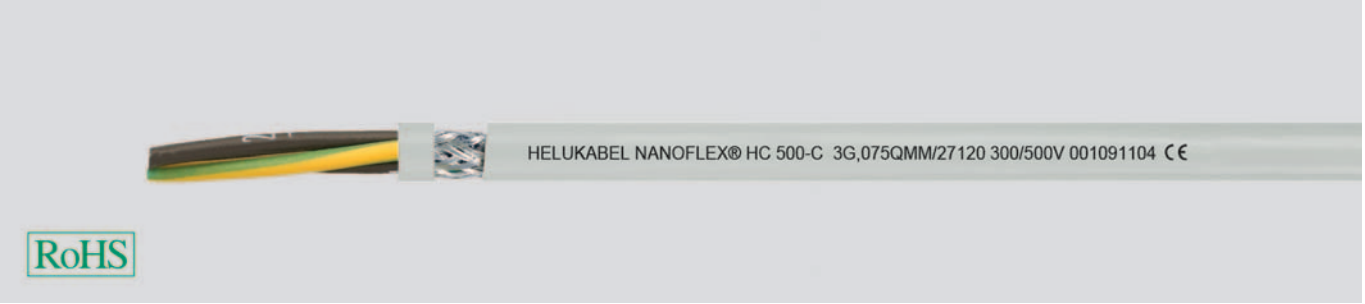
Dimensions and specifications may be changed without prior notice. (RA02)



Suitable accessories can be found in Chapter X.

• Cable Gland - HELUTOP® HT-Clean

NANOFLEX® HC*500-C EMC preferred type, cut-resistant, screened, no inner sheath, meter marking



Technical data

- Special PUR sheated cable adapted to DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range** flexing -5°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Breakdown voltage** min. 6000 V
- **Insulation resistance** Min. 20 MOhm x km
- **Coupling resistance** max. 250 Ohm/km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Separating foil
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special **full-polyurethane** compound type TMPU to DIN EN 50363-10-2
- Sheath colour light grey (RAL 7035)
- With meter marking

Properties

- Resistant to UV radiation, Oxygen, Ozone, Hydrolysis, Microbes
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- Good cleaning properties
- Resistent to all standard detergents

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- Unscreened analogue type: **NANOFLEX® HC 500**, confer page 116
- *Hygienic Cable

Application

Screened special PUR cable for the food and beverage industry; outer sheath with antimicrobial properties increases process reliability in all applications in which food and beverages are processed unpacked and unsealed, e. g. processing of dairy products, meat, fish; production of convenience foods, brewery and beverage industry.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

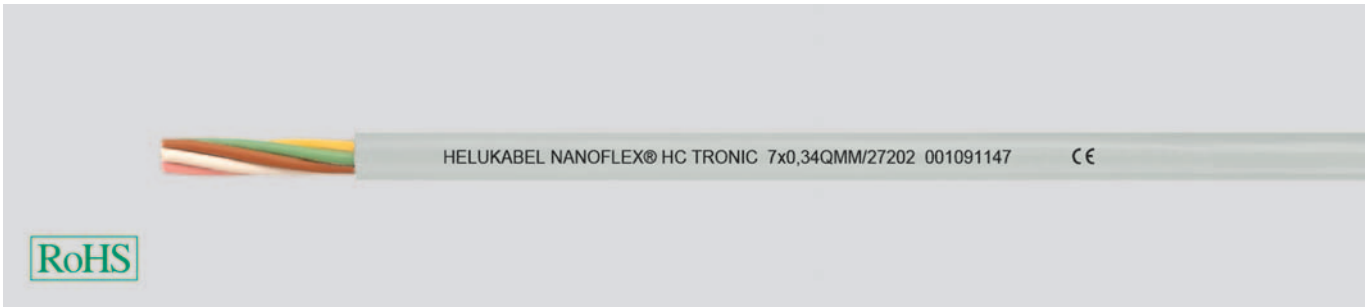
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
27105	2 x 0,5	5,7	35,0	47,0	20
27107	3 G 0,5	5,9	42,0	57,0	20
27106	3 x 0,5	5,9	42,0	57,0	20
27108	4 G 0,5	6,4	47,0	60,0	20
27109	4 x 0,5	6,4	47,0	60,0	20
27110	5 x 0,5	6,9	56,0	75,0	20
27111	5 G 0,5	6,9	56,0	75,0	20
27112	7 G 0,5	7,6	69,0	97,0	20
27113	7 x 0,5	7,6	69,0	97,0	20
27114	10 G 0,5	9,6	94,0	133,0	20
27115	12 G 0,5	9,7	108,0	158,0	20
27116	18 G 0,5	11,5	145,0	218,0	20
27117	25 G 0,5	13,7	240,0	315,0	20
27118	2 x 0,75	6,1	40,0	60,0	19
27119	3 x 0,75	6,3	52,0	67,0	19
27120	3 G 0,75	6,3	52,0	67,0	19
27121	4 G 0,75	6,8	60,0	76,0	19
27122	4 x 0,75	6,8	60,0	76,0	19
27123	5 x 0,75	7,4	71,0	92,0	19
27124	5 G 0,75	7,4	71,0	92,0	19
27125	7 G 0,75	8,2	91,0	131,0	19
27126	7 x 0,75	8,2	91,0	131,0	19
27127	10 G 0,75	10,3	137,0	180,0	19
27128	12 G 0,75	10,5	142,0	204,0	19
27129	18 G 0,75	12,7	212,0	290,0	19
27130	25 G 0,75	15,0	281,0	413,0	19
27131	2 x 1	6,4	50,0	66,0	18
27132	3 G 1	6,7	60,0	82,0	18
27133	3 x 1	6,7	60,0	82,0	18
27134	4 x 1	7,2	71,0	100,0	18

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
27135	4 G 1	7,2	71,0	100,0	18
27136	5 x 1	8,0	88,0	128,0	18
27137	5 G 1	8,0	88,0	128,0	18
27138	7 x 1	8,7	111,0	157,0	18
27139	7 G 1	8,7	111,0	157,0	18
27140	10 G 1	11,2	150,0	230,0	18
27141	12 G 1	11,4	184,0	262,0	18
27142	18 G 1	13,6	260,0	381,0	18
27143	25 G 1	16,2	349,0	535,0	18
27144	2 x 1,5	7,0	63,0	87,0	16
27145	3 x 1,5	7,4	80,0	102,0	16
27146	3 G 1,5	7,4	80,0	102,0	16
27147	4 x 1,5	8,1	97,0	127,0	16
27148	4 G 1,5	8,1	97,0	127,0	16
27149	5 x 1,5	9,0	119,0	159,0	16
27150	5 G 1,5	9,0	119,0	159,0	16
27151	7 x 1,5	9,8	147,0	207,0	16
27152	7 G 1,5	9,8	147,0	207,0	16
27153	12 G 1,5	12,8	267,0	340,0	16
27154	18 G 1,5	15,6	374,0	480,0	16
27155	25 G 1,5	18,4	526,0	704,0	16
27156	2 x 2,5	8,4	96,0	131,0	14
27157	3 G 2,5	8,8	144,0	168,0	14
27158	4 G 2,5	9,8	148,0	194,0	14
27159	5 G 2,5	10,8	181,0	222,0	14
27160	7 G 2,5	11,9	255,0	345,0	14
27161	12 G 2,5	15,8	441,0	570,0	14
27162	4 G 4	11,6	230,0	310,0	12
27163	5 G 4	12,8	273,0	386,0	12

Dimensions and specifications may be changed without prior notice. (RA02)

NANOFLEX® HC*TRONIC flexible, colour code to DIN 47100, meter marking



Technical data

- Special-PUR data cable adapted to DIN VDE 0812
- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -40°C to +80°C
- **Peak operating voltage**
  (not for purposes of high current and power installation)
  0,14 mm² = 350 V
  ≥ 0,25 mm² = 500 V
- **Test voltage**
  up to 0,25 mm² 1200 V
  from 0,34 mm² 2000 V
- **Breakdown voltage**
  up to 0,25 mm² 2400 V
  from 0,34 mm² 4000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Operating capacity**
  (approx. value) at 800 Hz
  0,14 mm² 120 pF/m
  ≥ 0,25 mm² 150 pF/m
- **Inductance**
  approx. 0,65 mH/km
- **Impedance**
  approx. 78 Ohm
- **Minimum bending radius**
  flexing 7,5x cable Ø
  fixed installation 4x cable Ø
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, from 0,5 mm² to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Conductor construction:
  0,14 mm² = 18x0,1 mm
  0,25 mm² = 14x0,15 mm
  0,34 mm² = 7x0,25 mm
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN 47100, without colour repetition
- Cores stranded in layers with optimal lay-lengths
- Outer sheath of special **full polyurethane** compound type TMPU to DIN EN 50363-10-2
- Sheath colour light grey (RAL 7035)
- with meter marking

Properties

- Resistant to UV radiation, oxygen, ozone, hydrolysis, microbes
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- Good cleaning properties
- Resistant to all standard detergents

Note

- Screened analogue type: **NANOFLEX®HC TRONIC-C**, confer page 120
- *Hygienic Cable

Application

Special PUR data cable for the food and beverage industry; outer sheath with antimicrobial properties increases process reliability in all applications in which food and beverages are processed unpacked and unsealed, e. g. processing of dairy products, meat, fish; production of convenience foods, brewery and beverage industry.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
27164	2 x 0,14	3,5	3,0	13,0	26
27165	3 x 0,14	3,7	4,0	16,0	26
27166	4 x 0,14	3,9	5,0	19,0	26
27167	5 x 0,14	4,3	7,0	22,0	26
27168	6 x 0,14	4,6	8,0	25,0	26
27169	7 x 0,14	4,6	9,0	28,0	26
27170	8 x 0,14	5,5	11,0	35,0	26
27171	10 x 0,14	5,9	13,0	41,0	26
27172	12 x 0,14	6,1	16,0	48,0	26
27173	14 x 0,14	6,3	19,0	53,0	26
27174	16 x 0,14	6,9	22,0	59,0	26
27175	18 x 0,14	7,2	24,0	65,0	26
27176	20 x 0,14	7,5	27,0	70,0	26
27177	21 x 0,14	7,6	28,0	77,0	26
27178	24 x 0,14	8,5	32,0	87,0	26
27179	25 x 0,14	8,6	34,0	91,0	26

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
27180	2 x 0,25	3,8	5,0	18,0	24
27181	3 x 0,25	4,0	7,0	22,0	24
27182	4 x 0,25	4,3	10,0	26,0	24
27183	5 x 0,25	4,7	12,0	30,0	24
27184	6 x 0,25	5,3	14,0	36,0	24
27185	7 x 0,25	5,3	17,0	42,0	24
27186	8 x 0,25	6,1	19,0	49,0	24
27187	10 x 0,25	6,8	24,0	57,0	24
27188	12 x 0,25	7,0	29,0	66,0	24
27189	14 x 0,25	7,3	34,0	75,0	24
27190	16 x 0,25	7,7	38,0	84,0	24
27191	18 x 0,25	8,3	43,0	72,0	24
27192	19 x 0,25	8,3	46,0	84,0	24
27193	20 x 0,25	8,7	48,0	101,0	24
27194	21 x 0,25	8,8	50,0	107,0	24
27195	24 x 0,25	9,8	60,0	120,0	24
27196	25 x 0,25	10,0	61,0	132,0	24

Continuation ▸

NANOFLEX® HC*TRONIC flexible, colour code to DIN 47100, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
27197	2 x 0,34	4,2	7,0	22,0	22
27198	3 x 0,34	4,4	10,0	30,0	22
27199	4 x 0,34	4,8	13,0	43,0	22
27200	5 x 0,34	5,4	16,0	54,0	22
27201	6 x 0,34	5,9	20,0	58,0	22
27202	7 x 0,34	5,9	23,0	61,0	22
27203	8 x 0,34	7,1	26,0	73,0	22
27204	10 x 0,34	7,6	33,0	82,0	22
27205	12 x 0,34	7,8	39,0	102,0	22
27206	14 x 0,34	8,4	46,0	108,0	22
27207	16 x 0,34	8,8	52,0	126,0	22
27208	18 x 0,34	9,3	59,0	143,0	22
27209	20 x 0,34	1,0	65,0	160,0	22
27210	21 x 0,34	10,1	69,0	166,0	22
27211	24 x 0,34	11,2	78,0	186,0	22
27212	25 x 0,34	11,4	82,0	192,0	22
27213	2 x 0,5	4,6	10,0	40,0	20
27214	3 x 0,5	4,9	14,0	46,0	20
27215	4 x 0,5	5,5	19,0	55,0	20
27216	5 x 0,5	6,0	24,0	64,0	20
27217	6 x 0,5	6,8	29,0	73,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
27218	7 x 0,5	6,8	34,0	81,0	20
27219	8 x 0,5	7,8	38,0	97,0	20
27220	10 x 0,5	8,7	48,0	116,0	20
27221	12 x 0,5	8,9	58,0	135,0	20
27222	16 x 0,5	10,0	77,0	168,0	20
27223	20 x 0,5	11,2	96,0	213,0	20
27224	24 x 0,5	12,7	116,0	241,0	20
27225	2 x 0,75	5,2	14,0	47,0	19
27226	3 x 0,75	5,5	22,0	54,0	19
27227	4 x 0,75	6,0	29,0	66,0	19
27228	5 x 0,75	6,7	36,0	80,0	19
27229	7 x 0,75	7,4	50,0	110,0	18
27230	8 x 0,75	8,7	58,0	125,0	19
27231	10 x 0,75	9,6	72,0	148,0	19
27232	12 x 0,75	9,9	86,0	176,0	19
27233	16 x 0,75	11,1	115,0	220,0	19
27234	20 x 0,75	12,5	144,0	276,0	19

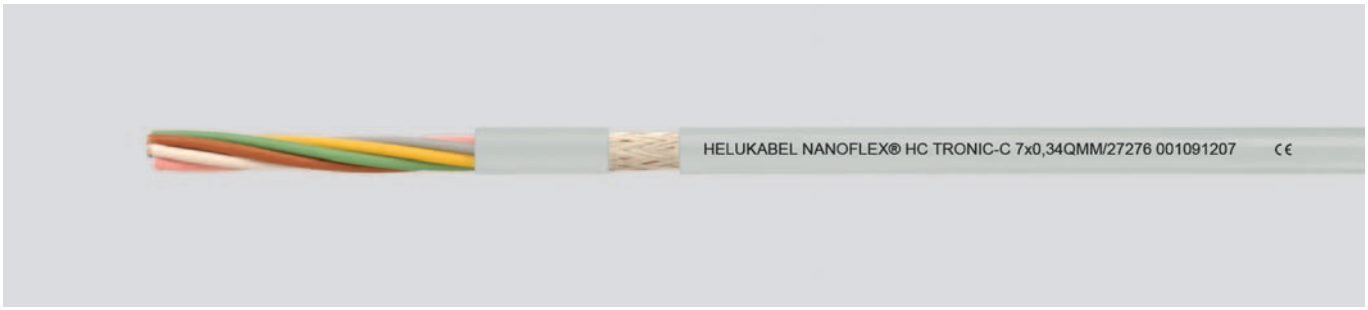
Dimensions and specifications may be changed without prior notice. (RA02)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-Clean

NANOFLEX® HC*TRONIC-C EMC preferred type, flexible, colour code to DIN 47100, screened, meter marking



Technical data

- Special-PUR data cable for electronic control adapted to DIN VDE 0812
- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -40°C to +80°C
- **Peak operating voltage**
  (not for purposes of high current and power installation)
  0,14 mm² = 350 V
  ≥ 0,25 mm² = 500 V
- **Test voltage**
  core/core 1200 V
  core/screen 800 V
- **Breakdown voltage**
  min. 2400 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Operating capacity**
  (approx.-value) at 800 Hz
  core/core at 0,14 mm² = 120 pF/m
  core/core ≥ 0,25 mm² = 150 pF/m
  core/screen at 0,14 mm² = 240 pF/m
  core/screen ≥ 0,25 mm² = 270 pF/m
- **Inductance**
  approx. 0,65 mH/km
- **Impedance**
  approx. 78 Ohm
- **Coupling resistance**
  max. 250 Ohm/km
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, from 0,5 mm² to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Conductor construction:
  0,14 mm² = 18x0,1 mm
  0,25 mm² = 14x0,15 mm
  0,34 mm² = 7x0,25 mm
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN 47100, without colour repetition
- Cores stranded in layers with optimal lay-length
- Separating foil
- Drain stranded wire, tinned copper
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special **full polyurethane** compound type TMPU to DIN EN 50363-10-2
- Sheath colour light grey (RAL 7035)
- with meter marking

Properties

- Resistant to UV radiation, oxygen, ozone, hydrolysis, microbes
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- Good cleaning properties
- Resistant to all standard detergents

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **NANOFLEX®HC TRONIC**, confer page 118
- *Hygienic Cable

Application

Special PUR cable for the food and beverage industry; outer sheath with antimicrobial properties increases process reliability in all applications in which food and beverages are processed unpacked and unsealed, e. g. processing of dairy products, meat, fish; production of convenience foods, brewery and beverage industry.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
27235	1 x 0,14	2,6	6,0	16,0	26
27236	2 x 0,14	3,9	12,0	20,0	26
27237	3 x 0,14	4,0	13,0	27,0	26
27238	4 x 0,14	4,3	15,0	32,0	26
27239	5 x 0,14	4,7	16,0	37,0	26
27240	6 x 0,14	5,2	18,0	42,0	26
27241	7 x 0,14	5,2	19,0	48,0	26
27242	8 x 0,14	5,9	21,0	55,0	26
27243	10 x 0,14	6,5	29,0	65,0	26
27244	12 x 0,14	6,7	31,0	77,0	26
27245	14 x 0,14	6,9	32,0	79,0	26
27246	16 x 0,14	7,3	43,0	89,0	26
27247	18 x 0,14	7,6	51,0	103,0	26
27248	20 x 0,14	8,3	55,0	116,0	26
27249	21 x 0,14	8,4	56,0	120,0	26
27250	24 x 0,14	8,9	62,0	131,0	26
27251	25 x 0,14	9,1	61,0	136,0	26

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
27252	1 x 0,25	3,0	7,0	27,0	24
27253	2 x 0,25	4,3	16,0	31,0	24
27254	3 x 0,25	4,5	19,0	36,0	24
27255	4 x 0,25	4,8	22,0	40,0	24
27256	5 x 0,25	5,4	27,0	51,0	24
27257	6 x 0,25	5,8	32,0	58,0	24
27258	7 x 0,25	5,8	35,0	64,0	24
27259	8 x 0,25	7,0	42,0	82,0	24
27260	10 x 0,25	7,3	50,0	85,0	24
27261	12 x 0,25	7,5	58,0	90,0	24
27262	14 x 0,25	8,1	62,0	144,0	24
27263	16 x 0,25	8,5	67,0	110,0	24
27264	18 x 0,25	9,1	78,0	142,0	24
27265	19 x 0,25	9,1	79,0	146,0	24
27266	20 x 0,25	9,5	152,0	88,0	24
27267	21 x 0,25	9,6	91,0	150,0	24
27268	24 x 0,25	10,4	96,0	163,0	24

Continuation ▸

NANOFLEX® HC*TRONIC-C EMC preferred type, flexible, colour code to DIN 47100, screened, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
27269	25 x 0,25	10,6	99,0	169,0	24
27270	1 x 0,34	3,2	13,0	24,0	22
27271	2 x 0,34	4,9	18,0	30,0	22
27272	3 x 0,34	5,1	22,0	37,0	22
27273	4 x 0,34	5,5	28,0	48,0	22
27274	5 x 0,34	6,0	31,0	54,0	22
27275	6 x 0,34	6,6	45,0	61,0	22
27276	7 x 0,34	6,6	51,0	67,0	22
27277	8 x 0,34	7,7	54,0	81,0	22
27278	10 x 0,34	8,4	65,0	103,0	22
27279	12 x 0,34	8,6	70,0	110,0	22
27280	14 x 0,34	9,0	81,0	153,0	22
27281	16 x 0,34	9,6	88,0	159,0	22
27282	18 x 0,34	10,1	103,0	172,0	22
27283	19 x 0,34	10,1	106,0	181,0	22
27284	20 x 0,34	10,8	112,0	191,0	22
27285	21 x 0,34	10,9	116,0	199,0	22
27286	24 x 0,34	11,7	129,0	229,0	22
27287	25 x 0,34	12,0	120,0	241,0	22
27288	1 x 0,5	3,5	15,0	40,0	20
27289	2 x 0,5	5,3	29,0	45,0	20
27290	3 x 0,5	5,6	39,0	55,0	20
27291	4 x 0,5	6,3	46,0	61,0	20
27292	5 x 0,5	6,8	52,0	76,0	20
27293	6 x 0,5	7,3	66,0	89,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
27294	7 x 0,5	7,3	68,0	98,0	20
27295	8 x 0,5	8,6	80,0	117,0	20
27296	10 x 0,5	9,4	93,0	135,0	20
27297	12 x 0,5	9,6	117,0	157,0	20
27298	14 x 0,5	10,1	122,0	190,0	20
27299	16 x 0,5	10,6	129,0	210,0	20
27300	18 x 0,5	11,3	152,0	217,0	20
27301	19 x 0,5	11,3	156,0	246,0	20
27302	20 x 0,5	12,0	173,0	275,0	20
27303	24 x 0,5	13,2	256,0	337,0	20
27304	25 x 0,5	13,7	250,0	351,0	20
27305	1 x 0,75	4,0	19,0	41,0	19
27306	2 x 0,75	5,8	38,0	59,0	19
27307	3 x 0,75	6,3	50,0	66,0	19
27308	4 x 0,75	6,8	57,0	77,0	19
27309	5 x 0,75	7,4	70,0	93,0	19
27310	6 x 0,75	8,2	87,0	113,0	19
27311	7 x 0,75	8,2	96,0	130,0	19
27312	8 x 0,75	9,7	110,0	145,0	19
27313	10 x 0,75	10,3	140,0	180,0	19
27314	12 x 0,75	10,5	151,0	202,0	19
27315	14 x 0,75	11,3	167,0	225,0	19
27316	16 x 0,75	11,9	183,0	275,0	19
27317	18 x 0,75	12,7	207,0	292,0	19
27318	19 x 0,75	12,7	221,0	322,0	19
27319	20 x 0,75	13,6	238,0	362,0	19
27320	24 x 0,75	14,9	270,0	435,0	19
27321	25 x 0,75	15,0	278,0	415,0	19

Dimensions and specifications may be changed without prior notice. (RA02)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-Clean


VERTEILERFLEX
PAAR-TRONIC
PAAR-TRONIC-Li-2YCYv
SENSORFLEX®
DATAFLAMM®
TRONIC (LiYY)
RE-2Y(St)

DATA & COMPUTER CABLES

Data & computer cables	Temperature (°C) - flexing	Temperature (°C) - fixed	Nominal voltage U_0/U Operating top level voltage	Bending radius - flexing x Ø	Bending radius - fixed x Ø	Halogen-free	UV-resistant	Outdoor use	Drag chain	Colored cores/VDE 0293	Screened/shielded	HAR/VDE REG no./VDE	UL/CSA	Page
TRONIC (LiYY)	-5 to +80	-40 to +80	350	7.5x	4x					X				124
PAAR-TRONIC	-5 to +80	-30 to +80	350	7.5x	4x					X				126
SENSORFLEX®	-5 to +80	-30 to +80	350	7.5/15x					(X)	X				128
VERTEILERFLEX	-5 to +80	-30 to +80	300/500	7.5/15x					(X)	X				129
DATAFLAMM®	+5 to +70	-40 to +70	350	7.5x	7.5x	X				X				130
TRONIC-CY (LiY-CY)	-5 to +80	-40 to +80	350	10x	5x					X	X			131
PAAR-TRONIC-CY	-5 to +80	-30 to +80	350	10x	5x					X	X			133
PAAR-CY-OZ	-5 to +80	-40 to +80	300/500	10x	5x						X			135
PAAR-TRONIC-CY-CY (LiYCY-CY)	-5 to +80	-40 to +80	350	12x	6x					X	X			136
PAAR-TRONIC-Li-2YCYv	-5 to +70	-30 to +80	250	12x	7.5x			X		X	X			138
PAAR-TRONIC-Li-2YCY	-5 to +70	-30 to +80	250	12x	7.5x					X	X			139
LifYCY	-5 to +70	-40 to +70	350	10x	5x					X	X			140
TRONIC 1-CY	-5 to +80	-40 to +80	250	10x	5x					X	X			141
TRONIC 2-CY	-5 to +80	-40 to +80	350	10x	5x					X	X			142
LiY-TPC-Y	-5 to +70	-30 to +70	500	12x	7.5x					X	X			143
DATAPUR®-C	-5 to +80	-40 to +80	350	10x	5x		X	X		X	X			144
DATAFLAMM®-C	+5 to +70	-40 to +70	350	7.5x	7.5x	X				X	X			145
DATAFLAMM®-C-PAAR	+5 to +70	-40 to +70	350	7.5x	7.5x	X				X	X			146
EDV-PiMF-CY	-5 to +80	-20 to +80	300	10x	5x					X	X			147
RD-Y(St)Y	-5 to +50	-40 to +70	600	7.5x	7.5x					X	X			148
RD-Y(St)Yv / RD-Y(St)YY	-5 to +50	-40 to +70	600	7.5x	7.5x			X		X	X			149
RE-2Y(St)YV	-5 to +50	-40 to +70	300	7.5x	7.5x			X		X	X			150
RE-2Y(St)YV PiMF	-5 to +50	-40 to +70	300	7.5x	7.5x			X		X	X			151
JE-Y(St)Y	-5 to +50	-30 to +70	225		6x					X	X			152
JE-LiYCY	-5 to +50	-30 to +70	225		6x					X	X			153
JE-LiHCH	-5 to +50	-30 to +70	225	7.5x	7.5x	X				X	X			154
RD-H(St)H	-5 to +50	-30 to +70	225	7.5x	7.5x	X		(X)		X	X			155

The selection table is intended as an initial orientation.
Please see the relevant page of the catalogue for detailed information on the product properties.

TRONIC (LiYY) flexible, colour coded to DIN 47100, meter marking



Technical data

- Special-PVC data cables adapted to DIN VDE 0812
- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -40°C to +80°C
- **Operating peak voltage**
  (not for purposes of high current and power installation)
  0,14 mm² = 350 V
  ≥ 0,25 mm² = 500 V
- **Test voltage**
  up to 0,25 mm² 1200 V
  from 0,34 mm² 2000 V
- **Breakdown voltage**
  up to 0,25 mm² 2400 V
  from 0,34 mm² 4000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Capacitance** (approx.-value) at 800 Hz
  0,14 mm² 120 pF/m
  0,25 mm² 150 pF/m
- **Inductance** approx. 0,65 mH/km
- **Impedance** approx. 78 Ohm
- **Minimum bending radius**
  flexing 7,5x cable Ø
  fixed installation 4x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, from 0,5 mm² to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Conductor construction:
  0,14 mm² = 18x0,1 mm
  0,25 mm² = 14x0,15 mm
  0,34 mm² = 7x0,25 mm
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN 47100, without colour repetition
- Cores stranded in layers with optimal lay-length
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Extensively oil resistant, oil-/ chemical Resistance - see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- Also available in paired version, see HELUKABEL®-PAAR-TRONIC
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type:
  TRONIC-CY (LiY-CY), confer page 131

Application

These cables are used for flexible use with free movement without tensile stress or forced movements in dry, moist and wet rooms but not suitable for open air, wherever the construction requirements call for a minimum outer diameter, TRONIC is the suitable cable to use. This applies especially to such areas as tool making and machine industries as well as electronic, computer, measurement and control sectors.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
18001	2 x 0,14	3,5	2,7	13,0	26
18002	3 x 0,14	3,7	4,0	16,0	26
18003	4 x 0,14	3,9	5,4	19,0	26
18004	5 x 0,14	4,3	6,7	22,0	26
18005	6 x 0,14	4,6	8,1	25,0	26
18006	7 x 0,14	4,6	9,4	28,0	26
18007	8 x 0,14	5,5	10,7	35,0	26
18008	10 x 0,14	5,9	13,4	41,0	26
18009	12 x 0,14	6,1	16,1	48,0	26
18010	14 x 0,14	6,3	18,8	53,0	26
18011	16 x 0,14	6,9	21,5	59,0	26
18012	18 x 0,14	7,2	24,2	65,0	26
18013	20 x 0,14	7,5	26,9	70,0	26
18014	21 x 0,14	7,6	28,2	77,0	26
18015	24 x 0,14	8,5	32,3	87,0	26
18117	25 x 0,14	8,6	33,6	91,0	26
18016	27 x 0,14	8,7	36,3	97,0	26
18017	30 x 0,14	8,9	40,3	108,0	26
18018	32 x 0,14	9,3	43,0	114,0	26
18019	36 x 0,14	9,8	48,4	126,0	26
18020	40 x 0,14	10,4	54,0	139,0	26
18021	42 x 0,14	10,5	56,0	146,0	26
18022	44 x 0,14	11,1	59,0	153,0	26
18023	48 x 0,14	11,2	65,0	164,0	26
18024	52 x 0,14	11,5	70,0	173,0	26
18025	56 x 0,14	11,8	75,0	187,0	26
18026	61 x 0,14	12,1	82,0	204,0	26
18027	80 x 0,14	14,1	108,0	280,0	26
18028	100 x 0,14	15,6	135,0	370,0	26

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
18029	2 x 0,25	3,8	4,8	18,0	24
18030	3 x 0,25	4,0	7,2	22,0	24
18031	4 x 0,25	4,3	9,6	26,0	24
18032	5 x 0,25	4,7	12,0	30,0	24
18033	6 x 0,25	5,3	14,4	36,0	24
18034	7 x 0,25	5,3	16,8	42,0	24
18035	8 x 0,25	6,1	19,2	49,0	24
18036	10 x 0,25	6,8	24,0	57,0	24
18037	12 x 0,25	7,0	28,8	66,0	24
18038	14 x 0,25	7,3	33,6	75,0	24
18039	16 x 0,25	7,7	38,4	84,0	24
18040	18 x 0,25	8,3	43,2	72,0	24
18114	19 x 0,25	8,3	46,0	84,0	24
18041	20 x 0,25	8,7	48,0	101,0	24
18042	21 x 0,25	8,8	50,0	107,0	24
18043	24 x 0,25	9,8	60,0	120,0	24
18118	25 x 0,25	10,0	61,0	132,0	24
18044	27 x 0,25	10,1	65,0	140,0	24
18045	30 x 0,25	10,3	72,0	156,0	24
18046	32 x 0,25	10,7	77,0	164,0	24
18047	36 x 0,25	11,3	86,0	182,0	24
18115	37 x 0,25	11,3	89,0	190,0	24
18048	40 x 0,25	12,1	96,0	200,0	24
18049	42 x 0,25	12,2	101,0	211,0	24
18050	44 x 0,25	12,8	106,0	225,0	24
18051	48 x 0,25	13,0	115,0	245,0	24
18052	52 x 0,25	13,3	125,0	263,0	24
18053	56 x 0,25	13,9	134,0	280,0	24
18054	61 x 0,25	14,3	146,0	305,0	24

Continuation ▸

TRONIC (LiYY) flexible, colour coded to DIN 47100, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
18055	80 x 0,25	16,5	192,0	450,0	24
18056	100 x 0,25	18,3	240,0	590,0	24
18057	2 x 0,34	4,2	6,5	22,0	22
18058	3 x 0,34	4,4	9,8	30,0	22
18059	4 x 0,34	4,8	13,1	43,0	22
18060	5 x 0,34	5,4	16,3	54,0	22
18061	6 x 0,34	5,9	19,6	58,0	22
18062	7 x 0,34	5,9	22,8	61,0	22
18063	8 x 0,34	7,1	26,1	73,0	22
18064	10 x 0,34	7,6	32,6	82,0	22
18065	12 x 0,34	7,8	39,2	102,0	22
18066	14 x 0,34	8,4	45,7	108,0	22
18067	16 x 0,34	8,8	52,0	126,0	22
18068	18 x 0,34	9,3	59,0	143,0	22
18069	20 x 0,34	10,0	65,0	160,0	22
18070	21 x 0,34	10,1	69,0	166,0	22
18071	24 x 0,34	11,2	78,0	186,0	22
18096	25 x 0,34	11,4	82,0	192,0	22
18072	27 x 0,34	11,5	88,0	206,0	22
18073	30 x 0,34	11,8	98,0	226,0	22
18074	32 x 0,34	12,3	104,0	245,0	22
18075	36 x 0,34	12,9	118,0	285,0	22
18116	37 x 0,34	12,9	121,0	292,0	22
18076	40 x 0,34	14,0	131,0	318,0	22
18077	42 x 0,34	14,1	137,0	330,0	22
18078	44 x 0,34	14,6	144,0	370,0	22
18079	48 x 0,34	14,7	157,0	405,0	22
18080	52 x 0,34	15,4	170,0	430,0	22
18081	53 x 0,34	15,8	183,0	440,0	22
18082	61 x 0,34	16,3	199,0	610,0	22
18083	80 x 0,34	18,8	264,0	880,0	22
18084	100 x 0,34	21,0	327,0	1050,0	22

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
18085	2 x 0,5	4,6	9,6	40,0	20
18086	3 x 0,5	4,9	14,4	46,0	20
18087	4 x 0,5	5,5	19,2	55,0	20
18088	5 x 0,5	6,0	24,0	64,0	20
18089	6 x 0,5	6,7	28,8	73,0	20
18090	7 x 0,5	6,7	33,6	81,0	20
18091	8 x 0,5	7,8	38,4	97,0	20
18092	10 x 0,5	8,6	48,0	116,0	20
18093	12 x 0,5	8,7	58,0	135,0	20
18103	16 x 0,5	10,0	77,0	168,0	20
18101	20 x 0,5	11,3	96,0	213,0	20
18094	24 x 0,5	12,7	116,0	241,0	20
18102	30 x 0,5	13,4	144,0	303,0	20
18095	40 x 0,5	15,8	192,0	391,0	20
18104	2 x 0,75	5,3	14,4	47,0	19
18097	3 x 0,75	5,6	21,6	54,0	19
18098	4 x 0,75	6,1	29,0	66,0	19
18099	5 x 0,75	6,9	36,0	80,0	19
18100	7 x 0,75	7,5	50,0	110,0	19
18105	8 x 0,75	8,9	58,0	125,0	19
18106	10 x 0,75	9,2	72,0	148,0	19
18107	12 x 0,75	9,8	86,0	176,0	19
18108	16 x 0,75	11,4	115,0	220,0	19
18109	20 x 0,75	12,7	144,0	276,0	19
18110	2 x 1	5,6	19,2	56,0	18
18111	3 x 1	5,9	29,0	71,0	18
18112	2 x 1,5	6,3	29,0	75,0	16
18113	3 x 1,5	6,8	43,0	90,0	16

Dimensions and specifications may be changed without prior notice. (RB01)



Suitable accessories can be found in Chapter X.

- Cable tie

PAAR-TRONIC flexible, colour coded to DIN 47100, meter marking



Technical data

- Special-PVC data cable for electronic control adapted to DIN VDE 0812 and 0814
- **Temperature range** flexing -5°C to +80°C fixed installation -30°C to +80°C
- **Operating peak voltage** 350 V (not for heavy current installation purposes)
- **Test voltage** 1200 V
- **Breakdown voltage** min. 2400 V
- **Insulation resistance** min. 20 MOhm x km
- **Capacitance** (approx.-value) at 800 Hz core/core 0,14 mm² = 120 pF/m core/core 0,25 mm² = 150 pF/m
- **Inductance** approx. 0,65 mH/km
- **Impedance** approx. 78 Ohm
- **K_1-coupling** approx. 300 pF/100 m
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, from 0,5 mm² to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification (pair) to DIN 47100
- Cores stranded in pairs with optimal lay-length
- Pairs stranded in layers with optimal lay-length
- Foil wrapping
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7032)
- with meter marking

Properties

- Extensively oil resistant, oil-/ chemical Resistance - see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **PAAR-TRONIC-CY**, confer page 133

Application

These data control cables are used for flexible use with free movement without tensile stress or forced movements in dry, moist and wet rooms but not suitable for open air. PAAR-TRONIC is the perfect cable for use in areas where a small diameter is essential to complete wiring. E. g. as a control and signal cable in measuring instruments, computers, signal transfer etc. This cable is suitable only for low load application.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
19001	1 x 2 x 0,14	3,6	2,7	20,0	26
19002	2 x 2 x 0,14	4,6	5,4	25,0	26
19003	3 x 2 x 0,14	5,1	8,0	31,0	26
19004	4 x 2 x 0,14	5,5	10,7	38,0	26
19005	5 x 2 x 0,14	6,3	13,4	45,0	26
19006	6 x 2 x 0,14	6,7	16,1	50,0	26
19007	7 x 2 x 0,14	6,7	18,8	57,0	26
19008	8 x 2 x 0,14	7,6	21,5	64,0	26
19009	10 x 2 x 0,14	8,5	26,9	78,0	26
19010	11 x 2 x 0,14	9,0	29,5	86,0	26
19011	12 x 2 x 0,14	9,1	32,3	94,0	26
19012	14 x 2 x 0,14	9,8	37,6	105,0	26
19013	15 x 2 x 0,14	10,1	40,3	108,0	26
19014	16 x 2 x 0,14	10,2	43,0	110,0	26
19015	18 x 2 x 0,14	10,6	48,4	119,0	26
19016	20 x 2 x 0,14	10,8	54,0	130,0	26
19017	22 x 2 x 0,14	11,7	59,0	150,0	26

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
19018	24 x 2 x 0,14	12,2	65,0	170,0	26
19019	25 x 2 x 0,14	12,3	67,0	180,0	26
19020	26 x 2 x 0,14	12,4	70,0	184,0	26
19021	27 x 2 x 0,14	12,5	73,0	188,0	26
19022	28 x 2 x 0,14	13,5	75,0	192,0	26
19023	30 x 2 x 0,14	13,6	81,0	200,0	26
19024	32 x 2 x 0,14	14,0	86,0	224,0	26
19025	34 x 2 x 0,14	14,1	91,0	247,0	26
19026	36 x 2 x 0,14	14,9	97,0	260,0	26
19027	38 x 2 x 0,14	15,6	102,0	272,0	26
19028	40 x 2 x 0,14	15,9	108,0	294,0	26
19029	44 x 2 x 0,14	16,2	118,0	334,0	26
19030	45 x 2 x 0,14	16,4	121,0	342,0	26
19031	50 x 2 x 0,14	17,4	134,0	387,0	26
19032	52 x 2 x 0,14	17,4	140,0	403,0	26
19033	55 x 2 x 0,14	18,0	148,0	427,0	26

Continuation ▸

PAAR-TRONIC flexible, colour coded to DIN 47100, meter marking

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
19034	1 x 2 x 0,25	4,0	5,0	32,0	24
19035	2 x 2 x 0,25	5,4	10,0	37,0	24
19036	3 x 2 x 0,25	5,9	15,0	47,0	24
19037	4 x 2 x 0,25	6,8	20,0	58,0	24
19038	5 x 2 x 0,25	7,7	25,0	70,0	24
19039	6 x 2 x 0,25	8,4	30,0	80,0	24
19040	7 x 2 x 0,25	8,4	35,0	89,0	24
19041	8 x 2 x 0,25	8,7	40,0	99,0	24
19042	10 x 2 x 0,25	10,3	50,0	114,0	24
19043	11 x 2 x 0,25	10,4	55,0	126,0	24
19044	12 x 2 x 0,25	10,5	60,0	137,0	24
19045	14 x 2 x 0,25	11,4	70,0	161,0	24
19046	15 x 2 x 0,25	11,7	75,0	174,0	24
19047	16 x 2 x 0,25	12,0	80,0	187,0	24
19048	18 x 2 x 0,25	12,6	90,0	212,0	24
19049	20 x 2 x 0,25	13,4	100,0	234,0	24
19050	22 x 2 x 0,25	14,2	110,0	250,0	24
19051	24 x 2 x 0,25	14,9	120,0	280,0	24
19052	25 x 2 x 0,25	15,0	125,0	300,0	24
19053	26 x 2 x 0,25	15,1	130,0	320,0	24
19054	27 x 2 x 0,25	15,2	135,0	330,0	24
19055	28 x 2 x 0,25	16,0	140,0	345,0	24
19056	30 x 2 x 0,25	16,2	150,0	370,0	24
19057	32 x 2 x 0,25	17,1	160,0	410,0	24
19058	34 x 2 x 0,25	17,5	170,0	425,0	24
19059	36 x 2 x 0,25	17,8	180,0	440,0	24
19060	38 x 2 x 0,25	18,3	190,0	480,0	24
19061	40 x 2 x 0,25	19,0	200,0	530,0	24
19062	44 x 2 x 0,25	19,7	220,0	580,0	24
19063	45 x 2 x 0,25	20,0	225,0	600,0	24
19064	50 x 2 x 0,25	21,0	250,0	650,0	24
19065	52 x 2 x 0,25	21,0	260,0	670,0	24
19066	55 x 2 x 0,25	21,5	275,0	790,0	24
19067	1 x 2 x 0,34	4,6	6,5	36,0	22
19068	2 x 2 x 0,34	6,3	13,1	42,0	22
19069	3 x 2 x 0,34	6,7	19,6	50,0	22
19070	4 x 2 x 0,34	7,6	26,1	61,0	22
19071	1 x 2 x 0,5	4,9	9,6	42,0	20
19072	2 x 2 x 0,5	7,2	19,2	51,0	20
19073	3 x 2 x 0,5	7,8	28,8	62,0	20
19074	4 x 2 x 0,5	8,6	38,4	73,0	20
19075	1 x 2 x 0,75	5,8	14,4	47,0	19
19076	2 x 2 x 0,75	8,7	28,8	59,0	19
19077	3 x 2 x 0,75	8,9	43,2	74,0	19
19078	4 x 2 x 0,75	10,2	57,6	93,0	19

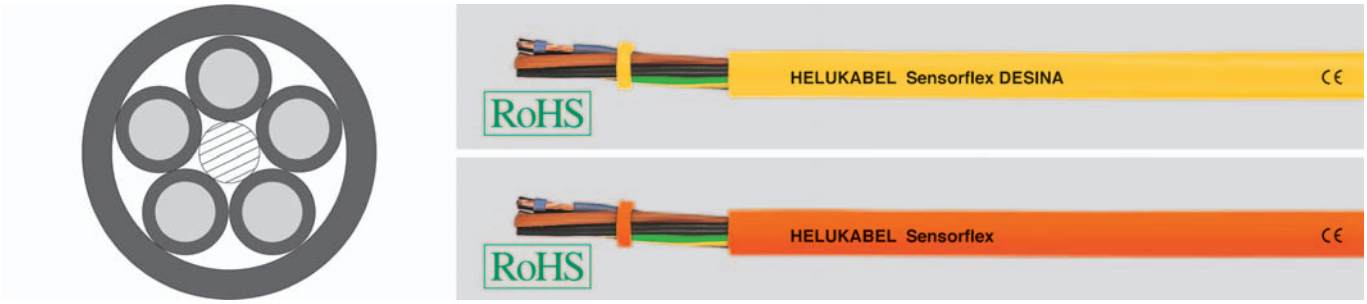
Dimensions and specifications may be changed without prior notice. (RB01)



Suitable accessories can be found in Chapter X.

- Cable tie

SENSORFLEX® sensor actuator cable, PVC, PUR, PVC/PUR



Technical data

- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -30°C to +80°C
- **Peak operating voltage**
  up to 0,25 mm² 350 V
  from 0,34 mm² 500 V
- **A.c. test voltage**, 50 Hz
  up to 0,25 mm² 1200 V
  from 0,34 mm² 2000 V
- **Minimum bending radius**
  SENSORFLEX® PUR 7,5x cable Ø
  SENSORFLEX® PVC/PUR 7,5x cable Ø
  SENSORFLEX® PVC 15x cable Ø

Cable structure

SENSORFLEX®PVC

- Bare copper-conductor, to DIN VDE 0295 cl.5 or cl.6, fine-wire or extra-fine-wire, BS 6360 cl.5 or cl.6, IEC 60228 cl.5 or cl.6
- Core insulation of PVC
- Core identification see table below
- Outer sheath of special PVC

SENSORFLEX®PUR

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insulation of PVC
- Core identification see table below
- Outer sheath of PUR

SENSORFLEX®PVC/PUR

- Construction as per SENSORFLEX® PVC
- PVC inner sheath, with PUR sheath applied over it by means of coextrusion

Properties

SENSORFLEX®PVC

- Extensively oil resistant; Chemical Resistance (see table Technical Informations)
- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

SENSORFLEX®PUR

- low adhesion, extremely abrasion resistant, resistant to hydrolysis and microbial attack

Special feature

- The cables with the highly flexible stranded conductor, cl. 6, are **suitable for drag chain applications**
- These cables are produced to high quality specifications and conform with a yellow sheath to the DESINA®-standard

Sheath colour yellow (RAL 1021) acc. to DESINA®

Note

- All cables can be delivered with UL/CSA approval and Cu shield.
- DESINA®: Explanation: see introduction.

Application

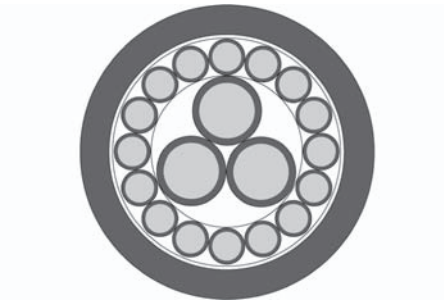
For decentralised installation and control technology. These cables are used in connector systems for sensors and actuators. In combination with injected circular connectors and installed actuator-sensor boxes, they constitute an important connecting element between the periphery and the PLC in production systems. The assembled cables offer attractive opportunities for reducing costs, not only in the field of automation technology, but also in the entire manufacturing industry. While previously it was necessary to carry out time-consuming wiring of switchgear cabinets and machines, now field bus technology has made it possible to move the periphery interfaces from the switchgear cabinets to the machines and systems. Moving the I/O points to the system periphery enables significant reductions in installation costs.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no. yellow	orange	grey	Cable structure No.cores x cross-sec. mm²	Sheath material	Core colours	Fine wire	High flex **	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
76061	76076	73473	3 x 0,25	PVC	BN, BU, BK		X	4,4	7,2	22,0	24
76062	76077	73466	3 x 0,25	PUR	BN, BU, BK		X	4,4	7,2	22,0	24
76063	76078	73474	4 x 0,25	PVC	BN, BU, BK, WH		X	4,7	9,6	26,0	24
76064	76079	73471	4 x 0,25	PUR	BN, BU, BK, WH		X	4,7	9,6	26,0	24
76065	76080	76094	5 G 0,25	PVC	BN, BU, BK, WH, GN-YE		X	4,8	12,0	30,0	24
76066	76081	76095	5 G 0,25	PVC/PUR	BN, BU, BK, WH, GN-YE		X	4,8	12,0	30,0	24
76071	76086	73472	3 G 0,34	PVC/PUR	BN, BU, GN-YE		X	4,9	9,8	30,0	22
76070	76085	76099	3 x 0,34	PVC	BN, BU, BK		X	4,9	9,8	30,0	22
73485	76087	73368	4 x 0,34	PVC	BN, BU, BK, WH	X		5,2	13,1	43,0	22
73484	76088	72973	4 x 0,34	PVC/PUR	BN, BU, BK, WH		X	5,2	13,1	43,0	22
78240	78241	73728	5 x 0,34	PVC	BN, BU, BK, WH, GY	X		5,9	16,4	54,0	22
76072	76089	73657	5 G 0,34	PVC	BN, BU, BK, WH, GN-YE	X		5,9	16,4	54,0	22
73870	76090	73548	5 G 0,34	PVC/PUR	BN, BU, BK, WH, GN-YE		X	5,9	16,4	54,0	22

Dimensions and specifications may be changed without prior notice.

VERTEILERFLEX for sensor actuator distributor boxes, PVC, PUR or PVC/PUR





Technical data

- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -30°C to +80°C
- **Operating voltage**
  U_0/U 300/500 V
- **A.c. test voltage**, 50 Hz
  2000 V
- **Minimum bending radius**
  flexibel 15x cable Ø
  highly flexible 7,5x cable Ø

Cable structure

PVC cables

- Bare copper-conductor, acc. to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of PVC
- Core identification see table below
- Outer sheath of special PVC

PUR cables

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insulation of PVC
- Core identification see table below
- Outer sheath of PUR

Note

- All cables can be delivered with UL/CSA approbation and Cu shield.
- Further core numbers, cross-sections an sheath colours available on request.

Properties

PVC cables

- Extensively oil resistant.
  Chemical Resistance - see table Technical Informations
- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

PUR cables

- Low adhesion, extremely abrasion resistant, resistant to hydrolysis and microbial attack

Special feature

- The cables with the highly flexible stranded conductor, cl. 6, are **suitable for drag chain applications**
- The types with PVC/PUR sheath material have a PVC inner sheath, with a PUR sheath applied over it by means of coextrusion

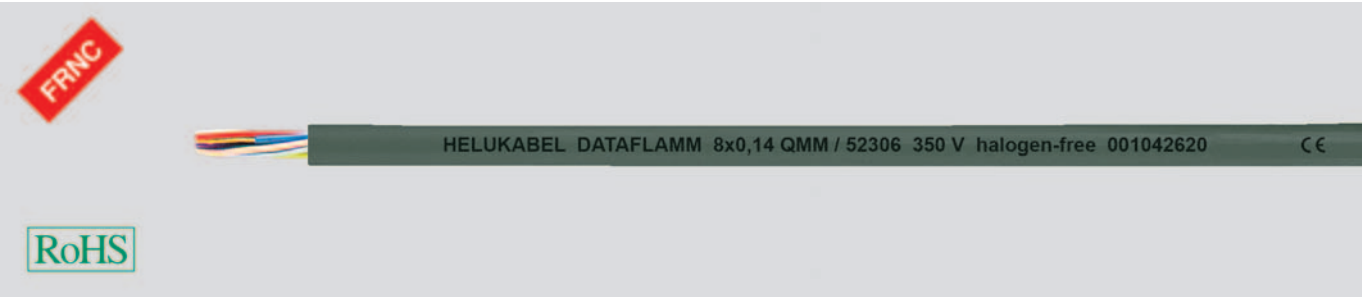
Application

These cables are used in connector systems for sensors an actuators. In combination with injected circular connectors and installed actuator-sensor boxes, they constitute an important connecting element between the periphery and the PLC in production systems. The assembled cables offer attractive opportunities for reducing costs, not only in the field of automation technology, but also in the entire manufacturing industry.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no. black	grey	Cable structure No.cores x cross-sec. mm²	Sheath material	Core colours	Fine wire	High flex **	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
76105	76115	4 G 0,34	PVC	BN, BU, BK, WH, GN-YE	X		5,8	18,0	58,0	22
76639		4 G 0,34	PVC/PUR	YE, WH, GN, GY, GN-YE, BN, BU		X	8,7	36,0	82,0	22
76107	73574	6 G 0,34	PVC/PUR	WH, GN, YE, GY, PK, RD, BN, BU, GN-YE		X	9,1	42,0	106,0	22
72961	73993	8 G 0,34	PVC/PUR	GY, PK, RD, BK, VT, WH, GN, YE, BN, BU, GN-GE		X	9,1	48,0	110,0	22
76109	74729	8 x 0,34	PVC	WH, GN, YE, GY, PK, RD, BK, VT, BU, BN	X		9,1	41,0	107,0	22
76110	72951	8 x 0,34	PUR	WH, GN, YE, GY, PK, RD, BK, VT, BU, BN		X	9,1	41,0	107,0	22
76108	76117	8 x 0,34	PVC/PUR	WH, GN, YE, GY, PK, RD, BK, VT, BU, BN		X	8,8	36,0	102,0	22
71254	76118	11 x 0,34	PVC	BK with number 1-2, DIN 47100	X		10,0	65,0	143,0	22
76111	76119	12 x 0,34	PVC/PUR	PK, YE/BN, RD, GY/PK, WH, RD/BU, GN, WH/GN, YE, BN/GN, GY, WH/YE		X	10,3	61,0	138,0	22
	77642	16 G 0,34	PVC/PUR	BU with number 1-2, GN-YE, GY/PK, WH, RD/BU, GN, WH/GY, YE, BN/GY, WH/YE, PK, YE/BN, RD, WH/GY, BK, GY/BN, VT		X	12,5	89,0	193,0	22
76112	76120	16 G 0,34	PVC/PUR	BN, GY/PK, RD/BU, WH/GN, BN/GN, WH/YE, YE/BN, WH/GY, GY/BN, BU, WH, GN, YE, GY, PK, RD, BK, VT, GN-GE		X	10,5	74,0	170,0	22
76113	76121	8 G 0,5	PUR	BN, BU, GN-GE, GY/PK, RD/BU, WH/GN, BN/GN, WH, GN, YE, GY		X	9,9	68,0	136,0	20
76114	76122	12 G 0,5	PUR	GY/PK, RD/BU, WH/GN, BN/GN, WH/YE, YE/BN, WH, GN, YE, GY, PK, RD, BN, BU, GN-YE		X	10,4	87,0	160,0	20
	79921	14 x 0,5	PVC	BK with number 1-14, BN with number 1-2, BU with number 1-2	X		12,3	125,0	201,0	20
76640		16 G 0,5	PVC/PUR	GY, BN/GN, GN, RD/BU, GY/PK, WH, WH/GN, WH/GY, BK, WH/YE, PK, YE, RD, YE/BN, VT, GY/BN, GN-GE, BN, BU		X	11,6	106,0	183,0	20
74034	76123	16 G 0,5	PUR	GY/PK, WH, RD/BU, GN, WH/GN, YE, BN/GN, GY, WH/YE, PK, YE/BN, RD, WH/GN, BK, VT, BN, BU, GN-YE		X	11,6	106,0	183,0	20

Dimensions and specifications may be changed without prior notice.

DATAFLAMM® halogen-free, meter marking



Technical data

- Special data cable, halogen-free
- **Temperature range**
  flexing +5°C to +70°C
  fixed installation -40°C to +70°C
- **Operating peak voltage**
  (not for heavy current installation purposes)
  0,14 mm² = 350 V
  ≥ 0,25 mm² = 500 V
- **Test voltage**
  0,14 mm² = 800 V
  ≥ 0,25 mm² = 1200 V
- **Insulation resistance**
  min. 2 GOhm x km
- **Capacitance**
  core/core < 70 nF/km
- **Minimum bending radius**
  7,5x cable Ø
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, fine-wire to DIN VDE 0812
- Conductor construction:
  0,34 mm² = 7x0,25 mm
- Core insulation of PE compound type L/MD to DIN VDE 0819-103 / DIN EN 50290-2-23
- Core identification to DIN 47100, without colour repetition
- Cores twisted in layers with optimal lay-length
- Outer sheath compound type HM2 to DIN VDE 0207 part 24
- Sheath colour grey (RAL 7005)
- with meter marking

Properties

Tests

- Halogen-free to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Corrosiveness of combustion gases acc.to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free sheath compound, self-extinguishing and flame retardant acc.to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type:
  DATAFLAMM®-C , confer page 145

Application

DATAFLAMM® halogen-free data cables are used as connecting cable for signal, measuring, control, call-announcing and two-way intercom speaking systems, clock installations, electronic weighing equipment and electrical apparatus for office requirements. The cables are suitable for installation in dry, damp and wet environments. PE-insulated-cores, compared with the conventional PVC-insulated cores, assure a remarkable and more favourable capacitance values. These cables are generally installed in telecommunication apparatus and data transmission systems in public buildings, laboratories, trading centres where the freedom from halogen in case of fire and the flame propagation must be avoided. The halogen-free thermoplastic sheath produce neither corrosive nor toxic gases.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
52300	2 x 0,14	3,3	2,6	14,0	26
52301	3 x 0,14	3,5	4,0	17,0	26
52302	4 x 0,14	3,7	5,3	19,0	26
52303	5 x 0,14	4,0	6,6	23,0	26
52304	6 x 0,14	4,3	7,9	25,0	26
52305	7 x 0,14	4,3	9,2	27,0	26
52306	8 x 0,14	4,6	10,3	30,0	26
52307	10 x 0,14	5,4	13,2	38,0	26
52308	12 x 0,14	5,7	16,0	45,0	26
52309	15 x 0,14	6,1	20,1	57,0	26
52310	18 x 0,14	6,7	23,7	65,0	26
52311	21 x 0,14	7,0	27,9	76,0	26
52312	25 x 0,14	7,8	33,4	88,0	26
52313	30 x 0,14	8,2	39,3	98,0	26
52314	34 x 0,14	8,8	45,5	111,0	26
52315	40 x 0,14	9,5	53,6	139,0	26
52316	50 x 0,14	10,5	64,9	764,0	26
52317	2 x 0,25	3,8	4,7	18,0	24
52318	3 x 0,25	4,0	7,1	21,0	24
52319	4 x 0,25	4,3	9,5	26,0	24
52320	5 x 0,25	4,7	12,0	31,0	24
52321	7 x 0,25	5,1	16,6	40,0	24
52322	10 x 0,25	6,4	24,0	56,0	24
52323	12 x 0,25	6,6	28,6	64,0	24
52324	15 x 0,25	7,4	36,0	80,0	24
52430	18 x 0,25	7,9	43,2	90,0	24
52431	21 x 0,25	8,6	50,4	105,0	24
52325	25 x 0,25	9,4	59,8	121,0	24
52326	34 x 0,25	11,0	81,3	168,0	24
52327	40 x 0,25	12,0	96,0	196,0	24
52328	2 x 0,34	4,4	6,4	25,0	22
52329	3 x 0,34	4,7	9,7	30,0	22

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
52330	4 x 0,34	5,0	13,0	35,0	22
52331	5 x 0,34	5,5	16,4	43,0	22
52332	7 x 0,34	6,0	22,7	58,0	22
52333	10 x 0,34	7,8	32,4	80,0	22
52334	12 x 0,34	8,0	39,1	91,0	22
52335	15 x 0,34	9,0	49,1	115,0	22
52336	18 x 0,34	9,8	59,1	135,0	22
52337	21 x 0,34	10,4	68,3	154,0	22
52338	25 x 0,34	12,0	81,4	180,0	22
52339	34 x 0,34	13,6	111,1	233,0	22
52340	40 x 0,34	14,8	130,5	272,0	22
52341	2 x 0,5	4,6	9,5	30,0	20
52342	3 x 0,5	4,9	14,2	36,0	20
52343	4 x 0,5	5,3	19,2	43,0	20
52344	5 x 0,5	5,9	24,0	56,0	20
52345	7 x 0,5	6,4	33,7	70,0	20
52346	10 x 0,5	8,3	48,0	101,0	20
52347	12 x 0,5	8,6	57,4	117,0	20
52348	15 x 0,5	9,8	72,0	145,0	20
52349	18 x 0,5	10,5	86,4	171,0	20
52350	21 x 0,5	11,1	101,0	197,0	20
52351	25 x 0,5	12,6	120,0	230,0	20
52352	30 x 0,5	13,3	142,6	269,0	20
52353	34 x 0,5	14,5	163,1	301,0	20
52354	40 x 0,5	15,8	192,0	365,0	20
52355	2 x 0,75	5,2	14,3	40,0	19
52356	3 x 0,75	5,5	21,5	51,0	19
52357	4 x 0,75	6,0	28,6	61,0	19
52358	5 x 0,75	6,7	36,1	76,0	19
52359	7 x 0,75	7,3	50,3	97,0	19
52360	10 x 0,75	9,8	72,0	137,0	19
52361	12 x 0,75	10,0	86,2	167,0	19

Dimensions and specifications may be changed without prior notice. (RB01)

TRONIC-CY (LiY-CY) flexible, Cu-screened, colour coded to DIN 47100,

EMC-preferred type, meter marking



Technical data

- Special-PVC data cable for electronic control adapted to DIN VDE 0812
- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -40°C to +80°C
- **Operating peak voltage**
  (not for heavy current installation purposes)
  0,14 mm² = 350 V
  ≥ 0,25 mm² = 500 V
- **Test voltage**
  core/core 1200 V
  core/screen 800 V
- **Breakdown voltage** min. 2400 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Capacitance** (approx.-value) at 800 Hz
  core/core at 0,14 mm² = 120 pF/m
  core/core 0,25 mm² = 150 pF/m
  core/screen at 0,14 mm² = 240 pF/m
  core/screen 0,25 mm² = 270 pF/m
- **Inductance** approx. 0,65 mH/km
- **Impedance** approx. 78 Ohm
- **Coupling resistance**
  max. 250 Ohm/km
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, from 0,5 mm² to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Conductor construction:
  0,14 mm² = 18x0,1 mm
  0,25 mm² = 14x0,15 mm
  0,34 mm² = 7x0,25 mm
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN 47100, without colour repetition
- Cores stranded in layers with optimal lay-length
- Foil wrapping
- Drain-wire, tinned
- Tinned, copper braided screen, approx. 85% coverage
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Extensively oil resistant, oil-/ chemical Resistance - see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- Also available in paired version, see HELUKABEL®-PAAR-TRONIC-CY
- For 1 core cable screen of helically wound.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type:
  TRONIC (LiYY), confer page 124

Application

These screened cables are used for flexible use with free movement without tensile stress or forced movements in dry, moist and wet rooms but not suitable for open air, wherever the construction requirements call for a minimum outer diameter, TRONIC is the suitable cable to use. This applies especially to such areas as tool making and machine industries as well as electronic, computer, measurement and control sectors. The extremely small outer diameter make suitable for miniature plugs etc.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
20139	1 x 0,14	2,6	6,1	16,0	26
20001	2 x 0,14	3,9	12,0	20,0	26
20002	3 x 0,14	4,0	13,0	27,0	26
20003	4 x 0,14	4,3	14,5	32,0	26
20004	5 x 0,14	4,7	15,5	37,0	26
20005	6 x 0,14	5,2	18,2	42,0	26
20006	7 x 0,14	5,2	19,0	48,0	26
20007	8 x 0,14	5,9	21,3	55,0	26
20008	10 x 0,14	6,5	28,7	65,0	26
20009	12 x 0,14	6,7	30,5	77,0	26
20010	14 x 0,14	6,9	32,0	79,0	26
20011	16 x 0,14	7,3	43,2	89,0	26
20012	18 x 0,14	7,6	51,0	103,0	26
20013	20 x 0,14	8,3	55,0	116,0	26
20014	21 x 0,14	8,4	56,0	120,0	26

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
20015	24 x 0,14	8,9	62,0	131,0	26
20091	25 x 0,14	9,1	61,0	136,0	26
20016	27 x 0,14	9,2	65,0	142,0	26
20017	30 x 0,14	9,5	69,0	157,0	26
20018	32 x 0,14	9,9	76,0	163,0	26
20019	36 x 0,14	10,2	83,0	182,0	26
20020	40 x 0,14	11,1	88,0	209,0	26
20021	42 x 0,14	11,2	94,0	217,0	26
20022	44 x 0,14	11,5	110,0	226,0	26
20023	48 x 0,14	11,7	115,0	240,0	26
20024	52 x 0,14	12,3	124,0	270,0	26
20025	56 x 0,14	12,5	132,0	320,0	26
20026	61 x 0,14	12,8	146,0	370,0	26
20027	80 x 0,14	14,7	226,0	510,0	26
20028	100 x 0,14	16,3	267,0	580,0	26

Continuation ▸

TRONIC-CY (LiY-CY) flexible, Cu-screened, colour coded to DIN 47100,

EMC-preferred type, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
20084	1 x 0,25	3,0	7,2	27,0	24
20029	2 x 0,25	4,3	15,8	31,0	24
20030	3 x 0,25	4,5	18,6	36,0	24
20031	4 x 0,25	4,8	22,0	40,0	24
20032	5 x 0,25	5,4	26,5	51,0	24
20083	6 x 0,25	5,8	32,4	58,0	24
20033	7 x 0,25	5,8	35,0	64,0	24
20034	8 x 0,25	7,0	42,1	82,0	24
20035	10 x 0,25	7,3	49,9	85,0	24
20036	12 x 0,25	7,5	58,0	90,0	24
20037	14 x 0,25	8,1	62,0	144,0	24
20038	16 x 0,25	8,5	67,0	110,0	24
20039	18 x 0,25	9,1	78,0	142,0	24
20086	19 x 0,25	9,1	79,0	146,0	24
20040	20 x 0,25	9,5	88,0	152,0	24
20041	21 x 0,25	9,6	91,0	150,0	24
20042	24 x 0,25	10,4	96,0	163,0	24
20092	25 x 0,25	10,6	99,0	169,0	24
20043	27 x 0,25	10,7	122,0	176,0	24
20044	30 x 0,25	11,1	132,0	189,0	24
20045	32 x 0,25	11,5	138,0	204,0	24
20046	36 x 0,25	11,9	146,0	219,0	24
20087	37 x 0,25	11,9	152,0	230,0	24
20047	40 x 0,25	12,9	157,0	247,0	24
20048	42 x 0,25	13,0	160,0	269,0	24
20049	44 x 0,25	13,7	164,0	292,0	24
20050	48 x 0,25	13,9	164,0	317,0	24
20051	52 x 0,25	14,3	175,0	330,0	24
20052	56 x 0,25	14,7	189,0	343,0	24
20053	61 x 0,25	15,2	204,0	365,0	24
20054	80 x 0,25	17,2	387,0	480,0	24
20055	100 x 0,25	19,4	505,0	605,0	24
20088	1 x 0,34	3,2	13,5	24,0	22
20056	2 x 0,34	4,9	18,0	30,0	22
20057	3 x 0,34	5,1	22,0	37,0	22
20058	4 x 0,34	5,5	28,0	48,0	22
20059	5 x 0,34	6,0	31,0	54,0	22
20085	6 x 0,34	6,6	45,0	61,0	22
20060	7 x 0,34	6,6	51,0	67,0	22
20061	8 x 0,34	7,7	54,0	81,0	22
20062	10 x 0,34	8,4	65,0	103,0	22
20063	12 x 0,34	8,6	70,0	110,0	22
20064	14 x 0,34	9,0	81,0	153,0	22
20065	16 x 0,34	9,6	88,0	159,0	22
20066	18 x 0,34	10,1	103,0	172,0	22
20089	19 x 0,34	10,1	106,0	181,0	22
20067	20 x 0,34	10,8	112,0	191,0	22
20068	21 x 0,34	10,9	116,0	199,0	22
20069	24 x 0,34	11,7	129,0	229,0	22
20093	25 x 0,34	12,0	120,0	241,0	22
20070	27 x 0,34	12,1	138,0	258,0	22
20071	30 x 0,34	12,6	158,0	290,0	22
20072	32 x 0,34	13,0	163,0	305,0	22
20073	36 x 0,34	13,8	178,0	330,0	22
20090	37 x 0,34	13,8	192,0	348,0	22
20074	40 x 0,34	14,8	198,0	364,0	22
20075	42 x 0,34	14,9	203,0	389,0	22
20076	44 x 0,34	15,6	214,0	414,0	22
20077	48 x 0,34	15,8	227,0	420,0	22
20078	52 x 0,34	16,3	242,0	450,0	22
20079	56 x 0,34	16,8	267,0	480,0	22
20080	61 x 0,34	17,2	295,0	520,0	22
20081	80 x 0,34	19,6	524,0	580,0	22
20082	100 x 0,34	21,9	620,0	694,0	22
16001	1 x 0,5	3,5	15,0	40,0	20
16002	2 x 0,5	5,3	29,0	45,0	20
16003	3 x 0,5	5,6	39,0	55,0	20
16004	4 x 0,5	6,3	46,0	61,0	20
16005	5 x 0,5	6,8	52,0	76,0	20
16006	6 x 0,5	7,3	66,0	89,0	20
16007	7 x 0,5	7,3	68,0	98,0	20
16008	8 x 0,5	8,6	80,0	117,0	20
16009	10 x 0,5	9,4	93,0	135,0	20
16010	12 x 0,5	9,6	117,0	157,0	20
16011	14 x 0,5	10,1	122,0	190,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
16012	16 x 0,5	10,6	129,0	210,0	20
16013	18 x 0,5	11,3	152,0	217,0	20
16526	19 x 0,5	11,3	156,0	246,0	20
16014	20 x 0,5	12,0	173,0	275,0	20
16015	24 x 0,5	13,2	236,0	337,0	20
16016	25 x 0,5	13,7	250,0	351,0	20
16527	27 x 0,5	13,8	265,0	373,0	20
16017	30 x 0,5	14,2	297,0	396,0	20
16018	32 x 0,5	14,7	301,0	431,0	20
16164	34 x 0,5	15,4	312,0	440,0	20
16019	36 x 0,5	15,5	320,0	445,0	20
16528	37 x 0,5	15,5	325,0	458,0	20
16020	40 x 0,5	16,4	345,0	470,0	20
16021	50 x 0,5	18,2	407,0	570,0	20
16022	61 x 0,5	19,2	508,0	650,0	20
16023	80 x 0,5	22,1	690,0	780,0	20
16024	100 x 0,5	24,6	814,0	990,0	20
16025	1 x 0,75	4,0	19,0	41,0	19
16026	2 x 0,75	5,8	38,0	59,0	19
16027	3 x 0,75	6,3	50,0	66,0	19
16028	4 x 0,75	6,8	57,0	77,0	19
16029	5 x 0,75	7,4	70,0	93,0	19
16030	6 x 0,75	8,2	87,0	113,0	19
16031	7 x 0,75	8,2	96,0	130,0	19
16032	8 x 0,75	9,7	110,0	145,0	19
16033	10 x 0,75	10,3	140,0	180,0	19
16034	12 x 0,75	10,5	151,0	202,0	19
16035	14 x 0,75	11,3	167,0	225,0	19
16036	16 x 0,75	11,9	183,0	275,0	19
16037	18 x 0,75	12,7	207,0	292,0	19
16529	19 x 0,75	12,7	221,0	322,0	19
16038	20 x 0,75	13,6	238,0	362,0	19
16039	24 x 0,75	14,9	270,0	435,0	19
16040	25 x 0,75	15,0	278,0	415,0	19
16041	27 x 0,75	15,1	287,0	467,0	19
16042	30 x 0,75	16,0	315,0	486,0	19
16043	32 x 0,75	16,5	330,0	530,0	19
16163	34 x 0,75	17,7	350,0	570,0	19
16044	36 x 0,75	17,4	370,0	600,0	19
16530	37 x 0,75	17,4	386,0	640,0	19
16045	40 x 0,75	18,7	395,0	680,0	19
16120	42 x 0,75	18,9	408,0	714,0	19
16047	61 x 0,75	22,0	555,0	900,0	19
16048	80 x 0,75	25,3	715,0	1200,0	19
16049	100 x 0,75	28,0	910,0	1440,0	19
16475	2 x 1	6,4	46,0	65,0	18
16476	3 x 1	6,7	56,0	80,0	18
16477	4 x 1	7,2	69,0	98,0	18
16478	5 x 1	8,0	89,0	127,0	18
16479	6 x 1	8,7	105,0	144,0	18
16480	7 x 1	8,7	111,0	158,0	18
16481	8 x 1	10,3	130,0	197,0	18
16482	10 x 1	11,2	140,0	232,0	18
16483	12 x 1	11,4	168,0	260,0	18
16484	14 x 1	12,0	198,0	302,0	18
16485	16 x 1	12,8	218,0	346,0	18
16486	19 x 1	13,6	268,0	412,0	18
16487	24 x 1	16,0	320,0	493,0	18
16488	27 x 1	16,4	360,0	562,0	18
16489	37 x 1	18,6	485,0	790,0	18
16500	2 x 1,5	7,0	63,0	88,0	16
16501	3 x 1,5	7,4	76,0	100,0	16
16502	4 x 1,5	8,1	98,0	126,0	16
16503	5 x 1,5	9,0	116,0	160,0	16
16504	6 x 1,5	9,8	140,0	192,0	16
16505	7 x 1,5	9,8	152,0	208,0	16
16506	8 x 1,5	11,0	172,0	244,0	16
16507	10 x 1,5	12,6	193,0	315,0	16
16508	12 x 1,5	12,8	254,0	338,0	16
16509	14 x 1,5	13,5	272,0	383,0	16
16510	16 x 1,5	14,6	285,0	424,0	16
16511	19 x 1,5	15,6	387,0	506,0	16
16512	24 x 1,5	18,1	448,0	690,0	16
16513	27 x 1,5	18,7	506,0	781,0	16
16514	37 x 1,5	21,4	682,0	941,0	16

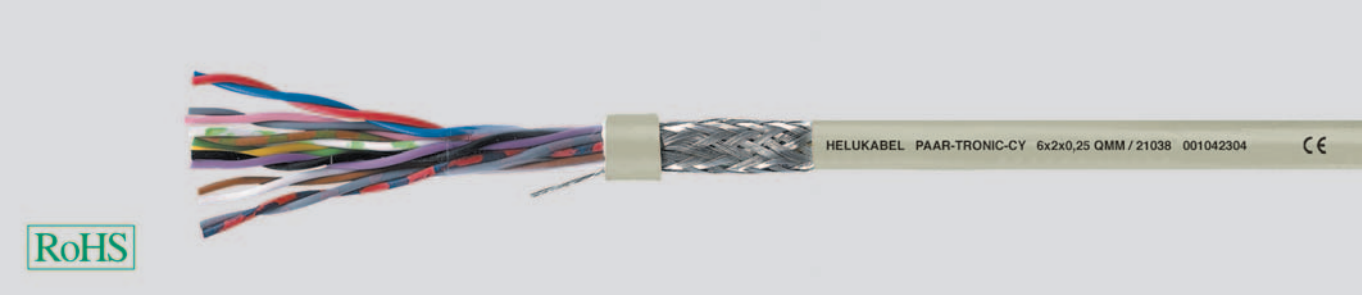
Dimensions and specifications may be changed without prior notice. (RB01)



Suitable accessories can be found in Chapter X.

- Cable tie

PAAR-TRONIC-CY EMC-preferred type, flexible, Cu-screened, colour coded to DIN 47100, meter marking



Technical data

- Special PVC data cables for electronic control adapted to DIN VDE 0812 and 0814
- **Temperature range** flexing -5°C to +80°C fixed installation -30°C to +80°C
- **Operating peak voltage** 350 V (not for heavy current installation purposes)
- **Test voltage** core/core 1200 V core/screen 800 V
- **Breakdown voltage** min. 2400 V
- **Insulation resistance** min. 20 MOhm x km
- **Plant capacity** (approx.-value) at 800 Hz core/core 0,14 mm² = 120 pF/m core/core 0,25 mm² = 150 pF/m core/screen 0,14 mm² = 240 pF/m core/screen 0,25 mm² = 270 pF/m
- **Inductance** approx. 0,65 mH/km
- **Impedance** approx. 78 Ohm
- **K_1-coupling** approx. 300 pF/100 m
- **Coupling resistance** max.250 Ohm/km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, from 0,5 mm² to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Conductor construction: 0,14 mm² = 18x0,1 mm 0,25 mm² = 14x0,15 mm 0,34 mm² = 7x0,25 mm
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification (pair) to DIN 47100
- Cores stranded in pairs with optimal lay-length
- Pairs stranded in layers with optimal lay-length
- Foil wrapping
- Drain wire, tinned
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7032) also available in other colours on request
- with meter marking

Properties

- Extensively oil resistant, oil-/ chemical Resistance - see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **PAAR-TRONIC**, confer page 126

Application

These data control cables are used for flexible use with free movement without tensile stress or forced movements in dry, moist and wet rooms but not suitable for open air. PAAR-TRONIC-CY is well suited for use in areas subject to signal interference. The high level of screening reduces substantially the effects of electrical disturbances from parallel running wiring etc. The copper screening is also often used as an "earth". The twisted pairs conform favourable cross-talk attenuation values.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
21001	1 x 2 x 0,14	4,0	15,6	34,0	26
21002	2 x 2 x 0,14	5,0	18,5	40,0	26
21003	3 x 2 x 0,14	5,7	23,0	49,0	26
21004	4 x 2 x 0,14	6,1	26,6	55,0	26
21005	5 x 2 x 0,14	6,8	30,7	66,0	26

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
21006	6 x 2 x 0,14	7,2	48,5	86,0	26
21007	7 x 2 x 0,14	7,2	51,1	91,0	26
21008	8 x 2 x 0,14	8,2	53,7	97,0	26
21009	10 x 2 x 0,14	9,1	59,0	109,0	26
21010	12 x 2 x 0,14	9,6	66,0	141,0	26

Continuation ▸

PAAR-TRONIC-CY EMC-preferred type, flexible, Cu-screened, colour coded to DIN 47100, meter marking

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
21011	14 x 2 x 0,14	10,4	74,0	148,0	26
21012	15 x 2 x 0,14	10,6	76,0	152,0	26
21013	16 x 2 x 0,14	10,7	79,0	155,0	26
21014	18 x 2 x 0,14	11,2	83,0	171,0	26
21015	20 x 2 x 0,14	11,4	97,0	183,0	26
21016	22 x 2 x 0,14	12,3	103,0	205,0	26
21017	24 x 2 x 0,14	12,8	111,0	228,0	26
21018	25 x 2 x 0,14	12,9	113,0	239,0	26
21019	26 x 2 x 0,14	13,0	122,0	245,0	26
21020	27 x 2 x 0,14	13,1	125,0	251,0	26
21021	28 x 2 x 0,14	14,0	128,0	258,0	26
21022	30 x 2 x 0,14	14,1	140,0	270,0	26
21023	32 x 2 x 0,14	14,8	145,0	284,0	26
21024	34 x 2 x 0,14	14,9	150,0	300,0	26
21025	36 x 2 x 0,14	15,6	156,0	316,0	26
21026	38 x 2 x 0,14	16,4	162,0	350,0	26
21027	40 x 2 x 0,14	16,8	177,0	370,0	26
21028	44 x 2 x 0,14	17,0	181,0	390,0	26
21029	46 x 2 x 0,14	17,2	195,0	430,0	26
21030	50 x 2 x 0,14	18,0	202,0	440,0	26
21031	52 x 2 x 0,14	18,2	206,0	460,0	26
21032	55 x 2 x 0,14	18,7	210,0	480,0	26
21033	1 x 2 x 0,25	4,4	15,0	45,0	24
21034	2 x 2 x 0,25	5,8	28,0	53,0	24
21035	3 x 2 x 0,25	6,4	32,0	65,0	24
21036	4 x 2 x 0,25	7,2	38,0	80,0	24
21037	5 x 2 x 0,25	8,1	55,0	98,0	24
21038	6 x 2 x 0,25	8,8	65,0	114,0	24
21039	7 x 2 x 0,25	8,8	70,0	121,0	24
21040	8 x 2 x 0,25	9,4	75,0	129,0	24
21041	10 x 2 x 0,25	10,8	110,0	157,0	24
21042	12 x 2 x 0,25	11,4	117,0	189,0	24
21043	14 x 2 x 0,25	12,0	122,0	213,0	24
21044	15 x 2 x 0,25	12,5	134,0	225,0	24
21045	16 x 2 x 0,25	12,6	143,0	237,0	24
21046	18 x 2 x 0,25	13,3	148,0	248,0	24
21047	20 x 2 x 0,25	14,0	162,0	275,0	24
21048	22 x 2 x 0,25	15,0	172,0	303,0	24
21049	24 x 2 x 0,25	15,7	223,0	330,0	24
21050	25 x 2 x 0,25	15,8	233,0	343,0	24
21051	26 x 2 x 0,25	15,9	238,0	345,0	24
21052	27 x 2 x 0,25	16,0	244,0	350,0	24
21053	28 x 2 x 0,25	16,6	249,0	360,0	24
21054	30 x 2 x 0,25	17,0	254,0	375,0	24
21055	32 x 2 x 0,25	17,6	290,0	400,0	24
21056	34 x 2 x 0,25	17,9	312,0	410,0	24
21057	36 x 2 x 0,25	18,6	322,0	420,0	24
21058	38 x 2 x 0,25	19,0	339,0	450,0	24
21059	40 x 2 x 0,25	19,7	349,0	485,0	24
21060	44 x 2 x 0,25	20,7	359,0	500,0	24
21061	46 x 2 x 0,25	21,2	398,0	540,0	24
21062	50 x 2 x 0,25	22,0	403,0	550,0	24
21063	52 x 2 x 0,25	22,0	435,0	580,0	24
21064	55 x 2 x 0,25	22,5	464,0	630,0	24
19970	1 x 2 x 0,34	5,0	16,0	58,0	22
19971	2 x 2 x 0,34	6,7	36,9	65,0	22

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
19972	3 x 2 x 0,34	7,2	44,9	78,0	22
19973	4 x 2 x 0,34	8,1	54,2	90,0	22
19974	5 x 2 x 0,34	9,0	63,5	110,0	22
19975	6 x 2 x 0,34	10,0	73,1	130,0	22
19976	7 x 2 x 0,34	10,0	79,5	145,0	22
19977	8 x 2 x 0,34	10,8	88,4	150,0	22
19978	9 x 2 x 0,34	11,1	99,3	170,0	22
19979	10 x 2 x 0,34	12,2	106,9	190,0	22
19980	12 x 2 x 0,34	12,9	122,1	220,0	22
19981	14 x 2 x 0,34	13,9	138,2	245,0	22
19982	16 x 2 x 0,34	14,5	154,2	250,0	22
19983	18 x 2 x 0,34	15,3	197,9	275,0	22
19984	21 x 2 x 0,34	16,3	214,4	300,0	22
19985	25 x 2 x 0,34	17,6	238,5	400,0	22
19986	27 x 2 x 0,34	18,0	262,5	410,0	22
19987	30 x 2 x 0,34	19,5	286,6	440,0	22
19988	34 x 2 x 0,34	20,8	310,1	510,0	22
19989	37 x 2 x 0,34	21,4	368,7	550,0	22
19990	40 x 2 x 0,34	22,1	392,6	590,0	22
19991	44 x 2 x 0,34	23,0	424,3	600,0	22
19992	50 x 2 x 0,34	24,5	455,9	650,0	22
19993	52 x 2 x 0,34	24,7	487,6	680,0	22
19994	56 x 2 x 0,34	26,1	518,5	750,0	22
19995	61 x 2 x 0,34	27,5	557,2	840,0	22
17047	1 x 2 x 0,5	5,3	24,0	60,0	20
17001	2 x 2 x 0,5	7,6	54,0	89,0	20
17002	3 x 2 x 0,5	8,2	70,0	104,0	20
17003	4 x 2 x 0,5	9,0	91,0	126,0	20
17004	5 x 2 x 0,5	9,9	105,0	148,0	20
17005	6 x 2 x 0,5	10,9	120,0	171,0	20
17006	8 x 2 x 0,5	12,0	144,0	290,0	20
17007	10 x 2 x 0,5	13,8	178,0	320,0	20
17008	12 x 2 x 0,5	14,5	199,0	361,0	20
17009	16 x 2 x 0,5	16,1	254,0	421,0	20
17010	20 x 2 x 0,5	18,4	302,0	580,0	20
17011	25 x 2 x 0,5	21,0	344,0	740,0	20
17048	1 x 2 x 0,75	6,0	28,0	71,0	19
17012	2 x 2 x 0,75	8,7	58,0	105,0	19
17013	3 x 2 x 0,75	9,3	84,0	128,0	19
17014	4 x 2 x 0,75	10,6	108,0	156,0	19
17015	5 x 2 x 0,75	11,7	126,0	189,0	19
17016	6 x 2 x 0,75	12,7	146,0	216,0	19
17017	8 x 2 x 0,75	14,4	180,0	309,0	19
17018	10 x 2 x 0,75	15,6	220,0	355,0	19
17019	12 x 2 x 0,75	16,8	261,0	405,0	19
17020	16 x 2 x 0,75	18,7	328,0	565,0	19
17021	20 x 2 x 0,75	20,9	392,0	700,0	19
17022	25 x 2 x 0,75	23,2	470,0	950,0	19
17049	1 x 2 x 1	6,3	46,0	75,0	18
17050	2 x 2 x 1	9,1	82,0	116,0	18
17051	3 x 2 x 1	9,8	103,0	140,0	18
17052	4 x 2 x 1	10,9	132,0	191,0	18
17053	1 x 2 x 1,5	7,2	63,0	84,0	16
17054	2 x 2 x 1,5	10,7	111,0	122,0	16
17055	3 x 2 x 1,5	11,4	136,0	194,0	16
17056	4 x 2 x 1,5	12,8	172,0	240,0	16

Dimensions and specifications may be changed without prior notice. (RB01)



Suitable accessories can be found in Chapter X.

- Cable tie

PAAR-CY-OZ flexible, Cu-screened, EMC-preferred type, meter marking



Technical data

- Special-PUR control cable adapted to DIN VDE 0812, 0814
- **Temperature range** flexing -5°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** core/core 1200 V core/screen 800 V
- **Breakdown voltage** min. 2400 V
- **Insulation resistance** min. 20 MOhm x km
- **Mutual capacitance** core/core approx. 150 nF/km core/screen approx. 270 nF/km
- **Inductance** approx. 0,67 mH/km
- **Coupling resistance** max. 250 Ohm/km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- Cores stranded in pairs with optimal lay-length
- Pairs stranded in layers with optimal lay-length
- Foil wrapping
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7032)
- with meter marking

Properties

- Extensively oil resistant, oil-/ chemical Resistance - see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- x = without green-yellow conductor (OZ)
- Also available in other dimensions and in other sheath colours.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

PAAR-CY is ideal for use as a connecting cable for all areas involving measuring, control, regulation and signal transfer as well as for use in all fields of data and impulse transmission. Especially suited for all areas of high electromagnetic activity, e. g. disturbances through parallel circuits.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
17023	2 x 2 x 1	9,5	82,0	135,0	18
17024	3 x 2 x 1	10,0	103,0	160,0	18
17025	4 x 2 x 1	11,0	132,0	197,0	18
17026	5 x 2 x 1	12,3	161,0	253,0	18
17027	6 x 2 x 1	13,4	188,0	295,0	18
17028	8 x 2 x 1	14,7	240,0	410,0	18
17029	10 x 2 x 1	16,4	282,0	518,0	18
17030	12 x 2 x 1	18,2	324,0	601,0	18
17031	16 x 2 x 1	19,0	412,0	990,0	18
17032	20 x 2 x 1	19,8	505,0	1400,0	18
17033	25 x 2 x 1	23,5	610,0	1600,0	18

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
17034	2 x 2 x 1,5	11,3	112,0	168,0	16
17035	3 x 2 x 1,5	12,2	139,0	221,0	16
17036	4 x 2 x 1,5	13,5	176,0	269,0	16
17037	5 x 2 x 1,5	14,5	212,0	314,0	16
17038	6 x 2 x 1,5	17,2	255,0	550,0	16
17039	8 x 2 x 1,5	17,5	322,0	650,0	16
17040	10 x 2 x 1,5	20,1	380,0	900,0	16
17041	12 x 2 x 1,5	21,8	442,0	950,0	16
17042	16 x 2 x 1,5	25,0	572,0	1100,0	16
17043	20 x 2 x 1,5	27,0	705,0	1700,0	16
17044	25 x 2 x 1,5	29,5	862,0	1900,0	16

Dimensions and specifications may be changed without prior notice. (RB01)



Suitable accessories can be found in Chapter X.

• Cable tie

PAAR-TRONIC-CY-CY (LiYCY-CY) EMC-preferred type, meter marking



Technical data

- Special PVC data transmission cable adapted to DIN VDE 0812 and 0814
- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -40°C to +80°C
- **Operating peak voltage**
  (not for heavy current installation purposes)
  0,14 mm² = max. 350 V
  ≥ 0,25 mm² = max. 500 V
- **Test voltage**
  0,14 mm² = 1200 V
  ≥ 0,25 mm² = 2000 V
- **Breakdown voltage**
  0,14 mm² = 2400 V
  ≥ 0,25 mm² = 4000 V
- **Mutual capacitance**
  core/core
  0,14 mm² = 147 pF/m
  0,25 mm² = 152,5 pF/m
  core/screen
  0,14 mm² = 147 pF/m
  0,25 mm² = 263 pF/m
- **Impedance**
  0,14 mm² = 536 Ohm/1 kHz/20°C
  0,25 mm² = 396 Ohm/1 kHz/20°C
- **Coupling** 250 pF/100 m/1 kHz
- **Screen resistance**
  0,14 mm² = 36 Ohm/km
  0,25 mm² = 18 Ohm/km
- **Attenuation**
  0,14 mm² = 3,6 dB/1 kHz/km
  0,25 mm² = 2,2 dB/1 kHz/km
- **Coupling resistance**
  max. 250 Ohm/km
- **Minimum bending radius**
  flexing 12x cable Ø
  fixed installation 6x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, fine wire conductors, to DIN VDE 0295 cl.5
- Conductor construction:
  0,14 mm² = 18x0,1 mm
  0,25 mm² = 14x0,15 mm
  0,34 mm² = 7x0,25 mm
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification (pair) to DIN 47100
- Cores stranded in pairs with optimal lay-length
- Pairs screened individually, tinned copper, coverage approx. 85%
- Special PVC coating over individual screened pairs all pairs-CY stranded together
- Foil wrapping
- Overall braid-screening, tinned copper coverage approx. 85%
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Extensively oil resistant, oil-/ chemical Resistance - see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- As of 0,75 mm² cross-sec. see type EDV-PiMF-CY.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

As a control and signal cable in electronics, instrumentation and control technology. Interference free transmission of data signals from peripheral devices to information storage. Excellent connecting cable for mixing console, studio equipment, measuring and control technology. Reliable in process control, in machining centers and safety engineering systems. These cables with copper screening are suitable for interference free data and signal transmission in the measurement, control and regulation technology.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
21065	2 x 2 x 0,14	7,6	31,0	95,0	26
21066	3 x 2 x 0,14	8,4	34,0	105,0	26
21067	4 x 2 x 0,14	9,9	45,0	140,0	26
21068	5 x 2 x 0,14	10,4	58,0	160,0	26
21069	6 x 2 x 0,14	11,0	67,0	185,0	26
21070	7 x 2 x 0,14	11,0	78,0	230,0	26

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
21071	8 x 2 x 0,14	12,0	97,0	245,0	26
21072	9 x 2 x 0,14	13,0	101,0	280,0	26
21073	10 x 2 x 0,14	14,1	108,0	325,0	26
21074	12 x 2 x 0,14	15,2	134,0	380,0	26
21075	16 x 2 x 0,14	16,7	179,0	440,0	26
21076	20 x 2 x 0,14	18,4	225,0	520,0	26

Continuation ▸

PAAR-TRONIC-CY-CY (LiYCY-CY) EMC-preferred type, meter marking

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
21077	2 x 2 x 0,25	8,6	62,0	125,0	24
21078	3 x 2 x 0,25	9,3	78,2	140,0	24
21079	4 x 2 x 0,25	10,4	124,1	205,0	24
21080	5 x 2 x 0,25	12,1	137,6	230,0	24
21081	6 x 2 x 0,25	13,9	148,1	275,0	24
21082	7 x 2 x 0,25	13,9	159,1	295,0	24
21083	8 x 2 x 0,25	14,2	178,7	330,0	24
21084	10 x 2 x 0,25	15,9	213,9	420,0	24
21085	12 x 2 x 0,25	17,0	238,3	465,0	24
21086	16 x 2 x 0,25	19,8	291,4	590,0	24
21087	20 x 2 x 0,25	21,2	325,0	620,0	24
21088	24 x 2 x 0,25	24,0	367,5	690,0	24
21089	32 x 2 x 0,25	26,5	588,0	785,0	24
21090	48 x 2 x 0,25	31,6	840,5	970,0	24
21091	2 x 2 x 0,34	9,5	73,1	139,0	22
21092	3 x 2 x 0,34	10,5	88,1	157,0	22
21093	4 x 2 x 0,34	11,3	137,2	213,0	22
21094	6 x 2 x 0,34	13,9	174,8	308,0	22
21095	8 x 2 x 0,34	15,4	247,2	385,0	22
21096	10 x 2 x 0,34	17,6	288,7	433,0	22
21097	12 x 2 x 0,34	18,3	321,0	495,0	22
21098	14 x 2 x 0,34	19,6	388,4	600,0	22
21099	16 x 2 x 0,34	20,9	425,5	637,0	22
21100	24 x 2 x 0,34	26,1	577,1	781,0	22

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
21101	2 x 2 x 0,5	10,4	83,1	143,0	20
21102	3 x 2 x 0,5	11,7	106,4	179,0	20
21103	4 x 2 x 0,5	13,1	158,0	241,0	20
21104	6 x 2 x 0,5	15,6	201,4	319,0	20
21105	8 x 2 x 0,5	16,4	311,5	441,0	20
21106	10 x 2 x 0,5	20,6	334,5	464,0	20
21107	12 x 2 x 0,5	21,5	394,1	529,0	20
21108	14 x 2 x 0,5	21,6	446,0	641,0	20
21109	16 x 2 x 0,5	23,8	501,2	694,0	20
21110	24 x 2 x 0,5	28,4	712,4	930,0	20

Dimensions and specifications may be changed without prior notice. (RB01)



Suitable accessories can be found in Chapter X.

- Cable tie

PAAR-TRONIC-Li-2YCYv PE-insulated, low capacitance, Termi-Point®, EMC-preferred type, meter marking



Technical data

- PE-insulated data cable
- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -30°C to +80°C
- **Conductor resistance** (loop) at 20°C
  0,22 mm² max. 186 Ohm/km
  0,34 mm² max. 115 Ohm/km
  0,5 mm² max. 78,5 Ohm/km
  1,0 mm² max. 39,2 Ohm/km
- **Operating peak voltage** max. 250 V
  (not for heavy current installation purposes)
- **Test voltage**
  core/core 2000 V
  core/screen 1000 V
- **Insulation resistance** min. 5 GOhm x km
- **Mutual capacitance** at 800 Hz
  > 4 pairs max. 60 nF/km
  ≤ 4 pairs values extended by 20%
- **Inductance** approx. 0,66 mH/km
- **Line attenuation** (approx. value)
  0,22 mm² at 100 kHz 9,0 dB/km
  0,34 mm² at 100 kHz 6,6 dB/km
  0,50 mm² at 100 kHz 6,0 dB/km
  0,22 mm² at 1 MHz 25,0 dB/km
  0,34 mm² at 1 MHz 20,0 dB/km
  0,50 mm² at 1 MHz 18,0 dB/km
- **Cross-talk attenuation**
  up to 1 MHz min. 50 dB
  up to 10 MHz min. 40 dB
- **Minimum bending radius**
  flexing 12x cable Ø
  fixed installation 7,5x cable Ø

Cable structure

- Bare copper-conductor, 7-wires, adapted to DIN VDE 0881, suitable for Termi-Point® and solder-free connection technique
- Conductor construction:
  0,22 mm² = 7x0,2 mm
  0,34 mm² = 7x0,25 mm
  0,5 mm² = 7x0,3 mm
  1 mm² = 7 x 0,42 mm
- Core insulation of PE compound type L/MD to DIN VDE 0819-103 /DIN EN 50290-2-23
- Core identification (pair) to DIN 47100
- Cores stranded in pairs with optimal lay-length
- Pairs stranded in layers with optimal lay-length
- Foil wrapping
- Tinned copper braided screening, coverage approx. 85%
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Type . . . Yv with reinforced outer sheath
- Sheath colour black
- with meter marking

Properties

- The line offers enormous advantages through fast and cheap contacting possibilty in Termi-Point®connection technology. With this solder-free connection technique, the stranded conductor is crimped together with a sleeve onto a contact pin without prior stripping of the insulation material
- The twisted-pair lay-up prevents electrical unbalances within the cable and this thus effectively suppresses cross-talking effects
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC outer sheath self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- At 0,22 mm² is designed for applications with Sub-D connectors.
- Termi-Point® registered trade mark AMP.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

These PE-insulated data cables with twisted pairs are used in particular for the interference-free transmission of data and signals over longer distances. The high transmission rates are particularly suitable for RS 422 and RS 485 interfaces. These cables are suitable for fixed installations as well as for flexing applications, for free movement without forced motion and without tensile stress, in dry and moist environments. Yv black with reinforced outer sheath, is suitable for installation in the ground and in open air.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
21129	2 x 2 x 0,22	7,8	26,0	60,0	24
21130	3 x 2 x 0,22	8,1	31,0	79,0	24
21131	4 x 2 x 0,22	8,5	38,0	96,0	24
21132	8 x 2 x 0,22	10,6	62,0	140,0	24
21133	10 x 2 x 0,22	11,6	79,0	184,0	24
21135	2 x 2 x 0,34	8,7	35,0	83,0	22
21136	3 x 2 x 0,34	9,4	44,0	92,0	22
21137	4 x 2 x 0,34	10,0	53,0	112,0	22
21138	8 x 2 x 0,34	12,4	86,0	179,0	22
21139	10 x 2 x 0,34	13,8	104,0	219,0	22

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
21141	2 x 2 x 0,5	9,8	49,0	90,0	20
21142	3 x 2 x 0,5	10,4	60,0	126,0	20
21143	4 x 2 x 0,5	11,2	73,0	146,0	20
21144	8 x 2 x 0,5	13,9	124,0	246,0	20
21145	10 x 2 x 0,5	16,0	155,0	292,0	20
21146	2 x 2 x 1	10,8	81,0	141,0	18
21147	3 x 2 x 1	11,5	102,0	170,0	18
21148	4 x 2 x 1	12,0	130,0	203,0	18
21149	8 x 2 x 1	16,1	240,0	261,0	18
21150	10 x 2 x 1	17,2	282,0	287,0	18

Dimensions and specifications may be changed without prior notice. (RB01)

PAAR-TRONIC-Li-2YCY PE-insulated, low capacitance, Termi-Point®, EMC-preferred type, meter marking



Technical data

- PE-insulated data cable
- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -30°C to +80°C
- **Conductor resistance** (loop) at 20°C
  0,22 mm² max. 186 Ohm/km
  0,34 mm² max. 115 Ohm/km
  0,5 mm² max. 78,5 Ohm/km
- **Operating peak voltage** max. 250 V
  (not for heavy current installation purposes)
- **Test voltage**
  core/core 2000 V
  core/screen 1000 V
- **Insulation resistance** min. 5 GOhm x km
- **Mutual capacitance** at 800 Hz
  > 4 pairs max. 60 nF/km
  ≤ 4 pairs values extended by 20%
- **Inductance** approx. 0,66 mH/km
- **Line attenuation** (approx. value)
  0,22 mm² at 100 kHz 9,0 dB/km
  0,34 mm² at 100 kHz 6,6 dB/km
  0,50 mm² at 100 kHz 6,0 dB/km
  0,22 mm² at 1 MHz 25,0 dB/km
  0,34 mm² at 1 MHz 20,0 dB/km
  0,50 mm² at 1 MHz 18,0 dB/km
- **Cross-talk attenuation**
  up to 1 MHz min. 50 dB
  up to 10 MHz min. 40 dB
- **Minimum bending radius**
  flexing 12x cable Ø
  fixed installation 7,5x cable Ø

Cable structure

- Bare copper-conductor, 7-wires, adapted to DIN VDE 0881, suitable for Termi-Point® and solder-free connection technique
- Conductor construction:
  0,22 mm² = 7x0,2 mm
  0,34 mm² = 7x0,25 mm
  0,5 mm² = 7x0,3 mm
- Core insulation of PE compound type L/MD to DIN VDE 0819-103/DIN EN 50290-2-23
- Core identification (pair) to DIN 47100
- Cores stranded in pairs with optimal lay-length
- Pairs stranded in layers with optimal lay-length
- Foil wrapping
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey
- with meter marking

Properties

- These cables make enormous advantages possible for fast and cost-effective contact-making using the Termi-Point® connection technique. With this solder-free connection technique, the stranded conductor is crimped together with a sleeve onto a contact pin without prior stripping of the insulation material
- The twisted-pair lay-up prevents electrical unbalances within the cable and this thus effectively suppresses cross-talking effects
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC outer sheath self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- At 0,22 mm² is designed for applications with Sub-D connectors.
- Termi-Point® registered trade mark AMP.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

These PE-insulated data cables with twisted pairs are used in particular for the interference-free transmission of data and signals over longer distances. The high transmission rates are particularly suitable for RS 422 and RS 485 interfaces. These cables are suitable for fixed installations as well as for flexing applications, for free movement without forced motion and without tensile stress, in dry and moist environments but not in open air (Type grey).

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
21111	2 x 2 x 0,22	5,5	26,0	48,0	24
21112	3 x 2 x 0,22	6,2	31,0	66,0	24
21113	4 x 2 x 0,22	6,5	38,0	82,0	24
21114	8 x 2 x 0,22	8,6	62,0	123,0	24
21115	10 x 2 x 0,22	9,9	79,0	165,0	24
21117	2 x 2 x 0,34	6,7	35,0	68,0	22
21118	3 x 2 x 0,34	7,2	44,0	77,0	22
21119	4 x 2 x 0,34	8,0	53,0	95,0	22
21120	8 x 2 x 0,34	10,9	86,0	158,0	22
21121	10 x 2 x 0,34	12,5	104,0	195,0	22
21123	2 x 2 x 0,5	7,9	49,0	74,0	20
21124	3 x 2 x 0,5	8,6	60,0	109,0	20
21125	4 x 2 x 0,5	9,6	73,0	128,0	20
21126	8 x 2 x 0,5	12,8	124,0	223,0	20
21127	10 x 2 x 0,5	14,8	155,0	265,0	20

Dimensions and specifications may be changed without prior notice. (RB01)

LifYCY high flexible, paired, screened, EMC-preferred type, meter marking



Technical data

- Special PVC connecting cable, adapted to DIN VDE 0812 and 0814
- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -40°C to +70°C
- **Operating peak voltage** 350 V
  (not for heavy current installation purposes)
- **Test voltage** 1200 V
- **Breakdown voltage** min. 2400 V
- **Insulation resistance**
  min. 10 MOhm x km
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)
- **Coupling resistance**
  max. 250 Ohm/km

Cable structure

- Bare copper, extra fine conductors (single wire diameter 0,05 mm)
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification (pair) to DIN 47100
- Cores stranded in pairs
- Pairs stranded in layers
- Foil wrapping
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7032)
- with meter marking

Properties

- Extensively oil resistant, oil-/ chemical Resistance - see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Application

These screened cables are used as connecting cable for signal, measuring, control and speaking purposes for example in Intercom systems, weighing instruments, equipment for office works, computers and telecommunication equipment etc. The cable offers a flexible handling and installation. Due to pair-twisting, the electrical unbalances of the cable itself can be reduced and cross-talk effects are avoided. The tinned copper screened braiding serves as protection against outer high frequency influences (capacitance unbalance). The drain wire ensure an exact connection to the earth clamp. The cables are suitable for fixed installation and flexible application, free-moving without tensile stress and without forced guiding operation in dry, damp and wet places for medium mechanical stress.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
15987	2 x 2 x 0,2	5,7	24,0	60,0	-
15988	3 x 2 x 0,2	6,1	35,0	70,0	-
15989	4 x 2 x 0,2	6,6	45,0	80,0	-
15990	5 x 2 x 0,2	7,9	54,0	90,0	-
15991	6 x 2 x 0,2	8,3	56,0	100,0	-
15992	7 x 2 x 0,2	8,3	68,0	120,0	-
15993	8 x 2 x 0,2	9,4	72,0	130,0	-

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
15994	10 x 2 x 0,2	10,2	108,0	150,0	-
15995	12 x 2 x 0,2	10,9	125,0	180,0	-
15996	16 x 2 x 0,2	12,3	144,0	210,0	-
15997	18 x 2 x 0,2	13,1	155,0	230,0	-
15998	20 x 2 x 0,2	13,2	216,0	250,0	-
15999	24 x 2 x 0,2	15,0	228,0	330,0	-
16000	32 x 2 x 0,2	16,6	269,0	400,0	-

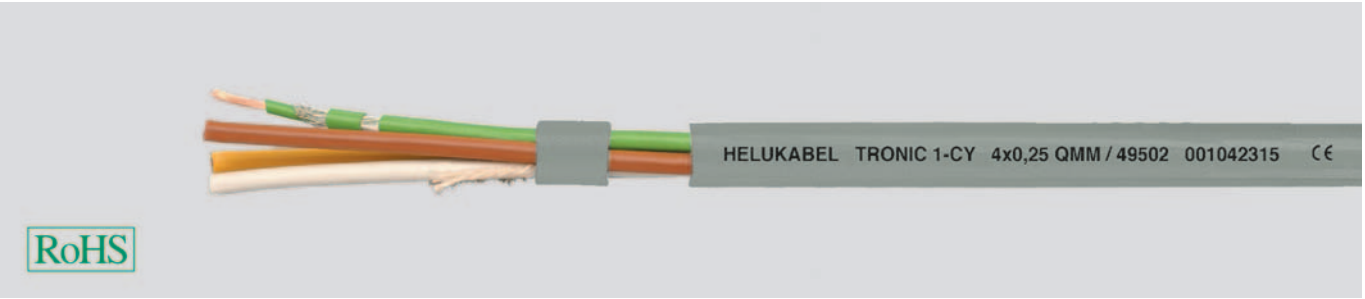
Dimensions and specifications may be changed without prior notice. (RB01)



Suitable accessories can be found in Chapter X.

• Cable tie

TRONIC 1-CY each core individually screened, EMC-preferred type, meter marking



Technical data

- Special-PVC core insulation adapted to DIN VDE 0812
- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -40°C to +80°C
- **Operating peak voltage**
  (not for heavy current installation purposes)
  0,25 mm² 250 V
  0,50 mm² 350 V
- **Test voltage** (core/screen)
  0,25 mm² 800 V
  0,50 mm² 1200 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, from 0,5 mm² to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Conductor construction:
  0,25 mm² = 14x0,15 mm
  0,50 mm² = 16x0,2 mm
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN 47100
- Each core individually with copper spiral shield, approx. 85% coverage
- Contact protection, PVC sheath
- Cores stranded in layers with optimal lay-length
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Extensively oil resistant, oil-/ chemical Resistance - see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

The individually screened, flexible cable is ideal for use in data and impulse transfer in computers, communication systems and external units and offers interference-free data flow for all measuring and command functions. This cable type is widely used in the machine and steel producing industries as well as for traffic signals and data processing areas.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
49501	3 x 0,25	6,5	18,0	40,0	24
49502	4 x 0,25	7,2	24,0	45,0	24
49503	5 x 0,25	8,0	30,0	56,0	24
49504	7 x 0,25	8,8	42,0	70,0	24
49505	8 x 0,25	10,0	48,0	87,0	24
49506	10 x 0,25	11,3	60,0	90,0	24
49507	12 x 0,25	12,0	72,0	95,0	24
49508	16 x 0,25	13,1	96,0	115,0	24
49509	24 x 0,25	16,0	144,0	170,0	24
49510	32 x 0,25	18,5	192,0	210,0	24
49511	48 x 0,25	23,5	288,0	320,0	24

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
49512	3 x 0,5	7,3	28,8	71,0	20
49513	4 x 0,5	8,2	38,5	81,0	20
49514	5 x 0,5	9,2	48,0	95,0	20
49515	7 x 0,5	10,0	67,0	115,0	20
49516	8 x 0,5	11,0	77,0	145,0	20
49517	10 x 0,5	13,2	96,0	169,0	20
49518	12 x 0,5	14,0	114,6	185,0	20
49519	16 x 0,5	15,5	154,0	225,0	20
49520	32 x 0,5	21,5	308,0	440,0	20

Dimensions and specifications may be changed without prior notice. (RB01)



Suitable accessories can be found in Chapter X.

• Cable tie

TRONIC 2-CY 2 cores screened, meter marking



Technical data

- Special-PVC core insulation adapted to DIN VDE 0812
- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -40°C to +80°C
- **Conductor resistance**
  0,14 mm² = max. 138 Ohm/km
  0,25 mm² = max. 77,8 Ohm/km
  0,50 mm² = max. 37,8 Ohm/km
- **Operating peak voltage**
  (not for heavy current installation purposes)
  0,14 mm² = max. 350 V
  0,25 mm² = max. 500 V
  0,50 mm² = max. 500 V
- **Test voltage** (50 Hz eff)
  0,14 mm² = 800 V
  0,25 mm² = 800 V
  0,50 mm² = 1200 V
- **Breakdown voltage**
  0,14 mm² = 1600 V
  0,25 mm² = 1600 V
  0,50 mm² = 2400 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Mutual capacitance** (approx.-value)
  core/core
  0,14 mm² = 70 pF/m
  0,25 mm² = 80 pF/m
  0,50 mm² = 80 pF/m
  core/screen
  0,14 mm² = 270 pF/m
  0,25 mm² = 350 pF/m
  0,50 mm² = 400 pF/m
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, from 0,5 mm² to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
  0,14 and 0,25 mm² to DIN VDE 0812
- Conductor construction:
  0,14 mm² = 18x0,1 mm
  0,25 mm² = 14x0,15 mm
  0,50 mm² = 16x0,2 mm
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN 47100
- White and brown cores each individually screened
- Copper braided screen, approx. 85% coverage
- Cores stranded in layers with optimal lay-length
- Contact protection, PVC sheath
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Extensively oil resistant, oil-/ chemical Resistance - see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

TRONIC 2-CY is used in all areas of measuring and control technology requiring only 2 impulse transfer cores. This cable type is used mainly in the machinery and industrial equipment fields as well as in the steel industry and in electronics.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
49521	4 x 0,14	6,2	14,6	40,0	26
49522	8 x 0,14	7,2	20,3	50,0	26
49523	12 x 0,14	8,4	26,8	70,0	26
49524	16 x 0,14	8,6	32,0	80,0	26
49525	24 x 0,14	9,0	43,4	110,0	26
49526	4 x 0,25	6,5	21,3	60,0	24
49527	8 x 0,25	8,0	31,0	90,0	24
49528	12 x 0,25	9,2	40,5	120,0	24
49529	16 x 0,25	9,6	50,1	140,0	24
49530	24 x 0,25	12,0	69,3	200,0	24

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
49531	4 x 0,5	7,6	34,0	100,0	20
49532	8 x 0,5	11,6	53,2	150,0	20
49533	12 x 0,5	11,9	72,4	190,0	20
49534	16 x 0,5	12,5	91,6	240,0	20
49535	24 x 0,5	15,3	130,0	310,0	20

Dimensions and specifications may be changed without prior notice. (RB01)

LiY-TPC-Y pairs screened, EMC-preferred type, meter marking



Technical data

- Pair screened special PVC data transmissionn cable adapted to DIN VDE 0812 and 0814
- **Temperature range** flexing -5°C to +70°C fixed installation -30°C to +70°C
- **Operating peak voltage** 500 V (not for heavy current installation purposes)
- **Test voltage** 1200 V
- **Breakdown voltage** min. 2400 V
- **Insulation resistance** min. 20 MOhm x km
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)
- **Coupling resistance** max. 250 Ohm/km
- **Minimum bending radius** flexing 12x cable Ø fixed installation 7,5x cable Ø

Cable structure

- Bare copper-conductor, from 0,5 mm² to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5 0,25 mm² and 0,34 mm² to DIN VDE 0812
- Conductor construction: 0,25 mm² = 14x0,15 mm 0,34 mm² = 7x0,25 mm
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification (pair) to DIN 47100
- Cores stranded in pairs with optimal lay-length
- Each pair with foil wrapping
- Pairs individually screened, tinned copper coverage approx. 85%
- All pairs-C stranded in layers with optimal lay-length
- Foil wrapping
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7032)
- with meter marking

Properties

- Extensively oil resistant, oil-/ chemical Resistance - see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

This pair screened table type offers total interference-free data transfer and is ideal for use as a signal and control cable in combination with computers and external units. The screening properties also make this cable type well suited for use as a connecting cable in sound studio equipment, measuring and control sectors as well as proving a highly reliable cable for process-control and security systems. The copper screening assures a disturbance-free data and signal transmission for measuring and control systems.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
21323	2 x 2 x 0,25	6,2	32,0	60,0	24
21324	3 x 2 x 0,25	6,8	48,0	80,0	24
21325	4 x 2 x 0,25	7,4	64,0	112,0	24
21326	5 x 2 x 0,25	8,7	80,0	142,0	24
21327	6 x 2 x 0,25	9,1	96,0	159,0	24
21328	7 x 2 x 0,25	9,6	112,0	177,0	24
21329	10 x 2 x 0,25	11,7	160,0	250,0	24
21340	2 x 2 x 0,34	6,7	42,0	78,0	22
21341	3 x 2 x 0,34	7,5	63,0	104,0	22
21342	4 x 2 x 0,34	8,1	84,0	153,0	22
21343	5 x 2 x 0,34	9,5	105,0	189,0	22
21344	7 x 2 x 0,34	10,1	147,0	238,0	22
21345	10 x 2 x 0,34	13,4	210,0	322,0	22

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
21355	2 x 2 x 0,5	8,3	58,0	96,0	20
21356	3 x 2 x 0,5	9,2	87,0	136,0	20
21357	4 x 2 x 0,5	10,2	116,0	187,0	20
21370	2 x 2 x 0,75	9,2	76,0	132,0	19
21371	3 x 2 x 0,75	10,1	114,0	178,0	19
21372	4 x 2 x 0,75	11,2	152,0	243,0	19
21373	5 x 2 x 0,75	12,7	190,0	312,0	19
21385	2 x 2 x 1	9,6	86,0	142,0	18
21386	3 x 2 x 1	10,8	130,0	189,0	18
21387	4 x 2 x 1	11,9	149,0	275,0	18

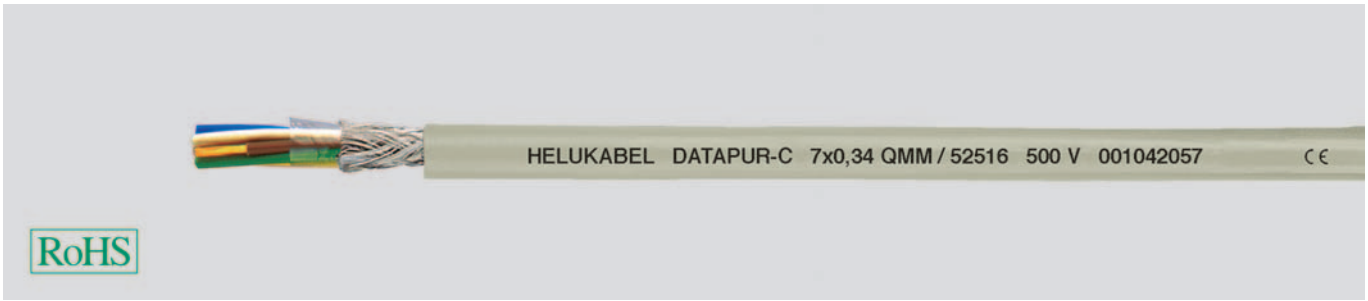
Dimensions and specifications may be changed without prior notice. (RB01)



Suitable accessories can be found in Chapter X.

• Cable tie

DATAPUR-C® EMC-preferred type, Cu-screened, PUR-outer sheath, meter marking



Technical data

- Special -PVC/PUR control cable adapted to DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -40°C to +80°C
- **Operating peak voltage**
  (not for heavy current installation purposes)
  0,14 mm² 350 V
  as of 0,25 mm² 500 V
- **Test voltage**
  0,14 mm² 800 V
  as of 0,25 mm² 1200 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Mutual capacitance** core/core:
  up to 0,34 mm² approx. 120 nF/km
  as of 0,5 mm² approx. 160 nF/km
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)
- **Coupling resistance**
  max. 250 Ohm/km

Cable structure

- Bare copper-conductor, from 0,5 mm² to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Conductor construction:
  0,34 mm² = 7 x 0,25 mm
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN 471000
- Cores stranded in layers with optimal lay-length
- Foil wrapping
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of PUR compound type TMPU to DIN VDE 0207-363-10-2/ DIN EN 50363-10-2
- Sheath colour grey (RAL 7032)
- with meter marking

Properties

- Chemical resistance: good against acids, lyes, hydraulic liquids
- High flexibility at low temperature
- High abrasion resistance
- **Resistant to**
  Oils and fats
  Non-alcoholic fuels and kerosene
  Atmospheric influences
  UV-radiation
  Oxygene and ozone
  Microbes and rotting
  Sea and waste water
  Vibrations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

The specific construction of DATAPUR-C® makes this cable type ideal for use in all types of computer systems, office machinery, signal and control units. DATAPUR-C® proves its efficiency but also in the acoustic field in telecommunications, paging and intercom systems but also in the cradle of technology and in the measuring and control technology.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
52490	2 x 0,14	3,9	12,3	21,0	26
52491	3 x 0,14	4,0	14,0	25,0	26
52492	4 x 0,14	4,3	15,7	29,0	26
52493	5 x 0,14	4,7	19,5	35,0	26
52494	7 x 0,14	5,2	23,4	41,0	26
52495	10 x 0,14	6,5	28,5	54,0	26
52496	12 x 0,14	6,7	34,3	64,0	26
52497	14 x 0,14	6,9	39,9	74,0	26
52498	18 x 0,14	7,6	51,5	93,0	26
52499	21 x 0,14	8,4	60,1	108,0	26
52500	25 x 0,14	9,1	71,9	128,0	26
52501	2 x 0,25	4,3	14,7	26,0	24
52502	3 x 0,25	4,5	17,1	33,0	24
52503	4 x 0,25	4,8	20,6	38,0	24
52504	5 x 0,25	5,4	24,8	44,0	24
52505	7 x 0,25	5,8	31,1	53,0	24
52506	10 x 0,25	7,3	42,0	79,0	24
52507	12 x 0,25	7,5	51,0	92,0	24
52508	14 x 0,25	8,1	60,1	105,0	24
52509	18 x 0,25	9,1	77,9	128,0	24
52510	21 x 0,25	9,6	91,4	148,0	24
52511	25 x 0,25	10,6	110,8	175,0	24

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
52512	2 x 0,34	4,9	17,0	33,0	22
52513	3 x 0,34	5,1	20,7	42,0	22
52514	4 x 0,34	5,5	24,7	48,0	22
52515	5 x 0,34	6,0	30,1	57,0	22
52516	7 x 0,34	6,6	38,2	77,0	22
52517	10 x 0,34	8,4	63,1	111,0	22
52518	12 x 0,34	8,6	74,2	128,0	22
52519	14 x 0,34	9,0	85,3	144,0	22
52520	18 x 0,34	10,1	107,4	175,0	22
52521	21 x 0,34	10,9	124,1	200,0	22
52522	25 x 0,34	12,0	147,0	233,0	22
52523	2 x 0,5	5,3	23,2	38,0	20
52524	3 x 0,5	5,6	30,1	51,0	20
52525	4 x 0,5	6,4	35,4	58,0	20
52526	5 x 0,5	6,9	52,6	77,0	20
52527	7 x 0,5	7,3	65,3	93,0	20
52528	10 x 0,5	9,6	88,8	134,0	20
52529	12 x 0,5	9,7	101,9	155,0	20
52530	14 x 0,5	10,2	115,1	175,0	20
52531	18 x 0,5	11,5	141,2	214,0	20
52532	21 x 0,5	12,1	161,1	245,0	20
52533	25 x 0,5	13,7	187,9	285,0	20

Dimensions and specifications may be changed without prior notice. (RB01)

DATAFLAMM®-C EMC-preferred type, halogen-free, screened, meter marking



Technical data

- Special data cable, halogen-free
- **Temperature range**
  flexing +5°C to +70°C
  fixed installation -40°C to +70°C
- **Operating peak voltage**
  (not for heavy current installation purposes)
  0,14 mm² = 350 V
  ≥ 0,25 mm² = 500 V
- **Test voltage**
  0,14 mm² = 800 V
  ≥ 0,25 mm² = 1200 V
- **Insulation resistance**
  min. 2 GOhm x km
- **Capacitance**
  core/core <70 nF/km
- **Minimum bending radius**
  7,5x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0812, fine-wire
- Conductor construction:
  0,34 mm² = 7x0,25 mm
- Core insulation of PE compound type L/MD to DIN VDE 0819-103 / DIN EN 50290-2-23
- Core identification to DIN 47100
- Cores twisted in layers with optimal lay-length
- Foil wrapping
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath compound type HM2 to DIN VDE 0207 part 24
- Sheath colour grey (RAL 7005)
- with meter marking

Properties

- PE-insulated cores, compared with PVC-insulated cores, assure a remarkable and more favourable capacitance values

Tests

- Halogen-free to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free sheath compound, self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **DATAFLAMM®**, confer page 130

Application

As a connecting and interconnecting cable for signaling, measuring, control and intercom purposes for the use in paging and intercom systems, clock systems, weighing equipment and office machines. The cables can be laid on or under plaster, in dry, damp and wet rooms as well as masonry and concrete. Areas of use are telecommunications and information processing systems in public buildings, laboratories, warehouses and other buildings in which the release of halogens in the event of fire must be avoided. Due to the shielding without interference against foreign encoder or high-frequency signals.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
52365	2 x 0,14	3,7	12,4	21,0	26
52366	3 x 0,14	3,9	14,0	25,0	26
52367	4 x 0,14	4,1	15,8	26,0	26
52368	5 x 0,14	4,4	19,5	32,0	26
52369	7 x 0,14	4,7	23,4	39,0	26
52370	10 x 0,14	5,9	28,4	54,0	26
52371	12 x 0,14	6,0	31,4	69,0	26
52372	14 x 0,14	6,4	37,5	76,0	26
52373	16 x 0,14	6,7	43,4	82,0	26
52374	18 x 0,14	7,0	51,4	90,0	26
52375	21 x 0,14	7,4	61,8	102,0	26
52376	25 x 0,14	8,3	76,0	121,0	26
52377	30 x 0,14	8,6	92,7	146,0	26
52378	34 x 0,14	9,4	121,0	167,0	26
52379	40 x 0,14	10,2	126,1	170,0	26
52380	2 x 0,25	4,3	14,6	23,0	24
52381	3 x 0,25	4,5	17,0	28,0	24
52382	4 x 0,25	4,8	20,6	34,0	24
52384	5 x 0,25	5,2	24,7	42,0	24
52385	7 x 0,25	5,6	31,2	49,0	24
52386	10 x 0,25	7,2	42,1	81,0	24
52387	12 x 0,25	7,3	47,5	88,0	24
52388	14 x 0,25	7,9	52,7	100,0	24
52389	16 x 0,25	8,3	58,1	113,0	24
52390	18 x 0,25	9,1	78,0	126,0	24
52391	21 x 0,25	9,5	94,3	144,0	24
52392	25 x 0,25	10,6	116,5	164,0	24
52393	30 x 0,25	11,1	132,2	191,0	24
52394	34 x 0,25	11,9	144,6	214,0	24
52395	40 x 0,25	13,0	163,3	245,0	24
52396	2 x 0,34	4,8	16,9	31,0	22
52397	3 x 0,34	5,1	20,6	38,0	22
52398	4 x 0,34	5,5	24,5	47,0	22
52399	5 x 0,34	6,0	30,0	58,0	22
52400	7 x 0,34	6,4	38,2	76,0	22
52401	10 x 0,34	8,0	62,2	110,0	22
52402	12 x 0,34	8,5	69,4	123,0	22
52403	14 x 0,34	9,0	82,1	140,0	22
52404	16 x 0,34	9,5	95,0	157,0	22
52405	18 x 0,34	10,2	107,3	172,0	22
52406	21 x 0,34	10,8	122,4	195,0	22
52407	25 x 0,34	12,2	142,2	226,0	22
52408	30 x 0,34	12,7	162,6	261,0	22
52409	34 x 0,34	13,7	178,9	285,0	22
52410	40 x 0,34	14,9	203,3	330,0	22
52411	2 x 0,5	5,1	23,0	37,0	20
52412	3 x 0,5	5,5	30,0	46,0	20
52413	4 x 0,5	5,9	35,3	57,0	20
52414	5 x 0,5	6,6	52,5	77,0	20
52415	7 x 0,5	7,1	65,3	92,0	20
52416	10 x 0,5	9,3	88,7	135,0	20
52417	12 x 0,5	9,4	98,7	148,0	20
52418	18 x 0,5	11,1	141,2	210,0	20
52419	21 x 0,5	12,0	161,0	242,0	20
52420	25 x 0,5	13,5	187,2	285,0	20
52421	30 x 0,5	14,2	223,2	340,0	20
52422	40 x 0,5	16,5	294,9	445,0	20
52423	2 x 0,75	5,9	30,6	45,0	19
52424	3 x 0,75	6,2	38,1	60,0	19
52425	4 x 0,75	6,9	58,0	80,0	19
52426	5 x 0,75	7,5	68,4	97,0	19
52427	7 x 0,75	8,1	88,4	127,0	19
52428	10 x 0,75	10,4	122,5	175,0	19
52429	12 x 0,75	10,9	137,2	196,0	19

Dimensions and specifications may be changed without prior notice. (RB01)

DATAFLAMM®-C-PAAR EMC-preferred type, halogen-free, screened, meter marking



Technical data

- Special data cable, halogen-free
- **Temperature range**
  flexing +5°C to +70°C
  fixed installation -40°C to +70°C
- **Operating peak voltage**
  (not for heavy current installation purposes)
  0,14 mm² = 350 V
  ≥ 0,25 mm² = 500 V
- **Test voltage**
  0,14 mm² = 800 V
  ≥ 0,25 mm² = 1200 V
- **Insulation resistance**
  min. 2 GOhm x km
- **Capacitance**
  core/core < 70 nF/km
- **Minimum bending radius**
  7,5x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, fine-wire to DIN VDE 0812
- Conductor construction: 0,34 mm² = 7x0,25 mm
- Core insulation of PE compound type L/MD to DIN VDE 0819-103 / DIN EN 50290-2-23
- Core identification to DIN 47100
- Cores stranded in pairs with optimal lay-length
- Pairs stranded in layers with optimal lay-length
- Foil wrapping
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath compound type HM2 to DIN VDE 0207 part 24
- Sheath colour grey (RAL 7005)
- with meter marking

Properties

Tests

- Halogen-free to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free sheath compound, self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Are used as connecting cable for signal, measuring, control, call-announcing and two-way intercom speaking systems, clock installations, electronic weighing equipment and electrical apparatus for office requirements. The cables are suitable for installation in dry, damp and wet environments as well as in masonry and concrete. PE-insulated cores, compared with the conventional PVC-insulated cores, assure a remarkable and more favourable capacitance values. These cables are generally installed in telecommunication apparatus and data transmission systems in public buildings, laboratories, trading centres where the freedom from halogen in case of fire and the flame propagation must be avoided. With screened braiding offers interference-free signal transfer. The halogen-free thermoplastic sheath produce neither corrosive nor toxic gases.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
52435	2 x 2 x 0,14	4,7	22,5	37,0	26
52436	3 x 2 x 0,14	5,1	25,6	47,0	26
52437	4 x 2 x 0,14	5,8	39,1	66,0	26
52438	5 x 2 x 0,14	6,3	45,3	76,0	26
52439	6 x 2 x 0,14	6,8	51,4	87,0	26
52440	7 x 2 x 0,14	6,8	54,2	94,0	26
52441	10 x 2 x 0,14	8,9	68,7	119,0	26
52442	12 x 2 x 0,14	9,2	78,3	135,0	26
52443	15 x 2 x 0,14	10,0	79,9	157,0	26
52444	18 x 2 x 0,14	11,0	99,2	190,0	26
52445	2 x 2 x 0,25	5,7	27,1	44,0	24
52446	3 x 2 x 0,25	6,2	42,4	66,0	24
52447	4 x 2 x 0,25	7,0	54,5	81,0	24
52448	5 x 2 x 0,25	7,9	59,8	98,0	24
52449	6 x 2 x 0,25	8,6	64,6	116,0	24
52450	7 x 2 x 0,25	8,6	71,3	120,0	24
52451	10 x 2 x 0,25	10,6	93,3	153,0	24
52452	12 x 2 x 0,25	11,4	108,0	175,0	24
52453	15 x 2 x 0,25	12,5	123,4	213,0	24
52454	18 x 2 x 0,25	13,1	139,7	248,0	24
52455	2 x 2 x 0,34	6,5	43,3	68,0	22
52456	3 x 2 x 0,34	7,2	55,0	92,0	22
52457	4 x 2 x 0,34	7,9	64,0	110,0	22
52458	5 x 2 x 0,34	8,8	74,5	128,0	22
52459	6 x 2 x 0,34	9,8	85,0	147,0	22

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
52460	7 x 2 x 0,34	9,8	89,8	154,0	22
52461	10 x 2 x 0,34	12,2	119,8	209,0	22
52462	12 x 2 x 0,34	12,9	139,4	245,0	22
52463	15 x 2 x 0,34	14,4	160,0	279,0	22
52464	18 x 2 x 0,34	15,3	207,2	363,0	22
52465	2 x 2 x 0,5	7,4	50,2	76,0	20
52466	3 x 2 x 0,5	8,0	64,5	107,0	20
52467	4 x 2 x 0,5	9,0	77,2	134,0	20
52468	5 x 2 x 0,5	9,9	96,2	150,0	20
52469	6 x 2 x 0,5	10,9	107,4	176,0	20
52470	7 x 2 x 0,5	10,9	117,3	185,0	20
52471	10 x 2 x 0,5	13,8	158,2	275,0	20
52472	12 x 2 x 0,5	14,5	177,8	330,0	20
52473	15 x 2 x 0,5	15,8	236,4	380,0	20
52474	18 x 2 x 0,5	17,1	265,4	450,0	20
52475	2 x 2 x 0,75	8,5	64,6	105,0	19
52476	3 x 2 x 0,75	9,3	81,7	137,0	19
52477	4 x 2 x 0,75	10,6	107,6	166,0	19
52478	5 x 2 x 0,75	11,7	126,1	200,0	19
52479	6 x 2 x 0,75	12,7	138,6	236,0	19
52480	7 x 2 x 0,75	12,7	153,7	255,0	19
52481	10 x 2 x 0,75	15,6	220,0	363,0	19
52482	12 x 2 x 0,75	16,8	265,5	434,0	19
52483	15 x 2 x 0,75	18,6	327,6	500,0	19
52484	18 x 2 x 0,75	20,5	374,6	580,0	19

Dimensions and specifications may be changed without prior notice. (RB01)

EDV-PiMF-CY PE-insulated, low capacitance, EMC-preferred type, meter marking



Technical data

- PE data cable
- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -20°C to +80°C
- **Operating peak voltage** max. 300 V
  (not for heavy current installation purposes)
- **Test voltage**
  core/core 2000 V
  core/screen 1000 V
- **Insulation resistance**
  approx. 5 GOhm x km
- **Mutual capacitance** (approx. value)
  core/core approx. 75pF/m
- **Inductance** approx. 0,4 mH/km
- **Cross-talk attenuation**
  min. 60 dB at 100 kHz
- **Impedance** (approx. value)
  at 1 kHz approx. 360 Ohm
  at 10 kHz approx. 125 Ohm
  at 100 kHz approx. 87 Ohm
  at 1000 kHz approx. 70 Ohm
- **Line attenuation** (approx. value)
  at 1 kHz approx. 1,1 dB
  at 10 kHz approx. 2,7 dB
  at 100 kHz approx. 6,8 dB
  at 1000 kHz approx. 35 dB
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)
- **Coupling resistance**
  max. 250 Ohm/km

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of PE
- Core identification to DIN 47100
- PiMF: (pair in metal foil) cores twisted in pairs; foil wrapped, plastic coated aluminium foil and copper drain-wire tinned, 100% coverage
- PiMFs are stranded in layer
- Foil wrapping
- Overall copper screened braiding, 85% coverage
- Outer sheath of PVC compound type TM2 adapted to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7032)
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC outer sheath self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Absolute disturbance-free data transfer both for installed terminals in all areas of medicine and data technology. Also suitable for use in machine tool and steel producing industries, traffic signal systems, assembly lines and food processing.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

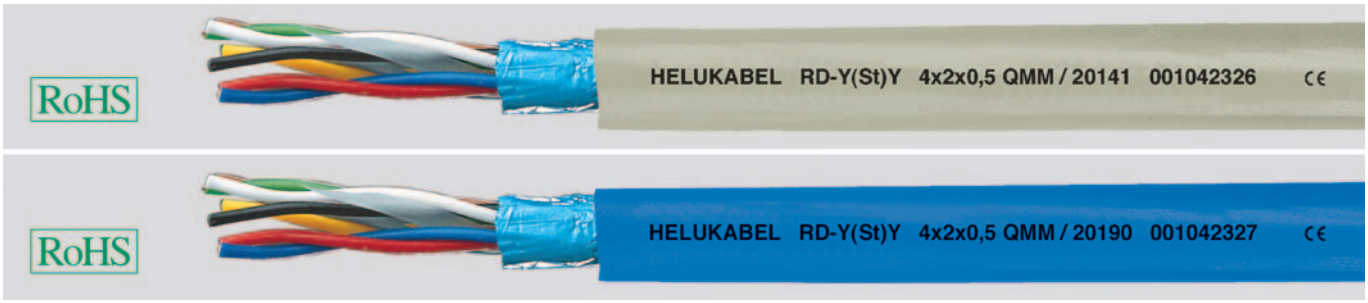
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
43553	2 x 2 x 0,5	8,7	50,0	101,0	20
43554	3 x 2 x 0,5	9,8	66,0	120,0	20
43524	4 x 2 x 0,5	10,8	108,0	196,0	20
43555	5 x 2 x 0,5	12,0	120,0	201,0	20
43525	6 x 2 x 0,5	13,1	148,0	260,0	20
43526	8 x 2 x 0,5	14,4	180,0	310,0	20
43527	10 x 2 x 0,5	17,3	236,0	398,0	20
43528	16 x 2 x 0,5	20,2	338,0	515,0	20
43529	20 x 2 x 0,5	21,6	394,0	688,0	20
43530	30 x 2 x 0,5	27,3	577,0	980,0	20
43531	40 x 2 x 0,5	28,9	684,0	1390,0	20
43532	50 x 2 x 0,5	31,4	834,0	1860,0	20
43556	2 x 2 x 0,75	10,1	61,0	117,0	19
43557	3 x 2 x 0,75	11,3	97,0	142,0	19
43533	4 x 2 x 0,75	12,2	141,0	240,0	19
43558	5 x 2 x 0,75	13,6	163,0	304,0	19
43534	6 x 2 x 0,75	15,1	198,0	352,0	19
43535	8 x 2 x 0,75	16,6	246,0	415,0	19
43536	10 x 2 x 0,75	19,7	305,0	505,0	19
43537	16 x 2 x 0,75	23,0	446,0	732,0	19
43538	20 x 2 x 0,75	24,7	530,0	860,0	19

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
43539	30 x 2 x 0,75	30,3	765,0	1210,0	19
43559	2 x 2 x 1	12,3	72,0	130,0	18
43560	3 x 2 x 1	13,4	104,0	161,0	18
43540	4 x 2 x 1	14,8	186,0	360,0	18
43561	5 x 2 x 1	16,6	231,0	412,0	18
43541	6 x 2 x 1	18,4	260,0	472,0	18
43542	8 x 2 x 1	20,1	322,0	540,0	18
43543	10 x 2 x 1	23,9	382,0	670,0	18
43544	16 x 2 x 1	27,8	578,0	982,0	18
43545	20 x 2 x 1	30,3	710,0	1240,0	18
43546	30 x 2 x 1	36,0	1050,0	1720,0	18
43562	2 x 2 x 1,5	13,4	81,0	164,0	16
43563	3 x 2 x 1,5	14,9	141,0	197,0	16
43547	4 x 2 x 1,5	16,6	261,0	480,0	16
43564	5 x 2 x 1,5	18,4	284,0	516,0	16
43548	6 x 2 x 1,5	20,4	355,0	590,0	16
43549	8 x 2 x 1,5	22,4	448,0	696,0	16
43550	10 x 2 x 1,5	27,0	551,0	874,0	16
43551	16 x 2 x 1,5	31,0	838,0	1340,0	16
43552	20 x 2 x 1,5	32,1	1030,0	1620,0	16

Dimensions and specifications may be changed without prior notice. (RB01)

RD-Y(St)Y Instrumentation Cable suitable for Maxi-Termi-Point®-connection, meter marking



Technical data

- Special -PVC data transmission cable adapted to DIN VDE 0815
- **Conductor resistance** (loop) max. 73,6 Ohm/km
- **Temperature range** flexing -5°C to +50°C fixed installation -40°C to +70°C
- **Operating peak voltage** max. 600 V (not for heavy current installation purposes)
- **Test voltage** core/core 2000 V core/screen 2000 V
- **Insulation resistance** core/core min. 100 MOhm x km core/screen min. 100 MOhm x km
- **Mutual capacitance** at 800 Hz max. 100 nF/km (this value may be exceeded by 20% with a make-up to 4 pairs)
- **Impedance** at 1 kHz approx. 370 Ohm at 10 kHz approx. 130 Ohm
- **Capacity unbalance** at 800 Hz max. 200 pF/100 m (20% of the values, but one value up to 400 pF is allowed)
- **Line attenuation** at 1 kHz approx. 1,2 dB/km at 10 kHz approx. 3,0 dB/km
- **Cross-talk attenuation** at 10 kHz and cable length of 500 m min. 60 dB
- **Minimum bending radius** 7,5x cable Ø

Cable structure

- Bare copper-conductor, multi-wire
- Conductor construction: 0,5 mm² = 7x0,3 mm
- Core insualtion of PVC (Semi-Rigid-PVC)
- Core identification coloured pair-no.1: a-core = BU; b-core = RD pair-no.2: a-core = GY; b-core = YE pair-no.3: a-core = GN; b-core = BN pair-no.4: a-core = WH; b-core = BK
- Cores stranded in pairs (approx. 20 pitch/m ≙ 50 mm)
- 4 pairs stranded to a unit (unit labelled with numbers printed plastic helix)
- Units stranded in concentric layers
- Electrostatic screen of plastic coated aluminium foil and drain-wire tinned, 0,5 mm² = 7x0,3 mm
- Outer sheath of PVC
- Sheath colour grey (RAL 7032) or blue (RAL 5015)
- with meter marking

Properties

- Twisted pairs with short different lay-lengths within a bundle results to good crosstalk attentuation values
- The static screen protects the transmission circuits against outer electrical interferences
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- Cop.weight including drain-wire.
- Also available halogen-free type RD-H(St)H on request.
- Maxi-Termi-Point®= registered trade mark AMP.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

The data transmission cables RD-Y(St)Y are used in measurement and control technology such as in control rooms of industrial plants and power stations. The cables serves for transmission of analog and digital signals up to frequencies of approx. 10 kHz. These cables offer considerable advantages by using the quick and economical connecting possibilities in Maxi-Termi-Point® technique. This solderless connecting technique is defined by a compression termination that employs a spring-clip for the connection of the cable to a square rigid post without pre-stripping. For this technique it is necessary to have an exact 7-core stranded conductor and a Semi-Rigid-PVC. Suitable for fixed installation only inside of buildings. With blue outer sheath suitable for intrinsic safe systems.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm²	Sheath colour	No. units	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
20140	2 x 2 x 0,5	GY	-	6,8	25,0	61,0	20
20141	4 x 2 x 0,5	GY	1	8,7	45,0	96,0	20
20142	8 x 2 x 0,5	GY	2	11,0	85,0	160,0	20
20143	12 x 2 x 0,5	GY	3	12,5	125,0	210,0	20
20144	16 x 2 x 0,5	GY	4	14,0	165,0	282,0	20
20145	24 x 2 x 0,5	GY	6	17,0	245,0	330,0	20
20146	32 x 2 x 0,5	GY	8	20,0	325,0	530,0	20
20147	48 x 2 x 0,5	GY	12	23,5	485,0	730,0	20
20148	96 x 2 x 0,5	GY	24	32,5	965,0	1400,0	20

Part no.	No.pairs x cross-sec. mm²	Sheath colour	No. units	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
20189	2 x 2 x 0,5	BU	-	6,8	25,0	61,0	20
20190	4 x 2 x 0,5	BU	1	8,7	45,0	96,0	20
20191	8 x 2 x 0,5	BU	2	11,0	85,0	160,0	20
20192	12 x 2 x 0,5	BU	3	12,5	125,0	210,0	20
20193	16 x 2 x 0,5	BU	4	14,0	165,0	282,0	20
20194	24 x 2 x 0,5	BU	6	17,0	245,0	330,0	20
20195	32 x 2 x 0,5	BU	8	20,0	325,0	530,0	20
20196	48 x 2 x 0,5	BU	12	23,5	485,0	730,0	20
20197	96 x 2 x 0,5	BU	24	32,5	965,0	1400,0	20

Dimensions and specifications may be changed without prior notice. (RB01)

RD-Y(St)Yv / RD-Y(St)YY reinforced (double) outer sheath, instrumentation cable, Maxi-Termi-Point®, meter marking



Technical data

- Special -PVC data transmission cable adapted to DIN VDE 0815 and 0816
- **Conductor resistance** (loop) max. 73,6 Ohm/km
- **Temperature range** flexing -5°C to +50°C fixed installation -40°C to +70°C
- **Operating peak voltage** max. 600 V (not for heavy current installation purposes)
- **Test voltage** core/core 2000 V core/screen 2000 V
- **Insulation resistance** core/core min. 100 MOhm x km core/screen min. 100 MOhm x km
- **Mutual capacitance** at 800 Hz max. 100 nF/km (this value may be exceeded by 20% with a make-up to 4 pairs)
- **Impedance** at 1 kHz approx. 370 Ohm at 10 kHz approx. 130 Ohm
- **Capacity unbalance** at 800 Hz max. 200 pF/100 m (20% of the values, but one value up to 400 pF is allowed)
- **Line attenuation** at 1 kHz approx. 1,2 dB/km at 10 kHz approx. 3,0 dB/km
- **Cross-talk attenuation** at 10 kHz and cable length of 500 m min. 60 dB
- **Minimum bending radius** 7,5x cable Ø

Cable structure

- Bare copper-conductor, multi-wires
- Conductor construction: 0,5 mm² = 7x0,3 mm
- Core insulation of PVC (Semi-Rigid-PVC)
- Cores colour coded pair-no.1: a-core = BU; b-core = RD pair-no.2: a-core = GY; b-core = YE pair-no.3: a-core = GN; b-core = BN pair-no.4: a-core = WH; b-core = BK
- Cores twisted in pairs (approx. 20 pitch/m ≙ 50 mm)
- 4 pairs stranded to a unit (unit labelled with numbers printed plastic helix)
- units stranded in concentric layers
- Static screen (St) of plastic coated metal foil with stranded tinned drain wire, 0,5 mm² = 7x0,3 mm
- Outer sheath of PVC
- Sheath colour grey (RAL 7032)
- with meter marking

Properties

- The static screen protects the transmission circuits against outer electrical interferences
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- Cop.Weight including drain-wire.
- Maxi-Termi-Point® = registered trade mark AMP.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

The data transmission cables RD-Y(St)Yv are used in measurement and control technology such as in control rooms of industrial plants and power stations. The pairs are twisted with short pitches and different lay-lengths which lead to good crosstalk attenuation values in a unit. The cables serves for transmission of analog and digital signals up to frequencies of approx. 10 kHz. These cables offer considerable advantages by using the quick and economical connecting possibilities in Maxi-Termi-Point® technique. This solderless connecting technique is defined by a compression termination that employs a spring-clip for the connection of the cable to a square rigid post without pre-stripping. For this technique it is necessary to have an exact 7-core stranded conductor and a Semi-Rigid-PVC. Suitable for fixed installation only inside of buildings. With the reinforced PVC(-Yv) outer sheath these cables are suitable for fixed installation in inside buildings and also in open air and in underground.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

RD-Y(St)Yv

Part no.	No.pairs x cross-sec. mm²	No. units	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
20160	2 x 2 x 0,5	-	8,5	25,0	80,0	20
20161	4 x 2 x 0,5	1	10,0	45,0	125,0	20
20162	8 x 2 x 0,5	2	13,0	85,0	200,0	20
20163	12 x 2 x 0,5	3	14,0	125,0	255,0	20
20164	16 x 2 x 0,5	4	15,5	165,0	315,0	20
20165	24 x 2 x 0,5	6	18,5	245,0	370,0	20
20166	32 x 2 x 0,5	8	20,5	325,0	555,0	20
20167	48 x 2 x 0,5	12	24,0	485,0	1045,0	20
20168	96 x 2 x 0,5	24	35,5	965,0	1300,0	20

RD-Y(St)YY

Part no.	No.pairs x cross-sec. mm²	No. units	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
20180	2 x 2 x 0,5	-	8,5	25,0	90,0	20
20181	4 x 2 x 0,5	1	10,6	45,0	140,0	20
20182	8 x 2 x 0,5	2	13,2	85,0	220,0	20
20183	12 x 2 x 0,5	3	14,8	125,0	275,0	20
20184	16 x 2 x 0,5	4	15,8	165,0	350,0	20
20185	24 x 2 x 0,5	6	18,2	245,0	470,0	20
20186	32 x 2 x 0,5	8	22,8	325,0	620,0	20
20187	48 x 2 x 0,5	12	24,0	485,0	850,0	20
20188	96 x 2 x 0,5	24	36,5	965,0	1450,0	20

Dimensions and specifications may be changed without prior notice. (RB01)

RE-2Y(St)Yv instrumentation cable, reinforced outer sheath, meter marking



Technical data

- Special core insulation of PE
- **Conductor resistance**
  0,5 mm²: max. 39,2 Ohm/km
  0,75 mm²: max. 24,6 Ohm/km
  1,3 mm²: max. 14,2 Ohm/km
- **Temperature range**
  flexing -5°C to +50°C
  fixed installation -40°C to +70°C
- **Operating peak voltage** max. 300 V
  (not for heavy current installation purposes)
- **Test voltage**
  core/core 2000 V
  core/screen 1000 V
- **Insulation resistance**
  min. 5 GOhm x km
- **Mutual capacitance** at 800 Hz
  core/core 0,5 mm²: 60 nF/km
  for 1 and 2 pairs: 75 nF/km
  core/core 0,75 mm²: 65 nF/km
  for 1 and 2 pairs: 110 nF/km
  core/core 1,3 mm²: 75 nF/km
  for 1 and 2 pairs: 100 nF/km
- **Inductance** max. 0,75 mH/km
- **Cross-talk attenuation**
  min. 0,88 dB/km at 60 kHz
- **Minimum bending radius**
  7,5x cable Ø

Cable structure

- Bare copper-conductor, multi-wires
- Conductor construction:
  0,5 mm² = 7x0,3 mm
  0,75 mm² = 7x0,37 mm
  1,3 mm² = 7x0,49 mm
- Core insulation of PE
- Cores coloured
  with number print 1/1, 2/2 etc.
  pair: a-core = BK; b-core = WH
  triple: a-core = BK; b-core = WH;
  c-core = RD
- Cores twisted to pairs with optimum pitch
- Pairs stranded in layer
- 1 communication core 0,5 mm², PE-insulated, orange (for multicore version)
- Foil wrapping
- Electrostatic screen (St) of plastics-coated metal foil
- Tinned drain-wire, 0,5 mm² = 7x0,3 mm
- Outer sheath of PVC, reinforced,
  black (RAL 9005) or blue (RAL 5015)
- with meter marking
- Wall-thickness to DIN VDE 0816 part 1, table 7, col. 1

Properties

- The electrostatic screen protect the screened pairs against outer electrostatic interference fields
- Low level of line attenuations and low mutual capacitances enable long transmission distances and fast pulse acceleration
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- Cop.Weight including communication core and drain-wire.
- Control cable with blue outer sheath, see Flexible Control Cables
- with blue outer sheath for hazardous areas to hazard type -i- for intrinsically safe installation acc. to DIN EN 60079-14 section 12.2.2 (VDE 0165 part 1)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Instrumentation cables are used in data processing and process control. Instrumentation cables are suitable for fixed installations in damp locations, in open spaces and for underground laying.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm²	Sheath colour	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
20099	1 x 2 x 0,5	BK	7,5	15,0	74,0	20
20100	2 x 2 x 0,5	BK	9,8	30,0	117,0	20
20101	4 x 2 x 0,5	BK	11,3	50,0	140,0	20
20233	6 x 2 x 0,5	BK	13,1	70,0	190,0	20
20102	8 x 2 x 0,5	BK	14,6	90,0	215,0	20
20103	10 x 2 x 0,5	BK	16,1	110,0	220,0	20
20104	12 x 2 x 0,5	BK	16,4	130,0	280,0	20
20105	16 x 2 x 0,5	BK	18,3	170,0	352,0	20
20106	20 x 2 x 0,5	BK	19,2	210,0	385,0	20
20107	24 x 2 x 0,5	BK	22,3	250,0	468,0	20
20108	36 x 2 x 0,5	BK	24,5	370,0	656,0	20
20109	48 x 2 x 0,5	BK	27,7	490,0	854,0	20
20149	1 x 2 x 0,75	BK	7,9	20,0	74,0	19
20150	2 x 2 x 0,75	BK	10,4	35,0	123,0	19
20151	4 x 2 x 0,75	BK	11,9	65,0	164,0	19
20152	8 x 2 x 0,75	BK	15,0	125,0	258,0	19
20153	10 x 2 x 0,75	BK	17,0	154,0	305,0	19
20154	12 x 2 x 0,75	BK	17,6	185,0	350,0	19
20155	16 x 2 x 0,75	BK	19,5	245,0	445,0	19
20156	20 x 2 x 0,75	BK	21,5	298,0	520,0	19
20157	24 x 2 x 0,75	BK	24,0	365,0	620,0	19
20158	36 x 2 x 0,75	BK	26,5	532,0	940,0	19
20159	48 x 2 x 0,75	BK	30,3	708,0	1250,0	19
20125	1 x 2 x 1,3	BK	8,7	31,0	102,0	-
20132	1 x 3 x 1,3	BK	9,0	44,0	116,0	-
20126	2 x 2 x 1,3	BK	11,5	62,0	161,0	-
20127	4 x 2 x 1,3	BK	14,3	114,0	230,0	-
20234	6 x 2 x 1,3	BK	16,0	168,0	310,0	-
20128	8 x 2 x 1,3	BK	17,3	218,0	377,0	-
20129	12 x 2 x 1,3	BK	20,5	322,0	515,0	-
20130	16 x 2 x 1,3	BK	23,0	426,0	656,0	-
20131	24 x 2 x 1,3	BK	27,9	684,0	952,0	-

Part no.	No.pairs x cross-sec. mm²	Sheath colour	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
20235	1 x 2 x 0,5	BU	7,5	15,0	74,0	20
20236	2 x 2 x 0,5	BU	9,8	30,0	117,0	20
20237	4 x 2 x 0,5	BU	11,3	50,0	140,0	20
20238	6 x 2 x 0,5	BU	13,1	70,0	190,0	20
20239	8 x 2 x 0,5	BU	14,6	90,0	215,0	20
20240	10 x 2 x 0,5	BU	16,1	110,0	220,0	20
20241	12 x 2 x 0,5	BU	16,4	130,0	280,0	20
20242	16 x 2 x 0,5	BU	18,3	170,0	352,0	20
20243	20 x 2 x 0,5	BU	19,2	210,0	385,0	20
20244	24 x 2 x 0,5	BU	22,3	250,0	468,0	20
20245	36 x 2 x 0,5	BU	24,5	370,0	656,0	20
20246	48 x 2 x 0,5	BU	27,7	490,0	854,0	20
20169	1 x 2 x 0,75	BU	7,9	20,0	74,0	19
20170	2 x 2 x 0,75	BU	10,4	35,0	123,0	19
20171	4 x 2 x 0,75	BU	11,9	65,0	164,0	19
20172	8 x 2 x 0,75	BU	15,0	125,0	258,0	19
20173	10 x 2 x 0,75	BU	17,0	154,0	305,0	19
20174	12 x 2 x 0,75	BU	17,6	185,0	350,0	19
20175	16 x 2 x 0,75	BU	19,5	245,0	445,0	19
20176	20 x 2 x 0,75	BU	21,5	298,0	520,0	19
20177	24 x 2 x 0,75	BU	24,0	365,0	620,0	19
20178	36 x 2 x 0,75	BU	26,5	532,0	940,0	19
20179	48 x 2 x 0,75	BU	30,3	708,0	1250,0	19
20247	1 x 2 x 1,3	BU	8,7	31,0	102,0	-
20255	1 x 3 x 1,3	BU	9,0	44,0	116,0	-
20248	2 x 2 x 1,3	BU	11,5	62,0	161,0	-
20249	4 x 2 x 1,3	BU	14,3	114,0	230,0	-
20250	6 x 2 x 1,3	BU	15,8	168,0	310,0	-
20251	8 x 2 x 1,3	BU	17,3	218,0	377,0	-
20252	12 x 2 x 1,3	BU	20,5	322,0	515,0	-
20253	16 x 2 x 1,3	BU	23,0	426,0	656,0	-
20254	24 x 2 x 1,3	BU	27,9	684,0	952,0	-

Dimensions and specifications may be changed without prior notice. (RB01)

RE-2Y(St)Yv PiMF Instrumentation cable, pairs screened, reinforced outer sheath, meter marking



Technical data

- Special core insulation of PE
- **Conductor resistance**
  0,5 mm² = max. 39,2 Ohm/km
  1,3 mm² = max. 14,2 Ohm/km
- **Temperature range**
  flexing -5°C to +50°C
  fixed installation -40°C to +70°C
- **Operating peak voltage** max. 300 V
  (not for heavy current installation purposes)
- **Test voltage**
  core/core 2000 V
  core/screen 1000 V
- **Insulation resistance**
  min. 5 GOhm x km
- **Mutual capacitance** (approx. value)
  at 800 Hz
  core/core 0,5 mm² = 75 nF/km
  core/core 1,3 mm² = 100 nF/km
- **Inductance** max. 0,75 mH/km
- **Cross-talk attenuation**
  min. 1,02 dB/km at 60 kHz
- **Minimum bending radius**
  7,5x cable Ø

Cable structure

- Bare copper stranded wires
  0,5 mm² =7x0,3 mm
  1,3 mm² = 7x0,49 mm
- Core insulation of PE
- Cores coloured
  with number print 1/1, 2/2 etc.
  a-core = BK; b-core = WH
- Cores twisted in pairs with optimum pitch
- PiMF (pair in metal foil),
  PiMF structure: foil taping,
  Cu-tinned drain-wire 0,6 mm Ø,
  plastic coated alu-foil
  and foil wrapping
- PiMFe stranded in layer,
  1 communication core 0,5 mm²,
  PE-insulated orange (communication core for multicore version)
- Electrostatic screen (St) of plastics-coated metal foil and tinned drain-wire 0,5 mm² (7x0,3 mm)
- Outer sheath of PVC, reinforced,
  black (RAL 9005) or blue (RAL 5015)
- with meter marking
- Wall-thickness to DIN VDE 0816 part 1, table 7, col. 1

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- Cop.weight including communication core and drain-wire.
- Control cable with blue outer sheath, see Flexible Control Cables
- with blue outer sheath for hazardous areas to hazard type -i- for intrinsically safe installation acc. to DIN EN 60079-14 section 12.2.2 (VDE 0165 part 1)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Instrumentation cables are used in data processing and process control. The individual screening of the pairs guarantee high cross-talk attenuation. The electrostatic screen protect the screened pairs against outer electrostatic interference fields. Low level of line attenuations and low mutual capacitances enable long transmission distances and fast pulse acceleration. Instrumentation cables are suitable for fixed installations in damp locations, in open spaces and for underground laying.

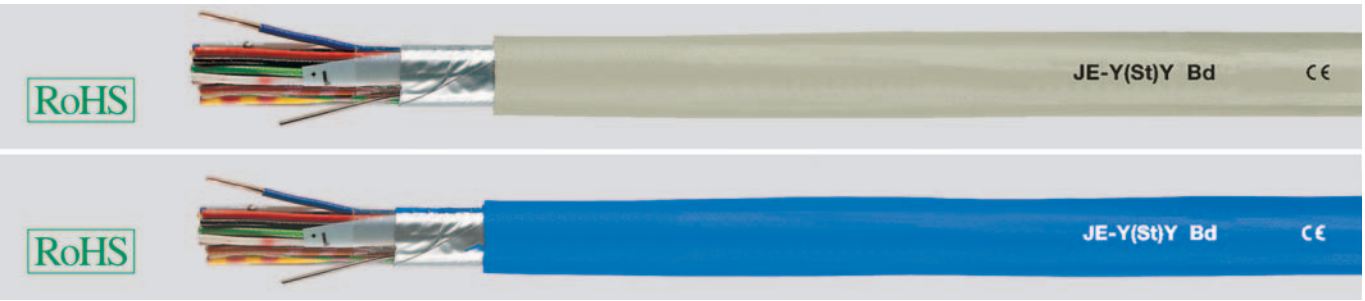
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm²	Sheath colour	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
20115	2 x 2 x 0,5	BK	11,0	35,0	128,0	20
20116	4 x 2 x 0,5	BK	12,6	60,0	170,0	20
21535	6 x 2 x 0,5	BK	14,6	82,0	215,0	20
20117	8 x 2 x 0,5	BK	15,5	121,0	246,0	20
20118	10 x 2 x 0,5	BK	16,8	136,0	261,0	20
20119	12 x 2 x 0,5	BK	17,9	161,0	351,0	20
20120	16 x 2 x 0,5	BK	19,8	212,0	430,0	20
20121	20 x 2 x 0,5	BK	21,0	262,0	496,0	20
20122	24 x 2 x 0,5	BK	23,4	313,0	604,0	20
20123	36 x 2 x 0,5	BK	26,5	465,0	850,0	20
20124	48 x 2 x 0,5	BK	29,5	616,0	1115,0	20
20133	2 x 2 x 1,3	BK	12,8	68,0	184,0	-
20134	4 x 2 x 1,3	BK	14,8	124,0	269,0	-
21536	6 x 2 x 1,3	BK	17,3	178,0	370,0	-
20135	8 x 2 x 1,3	BK	18,5	239,0	442,0	-
20136	12 x 2 x 1,3	BK	21,6	353,0	593,0	-
20137	16 x 2 x 1,3	BK	24,7	468,0	789,0	-
20138	24 x 2 x 1,3	BK	29,8	697,0	1104,0	-

Part no.	No.pairs x cross-sec. mm²	Sheath colour	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
21537	2 x 2 x 0,5	BU	11,0	35,0	128,0	20
21538	4 x 2 x 0,5	BU	12,6	60,0	170,0	20
21539	6 x 2 x 0,5	BU	14,6	82,0	215,0	20
21540	8 x 2 x 0,5	BU	15,5	121,0	246,0	20
21541	10 x 2 x 0,5	BU	16,8	136,0	261,0	20
21542	12 x 2 x 0,5	BU	17,9	161,0	351,0	20
21543	16 x 2 x 0,5	BU	19,8	212,0	430,0	20
21544	20 x 2 x 0,5	BU	21,0	262,0	496,0	20
21545	24 x 2 x 0,5	BU	23,4	313,0	604,0	20
21546	36 x 2 x 0,5	BU	26,5	465,0	850,0	20
21547	48 x 2 x 0,5	BU	29,5	616,0	1115,0	20
21548	2 x 2 x 1,3	BU	12,8	68,0	184,0	-
21549	4 x 2 x 1,3	BU	14,8	124,0	269,0	-
21550	6 x 2 x 1,3	BU	17,3	178,0	370,0	-
21551	8 x 2 x 1,3	BU	18,5	239,0	442,0	-
21552	12 x 2 x 1,3	BU	21,6	353,0	593,0	-
21553	16 x 2 x 1,3	BU	24,7	468,0	789,0	-
21554	24 x 2 x 1,3	BU	29,8	697,0	1104,0	-

Dimensions and specifications may be changed without prior notice. (RB01)

JE-Y(St)Y Bd Si industry-elektronic cable according to DIN VDE 0815



Technical data

- Special industrial electronic cable to DIN VDE 0815
- **Conductor resistance** at 20°C 36,6 Ohm/km
- **Temperature range** flexing -5°C to +50°C fixed installation -30°C to +70°C
- **Operating peak voltage** 225 V (not for purposes of high current and power installation)
- **Test voltage** core/core 500 V core/screen 2000 V
- **Insulation resistance** min. 100 MOhm x km
- **Mutual capacitance** max. 100 pF/m (the value can exceed of 20% by cables up to 4 pairs)
- **Capacitance unbalance** max. 200 pF/100 m
- **Inductance** approx. 0,70 mH/km
- **Attenuation** at 800 Hz approx. 1,1 dB/km
- **Radiation resistance** up to $80x10^6$ cJ/kg (up to 80 Mrad)
- **Minimum bending radius** fixed installation 6x cable Ø
- **Caloric load values** see table Technical Informations

Cable structure

- Solid bare copper conductor wire 0,8 mm Ø
- Core insulation of PVC YI3, to DIN VDE 0207 part 4
- Core identification (pair) to DIN VDE 0815 (Simatic colour code)
- Cores stranded in pairs with optimal lay-length
- 4 pairs stranded to a unit
- Unit stranded with optimal lay-length
- Foil wrapping
- Shielding of plastic laminated foil
- Copper drain-wire
- Outer sheath of PVC compound type YM1 to DIN VDE 0207 part 5
- Sheath colour grey (RAL 7032) or blue (RAL 5015)

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- Also availabel in a halogen-free version. (see also content "Halogen-free Security Cables and Wires".
- Control cable with blue outer sheath, see Flexible Control Cables
- with blue outer sheath for hazardous areas to hazard type -i- for intrinsically safe installation acc. to DIN EN 60079-14 section 12.2.2 (VDE 0165 part 1)
- 2-paired cables: cores stranded to a star quad

Application

These cable types are suitable for transmission of signals and measurements in the symmetric circuits of the control and regulation technology, and for the transmission of data and process information in computer systems. Used in dry and damp premises, and in or under plaster in the open air for fixed installation. Installation cables are not allowed for purposes of high current and power or burial installation.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm	Sheath colour	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
48500	1 x 2 x 0,8	GY	5,0	20,0	43,0	-
48501	2 x 2 x 0,8	GY	6,6	25,0	60,0	-
48502	4 x 2 x 0,8	GY	8,3	45,0	95,0	-
48503	8 x 2 x 0,8	GY	10,5	85,0	157,0	-
48504	12 x 2 x 0,8	GY	11,8	126,0	224,0	-
48505	16 x 2 x 0,8	GY	13,5	166,0	290,0	-
48506	20 x 2 x 0,8	GY	14,7	206,0	350,0	-
48507	32 x 2 x 0,8	GY	19,0	327,0	545,0	-
48508	40 x 2 x 0,8	GY	20,7	407,0	660,0	-
48509	80 x 2 x 0,8	GY	29,5	809,0	1160,0	-

Part no.	No.pairs x cross-sec. mm	Sheath colour	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
48519	1 x 2 x 0,8	BU	5,0	20,0	43,0	-
48520	2 x 2 x 0,8	BU	6,6	25,0	60,0	-
48521	4 x 2 x 0,8	BU	8,3	45,0	95,0	-
48522	8 x 2 x 0,8	BU	10,5	85,0	157,0	-
48523	12 x 2 x 0,8	BU	11,8	126,0	224,0	-
48524	16 x 2 x 0,8	BU	13,5	166,0	290,0	-
48525	20 x 2 x 0,8	BU	14,7	206,0	350,0	-
48526	32 x 2 x 0,8	BU	19,0	327,0	545,0	-
48527	40 x 2 x 0,8	BU	20,7	407,0	660,0	-
48528	80 x 2 x 0,8	BU	29,5	809,0	1160,0	-

Dimensions and specifications may be changed without prior notice. (RB01)



Suitable accessories can be found in Chapter X.

• Tool - Multistrip 10

JE-LiYCY Bd Si industry elektronic cable





Technical data

- Special industry electronic cable adapted to DIN VDE 0815
- **Conductor resistance** at 20°C 39,2 Ohm/km
- **Temperature range** flexing -5°C to +50°C fixed installation -30°C to +70°C
- **Operating peak voltage** 225 V (not for heavy current installation purposes)
- **Test voltage** core/core 500 V core/screen 2000 V
- **Insulation resistance** min. 100 MOhm x km
- **Mutual capacitance** max. 100 pF/m (the value can exceed of 20% by cables up to 4 pairs)
- **Capacitance unbalance** max. 200 pF/100 m
- **Inductance** approx. 0,70 mH/km
- **Attenuation** at 800 Hz approx. 1,1 dB/km
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)
- **Minimum bending radius** fixed installation 6x cable Ø

Cable structure

- Bare copper strands 7x0,3 mm
- Core insulation of PVC (Semi-Rigid-PVC)
- Core identification (pair) to DIN VDE 0815 (Simatic colour code)
- Cores stranded in pairs with optimal lay-length
- 4 pairs stranded to a unit
- Unit stranded with optimal lay-length
- Foil wrapping
- Bare or tinned copper wire braided, 0,2 mm Ø screening, approx. 85% coverage
- Outer sheath of PVC compound type YM1 to DIN VDE 0207 part 5
- Sheath colour grey (RAL 7032) or blue (RAL 5015)

Properties

- Suitable for cut clamp technology
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- Also availabel in a halogen-free version. (see also content "Halogen-free Security Cables and Wires")
- Control cable with blue outer sheath, see Flexible Control Cables
- with blue outer sheath for hazardous areas to hazard type -i- for intrinsically safe installation acc. to DIN EN 60079-14 section 12.2.2 (VDE 0165 part 1)
- 2-paired cables: cores stranded to a star quad
- For Maxi-Termi-Point® technique (Maxi-Termi-Point® = registered trade mark AMP)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

These cable types are suitable for transmission of signals and measurements in the symmetric circuits of the control and regulation technology, and for the transmission of data and process information in computer systems. Used in dry and damp premises, and in or under plaster in the open air for fixed installation. Installation cables are not allowed for purposes of high current and power or burial installation.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm²	Sheath colour	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
48510	2 x 2 x 0,5	GY	7,0	51,0	94,0	20
48511	4 x 2 x 0,5	GY	8,6	87,0	154,0	20
48512	8 x 2 x 0,5	GY	12,0	144,0	259,0	20
48513	12 x 2 x 0,5	GY	13,1	196,0	340,0	20
48514	16 x 2 x 0,5	GY	14,3	249,0	431,0	20
48515	20 x 2 x 0,5	GY	15,5	299,0	494,0	20
48516	24 x 2 x 0,5	GY	19,4	348,0	604,0	20
48517	32 x 2 x 0,5	GY	20,5	444,0	737,0	20
48518	40 x 2 x 0,5	GY	22,5	537,0	844,0	20

Part no.	No.pairs x cross-sec. mm²	Sheath colour	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
48529	2 x 2 x 0,5	BU	7,0	51,0	94,0	20
48530	4 x 2 x 0,5	BU	8,6	87,0	154,0	20
48531	8 x 2 x 0,5	BU	12,0	144,0	259,0	20
48532	12 x 2 x 0,5	BU	13,1	196,0	340,0	20
48533	16 x 2 x 0,5	BU	14,3	249,0	431,0	20
48534	20 x 2 x 0,5	BU	15,5	299,0	494,0	20
48535	24 x 2 x 0,5	BU	19,4	348,0	604,0	20
48536	32 x 2 x 0,5	BU	20,5	444,0	737,0	20
48537	40 x 2 x 0,5	BU	22,5	537,0	844,0	20

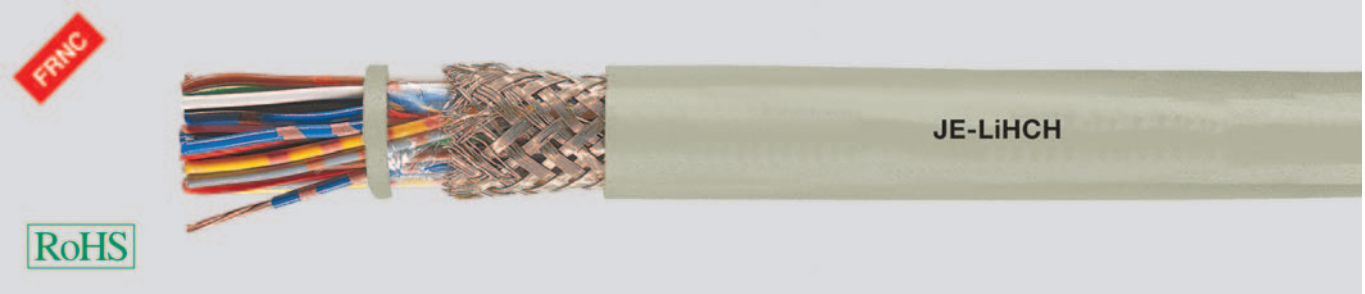
Dimensions and specifications may be changed without prior notice. (RB01)



Suitable accessories can be found in Chapter X.

• Tool - Multistrip 10

JE-LiHCH Bd industry electronic cable, halogen-free



Technical data

- Industry electronic cable adapted to DIN VDE 0815
- **Conductor resistance** at 20°C 39,2 Ohm/km
- **Temperature range** flexing -5°C to +50°C fixed installation -30°C to +70°C
- **Operating peak voltage** 225 V (not for heavy current installation purposes)
- **Test voltage** core/core 500 V core/screen 2000 V
- **Insulation resistance** min. 100 MOhm x km
- **Mutual capacitance** max. 120 nF/km at 800 Hz (this values may be extended at 20% with a make-up up to 4 pairs)
- **Capacitance unbalance** at 800 Hz max. 200 pF/100 m (20% of the values, but one value up to 400 pF is allowed)
- **Minimum bending radius** 7,5x cabel Ø
- **Radiation resistance** up to 100x10⁶ cJ/kg (up to 100 Mrad)
- **Caloric load values** see Technical Informations

Cable structure

- Bare copper, 7x0,3 mm
- Core insulation of polymer compound type HI1 or HI2 to DIN VDE 0207 part 23
- Insulation wall thickness 0,3 mm
- Core identification to DIN VDE 0815 (with ring colours and ring groups)
- 2 cores twisted in pair, 4 pairs to a unit and several units stranded in layers (for 2 pairs cable, 4 cores stranded to a quad)
- Foil wrapping
- Copper braided screening, wire 0,2 mm, approx. 85% coverage
- Outer sheath halogen-free compound type HM1 or HM2 to DIN VDE 0207 part 24
- Sheath colour grey RAL (7032)

Properties

- Installation cables are not allowed for purposes of high current and power or burial installation.

Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Note

- 2-paired cables: cores stranded to a star quad
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- **LS0H** = Low Smoke Zero Halogen

Application

Halogen-free installation cables with improved characteristics in the case of fire are used for telephone transmission, measuring and signal purposes. The copper screened design (C) protects the transmission circuits against electrical interferences. A fire propagation is prevented through high oxygen index of the insulation material and produce no corrosive gases in case of fire. They are preferably used for telecommunication installations inside buildings. These cables are suitable for fixed installation in areas with danger of fire, in dry and damp environments as well as in and under plaster.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm²	Core Ø approx. mm	No. units	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
34350	2 x 2 x 0,5	1,6	-	6,8	44,0	102,0	20
34351	4 x 2 x 0,5	1,6	1	9,1	80,0	168,0	20
34352	8 x 2 x 0,5	1,6	2	11,4	152,0	297,0	20
34353	12 x 2 x 0,5	1,6	3	13,3	192,0	357,0	20

Part no.	No.pairs x cross-sec. mm²	Core Ø approx. mm	No. units	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
34354	20 x 2 x 0,5	1,6	5	16,4	288,0	555,0	20
34355	32 x 2 x 0,5	1,6	8	19,6	439,0	852,0	20
34356	40 x 2 x 0,5	1,6	10	21,7	531,0	1005,0	20

Dimensions and specifications may be changed without prior notice. (RB01)



Suitable accessories can be found in Chapter X.

• Tool - Multistrip 10

RD-H(St)H Bd instrumentation cable, halogen-free



Technical data

- Halogen-free data transmission cable adapted to DIN VDE 0815
- **Coductor resistance** (loop)
  max. 73,6 Ohm/km (0,5 mm²)
  max. 36,8 Ohm/km (1,0 mm²)
- **Temperature range**
  flexing -5°C to +50°C
  fixed installation -30°C to +70°C
- **Operating peak voltage** max. 225 V
  (not for purposes of high
  current and power installation)
- **Test voltage**
  core/core 500 V
  core/screen 2000 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Mutual capacitance**
  at 800 Hz max. 100 nF/km
  (this value may be exceeded by 20%
  with a make-up up to 4 pairs)
- **Impedance**
  at 1 kHz (nominal values)
  450 Ohm (0,5 mm²)
  320 Ohm (1,0 mm²)
- **Capacity unbalance**
  at 800 Hz max. 200 pF/100 m
  (20% of the values, but one value
  up to 200 pF is allowed)
- **Cross-talk attenuation**
  at min. 10 kHz, 60 dB/500 m
- **Line attenuation**
  at 1 kHz (nominal values)
  1,2 dB/km (0,5 mm²)
  0,9 dB/km (1,0 mm²)
- **Minimum bending radius**
  7,5x cable Ø
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, multi-wires
- Conductor construction:
  0,5 mm² = 7x0,3 mm
  1 mm² = 7x0,43 mm
- Core insulation of halogen-free
  polymer compound
- Core identification coloured
  pair-no.1: a-core = BU; b-core = RD
  pair-no.2: a-core = GY; b-core = YE
  pair-no.3: a-core = GN; b-core = BN
  pair-no.4: a-core = WH; b-core = BK
- Cores twisted in pairs, with short lay-length
  (approx. 20 pitch/m ≙ 50 mm)
- 4 pairs stranded to a unit
  (unit labelled with numbers
  printed plastic helix)
- Units stranded in concentric layers
- Foil wrapping
- Electrostatic screen of plastic coated
  aluminium foil and drain wire tinned, 0,5 mm²
- Outer sheath of halogen-free, polymer
  compound, flame resistant
- Sheath colour grey (RAL 7032)

Properties

- The static screen protects the transmission
  circuits against outer electrical interferences
- The halogen-free cables prevent the fire
  propagation and compared to PVC cables
  exist only a low smoke density under flame
  influence
- This results no decomposition products which
  destroy equipments, machines and buildings
  by corrosion

Tests

- Flame test acc. to
  DIN VDE 0482-332-3, BS 4066 part 3,
  DIN EN 60332-3, IEC 60332-3 (previously
  DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases
  acc. to DIN VDE 0482 part 267,
  DIN EN 50267-2-2, IEC 60754-2
  (equivalent DIN VDE 0472 part 813)
- Smoke density acc. to DIN VDE 0482
  part 1034-1+2, IEC 61034-1+2,
  DIN EN 61034-1+2, BS 7622 part 1+2
  (equivalent DIN VDE 0472 part 816)

Note

- AWG sizes are approximate equivalent
  values. The actual cross-section is in mm².

Application

The halogen-free data transmission cable RD-H(St)H are used for measurement and control technology for transmission of analog and digital signals up to frequencies of approx. 10 kHz. The twisted pairs with short pitches (<50 mm for 0,5 mm²) and different lay-lengths which lead good cross-talk attenuation values in a unit. These cables are used in inside buildings (in special cases in open air, but with sufficient protection against sunlight is necessary).

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
20200	2 x 2 x 0,5	7,0	26,0	70,0	20
20201	4 x 2 x 0,5	9,0	46,0	110,0	20
20202	8 x 2 x 0,5	11,6	86,0	190,0	20
20203	12 x 2 x 0,5	13,5	127,0	240,0	20
20204	16 x 2 x 0,5	14,0	167,0	300,0	20
20205	20 x 2 x 0,5	16,0	209,0	360,0	20
20206	24 x 2 x 0,5	17,5	250,0	420,0	20
20207	28 x 2 x 0,5	19,0	290,0	480,0	20
20208	32 x 2 x 0,5	21,0	331,0	570,0	20
20209	36 x 2 x 0,5	21,5	372,0	614,0	20
20210	40 x 2 x 0,5	22,5	412,0	680,0	20
20211	44 x 2 x 0,5	23,5	453,0	700,0	20
20212	48 x 2 x 0,5	24,0	494,0	790,0	20
20213	64 x 2 x 0,5	30,0	658,0	1040,0	20
20214	80 x 2 x 0,5	33,0	821,0	1300,0	20
20215	96 x 2 x 0,5	36,0	986,0	1510,0	20

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
20216	2 x 2 x 1	9,0	47,0	110,0	18
20217	4 x 2 x 1	12,0	89,0	190,0	18
20218	8 x 2 x 1	16,5	172,0	320,0	18
20219	12 x 2 x 1	17,5	255,0	435,0	18
20220	16 x 2 x 1	19,5	338,0	560,0	18
20221	20 x 2 x 1	21,0	423,0	680,0	18
20222	24 x 2 x 1	23,0	507,0	800,0	18
20223	28 x 2 x 1	27,0	590,0	905,0	18
20225	32 x 2 x 1	29,0	674,0	1080,0	18
20226	36 x 2 x 1	30,0	757,0	1260,0	18
20227	40 x 2 x 1	31,0	841,0	1330,0	18
20228	44 x 2 x 1	34,0	924,0	1410,0	18
20229	48 x 2 x 1	32,5	1008,0	1550,0	18
20230	64 x 2 x 1	39,0	1342,0	2000,0	18
20231	80 x 2 x 1	43,0	1676,0	2470,0	18
20232	96 x 2 x 1	47,0	2016,0	2970,0	18

Dimensions and specifications may be changed without prior notice. (RB01)



JZ-HF

BIOFLEX-500®-JZ-HF

SUPERTRONIC®-PVC

KOMPOSPED®-JZ-HF-500-C

PURö-JZ-HF

SUPER-PAAR-TRONIC-C-PUR®

MULTISPEED 500-TPE

MULTIFLEX 512®-PUR

DRAG CHAIN CABLES

	Temperature (°C) - flexing	Temperature (°C) - fixed	Nominal voltage U_0/U	Bending radius - flexing x Ø	Bending radius - fixed x Ø	Halogen-free	UV-resistant	Outdoor use	Drag chain	Colored cores/VDE 0293	Screened/shielded	HAR/VDE REG no./VDE	UL/CSA	Page
PVC drag chain cables														
JZ-HF	-10 to +80	-40 to +80	300/500	7.5x	4x				X			X		160
MULTISPEED® 500-PVC	-15 to +80	-30 to +80	300/500	7.5x	4x		X	X	X					162
JZ-HF-CY	-10 to +80	-40 to +80	300/500	10x	5x				X		X	X		163
MULTISPEED® 500-C-PVC	-15 to +80	-30 to +80	300/500	7.5x	4x		X	X	X		X			165
PUR drag chain cables														
PURö-JZ-HF	-20 to +80	-40 to +80	300/500	7.5x	4x		X	X	X					167
MULTIFLEX 512®-PUR	-30 to +80	-40 to +80	300/500	5x	3x	X	X	X	X					169
MULTISPEED® 500-PUR	-30 to +80	-40 to +80	300/500	7.5x	4x	X	X	X	X					171
PURö-JZ-HF-YCP	-20 to +80	-40 to +80	300/500	10x	5x		X	X	X		X			172
MULTIFLEX 512®-C-PUR	-30 to +80	-40 to +80	300/500	7.5x	4x	X	X	X	X		X			174
MULTISPEED® 500-C-PUR	-30 to +80	-40 to +80	300/500	7.5x	4x	X	X	X	X		X			176
MULTISPEED® 500-TPE	-30 to +80	-40 to +80	300/500	5x	3x	X	X	X	X					177
MULTISPEED® 500-C-TPE	-30 to +80	-40 to +80	300/500	5x	3x	X	X	X	X		X			179
Bio-oil resistant and microbe-resistant drag chain cables														
BIOFLEX-500®-JZ-HF	-20 to +80	-40 to +80	300/500	10x	4x			X	X					181
BIOFLEX-500®-JZ-HF-C	-20 to +80	-40 to +80	300/500	15x	4x			X	X		X			182
KOMPOSPEED® JZ-HF-500	-30 to +90	-40 to +100	300/500	7.5x		X	X	X	X					184
KOMPOSPEED® JZ-HF-500-C	-30 to +90	-40 to +100	300/500	7.5x		X	X	X	X		X			185
Data drag chain cables														
SUPERTRONIC®-PVC	-5 to +70	-40 to +70	350	5x	3x				X	X				187
SUPERTRONIC®-C-PVC	-5 to +70	-40 to +70	350	7.5x	4x				X	X	X			188
SUPERTRONIC®-PURö	-5 to +70	-40 to +70	350	5x	3x		X	X	X	X				189
SUPERTRONIC®-C-PURö	-30 to +70	-40 to +70	350	7.5x	4x	X	X	X	X	X	X			190
SUPER-PAAR-TRONIC-C-PUR®	-30 to +70	-40 to +70	350	10x	5x	X	X	X	X	X	X			191
SENSORFLEX-H	-30 to +80	-40 to +80	350	5x/7,5x		X		X	X	X				192

The selection table is intended as an initial orientation.
Please see the relevant page of the catalogue for detailed information on the product properties.

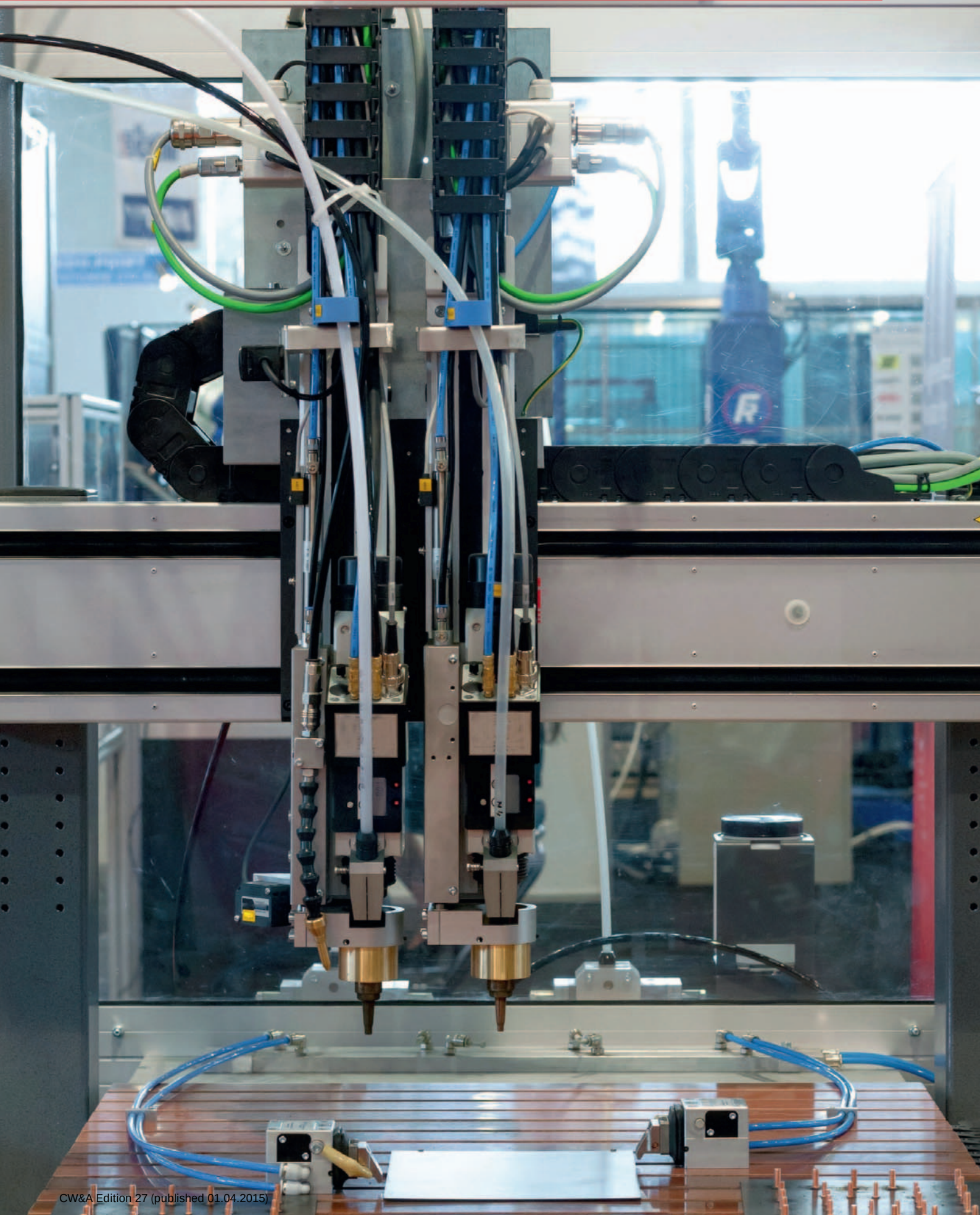
SELECTION TABLE - DRAG CHAIN CABLES

	Max. movement distance in m (10 m up to 25-cores)	Min. bending radius - flexing (D=outerØ)	Max. speed (m/s)	Max. acceleration (m/s²)	Max. cycles	Material	Nominal voltage U_0/U / Operating voltage	Temperature (°C) - flexing	Approvals	Page	UL/CSA equivalent
PVC drag chain cables											
JZ-HF	10	7.5 x D	2	10	9 Mio	PVC/PVC	300/500V	-10° to +80°	VDE	160	423
JZ-HF CY	10	10 x D	2	10	9 Mio	PVC/CU/PVC	300/500V	-10° to +80°	VDE	163	427
MULTISPEED® 500-PVC	100	7.5 x D	5	50	9 Mio	PP/PVC	300/500V	-15° to +80°		162	425
MULTISPEED® 500-C-PVC	100	7.5 x D	5	50	9 Mio	PP/CU/PVC	300/500V	-15° to +80°		165	429
PUR & TPE drag chain cables											
PURÖ-JZ-HF	15	7.5 x D	3	10	10 Mio	PVC/PUR	300/500V	-20° to +80°		167	430
PURÖ-JZ-HF-YCP	15	10 x D	3	10	10 Mio	PVC/CU/PUR	300/500V	-20° to +80°		172	436
MULTIFLEX 512®-PUR	100	5 x D	4	10	11 Mio	PP/PUR	300/500V	-30° to +80°		169	431
MULTIFLEX 512®-C-PUR	100	7.5 x D	4	10	11 Mio	PP/CU/PUR	300/500V	-30° to +80°		174	437
MULTISPEED® 500-PUR	450	7.5 x D	5	50	11 Mio	PP/PUR	300/500V	-30° to +80°		171	433
MULTISPEED® 500-C-PUR	450	7.5 x D	5	50	11 Mio	PP/CU/PUR	300/500V	-30° to +80°		176	439
MULTISPEED® 500-TPE	450	5 x D	5	50	11 Mio	PP/TPE	300/500V	-30° to +80°		177	441
MULTISPEED® 500-C-TPE	450	5 x D	5	50	11 Mio	PP/CU/TPE	300/500V	-30° to +80°		179	443
Bio-oil resistant and microbe-resistant drag chain cables											
BIOFLEX 500® JZ-HF	100	10 x D	4	10	11 Mio	Poly/Poly	300/500V	-20° to +80°		181	-
BIOFLEX 500® JZ-HF-C	100	15 x D	4	10	11 Mio	Poly/CU/Poly	300/500V	-20° to +80°		182	-
KOMPOSPEED® JZ-HF-500	100	7.5 x D	4	10	10 Mio	Poly/Poly	300/500V	-30° to +90°		184	-
KOMPOSPEED® JZ-HF-500-C	100	7.5 x D	4	10	10 Mio	Poly/CU/Poly	300/500V	-30° to +90°		185	-
Sensor cables											
SUPERTRONIC®-PVC	5	5 x D	2	10	9 Mio	PVC/PVC	350V	-5° to +70°		187	445
SUPERTRONIC®-C-PVC	5	7.5 x D	2	10	9 Mio	PVC/CU/PVC	350V	-5° to +70°		188	446
SUPERTRONIC®-PURö	5	5 x D	3	10	9 Mio	PVC/PUR	350V	-5° to +70°		189	447
SUPERTRONIC®-C-PURö	15	7.5 x D	4	10	9 Mio	PP/CU/PUR	350V	-30° to +70°		190	449
SUPER-PAAR-TRONIC-C-PUR®	30	10 x D	4	50	9 Mio	PP/CU/PUR	350V	-30° to +70°		191	451
SENSORFLEX®-H (Li12Y11Y)	30	5 x D	5	10	11 Mio	TPE/PUR	350V	-30° to +80°		192	-
SENSORFLEX®-H (Li9Y11Y)	30	7.5 x D	5	10	11 Mio	PP/PUR	350V	-30° to +80°		192	-

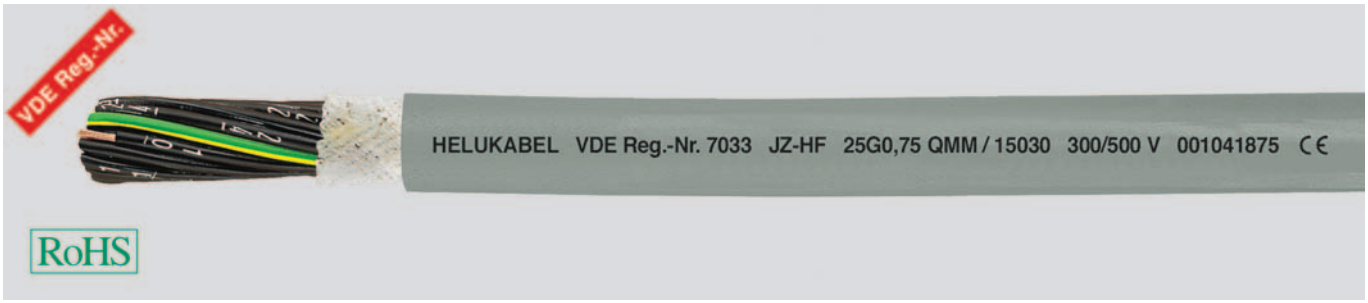
A cycle is a double lift: a representative sample has been tested and measurot in our Test Workshop. The cycle count is only valid when appropriatel and professionally installed (see the installation manual: cable installation in drag chains, see pages 1036 and 1037).

The selection table is intended as an initial orientation.
Please see the relevant page of the catalogue for detailed information on the product properties and the selection tables cables in drag chains, see pages 1030 and 1031.

PVC DRAG CHAIN CABLES



JZ-HF flexible, number coded, control cable for drag chains, oil resistant, meter marking



Technical data

- Special PVC control cable, extreme flexibility due to special construction
- Requirements adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51
- **Temperature range** flexing -10°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10^6 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, extra fine wire conductors, to DIN VDE 0295 cl.6 col. 4, BS 6360 cl.6 and IEC 60228 cl.6
- Core insulation of special PVC compound type Z 7225
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- Cores stranded in layers with optimal selected lay-length
- GN-YE conductor, 3 cores and above in the outer layer
- Core wrapping with fleece
- Outer sheath of special PVC compound type TM5 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Colour grey (RAL 7001)
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Oil resistent to DIN VDE 0473-811-404/ DIN EN 60811-404

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- Cleanroom qualification tested with analog type. Please note "cleanroom qualified" when ordering.
- screened analogue type: **JZ-HF-CY**, confer page 163
- with UL-approval **MULTISPEED® 500-PVC UL/CSA**, confer page 424

Application

JZ-HF cables are ideal for use in the machine tool industry, in robotics and machine production and anywhere where high flexibility is essential. These cables have shown excellent performance in combination with standard cable trays. These cables are suitable for flexible use for medium mechanical stresses with free movements. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
15001	2 x 0,5	5,0	9,6	46,0	20
15002	3 G 0,5	5,3	14,0	57,0	20
15003	4 G 0,5	5,7	19,0	70,0	20
15004	5 G 0,5	6,4	24,0	93,0	20
15005	7 G 0,5	7,5	34,0	127,0	20
15090	7 x 0,5	7,5	34,0	127,0	20
15006	10 G 0,5	9,1	48,0	161,0	20
15007	12 G 0,5	9,2	58,0	177,0	20
15008	14 G 0,5	9,8	67,0	213,0	20
15009	16 G 0,5	10,3	77,0	260,0	20
15010	18 G 0,5	11,1	86,0	284,0	20
15011	20 G 0,5	11,6	96,0	318,0	20
15012	25 G 0,5	13,4	120,0	363,0	20
15013	30 G 0,5	13,7	144,0	432,0	20
15014	34 G 0,5	15,0	163,0	487,0	20
15015	36 G 0,5	15,0	173,0	518,0	20
15016	42 G 0,5	16,1	202,0	575,0	20
15017	50 G 0,5	17,9	240,0	675,0	20
15018	61 G 0,5	19,6	290,0	829,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
15019	2 x 0,75	5,4	14,4	58,0	19
15020	3 G 0,75	5,7	22,0	73,0	19
15021	4 G 0,75	6,4	29,0	77,0	19
15022	5 G 0,75	7,0	36,0	119,0	19
15023	7 G 0,75	8,3	50,0	165,0	19
15024	10 G 0,75	10,1	72,0	216,0	19
15025	12 G 0,75	10,2	86,0	247,0	19
15026	14 G 0,75	10,9	101,0	284,0	19
15027	16 G 0,75	11,5	115,0	320,0	19
15028	18 G 0,75	12,1	130,0	356,0	19
15029	20 G 0,75	12,8	144,0	453,0	19
15030	25 G 0,75	14,9	180,0	498,0	19
15031	30 G 0,75	15,2	216,0	510,0	19
15032	34 G 0,75	16,6	245,0	550,0	19
15033	36 G 0,75	16,6	259,0	570,0	19
15034	42 G 0,75	18,1	302,0	600,0	19
15035	50 G 0,75	20,0	360,0	700,0	19
15036	61 G 0,75	22,1	432,0	820,0	19
15091	65 G 0,75	22,7	439,0	841,0	19

Continuation ▸

JZ-HF flexible, number coded, control cable for drag chains, oil resistant, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
15037	2 x 1	5,7	19,0	65,0	18
15038	3 G 1	6,0	29,0	84,0	18
15039	4 G 1	6,8	38,0	113,0	18
15040	5 G 1	7,4	48,0	137,0	18
15041	7 G 1	8,8	67,0	192,0	18
15042	10 G 1	10,7	96,0	251,0	18
15043	12 G 1	10,8	115,0	295,0	18
15044	14 G 1	11,6	134,0	337,0	18
15045	16 G 1	12,2	154,0	379,0	18
15046	18 G 1	13,0	173,0	420,0	18
15047	20 G 1	13,6	192,0	480,0	18
15048	25 G 1	15,8	240,0	600,0	18
15049	30 G 1	16,4	288,0	695,0	18
15050	34 G 1	17,8	326,0	777,0	18
15051	36 G 1	17,8	346,0	825,0	18
15052	41 G 1	19,3	403,0	926,0	18
15214	42 G 1	19,3	403,0	948,0	18
15053	50 G 1	21,2	480,0	1092,0	18
15092	61 G 1	23,7	586,0	1204,0	18
15054	65 G 1	24,4	624,0	1400,0	18
15055	2 x 1,5	6,4	29,0	91,0	16
15056	3 G 1,5	6,8	43,0	117,0	16
15057	4 G 1,5	7,4	58,0	147,0	16
15058	5 G 1,5	8,3	72,0	181,0	16
15059	7 G 1,5	9,9	101,0	273,0	16
15060	10 G 1,5	11,9	144,0	344,0	16
15061	12 G 1,5	12,1	173,0	391,0	16
15062	14 G 1,5	12,9	202,0	457,0	16
15063	16 G 1,5	13,6	230,0	523,0	16
15064	18 G 1,5	14,5	259,0	590,0	16
15065	20 G 1,5	15,2	288,0	650,0	16
15066	25 G 1,5	17,8	360,0	801,0	16
15067	30 G 1,5	18,2	432,0	958,0	16
15068	34 G 1,5	19,7	490,0	1084,0	16
15069	36 G 1,5	19,7	518,0	1135,0	16
15070	42 G 1,5	21,5	605,0	1290,0	16
15071	50 G 1,5	23,7	720,0	1521,0	16
15072	60 G 1,5	25,3	864,0	1885,0	16
15215	61 G 1,5	26,2	878,0	1916,0	16
15216	65 G 1,5	27,2	936,0	1994,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
15073	2 x 2,5	7,7	48,0	130,0	14
15074	3 G 2,5	8,4	72,0	160,0	14
15075	4 G 2,5	9,1	96,0	200,0	14
15076	5 G 2,5	10,2	120,0	268,0	14
15077	7 G 2,5	12,2	168,0	357,0	14
15078	10 G 2,5	15,0	240,0	486,0	14
15079	12 G 2,5	15,2	288,0	572,0	14
15080	14 G 2,5	16,1	336,0	612,0	14
15081	16 G 2,5	17,2	384,0	702,0	14
15082	18 G 2,5	18,1	432,0	800,0	14
15083	20 G 2,5	19,2	480,0	920,0	14
15084	25 G 2,5	22,5	600,0	1100,0	14
15085	30 G 2,5	23,5	720,0	1400,0	14
15086	34 G 2,5	25,2	816,0	1500,0	14
15087	36 G 2,5	25,2	864,0	1600,0	14
15088	42 G 2,5	27,4	1008,0	1800,0	14
15089	50 G 2,5	30,0	1200,0	2100,0	14
15142	3 G 4	10,4	115,0	221,0	12
15143	4 G 4	11,4	154,0	260,0	12
15144	5 G 4	12,7	192,0	318,0	12
15145	4 G 6	13,3	230,0	392,0	10
15146	5 G 6	14,5	288,0	481,0	10
15147	4 G 10	17,7	384,0	642,0	8
15148	5 G 10	19,7	480,0	780,0	8
15149	4 G 16	20,8	614,0	926,0	6
15150	5 G 16	23,3	768,0	1135,0	6

Dimensions and specifications may be changed without prior notice. (RC01)

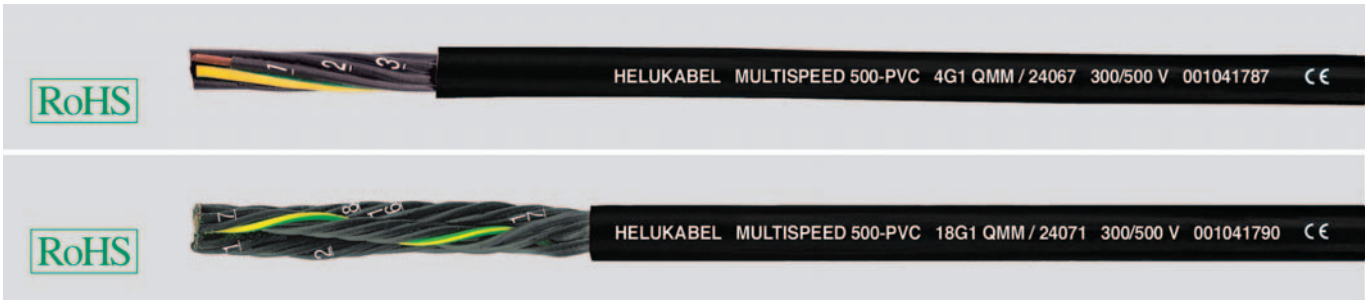


Suitable Cable drag chains can be found in our Cable Accessories catalogue.

C

MULTISPEED® 500-PVC high flexible, safety against high bending

in drag chain systems, oil resistant, low torsion, meter marking



Technical data

- Special drag chain cables for high mechanical stress adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51
- **Temperature range** flexing -15°C to +80°C fixed installation -30°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Insulation resistance** min. 100 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, fine wire conductors, Unilay with short pitch length
- Core insulation of special PP
- Core identification black cores with continuous white numbering
- GN-YE conductor, 3 cores and above
- Stranding: <7 cores: cores stranded in a layer with optimal lay-length around a filler as per construction ≥7 cores: cores stranded with optimal lay-length to bunch-construction with low torsion strength, optimal selected short lay-length around a filler
- Outer sheath of special PVC, especially resistant against fatigue strength, extruded as filler with pressure
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- Low adhesion
- ozon- and uv-resistant
- High property of alternating bending strength
- High resistant to mechanical strain
- Long life durabilities due to low friction-resistancen
- Better chemical resistance
- High stability
- Higher economical solution
- Reduced Ø, results low weight of moving materials
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Oil resistance to DIN VDE 0473-811-404 / DIN EN 60811-404

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **MULTISPEED® 500-C-PVC**, confer page 165

Application

HELUKABEL® MULTISPEED 500-PVC are installed there, where the extreme requirements for the cables are necessary. The selected materials and lay-up technique permit these high flexible cables for permanent application in drag chains for long distances, high and low speed of movements. These high flexible PVC control cables are suitable for shift- and bending stresses in machines and machine tool constructions. These are installed in dry, moist rooms and in open air with free movement without tensile stress or forced movements. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

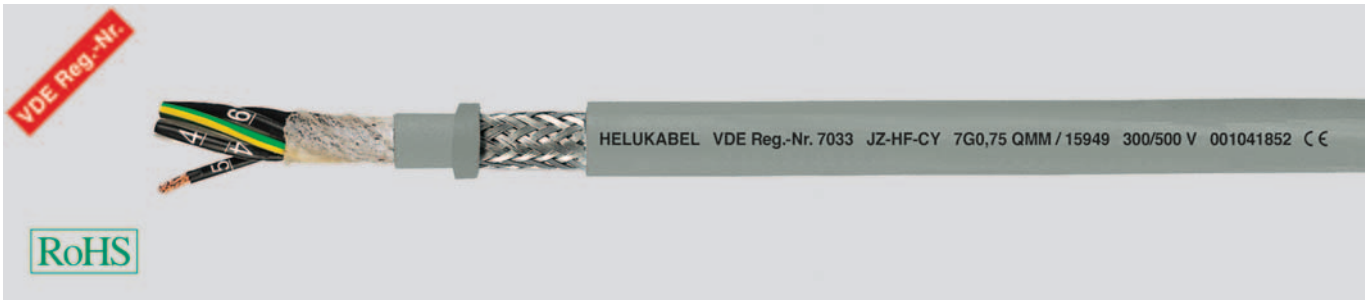
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24050	2 x 0,5	4,3	9,6	40,0	20
24051	3 G 0,5	4,6	14,4	45,0	20
24052	4 G 0,5	5,0	19,0	57,0	20
24053	5 G 0,5	5,4	24,0	66,0	20
24054	7 G 0,5	8,9	33,6	81,0	20
24055	12 G 0,5	9,7	58,0	133,0	20
24056	18 G 0,5	11,8	86,0	194,0	20
24057	25 G 0,5	13,9	120,0	274,0	20
24058	4 G 0,75	5,6	29,0	63,0	19
24059	5 G 0,75	6,3	36,0	79,0	19
24060	7 G 0,75	10,3	50,0	107,0	19
24061	12 G 0,75	11,0	86,0	169,0	19
24062	18 G 0,75	13,9	130,0	247,0	19
24063	25 G 0,75	15,9	180,0	366,0	19
24064	36 G 0,75	19,6	259,0	540,0	19
24065	42 G 0,75	21,5	302,0	630,0	19
24066	3 G 1	5,4	29,0	69,0	18
24067	4 G 1	5,9	38,4	86,0	18

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24068	5 G 1	6,7	48,0	101,0	18
24069	7 G 1	11,1	67,0	140,0	18
24070	12 G 1	12,0	115,0	227,0	18
24071	18 G 1	14,8	173,0	351,0	18
24072	25 G 1	17,2	240,0	489,0	18
24073	3 G 1,5	6,4	43,0	88,0	16
24074	4 G 1,5	7,0	58,0	110,0	16
24075	5 G 1,5	7,8	72,0	130,0	16
24076	7 G 1,5	13,0	101,0	182,0	16
24077	12 G 1,5	14,2	173,0	319,0	16
24078	18 G 1,5	17,5	259,0	420,0	16
24079	25 G 1,5	20,1	360,0	604,0	16
24080	4 G 2,5	8,8	96,0	172,0	14
24081	5 G 2,5	9,8	120,0	219,0	14
24082	7 G 2,5	16,1	168,0	303,0	14
24083	12 G 2,5	17,8	288,0	504,0	14
24084	18 G 2,5	21,8	432,0	754,0	14
24085	25 G 2,5	24,4	600,0	940,0	14

Dimensions and specifications may be changed without prior notice. (RC01)

JZ-HF-CY high flexible, screened control cable for drag chains, oil resistant, EMC-preferred type, meter marking



Technical data

- Special PVC control cable, extreme flexibility due to special construction
- Requirements adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51
- **Temperature range** flexing -10°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Radiation resistance** up to 80x10^6 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, extra fine wire conductors, to DIN VDE 0295 cl.6 col. 4, BS 6360 cl.6 and IEC 60228 cl.6
- Core insulation of special PVC Z 7225
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal selected lay-length
- Core wrapping with fleece PVC-inner sheath
- construction with Cu-screening, tinned, approx. 85%
- Minimum coverage 85%
- Outer sheath of special PVC compound type TM5 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Colour grey (RAL 7001)
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- oil resistant to DIN VDE 0473-811-404 / DIN EN 60811-404

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- Please note the cleanroom qualification when ordering.
- unscreened analogue type: **JZ-HF**, confer page 160
- with UL-approval **JZ-HF-FCY**, confer page 425

Application

JZ-HF cables are ideal for use in the machine tool industry, in robotics and machine production and anywhere where high flexibility is essential. These cables have shown excellent performance in combination with standard cable trays. These cables are suitable for flexible use for medium mechanical stresses with free movements. The dense screening assures disturbance-free transmission of all signals and impulses. An ideal disturbance-free control cable for the above application. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
15930	2 x 0,5	7,2	30,0	90,0	20
15931	3 G 0,5	7,5	38,0	115,0	20
15932	4 G 0,5	8,1	48,0	140,0	20
15933	5 G 0,5	8,6	64,0	168,0	20
15934	7 G 0,5	9,9	70,0	217,0	20
15935	12 G 0,5	11,6	100,0	274,0	20
15876	14 G 0,5	12,2	135,0	332,0	20
15877	16 G 0,5	13,0	145,0	388,0	20
15936	18 G 0,5	13,8	154,0	445,0	20
15937	20 G 0,5	14,3	160,0	497,0	20
15878	21 G 0,5	14,8	175,0	500,0	20
15938	25 G 0,5	16,1	240,0	505,0	20
15879	30 G 0,5	16,6	280,0	515,0	20
15880	34 G 0,5	17,7	290,0	530,0	20
15881	36 G 0,5	17,7	300,0	572,0	20
15882	42 G 0,5	19,2	330,0	605,0	20
15883	50 G 0,5	21,2	393,0	742,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
15945	2 x 0,75	7,6	39,0	105,0	19
15946	3 G 0,75	8,1	49,0	128,0	19
15947	4 G 0,75	8,6	60,0	184,0	19
15948	5 G 0,75	9,4	70,0	200,0	19
15949	7 G 0,75	10,5	95,0	269,0	19
15885	10 G 0,75	12,6	110,0	327,0	19
15950	12 G 0,75	12,9	140,0	366,0	19
15886	14 G 0,75	13,4	163,0	426,0	19
15887	16 G 0,75	14,2	187,0	487,0	19
15951	18 G 0,75	14,8	211,0	547,0	19
15888	20 G 0,75	15,5	216,0	551,0	19
15889	21 G 0,75	16,2	272,0	590,0	19
15952	25 G 0,75	17,7	322,0	600,0	19
15890	30 G 0,75	18,2	414,0	650,0	19
15891	34 G 0,75	19,8	473,0	685,0	19
15892	36 G 0,75	19,8	500,0	720,0	19
15893	42 G 0,75	21,0	583,0	800,0	19
15894	50 G 0,75	23,1	695,0	954,0	19

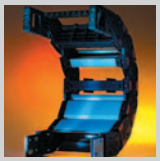
Continuation ▸

JZ-HF-CY high flexible, screened control cable for drag chains, oil resistant, EMC-preferred type, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
15961	2 x 1	8,1	50,0	115,0	18
15962	3 G 1	8,4	60,0	142,0	18
15963	4 G 1	9,0	73,0	196,0	18
15964	5 G 1	9,8	81,0	271,0	18
15965	7 G 1	11,2	114,0	307,0	18
15966	12 G 1	13,4	186,0	474,0	18
15967	18 G 1	15,7	254,0	622,0	18
15968	25 G 1	19,0	365,0	828,0	18
15969	34 G 1	21,0	500,0	1049,0	18
15970	41 G 1	22,7	576,0	1257,0	18
15971	50 G 1	24,5	681,0	1437,0	18
15972	65 G 1	27,7	932,0	1823,0	18
15976	2 x 1,5	8,6	64,0	170,0	16
15977	3 G 1,5	9,0	84,0	203,0	16
15978	4 G 1,5	9,8	99,0	243,0	16
15979	5 G 1,5	10,5	120,0	288,0	16
15980	7 G 1,5	12,5	148,0	403,0	16
15981	12 G 1,5	14,8	274,0	592,0	16
15982	18 G 1,5	17,3	386,0	844,0	16
15983	25 G 1,5	21,0	584,0	1155,0	16
15152	41 G 1,5	24,8	867,0	1227,0	16
15153	50 G 1,5	27,3	970,0	1445,0	16
15154	61 G 1,5	29,8	1028,0	1724,0	16

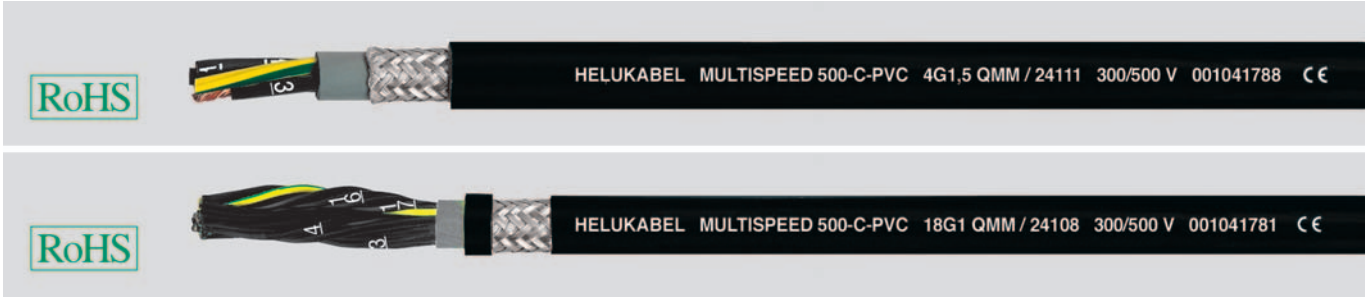
Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
15925	3 G 2,5	10,8	140,0	215,0	14
15926	4 G 2,5	11,5	159,0	264,0	14
15927	5 G 2,5	12,9	194,0	344,0	14
15928	7 G 2,5	15,1	234,0	410,0	14
15929	12 G 2,5	18,4	390,0	721,0	14
15155	3 G 4	13,0	178,0	292,0	12
15156	4 G 4	14,2	222,0	372,0	12
15157	5 G 4	15,6	328,0	448,0	12
15158	4 G 6	16,0	305,0	526,0	10
15159	5 G 6	17,5	441,0	632,0	10
15160	4 G 10	21,2	485,0	838,0	8
15161	5 G 10	23,2	610,0	998,0	8
15162	4 G 16	24,1	840,0	1225,0	6
15163	5 G 16	27,0	1050,0	1560,0	6

Dimensions and specifications may be changed without prior notice. (RC01)



Suitable Cable drag chains can be found in our Cable Accessories catalogue.

MULTISPEED® 500-C-PVC high flexible, safety against high bending in drag chain systems, oil resistant, low torsion, screened, EMC-preferred type, meter marking



C

Technical data

- Special drag chain cables for high mechanical stress adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51
- **Temperature range** flexing -15°C to +80°C fixed installation -30°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Insulation resistance** min. 100 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Coupling resistance** max. 250 Ohm x km
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, fine wire conductors, Unilay with short pitch length
- Core insulation of special PP
- Core identification black cores with continuous white numbering
- GN-YE conductor, 3 cores and above
- Stranding: <7 cores: cores stranded in a layer with optimal lay-length around a filler as per construction ≥7 cores: cores stranded with optimal lay-length to bunch-construction with low torsion strength, optimal selected short lay-length around a filler
- Special-PVC inner sheath YM2 extruded as filler with pressure grey (RAL 7001)
- Tinned copper braidet screen, coverage 85% max., with optimal bunch
- Fleece separator, ensure good dismantling ability
- Outer sheath of special PVC especially resistant against fatigue strength
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- Low adhesion
- ozon- and uv- resistant
- High property of alternating bending strength
- Long life durability due to low friction-resistance
- Better chemical resistance
- High stability
- Higher economical solution
- Reduced Ø, results low weight of moving materials
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Oil resistance to DIN VDE 0473-811-404 / DIN EN 60811-404

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **MULTISPEED® 500-PVC**, confer page 162

Application

HELUKABEL® MULTISPEED 500-C-PVC are installed there, where the extreme requirements for the cables are necessary. The selected materials and lay-up technique permit these high flexible cables for permanent application in drag chains for long distances, high and low speed of movements. These high flexible PVC control cables are suitable for shift- and bending stresses in machines and machine tool constructions. These are installed in dry, moist rooms and in open air with free movement without tensile stress or forced movements. These screened cables are particularly suitable for the interference-free transmission in instrumentation and control engineering applications. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24086	2 x 0,5	6,2	30,0	88,0	20
24087	3 G 0,5	6,7	36,0	101,0	20
24088	4 G 0,5	7,2	42,0	116,0	20
24089	5 G 0,5	7,6	48,0	146,0	20
24090	7 G 0,5	11,4	64,0	181,0	20
24091	9 G 0,5	11,4	80,0	219,0	20
24092	12 G 0,5	12,4	105,0	271,0	20
24093	18 G 0,5	14,7	137,0	374,0	20
24094	25 G 0,5	17,1	210,0	542,0	20
24095	2 x 0,75	6,8	40,0	96,0	19
24096	3 G 0,75	7,3	48,0	111,0	19
24097	4 G 0,75	7,8	55,0	140,0	19
24098	5 G 0,75	8,3	66,0	161,0	19
24099	7 G 0,75	12,7	85,0	227,0	19
24100	12 G 0,75	13,7	135,0	317,0	19
24101	18 G 0,75	17,1	190,0	486,0	19
24102	25 G 0,75	19,5	275,0	651,0	19

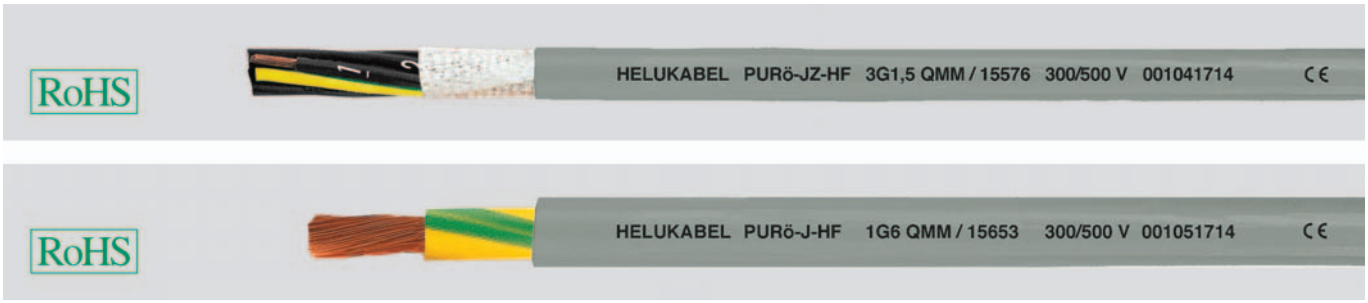
Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24103	3 G 1	7,6	59,0	131,0	18
24104	4 G 1	8,1	70,0	164,0	18
24105	5 G 1	8,9	84,0	198,0	18
24106	7 G 1	13,6	106,0	252,0	18
24107	12 G 1	14,6	174,0	410,0	18
24108	18 G 1	18,4	240,0	550,0	18
24109	25 G 1	21,0	332,0	756,0	17
24110	3 G 1,5	8,4	75,0	166,0	16
24111	4 G 1,5	9,1	90,0	199,0	16
24112	5 G 1,5	10,2	108,0	229,0	16
24113	7 G 1,5	15,7	157,0	304,0	16
24114	12 G 1,5	17,4	240,0	502,0	16
24115	18 G 1,5	21,3	355,0	709,0	16
24116	25 G 1,5	24,3	448,0	939,0	16
24117	4 G 2,5	11,2	134,0	270,0	14
24118	5 G 2,5	12,2	175,0	335,0	14

Dimensions and specifications may be changed without prior notice. (RC01)

PUR DRAG CHAIN CABLES



PURö-JZ-HF high flexible, cable for drag chains, abrasion and coolant resistant, meter marking



Technical data

- Special polyurethane control cable adapted to DIN VDE 0285-525-1/ DIN EN 50525-1
- **Temperature range** flexing -20°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper, extra fine wire conductors, bunch stranded to DIN VDE 0295 cl.6, BS 6360 cl.6 and IEC 60228 cl.6
- **Oil resistant** PVC core insulation, TI2 in adapted to DIN VDE 0207-363-3 / DIN EN 50363-3, for better sliding abilities
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal selected lay-length
- Core wrapping with fleece
- Outer sheath of special **full-polyurethane** TMPU, to DIN VDE 0207-363-10-2/ DIN EN 50363-10-2
- Colour grey (RAL 7001)
- with meter marking

Properties

- Suitable for outdoor lying and resistant to UV-radiation, oxygen, ozone and hydrolysis. Conditionally resistant to microbes
- Adhesion-low
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- Cross-linked types also available on request.
- screened analogue type: **PURö-JZ-HF-YCP**, confer page 172

Application

PURö-JZ-HF is an extremely robust cable noted for its good tear and abrasion resistance. Due to its good performance with mineral oils and especially in connection with coolants, this cable is well suited for use in the machinery, tool making and steel industries in critical areas. Its high abrasion resistance and good flexing ability make it quick and easy to install and, with its low bending radius, ideal for use with cable trays. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
15520	2 x 0,5	5,5	9,6	45,0	20
15521	3 G 0,5	6,0	14,4	56,0	20
15522	4 G 0,5	6,4	19,1	69,0	20
15523	5 G 0,5	6,9	24,0	92,0	20
15524	7 G 0,5	7,9	33,6	126,0	20
16161	7 x 0,5	7,8	33,6	126,0	20
15525	8 G 0,5	8,6	38,0	136,0	20
15526	10 G 0,5	9,7	48,0	158,0	20
15527	12 G 0,5	9,9	58,0	176,0	20
15528	14 G 0,5	10,4	67,0	212,0	20
15529	18 G 0,5	11,4	86,4	283,0	20
15530	21 G 0,5	12,1	96,0	310,0	20
15531	25 G 0,5	13,5	120,0	330,0	20
15532	30 G 0,5	14,2	144,0	390,0	20
15533	34 G 0,5	15,2	163,0	420,0	20
15534	42 G 0,5	16,2	202,0	500,0	20
15535	50 G 0,5	18,0	240,0	580,0	20
15538	2 x 0,75	6,0	14,4	57,0	19
15539	3 G 0,75	6,3	21,6	72,0	19
15540	4 G 0,75	6,8	29,0	97,0	19
15541	5 G 0,75	7,4	36,0	119,0	19
15542	7 G 0,75	8,7	50,0	165,0	19
15543	8 G 0,75	9,5	58,0	189,0	19
15544	10 G 0,75	10,7	72,0	214,0	19
15545	12 G 0,75	10,9	86,0	247,0	19
15546	14 G 0,75	11,5	101,0	283,0	19
15547	18 G 0,75	12,7	130,0	356,0	19
15548	21 G 0,75	13,4	151,0	502,0	19
15549	25 G 0,75	15,0	180,0	698,0	19
15550	30 G 0,75	15,8	216,0	720,0	19
15551	34 G 0,75	17,2	245,0	770,0	19
15552	42 G 0,75	18,5	302,0	840,0	19
15553	50 G 0,75	20,1	360,0	990,0	19

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
15556	2 x 1	6,3	19,2	64,0	18
15557	3 G 1	6,6	29,0	83,0	18
15558	4 G 1	7,1	38,5	113,0	18
15559	5 G 1	7,8	48,0	137,0	18
15560	7 G 1	9,0	67,0	191,0	18
15561	8 G 1	9,9	77,0	218,0	18
15562	10 G 1	11,1	96,0	251,0	18
15563	12 G 1	11,1	115,0	294,0	18
15564	14 G 1	12,1	134,0	337,0	18
15565	18 G 1	13,6	173,0	420,0	18
15566	21 G 1	14,2	196,0	504,0	18
15567	25 G 1	16,1	240,0	600,0	18
15568	32 G 1	17,6	308,0	732,0	18
15569	34 G 1	18,4	326,0	776,0	18
15570	41 G 1	19,7	394,0	925,0	18
15571	42 G 1	19,7	403,0	949,0	18
15572	50 G 1	21,7	480,0	1092,0	18
15573	65 G 1	30,9	624,0	1400,0	18
15575	2 x 1,5	6,8	29,0	90,0	16
15576	3 G 1,5	7,2	43,0	117,0	16
15577	4 G 1,5	7,7	58,0	147,0	16
15578	5 G 1,5	8,6	72,0	181,0	16
15579	7 G 1,5	10,3	101,0	274,0	16
15580	8 G 1,5	11,0	115,0	313,0	16
15581	10 G 1,5	12,7	144,0	344,0	16
15582	12 G 1,5	12,7	173,0	391,0	16
15583	14 G 1,5	13,4	202,0	457,0	16
15584	18 G 1,5	15,1	259,0	589,0	16
15585	21 G 1,5	16,2	302,0	680,0	16
15586	25 G 1,5	18,0	360,0	801,0	16
15587	30 G 1,5	18,7	410,0	938,0	16
15588	34 G 1,5	20,6	490,0	1048,0	16
15589	42 G 1,5	22,4	605,0	1290,0	16

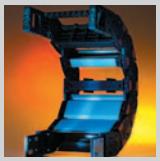
Continuation ▸

PURö-JZ-HF high flexible, cable for drag chains, abrasion and coolant resistant, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
15590	50 G 1,5	24,2	720,0	1520,0	16
15591	61 G 1,5	32,4	889,0	1850,0	16
15592	65 G 1,5	33,6	940,0	1970,0	16
15620	2 x 2,5	8,5	48,0	128,0	14
15621	3 G 2,5	9,0	72,0	160,0	14
15622	4 G 2,5	9,9	96,0	200,0	14
15623	5 G 2,5	11,0	120,0	268,0	14
15624	7 G 2,5	12,8	168,0	357,0	14
15625	12 G 2,5	16,2	288,0	571,0	14
15626	14 G 2,5	17,1	336,0	612,0	14
15627	18 G 2,5	19,1	432,0	800,0	14
15628	25 G 2,5	22,8	600,0	1100,0	14
15630	2 x 4	10,1	77,0	190,0	12
15631	3 G 4	10,9	115,0	250,0	12
15632	4 G 4	12,0	154,0	320,0	12
15633	5 G 4	13,4	192,0	400,0	12
15634	7 G 4	16,0	269,0	550,0	12
15653	1 G 6	7,3	58,0	81,0	10
15636	3 G 6	12,8	173,0	350,0	10

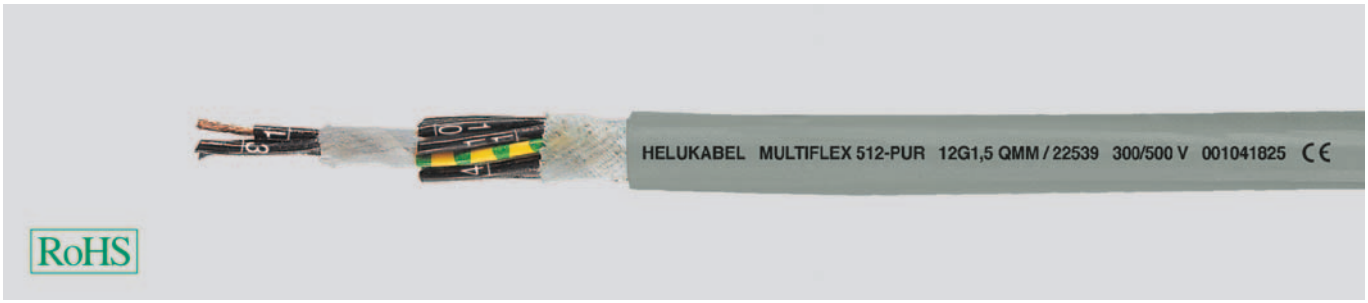
Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
15637	4 G 6	13,9	230,0	500,0	10
15638	5 G 6	15,4	288,0	580,0	10
15639	7 G 6	18,0	403,0	800,0	10
15654	1 G 10	8,9	96,0	152,0	8
15641	3 G 10	16,2	288,0	660,0	8
15642	4 G 10	18,1	384,0	750,0	8
15643	5 G 10	20,3	480,0	990,0	8
15644	7 G 10	24,3	672,0	1300,0	8
15655	1 G 16	10,0	154,0	215,0	6
15645	4 G 16	21,1	614,0	1200,0	6
15646	5 G 16	23,5	768,0	1500,0	6
15647	7 G 16	28,7	1075,0	1900,0	6
15656	1 G 25	11,1	240,0	320,0	4
15648	4 G 25	34,0	960,0	1700,0	4
15649	4 G 35	37,0	1344,0	2300,0	2
15650	4 G 50	44,0	1920,0	2500,0	1
15651	4 G 70	53,0	2688,0	4600,0	2/0
15652	4 G 95	59,0	3648,0	6400,0	3/0

Dimensions and specifications may be changed without prior notice. (RC02)



Suitable Cable drag chains can be found in our Cable Accessories catalogue.

MULTIFLEX 512®-PUR special cable for drag chains, halogen-free, meter marking



Technical data

- Special drag chain cables for high mechanical stress, adapted to DIN VDE 0285-525-2-21/ DIN EN 50525-2-21
- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Minimum bending radius**
  flexing 5x cable Ø
  fixed installation 3x cable Ø
- **Alternating bending cycles**
  approx. **10 million**
- **Radiation resistance**
  up to 50x10⁶ cJ/kg (up to 50 Mrad)

Cable structure

- Bare copper, extra fine wire conductors, bunch stranded to DIN VDE 0295 cl.6, col. 4, BS 6360 cl.6 and IEC 60228 cl.6
- Core insulation of special PP
- Core identification black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal selected lay-length
- Special core wrapping over each layer (up to 4 mm² without core wrapping over the outer layer)
- Outer sheath of special **full-polyurethane** TMPU, to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2
- Colour grey (RAL 7001) outer surface mat
- with meter marking

Properties

- Very good oil resistant
- Guaranteed permanent application in multi-shift operation under extreme high bending stress
- Adhesion-low
- High resistant to mechanical strain
- High property of alternating bending strength
- Long life durabilities through low friction-resistance by using the PP-insulation
- High tensile strength-, abrasion- and impact resistant at low temperature
- **Resistant to** weather, ozone and UV-radiation, solvents, acids and alkalis, hydraulic liquidity and hydrolysis
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- Cleanroom qualification tested with analog type. Please note "cleanroom qualified" when ordering.
- screened analogue type:
  MULTIFLEX 512®-C-PUR ,
  confer page 174

Application

The special cables for drag chains are used for permanent flexible applications in machineries, machine tools, robot technics, for movable automated machinery parts and multi-shift operation. Those cables are developed according to the newest state of technology improvement. These high flexible control cables with sliding abilities guaranteed an optimum service life durabilities and also very economic by using the PP-core insulation and the PUR-outer sheath. The PUR material is adhesion-low and cut-resistant. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22501	2 x 0,5	5,5	9,6	38,0	20
22502	3 G 0,5	5,8	14,4	46,0	20
22503	4 G 0,5	6,4	19,0	59,0	20
22504	5 G 0,5	7,0	24,0	68,0	20
22505	7 G 0,5	8,1	33,6	88,0	20
22506	12 G 0,5	9,9	58,0	131,0	20
22507	18 G 0,5	11,5	86,0	197,0	20
22508	20 G 0,5	12,0	96,0	260,0	20
22509	25 G 0,5	13,7	120,0	282,0	20
22510	30 G 0,5	14,3	144,0	315,0	20
22511	36 G 0,5	15,3	172,0	374,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22512	2 x 0,75	6,2	14,4	47,0	19
22513	3 G 0,75	6,5	21,6	58,0	19
22514	4 G 0,75	7,0	29,0	69,0	19
22515	5 G 0,75	7,8	36,0	85,0	19
22516	7 G 0,75	9,0	50,0	118,0	19
22517	12 G 0,75	11,0	86,0	183,0	19
22518	18 G 0,75	13,0	130,0	270,0	19
22519	20 G 0,75	13,5	144,0	290,0	19
22520	25 G 0,75	15,4	180,0	374,0	19
22521	30 G 0,75	16,2	216,0	420,0	19
22522	36 G 0,75	17,6	259,0	498,0	19

Continuation ▸

MULTIFLEX 512®-PUR special cable for drag chains, halogen-free, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22523	2 x 1	6,9	19,2	55,0	18
22524	3 G 1	7,4	29,0	70,0	18
22525	4 G 1	8,0	38,0	86,0	18
22526	5 G 1	8,7	48,0	102,0	18
22527	7 G 1	10,2	67,0	143,0	18
22528	12 G 1	12,6	115,0	225,0	18
22529	18 G 1	14,8	173,0	334,0	18
22530	20 G 1	15,8	192,0	370,0	18
22531	25 G 1	18,1	240,0	460,0	18
22532	30 G 1	18,5	288,0	530,0	18
22533	36 G 1	20,1	346,0	625,0	18
22878	41 G 1	22,0	410,0	779,0	18
22879	50 G 1	24,0	498,0	953,0	18
22880	65 G 1	27,2	650,0	1205,0	18
22534	2 x 1,5	7,6	29,0	70,0	16
22535	3 G 1,5	8,1	43,0	90,0	16
22536	4 G 1,5	8,7	58,0	106,0	16
22537	5 G 1,5	9,7	72,0	145,0	16
22538	7 G 1,5	11,3	101,0	205,0	16
22539	12 G 1,5	13,8	173,0	320,0	16
22540	18 G 1,5	16,3	259,0	465,0	16
22541	20 G 1,5	17,3	288,0	510,0	16
22542	25 G 1,5	19,8	360,0	650,0	16
22543	30 G 1,5	20,3	432,0	750,0	16
22544	36 G 1,5	22,2	518,0	880,0	16
22881	42 G 1,5	24,0	628,0	1209,0	16
22882	50 G 1,5	26,2	749,0	1449,0	16
22883	61 G 1,5	28,9	912,0	1712,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22545	2 x 2,5	9,2	48,0	115,0	14
22546	3 G 2,5	9,7	72,0	162,0	14
22547	4 G 2,5	10,5	96,0	196,0	14
22548	5 G 2,5	11,6	120,0	230,0	14
22549	7 G 2,5	13,8	168,0	312,0	14
22550	12 G 2,5	16,9	288,0	532,0	14
22551	18 G 2,5	20,0	432,0	762,0	14
22552	20 G 2,5	21,2	480,0	858,0	14
22553	25 G 2,5	24,4	600,0	998,0	14
22554	4 G 4	13,2	154,0	283,0	12
22555	5 G 4	14,6	192,0	349,0	12
22556	7 G 4	17,6	269,0	498,0	12
22557	4 G 6	14,4	230,0	432,0	10
22558	5 G 6	15,9	288,0	529,0	10
22559	7 G 6	19,2	403,0	782,0	10
22560	4 G 10	18,4	384,0	685,0	8
22561	5 G 10	20,7	480,0	817,0	8
22562	7 G 10	24,7	672,0	1023,0	8
22563	4 G 16	21,3	614,0	1042,0	6
22564	5 G 16	23,8	768,0	1292,0	6
22565	7 G 16	28,6	1075,0	1709,0	6

Dimensions and specifications may be changed without prior notice. (RC02)



Suitable Cable drag chains can be found in our Cable Accessories catalogue.

MULTISPEED® 500-PUR safety against high bending in drag chain systems, low torsion, halogen-free, meter marking



C

Technical data

- Special drag chain cables for high mechanical stress adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51 and DIN VDE 0285-525-2-21/ DIN EN 50525-2-21
- **Temperature range** flexing -30°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Insulation resistance** min. 100 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper, fine wire conductors, Unilay with short pitch length
- Core insulation of special PP
- Core identification black cores with continuous white numbering
- GN-YE conductor, 3 cores and above
- Stranding: <7 cores: cores stranded in a layer with optimal lay-length around a filler as per construction ≥7 cores: cores stranded with optimal lay-length to bunch-construction with low torsion strength, optimal selected short lay-length around a filler
- Special-PUR outer sheath, extruded as filler with pressure
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- Low adhesion
- Halogen-free
- Oil resistance
- Better chemical resistance
- UV and ozone resistance
- Higher economical solution
- Reduced Ø, results low weight of moving materials
- High property of alternating bending strength
- High resistant to mechanical strain
- Long life durabilitys due to low friction-resistance
- High tensile strength, abrasion- and impact resistance at low temperature
- Tear resistance and high stability
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- screened analogue type: **MULTISPEED® 500-C-PUR**, confer page 176

Application

For permanent application in drag chains for long distances, high and low speed of movements. These cables are installed in dry, moist and wet rooms and in open air with free movement without tensile stress or forced movements. These robust and abrasion resistant special control cables are installed there, where the problems appear for the application in permanent stresses e. g. in energy drag chains, industry robotics, production lines, automatic control systems and permanent movable machinery parts for multi-shift operation. These cables are installed everywhere, where high requirements for the flexibility, abrasion, oxygen and chemical resistance are necessary. For applications which go beyond standard solutions we recommend for our especially developed enquiry sheet for energy guiding systems.

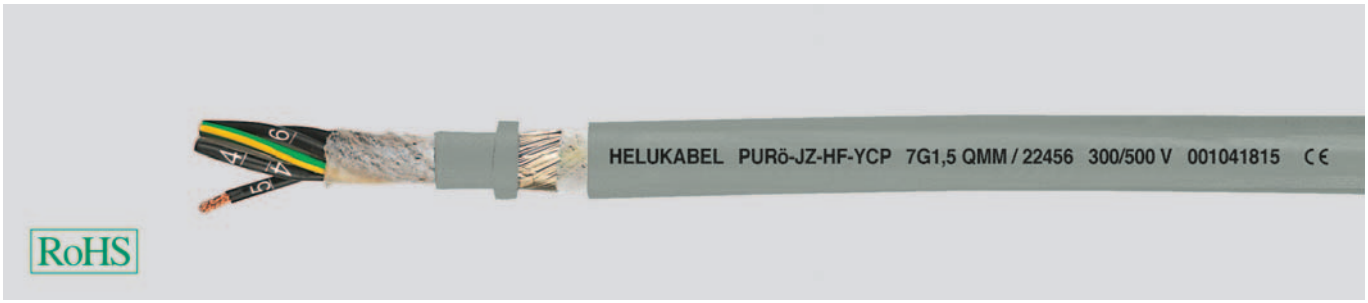
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24119	2 x 0,5	4,3	9,6	41,0	20
24120	3 G 0,5	4,6	14,4	48,0	20
24121	4 G 0,5	5,0	19,0	62,0	20
24122	5 G 0,5	5,4	24,0	70,0	20
24123	7 G 0,5	8,9	33,6	88,0	20
24124	12 G 0,5	9,7	58,0	131,0	20
24125	18 G 0,5	11,8	86,0	204,0	20
24126	25 G 0,5	13,9	120,0	266,0	20
24127	3 G 0,75	5,2	21,6	51,0	19
24128	4 G 0,75	5,6	29,0	68,0	19
24129	5 G 0,75	6,3	36,0	73,0	19
24130	7 G 0,75	10,3	50,0	92,0	19
24131	12 G 0,75	11,0	86,0	170,0	19
24132	18 G 0,75	13,9	130,0	257,0	19
24133	25 G 0,75	15,9	180,0	280,0	19
24134	36 G 0,75	19,6	260,0	411,0	19
24135	42 G 0,75	21,5	302,0	608,0	19
24136	3 G 1	5,4	29,0	59,0	18
24137	4 G 1	5,9	38,0	71,0	18

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24138	5 G 1	6,7	48,0	84,0	18
24139	7 G 1	11,1	67,0	111,0	18
24140	12 G 1	12,0	115,0	200,0	18
24141	18 G 1	14,8	173,0	286,0	18
24142	25 G 1	17,2	240,0	370,0	18
24143	3 G 1,5	6,4	43,0	81,0	16
24144	4 G 1,5	7,0	58,0	102,0	16
24145	5 G 1,5	7,8	72,0	121,0	16
24146	7 G 1,5	13,0	101,0	164,0	16
24147	12 G 1,5	14,2	173,0	293,0	16
24148	18 G 1,5	17,5	259,0	450,0	16
24149	25 G 1,5	20,1	360,0	631,0	16
24150	4 G 2,5	8,8	86,0	173,0	14
24151	5 G 2,5	9,8	120,0	220,0	14
24152	7 G 2,5	16,1	168,0	290,0	14
24153	12 G 2,5	17,8	288,0	504,0	14
24154	18 G 2,5	21,8	432,0	719,0	14
24155	25 G 2,5	24,4	600,0	940,0	14

Dimensions and specifications may be changed without prior notice. (RC02)

PURö-JZ-HF-YCP EMC-preferred type, cable for drag chains, screened, PUR-outer sheath, meter marking



Technical data

- Special polyurethane control cable adapted to DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range**
  flexing -20°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Radiation resistance**
  up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper, extra fine wire conductors, bunch stranded to DIN VDE 0295 cl.6, col. 4, BS 6360 cl.6 and IEC 60228 cl.6
- **Oil resistant** PVC core insulation TI2, in adapted to DIN VDE 0207-363-3/ DIN EN 50363-3, for better sliding abilities
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal selected lay-length
- Fleece separator
- **Oil resistant** PVC inner sheath
- One layer of tinned copper wire screening[1)], approx. 85% coverage
- Outer sheath of special **full-polyurethane** to DIN VDE 0207-363-10-2/ DIN EN 50363-10-2
- Colour grey (RAL 7001)
- with meter marking

Properties

- Suitable for outdoor lying and resistant to UV-radiation, oxygen, ozone and hydrolysis. Conditionally resistant to microbes
- Adhesion-low
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- [1)]Change-over up to construction with Cu-screening, tinned, approx. 85% for coverage optimisation of the useful properties are in preparation
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type:
  PURö-JZ-HF, confer page 167

Application

PURö-JZ-HF-YCP is a highly robust and tare and abrasion resistant cable with excellent resistance properties to mineral oils and cooling fluids, thus making it an ideal choice for installation in most types of industrial machinery as well as in steel works and rolling mills, etc. in fact, wherever you may need a cable to cope with especially critical situations. Easy to install, thanks to its high degree of flexibility. Its high abrasion resistance and good flexing ability make it quick and easy to install and, with its low bending radius, ideal for use with cable trays. This screened cable is ideal for use in data signal transmission free from interferences for measurement and control engineering technology. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22400	2 x 0,5	7,5	30,0	90,0	20
22401	3 G 0,5	7,8	38,0	104,0	20
22402	4 G 0,5	7,8	48,0	123,0	20
22403	5 G 0,5	8,5	65,0	131,0	20
22404	7 G 0,5	9,5	70,0	172,0	20
22405	8 G 0,5	10,4	81,0	195,0	20
22406	10 G 0,5	11,4	94,0	230,0	20
22407	12 G 0,5	11,6	110,0	250,0	20
22408	14 G 0,5	12,0	135,0	280,0	20
22409	18 G 0,5	13,4	157,0	321,0	20
22410	21 G 0,5	14,8	175,0	380,0	20
22411	25 G 0,5	16,1	240,0	445,0	20
22412	30 G 0,5	16,4	275,0	509,0	20
22413	34 G 0,5	17,8	305,0	560,0	20
22414	42 G 0,5	19,1	330,0	780,0	20
22415	50 G 0,5	20,6	393,0	960,0	20
22416	61 G 0,5	23,0	541,0	1050,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22417	2 x 0,75	7,5	39,0	106,0	19
22418	3 G 0,75	7,8	49,0	120,0	19
22419	4 G 0,75	8,5	60,0	150,0	19
22420	5 G 0,75	9,1	70,0	158,0	19
22421	7 G 0,75	10,9	95,0	205,0	19
22422	8 G 0,75	11,5	104,0	272,0	19
22423	10 G 0,75	13,0	110,0	290,0	19
22424	12 G 0,75	13,2	141,0	304,0	19
22425	14 G 0,75	13,7	163,0	380,0	19
22426	18 G 0,75	15,2	211,0	418,0	19
22427	21 G 0,75	16,4	274,0	485,0	19
22428	25 G 0,75	18,2	322,0	578,0	19
22429	30 G 0,75	18,6	414,0	630,0	19
22430	34 G 0,75	20,0	473,0	720,0	19
22431	42 G 0,75	21,5	583,0	780,0	19
22432	50 G 0,75	23,7	626,0	954,0	19
22433	61 G 0,75	25,9	763,0	1085,0	19

Continuation ▸

PURö-JZ-HF-YCP EMC-preferred type, cable for drag chains, screened, PUR-outer sheath, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22434	2 x 1	8,5	50,0	116,0	18
22435	3 G 1	8,8	60,0	135,0	18
22436	4 G 1	9,4	73,0	178,0	18
22437	5 G 1	10,7	81,0	188,0	18
22438	7 G 1	12,1	114,0	235,0	18
22439	8 G 1	13,2	130,0	270,0	18
22440	10 G 1	14,6	178,0	340,0	18
22441	12 G 1	14,8	186,0	358,0	18
22442	14 G 1	15,6	231,0	415,0	18
22443	18 G 1	17,0	254,0	500,0	18
22444	21 G 1	19,0	328,0	525,0	18
22445	25 G 1	20,9	378,0	678,0	18
22446	32 G 1	22,6	450,0	777,0	18
22447	34 G 1	23,3	478,0	825,0	18
22448	41 G 1	25,1	576,0	980,0	18
22449	42 G 1	25,3	590,0	998,0	18
22450	50 G 1	27,6	702,0	1160,0	18
22451	65 G 1	30,7	913,0	1670,0	18
22452	2 x 1,5	9,0	64,0	141,0	16
22453	3 G 1,5	9,4	84,0	164,0	16
22454	4 G 1,5	10,6	99,0	220,0	16
22455	5 G 1,5	11,4	120,0	233,0	16
22456	7 G 1,5	13,3	148,0	323,0	16
22457	8 G 1,5	14,5	191,0	369,0	16
22458	10 G 1,5	15,9	240,0	461,0	16
22459	12 G 1,5	16,1	274,0	481,0	16
22460	14 G 1,5	16,7	340,0	561,0	16
22461	18 G 1,5	18,4	395,0	672,0	16
22462	21 G 1,5	20,6	461,0	780,0	16
22463	25 G 1,5	22,8	533,0	927,0	16
22464	30 G 1,5	23,5	608,0	1030,0	16
22465	34 G 1,5	26,1	702,0	1180,0	16
22466	42 G 1,5	27,8	867,0	1458,0	16
22467	50 G 1,5	30,3	1033,0	1857,0	16
22468	61 G 1,5	32,7	1233,0	2250,0	16
22469	65 G 1,5	33,5	1315,0	2401,0	16

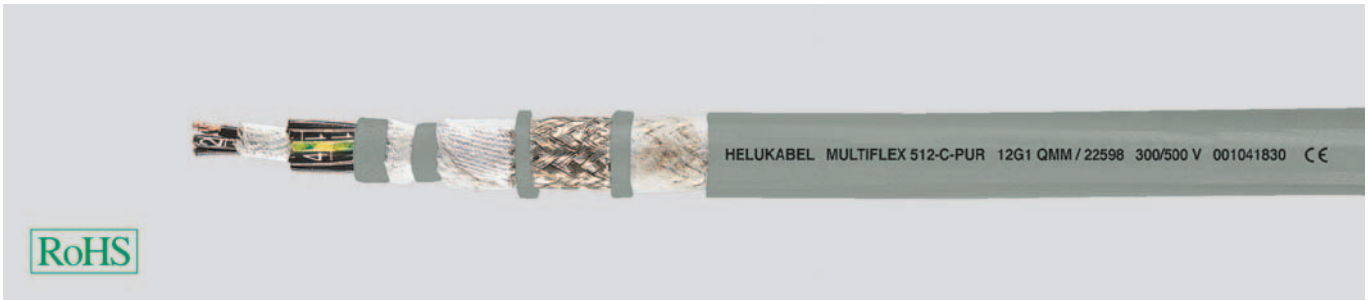
Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22470	2 x 2,5	10,9	96,0	185,0	14
22471	3 G 2,5	11,4	150,0	278,0	14
22472	4 G 2,5	12,2	159,0	370,0	14
22473	5 G 2,5	13,5	195,0	412,0	14
22474	7 G 2,5	16,0	240,0	470,0	14
22475	12 G 2,5	19,4	390,0	738,0	14
22476	14 G 2,5	20,4	480,0	870,0	14
22477	18 G 2,5	23,0	620,0	1100,0	14
22478	25 G 2,5	27,7	821,0	1512,0	14
22479	2 G 4	13,1	135,0	235,0	12
22480	3 G 4	13,7	178,0	350,0	12
22481	4 G 4	15,6	222,0	460,0	12
22482	5 G 4	16,7	328,0	550,0	12
22483	7 G 4	19,7	360,0	700,0	12
22484	3 G 6	16,0	250,0	525,0	10
22485	4 G 6	17,2	305,0	700,0	10
22486	5 G 6	19,3	441,0	800,0	10
22487	7 G 6	21,6	505,0	1100,0	10
22488	3 G 10	20,4	370,0	855,0	8
22489	4 G 10	23,0	485,0	1140,0	8
22490	5 G 10	25,3	610,0	1310,0	8
22491	7 G 10	28,0	820,0	1630,0	8
22492	4 G 16	26,2	840,0	1391,0	6
22493	5 G 16	28,6	1050,0	1810,0	6
22494	7 G 16	31,5	1510,0	2166,0	6

Dimensions and specifications may be changed without prior notice. (RC02)



Suitable Cable drag chains can be found in our Cable Accessories catalogue.

MULTIFLEX 512®-C-PUR special cable for drag chains, halogen-free, screened, EMC-preferred type, meter marking



Technical data

- Special drag chain cables for extreme mechanical stress in accordance to DIN VDE 0285-525-2-21/ DIN EN 50525-2-21
- **Temperature range** flexing -30°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Insulation resistance** min. 100 MOhm x km
- **Minimum bending radius** flexing 7,5x cable ø fixed installation 4x cable ø
- **Test of alternating bending cycles** approx. **10 million**
- **Radiation resistance** up to 50x10⁶ cJ/kg (up to 50 Mrad)
- **Coupling resistance** max. 250 Ohm/km

Cable structure

- Bare copper, extra fine wire conductors, bunch stranded to DIN VDE 0295 cl.6, col. 4, BS 6360 cl.6 and IEC 60228 cl.6
- Core insulation special PP
- Core identification black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal selected lay-length
- Special core wrapping over each layers and an additional fleece over outer layer
- **TPE-inner sheath**, halogen-free
- Wrapping with special tapes
- Tinned copper braided screening , approx. 85% coverage
- Special core wrapping of fleece (up to 4 mm²) without core wrapping over the outer layer
- Outer sheath of special **full-polyurethane** TMPU, to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2
- Sheath colour grey, (RAL 7001), with a matte surface
- with meter marking

Properties

- Very good oil resistant
- Guaranteed permanent application in multi-shift operation under extreme high bending stress
- Adhesion-low
- High resistant to mechanical strain
- High property of alternating bending strength
- Long life durabilities through low friction-resistance by using the PP insulation
- High tensile strength-, abrasion- and impact resistant at low temperature
- Resistant to weather, ozone and UV-radiation, solvents, acids and alkalis, hydraulic liquidity and hydrolysis
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- Please note the cleanroom qualification when ordering. For more information see introduction
- unscreened analogue type: **MULTIFLEX 512®-PUR** , confer page 169

Application

The special screened cables for drag chains are mainly applied for impulse transmission to prevent external interference effects and used for permanent flexible applications in machineries, machine tools, robot technics, for movable automated machinery parts and multi-shift operation. Those cables are developed according to the newest state of technology improvement. These high flexible control cables with sliding abilities guaranteed an optimum service life durabilities and also very economic by using the PP-core insulation and the PUR-outer sheath which is adhesive-free and cut-resistant.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22571	2 x 0,5	8,3	30,0	90,0	20
22572	3 G 0,5	8,5	38,0	105,0	20
22573	4 G 0,5	9,0	50,0	124,0	20
22574	5 G 0,5	9,7	65,0	132,0	20
22575	7 G 0,5	11,1	70,0	175,0	20
22576	12 G 0,5	12,7	100,0	250,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22577	18 G 0,5	14,7	157,0	325,0	20
22578	20 G 0,5	15,4	167,0	350,0	20
22579	25 G 0,5	17,1	240,0	450,0	20
22580	30 G 0,5	17,9	273,0	510,0	20
22581	36 G 0,5	19,2	306,0	580,0	20

Continuation ▸

MULTIFLEX 512®-C-PUR special cable for drag chains,

halogen-free, screened, EMC-preferred type, meter marking

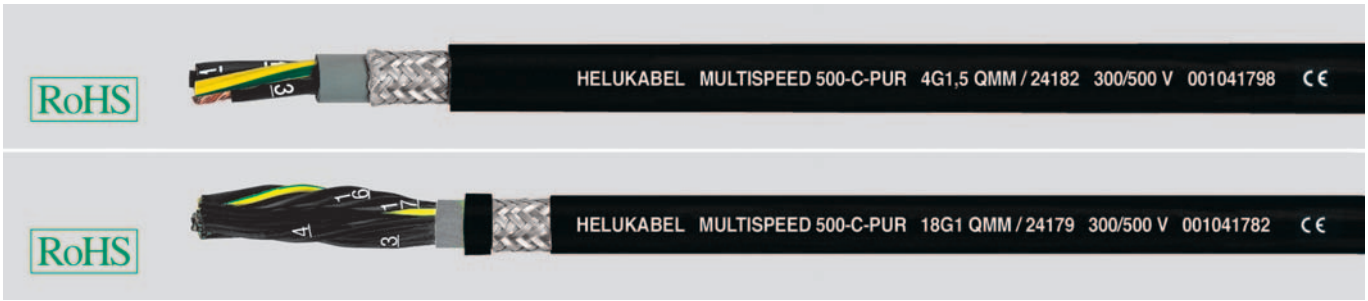
Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22582	2 x 0,75	8,8	39,0	110,0	19
22583	3 G 0,75	9,3	49,0	120,0	19
22584	4 G 0,75	9,7	60,0	148,0	19
22585	5 G 0,75	10,5	70,0	160,0	19
22586	7 G 0,75	11,9	95,0	205,0	19
22587	12 G 0,75	14,2	140,0	308,0	19
22588	18 G 0,75	16,3	220,0	420,0	19
22589	20 G 0,75	16,9	249,0	450,0	19
22590	25 G 0,75	19,2	313,0	579,0	19
22591	30 G 0,75	19,7	470,0	630,0	19
22592	36 G 0,75	21,2	500,0	745,0	19
22593	2 x 1	9,7	50,0	120,0	18
22594	3 G 1	10,0	60,0	135,0	18
22595	4 G 1	10,8	73,0	173,0	18
22596	5 G 1	11,7	81,0	187,0	18
22597	7 G 1	13,4	114,0	240,0	18
22598	12 G 1	16,0	186,0	360,0	18
22599	18 G 1	18,5	254,0	498,0	18
22600	20 G 1	19,4	322,0	568,0	18
22601	25 G 1	21,7	377,0	670,0	18
22602	30 G 1	22,5	429,0	774,0	18
22603	36 G 1	24,3	516,0	895,0	18
22884	41 G 1	26,1	610,0	1032,0	18
22885	50 G 1	28,4	690,0	1160,0	18
22886	65 G 1	32,2	852,0	1660,0	18
22604	2 x 1,5	10,2	64,0	145,0	16
22605	3 G 1,5	11,0	84,0	168,0	16
22606	4 G 1,5	11,6	99,0	217,0	16
22607	5 G 1,5	12,6	129,0	235,0	16
22608	7 G 1,5	14,5	148,0	325,0	16
22609	12 G 1,5	17,4	279,0	481,0	16
22610	18 G 1,5	19,9	393,0	675,0	16
22611	25 G 1,5	23,7	584,0	927,0	16
22612	30 G 1,5	24,6	607,0	1025,0	16
22613	36 G 1,5	26,4	702,0	1210,0	16
22887	42 G 1,5	28,4	829,0	1441,0	16
22888	50 G 1,5	31,2	1025,0	1709,0	16
22889	61 G 1,5	34,2	1190,0	2025,0	16
22614	2 x 2,5	11,9	104,0	198,0	14
22615	3 G 2,5	12,6	140,0	284,0	14
22616	4 G 2,5	13,6	164,0	378,0	14
22617	5 G 2,5	14,7	190,0	423,0	14
22618	7 G 2,5	17,4	236,0	486,0	14
22619	12 G 2,5	20,9	390,0	756,0	14
22620	18 G 2,5	24,2	607,0	1127,0	14
22621	20 G 2,5	25,6	661,0	1210,0	14
22622	25 G 2,5	29,1	796,0	1530,0	14
22623	4 G 4	16,8	222,0	448,0	12
22624	5 G 4	18,4	328,0	533,0	12
22625	7 G 4	21,6	360,0	678,0	12
22626	4 G 6	18,1	305,0	636,0	10
22627	5 G 6	19,6	441,0	772,0	10
22628	7 G 6	23,2	505,0	1028,0	10
22629	4 G 10	22,5	485,0	1052,0	8
22630	5 G 10	24,7	610,0	1096,0	8
22631	7 G 10	29,3	820,0	1530,0	8
22632	4 G 16	25,7	840,0	1386,0	6
22633	5 G 16	28,2	1050,0	1759,0	6
22634	7 G 16	33,6	1510,0	2087,0	6

Dimensions and specifications may be changed without prior notice. (RC02)



Suitable Cable drag chains can be found in our Cable Accessories catalogue.

MULTISPEED® 500-C-PUR safety against high bending in drag chain systems, low torsion, halogen-free, EMC-preferred type, halogen-free, meter marking



Technical data

- Special drag chain cables for high mechanical stress adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51 and DIN VDE 0285-525-2-21/DIN EN 50525-2-21
- **Temperature range** flexing -30°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Insulation resistance** min. 100 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Coupling resistant** max. 250 Ohm/km
- **Radiation resistance** up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper, fine wire conductors, Unilay with short pitch length
- Core insulation of special PP
- Core identification black cores with continuous white numbering
- GN-YE conductor, 3 cores and above
- Stranding: <7 cores: cores stranded in a layer with optimal lay-length around a filler as per construction ≥7 cores: cores stranded with optimal lay-length to bunch-construction with low torsion strength, optimal selected short lay-length around a filler
- Special-TPE inner sheath, extruded as filler with pressure, grey RAL 7001
- Tinned copper braided screen, coverage 85% max., with optimal pitch
- Fleece separator, ensure good dismantling ability
- Outer sheath of special PUR
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- Low adhesion
- High property of alternating bending strength
- High resistant to mechanical strain
- Long life durabilitys due to low friction-resistance
- High tensile strength, abrasion- and impact resistance at low temperature
- Tear resistance
- High stability and oil resistance
- Better chemical resistance
- UV and ozone resistance
- Higher economical solution
- Reduced Ø, results low weight of moving materials
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- unscreened analogue type: **MULTISPEED® 500-PUR**, confer page 171

Application

For permanent application in drag chains for long distances, high and low speed of movements. These cables are installed in dry, moist and wet rooms and in open air with free movement without tensile stress or forced movements. These robust and abrasion resistant special control cables are installed there, where the problems appear for the application in permanent stresses e. g. in energy drag chains. These cables are installed everywhere, where high requirements for the flexibility, abrasion, oxygen and chemical resistance are necessary. These screened cables are particularly suitable for the interference-free transmission in instrumentation and control engineering applications. For applications which go beyond standard solutions we recommend for our especially developed enquiry sheet for energy guiding systems.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

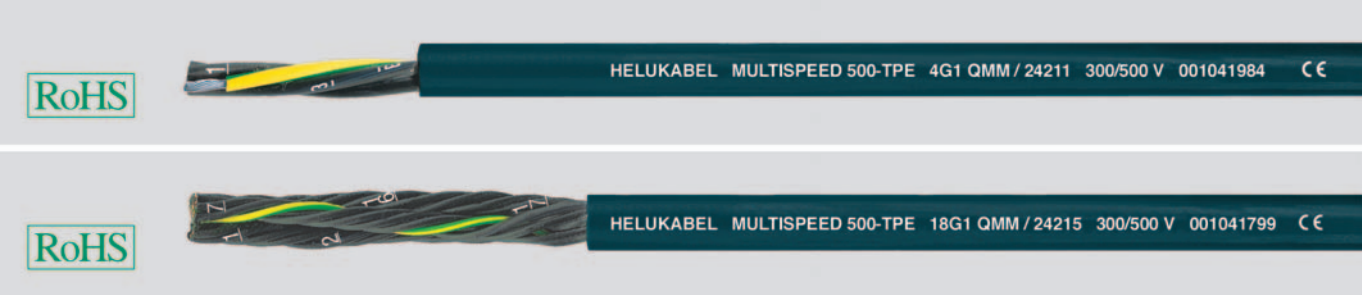
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24156	2 x 0,5	6,4	30,0	90,0	20
24157	3 G 0,5	6,7	36,0	104,0	20
24158	4 G 0,5	7,2	42,0	118,0	20
24159	5 G 0,5	7,6	48,0	148,0	20
24160	7 G 0,5	11,4	64,0	184,0	20
24161	9 G 0,5	11,4	80,0	219,0	20
24162	12 G 0,5	12,4	105,0	276,0	20
24163	18 G 0,5	14,7	137,0	378,0	20
24164	25 G 0,5	17,1	210,0	547,0	20
24165	2 x 0,75	6,8	40,0	100,0	19
24166	3 G 0,75	7,3	48,0	117,0	19
24167	4 G 0,75	7,8	55,0	143,0	19
24168	5 G 0,75	8,3	66,0	167,0	19
24169	7 G 0,75	12,7	85,0	229,0	19
24170	12 G 0,75	13,7	135,0	319,0	19
24171	18 G 0,75	17,1	190,0	492,0	19
24172	25 G 0,75	19,5	275,0	659,0	19

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24173	2 x 1	7,1	50,0	120,0	18
24174	3 G 1	7,6	59,0	140,0	18
24175	4 G 1	8,1	70,0	167,0	18
24176	5 G 1	8,9	84,0	201,0	18
24177	7 G 1	13,6	106,0	256,0	18
24178	12 G 1	14,6	174,0	417,0	18
24179	18 G 1	18,4	240,0	557,0	18
24180	25 G 1	21,0	332,0	766,0	18
24181	3 G 1,5	8,4	75,0	170,0	16
24182	4 G 1,5	9,1	90,0	204,0	16
24183	5 G 1,5	10,2	108,0	236,0	16
24184	7 G 1,5	15,7	157,0	309,0	16
24185	12 G 1,5	17,4	240,0	509,0	16
24186	18 G 1,5	21,3	355,0	718,0	16
24187	25 G 1,5	24,3	448,0	944,0	16
24188	4 G 2,5	11,2	134,0	280,0	14
24189	5 G 2,5	12,2	175,0	346,0	14
24190	7 G 2,5	19,7	229,0	410,0	14

Dimensions and specifications may be changed without prior notice. (RC02)

MULTISPEED® 500-TPE high flexible, safety against high bending in drag chain systems, low torsion, halogen-free, meter marking



Technical data

- Special drag chain cables for high mechanical stress adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51
- **Temperature range** flexing -30°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Insulation resistance** min. 100 MOhm x km
- **Minimum bending radius** flexing 5x cable Ø fixed installation 3x cable Ø
- **Radiation resistance** up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Tinned copper, fine wire conductors, Unilay with short pitch length
- Core insulation of special PP
- Core identification black cores with continuous white numbering
- GN-YE conductor, 3 cores and above
- Stranding: <7 cores: cores stranded in a layer with optimal lay-length around a filler as per construction ≥7 cores: cores stranded with optimal lay-length to bunch-construction with low torsion strength, optimal selected short lay-length around a filler
- Outer sheath of special TPE-O extruded as filler with pressure
- Sheath colour ocean blue (RAL 5020)
- with meter marking
- **TPE**: The selected tinned copper wire conductor permits the installation in aggressive environments as well as hydrogen sulfide, ammonia and sulfur dioxide

Properties

- Microbe-resistance - TPE
- Halogen-free
- Low adhesion
- High property of alternating bending strength
- High resistant to mechanical strain
- Long life durabilitys due to low friction-resistance
- High tensile strength, abrasion- and impact resistance at low temperature
- Use in multi-shift operations under extremely high continuous bending loads
- Abrasion resistance
- Tear resistance
- High stability
- Oil resistance
- Better chemical resistance
- UV and ozone resistance
- Higher economical solution
- Reduced Ø, results low weight of moving materials
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- Cleanroom qualification tested with analog type. Please note "cleanroom qualified" when ordering.
- screened analogue type: **MULTISPEED® 500-C-TPE**, confer page 179

Application

For permanent application in drag chains for long distances, high and low speed of movements. These cables are installed in dry, moist and wet rooms and in open air with free movement without tensile stress or forced movements. These robust and abrasion resistant special control cables are installed there, where the problems appear for the application in permanent stresses e. g. in energy drag chains, industry robotics, production lines, automatic control systems and permanent movable machinery parts for multi-shift operation. For applications which go beyond standard solutions we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24191	2 x 0,5	4,7	9,6	42,0	20
24192	3 G 0,5	5,0	14,4	49,0	20
24193	4 G 0,5	5,4	19,0	63,0	20
24194	5 G 0,5	5,8	24,0	70,0	20
24195	7 G 0,5	8,9	33,6	90,0	20
24196	12 G 0,5	9,7	58,0	134,0	20
24197	18 G 0,5	11,8	86,0	209,0	20
24198	25 G 0,5	13,9	120,0	270,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24199	2 x 0,75	5,0	14,4	47,0	19
24200	3 G 0,75	5,2	21,6	55,0	19
24201	4 G 0,75	6,0	29,0	70,0	19
24202	5 G 0,75	6,5	36,0	74,0	19
24203	7 G 0,75	10,3	50,0	95,0	19
24204	12 G 0,75	11,0	86,0	174,0	19
24205	18 G 0,75	13,9	130,0	261,0	19
24206	25 G 0,75	15,9	180,0	290,0	19
24207	36 G 0,75	19,6	260,0	419,0	19
24208	42 G 0,75	21,5	302,0	614,0	19

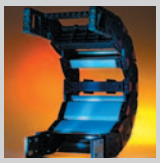
Continuation ▸

MULTISPEED® 500-TPE high flexible, safety against high bending in drag chain systems, low torsion, halogen-free, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24209	2 x 1	5,2	19,2	50,0	18
24210	3 G 1	5,8	29,0	60,0	18
24211	4 G 1	6,3	38,0	74,0	18
24212	5 G 1	6,9	48,0	86,0	18
24213	7 G 1	11,1	67,0	114,0	18
24214	12 G 1	12,0	115,0	210,0	18
24215	18 G 1	14,8	173,0	291,0	18
24216	25 G 1	17,2	240,0	380,0	18
24043	41 G 1	22,0	394,0	510,0	18
24217	3 G 1,5	6,6	43,0	84,0	16
24218	4 G 1,5	7,2	58,0	108,0	16
24219	5 G 1,5	7,8	72,0	126,0	16
24220	7 G 1,5	13,0	101,0	169,0	16
24221	12 G 1,5	14,2	173,0	299,0	16
24222	18 G 1,5	17,5	259,0	460,0	16
24223	25 G 1,5	20,1	360,0	640,0	16

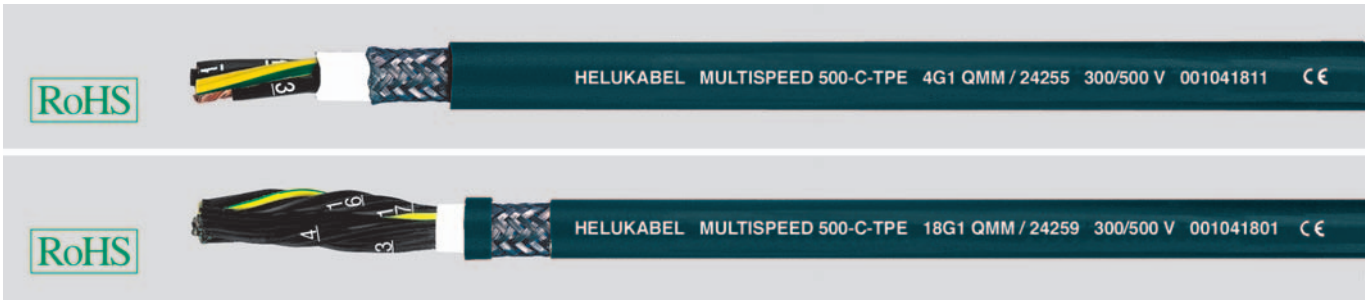
Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24224	4 G 2,5	8,8	96,0	179,0	14
24225	5 G 2,5	9,8	120,0	230,0	14
24226	7 G 2,5	16,1	168,0	294,0	14
24227	12 G 2,5	17,8	288,0	510,0	14
24228	18 G 2,5	21,8	432,0	722,0	14
24229	25 G 2,5	24,4	600,0	950,0	14
24230	4 G 4	10,3	154,0	197,0	12
24231	4 G 6	11,9	231,0	320,0	10
24232	5 G 6	13,4	289,0	394,0	10
24233	4 G 10	14,7	387,0	520,0	8
24234	4 G 16	20,0	517,0	784,0	6
24235	4 G 35	24,9	1344,0	1711,0	2

Dimensions and specifications may be changed without prior notice. (RC02)



Suitable Cable drag chains can be found in our Cable Accessories catalogue.

MULTISPEED® 500-C-TPE safety against high bending in drag chain systems, low torsion, halogen-free, EMC-preferred type, meter marking



C

Technical data

- Special drag chain cables for high mechanical stress adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51
- **Temperature range** flexing -30°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Insulation resistance** min. 100 MOhm x km
- **Minimum bending radius** flexing 5x cable Ø fixed installation 3x cable Ø
- **Coupling resistance** max. 250 Ohm x km
- **Radiation resistance** up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Tinned copper, fine wire conductors, Unilay with short pitch length
- Core insulation of special PP
- Core identification black cores with continuous white numbering
- GN-YE conductor, 3 cores and above
- Stranding: <7 cores: cores stranded in a layer with optimal lay-length around a filler as per construction ≥7 cores: cores stranded with optimal lay-length to bunch-construction with low torsion strength, optimal selected short lay-length around a filler
- Inner sheath of special-TPE , extruded as filler with pressure, natural colour
- Screen of Cu braid tinned, coverage 85% max., with optimal pitch
- Fleece separator, ensure good dismantling ability
- Outer sheath of special-TPE-O extruded as filler with pressure
- Sheath colour ocean blue (RAL 5020)
- with meter marking
- **TPE**: The selected tinned copper wire conductor permits the installation in aggressive environments as well as hydrogen sulfide, ammonia and sulfur dioxide

Properties

- Microbe-resistance - TPE
- High property of alternating bending strength
- Long life durabilitys due to low friction-resistance
- High tensile strength, abrasion- and impact resistance at low temperature
- Low adhesion, oil resistence
- Tear resistance
- Better chemical resistance
- UV and ozone resistance
- Reduced Ø, results low weight of moving materials
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- Please note the cleanroom qualification when ordering. For more information, see introduction
- unscreened analogue type: **MULTISPEED® 500-TPE**, confer page 177

Application

For permanent application in drag chains for long distances, high and low speed of movements. These cables are installed in dry, moist and wet rooms and in open air with free movement without tensile stress or forced movements. These robust and abrasion resistant special control cables are installed there, where the problems appear for the application in permanent stresses e. g. in energy drag chains. These cables are installed everywhere, where high requirements for the flexibility, abrasion, oxygen and chemical resistance are necessary.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24236	2 x 0,5	6,5	30,0	85,0	20
24237	3 G 0,5	6,7	36,0	99,0	20
24238	4 G 0,5	7,2	42,0	107,0	20
24239	5 G 0,5	7,6	48,0	140,0	20
24240	7 G 0,5	11,4	64,0	176,0	20
24241	10 G 0,5	11,4	80,0	204,0	20
24242	12 G 0,5	12,4	105,0	261,0	20
24243	18 G 0,5	14,7	137,0	360,0	20
24244	25 G 0,5	17,1	320,0	530,0	20
24245	2 x 0,75	7,0	40,0	97,0	19
24246	3 G 0,75	7,3	48,0	110,0	19
24247	4 G 0,75	7,8	55,0	139,0	19
24248	5 G 0,75	8,3	66,0	160,0	19
24249	7 G 0,75	12,7	85,0	219,0	19
24250	12 G 0,75	13,7	135,0	307,0	19
24251	18 G 0,75	17,1	190,0	490,0	19
24252	25 G 0,75	19,5	275,0	640,0	19
24253	2 x 1	7,3	50,0	115,0	18
24254	3 G 1	7,6	59,0	131,0	18

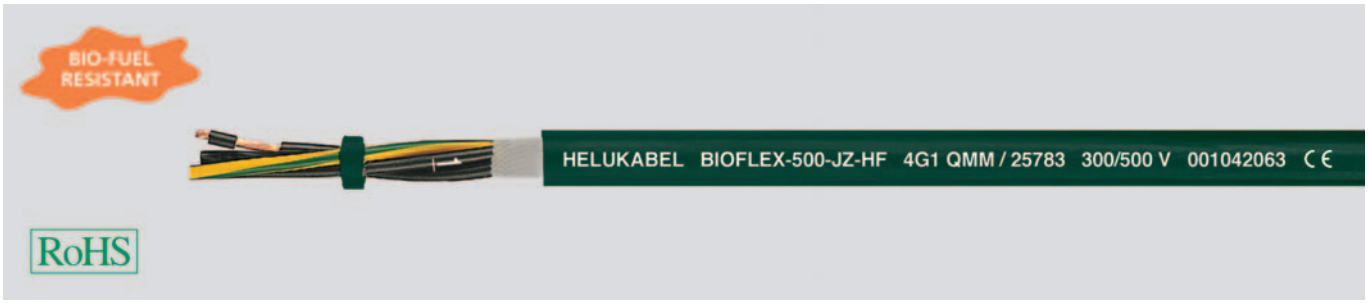
Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24255	4 G 1	8,1	70,0	160,0	18
24256	5 G 1	8,9	84,0	195,0	18
24257	7 G 1	13,6	106,0	247,0	18
24258	12 G 1	14,8	174,0	411,0	18
24259	18 G 1	18,4	240,0	547,0	18
24260	25 G 1	21,0	332,0	754,0	18
24261	3 G 1,5	8,4	75,0	160,0	16
24262	4 G 1,5	9,2	90,0	194,0	16
24263	5 G 1,5	10,2	108,0	220,0	16
24264	7 G 1,5	15,7	157,0	294,0	16
24265	12 G 1,5	17,4	240,0	490,0	16
24266	18 G 1,5	21,3	355,0	704,0	16
24267	25 G 1,5	24,3	448,0	930,0	16
24268	4 G 2,5	11,2	134,0	260,0	14
24269	5 G 2,5	12,2	175,0	330,0	14
24270	7 G 2,5	19,5	229,0	406,0	14
24271	12 G 2,5	21,7	390,0	990,0	14
24272	4 G 4	13,6	194,0	355,0	12

Dimensions and specifications may be changed without prior notice. (RC02)

BIO-OIL & MICROBE-RESISTANT CABLES
DRAG CHAIN CABLES



BIOFLEX-500®-JZ-HF Bio-fuel resistant, abrasion resistant, recyclable environment friendly, bio-oil resistant[1)], cable for drag chains, meter marking



Technical data

- Bio-oil resistant, abrasion resistant special high flexible control cable adapted to DIN VDE 0285-525-1/DIN EN 50525-1
- **Temperature range**
  flexing -20°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 4x cable Ø
- **Radiation resistance**
  up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper, extra fine wire conductors, bunch stranded to DIN VDE 0295 cl.6, BS 6360 cl.6 and IEC 60228 cl.6
- Core insulation of special polymer with improved sliding ability
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal selected lay-length
- Wrapping with fleece
- Outer sheath of special polymer compound
- Sheath colour dark green
- with meter marking

Properties

- **Resistant to**
  Bio-fuel (diesel and petrol), highly resistant to biologically decomposable oils, Oxygene, Ozone, Hydrolysis and Microbes
- Low adhesion

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type:
  BIOFLEX-500®-JZ-HF-C, confer page 182

Application

HELUKABEL® BIOFLEX-500®-JZ-HF is an extremely robust and high flexible control cable with high abrasion and tear resistant properties. Due to its high resistance to Bio-fuel, Bio-oil and coolant emulsions. It is especially suited for use in the machine, tool making and plant industries as well as in the steel industry for difficult and problem areas. Suitable in combination with cable trays in dry, moist and wet rooms and outdoor installation. The high flexibility of this cable type makes it quick and easy to install. Suitable for outdoor lying. [1)] For the critical applications we advise for consultation. For applications which go beyond standard solutions we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
25761	2 x 0,5	5,4	9,6	45,0	20
25762	3 G 0,5	5,9	14,4	56,0	20
25763	4 G 0,5	6,3	19,1	69,0	20
25764	5 G 0,5	6,9	24,0	92,0	20
25765	7 G 0,5	7,8	33,6	126,0	20
25766	10 G 0,5	9,6	48,0	158,0	20
25767	12 G 0,5	10,3	58,0	176,0	20
25768	14 G 0,5	10,3	67,0	212,0	20
25769	18 G 0,5	11,5	86,4	283,0	20
25770	25 G 0,5	13,6	120,0	330,0	20
25771	2 x 0,75	5,9	14,4	57,0	19
25772	3 G 0,75	6,2	21,6	72,0	19
25773	4 G 0,75	6,7	29,0	97,0	19
25774	5 G 0,75	7,3	36,0	119,0	19
25775	7 G 0,75	8,7	50,0	165,0	19
25776	10 G 0,75	10,5	72,0	214,0	19
25777	12 G 0,75	11,0	86,0	247,0	19
25778	14 G 0,75	11,4	101,0	283,0	19
25779	18 G 0,75	12,6	130,0	356,0	19
25780	25 G 0,75	15,2	180,0	698,0	19
25781	2 x 1	6,6	19,0	64,0	18
25782	3 G 1	7,0	29,0	83,0	18
25783	4 G 1	7,6	38,5	113,0	18
25784	5 G 1	8,2	48,0	137,0	18
25785	7 G 1	9,6	67,0	191,0	18
25786	10 G 1	11,6	96,0	251,0	18
25787	12 G 1	12,0	115,0	294,0	18
25788	14 G 1	13,0	134,0	337,0	18
25789	18 G 1	14,5	173,0	420,0	18
25790	25 G 1	17,6	240,0	600,0	18
25791	2 x 1,5	7,1	29,0	90,0	16
25792	3 G 1,5	7,5	43,0	117,0	16
25793	4 G 1,5	8,2	58,0	147,0	16
25794	5 G 1,5	9,0	72,0	181,0	16
25795	7 G 1,5	10,8	101,0	274,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
25796	10 G 1,5	13,4	144,0	344,0	16
25797	12 G 1,5	13,4	173,0	391,0	16
25798	14 G 1,5	14,3	202,0	457,0	16
25799	18 G 1,5	16,0	259,0	589,0	16
25800	25 G 1,5	19,5	360,0	801,0	16
25801	2 x 2,5	8,6	48,0	128,0	14
25802	3 G 2,5	9,3	72,0	160,0	14
25803	4 G 2,5	10,3	96,0	200,0	14
25804	5 G 2,5	11,5	120,0	268,0	14
25805	7 G 2,5	13,4	168,0	357,0	14
25806	12 G 2,5	17,0	288,0	571,0	14
25807	14 G 2,5	18,5	336,0	612,0	14
25808	18 G 2,5	20,0	432,0	800,0	14
25809	25 G 2,5	29,6	600,0	1100,0	14
25810	2 x 4	10,4	77,0	190,0	12
25811	3 G 4	11,2	115,0	250,0	12
25812	4 G 4	12,5	154,0	320,0	12
25813	5 G 4	13,8	192,0	400,0	12
25814	3 G 6	13,0	173,0	350,0	10
25815	4 G 6	14,7	230,0	500,0	10
25816	5 G 6	16,0	288,0	580,0	10
25817	3 G 10	17,4	288,0	660,0	8
25819	5 G 10	21,3	480,0	990,0	8
25820	4 G 16	23,2	614,0	1200,0	6
25821	4 G 25	34,0	960,0	1700,0	4
25822	4 G 35	37,0	1344,0	2300,0	2
25823	4 G 50	44,0	1920,0	2500,0	1
25824	4 G 70	53,0	2688,0	4600,0	2/0
25825	4 G 95	59,0	3648,0	6400,0	3/0

Dimensions and specifications may be changed without prior notice. (RC03)

BIOFLEX-500®-JZ-HF-C Biofuel-resistant, abrasion-resistant, recyclable, environmentally friendly, drag-chain cable, bio-oil resistant [1], meter marking



Technical data

- Bio-oil resistant, abrasion resistant special high flexible control cable adapted to DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range**
  flexing -20°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing 15x cable Ø
  fixed installation 4x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper, extra fine wire conductors, bunch stranded to DIN VDE 0295 cl.6, BS 6360 cl.6 and IEC 60228 cl.6
- Core insulation of special polymer with improved sliding ability
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal selected lay-length
- Wrapping with fleece
- Special inner sheath
- Copper braided screening approx. 85% coverage
- Wrapping with fleece guarantees a good dismantling
- Outer sheath of special polymer compound
- Sheath colour dark green
- with meter marking

Properties

- **Resistant to**
  Bio-fuel (diesel and petrol), highly resistant to biologically decomposable oils, Oxygene, Ozone, Hydrolysis and Microbes
- Low adhesion

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unsreened analogue type:
  BIOFLEX-500®-JZ-HF, confer page 181

Application

HELUKABEL® BIOFLEX-500®-JZ-HF-C is an extremely robust and high flexible control cable with high abrasion and tear resistant properties. Due to its high resistance to Bio-fuel, Bio-oil and coolant emulsions. It is especially suited for use in the machine, tool making and plant industries as well as in the steel industry for difficult and problem areas. Suitable in combination with cable trays in dry, moist and wet rooms and outdoor installation. The high flexibility of this cable type makes it quick and easy to install. Suitable for outdoor lying. These screened cables are particularly suitable for the interference-free transmission in instrumentation and control engineering applications (electromagnetic compatibillity). For the critical applications we advise for consultation. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
25826	2 x 0,5	7,5	47,0	90,0	20
25827	3 G 0,5	7,8	52,0	104,0	20
25828	4 G 0,5	8,2	55,0	123,0	20
25829	5 G 0,5	9,9	65,0	131,0	20
25830	7 G 0,5	10,0	84,0	172,0	20
25831	10 G 0,5	11,3	115,0	230,0	20
25832	12 G 0,5	12,5	117,0	250,0	20
25833	14 G 0,5	13,2	148,0	280,0	20
25834	18 G 0,5	14,5	157,0	321,0	20
25835	25 G 0,5	16,8	227,0	445,0	20
25836	2 x 0,75	8,3	53,0	106,0	19
25837	3 G 0,75	8,5	62,0	120,0	19
25838	4 G 0,75	9,5	77,0	150,0	19
25839	5 G 0,75	10,8	86,0	158,0	19
25840	7 G 0,75	11,5	107,0	205,0	19
25841	10 G 0,75	13,1	148,0	290,0	19
25842	12 G 0,75	14,0	156,0	304,0	19
25843	14 G 0,75	15,3	214,0	380,0	19
25844	18 G 0,75	17,3	235,0	418,0	19
25845	25 G 0,75	18,7	313,0	578,0	19
25846	2 x 1	10,0	60,0	116,0	18
25847	3 G 1	10,2	70,0	135,0	18
25848	4 G 1	11,0	86,0	178,0	18

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
25849	5 G 1	11,8	99,0	188,0	18
25850	7 G 1	12,7	125,0	235,0	18
25851	10 G 1	14,6	178,0	340,0	18
25852	12 G 1	15,5	186,0	358,0	18
25853	14 G 1	16,7	250,0	415,0	18
25854	18 G 1	18,0	280,0	500,0	18
25855	25 G 1	21,0	378,0	678,0	18
25856	2 x 1,5	10,5	79,0	141,0	16
25857	3 G 1,5	10,8	94,0	164,0	16
25858	4 G 1,5	11,5	113,0	220,0	16
25859	5 G 1,5	12,5	129,0	233,0	16
25860	7 G 1,5	13,2	170,0	323,0	16
25861	8 G 1,5	14,4	226,0	369,0	16
25862	10 G 1,5	14,9	258,0	461,0	16
25863	12 G 1,5	16,2	280,0	481,0	16
25864	14 G 1,5	18,1	340,0	561,0	16
25865	18 G 1,5	20,3	395,0	672,0	16
25866	21 G 1,5	21,7	461,0	780,0	16
25867	25 G 1,5	23,1	533,0	927,0	16
25868	2 x 2,5	11,8	96,0	185,0	14
25869	3 G 2,5	13,0	150,0	278,0	14
25870	4 G 2,5	14,0	174,0	370,0	14
25871	5 G 2,5	15,1	200,0	412,0	14

Continuation ▸

BIOFLEX-500®-JZ-HF-C Biofuel-resistant, abrasion-resistant, recyclable, environmentally friendly, drag-chain cable, bio-oil resistant [1], meter marking



Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
25872	7 G 2,5	16,2	240,0	470,0	14
25873	12 G 2,5	21,0	410,0	738,0	14
25874	14 G 2,5	23,4	480,0	870,0	14
25875	18 G 2,5	25,7	620,0	1100,0	14
25876	25 G 2,5	31,0	821,0	1512,0	14
25877	2 x 4	13,4	135,0	235,0	12
25878	3 G 4	15,8	178,0	350,0	12
25879	4 G 4	17,3	222,0	460,0	12
25880	5 G 4	19,0	328,0	550,0	12

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
25881	3 G 6	19,5	250,0	525,0	10
25882	4 G 6	21,0	305,0	700,0	10
25883	5 G 6	23,0	441,0	800,0	10
25884	3 G 10	18,8	370,0	855,0	8
25885	4 G 10	25,0	485,0	1140,0	8
25886	5 G 10	26,4	610,0	1310,0	8
25887	4 G 16	28,0	840,0	1391,0	6

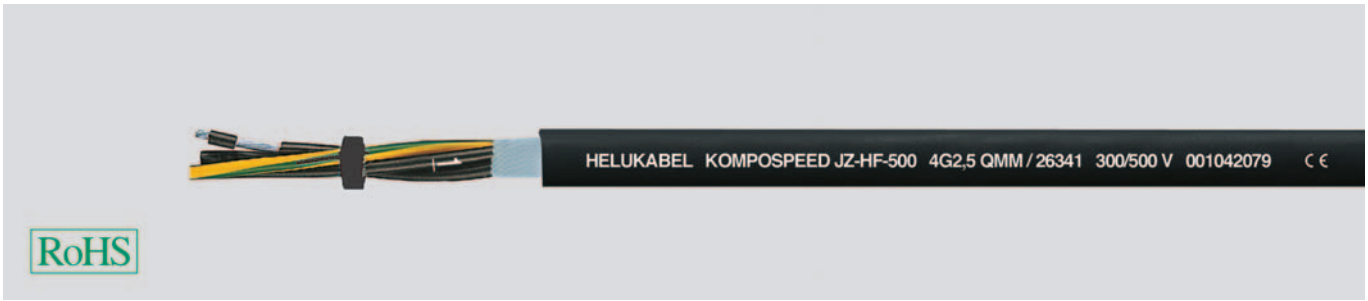
Dimensions and specifications may be changed without prior notice. (RC03)



Suitable Cable drag chains can be found in our Cable Accessories catalogue.

C

KOMPOSPEED® JZ-HF-500 halogen-free, microbes resistant, cable for drag chains, meter marking



Technical data

- Microbes resistant, halogen-free special control cable adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51
- **Temperature range** flexing -30°C to +90°C fixed installation -40°C to +100°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Isulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø
- **Radiation resistance** up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Tinned copper, extra fine wire conductors, bunch stranded to DIN VDE 0295 cl.6, BS 6360 cl.6 and IEC 60228 cl.6
- Core insulation of special thermoplastic polymer with improved sliding ability
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal selected lay-length
- Wrapping with fleece over the stranded layers
- Outer sheath of special thermoplastic polymer
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- **Resistant to**
  UV-radiation
  Oxygene
  Ozone
  Microbes
  Hydrofluoric acid
  Hydrochloric acid
  and diluted sulfuric acid
- Low adhesion
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

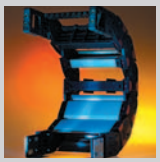
HELUKABEL® KOMPOSPEED® JZ-HF-500 control cable is significant due to its resistance against microbes. This cable is specially installed in rubbish, sewage-treatment plants, composting works, animal stalls and greenhouses. Suitable for installation for flexible use for medium mechanical, stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms as well as outside. The high flexibility of this cable type makes it quick and easy to install. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
26307	2 x 0,5	5,0	9,6	42,0	20
26308	3 G 0,5	5,3	14,4	51,0	20
26309	4 G 0,5	5,7	19,1	62,0	20
26310	5 G 0,5	6,4	24,0	88,0	20
26311	7 G 0,5	7,5	33,6	119,0	20
26312	12 G 0,5	9,2	58,0	166,0	20
26313	18 G 0,5	11,1	86,4	273,0	20
26314	25 G 0,5	13,4	120,0	330,0	20
26315	2 x 0,75	5,4	14,4	53,0	19
26316	3 G 0,75	5,7	21,6	70,0	19
26317	4 G 0,75	6,4	29,0	92,0	19
26318	5 G 0,75	7,0	36,0	116,0	19
26319	7 G 0,75	8,3	50,0	159,0	19
26320	12 G 0,75	10,2	86,0	241,0	19
26321	18 G 0,75	12,1	130,0	346,0	19
26322	25 G 0,75	14,9	180,0	681,0	19
26323	2 x 1	5,7	19,2	60,0	18
26324	3 G 1	6,0	29,0	79,0	18
26325	4 G 1	6,8	38,5	107,0	18
26326	5 G 1	7,4	48,0	127,0	18
26327	7 G 1	8,8	67,0	181,0	18
26328	12 G 1	10,8	115,0	284,0	18
26329	18 G 1	13,0	173,0	397,0	18
26330	25 G 1	15,8	240,0	491,0	18

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
26331	2 x 1,5	6,4	29,0	88,0	16
26332	3 G 1,5	6,8	43,0	104,0	16
26333	4 G 1,5	7,4	58,0	137,0	16
26334	5 G 1,5	8,3	72,0	171,0	16
26335	7 G 1,5	9,9	101,0	264,0	16
26336	12 G 1,5	12,1	173,0	381,0	16
26337	18 G 1,5	14,5	259,0	579,0	16
26338	25 G 1,5	17,8	360,0	789,0	16
26339	2 x 2,5	7,7	48,0	118,0	14
26340	3 G 2,5	8,4	72,0	172,0	14
26341	4 G 2,5	9,1	96,0	197,0	14
26342	5 G 2,5	10,2	120,0	258,0	14
26343	7 G 2,5	12,2	168,0	347,0	14
26344	12 G 2,5	15,2	288,0	561,0	14
26345	18 G 2,5	18,1	432,0	791,0	14
26346	25 G 2,5	22,5	600,0	1090,0	14

Dimensions and specifications may be changed without prior notice. (RC03)



Suitable Cable drag chains can be found in our Cable Accessories catalogue.

KOMPOSPEED® JZ-HF-500-C halogen-free, microbes resistant,

Cu-screened, EMC-preferred type, cable for drag chains, meter marking



Technical data

- Screened microbes resistant, halogen-free special control cable in adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51
- **Temperature range** flexing -30°C to +90°C fixed installation -40°C to +100°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** core/core 4000 V core/screen 2000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø
- **Coupling resistance** max. 250 Ohm/km
- **Radiation resistance** up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Tinned copper, extra fine wire conductors, bunch stranded to DIN VDE 0295 cl.6, BS 6360 cl.6 and IEC 60228 cl.6
- Core insulation of Special thermoplastic polymer with improved sliding ability
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal selected lay-length
- Wrapping with fleece
- Inner-sheath with special thermoplastic polymer
- Screen of tinned copper braid, coverage approx. 85%
- Wrapping of fleece guarantees a good dismantling
- Outer sheath of special thermoplastic polymer
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- **Resistant to** UV-radiation Oxygene Ozone Microbes Hydrofluoric acid Hydrochloric acid and diluted sulfuric acid
- Low adhesion
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

HELUKABEL® KOMPOSPEED® JZ-HF-500-C control cable is significant due to its resistance against microbes. This cable is specially installed in rubbish, sewage-treatment plants, composting works, animal stalls and greenhouses. The inner sheaths of those cables raise the mechanical stress. For medium mechanical, stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms as well as outside. This screened cable is ideal for use in data signal transmission free from interferences for measurement and control engineering technology. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
26347	2 x 0,5	6,9	47,0	90,0	20
26348	3 G 0,5	7,2	52,0	101,0	20
26349	4 G 0,5	7,8	55,0	119,0	20
26350	5 G 0,5	8,3	65,0	121,0	20
26351	6 G 0,5	9,1	70,0	144,0	20
26352	7 G 0,5	9,6	84,0	169,0	20
26353	12 G 0,5	11,3	117,0	250,0	20
26354	18 G 0,5	13,5	157,0	321,0	20
26355	25 G 0,5	15,8	227,0	445,0	20
26356	2 x 0,75	7,3	53,0	106,0	19
26357	3 G 0,75	7,8	62,0	116,0	19
26358	4 G 0,75	8,3	77,0	140,0	19
26359	5 G 0,75	9,1	86,0	148,0	19
26360	7 G 0,75	10,2	107,0	198,0	19
26361	12 G 0,75	12,6	156,0	294,0	19
26362	18 G 0,75	14,5	235,0	391,0	19
26363	25 G 0,75	17,3	313,0	562,0	19
26364	2 x 1	7,8	60,0	110,0	18
26365	3 G 1	8,1	70,0	131,0	18
26366	4 G 1	8,7	86,0	171,0	18

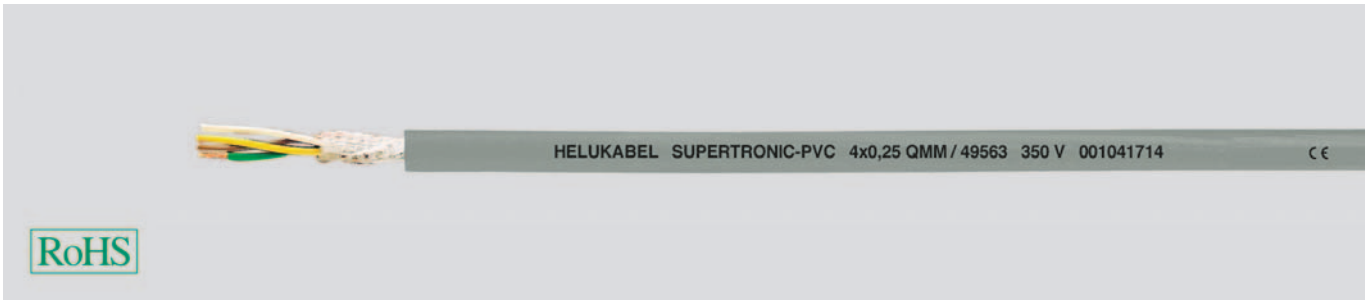
Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
26367	5 G 1	9,5	99,0	179,0	18
26368	7 G 1	10,9	125,0	229,0	18
26369	12 G 1	13,1	186,0	348,0	18
26370	18 G 1	15,4	280,0	498,0	18
26371	25 G 1	18,6	378,0	669,0	18
26372	2 x 1,5	8,3	79,0	141,0	16
26373	3 G 1,5	8,7	94,0	162,0	16
26374	4 G 1,5	9,5	113,0	210,0	16
26375	5 G 1,5	10,2	129,0	233,0	16
26376	7 G 1,5	12,2	170,0	317,0	16
26377	12 G 1,5	14,5	280,0	471,0	16
26378	18 G 1,5	16,9	395,0	664,0	16
26379	25 G 1,5	20,6	533,0	914,0	16
26380	2 x 2,5	9,8	96,0	182,0	14
26381	3 G 2,5	10,5	150,0	264,0	14
26382	4 G 2,5	11,2	174,0	350,0	14
26383	5 G 2,5	12,6	200,0	394,0	14
26384	7 G 2,5	14,8	240,0	450,0	14
26385	12 G 2,5	18,0	410,0	712,0	14

Dimensions and specifications may be changed without prior notice. (RC03)

DATA DRAG CHAIN CABLES



SUPERTRONIC®-PVC special cable for drag chains, meter marking



Technical data

- Special PVC cable for drag chains, adapted to DIN VDE 0285-525-1 / DIN EN 50525-1
- Very high flexible due to special construction
- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -40°C to +70°C
- **Nominal voltage** 350 V
- **Test voltage** 1500 V
- **Breakdown voltage** min. 3000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing 5x cable Ø
  fixed installation 3x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, extra fine wire conductors, to DIN VDE 0295 cl.6
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Cores colour coded to DIN 47100, see Technical Informations
- Cores stranded in layers with optimal selected lay-length
- Core wrapping with textile tape
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Colour grey (RAL 7001)
- with meter marking

Properties

- Extensively oil resistant
  Chemical Resistance - see table Technical Informations
- Adhesion-low
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

The ideal cable for use in cable trays. This high flexible cable is ideal for all areas requiring a high and fast flexing cable including the machine industries, robotics and all areas of highly mobile machine parts. The long working life offers a secure performance as well as economy. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
49550	2 x 0,14	3,5	2,8	23,0	26
49551	3 x 0,14	3,7	4,1	25,0	26
49552	4 x 0,14	3,9	5,6	30,0	26
49553	5 x 0,14	4,2	7,0	35,0	26
49554	7 x 0,14	4,8	9,8	49,0	26
49555	10 x 0,14	6,2	14,0	64,0	26
49556	12 x 0,14	6,3	16,8	71,0	26
49557	14 x 0,14	6,6	19,6	77,0	26
49558	18 x 0,14	7,2	25,2	90,0	26
49559	24 x 0,14	8,5	33,6	119,0	26
49560	25 x 0,14	8,6	35,0	124,0	26
49561	2 x 0,25	4,2	5,0	28,0	24
49562	3 x 0,25	4,4	7,5	33,0	24
49563	4 x 0,25	4,7	10,0	39,0	24
49564	5 x 0,25	5,6	12,5	50,0	24
49565	7 x 0,25	6,1	17,5	63,0	24
49566	10 x 0,25	7,2	25,0	83,0	24
49567	12 x 0,25	7,5	30,1	95,0	24
49568	14 x 0,25	7,9	35,0	107,0	24
49569	18 x 0,25	8,9	45,0	130,0	24
49570	24 x 0,25	10,4	60,0	170,0	24
49571	25 x 0,25	10,5	62,5	177,0	24
49572	2 x 0,34	4,6	6,8	33,0	22
49573	3 x 0,34	4,8	10,2	42,0	22
49574	4 x 0,34	5,2	13,6	56,0	22
49575	5 x 0,34	6,1	17,0	64,0	22
49576	7 x 0,34	7,0	23,8	84,0	22
49577	10 x 0,34	8,4	34,0	116,0	22
49578	12 x 0,34	8,5	40,8	133,0	22
49579	14 x 0,34	9,0	47,6	150,0	22
49580	18 x 0,34	10,1	61,2	182,0	22
49581	24 x 0,34	12,0	81,5	240,0	22
49582	25 x 0,34	12,2	85,0	250,0	22

Dimensions and specifications may be changed without prior notice. (RC03)



Suitable Cable drag chains can be found in our Cable Accessories catalogue.

SUPERTRONIC®-C-PVC special cable for drag chains, EMC-preferred type, meter marking



Technical data

- Special PVC cable for drag chains, adapted to DIN VDE 0285-525-1 / DIN EN 50525-1
- Very high flexible due to special construction
- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -40°C to +70°C
- **Nominal voltage** 350 V
- **Test voltage** 1500 V
- **Breakdown voltage** min. 3000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing 7,5x cable Ø
  fixed installation 4x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)
- **Coupling resistance**
  max. 250 Ohm/km

Cable structure

- Bare copper, extra fine wire conductors, to DIN VDE 0295 cl.6
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Cores colour coded to DIN 47100, see Technical Informations
- Cores stranded in layers with optimal selected lay-length
- Core wrapping with textile tape
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Extensively oil resistant
  Chemical Resistance - see table Technical Informations
- Adhesion-low
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

The ideal cable for use in cable trays. This high flexible cable is ideal for all areas requiring a high and fast flexing cable including the machine industries, robotics and all areas of highly mobile machine parts. The long working life offers a secure performance as well as economy. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
49620	2 x 0,14	4,0	11,2	33,0	26
49621	3 x 0,14	4,2	14,1	36,0	26
49622	4 x 0,14	4,4	15,5	41,0	26
49623	5 x 0,14	4,7	18,3	46,0	26
49624	7 x 0,14	5,3	27,6	70,0	26
49625	10 x 0,14	6,7	39,3	88,0	26
49626	12 x 0,14	6,8	41,1	97,0	26
49627	14 x 0,14	7,1	45,3	105,0	26
49628	18 x 0,14	7,7	54,1	122,0	26
49629	24 x 0,14	9,0	66,3	156,0	26
49630	25 x 0,14	9,1	68,4	162,0	26
49631	2 x 0,25	4,7	14,9	39,0	24
49632	3 x 0,25	4,9	18,8	45,0	24
49633	4 x 0,25	5,2	21,3	52,0	24
49634	5 x 0,25	5,6	31,0	70,0	24
49635	7 x 0,25	6,7	39,6	88,0	24
49636	10 x 0,25	7,8	53,9	114,0	24
49637	12 x 0,25	8,1	59,1	128,0	24

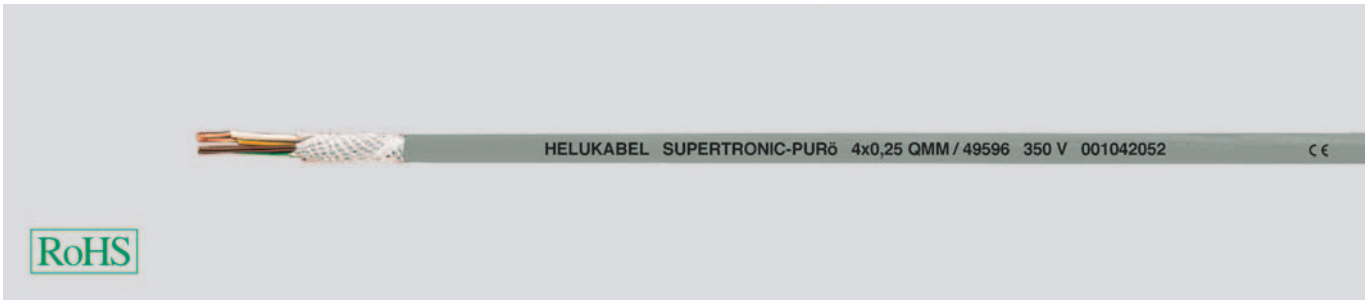
Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
49638	14 x 0,25	8,5	64,2	140,0	24
49639	18 x 0,25	9,5	78,4	166,0	24
49640	24 x 0,25	11,0	89,9	210,0	24
49641	25 x 0,25	11,1	101,0	220,0	24
49642	2 x 0,34	5,2	16,1	46,0	22
49643	3 x 0,34	5,4	28,7	62,0	22
49644	4 x 0,34	5,8	35,7	80,0	22
49645	5 x 0,34	6,7	39,1	88,0	22
49646	7 x 0,34	7,6	52,7	116,0	22
49647	10 x 0,34	9,0	67,4	156,0	22
49648	12 x 0,34	9,1	76,4	167,0	22
49649	14 x 0,34	9,6	85,3	195,0	22
49650	18 x 0,34	10,7	99,7	225,0	22
49651	24 x 0,34	12,6	147,1	312,0	22
49652	25 x 0,34	12,8	155,0	325,0	22

Dimensions and specifications may be changed without prior notice. (RC03)



Suitable Cable drag chains can be found in our Cable Accessories catalogue.

SUPERTRONIC®-PURö special cable for drag chains, meter marking



Technical data

- Special PUR drag chain cables adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51
- Very high flexible due to special construction
- **Temperature range** flexing -5°C to +70°C fixed installation -40°C to +70°C
- **Nominal voltage** 350 V
- **Test voltage** 1500 V
- **Breakdown voltage** min. 3000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 5x cable Ø fixed installation 3x cable Ø
- **Radiation resistance** up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper, extra fine wire conductors, to DIN VDE 0295 cl.6, col. 4 and 5 and IEC 60228 cl.6
- **Oil resistant** PVC core insulation TI2, in adapted to DIN VDE 0207-363-3 / DIN EN 50363-3, for better sliding abilities
- Cores are stranded in layer with short lay-length
- Cores colour coded to DIN 47100
- Core wrapping with textile tape
- Outer sheath of special **full-polyurethane** TMPU to DIN VDE 0207-363-10-2/ DIN EN 50363-10-2
- Sheath colour grey (RAL 7001), surface mat
- with meter marking

Properties

- **Features** High flexibility at low temperature, high abrasion resistance, break and cut-resistant, tear resistant
- **Resistant to** UV-radiation, Oxygen, Ozone, Hydrolyse, Oil.
- **Conditional resistant to** Microbes, Hydraulic liquidity, Alkalis, Lye.
- The PUR outer sheath is extremely robust with high tear, abrasion and oil-resistance.
- Adhesion-low
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Perfect for use with cable trays. This highly flexible PUR control cable is ideal for use wherever frequent high flexing motion is required, e. g. in robotics or all moving parts. The long working life of this cable makes it both efficient and economic. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
49583	2 x 0,14	3,5	2,8	22,0	26
49584	3 x 0,14	3,7	4,1	24,0	26
49585	4 x 0,14	3,9	5,6	29,0	26
49586	5 x 0,14	4,2	7,0	33,0	26
49587	7 x 0,14	4,9	9,8	47,0	26
49588	10 x 0,14	6,2	14,0	59,0	26
49589	12 x 0,14	6,4	16,8	67,0	26
49590	14 x 0,14	6,6	19,6	74,0	26
49591	18 x 0,14	7,3	25,2	86,0	26
49592	24 x 0,14	8,5	33,6	115,0	26
49593	25 x 0,14	8,6	35,0	120,0	26
49594	2 x 0,25	4,1	5,0	27,0	24
49595	3 x 0,25	4,3	7,5	33,0	24
49596	4 x 0,25	4,8	10,0	40,0	24
49597	5 x 0,25	5,2	12,5	48,0	24
49598	7 x 0,25	6,2	17,5	60,0	24
49599	10 x 0,25	7,4	25,0	79,0	24

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
49600	12 x 0,25	7,6	30,1	91,0	24
49601	14 x 0,25	7,9	35,0	102,0	24
49602	18 x 0,25	8,9	45,0	125,0	24
49603	24 x 0,25	10,0	60,0	163,0	24
49604	25 x 0,25	10,6	62,5	170,0	24
49605	2 x 0,34	4,5	6,8	32,0	22
49606	3 x 0,34	4,9	10,2	40,0	22
49607	4 x 0,34	5,3	13,6	55,0	22
49608	5 x 0,34	5,8	17,0	60,0	22
49609	7 x 0,34	6,9	23,8	80,0	22
49610	10 x 0,34	8,4	34,0	112,0	22
49611	12 x 0,34	8,6	40,8	127,0	22
49612	14 x 0,34	9,0	47,6	142,0	22
49613	18 x 0,34	10,1	61,2	175,0	22
49614	24 x 0,34	12,0	81,5	229,0	22
49615	25 x 0,34	12,2	85,0	238,0	22

Dimensions and specifications may be changed without prior notice. (RC03)



Suitable Cable drag chains can be found in our Cable Accessories catalogue.

SUPERTRONIC®-C-PURö special cable for drag chains, halogen-free,

EMC-preferred type, meter marking



Technical data

- Special PUR drag chain cables, screened, adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51
- **Temperature range**
  flexing -30°C to +70°C
  fixed installation -40°C to +70°C
- **Nominal voltage**
  0,14 mm² 350 V
  0,25 and 0,34 mm² 500 V
- **Test voltage**
  0,14 mm² 800 V
  0,25 and 0,34 mm² 1200 V
- **Capacitance** core/core <80 nF/km
- **Minimum bending radius**
  flexing 7,5x cable Ø
  fixed installation 4x cable Ø
- **Radiation resistance**
  up to 100x10

Cable structure

- Bare copper conductors extra fine wire stranded to DIN VDE 0295 cl.6, col. 4 and 5, IEC 60228 cl.6
- Core insulation of PP
- Cores are stranded in layer with short lay-length
- Cores colour coded to DIN 47100
- Core wrapping with textile tape
- Tinned copper braided screen, approx. 85% coverage.
- Outer sheath of special **full-polyurethane** TMPU to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2
- Sheath colour grey (RAL 7001), surface mat
- with meter marking

Properties

- **Features**
  High flexibility at low temperature, high abrasion resistance, break and cut-resistant, tear resistant
- **Resistant to**
  UV-radiation, Oxygen, Ozone, Hydrolyse, Oil
- **Conditional resistant to**
  Microbes, Hydraulic liquidity, Alkalis, Lye
- The PUR outer sheath is extremely robust with high tear, abrasion and oil-resistance
- Adhesion-low
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Used for installation in dry, moist and wet environments as well as for outdoors, for free movement without forced motion and for flexible routing without forced motion, for proven use as drag-chain cables. Suitable as a highly flexible control cable for fast hoisting and bending stresses in machinery and tooling construction, in robotics engineering and for continuously moving machinery parts. The long working life of this cable makes it both efficient and economic. The copper braided screening offers effective protection from both internal and external interference. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
49653	2 x 0,14	4,1	11,2	32,0	26
49654	3 x 0,14	4,3	14,1	35,0	26
49655	4 x 0,14	4,5	15,5	40,0	26
49656	5 x 0,14	4,8	18,3	45,0	26
49657	7 x 0,14	5,7	27,8	66,0	26
49658	10 x 0,14	6,7	39,3	86,0	26
49659	12 x 0,14	6,9	42,1	94,0	26
49660	14 x 0,14	7,1	45,3	102,0	26
49661	18 x 0,14	7,8	54,1	118,0	26
49662	24 x 0,14	9,0	66,3	149,0	26
49663	25 x 0,14	9,1	68,4	156,0	26
49664	2 x 0,25	4,6	14,9	38,0	24
49665	3 x 0,25	4,8	18,8	44,0	24
49666	4 x 0,25	5,3	21,3	51,0	24
49667	5 x 0,25	5,7	31,0	68,0	24
49668	7 x 0,25	6,7	39,6	82,0	24
49669	10 x 0,25	8,2	53,9	110,0	24

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
49670	12 x 0,25	8,4	59,1	124,0	24
49671	14 x 0,25	8,7	64,2	135,0	24
49672	18 x 0,25	9,5	78,4	160,0	24
49673	24 x 0,25	11,0	89,9	202,0	24
49674	25 x 0,25	11,1	101,0	211,0	24
49675	2 x 0,34	5,0	18,1	45,0	22
49676	3 x 0,34	5,4	28,7	60,0	22
49677	4 x 0,34	6,2	35,7	76,0	22
49678	5 x 0,34	6,7	39,1	82,0	22
49679	7 x 0,34	7,6	52,7	110,0	22
49680	10 x 0,34	9,2	67,4	148,0	22
49681	12 x 0,34	9,4	76,4	166,0	22
49682	14 x 0,34	10,0	85,5	185,0	22
49683	18 x 0,34	10,9	99,7	216,0	22
49684	24 x 0,34	12,6	147,1	300,0	22
49685	25 x 0,34	12,8	155,0	313,0	22

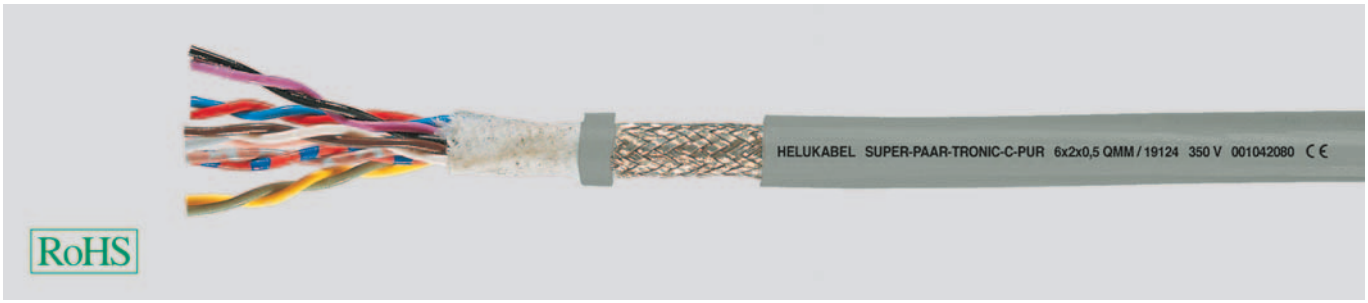
Dimensions and specifications may be changed without prior notice. (RC03)



Suitable Cable drag chains can be found in our Cable Accessories catalogue.

SUPER-PAAR-TRONIC-C-PUR® cable for drag chains,

halogen-free, EMC-preferred type, meter marking



C

Technical data

- Special drag chain cable, twisted in pairs, adapted to DIN VDE 0812
- **Temperature range**
  flexing -30°C to +70°C
  fixed installation -40°C to +70°C
- **Nominal voltage** 350 V
- **Test voltage** 1500 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Mutual capacitance**
  approx. 135 nF/km
- **Minimum bending radius**
  flexing at 0,25 mm²
  7,5 x cable Ø
  fixed installation at 0,25 mm²
  4 x cable Ø
  flexing at 0,5 - 1 mm²
  10 x cable Ø
  fixed installation at 0,5 - 1 mm²
  5 x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper conductors, extra fine wire stranded to DIN VDE 0295 cl.6, col. 4, BS 6360 cl.6 and IEC 60228 cl.6
- Core insulation of PP
- Core identification to DIN 47100
- Cores twisted in pairs, the pairs torsion-free stranded in layers
- Special fleece over outer layer
- Tinned copper screened braiding, approx. 85% coverage
- Outer sheath of **full-polyurethane** compound type TMPU to DIN VDE 0207-363-10-2/ DN EN 50363-10-2
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Very good oil resistant
- Resistant to weather, ozone, hydrolysis- and UV-radiation
- Chemical resistant to solvents, acids, lyes and hydraulic liquidity
- Guaranteed permanent application in multi-shift operation under extreme high bending stress
- High resistant to mechanical strain
- High property of alternating bending strength
- Long life durabilities through low friction-resistance by using the PP-core insulation where the core are stranded in layers
- High tensile strength-, abrasion- and impact resistant at low temperature
- Adhesion-low
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

These pair stranded and overall screened special cables for drag chains offer the operational possibilities where the outer electrical influences at high frequence cause interference of impulse transmission, are applied for permanent flexible operations in machineries, machine tools, robot technics, for movable automated machinery parts and multi-shift-operation as a transmission-cable. These high flexible data cables are developed according to the newest state of technology improvement and with its sliding abilities by using the PP-core insulation and adhesion-low and cut-resistant PUR-outer sheath, guaranteed an optimum life durabilities and highly economic. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
19101	1 x 2 x 0,25	4,7	14,0	28,0	24
19102	2 x 2 x 0,25	6,5	32,0	61,0	24
19103	3 x 2 x 0,25	6,6	38,4	73,0	24
19104	4 x 2 x 0,25	7,1	43,2	90,0	24
19105	5 x 2 x 0,25	8,2	51,5	105,0	24
19106	6 x 2 x 0,25	8,5	71,8	133,0	24
19107	8 x 2 x 0,25	9,2	74,4	156,0	24
19108	10 x 2 x 0,25	10,7	90,0	188,0	24
19109	14 x 2 x 0,25	11,5	111,2	220,0	24
19119	1 x 2 x 0,5	5,5	22,0	47,0	20
19120	2 x 2 x 0,5	7,9	50,0	100,0	20
19121	3 x 2 x 0,5	8,2	71,8	131,0	20
19122	4 x 2 x 0,5	8,9	74,4	149,0	20
19123	5 x 2 x 0,5	10,3	84,5	169,0	20
19124	6 x 2 x 0,5	10,7	99,6	196,0	20
19125	8 x 2 x 0,5	11,8	144,3	285,0	20
19126	10 x 2 x 0,5	13,5	176,0	344,0	20
19127	14 x 2 x 0,5	14,8	215,4	401,0	20

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
19128	1 x 2 x 0,75	6,3	34,0	61,0	19
19129	2 x 2 x 0,75	9,0	60,0	113,0	19
19130	3 x 2 x 0,75	9,1	85,7	158,0	19
19131	4 x 2 x 0,75	9,9	93,6	173,0	19
19132	5 x 2 x 0,75	11,5	113,0	203,0	19
19133	6 x 2 x 0,75	11,9	130,4	231,0	19
19134	8 x 2 x 0,75	13,1	192,2	343,0	19
19135	10 x 2 x 0,75	15,0	258,0	467,0	19
19136	14 x 2 x 0,75	16,4	316,6	546,0	19
19137	1 x 2 x 1	6,9	42,0	71,0	18
19138	2 x 2 x 1	10,0	73,0	130,0	18
19139	3 x 2 x 1	10,2	93,6	170,0	18
19140	4 x 2 x 1	11,3	117,8	204,0	18
19141	5 x 2 x 1	13,1	139,0	238,0	18

Dimensions and specifications may be changed without prior notice. (RC03)

SENSORFLEX®-H sensor actuator cables, halogen-free, high flexible drag chain cable, PUR





Technical data

- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -40°C to +80°C
- **Operating voltage**
  up to 0,25 mm² 350 V
  from 0,34 mm² 500 V
- **A.c. test voltage**, 50 Hz
  up to 0,25 mm² 1200 V
  from 0,34 mm² 2000 V
- **Minimum bending radius**
  SENSORFLEX®-H (Li12Y11Y)
  5x cable Ø
  SENSORFLEX®-H (Li9Y11Y)
  7,5x cable Ø

Cable structure

SENSORFLEX®-H (Li12Y11Y)

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insulation of TPE
- Core identification see table below
- Outer sheath of PUR
- Sheath colour see table below

SENSORFLEX®-H (Li9Y11Y)

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insualtion of PP
- Core identification see table below
- Outer sheath of PUR
- Sheath colour see table below

Properties

- low adhesion, extremely abrasion resistant, resistant to hydrolysis and microbial attack
- Highly flexible drag chain cable

Application

For decentralised installation and control technology. These cables are used in connector systems for sensors and actuators. In combination with injected circular connectors and installed actuator-sensor boxes, they constitute an important connecting element between the periphery and the PLC in production systems. The assembled cables offer attractive opportunities for reducing costs, not only in the field of automation technology, but also in the entire manufacturing industry. While previously it was necessary to carry out time-consuming wiring of switchgear cabinets and machines, now field bus technology has made it possible to move the periphery interfaces from the switchgear cabinets to the machines and systems. Moving the I/O points to the system periphery enables significant reductions in installation costs.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

SENSORFLEX®-H (Li12Y11Y) sensor actuator cables, halogen-free, high flexible drag chain cable, PUR

Part no. black	grey	Cable structure No.cores x cross-sec. mm²	Sheath material	Core colours	Fine wire	High flex **	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
76283	76299	2 x 0,25	PUR	BN, BU		X	4,4	4,8	22,0	24
76284	76300	3 x 0,25	PUR	BN, BU, BK		X	4,4	7,2	22,0	24
76285	76301	4 x 0,25	PUR	BN, BU, BK, WH		X	4,7	9,6	26,0	24
76286	76302	5 x 0,25	PUR	BN, BU, BK, WH, GY		X	4,8	12,0	30,0	24
76287	76303	2 x 0,34	PUR	BN, BU		X	4,9	6,5	30,0	22
76288	76304	3 x 0,34	PUR	BN, BU, BK		X	4,9	9,8	30,0	22
76289	76305	4 x 0,34	PUR	BN, BU, BK, WH		X	5,2	13,1	43,0	22
76290	76306	5 x 0,34	PUR	BN, BU, BK, WH, GY		X	5,9	16,4	54,0	22
78265	78266	5 G 0,34	PUR	BN, BU, BK, WH, GN-YE		X	5,9	16,4	54,0	22
76291	76307	2 x 0,5	PUR	BN, BU		X	5,0	9,6	40,0	20
78267	78268	3 G 0,5	PUR	BK with number, GN-YE		X	5,7	14,4	43,0	20
76292	76308	3 x 0,5	PUR	BN, BU, BK		X	5,0	14,4	40,0	20
76293	76309	4 x 0,5	PUR	BN, BU, BK, WH		X	5,5	19,2	47,0	20
76294	76310	5 x 0,5	PUR	BN, BU, BK, WH, GY		X	6,0	24,0	55,0	20

Continuation ▸

SENSORFLEX®-H sensor actuator cables, halogen-free, high flexible drag chain cable, PUR



SENSORFLEX®-H (Li12Y11Y) sensor actuator cables, halogen-free, high flexible drag chain cable, PUR

Part no. black	grey	Cable structure No.cores x cross-sec. mm²	Sheath material	Core colours	Fine wire	High flex **	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
76295	76311	2 x 0,75	PUR	BN, BU		X	5,7	14,4	47,0	18
78269	78270	3 G 0,75	PUR	BN, BU, GN-YE		X	5,9	21,6	54,0	18
76296	76312	3 x 0,75	PUR	BN, BU, BK		X	5,9	21,6	54,0	18
78271	78272	4 G 0,75	PUR	BN, BU, BK, GN-YE		X	6,2	28,8	67,0	18
76297	76313	4 x 0,75	PUR	BN, BU, BK, WH		X	6,0	28,8	66,0	18
78273	78274	5 G 0,75	PUR	BK with number, GN-YE		X	7,0	36,0	80,0	18
76298	76314	5 x 0,75	PUR	BN, BU, BK, WH, GY		X	7,0	36,0	80,0	18

SENSORFLEX®-H (Li9Y11Y) sensor actuator cables, halogen-free, high flexible drag chain cable, PUR

Part no.	Sheath colour	Cable structure No.cores x cross-sec. mm²	Sheath material	Core colours	Fine wire	High flex **	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
75801	GY RAL 7001	3 x 0,25	PUR	BN, BU, BK		X	4,5	7,2	22,0	24
77468	GY RAL 7001	4 x 0,25	PUR	BN, BU, BK, WH		X	4,7	9,6	26,0	24
76705	GY RAL 7001	8 x 0,25	PUR	DIN 47100		X	6,0	19,2	49,0	24
77427	GY RAL 7001	4 x 0,34	PUR	BN, BU, BK, WH		X	4,9	13,1	43,0	22
77428	GY RAL 7001	3 G 0,75	PUR	BK with number, GN-YE		X	6,2	21,6	54,0	18
78275	GY RAL 7001	3 x 0,75	PUR	BK with number, GN-YE		X	6,2	21,6	54,0	18
77429	GY RAL 7001	4 G 0,75	PUR	BK with number, GN-YE		X	6,2	28,8	66,0	18

Dimensions and specifications may be changed without prior notice.

TOPFLEX®611-PUR

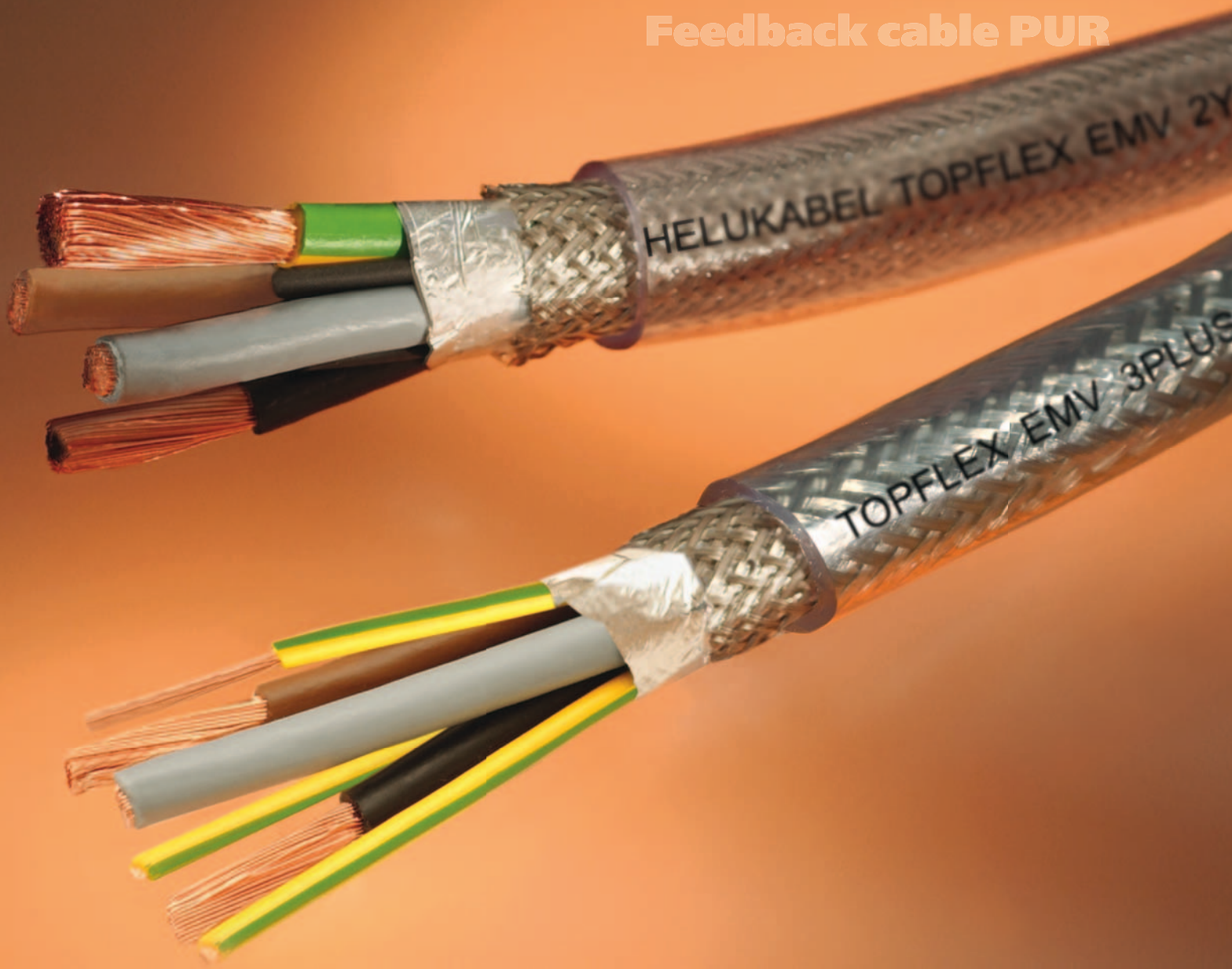
TOPFLEX® MOTOR 109

TOPFLEX® EMV-UV-2YSLCYK-J

TOPSERV® 110

TOPFLEX® 600-PVC

Feedback cable PUR



CW&A Edition 27 (published 01.04.2015)

MOTOR, SERVO, & FEEDBACK CABLES

	Temperature (°C) - flexing	Temperature (°C) - fixed	Nominal voltage U_0/U	Bending radius - flexing x Ø	Bending radius - fixed x Ø	Halogen-free	UV-resistant	Outdoor use	Drag chain	Colored cores/VDE 0293	Screened/shielded	HAR/VDE REG no./VDE	UL/CSA	Page
Motor, servo, and feedback cables														
TOPFLEX® 600-PVC	-15 to +80	-40 to +80	0.6/1 kV	7.5x	4x									197
TOPFLEX® 600-C-PVC	-15 to +80	-40 to +80	0.6/1 kV	7.5x	4x						X			198
TOPFLEX® 611-PUR	-30 to +80	-40 to +80	0.6/1 kV	7.5x	4x	X	X	X	X					199
TOPFLEX® 611-C-PUR	-30 to +80	-40 to +80	0.6/1 kV	10x	5x	X	X	X	X		X			200
TOPSERV® 110 / 120	-30 to +80	-40 to +80	0.6/1 kV	7.5x	4x	X	X	X	X		X			201
Feedback cable	-5 to +70	-30 to +80	350	10x						X	X			202
Feedback cable PUR	-30 to +80	-40 to +80	250	10x	5x		X	X	X	X	X			203
TOPFLEX® - EMV-2YSLCYK-J	+5 to +70	-40 to +70	0.6/1 kV	20x	10x					X	X			204
TOPFLEX® - EMV-3 PLUS 2YSLCY-J	+5 to +70	-40 to +70	0.6/1 kV	20x	10x					X	X			205
TOPFLEX® - EMV-UV-2YSLCYK-J	-5 to +70	-40 to +70	0.6/1 kV	20x	10x		X	X		X	X			206
TOPFLEX® - EMV-UV-3 PLUS 2YSLCYK-J	-5 to +70	-40 to +70	0.6/1 kV	20x	10x		X	X		X	X			207
TOPFLEX® - EMV-UV-2XSLCYK-J	-5 to +90	-40 to +90	0.6/1 kV	20x	10x		X	X		X	X			209
TOPFLEX® - EMV-UV-3 PLUS 2XSLCYK-J	-5 to +90	-40 to +90	0.6/1 kV	20x	10x		X	X		X	X			211
TOPFLEX® - EMV-UV-2XSLCH-J	-5 to +90	-40 to +90	0.6/1 kV	20x	10x	X				X	X			213
TOPFLEX® - EMV-UV-3 PLUS 2XSLCH-J	-5 to +90	-40 to +90	0.6/1 kV	20x	10x	X				X	X			215
TOPFLEX® MOTOR 109	-5 to +70	-40 to +80	0.6/1 kV	20x	10x	X	X	X		X	X			217

The selection table is intended as an initial orientation.
Please see the relevant page of the catalogue for detailed information on the product properties.

SELECTION TABLE - DRAG CHAIN CABLES

	Max. movement distance in m (10 m up to 25-cores)	Min. bending radius - flexing (D=outerØ)	Max. speed (m/s)	Max. acceleration (m/s²)	Max. cycles	Material	Nominal voltage U_0/U / Operating voltage	Temperature (°C) - flexing	Approvals	Page	UL/CSA equivalent
PUR motor & servo cables for drag chains											
TOPFLEX® 611-PUR	30	7.5 x D	4	50	11 Mio	PP/PUR	600/1000V	-30° to +80°		**199**	**431**
TOPFLEX® 611 C-PUR	30	10 x D	4	50	11 Mio	PP/CU/PUR	600/1000V	-30° to +80°		**200**	**437**
TOPSERV® 110	30	7.5 x D	3	10	11 Mio	PP/CU/PUR	600/1000V	-30° to +80°		**201**	**468**
TOPSERV® 120	30	7.5 x D	3	10	11 Mio	PP/CU/PUR	600/1000V	-30° to +80°		**201**	**468**
PUR feedback cables for drag chain cables											
Tachofeedback-cable-C-PUR	30	10 x D	4	50	9 Mio	PP/CU/PUR	450V	-30° to +80°		**203**	**470**
Incremental encoder cable C-PUR	30	10 x D	4	50	9 Mio	PP/CU/PUR	250V	-30° to +80°		**203**	**470**
TOPFLEX®-PUR	30	10 x D	4	50	9 Mio	PP/CU/PUR	350V	-30° to +80°		**203**	**470**

A cycle is a double lift: a representative sample has been tested and measurot in our Test Workshop. The cycle count is only valid when appropriatel and professionally installed (see the installation manual: cable installation in drag chains, see pages 1036 and 1037).

The selection table is intended as an initial orientation.
Please see the relevant page of the catalogue for detailed information on the product properties and the selection tables cables in drag chains, see pages 1030 and 1031.

TOPFLEX® 600-PVC motor power supply cable 0,6/1kV, meter marking



D

Technical data

- Special PVC-insulated sheathed cable adapted to DIN VDE 0293, 0295
- **Temperature range**
  flexing -15°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 600/1000 V
- **Test voltage** 4000 V
- **Breakdown voltage**
  min. 8000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing 7,5x cable Ø
  fixed installation 4x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, IEC 60228 cl.5
- Core insulation of PVC
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor
- Cores stranded in layers with optimal lay-length
- Outer sheath of special PVC
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- PVC outer sheath: extensively oil resistant Chemical Resistance - see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- For use in drag chains, we recommend our versions TOPFLEX® 611-PUR and TOPFLEX® 611-C-PUR
- screened analogue type: **TOPFLEX® 600-C-PVC**, confer page 198

Application

As supply cable for electronically controlled servo-motors and connections to DNC motors. The cable is suitable for permanent and flexible installation for medium mechanical loads in dry, damp and wet environments.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22860	4 G 1,5	9,6	58,0	130,0	16
22861	4 G 2,5	11,2	95,0	220,0	14
22862	4 G 4	13,0	154,0	330,0	12
22863	4 G 6	14,5	231,0	445,0	10
22864	4 G 10	18,2	384,0	660,0	8
22865	4 G 16	22,3	615,0	1060,0	6

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22866	4 G 25	27,4	960,0	1805,0	4
22867	4 G 35	30,0	1344,0	2060,0	2
22868	4 G 50	35,8	1920,0	2900,0	1
22869	4 G 70	40,9	2640,0	4050,0	2/0
22854	4 G 95	46,2	3648,0	5540,0	3/0
22855	4 G 120	51,6	4608,0	7000,0	4/0

Dimensions and specifications may be changed without prior notice. (RD01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HELUTOP® HT-MS-EP4

TOPFLEX® 600-C-PVC motor power supply cable 0,6/1kV, EMC prefered type, meter marking



Technical data

- Special PVC-insulated sheathed cable adapted to DIN VDE 0293, 0295
- **Temperature range** flexing -15°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 600/1000 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Coupling resistance** max. 250 Ohm/km
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, IEC 60228 cl.5
- Core insulation of PVC
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor
- Cores stranded in layers with optimal lay-length
- Inner sheath of
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC
- Colour grey (RAL 7001)
- with meter marking

Properties

- PVC outer sheath largely oil resistant, for Chemical Resistance - see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- For use in drag chains, we recommend our versions TOPFLEX® 611-PUR and TOPFLEX® 611-C-PUR
- unscreened analogue type: **TOPFLEX® 600-PVC**, confer page 197

Application

As supply cable for electronically controlled servo-motors and connections to DNC motors. The cable is suitable for permanent and flexible installation for medium mechanical loads in dry, damp and wet environments.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22960	4 G 1,5	11,8	99,0	250,0	16
22961	4 G 2,5	13,8	169,0	360,0	14
22962	4 G 4	15,7	234,0	530,0	12
22963	4 G 6	17,3	316,0	620,0	10
22964	4 G 10	21,5	549,0	1050,0	8
22965	4 G 16	26,1	807,0	1465,0	6

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22966	4 G 25	31,7	1169,0	1920,0	4
22967	4 G 35	34,5	1680,0	2515,0	2
22856	4 G 50	40,7	2370,0	3315,0	1
22857	4 G 70	46,0	3257,0	4600,0	2/0
22858	4 G 95	51,3	4060,0	6060,0	3/0
22859	4 G 120	56,4	5231,0	7315,0	4/0

Dimensions and specifications may be changed without prior notice. (RD01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HELUTOP® HT-MS-EP4

TOPFLEX® 611-PUR motor power supply cable 0,6/1kV, cable for drag chain, halogen-free, meter marking



D

Technical data

- Special-PUR drag chain cable adapted to DIN VDE 0293, 0295, 0250, DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range** flexing -30°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 600/1000 V
- **Test voltage** 4000 V
- **Insulation resistance** min. 20 MOhm x km
- **Min. bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insualtion of PP
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor
- Cores stranded together with optimal lay-length and stabilising filler
- Fleece wrapping facilitates sliding
- Outer sheath of PUR
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Adhesion-free, extremely abrasion resistant, halogen-free, resistant to hydrolysis and microbial attack
- resistant to UV-radiation, oxygen and ozone
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor
- For extreme applications extending beyond standard solutions we recommend that you request our questionnaire, which has been especially designed for energy supply systems.
- Please observe applicable installation regulations for use in energy supply chains.
- screened analogue type: **TOPFLEX® 611-C-PUR**, confer page 200

Application

As optimized supply cable for the supply to motors, in particular to DNC motors, servo-motors. These cables are specially designed for use in power drag chains, handling equipment, robotics, tooling machinery, processing and manufacturing machinery. Optimised insulation materials ensure resistance to oils (including mineral oils), greases, coolants, hydraulic fluids as well as many alkalis and solvents. Favourable outer diameters, reduced weights and enhanced torsion characteristics assure the use in multi-layer operations with extremely high continuous bending loads. Suitable for outdoor use.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22870	4 G 1,5	8,0	58,0	125,0	16
22871	4 G 2,5	10,8	95,0	215,0	14
22872	4 G 4	12,5	154,0	310,0	12
22873	4 G 6	14,8	231,0	470,0	10
22874	4 G 10	18,8	384,0	760,0	8
22875	4 G 16	22,8	615,0	1250,0	6

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22876	4 G 25	26,9	960,0	1510,0	4
22877	4 G 35	30,7	1344,0	2100,0	2
22978	4 G 50	36,5	1920,0	2950,0	1
22979	4 G 70	41,6	2640,0	4090,0	2/0
22980	4 G 95	48,2	3648,0	5580,0	3/0
22981	4 G 120	51,6	4608,0	7040,0	4/0

Dimensions and specifications may be changed without prior notice. (RD01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HELUTOP® HT-MS-EP4

TOPFLEX® 611-C-PUR Motor power supply cable for drag chains

0,6/1kV, EMC preferred type, halogen-free, meter marking



Technical data

- Special-PUR drag chain cable adapted to DIN VDE 0293, 0295, 0250, DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range** flexing -30°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 600/1000 V
- **Test voltage** 4000 V
- **Coupling resistance** max. 250 Ohm/km
- **Insulation resistance** min. 20 MOhm x km
- **Min. bending radius** flexing 10x cable Ø fixed installation 5x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insualtion PP
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor
- Cores stranded together with optimal lay-length and stabilising filler
- Fleece wrapping facilitates sliding
- Inner sheath of TPE
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of PUR
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Adhesion-free, extremely abrasion resistant, halogen-free, resistant to hydrolysis and microbial attack
- resistant to UV-radiation, oxygen and ozone
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor
- For extreme applications extending beyond standard solutions we recommend that you request our questionnaire, which has been especially designed for energy supply systems.
- Please observe applicable installation regulations for use in energy supply chains.
- unscreened analogue type: **TOPFLEX® 611-PUR**, confer page 199

Application

As optimized supply cable for the supply to motors, in particular to DNC motors, servo-motors. These cables are specially designed for use in power drag chains, handling equipment, robotics, tooling machinery, processing and manufacturing machinery. Optimised insulation materials ensure resistance to oils (including mineral oils), greases, coolants, hydraulic fluids as well as many alkalis and solvents. Favourable outer diameters, reduced weights and enhanced torsion characteristics assure the use in multi-layer operations with extremely high continuous bending loads. Suitable for outdoor use.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22970	4 G 1,5	11,3	99,0	220,0	16
22971	4 G 2,5	13,5	169,0	340,0	14
22972	4 G 4	16,0	234,0	490,0	12
22973	4 G 6	17,8	316,0	680,0	10
22974	4 G 10	22,2	549,0	1035,0	8
22975	4 G 16	27,2	807,0	1460,0	6

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22976	4 G 25	31,2	1169,0	1990,0	4
22977	4 G 35	35,2	1680,0	2535,0	2
22982	4 G 50	42,5	2370,0	3360,0	1
22983	4 G 70	48,8	3257,0	4650,0	2/0
22984	4 G 95	54,6	4060,0	6090,0	3/0
22985	4 G 120	58,5	5231,0	7380,0	4/0

Dimensions and specifications may be changed without prior notice. (RD01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HELUTOP® HT-MS-EP4

TOPSERV® 110 / 120 PUR servo cable with 1 or 2 signal pairs 0,6/1kV, high flexible, cable for drag chain, EMC preferred type



D

Technical data

- Spezial-PUR drag chain cable adapted to DIN VDE 0295, 0250, DIN VDE 0285-525-1-1/DIN EN 50525-1
- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage**
  power supply cores U_0/U 600/1000 V
  control cores U_0/U 300/500 V
- **Test voltage**
  power supply cores 4000 V
  control cores 1000 V
- **Power rating**
  to DIN VDE 0298 part 4
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing 7,5x cable Ø
  fixed installation 4x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire
- Core insulation of halogen-free PP
- Core identification
  power supply cores
  core 1: black with imprint U/L1/C/L+
  core 2: black with imprint V/L2
  core 3: black with imprint W/L3/D/L-
  control cores
  TOPSERV® 110
  core 1 black with imprint BR1
  core 2 black with imprint BR2
  TOPSERV® 120
  pair 1: black with number no. 5+6
  pair 2: black with number no. 7+8
- GN-YE conductor
- Screening of the control cores in pairs, tinned drain wire and tinned Cu braid
- Control cores stranded in pairs and laid up in layers together with the power supply cores
- Foil wrapping
- Overall screening of tinned cu braid, visible coverage min. 80%
- Fleece wrapping
- Outer sheath of PUR
- Sheath colour petrol (RAL 5018)

Properties

- low capacitance by using PP as core insulation
- PUR-outer sheath low adhesion, resistant to hydrolysis and microbial attack, halogen-free
- These highly flexible cables are fitted with an additional overall screen to assure EMC compatibility, i.e. the protection against electromagnetic interference
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- For extreme applications extending beyond standard solutions we recommend that you request our questionnaire, which has been especially designed for energy supply systems.
- Please observe applicable installation regulations for use in energy supply chains.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- Servo-cable and Feedback-cable **with UL-approval** to e.g. Siemens, Bosch Rexroth, Lenze etc. can be found in chapter N ...

Application

The combination of feeder cores with the control cores for the braking function and the thermal protection in these cables is ideal. Precision servomotors, as used today in many areas of highly-automated manufacturing processes, call for high-quality, reliable and long-lasting cables. These requirements are met to a high degree as is the electromagnetic compatibillity (EMC). These cables can also be used as drag chain cables. Manufacturing is based on specifications from renowned manufacturers of servo-actuators and servo-controls as well as in accordance with diverse VDE standards. Application for system SIMODRIVE.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

TOPSERV® 110 (1 pair screened and overall screening)

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
71491	(4 G 1,5 + (2 x 1,0))	11,5	139,0	211,0	16
71493	(4 G 2,5 + (2 x 1,0))	13,6	188,0	273,0	14
71705	(4 G 4 + (2 x 1,0))	14,6	260,0	352,0	12
71706	(4 G 6 + (2 x 1,0))	16,0	360,0	500,0	10
71707	(4 G 10 + (2 x 1,0))	20,2	590,0	753,0	8
71708	(4 G 16 + (2 x 1,0))	23,8	845,0	1061,0	6
71709	(4 G 25 + (2 x 1,0))	27,0	1320,0	1499,0	4
71710	(4 G 35 + (2 x 1,0))	31,9	1840,0	1992,0	2
71711	(4 G 50 + (2 x 1,0))	36,7	2530,0	2880,0	1

Dimensions and specifications may be changed without prior notice. (RD01)

TOPSERV® 120 (2 pairs individually screened and overall screening)

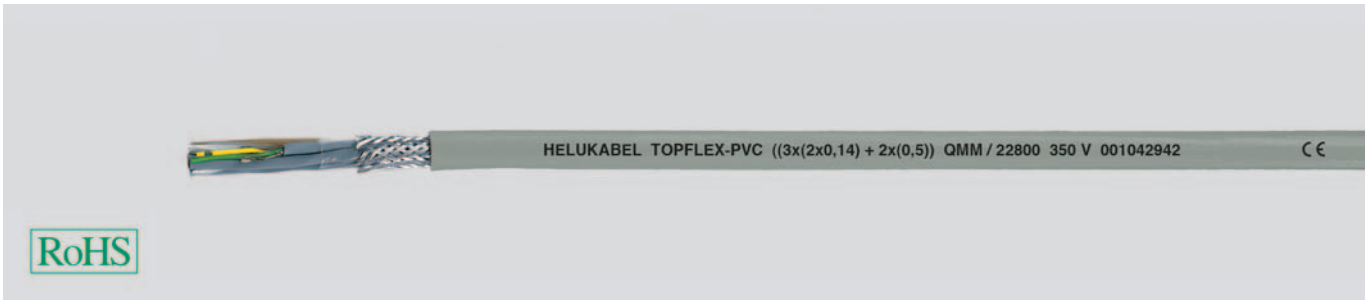
Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
71990	(4 G 1,5 + 2 x (2 x 1,0))	12,6	186,0	242,0	16
71991	(4 G 2,5 + 2 x (2 x 1,0))	15,0	231,0	316,0	14
71992	(4 G 4 + 2 x (2 x 1,0))	16,0	308,0	415,0	12
71993	(4 G 6 + 2 x (2 x 1,0))	18,2	420,0	574,0	10
71994	(4 G 10 + 2 x (2 x 1,0))	22,8	647,0	805,0	8
71995	(4 G 16 + 2 x (2 x 1,0))	25,0	918,0	1122,0	6
71996	(4 G 25 + 2 x (2 x 1,0))	27,7	1400,0	1584,0	4
72106	(4 G 35 + 2 x (2 x 1,0))	32,0	1882,0	2185,0	2
71997	(4 G 50 + 2 x (2 x 1,0))	37,0	2574,0	2977,0	1



Suitable accessories can be found in Chapter X.

• Cable Gland - HELUTOP® HT-MS-EP4

Feedback cables PVC EMC-preferred type, meter marking



Technical data

- Special core and sheath compound of PVC
- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -30°C to +80°C
- **Nominal voltage** 350 V
- **Test voltage**
  core/core 2000 V
  core/screen 1000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  10x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km

Cable structure

- Bare copper, fine and/or ultra-fine wire conductors acc. to DIN VDE 0295 cl.5 and/or IEC 60228
- Core insulation of PVC
- Part No. 22800 Cu-screen of single pairs and PVC sheath
- Core identification see table below
- Single cores or pairs stranded in layer with optimal lay-length
- Core wrapping with film
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC
- Colour grey (RAL 7001)
- with meter marking

Properties

- Largely oil-resistant, for oil-/ chemical Resistance see Technical Information table
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

These feedback cables are used in machinery and control construction as well as in plant engineering as these enable an excellent transmission of data and signals. Additional cores for the power supply to individual components are available.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

TOPFLEX®-PVC

Part no.	No.cores x cross-sec. mm²	Core marking 0,14 mm²	Core marking 0,5 mm²	Sheath colour	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22800	(3 x (2 x 0,14) + (2 x 0,5))	GN+YE, GY+PK, BU+RD	WH, BN	Grey	8,5	78,0	112,0	26
22806	(4 x 2 x 0,14 + 4 x 0,5)	RD+BK, BN+GN, YE+VT, GN+PK	WH, BU, WH/GN, BN/GN	Grey	8,5	68,0	111,0	26
22845	(10 x 0,14 + 2 x 0,5)	DIN 47100	WH, BN	Grey	8,0	46,2	70,0	26
22846	(10 x 0,14 + 4 x 0,5)	DIN 47100	WH, BN, GN, YE	Grey	8,2	56,3	86,0	26

Incremental feedback-cable

Part no.	No.cores x cross-sec. mm²	Core marking 0,25 mm²	Core marking 1 mm²	Sheath colour	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22825	(4 x 2 x 0,25 + 2 x 1,0)	BN+GN, RD+BK, VT+BU, GY+PK	WH, BN	Grey	8,8	66,0	110,0	24

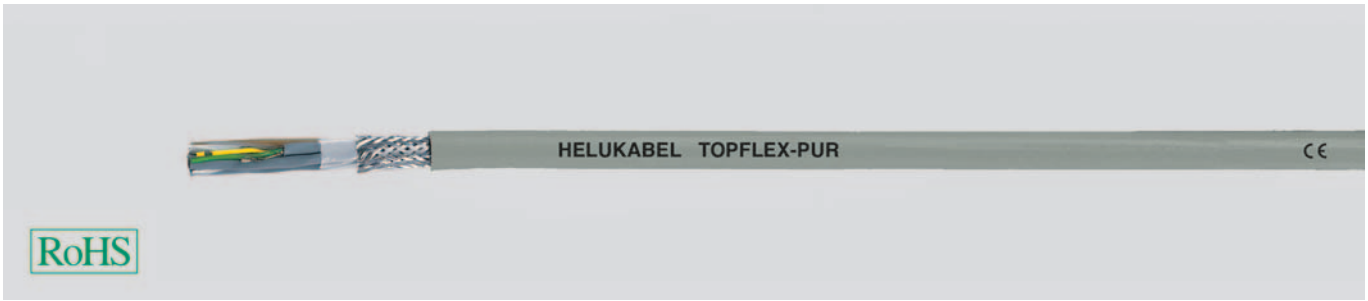
Dimensions and specifications may be changed without prior notice. (RD01)



Suitable accessories can be found in Chapter X.
• Cable Gland - HELUTOP® HT-MS-EP4

Feedback cables PUR high flexible feedback cables for drag chain,

EMC-preferred type, meter marking



Technical data

- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage**
  TOPFLEX®-PUR 350 V
  Tachofeedback-cable-C-PUR 450 V
  Incremental Feedback-cable-C-PUR 250 V
- **Test voltage**
  core/core 2000 V
  core/screen 1000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insualtion of PP
- Part No. 22847 Cu-screen of single pairs or single cores and PETP (polyethylene terephthalate) sheath
- Core identification see table below
- Single cores or pairs stranded in layer with optimal lay-length (pairs part no. 22818)
- Drain wire
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PUR, matt
- Sheath colour see table below

Properties

- Special PUR outer sheath low adhesion
- **Resistant to**
  Oils and fats
  Acids and alkalis
  Hydraulic fluids
  Oxygen and ozone
  UV-radiation
  Hydrolysis
  Microbial attack
  Water and weathering effects
- The high abrasion resistance and notch resistance meet the highest requirements
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- For extreme applications extending beyond standard solutions we recommend that you request our questionnaire, which has been especially designed for energy supply systems.
- Please observe the assembly instruction for use in energy supply chains.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Both cables fulfil different tasks for the control of servo-motors. The tachofeedback-cable or response cable serves the regulation of the motor speed and measurement of the actual values. The incremental feedback-cable or position response cable transfers the control signals for positioning and engineering characteristics and is used as the flexible connecting cable for tachometer, brakes and pulse transmitter in case of high mechanical stress in plant, machine and control engineering in dry, moist and wet rooms. Particularly suitable for continuous operating in drag chains, industrial robotics and handling equipment as these cables enable an excellent transmission of data and signals. Additional cores for the power supply to individual components are available. The braided screen guarantees reliable signal transmission. Optimum functionality, long service life and an excellent cost-performance ratio are given for the mentioned applications by the special compounds used for insulation and sheath.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

TOPFLEX®-PUR

Part no.	No.cores x cross-sec. mm²	Core marking 0,14 mm²	Core marking 0,5 mm²	Sheath colour	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22847	(3 x (2 x 0,14) + (2 x 0,5))	DIN 47100	WH, BN	Grey	8,3	78,0	103,0	26
22852	4 x 2 x 0,14 + 4 x 0,5	BN+GN, YE+VT, GY+PK, RD+BU	WH, BN, WH/GN, BN/GN	Grey	8,4	73,0	105,0	26
22849	(10 x 0,14 + 2 x 0,5)	DIN 47100	WH, BN	Grey	7,2	39,0	83,0	26

Tachofeedback-cable

Part no.	No.cores x cross-sec. mm²	Core marking 0,5 mm²	Core marking -	Sheath colour	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22823	(9 x 0,5)	WH, BN, GN, YE, GY, PK, BU, RD, BK	-	Orange	8,8	80,8	128,0	20

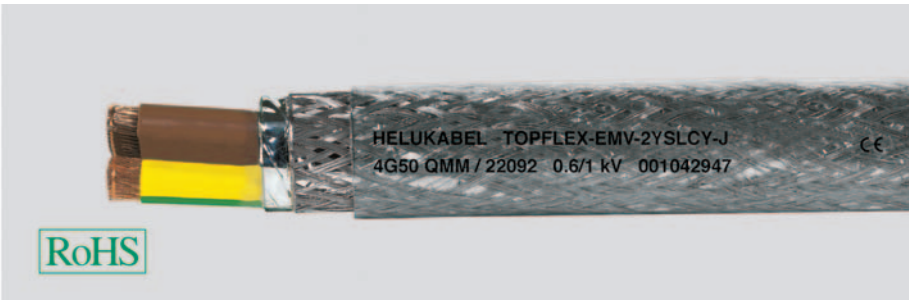
Incremental feedback cable

Part no.	No.cores x cross-sec. mm²	Core marking 0,14 mm²	Core marking 1 mm²	Sheath colour	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22818	(4 x 2 x 0,25 + 2 x 1,0)	RD+BK, BN+GN, YE+VT, GN+PK	WH, BN	Orange	8,8	65,2	105,0	24

Dimensions and specifications may be changed without prior notice. (RD01)

TOPFLEX® -EMV-2YSLCY-J for power supply connections to frequency converters, double screened, 0,6/1kV, meter marking





Technical data

- Special motor power supply cable for frequency converters adapted to DIN VDE 0250
- **Temperature range**
  flexing +5°C to +70°C
  fixed installation -40°C to +70°C
- **Nominal voltage** U_0/U 600/1000 V
- Max. **operating voltage**
  A.C. and 3-phase 700/1200 V
  DC operation 900/1800 V
- **Test voltage** 4000 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Coupling resistance**
  acc. to different cross-sections
  max. 250 Ohm/km
- **Minimum bending radius**
  free-movement for outer Ø:
  up to 12 mm: 10x cable Ø
  > 12-20 mm: 15x cable Ø
  > 20 mm: 20x cable Ø
  fixed installation for outer Ø:
  up to 12 mm: 5x cable Ø
  > 12-20 mm: 7,5x cable Ø
  > 20 mm: 10x cable Ø
- **Radiation-resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of polyethylene (PE)
- Core identification BN, BK, GY
- GN-YE conductor
- Cores stranded in concentric layers
- 1. Screen with special aluminium film
  2. Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC
- Sheath colour transparent
- with meter marking

Note

- G = with GN-YE conductor
- **) The current carrying capacity for permanent operation at ambient temperature of 30°C. For deviating ambient temperatures the conversion factors should be used and for further see the indication in DIN VDE 0298 part 4.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Properties

- Low mutual capacitance
- Low coupling resistance for high electromagnetic compatibility
- This screened motor supply cable with low mutual capacitance of the single cores because of the special PE core insulation and low screen capacitance enable a low-loss transmission of the power compared to PVC-sheathed connecting cables
- Due to the optimal screening an interference-free operation of frequency converters is obtained
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Meets EMC requirements acc. to EN 55011 and DIN VDE 0875 part 11

Application

This TOPFLEX®-EMV-2YSLCY-J motor power supply cable for the frequency converters assures electromagnetic compatibillity in plants and buildings, facilities with units and operating equipment where the fields of electromagnetic interference might cause adverse effects on the surroundings. As a supply and connecting cable for medium mechanical stresses in fixed installations and forced movements in dry, moist and wet environments, not however for outdoor applications. Used in the automotive and food industries, environmental technology, packaging industry, machine tools. Handling equipment, for SIMOVERT drives, they are particularly suitable for use with industrial pumps, ventilators, conveyor belts and air-conditioning installations and similar applications. Installation in hazardous areas.

EMC = Electromagnetic compatibillity

The screen must be connected at both ends and ensure large-area contact over the entire cable circumference for compliance with the functional interference requirements of EN 55011.

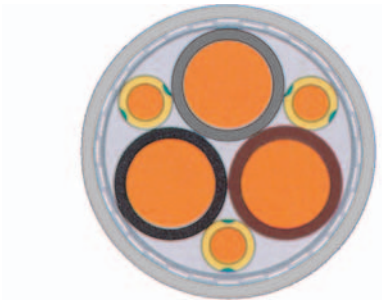
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Mutual capacitance Core / Core approx.nF / km	Core / Screen approx.nF / km	Coupling resistance at 1 MHz Ohm/km	at 30 MHz Ohm/km	Power ratings **) with 3 loaded cores in Amperes	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22084	4 G 1,5	10,1	70	110			18	95,0	230,0	16
22085	4 G 2,5	11,9	80	130	18	210	26	150,0	300,0	14
22086	4 G 4	13,6	90	150	11	210	34	235,0	485,0	12
22087	4 G 6	15,3	90	150	6	150	44	320,0	633,0	10
22088	4 G 10	19,4	120	200	7	180	61	533,0	863,0	8
22089	4 G 16	22,4	140	230	9	190	82	789,0	1291,0	6
22090	4 G 25	26,7	120	210	4	95	108	1236,0	1862,0	4
22091	4 G 35	29,3	150	260	3	85	135	1662,0	2611,0	2
22092	4 G 50	34,1	190	320	2	40	168	2345,0	2955,0	1
22093	4 G 70	39,0	190	320	2	45	207	3196,0	3953,0	2/0
22094	4 G 95	44,0	250	410	1	50	250	4316,0	5304,0	3/0
22095	4 G 120	48,7					292	5435,0	6604,0	4/0
22096	4 G 150	54,2					335	6394,0	7043,0	300 kcmil
22097	4 G 185	60,6					382	7639,0	8384,0	350 kcmil

Dimensions and specifications may be changed without prior notice. (RD01)

TOPFLEX®-EMV-3 PLUS 2YSLCY-J for power supply connections

to frequency converters, double screened, 0,6/1kV, meter marking





D

Technical data

- Special motor power supply cable for frequency converters adapted to DIN VDE 0250
- **Temperature range**
  flexing +5°C to +70°C
  fixed installation -40°C to +70°C
- **Nominal voltage** U_0/U 600/1000 V
- Max. **operating voltage**
  A.C. and 3-phase 700/1200 V
  DC operation 900/1800 V
- **Test voltage** 4000 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Coupling resistance**
  acc. to different cross-sections
  max. 250 Ohm/km
- **Minimum bending radius**
  free-movement for outer Ø:
  up to 12 mm: 10x cable Ø
  > 12-20 mm: 15x cable Ø
  > 20 mm: 20x cable Ø
  fixed installation for outer Ø:
  up to 12 mm: 5x cable Ø
  > 12-20 mm: 7,5x cable Ø
  > 20 mm: 10x cable Ø
- **Radiation-resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of polyethylene (PE)
- Core identification BK, BN, GY
- GN-YE conductor (divided into 3)
- 3+3-core structure
- Cores stranded in concentric layers
- 1. Screen with special aluminium film
  2. Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC
- Sheath colour transparent
- with meter marking

Note

- **)The current carrying capacity for permanent operation at ambient temperature of 30°C. For deviating ambient temperatures the conversion factors should be used and for further see the indication in DIN VDE 0298 part 4.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Properties

- Low mutual capacitance
- Low coupling resistance for high electromagnetic compatibility
- The minimum cross-section of 0,75² meets the requirements of DIN EN 60204 part 1.
- The 3 PLUS-construction of motor power supply cables features a symmetrical 3-core design, improved in terms of EMC characteristics comparing favorably with a 4-core version. The protective conductor PE, divided into 3 is uniformly stranded in the interstices. This enables an extremely concentric structure.
- Due to the optimal screening an interference-free operation of frequency converters is obtained
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Meets EMC requirements acc. to EN 55011 and DIN VDE 0875 part 11

Application

As a supply and connecting cable for medium mechanical stresses in fixed installations and forced movements in dry, moist and wet environments not however for outdoor applications. Used in the automotive and food industries, environmental technology, packaging industry, machine tools. Handling equipment, for SIMOVERT drives, they are particularly suitable for use with industrial pumps, ventilators, conveyor belts and air-conditioning installations and similar applications. Installation in hazardous areas. This screened motor supply cable with low mutual capacitance of the single cores because of the special PE core insulation and low screen capacitance enable a low-loss transmission of the power compared to PVC-sheathed connecting cables. Due to the optimal screening an interference-free operation of frequency converters is obtained. Installation in hazardous areas.

EMC = Electromagnetic compatibillity

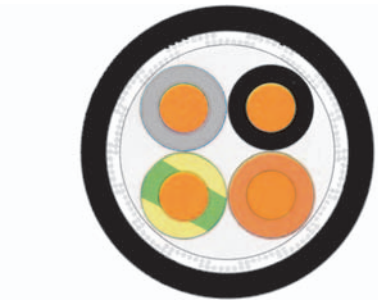
The screen must be connected at both ends and ensure large-area contact over the entire cable circumference for compliance with the functional interference requirements of EN 55011.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Coupling resistance at 1 MHz Ohm/km	Coupling resistance at 30 MHz Ohm/km	Power ratings **) with 3 loaded cores in Amperes	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22368	3 x 1,5 + 3 G 0,25	9,2			18	86,0	140,0	16
22369	3 x 2,5 + 3 G 0,5	10,8	18	210	26	144,0	220,0	14
22370	3 x 4 + 3 G 0,75	12,3	11	210	34	224,0	323,0	12
22371	3 x 6 + 3 G 1,0	14,0	6	150	44	298,0	420,0	10
22372	3 x 10 + 3 G 1,5	17,6	7	180	61	491,0	615,0	8
22373	3 x 16 + 3 G 2,5	21,2	9	190	82	723,0	819,0	6
22374	3 x 25 + 3 G 4,0	24,5	4	95	108	1138,0	1325,0	4
22375	3 x 35 + 3 G 6,0	26,9	3	85	135	1535,0	1718,0	2
22376	3 x 50 + 3 G 10,0	32,5	2	40	168	2208,0	2399,0	1
22377	3 x 70 + 3 G 10,0	35,5	2	45	207	2871,0	3056,0	2/0
22378	3 x 95 + 3 G 16,0	40,1	1	50	250	3953,0	4162,0	3/0
22379	3 x 120 + 3 G 16,0	44,4			292	4836,0	5074,0	4/0
22380	3 x 150 + 3 G 25,0	49,3			335	5412,0	6128,0	300 kcmil
22381	3 x 185 + 3 G 35,0	55,1			382	6969,0	7189,0	350 kcmil
22382	3 x 240 + 3 G 42,5	60,0			453	8540,0	9540,0	500 kcmil

Dimensions and specifications may be changed without prior notice. (RD01)

TOPFLEX® -EMV-UV-2YSLCYK-J for power supply connections to frequency converters, double screened, 0,6/1kV, meter marking





Technical data

- Special motor power supply cable for frequency converters adapted to DIN VDE 0250
- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -40°C to +70°C
- **Nominal voltage** U_0/U 600/1000 V
- **Max. operating voltage**
  A.C. and 3-phase 700/1200 V
  DC operation 900/1800 V
- **Test voltage** 4000 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Coupling resistance**
  acc. to different cross-sections
  max. 250 Ohm/km
- **Minimum bending radius**
  free-movement for outer Ø:
  up to 12 mm: 10x cable Ø
  > 12-20 mm: 15x cable Ø
  > 20 mm: 20x cable Ø
  fixed installation for outer Ø:
  up to 12 mm: 5x cable Ø
  > 12-20 mm: 7,5x cable Ø
  > 20 mm: 10x cable Ø
- **Radiation-resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of polyethylene (PE)
- Core identificdation BN, BK, GY
- GN-YE conductor
- Cores stranded in concentric layers
- 1. Screen with special aluminium film
  2. Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC
- Sheath colour black (RAL 9005)
- with meter marking

Note

- **)The current carrying capacity for permanent operation at ambient temperature of 30°C. For deviating ambient temperatures the conversion factors should be used and for further see the indication in DIN VDE 0298 part 4.

Properties

- Low mutual capacitance
- Low coupling resistance for high electromagnetic compatibility
- UV-resitant
- Outdoor application, possible for installation in underground at 4G16 mm²
- This screened motor supply cable with low mutual capacitance of the single cores because of the special PE core insulation and low screen capacitance enable a low-loss transmission of the power compared to PVC-sheathed connecting cables
- Due to the optimal screening an interference-free operation of frequency converters is obtained
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Meets EMC requirements acc. to EN 55011 and DIN VDE 0875 part 11
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

This TOPFLEX®-EMV-2YSLCYK-J motor power supply cable for the frequency converters assures electromagnetic compatibillity in plants and buildings, facilities with units and operating equipment where the fields of electromagnetic interference might cause adverse effects on the surroundings. As a supply and connecting cable for medium mechanical stresses in fixed installations and forced movements in dry, moist and wet environments and for outdoor applications, possible for installation in underground at 4G16 mm². Used in the automotive and food industries, environmental technology, packaging industry, machine tools. Handling equipment, for SIMOVERT drives, they are particularly suitable for use with industrial pumps, ventilators, conveyor belts and air-conditioning installations and similar applications. Installation in hazardous areas.

EMC = Electromagnetic compatibillity

The screen must be connected at both ends and ensure large-area contact over the entire cable circumference for compliance with the functional interference requirements of EN 55011.

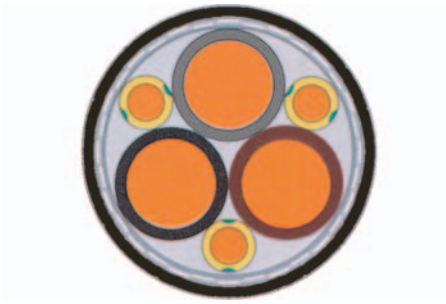
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

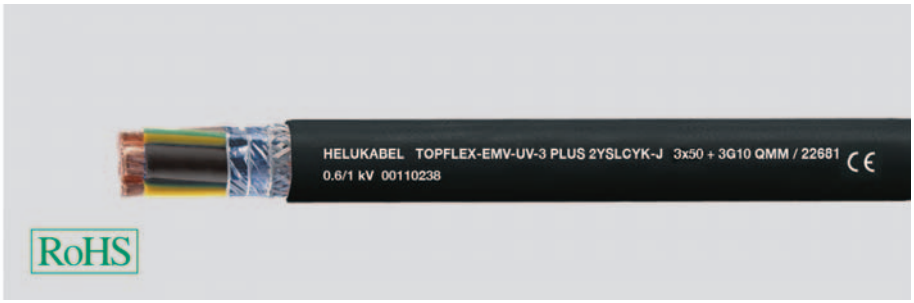
Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Mutual capacitance Core / Core approx.nF / km	Core / Screen approx.nF / km	Coupling resistance at 1 MHz Ohm/km	at 30 MHz Ohm/km	Power ratings **) with 3 loaded cores in Amperes	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22234	4 G 1,5	10,1	70	110			18	95,0	230,0	16
22235	4 G 2,5	11,9	80	130	18	210	26	150,0	300,0	14
22236	4 G 4	13,6	90	150	11	210	34	235,0	485,0	12
22237	4 G 6	15,3	90	150	6	150	44	320,0	630,0	10
22238	4 G 10	19,4	120	200	7	180	61	533,0	860,0	8
22239	4 G 16	22,4	140	230	9	190	82	789,0	1290,0	6
22240	4 G 25	26,7	120	210	4	95	108	1236,0	1860,0	4
22241	4 G 35	29,3	150	260	3	85	135	1662,0	2610,0	2
22242	4 G 50	34,1	190	320	2	40	168	2345,0	2950,0	1
22243	4 G 70	39,0	190	320	2	45	207	3196,0	3950,0	2/0
22244	4 G 95	44,0	250	410	1	50	250	4316,0	5300,0	3/0
22245	4 G 120	48,7					292	5435,0	6600,0	4/0
22246	4 G 150	54,2					335	6394,0	7040,0	300 kcmil
22247	4 G 185	60,6					382	7639,0	8380,0	350 kcmil

Dimensions and specifications may be changed without prior notice. (RD01)

TOPFLEX®-EMV-UV-3 PLUS 2YSLCYK-J for power supply

connections to frequency converters, double screened, 0,6/1kV, meter marking





D

Technical data

- Special motor power supply cable for frequency converters adapted to DIN VDE 0250
- **Temperature range**
  flexing -5°C up to +70°C
  fixed installation -40°C up to +70°C
- **Nominal voltage** U_0/U 600/1000 V
- Max. **operating voltage**
  A.C. and 3-phase 700/1200 V
  DC operation 900/1800 V
- **Test voltage** 4000 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Coupling resistance**
  acc. to different cross-sections
  max. 250 Ohm/km
- **Minimum bending radius**
  free-movement for outer Ø:
  up to 12 mm: 10x cable Ø
  > 12-20 mm: 15x cable Ø
  > 20 mm: 20x cable Ø
  fixed installation for outer Ø:
  up to 12 mm: 5x cable Ø
  > 12-20 mm: 7,5x cable Ø
  > 20 mm: 10x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of polyethylene (PE)
- Core identification BK, BN, GY
- GN-YE conductor (divided into 3)
- 3+3 core design
- Cores stranded in concentric layers
- 1. Screen with special aluminium film
  2. Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC
- Sheath colour black (RAL 9005)
- with meter marking

Note

- **)The current carrying capacity for permanent operation at ambient temperature of 30°C. For deviating ambient temperatures the conversion factors should be used and for further see the indication in DIN VDE 0298 part 4.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Properties

- Low mutual capacitance
- Low coupling resistance for high electromagnetic compatibility
- Due to the optimal screening an interference-free operation of frequency converters is obtained
- The 3 PLUS-construction of motor power supply cables features a symmetrical 3-core design, improved in terms of EMC characteristics comparing favorably with a 4-core version. The protective conductor PE, divided into 3 is uniformly stranded in the interstices. This enables an extremely concentric structure
- The minimum cross-section of 0,75 mm² meets the requirements of DIN EN 60204 part 1
- UV-resistant
- Outdoor application
- This screened motor supply cable with low mutual capacitance of the single cores because of the special PE core insulation and low screen capacitance enable a low-loss transmission of the power compared to PVC-sheathed connecting cables
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Meets EMC requirements acc. to EN 55011 and DIN VDE 0875 part 11

Application

As a supply and connecting cable for medium mechanical stresses in fixed installations and forced movements in dry, moist and wet environments and for outdoor applications, possible for installation in underground at 3x16+3G2,5 mm². Used in the automobile industry, food industry, environmental engineering, packaging industry, toolmaking machinery, handling equipment, for SIMOVERT drivers, they are particularly suitable for use with industrial pumps, ventilators, conveyor belts and air-conditioning installations and similar applications. Installation in hazardous areas.

EMC = Electromagnetic compatibillity

The screen must be connected at both ends and ensure large-area contact over the entire cable circumference for compliance with the functional interference requirements of EN 55011.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Continuation ▸

TOPFLEX®-EMV-UV-3 PLUS 2YSLCYK-J for power supply

connections to frequency converters, double screened, 0,6/1kV, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Coupling resistance at 1 MHz Ohm/km	at 30 MHz Ohm/km	Power ratings **) with 3 loaded cores in Amperes	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22673	3 x 1,5 + 3 G 0,25	9,2			18	86,0	140,0	16
22674	3 x 2,5 + 3 G 0,5	10,8	18	210	26	144,0	220,0	14
22675	3 x 4 + 3 G 0,75	12,3	11	210	34	224,0	323,0	12
22676	3 x 6 + 3 G 1,0	14,0	6	150	44	298,0	420,0	10
22677	3 x 10 + 3 G 1,5	17,6	7	180	61	491,0	615,0	8
22678	3 x 16 + 3 G 2,5	21,2	9	190	82	723,0	819,0	6
22679	3 x 25 + 3 G 4,0	24,5	4	95	108	1138,0	1325,0	4
22680	3 x 35 + 3 G 6,0	26,9	3	85	135	1535,0	1718,0	2
22681	3 x 50 + 3 G 10,0	32,5	2	40	168	2208,0	2399,0	1
22682	3 x 70 + 3 G 10,0	35,5	2	45	207	2871,0	3056,0	2/0
22683	3 x 95 + 3 G 16,0	40,1	1	50	250	3953,0	4162,0	3/0
22684	3 x 120 + 3 G 16,0	44,4			292	4836,0	5075,0	4/0
22685	3 x 150 + 3 G 25,0	49,3			335	5412,0	6128,0	300 kcmil
22686	3 x 185 + 3 G 35,0	55,1			382	6969,0	7189,0	350 kcmil
22687	3 x 240 + 3 G 42,5	60,0			453	8540,0	9540,0	500 kcmil

Dimensions and specifications may be changed without prior notice. (RD01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

TOPFLEX®-EMV-UV-2XSLCYK-J for power supply connections to frequency converters, double screened, higher current carrying capacity, 0,6/1kV, meter marking





Technical data

- Special motor power supply cable for frequency converters adapted to DIN VDE 0250
- **Temperature range**
  flexing -5°C to +90°C
  fixed installation -40°C to +90°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** U_0/U 600/1000 V
- Max. **operating voltage**
  A.C. and 3-phase 700/1200 V
  DC operation 900/1800 V
- **Test voltage** 4000 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Coupling resistance**
  acc. to different cross-sections
  max. 250 Ohm/km
- **Minimum bending radius**
  free-movement for outer Ø:
  up to 12 mm: 10x cable Ø
  > 12-20 mm: 15x cable Ø
  > 20 mm: 20x cable Ø
  fixed installation for outer Ø:
  up to 12 mm: 5x cable Ø
  > 12-20 mm: 7,5x cable Ø
  > 20 mm: 10x cable Ø
- **Radiation-resistance**
  up to 80x10^6 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of cross-linked polyethylene (XLPE)
- Core identification BN, BK, GY
- GN-YE conductor
- Cores stranded in concentric layers
- 1. Screen with special aluminium film
  2. Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC
- Sheath colour black (RAL 9005)
- with meter marking

Note

- **)The current carrying capacity for permanent operation at ambient temperature of 30°C. For deviating ambient temperatures the conversion factors should be used and for further see the indication in DIN VDE 0298 part 4.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Properties

- Low mutual capacitance
- Low coupling resistance for high electromagnetic compatibility
- UV-resitant
- Outdoor application, possible for installation in underground at 4G16 mm²
- This screened motor supply cable with low mutual capacitance of the single cores because of the special XLPE core insulation and low screen capacitance enable a low-loss transmission of the power compared to PE-sheathed connecting cables
- Due to the optimal screening an interference-free operation of frequency converters is obtained
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Meets EMC requirements acc. to EN 55011 and DIN VDE 0875 part 11

Application

This TOPFLEX®-EMV-UV-2XSLCYK-J motor power supply cable for the frequency converters assures electromagnetic compatibillity in plants and buildings, facilities with units and operating equipment where the fields of electromagnetic interference might cause adverse effects on the surroundings. Respecting the permissible operating temperature at the conductor of +90 °C permits a higher current carrying capacity than PE insulated power distribution cables. As a supply and connecting cable for medium mechanical stresses in fixed installations and forced movements in dry, moist and wet environments and for outdoor applications, possible for installation in underground at 4G16 mm². Used in the automotive and food industries, environmental technology, packaging industry, machine tools. Handling equipment, for SIMOVERT drives, they are particularly suitable for use with industrial pumps, ventilators, conveyor belts and air-conditioning installations and similar applications. Installation in hazardous areas.

EMC = Electromagnetic compatibillity

The screen must be connected at both ends and ensure large-area contact over the entire cable circumference for compliance with the functional interference requirements of EN 55011.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Mutual capacitance Core / Core approx.nF / km	Core / Screen approx.nF / km	Coupling resistance at 1 MHz Ohm/km	at 30 MHz Ohm/km	Power ratings **) with 3 loaded cores in Amperes	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24489	4 G 1,5	10,1	70	110			23	95,0	230,0	16
24490	4 G 2,5	11,2	80	130	18	210	32	150,0	300,0	14
24491	4 G 4	12,8	90	150	11	210	42	235,0	485,0	12
24492	4 G 6	14,9	90	150	6	150	54	320,0	630,0	10
24493	4 G 10	17,7	120	200	7	180	75	533,0	860,0	8
24494	4 G 16	20,9	140	230	9	190	100	789,0	1290,0	6

Continuation ▸

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TOPFLEX®-EMV-UV-2XSLCYK-J for power supply connections to frequency converters, double screened, higher current carrying capacity, 0,6/1kV, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Mutual capacitance Core / Core approx.nF / km	Core / Screen approx.nF / km	Coupling resistance at 1 MHz Ohm/km	at 30 MHz Ohm/km	Power ratings **) with 3 loaded cores in Amperes	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24495	4 G 25	25,3	120	210	4	95	127	1236,0	1860,0	4
24496	4 G 35	28,0	150	260	3	85	158	1662,0	2610,0	2
24497	4 G 50	32,3	190	320	2	40	192	2345,0	2950,0	1
24498	4 G 70	37,6	190	320	2	45	246	3196,0	3950,0	2/0
24499	4 G 95	41,6	250	410	1	50	298	4316,0	5300,0	3/0
24500	4 G 120	44,8					346	5435,0	6600,0	4/0
24506	4 G 150	52,3					399	6394,0	7040,0	300 kcmil
24507	4 G 185	58,7					456	7639,0	8380,0	350 kcmil

Dimensions and specifications may be changed without prior notice. (RD01)



Suitable accessories can be found in Chapter X.

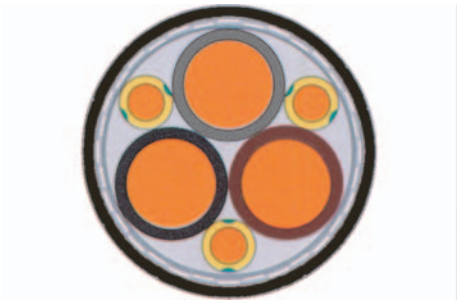
• Cable Gland - HELUTOP® HT-MS-EP4

TOPFLEX®-EMV-UV-3 PLUS 2XSLCYK-J for power supply

connections to frequency converters, double screened, higher current carrying capacity, 0,6/1kV, meter marking

NEW

D





Technical data

- Special motor power supply cable for frequency converters adapted to DIN VDE 0250
- **Temperature range**
  flexing -5°C to +90°C
  fixed installation -40°C to +90°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** U_0/U 600/1000 V
- Max. **operating voltage**
  A.C. and 3-phase 700/1200 V
  DC operation 900/1800 V
- **Test voltage** 4000 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Coupling resistance**
  acc. to different cross-sections
  max. 250 Ohm/km
- **Minimum bending radius**
  free-movement for outer Ø:
  up to 12 mm: 10x cable Ø
  > 12-20 mm: 15x cable Ø
  > 20 mm: 20x cable Ø
  fixed installation for outer Ø:
  up to 12 mm: 5x cable Ø
  > 12-20 mm: 7,5x cable Ø
  > 20 mm: 10x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of cross-linked polyethylene (XLPE)
- Core identification BK, BN, GY
- GN-YE conductor (divided into 3)
- 3+3 core design
- Cores stranded in concentric layers
- 1. Screen with special aluminium film
  2. Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC
- Sheath colour black (RAL 9005)
- with meter marking

Note

- **)The current carrying capacity for permanent operation at ambient temperature of 30°C. For deviating ambient temperatures the conversion factors should be used and for further see the indication in DIN VDE 0298 part 4.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Properties

- Low mutual capacitance
- Low coupling resistance for high electromagnetic compatibility
- Due to the optimal screening an interference-free operation of frequency converters is obtained
- The 3 PLUS-construction of motor power supply cables features a symmetrical 3-core design, improved in terms of EMC characteristics comparing favorably with a 4-core version. The protective conductor PE, divided into 3 is uniformly stranded in the interstices. This enables an extremely concentric structure.
- The minimum cross-section of 0,75 mm² meets the requirements of DIN EN 60204 part 1
- UV-resistant
- Outdoor application, possible for installation in undergraound at 3x16+3G2,5 mm²
- This screened motor supply cable with low mutual capacitance of the single cores because of the special XLPE core insulation and low screen capacitance enable a low-loss transmission of the power compared to PE-sheathed connecting cables
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Meets EMC requirements acc. to EN 55011 and DIN VDE 0875 part 11

Application

As a supply and connecting cable for medium mechanical stresses in fixed installations and forced movements in dry, moist and wet environments and for outdoor applications, possible for installation in underground at 3x16+3G2,5 mm². Respecting the permissible operating temperature at the conductor of +90 °C permits a higher current carrying capacity than PE insulated power distribution cables. Used in the automobile industry, food industry, environmental engineering, packaging industry, toolmaking machinery, handling equipment, for SIMOVERT drivers, they are particularly suitable for use with industrial pumps, ventilators, conveyor belts and air-conditioning installations and similar applications. Installation in hazardous areas.

EMC = Electromagnetic compatibillity

The screen must be connected at both ends and ensure large-area contact over the entire cable circumference for compliance with the functional interference requirements of EN 55011.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Continuation ▸

TOPFLEX®-EMV-UV-3 PLUS 2XSLCYK-J for power supply

connections to frequency converters, double screened, higher current carrying capacity, 0,6/1kV, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Coupling resistance at 1 MHz Ohm/km	at 30 MHz Ohm/km	Power ratings **) with 3 loaded cores in Amperes	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24508	3 x 1,5 + 3 G 0,25	9,2			23	86,0	140,0	16
24509	3 x 2,5 + 3 G 0,5	10,8	18	210	32	144,0	220,0	14
24510	3 x 4 + 3 G 0,75	12,3	11	210	42	224,0	323,0	12
24511	3 x 6 + 3 G 1,0	14,0	6	150	54	298,0	420,0	10
24512	3 x 10 + 3 G 1,5	17,6	7	180	75	491,0	615,0	8
24513	3 x 16 + 3 G 2,5	20,4	9	190	100	723,0	819,0	6
24514	3 x 25 + 3 G 4,0	23,2	4	95	127	1138,0	1325,0	4
24515	3 x 35 + 3 G 6,0	26,1	3	85	158	1535,0	1718,0	2
24516	3 x 50 + 3 G 10,0	30,8	2	40	192	2208,0	2399,0	2
24517	3 x 70 + 3 G 10,0	34,2	2	45	246	2871,0	3056,0	2/0
24518	3 x 95 + 3 G 16,0	37,8	1	50	298	3953,0	4162,0	3/0
24519	3 x 120 + 3 G 16,0	42,6			346	4836,0	5075,0	4/0
24520	3 x 150 + 3 G 25,0	47,5			399	5412,0	6128,0	300 kcmil
24521	3 x 185 + 3 G 35,0	53,4			456	6969,0	7189,0	350 kcmil
24587	3 x 240 + 3 G 42,5	58,7			538	8540,0	9540,0	350 kcmil

Dimensions and specifications may be changed without prior notice. (RD01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

TOPFLEX®-EMV-UV-2XSLCH-J for power supply connections to frequency converters, halogen-free, double screened, higher current carrying capacity, 0,6/1kV, meter marking

NEW

D





Technical data

- Special motor power supply cable for frequency converters adapted to DIN VDE 0250
- **Temperature range**
  flexing -5°C to +90°C
  fixed installation -40°C to +90°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** U_0/U 600/1000 V
- Max. **operating voltage**
  A.C. and 3-phase 700/1200 V
  DC operation 900/1800 V
- **Test voltage** 4000 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Coupling resistance**
  acc. to different cross-sections
  max. 250 Ohm/km
- **Minimum bending radius**
  free-movement for outer Ø:
  up to 12 mm: 10x cable Ø
  > 12-20 mm: 15x cable Ø
  > 20 mm: 20x cable Ø
  fixed installation for outer Ø:
  up to 12 mm: 5x cable Ø
  > 12-20 mm: 7,5x cable Ø
  > 20 mm: 10x cable Ø
- **Radiation-resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, fine wire conductor to DIN VDE 0295 cl.5, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of cross-linked polyethylene (XLPE)
- Core cidentification: BN, BL, GY
- GN-YE conductor
- Cores stranded in concentric layers
- 1. Screen with special aluminium film
  2. Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special polyolefin compound
- Sheath colour black (RAL 9005)
- with meter marking

Note

- **) The current carrying capacity for permanent operation at ambient temperature of 30°C. For deviating ambient temperatures the conversion factors should be used and for further see the indication in DIN VDE 0298 part 4.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Properties

- halogen-free
- Low mutual capacitance
- Low coupling resistance for high electromagnetic compatibility
- This screened motor supply cable with low mutual capacitance of the single cores because of the special XLPE core insulation and low screen capacitance enable a low-loss transmission of the power compared to PE-sheathed connecting cables
- Due to the optimal screening an interference-free operation of frequency converters is obtained
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Meets EMC requirements acc. to EN 55011 and DIN VDE 0875 part 11

Application

This TOPFLEX®-EMV-UV-2XSLCH-J motor power supply cable for the frequency converters assures electromagnetic compatibillity in plants and buildings, facilities with units and operating equipment where the fields of electromagnetic interference might cause adverse effects on the surroundings. Respecting the permissible operating temperature at the conductor of +90 °C permits a higher current carrying capacity than PE insulated power distribution cables. As a supply and connecting cable for medium mechanical stresses in fixed installations and forced movements in dry, moist and wet environments. These cables are suitable for outdoor applications and in underground by using in conduits or tubes. For the installation in conduit all precautions must be taken that no accumulation of water can occur in the pipes. Used in the automotive and food industries, environmental technology, packaging industry, machine tools. Handling equipment, for SIMOVERT drives, they are particularly suitable for use with industrial pumps, ventilators, conveyor belts and air-conditioning installations and similar applications. Installation in hazardous areas.

EMC = Electromagnetic compatibillity

The screen must be connected at both ends and ensure large-area contact over the entire cable circumference for compliance with the functional interference requirements of EN 55011.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Continuation ▸

TOPFLEX®-EMV-UV-2XSLCH-J for power supply connections to frequency converters, halogen-free, double screened, higher current carrying capacity, 0,6/1kV, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Mutual capacitance Core / Core approx.nF / km	Core / Screen approx.nF / km	Coupling resistance at 1 MHz Ohm/km	at 30 MHz Ohm/km	Power ratings **) with 3 loaded cores in Amperes	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24522	4 G 1,5	10,1	70	110			23	95,0	230,0	16
24523	4 G 2,5	11,2	80	130	18	210	32	150,0	300,0	14
24524	4 G 4	12,8	90	150	11	210	42	235,0	485,0	12
24525	4 G 6	14,9	90	150	6	150	54	320,0	630,0	10
24526	4 G 10	17,7	120	200	7	180	75	533,0	860,0	8
24527	4 G 16	20,9	140	230	9	190	100	789,0	1290,0	6
24528	4 G 25	25,3	120	210	4	95	127	1236,0	1860,0	4
24529	4 G 35	28,0	150	260	3	85	168	1662,0	2610,0	2
24530	4 G 50	32,3	190	320	2	40	192	2345,0	2950,0	1
24531	4 G 70	37,6	190	320	2	45	246	3196,0	3950,0	2/0
24532	4 G 95	41,6	250	410	1	50	298	4316,0	5300,0	3/0
24533	4 G 120	44,8					346	5435,0	6600,0	4/0
24534	4 G 150	52,3					399	6394,0	7040,0	300 kcmil
24535	4 G 185	58,7					456	7639,0	8380,0	350 kcmil

Dimensions and specifications may be changed without prior notice. (RD01)



Suitable accessories can be found in Chapter X.

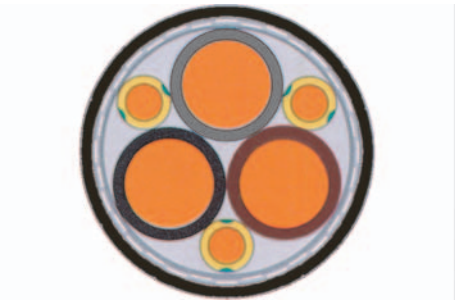
- Cable Gland - HELUTOP® HT-MS-EP4

TOPFLEX®-EMV-UV-3 PLUS 2XSLCH-J for power supply connections

to frequency converters, halogen-free, double screened, higher current carrying capacity, 0,6/1kV, meter marking

NEW

D





Technical data

- Special motor power supply cable for frequency converters adapted to DIN VDE 0250
- **Temperature range**
  flexing -5°C to +90°C
  fixed installation -40°C to +90°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** U_0/U 600/1000 V
- Max. **operating voltage**
  A.C. and 3-phase 700/1200 V
  DC operation 900/1800 V
- **Test voltage** 4000 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Coupling resistance**
  acc. to different cross-sections
  max. 250 Ohm/km
- **Minimum bending radius**
  free-movement for outer Ø:
  up to 12 mm: 10x cable Ø
  > 12-20 mm: 15x cable Ø
  > 20 mm: 20x cable Ø
  fixed installation for outer Ø:
  up to 12 mm: 5x cable Ø
  > 12-20 mm: 7,5x cable Ø
  > 20 mm: 10x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of cross-linked polyethylene (XLPE)
- Core identification BK, BN, GY
- GN-YE conductor (divided into 3)
- 3+3 core design
- Cores stranded in concentric layers
- 1. Screen with special aluminium film
  2. Tinned copper braided screen, approx. 85% coverage
- Outer sheath special polyolefin compound
- Sheath colour black (RAL 9005)
- with meter marking

Note

- **)The current carrying capacity for permanent operation at ambient temperature of 30°C. For deviating ambient temperatures the conversion factors should be used and for further see the indication in DIN VDE 0298 part 4.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Properties

- halogen-free
- Low mutual capacitance
- Low coupling resistance for high electromagnetic compatibility
- Due to the optimal screening an interference-free operation of frequency converters is obtained
- The 3 PLUS-construction of motor power supply cables features a symmetrical 3-core design, improved in terms of EMC characteristics comparing favorably with a 4-core version. The protective conductor PE, divided into 3 is uniformly stranded in the interstices. This enables an extremely concentric structure
- The minimum cross-section of 0,75 mm² meets the requirements of DIN EN 60204 part 1
- This screened motor supply cable with low mutual capacitance of the single cores because of the special XLPE core insulation and low screen capacitance enable a low-loss transmission of the power compared to PE-sheathed connecting cables
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Meets EMC requirements acc. to EN 55011 and DIN VDE 0875 part 11

Application

As a supply and connecting cable for medium mechanical stresses in fixed installations and forced movements in dry, moist and wet environments. These cables are suitable for outdoor applications and in underground by using in conduits or tubes. For the installation in conduit all precautions must be taken that no accumulation of water can occur in the pipes. Respecting the permissible operating temperature at the conductor of +90 °C permits a higher current carrying capacity than PE insulated power distribution cables. Used in the automobile industry, food industry, environmental engineering, packaging industry, toolmaking machinery, handling equipment, for SIMOVERT drivers, they are particularly suitable for use with industrial pumps, ventilators, conveyor belts and air-conditioning installations and similar applications. Installation in hazardous areas.

EMC = Electromagnetic compatibillity

The screen must be connected at both ends and ensure large-area contact over the entire cable circumference for compliance with the functional interference requirements of EN 55011.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Continuation ▸

TOPFLEX®-EMV-UV-3 PLUS 2XSLCH-J for power supply connections

to frequency converters, halogen-free, double screened, higher current carrying capacity, 0,6/1kV, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Coupling resistance at 1 MHz Ohm/km	at 30 MHz Ohm/km	Power ratings **) with 3 loaded cores in Amperes	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24536	3 x 1,5 + 3 G 0,25	9,2			23	86,0	140,0	16
24537	3 x 2,5 + 3 G 0,5	10,8	18	210	32	144,0	220,0	14
24538	3 x 4 + 3 G 0,75	12,3	11	210	42	224,0	323,0	10
24539	3 x 6 + 3 G 1,0	14,0	6	150	54	298,0	420,0	10
24540	3 x 10 + 3 G 1,5	17,6	7	180	75	491,0	615,0	10
24541	3 x 16 + 3 G 2,5	20,4	9	190	100	723,0	819,0	6
24542	3 x 25 + 3 G 4,0	23,2	4	95	127	1138,0	1325,0	10
24543	3 x 35 + 3 G 6,0	26,1	3	85	158	1535,0	1718,0	2
24544	3 x 50 + 3 G 10,0	30,8	2	40	192	2208,0	2399,0	2
24545	3 x 70 + 3 G 10,0	34,2	2	45	246	2871,0	3056,0	2/0
24546	3 x 95 + 3 G 16,0	37,8	1	50	298	3953,0	4162,0	3/0
24583	3 x 120 + 3 G 16,0	42,6			346	4836,0	5075,0	4/0
24584	3 x 150 + 3 G 25,0	47,5			399	5412,0	6128,0	300 kcmil
24585	3 x 185 + 3 G 35,0	53,4			456	6969,0	7189,0	350 kcmil
24586	3 x 240 + 3 G 42,5	58,7			538	8540,0	9540,0	350 kcmil

Dimensions and specifications may be changed without prior notice. (RD01)

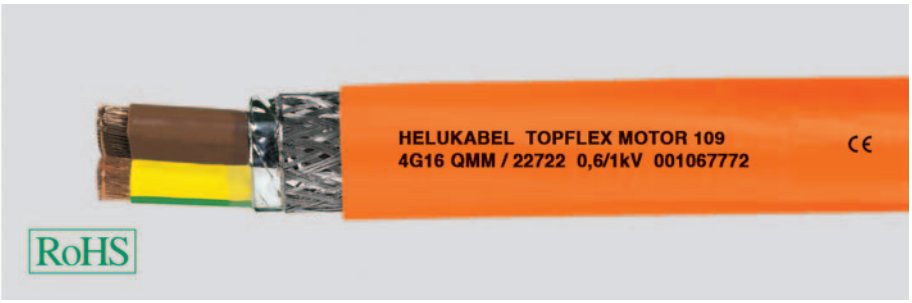


Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

TOPFLEX® Motor 109 low capacitance power supply cable 0,6/1kV, increased ampacity, halogen-free, meter marking





D

Technical data

- Special motor power supply cable for frequency converters
- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -40°C to +80°C
- Permissible **operating temperature**
  at conductor +90°C
- **Nominal voltage** U_0/U 600/1000 V
- Max. **operating voltage**
  A.C. and 3-phase 700/1200 V
  DC operation 900/1800 V
- **Test voltage** 2500 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Coupling resistance**
  acc. to different cross-sections
  max. 250 Ohm/km
- **Mutual capacitance**
  acc. to different cross-sections
  core/core 70 to 250 nF/km
  core/screen 110 to 410 nF/km
- **Minimum bending radius**
  free-movement for outer Ø:
  up to 12 mm: 10x cable Ø
  > 12-20 mm: 15x cable Ø
  > 20 mm: 20x cable Ø
  fixed installation for outer Ø:
  up to 12 mm: 5x cable Ø
  > 12-20 mm: 7,5x cable Ø
  > 20 mm: 10x cable Ø
- **Radiation-resistance**
  up to 80x10^6 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insualtion of special Polymer
- Core identification to DIN VDE 0293-308
  - up to 5 cores coloured
  - from 7 cores, black with continuous white numbering
- GN-YE conductor
- Cores stranded in concentric layers
- 1. Screen with special aluminium film
  2. Tinned copper braided screen, approx. 80% coverage
- Outer sheath of special PUR
- Sheath colour orange (RAL 2003)
- with meter marking

Properties

- Special polymerinsulation ensures low dielectric losses, a dual voltage resistance, longer service life and low - interference shield, and increased current carrying capacity
- Low coupling resistance for high electromagnetic compatibility
- UV-resistant
- Outdoor application
- This screened motor supply cable with low mutual capacitance of the single cores because of the special Polymer core insulation and low screen capacitance enable a low-loss transmission of the power compared to PVC-sheathed connecting cables
- Due to the optimal screening an interference-free operation of frequency converters is obtained
- Design acc. to the requirements of VdS 3501:2006-04
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Low mutual capacitance, test acc. to DIN VDE 0472 part 504, test method B
- Meets EMC requirements acc. to EN 55011 and DIN VDE 0875 part 11

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

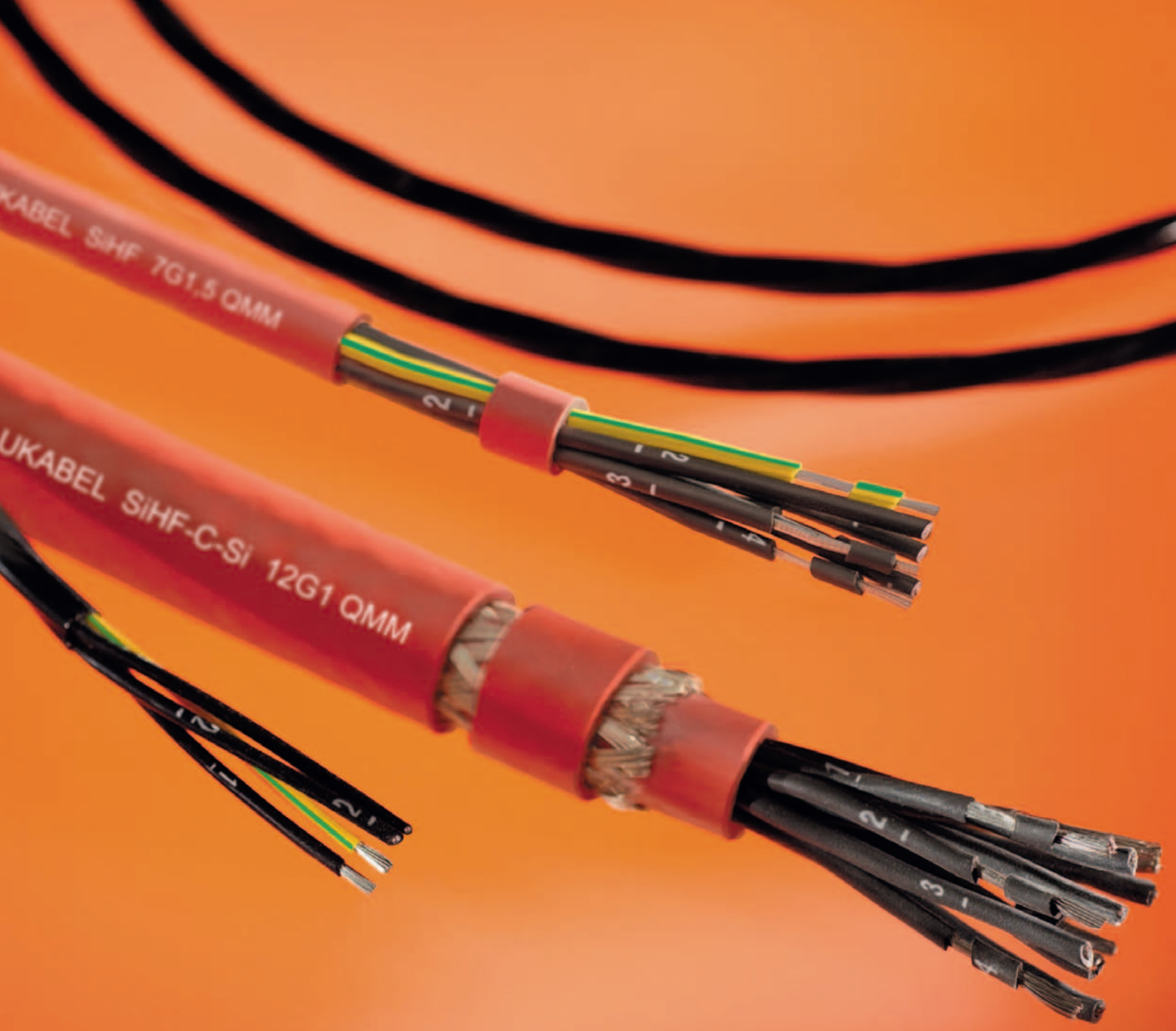
Application

This motor power supply cable for the frequency converters assures electromagnetic compatibillity in plants and buildings, facilities with units and operating equipment where the fields of electromagnetic interference might cause adverse effects on the surroundings. As a supply and connecting cable for medium mechanical stresses in fixed installations and forced movements in dry, moist and wet environments and for outdoor applications. Used in the automotive and food industries, environmental technology, packaging industry, machine tools. Handling equipment, for SIMOVERT drives, they are particularly suitable for use with industrial pumps, ventilators, conveyor belts and air-conditioning installations and similar applications.
EMC = Electromagnetic compatibillity
The screen must be connected at both ends and ensure large-area contact over the entire cable circumference for compliance with the functional interference requirements of EN 55011.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22724	3 G 1,5	9,4	72,0	200,0	16
22707	4 G 1,5	10,4	95,0	230,0	16
22708	5 G 1,5	11,2	117,0	258,0	16
22709	7 G 1,5	13,2	148,0	281,0	16
22710	3 G 2,5	11,2	137,0	270,0	14
22711	4 G 2,5	12,5	150,0	300,0	14
22712	5 G 2,5	13,5	200,0	352,0	14
22713	7 G 2,5	16,0	230,0	473,0	14
22714	4 G 4	14,2	235,0	485,0	12

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22715	5 G 4	15,4	321,0	567,0	12
22716	7 G 4	18,2	352,0	603,0	12
22717	4 G 6	15,2	320,0	633,0	10
22718	5 G 6	16,8	439,0	679,0	10
22719	7 G 6	20,0	501,0	771,0	10
22720	4 G 10	19,5	533,0	860,0	8
22721	5 G 10	21,6	711,0	1029,0	8
22722	4 G 16	23,1	789,0	1290,0	6
22723	4 G 25	27,1	1236,0	1862,0	4

Dimensions and specifications may be changed without prior notice. (RD01)



HELUFLON® FEP-6Y

THERMFLEX® 180 EWKF

MULTITHERM 400

H05SS-F/H05SST-F

HELUTHERM® 145 MULTI

SiHF-C-Si 500-TPE

SiHF/GL-P

HELUTHERM® 120

HEAT-RESISTANT CABLES

	Temperature (°C) - flexing	Temperature (°C) - fixed	Nominal voltage U_0/U	Bending radius - flexing x Ø	Bending radius - fixed x Ø	Halogen-free	UV-resistant	Outdoor use	Drag chain	Colored cores/VDE 0293	Screened/shielded	HAR/VDE REG no./VDE	UL/CSA	Page
Heat-resistant cables														
HELUTHERM® 120	-5 to +105	-30 to +105	300/500	7.5x	4x			X		X				220
HELUTHERM® 145 MULTI	-35 to +120	-55 to +145	300/500	8x	4x	X	X	X		X				221
SiHF		-60 to +180	300/500	7.5x	4x	X		X		X				223
THERMFLEX® 180 EWKF	-25 to +180	-60 to +180	300/500	7.5x	4x	X		X		X				225
H05SS-F / H05SST-F		-60 to +180	300/500	7.5x	4x					X		X		226
HELUFLON®-FEP-6Y		-100 to +205	600	15x	4x		X	X						227
MULTITHERM 400		-60 to +400	500		5x	X				X				229
HELUTHERM® 145 MULTI-C	-35 to +120	-55 to +145	300/500	8x	4x	X	X	X			X			230
SiHF-C-Si		-60 to +180	300/500	10x	5x	X		X		X	X			232
THERMFLEX® 180 EWKF-C	-25 to +180	-60 to +180	300/500	10x	5x	X		X		X	X			234
SiHF/GL-P		-60 to +180	300/500	10x	5x	X		X		X	X			235
MULTITHERM 400 -ES		-60 to +400	500		5x	X				X	X			236

The selection table is intended as an initial orientation.
Please see the relevant page of the catalogue for detailed information on the product properties.

HELUTHERM® 120 flexible, heat-resistant (+105°C), meter marking



Technical data

- Special PVC cable with increased heat-resistance adapted to DIN VDE 0285-525-2-11 / DIN EN 50525-2-11
  0,5-0,75 mm² acc. to IEC 60227/56
  1,0-2,5 mm² acc. to IEC 60227/57
- **Temperature range**
  flexing -5°C to +105°C
  fixed installation -30°C to +105°C
  (for short time +120°C)
- **Nominal voltage**
  0,5-1 mm² U_0/U 300/500 V
  from 1,5 mm² U_0/U 450/750 V
- **Spark-test** 6000 V
- **Test voltag**e 2000 V
- **Breakdown voltage** min. 4000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing 7,5x cable Ø
  fixed installation 4x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insualtion of special PVC compound type TI3 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293-308
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of special PVC, heat-resistant compound type TM3 to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1
- Outer sheath black (RAL 9005), also available in other colours on request
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- On request
  HELUTHERM® 120 H03V2V2-F
  HELUTHERM® 120 H05V2V2-F
  HELUTHERM® 120 (H)05V2V2-F

Application

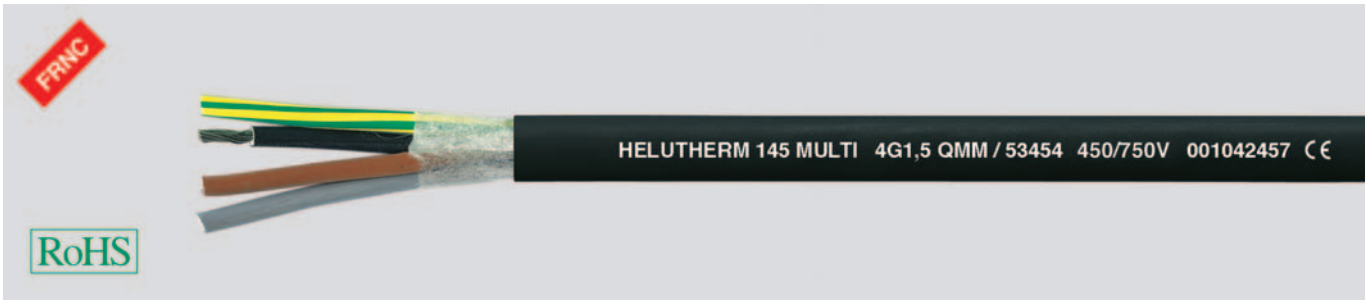
Therm cables are ideal for use in machines, appliances or motors which are subject to direct contact with high temperatures (e. g. varnishing machines and drying towers etc.). For application in dry, moist and wet rooms and in open air.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24002	2 x 0,5	5,0	9,6	40,0	20
24003	3 G 0,5	5,3	14,4	50,0	20
24004	4 G 0,5	5,8	19,2	60,0	20
24005	5 G 0,5	6,7	24,0	70,0	20
24006	7 G 0,5	8,8	33,6	90,0	20
24007	12 G 0,5	11,1	58,0	140,0	20
24008	18 G 0,5	12,9	86,0	170,0	20
24009	25 G 0,5	15,8	101,0	250,0	20
24011	2 x 0,75	6,2	14,4	52,0	19
24012	3 G 0,75	6,6	21,6	61,0	19
24013	4 G 0,75	7,1	29,0	75,0	19
24014	5 G 0,75	8,0	36,0	94,0	19
24015	7 G 0,75	9,5	50,0	112,0	19
24016	12 G 0,75	11,6	86,0	180,0	19
24017	18 G 0,75	13,9	130,0	270,0	19
24018	25 G 0,75	16,9	180,0	380,0	19
24019	1 x 1	6,0	9,6	50,0	18
24020	2 x 1	6,5	19,2	60,0	18
24021	3 G 1	6,9	29,0	73,0	18
24022	4 G 1	7,7	38,0	88,0	18
24023	5 G 1	8,4	48,0	110,0	18
24024	6 G 1	9,3	58,0	121,0	18
24025	7 G 1	10,0	67,0	130,0	18
24026	12 G 1	12,5	115,0	223,0	18
24027	18 G 1	14,7	173,0	350,0	18
24028	25 G 1	17,8	240,0	485,0	18

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24030	2 x 1,5	7,4	29,0	77,0	16
24031	3 G 1,5	8,1	43,0	97,0	16
24032	4 G 1,5	9,0	58,0	122,0	16
24033	5 G 1,5	10,0	72,0	143,0	16
24034	7 G 1,5	11,9	101,0	179,0	16
24035	12 G 1,5	14,5	173,0	310,0	16
24036	18 G 1,5	17,4	259,0	460,0	16
24037	25 G 1,5	21,3	360,0	650,0	16
24039	2 x 2,5	9,3	48,0	120,0	14
24046	3 G 2,5	10,1	72,0	150,0	14
24040	4 G 2,5	11,0	96,0	200,0	14
24041	5 G 2,5	12,3	120,0	250,0	14
24042	7 G 2,5	14,6	168,0	310,0	14
24044	2 x 4	10,6	77,0	180,0	12
24291	3 G 4	11,5	115,0	220,0	12
24045	4 G 4	12,5	154,0	300,0	12
24292	5 G 4	15,1	192,0	360,0	12

Dimensions and specifications may be changed without prior notice. (RE01)

HELUTHERM® 145 MULTI flexible, cross-linked, halogen-free, meter marking



Technical data

- Halogen-free control and connecting cable with increased heat resistance
- **Temperature range**
  flexing -35°C to +120°C
  fixed installation -55°C to +145°C
  in short-circuit +250°C
- **Nominal voltage**
  up to 1,0 mm² U_0/U 300/500 V
  from 1,5 mm² U_0/U 450/750 V
  with protected fixed installation
  from 1,5 mm² U_0/U 600/1000 V
- **Test voltage** 3000 V
- **Minimum bending radius**
  in operation 8x cable Ø
  fixed installation 4x cable Ø
- **Caloric load values**
  see Technical Informations
- **Power ratings table**
  see Technical Informations
- **Approval**
  Germanischer Lloyd

Cable structure

- Tinned Cu wires, acc. to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl. 5
- Core insulation of halogen-free, cross-linked polyolefin-copolymer
- Core identification to DIN VDE 0293-308
  - for 2 cores BN, BU
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering

  also available in other colours on request
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Fleece wrapping
- Outer sheath of halogenfree, cross-linked Polyolefin-Copolymer
- Sheath colour black
  also available in other colours on request
- with meter marking

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type:
  HELUTHERM® 145 MULTI-C,
  confer page 230

Properties

- Reduced flame propagation
- Good abrasion and notch resistance
- Good resistance to oils and weathering
- Resistant to UV radiation and ozone
- Resistant to soldering temperatures
- Thermal class B
- Are resistant to melting, even when in contact with a soldering iron at temperatures of between 300°C and 380°C, because of the cross-linking for the insulation material
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Flame test (unit flame test) acc. to DIN VDE 0482-332-3-22, BS 4066 part 3, DIN EN 60332-3-22, IEC 60332-3-22 (previously DIN VDE 0472 part 804 test method C)
- Flame test (cable) acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Application

These halogen-free, cross-linked and temperature resistant wiring and control cables with enhanced fire-behaviour properties are used for wiring up the lighting fixtures, heaters, electric machines (temperature class B), switching systems and distribution switchboards. A very long service life is also given on account of their excellent high-temperature stability. These cables exhibit good resistance to weathering as well as being very stable to temperature, moisture, ozone and UV radiation. These cables are therefore mainly used for traffic control systems and diverse outdoor applications. The development of smoke is low and no corrosive gases are liberated during combustion of these halogen-free cables in case of fire. The risk of toxic fumes is considerably less in the event of fire because the coloric load values is lower. Precious time can thus be won for a disciplined evacuation, and unnecessary loss of life can be prevented. The extent of the damage to costly control and monitoring systems and the concrete and steel structures of buildings and plant due to fire is reduced by this. Injuries to persons and damage to materials can be prevented. A lower conductor cross-section is possible in certain circumstances because of the high thermal load and thus savings in the space and weight required can be made. These wiring and control cables provide a significant contribution in safety engineering and environmental protection.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
53376	1 x 0,25	2,9	2,4	11,4	24
52630	1 G 0,25	2,9	2,4	11,4	24
53377	2 x 0,25	4,6	4,8	28,7	24
53378	3 G 0,25	4,9	7,2	33,7	24
53379	4 G 0,25	5,5	9,6	41,8	24
53380	5 G 0,25	5,8	12,0	47,0	24

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
53381	6 G 0,25	6,5	14,4	58,0	24
53382	7 G 0,25	6,9	16,8	64,0	24
53383	8 G 0,25	7,3	19,2	71,0	24
53384	10 G 0,25	8,1	24,0	84,0	24
53385	12 G 0,25	8,1	28,8	90,0	24
53386	14 G 0,25	8,6	33,6	102,0	24

Continuation ▸

HELUTHERM® 145 MULTI flexible, cross-linked, halogen-free,

meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
53387	16 G 0,25	8,9	38,4	114,0	24
53388	19 G 0,25	10,1	45,6	132,0	24
53389	21 G 0,25	10,5	50,4	145,0	24
52631	1 G 0,5	3,2	4,8	15,7	20
53391	1 x 0,5	3,2	4,8	15,7	20
53392	2 x 0,5	5,1	9,6	39,6	20
53393	3 G 0,5	5,5	14,4	48,1	20
53394	4 G 0,5	5,9	19,2	51,0	20
53395	5 G 0,5	6,7	24,0	64,0	20
53396	6 G 0,5	7,1	28,8	74,0	20
53397	7 G 0,5	7,8	33,6	88,0	20
53398	8 G 0,5	8,6	38,4	102,0	20
53399	10 G 0,5	9,4	48,0	123,0	20
53400	12 G 0,5	9,4	57,6	135,0	20
53401	14 G 0,5	10,0	67,2	153,0	20
53402	16 G 0,5	10,7	76,8	176,0	20
53403	19 G 0,5	12,4	91,2	213,0	20
53404	21 G 0,5	13,0	100,8	234,0	20
53405	24 G 0,5	14,0	115,2	263,0	20
53406	25 G 0,5	14,0	120,0	269,0	20
53407	27 G 0,5	14,0	129,6	280,0	20
53408	30 G 0,5	15,0	144,0	311,0	20
53409	33 G 0,5	15,0	158,4	343,0	20
53410	37 G 0,5	17,0	177,6	392,0	20
52632	1 G 0,75	3,5	7,2	19,8	19
53411	1 x 0,75	3,5	7,2	19,8	19
53412	2 x 0,75	5,9	14,4	40,0	19
53413	3 G 0,75	6,2	21,6	53,0	19
53414	4 G 0,75	6,9	28,8	69,0	19
53415	5 G 0,75	7,7	36,0	86,0	19
53416	6 G 0,75	8,3	43,2	101,0	19
53417	7 G 0,75	9,1	50,4	117,0	19
53418	8 G 0,75	10,2	57,6	140,0	19
53419	10 G 0,75	11,1	72,0	167,0	19
53420	12 G 0,75	11,1	86,4	183,0	19
53421	14 G 0,75	11,7	100,8	212,0	19
53422	16 G 0,75	12,5	115,2	239,0	19
53423	19 G 0,75	14,0	136,8	290,0	19
53424	21 G 0,75	15,0	151,2	323,0	19
53425	24 G 0,75	16,0	172,8	364,0	19
53426	25 G 0,75	16,0	180,0	371,0	19
53427	27 G 0,75	16,0	194,4	387,0	19
53428	30 G 0,75	17,0	216,0	429,0	19
53429	33 G 0,75	18,0	237,6	468,0	19
53430	37 G 0,75	19,0	266,4	550,0	19
52633	1 G 1	3,9	9,6	25,2	18
53431	1 x 1	3,9	9,6	25,2	18
53432	2 x 1	6,3	19,2	50,0	18
53433	3 G 1	6,8	28,8	66,0	18
53434	4 G 1	7,4	38,4	86,0	18
53435	5 G 1	8,3	48,0	106,0	18
53436	6 G 1	8,9	57,6	127,0	18
53437	7 G 1	9,9	67,2	155,0	18
53438	8 G 1	11,0	76,8	187,0	18
53439	10 G 1	12,1	96,0	214,0	18
53440	12 G 1	12,1	115,2	230,0	18
53441	14 G 1	12,7	134,4	266,0	18
53442	16 G 1	13,6	153,6	301,0	18
53443	19 G 1	15,1	182,4	377,0	18
53444	21 G 1	16,0	201,6	419,0	18
53445	24 G 1	17,1	230,4	464,0	18
53446	25 G 1	17,1	240,0	472,0	18
53447	27 G 1	17,1	259,2	488,0	18
53448	30 G 1	17,7	288,0	536,0	18
53449	33 G 1	18,9	316,8	605,0	18
53450	37 G 1	20,3	355,2	690,0	18
52634	1 G 1,5	4,3	14,4	32,3	16
53451	1 x 1,5	4,3	14,4	32,3	16
53452	2 x 1,5	7,6	28,8	69,0	16
53453	3 G 1,5	8,1	43,2	93,0	16
53454	4 G 1,5	8,8	57,6	120,0	16
53455	5 G 1,5	9,8	72,0	152,0	16
53456	6 G 1,5	10,9	86,4	187,0	16
53457	7 G 1,5	12,0	100,8	222,0	16
53458	8 G 1,5	14,0	115,2	263,0	16
53459	10 G 1,5	14,6	144,0	308,0	16
53460	12 G 1,5	14,6	172,8	330,0	16
53461	14 G 1,5	15,4	201,6	383,0	16
53462	16 G 1,5	16,2	230,4	438,0	16
53463	19 G 1,5	18,3	273,6	554,0	16
53464	21 G 1,5	19,7	302,4	614,0	16
53465	24 G 1,5	21,1	345,6	791,0	16
53466	25 G 1,5	21,1	360,0	701,0	16
53467	27 G 1,5	21,1	388,8	723,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
53468	30 G 1,5	21,8	432,0	796,0	16
53469	33 G 1,5	22,6	475,2	880,0	16
53470	37 G 1,5	24,8	532,8	1026,0	16
52635	1 G 2,5	5,0	24,0	46,9	14
53471	1 x 2,5	5,0	24,0	46,9	14
53472	2 x 2,5	9,0	48,0	99,0	14
53473	3 G 2,5	9,8	72,0	140,0	14
53474	4 G 2,5	10,8	96,0	183,0	14
53475	5 G 2,5	12,0	120,0	231,0	14
53476	6 G 2,5	13,2	144,0	280,0	14
53477	7 G 2,5	14,6	168,0	336,0	14
53478	8 G 2,5	15,7	192,0	397,0	14
53479	10 G 2,5	17,7	240,0	460,0	14
53480	12 G 2,5	18,7	288,0	500,0	14
53481	14 G 2,5	19,0	336,0	593,0	14
53482	16 G 2,5	20,1	384,0	675,0	14
53483	19 G 2,5	20,7	456,0	835,0	14
53484	21 G 2,5	23,7	504,0	939,0	14
53485	24 G 2,5	25,8	576,0	1047,0	14
53486	25 G 2,5	25,8	600,0	1067,0	14
53487	27 G 2,5	25,8	648,0	1107,0	14
53488	30 G 2,5	26,7	720,0	1219,0	14
53489	33 G 2,5	28,0	792,0	1349,0	14
53490	37 G 2,5	30,6	888,0	1565,0	14
52636	1 G 4	5,6	38,4	96,0	12
53491	1 x 4	5,6	38,4	96,0	12
53492	2 x 4	10,2	76,8	159,0	12
53493	3 G 4	10,9	115,2	197,0	12
53494	4 G 4	12,2	153,6	260,0	12
53495	5 G 4	13,5	192,0	329,0	12
53496	6 G 4	14,9	230,4	398,0	12
53497	7 G 4	16,4	268,8	478,0	12
53498	8 G 4	17,6	307,2	553,0	12
53499	10 G 4	20,1	384,0	663,0	12
53500	12 G 4	20,1	460,8	725,0	12
53501	14 G 4	21,5	537,6	797,0	12
52637	1 G 6	6,1	57,6	108,0	10
53502	1 x 6	6,1	57,6	108,0	10
53503	2 x 6	11,6	115,2	216,0	10
53504	3 G 6	12,4	172,8	285,0	10
53505	4 G 6	13,8	230,4	375,0	10
53506	5 G 6	15,4	288,0	465,0	10
53507	6 G 6	16,7	345,6	544,0	10
53508	7 G 6	18,3	403,2	664,0	10
52638	1 G 10	7,7	96,0	144,0	8
53509	1 x 10	7,7	96,0	144,0	8
53510	2 x 10	14,7	192,0	351,0	8
53511	3 G 10	15,7	288,0	475,0	8
53512	4 G 10	17,5	384,0	630,0	8
53513	5 G 10	19,6	480,0	782,0	8
53514	6 G 10	21,7	576,0	914,0	8
53515	7 G 10	23,7	672,0	1092,0	8
52639	1 G 16	9,1	153,6	205,0	6
53516	1 x 16	9,1	153,6	205,0	6
53517	2 x 16	17,7	307,2	495,0	6
53518	3 G 16	19,3	460,8	691,0	6
53519	4 G 16	21,5	614,4	905,0	6
53520	5 G 16	23,9	768,0	1129,0	6
53521	6 G 16	26,2	921,6	1327,0	6
53522	7 G 16	28,9	1075,2	1590,0	6
52640	1 G 25	10,0	240,0	336,0	4
53523	1 x 25	10,9	240,0	336,0	4
53524	2 x 25	21,3	480,0	833,0	4
53525	3 G 25	22,7	720,0	1139,0	4
53526	4 G 25	25,4	960,0	1489,0	4
53527	5 G 25	28,1	1200,0	1863,0	4
53528	6 G 25	31,1	1440,0	2275,0	4
53529	7 G 25	34,5	1680,0	2633,0	4
52641	1 G 35	12,1	336,0	454,0	2
53530	1 x 35	12,1	336,0	454,0	2
53531	2 x 35	23,7	672,0	1104,0	2
53532	3 G 35	25,5	1008,0	1513,0	2
53533	4 G 35	28,4	1344,0	1992,0	2
53534	5 G 35	31,3	1680,0	2488,0	2
52642	1 G 50	14,9	480,0	638,0	1
53535	1 x 50	14,9	480,0	638,0	1
53536	2 x 50	29,3	960,0	1573,0	1
53537	3 G 50	31,5	1440,0	2154,0	1
53538	4 G 50	35,3	1920,0	2819,0	1
53539	5 G 50	39,1	2400,0	3505,0	1
52643	1 G 70	17,1	672,0	875,0	2/0
53540	1 x 70	17,1	672,0	875,0	2/0
53541	2 x 70	33,7	1344,0	2157,0	2/0
53542	3 G 70	36,4	2016,0	2946,0	2/0
53543	4 G 70	40,3	2688,0	3888,0	2/0
53544	5 G 70	44,5	3360,0	4864,0	2/0
52644	1 G 95	19,2	912,0	1149,0	3/0
53545	1 x 95	19,2	912,0	1149,0	3/0
53546	2 x 95	37,5	1824,0	2763,0	3/0
53547	3 G 95	40,0	2736,0	3835,0	3/0
53548	4 G 95	45,3	3648,0	5052,0	3/0
53549	5 G 95	50,7	4560,0	6307,0	3/0

Dimensions and specifications may be changed without prior notice. (RE01)

SiHF silicon mulitcore cable, flexible, halogen-free, meter marking



Technical data

- Special silicone multicore cable with higher heat-resistance range adapted to DIN VDE 0250 part 1 and DIN VDE 0285-525-2-83/ DIN EN 50525-2-83
- **Temperature range** -60°C to +180°C (for short time +220°C)
- **Temperature limit** at the conductor in operation +180°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 2000 V
- **Breakdown voltage** min. 5000 V
- **Insulation resistance** min. 200 MOhm x km
- **Power rating** ambient temperature up to +145°C to DIN VDE 0100 for higher temperatures valid: 150°C - load value 100% 155°C - load value 91% 160°C - load value 82% 165°C - load value 71% 170°C - load value 58% 175°C - load value 41%
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 20x10⁶ cJ/kg (up to 20 Mrad)

Cable structure

- Tinned copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of silicone
- Core identification to DIN VDE 0293-308 - up to 5 cores coloured - from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Outer sheath of silicone
- Sheath colour preferably redbrown
- with meter marking

Properties

- **Advantages** Hardly changes of dielectric strength and the insulation resistance also at high temperatures, high ignition or flash point, in case of fire, forms an insulating layer of SiO_2
- **Resistant to** High molecular oils, fats from vegetables and animals, alcohols, plasticizers and clophenes, diluted acids, lyes and salt dissolution, oxidation substances, tropical influences and weather, lake water, oxygen, ozone
- For laying as a fixed installation only in open or ventilated pipe systems as well as in ducts. Otherwise the mechanical properties of the silicon are reduced by the enclosed air at temperatures exceeding 90°C.

Tests

- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2/ IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- **Behaviour in fire** no flame propagation acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2,IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor x = without green-yellow conductor (OB)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **SiHF-C-Si**, confer page 232

Application

Silicone cables were evolved for use wherever insulation is subjected to extreme temperature changes. They are heat-resistant for permanent temperature up to +180°C, for short time operation up to +220°C. The good performance of the environmental resistant properties means that silicone cables can be used at temperatures down to -60°C. Silicone cables are halogen-free cables and are especially suited for installation in power stations. They have also found their uses in the steel producing industries, aviation industry, ship building as well as in ceramic, glass and cement factories. Due to elastical characteristic of core insulations, these are used as flexible connection cable.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22989	2 x 0,5	5,6	9,6	42,0	20
22990	3 G 0,5	5,9	14,5	44,0	20
22940	3 x 0,5	5,9	14,5	44,0	20
22991	4 G 0,5	6,4	19,3	58,0	20
22941	4 x 0,5	6,4	19,3	58,0	20
22992	5 G 0,5	7,3	24,0	62,0	20
22942	5 x 0,5	7,3	24,0	62,0	20
22993	6 G 0,5	8,3	28,9	79,0	20
22994	7 G 0,5	8,1	33,7	85,0	20
22995	8 G 0,5	8,9	38,4	99,0	20
22996	10 G 0,5	10,0	48,1	124,0	20
22997	12 G 0,5	10,6	57,6	141,0	20
22998	16 G 0,5	12,1	76,7	186,0	20
22999	18 G 0,5	12,7	86,5	211,0	20
23000	25 G 0,5	15,2	120,0	271,0	20
23001	2 x 0,75	6,4	14,4	53,0	19

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
23002	3 G 0,75	6,8	21,6	63,0	19
23104	3 x 0,75	6,8	21,6	63,0	19
23003	4 G 0,75	7,6	29,0	83,0	19
23105	4 x 0,75	7,6	29,0	83,0	19
23004	5 G 0,75	8,5	36,0	101,0	19
22943	5 x 0,75	8,5	36,0	101,0	19
23005	6 G 0,75	9,2	43,0	115,0	19
23006	7 G 0,75	9,2	50,0	124,0	19
23127	8 G 0,75	9,9	57,7	138,0	19
23128	10 G 0,75	11,1	72,1	156,0	19
23129	12 G 0,75	12,2	86,5	185,0	19
23130	16 G 0,75	13,7	115,2	218,0	19
23131	18 G 0,75	14,6	129,7	260,0	19
23132	25 G 0,75	17,2	180,0	370,0	19
23007	2 x 1	6,6	19,0	59,0	18
23008	3 G 1	7,0	29,0	77,0	18

Continuation ▸

SiHF silicon mulitcore cable, flexible, halogen-free, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22944	3 x 1	7,0	29,0	77,0	18
23009	4 G 1	7,8	38,0	94,0	18
22945	4 x 1	7,8	38,0	94,0	18
23010	5 G 1	8,8	48,0	115,0	18
22946	5 x 1	8,8	48,0	115,0	18
23011	6 G 1	9,5	58,0	134,0	18
23012	7 G 1	9,5	67,0	144,0	18
23133	8 G 1	10,3	76,7	175,0	18
24000	9 G 1	11,5	86,0	196,0	18
23134	10 G 1	11,5	96,1	216,0	18
23135	12 G 1	12,5	115,2	231,0	18
23136	16 G 1	14,2	153,5	302,0	18
23137	18 G 1	15,1	172,9	340,0	18
23138	25 G 1	18,0	240,0	431,0	18
23013	2 x 1,5	7,6	29,0	81,0	16
23014	3 G 1,5	8,0	43,0	98,0	16
22947	3 x 1,5	8,0	43,0	98,0	16
23015	4 G 1,5	8,7	58,0	122,0	16
22948	4 x 1,5	8,7	58,0	122,0	16
23016	5 G 1,5	9,6	72,0	147,0	16
22949	5 x 1,5	9,6	72,0	147,0	16
23017	6 G 1,5	10,4	86,0	173,0	16
23018	7 G 1,5	10,4	101,0	187,0	16
23019	8 G 1,5	11,2	114,0	213,0	16
23020	10 G 1,5	13,0	116,0	263,0	16
23021	12 G 1,5	13,9	173,0	314,0	16
23022	14 G 1,5	14,7	202,0	379,0	16
23023	16 G 1,5	16,2	231,0	445,0	16
23024	18 G 1,5	17,0	260,0	506,0	16
23025	20 G 1,5	17,5	288,0	566,0	16
23026	24 G 1,5	20,4	346,0	722,0	16
23027	2 x 2,5	8,8	48,0	134,0	14
23028	3 G 2,5	9,7	72,0	152,0	14
23029	4 G 2,5	10,6	96,0	188,0	14
23030	5 G 2,5	11,6	120,0	228,0	14
23139	6 G 2,5	12,6	144,0	304,0	14
23032	7 G 2,5	12,6	168,0	320,0	14
23140	8 G 2,5	13,6	192,2	373,0	14

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
23141	10 G 2,5	15,5	240,1	450,0	14
23033	12 G 2,5	17,1	288,0	502,0	14
23142	16 G 2,5	19,6	384,0	659,0	14
23143	18 G 2,5	20,6	432,2	761,0	14
23144	25 G 2,5	24,4	600,0	1007,0	14
23034	2 x 4	10,8	77,0	180,0	12
23035	3 G 4	11,4	115,0	224,0	12
23036	4 G 4	12,5	154,0	295,0	12
23037	5 G 4	13,9	192,0	359,0	12
23039	7 G 4	15,6	269,0	479,0	12
23040	2 x 6	12,4	115,0	210,0	10
23041	3 G 6	13,2	173,0	270,0	10
23042	4 G 6	14,8	230,0	341,0	10
23043	5 G 6	16,5	288,0	432,0	10
23045	7 G 6	18,0	403,0	552,0	10
23046	2 x 10	16,2	192,0	400,0	8
23047	3 G 10	17,2	288,0	507,0	8
23048	4 G 10	19,4	384,0	644,0	8
23049	5 G 10	21,4	480,0	788,0	8
23145	7 G 10	23,4	672,2	1151,0	8
23050	2 x 16	18,0	308,0	591,0	6
23051	3 G 16	19,3	462,0	749,0	6
23052	4 G 16	21,4	616,0	950,0	6
23053	5 G 16	24,0	770,0	1204,0	6
23146	7 G 16	26,4	1075,3	1682,0	6
23054	2 x 25	22,0	480,0	700,0	4
23055	3 G 25	23,4	720,0	1100,0	4
23056	4 G 25	26,3	960,0	1500,0	4
23057	2 x 35	24,6	672,0	1100,0	2
23058	3 G 35	26,3	1008,0	1500,0	2
23059	4 G 35	29,1	1344,0	2100,0	2

Dimensions and specifications may be changed without prior notice. (RE01)



Suitable accessories can be found in Chapter X.

- Cable protection tube - HTP

THERMFLEX® 180 EWKF silicone multicore cable, halogen-free, meter marking



Technical data

- adapted to DIN VDE 0285-525-2-83/ DIN EN 50525-2-83
- **Temperature range** flexing -25°C to +180°C fixed installation -60°C to +180°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 2000 V
- **Insulation resistance** min. 200 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 20x10⁶ cJ/kg (up to 20 Mrad)

Tests

- Insulation integrity testet acc. to DIN VDE 0472 part 814 and IEC 60331
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Behaviour in fire no flame propagation acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2,IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)

Cable structure

- Tinned copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special silicone compound type EI2 to DIN VDE 0207-363-1 / DIN EN 50363-1
- Core identification to DIN VDE 0293-308
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of special silicone compound type 2GM1 to DIN VDE 0207-363-2-1/DIN EN 50363-2-1
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- Smoke density - low
- Due to the special abrasive and notch resistance outer sheath, these cables are suitable for heavy loading of mechanical stresses than the usual standard silicone cables
- Hardly changes of dielectric strength and the insulation resistance also at high temperatures
- High ignition or flash point
- leave in case of fire an insulating layer of SiO_2, thereby ensuring a longer functional integrity
- **Resistant to** High molecular oils, fats from vegetables and animals, alcohols, plasticizers and clophenes, diluted acids, lyes and salt dissolution, oxidation substances, tropical influences and weather, lake water, oxygen, ozone

Note

- G = with green-yellow conductor x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- **EWKF** = Improved values to **E**=tearing resistance, **W**=breaking strength propagation, **K**=notch strength, **F**=flexibility
- screened analogue type: **THERMFLEX® 180 EWKF-C**, confer page 234

Application

These cables are ideal for use everywhere, where they are exposed to high mechanical stresses, as well as wire insulation are subjected to high temperatures. For use in dry, damp and wet rooms, as well outdoor. Silicone cables are halogen free and are suitable for use in air conditioning and heating, for lighting, for the wiring of ovens, saunas and solariums, foundries, steel, cement and ceramic works and in the heating and cooling equipment.

FRNC = **F**lame **R**etardant **N**on **C**orrosive

All silicon cables are available also in FRNC versions. The sheath designed with special-compound conform flame test method C to DIN VDE 0472 part 804 and IEC 60332-3 as well as HD 405.3. This special compound is self-extinguishing. Because of that these cables can be installed as security cable with functionality as for example in communal buildings, power stations, hotels, airports etc.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
74992	2 x 0,75	6,4	15,0	53,0	19
74993	3 G 0,75	7,0	22,0	64,0	19
74994	4 G 0,75	7,6	29,0	84,0	19
74995	5 G 0,75	8,5	36,0	101,0	19
74996	2 x 1	6,8	20,0	60,0	18
74997	3 G 1	7,2	29,0	78,0	18
74998	4 G 1	7,8	39,0	95,0	18
74999	5 G 1	8,8	48,0	116,0	18
75000	2 x 1,5	8,8	29,0	82,0	16
75001	3 G 1,5	8,9	43,0	98,0	16
75002	4 G 1,5	9,9	58,0	122,0	16
75003	5 G 1,5	10,8	72,0	148,0	16
75004	7 G 1,5	12,0	101,0	187,0	16
75005	12 G 1,5	16,1	173,0	315,0	16
75006	16 G 1,5	18,2	231,0	446,0	16
75007	20 G 1,5	19,4	288,0	566,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
75008	2 G 2,5	9,8	48,0	135,0	14
75009	3 G 2,5	10,4	72,0	152,0	14
75010	4 G 2,5	11,5	96,0	189,0	14
75011	5 G 2,5	12,9	120,0	229,0	14
75012	2 x 4	11,6	77,0	180,0	12
75013	3 G 4	12,3	115,0	230,0	12
75014	4 G 4	13,6	154,0	300,0	12
75015	5 G 4	15,2	192,0	380,0	12
75016	2 x 6	13,2	115,0	321,0	10
75017	3 G 6	14,0	173,0	330,0	10
75018	4 G 6	15,5	230,0	430,0	10
75019	5 G 6	17,2	288,0	550,0	10

Dimensions and specifications may be changed without prior notice. (RE01)

H05SS-F / H05SST-F heat-resistant multicore cable



Technical data

- Heat-resistant multicore cable to DIN VDE 0285-525-2-83 / DIN EN 50525-2-83
- **Temperature range** fixed installation -60°C to + 180°C (for short time +250°C)
- Permissible **operating temperature** at conductor +180°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 2000 V
- **Specific volume resistivity** min. 200 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 20x10⁶ cJ/kg (up to 20 Mrad)

Cable structure

- Tinned copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of cross-linked rubber (SiR) compound type EI2 to DIN VDE 0207-363-1 / DIN EN 50363-1
- Core identification to DIN VDE 0293-308
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Outer sheath of cross-linked rubber compound type EM9 to DIN VDE 0207-363-2-1/DIN EN 50363-2-1
- Sheath colour black (RAL 9005) also available in other colours on request

H05SST-F

- Constuction as per H05SS-F
- Polyester braiding

Properties

- Advantages Hardly changes of dielectric strength and the insulation resistance also at high temperatures
- These cables may be damaged by pulling over sharp-edges or by abrasion during the installation and application. To avoid this, it should be treated with great care during the installation and application of the cable.

Tests

- **Behavior in fire**: Test of vertical flame-propagation to VDE 0482-332-1-2, DIN EN 60332-1-2, not valid for the cables with outer polyesterbraiding (Type H05SST-F)

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Multicore cables insulated and sheathed with heat resistant silicone rubber without strain relieving elements are used in high temperatures or with contact to hot-surfaces. These cables are installed for fixed installation, mechanical protected, for internal wiring of lighting fixtures in industrial application. It is recommended for the application of the apparatus which are moving during the operation with less mechanical stress.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

H05SS-F

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22290	2 x 0,75	5,7 - 7,4	14,4	59,0	19
22291	3 G 0,75	6,2 - 8,1	21,6	71,0	19
22292	4 G 0,75	6,8 - 8,8	28,8	93,0	19
22293	5 G 0,75	7,6 - 9,9	36,0	113,0	19
22294	2 x 1	6,1 - 8,0	19,2	67,0	18
22295	3 G 1	6,5 - 8,5	29,0	86,0	18
22296	4 G 1	7,1 - 9,3	38,4	105,0	18
22297	5 G 1	8,0 - 10,3	48,0	129,0	18
22298	2 x 1,5	7,6 - 9,8	29,0	91,0	16
22299	3 G 1,5	8,0 - 10,4	43,0	110,0	16
22300	4 G 1,5	9,0 - 11,6	58,0	137,0	16
22301	5 G 1,5	9,8 - 12,7	72,0	165,0	16
22302	2 x 2,5	9,0 - 11,6	48,0	150,0	14
22303	3 G 2,5	9,6 - 12,4	72,0	170,0	14
22304	4 G 2,5	10,7 - 13,8	96,0	211,0	14
22305	5 G 2,5	11,9 - 15,3	120,0	255,0	14
22306	3 G 4	11,3 - 14,5	115,0	251,0	12
22307	4 G 4	12,7 - 16,2	154,0	330,0	12
22308	3 G 6	12,8 - 16,3	173,0	379,0	10
22309	4 G 6	14,2 - 18,1	230,0	494,0	10

H05SST-F

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
22343	2 x 0,75	6,7 - 8,4	14,4	63,0	19
22344	3 G 0,75	7,2 - 9,1	21,6	75,0	19
22345	4 G 0,75	7,8 - 9,8	28,8	99,0	19
22346	5 G 0,75	8,6 - 10,9	36,0	120,0	19
22347	2 x 1	7,1 - 9,0	19,2	71,0	18
22348	3 G 1	7,5 - 9,5	29,0	91,0	18
22349	4 G 1	8,1 - 10,3	38,4	111,0	18
22350	5 G 1	9,0 - 11,3	48,0	137,0	18
22351	2 x 1,5	8,6 - 10,8	29,0	97,0	16
22352	3 G 1,5	9,0 - 11,4	43,0	117,0	16
22353	4 G 1,5	10,0 - 12,6	58,0	145,0	16
22354	5 G 1,5	10,8 - 13,7	72,0	175,0	16
22355	2 x 2,5	10,0 - 12,6	48,0	159,0	14
22356	3 G 2,5	10,6 - 13,4	72,0	180,0	14
22357	4 G 2,5	11,7 - 14,8	96,0	224,0	14
22358	5 G 2,5	12,9 - 16,3	120,0	270,0	14
22359	3 G 4	12,3 - 15,5	115,0	266,0	12
22360	4 G 4	13,7 - 17,2	154,0	350,0	12
22361	3 G 6	13,8 - 17,3	173,0	402,0	10
22362	4 G 6	15,2 - 19,1	230,0	524,0	10

Dimensions and specifications may be changed without prior notice. (RE01)



Suitable accessories can be found in Chapter X.

• Cable protection tube - HTP

HELUFLON®-FEP-6Y multi core, fluorinated polymeric materials, -100°C up to +205°C



Technical data

- Fluorinated polymeric insulation FEP (Fluorethylenepropylene)
- **Temperature range** -100°C to +205°C (for short time +230°C)
- **Conductor temperature range** bare copper +130°C tinned copper +180°C silver pl. copper +200°C
- **Nominal voltage** 600 V
- **Test voltage** 2500 V
- **Insulation resistance** min. 2 GOhm x km
- **Minimum bending radius** flexing 15x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 1x10⁶ cJ/kg (up to 1 Mrad)

Cable structure

- Copper-conductor, bare, tinned, silver to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of FEP-HELUFLON®
- Core identification to DIN VDE 0293-308
  - up to 0,25 mm² cores coloured
  - from 0,5 mm² black cores with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Outer sheath of FEP-HELUFLON®
- Sheath colour black (RAL 9005)

Properties

- Higher insulation resistance
- Low dielectric loss
- Not flammable
- Resistant to micro-cultures
- Do not permit any fungus-formation
- Absolute ozone resistant
- Absolute weather resistant
- Water absorption <0,01%
- Minimal water vapour permeability (approx. 0,18 mgr/cm² in 24 hours)
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor
- x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

This cables are predominantly used for installing in control cabinets subjected to high thermal effects as well as in brickworks, heaters, kitchen fitments and measuring appliances as well as in the chemical industry. These cables are non-flammable and resistant to acids, alkalis, solvents, oil and petrol.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

copper wire, tinned

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24547	2 x 0,25	2,7	5,0	17,0	24
24548	3 G 0,25	2,9	7,5	22,0	24
24549	4 G 0,25	3,2	10,0	27,0	24
24550	5 G 0,25	3,5	12,5	34,0	24
24551	7 G 0,25	3,9	17,5	46,0	24
24552	2 x 0,5	3,3	9,8	21,0	20
24553	3 G 0,5	3,5	14,7	32,0	20
24554	4 G 0,5	3,9	19,6	44,0	20
24555	5 G 0,5	4,3	24,5	55,0	20
24556	7 G 0,5	4,8	34,3	70,0	20
24557	2 x 0,75	3,6	14,4	31,0	19
24558	3 G 0,75	3,9	21,6	46,0	19
24559	4 G 0,75	4,3	29,0	58,0	19
24560	5 G 0,75	4,7	36,0	69,0	19
24561	7 G 0,75	4,8	50,0	92,0	19
24562	2 x 1	4,1	19,0	41,0	18
24563	3 G 1	4,4	29,0	55,0	18
24564	4 G 1	4,9	38,0	71,0	18
24565	5 G 1	5,5	48,0	88,0	18

copper wire, tinned

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
24566	7 G 1	6,0	67,0	113,0	18
24273	12 G 1	8,0	115,2	220,0	18
24274	18 G 1	9,5	173,0	321,0	18
24275	25 G 1	11,2	240,0	458,0	18
24501	2 x 1,5	4,9	29,0	45,0	16
24502	3 G 1,5	5,3	43,0	70,0	16
24503	4 G 1,5	5,8	58,0	98,0	16
24504	5 G 1,5	6,5	72,0	117,0	16
24505	7 G 1,5	7,2	101,0	184,0	16
24276	12 G 1,5	10,2	173,0	326,0	16
24277	18 G 1,5	12,3	260,0	504,0	16
24278	25 G 1,5	14,0	360,0	682,0	16
24279	3 G 2,5	6,4	72,0	121,0	14
24280	4 G 2,5	7,0	96,0	182,0	14
24281	5 G 2,5	7,9	120,0	240,0	14
24282	7 G 2,5	8,7	168,0	316,0	14
24283	3 G 4	7,5	115,0	212,0	12
24284	4 G 4	8,3	154,0	304,0	12
24285	5 G 4	9,2	192,0	386,0	12

Continuation ▸

HELUFLON®-FEP-6Y multi core, fluorinated polymeric materials,

-100°C up to +205°C

Copper wire, bare

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
25914	2 x 0,25	2,7	5,0	17,0	24
25915	3 G 0,25	2,9	7,5	22,0	24
25916	4 G 0,25	3,2	10,0	27,0	24
25917	5 G 0,25	3,5	12,5	34,0	24
25918	7 G 0,25	3,9	17,5	46,0	24
25919	2 x 0,5	3,3	9,8	21,0	20
25920	3 G 0,5	3,5	14,7	32,0	20
25921	4 G 0,5	3,9	19,6	44,0	20
25922	5 G 0,5	4,3	24,5	55,0	20
25923	7 G 0,5	4,8	34,3	70,0	20
25924	2 x 0,75	3,6	14,4	31,0	19
25925	3 G 0,75	3,9	21,6	46,0	19
25926	4 G 0,75	4,3	29,0	58,0	19
25927	5 G 0,75	4,7	36,0	69,0	19
25928	7 G 0,75	5,4	50,0	92,0	19
25929	2 x 1	4,1	19,0	41,0	18
25930	3 G 1	4,4	29,0	55,0	18
25931	4 G 1	4,9	38,0	71,0	18
25932	5 G 1	5,5	48,0	88,0	18
25933	7 G 1	6,0	67,0	113,0	18
25934	12 G 1	8,0	115,2	220,0	18
25935	18 G 1	9,5	173,0	321,0	18
25936	25 G 1	11,2	240,0	458,0	18
25937	2 x 1,5	4,9	29,0	45,0	16
25938	3 G 1,5	5,3	43,0	70,0	16
25939	4 G 1,5	5,8	58,0	98,0	16
25940	5 G 1,5	6,5	72,0	117,0	16
25941	7 G 1,5	7,2	101,0	184,0	16
25942	12 G 1,5	10,2	173,0	326,0	16
25943	18 G 1,5	12,3	260,0	504,0	16
25944	25 G 1,5	14,0	360,0	682,0	16
25945	3 G 2,5	6,4	72,0	121,0	14
25946	4 G 2,5	7,0	96,0	182,0	14
25947	5 G 2,5	7,9	120,0	240,0	14
25948	7 G 2,5	8,7	168,0	316,0	14
25949	3 G 4	7,5	115,0	212,0	12
25950	4 G 4	8,3	154,0	304,0	12
25951	5 G 4	9,2	192,0	386,0	12

copper wire, silvered

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	AG weight kg / km	Weight approx. kg / km	AWG-No.
25952	2 x 0,25	2,7	5,0	0,26	17,0	24
25953	3 G 0,25	2,9	7,5	0,39	22,0	24
25954	4 G 0,25	3,2	10,0	0,52	27,0	24
25955	5 G 0,25	3,5	12,5	0,65	34,0	24
25956	7 G 0,25	3,9	17,5	0,91	46,0	24
25957	2 x 0,5	3,3	9,8	0,34	21,0	20
25958	3 G 0,5	3,5	14,7	0,51	32,0	20
25959	4 G 0,5	3,9	19,6	0,68	44,0	20
25960	5 G 0,5	4,3	24,5	0,85	55,0	20
25961	7 G 0,5	4,8	34,3	1,19	70,0	20
25962	2 x 0,75	3,6	14,4	0,40	31,0	19
25963	3 G 0,75	3,9	21,6	0,60	46,0	19
25964	4 G 0,75	4,3	29,0	0,80	58,0	19
25965	5 G 0,75	4,7	36,0	1,00	69,0	19
25966	7 G 0,75	5,4	50,0	1,40	92,0	19
25967	2 x 1	4,1	19,0	0,52	41,0	18
25968	3 G 1	4,4	29,0	0,78	55,0	18
25969	4 G 1	4,9	38,0	1,04	71,0	18
25970	5 G 1	5,5	48,0	1,30	88,0	18
25971	7 G 1	6,0	67,0	1,82	113,0	18
25972	12 G 1	8,0	115,2	3,12	220,0	18
25973	18 G 1	9,5	173,0	4,68	321,0	18
25974	25 G 1	11,2	240,0	6,50	458,0	18
25975	2 x 1,5	4,9	29,0	0,70	45,0	16
25976	3 G 1,5	5,3	43,0	1,05	70,0	16
25977	4 G 1,5	5,8	58,0	1,40	98,0	16
25978	5 G 1,5	6,5	72,0	1,75	117,0	16
25979	7 G 1,5	7,2	101,0	2,45	184,0	16
25980	12 G 1,5	10,2	173,0	4,20	326,0	16
25981	18 G 1,5	12,3	260,0	6,30	504,0	16
25982	25 G 1,5	14,0	360,0	8,75	682,0	16
25983	3 G 2,5	6,4	72,0	2,10	121,0	14
25984	4 G 2,5	7,0	96,0	2,80	182,0	14
25985	5 G 2,5	7,9	120,0	3,50	240,0	14
25986	7 G 2,5	8,7	168,0	4,90	316,0	14
25987	3 G 4	7,5	115,0	3,60	212,0	12
25989	4 G 4	8,3	154,0	4,80	304,0	12
25990	5 G 4	9,2	192,0	6,00	386,0	12

Dimensions and specifications may be changed without prior notice. (RE01)



Suitable accessories can be found in Chapter X.

- Cable protection tube - HTP

MULTITHERM 400 halogen-free



Technical data

- Special core insulation for high temperatures
- **Temperature range** -60°C to +400°C (for short time +500°C)
- **Nominal voltage** 500 V
- **Test voltage** 2500 V
- **Minimum bending radius** 5x cable Ø

Cable structure

- Copper-conductor nickel plated, fine-wire (ASTM B 355)
- 1. Core insulation of braided glass-fibre impregnated with silicone
  2. Core insulation of braided glass-fibre impregnated with silicone
- Core identification
  - No. of cores with GN-YE conductor
  3 = GN-YE, BU, BN
  4 = GN-YE, BK, BU, BN
  5 = GN-YE, BK, BU, BN, WH
  6 = GN-YE, BK, BU, BN, WH, RD
  7 = GN-YE, BK, BU, BN, WH, RD, GY
  - No. of cores without GN-YE conductor
  2 = BU, BN
  3 = BK, BU, BN
  4 = BK, BU, BN, WH
  5 = BK, BU, BN, WH, RD
  6 = BK, BU, BN, WH, RD, GY
  7 = BK, BU, BN, WH, RD, GY, GN
- Overall lay up of cores
- Outer sheath of braided glass-fibre impregnated with silicone

Properties

- Asbestos and cadmium-free

Note

- Further sizes are available on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **MULTITHERM 400-ES**, confer page 236

Application

MULTITHERM 400 cables are used for applications where extremely high connecting and ambient temperatures can arise, e. g. in iron and steel works, rolling mills, foundries, glass and ceramic factories, in furnace and power plant construction, during thermoplastic moulding processes etc. The special construction of the cable is designed for a recommended maximum temperature in damp environmentsof 220°C and for dry environments above this temperature.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Max. permiss. current carrying capacity at +340°C (A)	Weight approx. kg / km	AWG-No.
51741	2 x 0,5	6,2	10,0	3,3	47,0	20
51742	3 x 0,5	6,4	15,0	3,1	50,0	20
51743	4 x 0,5	7,5	19,0	3,0	70,0	20
51744	5 x 0,5	8,0	25,0	2,9	81,0	20
51745	6 x 0,5	8,6	30,0	2,8	97,0	20
51746	7 x 0,5	8,7	34,0	2,7	105,0	20
51747	2 x 0,75	6,7	14,4	5,1	55,0	19
51748	3 x 0,75	7,0	21,6	5,1	66,0	19
51749	4 x 0,75	8,0	29,0	4,9	86,0	19
51750	5 x 0,75	8,8	36,0	4,7	103,0	19
51751	6 x 0,75	9,5	43,0	4,5	119,0	19
51752	7 x 0,75	9,7	50,0	4,4	130,0	19
51753	2 x 1	6,9	19,0	7,0	63,0	18
51754	3 x 1	7,8	29,0	6,7	82,0	18
51755	4 x 1	8,3	38,0	6,4	98,0	18
51756	5 x 1	9,1	48,0	6,2	119,0	18
51757	6 x 1	9,8	58,0	6,0	138,0	18
51758	7 x 1	10,0	67,0	5,8	150,0	18
51759	2 x 1,5	8,0	29,0	9,4	87,0	16
51760	3 x 1,5	8,3	43,0	9,0	103,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Max. permiss. current carrying capacity at +340°C (A)	Weight approx. kg / km	AWG-No.
51761	4 x 1,5	9,1	58,0	8,6	128,0	16
51762	5 x 1,5	10,0	72,0	8,3	150,0	16
51763	6 x 1,5	10,7	88,0	8,0	175,0	16
51764	7 x 1,5	11,0	101,0	7,8	190,0	16
51765	2 x 2,5	9,2	48,0	12,2	135,0	14
51766	3 x 2,5	9,7	72,0	11,6	153,0	14
51767	4 x 2,5	10,6	96,0	11,2	190,0	14
50060	5 x 2,5	11,8	120,0	10,8	230,0	14
50061	6 x 2,5	12,8	144,0	10,4	270,0	14
50062	7 x 2,5	13,0	168,0	10,1	295,0	14
50063	2 x 4	11,0	77,0	16,0	191,0	12
50064	3 x 4	11,4	115,0	15,3	224,0	12
50065	4 x 4	13,0	154,0	14,6	285,0	12
50066	5 x 4	14,5	192,0	14,1	360,0	12
50067	7 x 4	16,5	270,0	13,3	485,0	12
50068	3 x 6	14,2	173,0	20,0	340,0	10
50069	4 x 6	16,2	230,0	19,0	442,0	10
50070	5 x 6	17,7	288,0	18,0	535,0	10
50071	4 x 10	20,0	384,0	26,0	710,0	8
50072	4 x 16	24,5	615,0	34,0	990,0	6

Dimensions and specifications may be changed without prior notice. (RE01)



Suitable accessories can be found in Chapter X.

• Cable protection tube - HTP

HELUTHERM® 145 MULTI-C flexible, cross-linked,

halogen-free, Cu-screened, EMC-preferred type



Technical data

- Temperature-resistant and halogen-free connection and control cable
- **Temperature range**
  flexing -35°C to +120°C
  fixed installation -55°C to +145°C
  in short-circuit +250°C
- **Nominal voltage**
  up to 1,0 mm² U_0/U 300/500 V
  from 1,5 mm² U_0/U 450/750 V
  with protected fixed installation
  from 1,5 mm² U_0/U 600/1000 V
- **Test voltage** 3000 V
- **Minimum bending radius**
  in operation 8x cable Ø
  fixed installation 4x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km
- **Caloric load values**
  see Technical Informations
- **Power ratings table**
  see Technical Informations
- **Approval**
  Germanischer Lloyd

Cable structure

- Tinned copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of cross-linked, halogen-free polyolefin-copolymer
- Core identification black cores with continuous white numbering
- Cores stranded in layers with optimal lay-lenght
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of cross-linked, halogen-free polyolefin-copolymer
- Sheath colour black
- with meter marking
- Different insulation- and outer sheath in other colours available on request

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type:
  HELUTHERM® 145 MULTI, confer page 221

Properties

- Lower propagation of fire
- Low development of smoke and fumes
- Good abrasion and notch resistance
- Good resistance to oils and weathering
- Resistant to UV radiation and ozone
- Resistant to soldering temperatures
- Thermal class B
- These control cables are resistant to melting, even when in contact with a soldering iron at temperatures of between 300°C and 380°C, because of the cross-linking for the insulation material
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Flame test (unit flame test) acc. to DIN VDE 0482-332-3-22, BS 4066 Teil 3, DIN EN 60332-3-22, IEC 60332-3-22 (previously DIN VDE 0472 part 804 test method C)
- Flame test (cable) acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Application

These halogen-free, cross-linked and temperature resistant wiring and control cables with enhanced fire-behaviour properties are used for wiring up the lighting fixtures, heaters, electric machines (temperature class B), switching systems and distribution switchboards. A very long service life is also given on account of their excellent high-temperature stability. These cables exhibit good resistance to weathering as well as being very stable to temperature, moisture, ozone and UV radiation. These cables are therfore mainly used for traffic control systems and diverse outdoor applications. The development of smoke is low and no corrosive gases are liberated during combustion of these halogen-free cables in case of fire. The risk of toxic fumes is considerably less in the event of fire because the coloric load values is lower. Precious time can thus be won for a disciplined evacuation, and unnecessary loss of life can be prevented. The extent of the damage to costly control and monitoring systems and the concrete and steel structures of buildings and plant due to fire is reduced by this. Injuries to persons and damage to materials can be prevented. A lower conductor cross-section is possible in certain circumstances because of the high thermal load and thus savings in the space and weight required can be made. These wiring and control cables provide a significant contribution in safety engineering and environmental protection.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
52194	2 x 0,25	5,0	16,0	36,0	24
52195	3 x 0,25	5,5	21,0	44,0	24

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
52196	5 x 0,25	6,4	29,0	68,0	24
52197	7 x 0,25	7,5	37,0	95,0	24

Continuation ▸

HELUTHERM® 145 MULTI-C flexible, cross-linked,

halogen-free, Cu-screened, EMC-preferred type

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
52198	1 x 0,5	3,7	15,0	24,0	20
52199	2 x 0,5	5,6	29,0	55,0	20
52200	3 x 0,5	6,1	38,0	64,0	20
52201	4 x 0,5	6,7	45,0	78,0	20
52202	5 x 0,5	7,3	51,0	95,0	20
52203	6 x 0,5	7,9	66,0	106,0	20
52204	7 x 0,5	8,4	68,0	122,0	20
52205	8 x 0,5	9,0	80,0	138,0	20
52206	10 x 0,5	10,0	93,0	161,0	20
52207	12 x 0,5	10,0	107,0	170,0	20
52208	14 x 0,5	11,0	122,0	193,0	20
52209	16 x 0,5	11,7	129,0	216,0	20
52210	19 x 0,5	12,8	158,0	253,0	20
52211	21 x 0,5	13,5	167,0	281,0	20
52212	1 x 0,75	4,0	18,0	29,0	19
52213	2 x 0,75	6,6	38,0	71,0	19
52214	3 x 0,75	6,9	50,0	82,0	19
52215	4 x 0,75	7,6	58,0	100,0	19
52216	5 x 0,75	8,3	70,0	117,0	19
52217	6 x 0,75	8,9	85,0	135,0	18
52218	7 x 0,75	9,9	90,0	158,0	19
52219	8 x 0,75	10,6	110,0	178,0	19
52220	10 x 0,75	11,5	140,0	207,0	19
52221	12 x 0,75	11,5	148,0	220,0	19
52222	14 x 0,75	12,2	167,0	250,0	19
52223	16 x 0,75	12,9	183,0	282,0	19
52224	19 x 0,75	14,5	212,0	335,0	19
52225	21 x 0,75	15,3	230,0	370,0	19
52226	1 x 1	4,2	20,0	33,0	18
52227	2 x 1	7,0	31,0	78,0	18
52228	3 x 1	7,4	56,0	92,0	18
52229	4 x 1	8,1	66,0	112,0	18
52230	5 x 1	8,9	95,0	134,0	18
52231	6 x 1	9,5	105,0	164,0	18
52232	7 x 1	10,5	109,0	192,0	18
52233	8 x 1	11,4	130,0	219,0	18
52234	10 x 1	12,5	138,0	254,0	18
52235	12 x 1	12,5	164,0	270,0	18
52236	14 x 1	13,5	198,0	308,0	18
52237	16 x 1	14,3	203,0	350,0	18
52238	19 x 1	16,2	235,0	447,0	18
52239	21 x 1	17,0	257,0	492,0	18
52240	1 x 1,5	4,8	22,0	42,0	16
52241	2 x 1,5	8,2	58,0	105,0	16
52242	3 x 1,5	8,7	71,0	121,0	16
52243	4 x 1,5	9,4	86,0	156,0	16
52244	5 x 1,5	10,5	104,0	188,0	16
52245	6 x 1,5	11,5	118,0	225,0	16
52246	7 x 1,5	12,6	136,0	264,0	16
52247	8 x 1,5	13,7	172,0	308,0	16
52248	10 x 1,5	15,0	193,0	361,0	16
52249	12 x 1,5	15,0	222,0	383,0	16
52250	14 x 1,5	16,0	272,0	458,0	16
52251	16 x 1,5	17,0	285,0	515,0	16
52252	19 x 1,5	19,3	331,0	639,0	16
52253	21 x 1,5	20,3	367,0	705,0	16
51000	25 x 1,5	21,7	526,0	841,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
52254	1 x 2,5	5,6	28,0	59,0	14
52255	2 x 2,5	9,8	96,0	148,0	14
52256	3 x 2,5	10,4	146,0	183,0	14
52257	4 x 2,5	11,5	150,0	221,0	14
52258	5 x 2,5	12,6	200,0	273,0	14
52259	6 x 2,5	13,8	227,0	326,0	14
52260	7 x 2,5	15,3	235,0	397,0	14
52261	8 x 2,5	16,5	265,0	475,0	14
52262	10 x 2,5	18,3	326,0	542,0	14
52263	12 x 2,5	18,3	376,0	582,0	14
52264	14 x 2,5	19,6	428,0	681,0	14
52265	16 x 2,5	20,7	480,0	778,0	14
52266	19 x 2,5	23,5	557,0	948,0	14
52267	21 x 2,5	24,4	606,0	1042,0	14
52268	1 x 4	6,3	56,0	86,0	12
52269	2 x 4	10,9	135,0	196,0	12
52270	3 x 4	11,5	178,0	248,0	12
52271	4 x 4	12,8	220,0	316,0	12
52272	5 x 4	14,3	259,0	376,0	12
52273	6 x 4	15,6	302,0	452,0	12
52274	7 x 4	17,0	355,0	555,0	12
52275	8 x 4	18,3	392,0	655,0	12
52276	10 x 4	20,7	480,0	767,0	12
52277	12 x 4	20,7	557,0	829,0	12
52278	14 x 4	22,1	636,0	948,0	12
52279	1 x 6	6,9	81,0	108,0	10
52280	2 x 6	12,1	175,0	255,0	10
52281	3 x 6	12,8	240,0	330,0	10
52282	4 x 6	14,3	305,0	429,0	10
52283	5 x 6	16,0	441,0	536,0	10
52284	6 x 6	17,4	473,0	624,0	10
52285	7 x 6	19,3	505,0	751,0	10
52286	1 x 10	8,4	124,0	170,0	8
52287	2 x 10	15,1	265,0	409,0	8
52288	3 x 10	16,4	370,0	550,0	8
52289	4 x 10	18,1	485,0	715,0	8
52290	5 x 10	20,2	610,0	882,0	8
52291	6 x 10	22,3	715,0	1026,0	8
52292	7 x 10	24,3	820,0	1195,0	8

Dimensions and specifications may be changed without prior notice. (RE01)



Suitable accessories can be found in Chapter X.

- Cable protection tube - HTP

SiHF-C-Si silicon multicore cable, halogen-free, Cu-screened, EMC-preferred type, meter marking



Technical data

- Special silicone-insulated cable with higher heat-resistance adapted to DIN VDE 0250 part 1 and DIN VDE 0285-525-2-83/ DIN EN 50525-2-83
- **Temperature range** -60°C to +180°C (for short time +220°C)
- **Temperature limit** at the conductor in operation +180°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 2000 V
- **Breakdown voltage** min. 5000 V
- **Insulation resistance** min. 200 MOhm x km
- **Power rating** at ambient temperatures up to +145°C acc. to DIN VDE 0100
  150°C - load value 100%
  155°C - load value 91%
  160°C - load value 82%
  165°C - load value 71%
  170°C - load value 58%
  175°C - load value 41%
- **Minimum bending radius** flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Coupling resistance** max. 250 Ohm/km
- **Radiation resistance** up to 20x10⁶ cJ/kg (up to 20 Mrad)

Cable structure

- Tinned copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of silicone
- Core identification to DIN VDE 0293-308
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Inner sheath of silicone
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of silicone
- Sheath colour preferentially redbrown
- with meter marking

Properties

- **Resistant to** High molecular oils, fats from vegetables and animals, alcohols, plasticizers and clophenes, diluted acids, lyes and salt dissolution, oxidation substances, tropical influences and weather, lake water, oxygen, ozone
- For laying as a fixed installation only in open or ventilated pipe systems as well as in ducts. Otherwise the mechanical properties of the silicon are reduced by the enclosed air at temperatures exceeding 90°C.

Tests

- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- **Behaviour in fire** no flame propagation acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2,IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **SiHF**, confer page 223

Application

Silicone-rubber-insulated cables are used for all applications where the cable insulation is subjected to high temperature fluctuations. These cables are heat-resistant for continuous use at temperatures up to +180°C, as well as for short periods of time at +220°C. Silicone-rubber-insulated cables can also be used at low temperatures down to -60°C because of the excellent weathering resistance of the material. These cables are halogen-free and hence are particularly suitable for applications in iron and steel works, rolling mills, foundries, in aircraft construction and ship building, as well as in cement, glass and ceramic plants. Silicone-rubber-insulated cables have demonstrated proven applications in projector and high-power lighting fixtures as well as all types of heating equipment. An interference-free transmission of signals and pulse is assured by the high screening density. The ideal interference-protected silicone multicore flexible cable for such applications as given above.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
23151	2 x 0,5	8,0	55,5	101,0	20
23152	3 G 0,5	8,3	60,8	118,0	20
23153	4 G 0,5	9,1	66,5	131,0	20
23154	5 G 0,5	9,9	81,6	153,0	20
23155	7 G 0,5	10,9	92,2	173,0	20
23156	10 G 0,5	12,8	124,0	242,0	20
23157	12 G 0,5	13,5	134,4	263,0	20
23158	16 G 0,5	15,1	170,2	326,0	20
23159	18 G 0,5	15,9	181,0	351,0	20
23291	25 G 0,5	18,5	230,1	348,0	20

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
23160	2 x 0,75	9,0	61,4	124,0	19
23161	3 G 0,75	9,4	69,1	136,0	19
23162	4 G 0,75	10,4	86,7	159,0	19
23163	5 G 0,75	11,3	95,2	180,0	19
23164	7 G 0,75	12,0	113,3	212,0	19
23165	10 G 0,75	13,9	165,2	306,0	19
23166	12 G 0,75	15,2	180,3	333,0	19
23167	16 G 0,75	16,9	212,2	418,0	19
23168	18 G 0,75	18,0	282,1	453,0	19
23292	25 G 0,75	20,8	297,4	468,0	19

Continuation ▸

SiHF-C-Si silicon multicore cable, halogen-free, Cu-screened, EMC-preferred type, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
23169	2 x 1	9,4	66,7	132,0	18
23170	3 G 1	9,8	86,2	153,0	18
23171	4 G 1	11,1	96,8	173,0	18
23172	5 G 1	12,0	108,3	202,0	18
23173	7 G 1	12,7	141,2	243,0	18
23174	10 G 1	14,7	190,0	238,0	18
23175	12 G 1	15,8	209,8	371,0	18
23176	16 G 1	17,4	251,8	468,0	18
23177	18 G 1	18,5	297,4	526,0	18
23293	25 G 1	21,8	329,0	559,0	18
23178	2 x 1,5	10,8	87,7	172,0	16
23179	3 G 1,5	11,2	103,5	198,0	16
23180	4 G 1,5	12,0	131,7	235,0	16
23181	5 G 1,5	12,8	148,5	281,0	16
23182	7 G 1,5	13,6	193,4	345,0	16
23183	10 G 1,5	14,7	268,5	482,0	16
23184	12 G 1,5	15,8	298,4	531,0	16
23185	16 G 1,5	17,4	362,3	662,0	16
23186	18 G 1,5	20,6	394,0	720,0	16
23294	25 G 1,5	24,2	488,2	791,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
23187	2 x 2,5	12,0	122,3	230,0	14
23188	3 G 2,5	12,9	147,7	275,0	14
23189	4 G 2,5	13,8	188,6	340,0	14
23190	5 G 2,5	14,8	214,9	394,0	14
23191	7 G 2,5	15,8	265,7	488,0	14
23192	4 G 4	16,0	294,0	520,0	12
23193	5 G 4	17,4	374,0	653,0	12
23150	2 x 6	15,8	171,0	350,0	20
23194	4 G 6	18,1	449,0	781,0	10
23195	5 G 6	20,0	563,0	982,0	10
23196	4 G 10	23,2	759,0	1294,0	8
23197	4 G 16	25,2	1180,0	1988,0	6
23198	4 G 25	31,0	1276,0	2995,0	4

Dimensions and specifications may be changed without prior notice. (RE01)



Suitable accessories can be found in Chapter X.

- Cable protection tube - HTP

E

THERMFLEX® 180 EWKF-C silicone multicore cable,

halogen-free, screened, EMC-preferred type, meter marking



Technical data

- adapted to DIN VDE 0285-525-2-83/ DIN EN 50525-2-83
- **Temperature range**
  flexing -25°C to +180°C
  fixed installation -60°C to +180°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 2000 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km
- **Radiation resistance**
  up to 20x10^6 cJ/kg (up to 20 Mrad)

Tests

- Insulation integrity
  testet acc. to DIN VDE 0472 part 814 and IEC 60331
- Halogen-free
  acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Behaviour in fire
  no flame propagation acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2,IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Corrosiveness of combustion gases
  acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2

Cable structure

- Tinned copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special silicone compound type EI2 to DIN VDE 0207-363-1 / DIN EN 50363-1
- Core identification to DIN VDE 0293-308
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Inner sheath of special silicone
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special silicone compound type 2GM1 to DIN VDE 0207-363-2-1/DIN EN 50363-2-1
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- Smoke density - low
- Due to the special abrasive and notch resistance outer sheath, these cables are suitable for heavy loading of mechanical stresses than the usual standard silicone cables
- Hardly changes of dielectric strength and the insulation resistance also at high temperatures
- High ignition or flash point
- In case of fire, forms an insulating layer of SiO_2
- **Resistant to**
  High molecular oils, fats from vegetables and animals, alcohols, plasticizers and clophenes, diluted acids, lyes and salt dissolution, oxidation substances, tropical influences and weather, lake water, oxygen, ozone

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- **EWKF** = Improved values to **E**=tearing resistance, **W**=breaking strength propagation, **K**=notch strength, **F**=flexibility
- unscreened analogue type:
  THERMFLEX® 180 EWKF, confer page 225

Application

These cables are ideal for use everywhere, where increased mechanical stresses for the installation and operation are required. Silicone-rubber-insulated cables are used for all applications where the cable insulation is subjected to high temperature fluctuations. For use in dry, damp and wet rooms as well outdoor. As flexible connecting cable for low mechanical stress i. e. sauna, solar installations, foundries and steel plants. This cable can be used for fixed installation only in open and ventilated cable tubes and cable ducts. An interference-free transmission of signals and pulse is assured by the high screening density.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

FRNC = **F**lame **R**etardant **N**on **C**orrosive

All silicon cables are available also in FRNC versions. The sheath designed with special-compound conform flame test method C to DIN VDE 0472 part 804 and IEC 60332-3 as well as HD 405.3. This special compound is self-extinguishing. Because of that these cables can be installed as security cable with functionality as for example in communal buildings, power stations, hotels, airports etc.

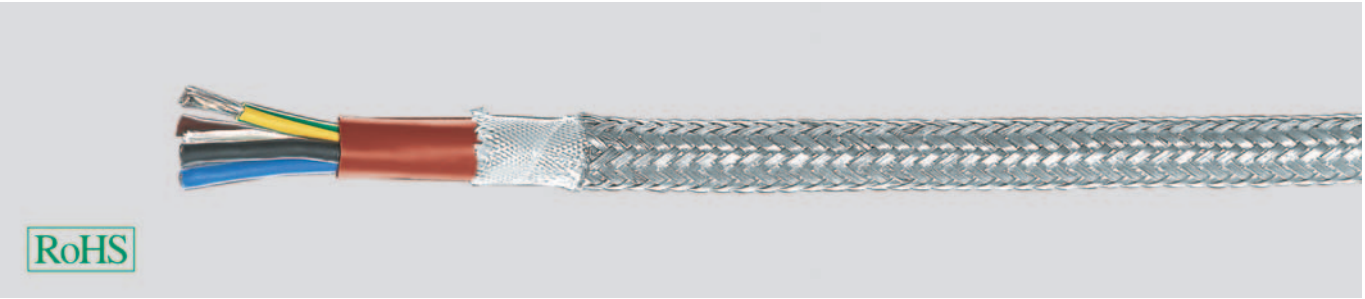
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
79804	2 x 0,75	9,0	61,4	124,0	19
79805	3 G 0,75	9,4	69,1	136,0	19
79806	4 G 0,75	10,4	86,7	160,0	19
79807	5 G 0,75	11,2	95,2	180,0	19
79808	2 x 1	9,4	66,7	132,0	18
79809	3 G 1	9,8	86,2	154,0	18
79810	4 G 1	10,7	96,8	176,0	18
79811	5 G 1	11,6	108,3	207,0	18
79812	2 x 1,5	10,8	87,7	170,0	16
79813	3 G 1,5	11,2	103,5	190,0	16
79814	4 G 1,5	12,0	131,7	231,0	16
79815	5 G 1,5	12,8	148,5	282,0	16
79816	7 G 1,5	13,6	193,4	342,0	16
701219	12 G 1,5	17,2	298,4	531,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
79817	16 G 1,5	20,0	362,3	660,0	16
79818	20 G 1,5	21,3	405,1	766,0	16
79819	2 x 2,5	12,0	122,3	230,0	14
79820	3 G 2,5	12,9	147,7	275,0	14
79821	4 G 2,5	13,9	188,6	340,0	14
79822	5 G 2,5	14,8	214,9	395,0	14
79823	2 x 4	14,2	137,0	308,0	12
79824	3 G 4	14,9	178,1	364,0	12
79825	4 G 4	16,0	294,0	511,0	12
79826	5 G 4	17,4	374,0	630,0	12
79827	2 x 6	15,8	185,0	418,0	10
79828	3 G 6	16,6	241,1	612,0	10
79829	4 G 6	18,1	449,0	781,0	10
79830	5 G 6	20,0	563,0	980,0	10

Dimensions and specifications may be changed without prior notice. (RE01)

SiHF/GL-P silicon mulitcore cable, steel braiding, halogen-free



Technical data

- Special silicone multicore cable with higher heat-resistance range adapted to DIN VDE 0250 part 1 and DIN VDE 0285-525-2-83/ DIN EN 50525-2-83
- **Temperature range** -60°C to +180°C (for short time +220°C)
- **Temperature limit** at the conductor in operation +180°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 2000 V
- **Breakdown voltage** min. 5000 V
- **Insulation resistance** min. 200 MOhm x km
- **Power rating** at ambient temperature up to +145°C to DIN VDE 0100 for higher temperatures valid:
  150°C - load value 100%
  155°C - load value 91%
  160°C - load value 82%
  165°C - load value 71%
  170°C - load value 58%
  175°C - load value 41%
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Radiation resistance** up to 20x10⁶ cJ/kg (up to 20 Mrad)

Cable structure

- Tinned copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of silicone
- Core identification to DIN VDE 0293-308
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Sheath of silicone
- Glass fibre tape over the sheath
- Galvanized steel wire outer braiding

Properties

- **Advantages** Hardly changes of dielectric strength and the insulation resistance also at high temperatures, high ignition or flash point, in case of fire, forms an insulating layer of SiO_2
- **Resistant to** High molecular oils, fats from vegetables and animals, alcohols, plasticizers and clophenes, diluted acids, lyes and salt dissolution, oxidation substances, tropical influences and weather, lake water, oxygen
- For laying as a fixed installation only in open or ventilated pipe systems as well as in ducts. Otherwise the mechanical properties of the silicon are reduced by the enclosed air at temperatures exceeding 90°C

Tests

- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- **Behaviour in fire** no flame propagation acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2,IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Silicone cables screened with steel braiding were evolved for use wherever insulation is subjected to extreme temperature changes. They are heat-resistant for permanent temperature up to +180°C, for short time operation up to +220°C. The good performance of the environmental resistant properties means that silicone cables can be used at temperatures down to -60°C. Silicone cables are halogen-free cables and are especially suited for installation in power stations. They have also found their uses in the steel producing industries, aviation industry, ship building as well as in ceramic, glass and cement factories. The screened steel braiding ensures a disturbance-free transmission of signals and impulses.

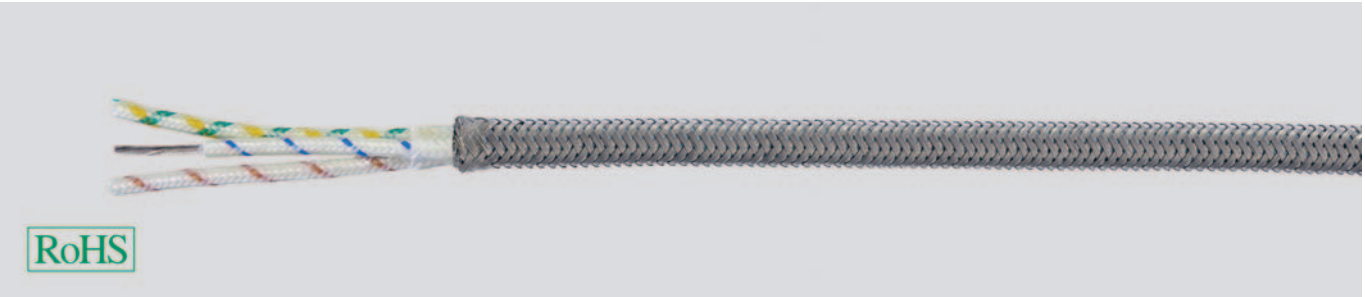
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
23062	2 x 0,75	7,9	14,4	90,0	19
23063	3 G 0,75	8,3	21,6	101,0	19
23064	4 G 0,75	9,3	29,0	129,0	19
23065	5 G 0,75	10,0	36,0	157,0	19
23067	7 G 0,75	10,7	50,0	177,0	19
23068	2 x 1	8,0	19,0	97,0	18
23069	3 G 1	8,9	29,0	122,0	18
23070	4 G 1	9,4	38,0	141,0	18
23071	5 G 1	10,4	48,0	166,0	18
23073	7 G 1	11,1	67,0	197,0	18
23074	2 x 1,5	9,0	29,0	127,0	16
23075	3 G 1,5	9,5	43,0	145,0	16
23076	4 G 1,5	10,3	58,0	173,0	16
23077	5 G 1,5	11,0	72,0	202,0	16
23078	6 G 1,5	12,0	86,0	240,0	16
23079	7 G 1,5	12,0	101,0	244,0	16
23080	8 G 1,5	13,0	115,0	261,0	16
23081	12 G 1,5	15,5	173,0	327,0	16
23082	14 G 1,5	16,2	202,0	382,0	16
23083	18 G 1,5	18,7	259,0	440,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
23084	24 G 1,5	21,5	346,0	600,0	16
23085	2 x 2,5	10,7	48,0	187,0	14
23086	3 G 2,5	11,2	72,0	205,0	14
23087	4 G 2,5	12,1	96,0	278,0	14
23088	5 G 2,5	13,3	120,0	322,0	14
23089	6 G 2,5	14,3	144,0	351,0	14
23090	7 G 2,5	14,4	168,0	380,0	14
23091	2 x 4	12,5	77,0	240,0	12
23092	3 G 4	13,0	115,0	311,0	12
23093	4 G 4	15,0	154,0	384,0	12
23094	5 G 4	16,0	192,0	454,0	12
23095	7 G 4	17,5	269,0	633,0	12
23096	2 x 6	15,1	115,0	321,0	10
23097	3 G 6	15,9	173,0	432,0	10
23098	4 G 6	18,0	230,0	544,0	10
23099	5 G 6	19,4	288,0	656,0	10
23100	7 G 6	20,7	403,0	768,0	10
23101	4 G 10	22,1	384,0	925,0	8
23102	4 G 16	26,1	614,0	1235,0	6
23103	4 G 25	30,4	960,0	1700,0	4

Dimensions and specifications may be changed without prior notice. (RE01)

MULTITHERM 400-ES halogen-free, high-grade steel braiding



Technical data

- Special core insulation for high temperatures
- **Temperature range** -60°C to +400°C (for short time +500°C)
- **Nominal voltage** 500 V
- **Test voltage** 2500 V
- **Minimum bending radius** 5x cable Ø

Cable structure

- Copper-conductor nickel plated, fine-wire (ASTM B 355)
- 1. Core insulation of braided glass-fibre impregnated with silicone
  2. Core insulation of braided glass-fibre impregnated with silicone
- Core identification
  - No. of cores with GN-YE conductor
  3 = GN-YE, BU, BN
  4 = GN-YE, BK, BU, BN
  5 = GN-YE, BK, BU, BN, WH
  6 = GN-YE, BK, BU, BN, WH, RD
  7 = GN-YE, BK, BU, BN, WH, RD, GY
  - No. of cores without GN-YE conductor
  2 = BU, BN
  3 = BK, BU, BN
  4 = BK, BU, BN, WH
  5 = BK, BU, BN, WH, RD
  6 = BK, BU, BN, WH, RD, GY
  7 = BK, BU, BN, WH, RD, GY, GN
- Overall lay up of cores
- Outer sheath of braided glass-fibre impregnated with silicone
- braided high-grade steel, coverage approx. 80%

Properties

- Asbestos and cadmium-free

Note

- Further sizes are available on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **MULTITHERM 400**, confer page 229

Application

Where extremely high connecting and ambient temperatures occur, e. g. in iron and steel works, rolling mills, foundries, glass and ceramic plants, in power plant construction, in the chemical industry, nuclear technology, crude oil engineering, in technical applications in medicine, as well as for wiring resistances in electrical heating equipment, furnaces and machinery in thermoplastic forming. Due to the special construction of the cable, a maximum temperature of approx. 220°C is recommended for use in damp environments. Applications at temperatures above this should be used in dry environments only. The robust braiding of high-grade steel protects the cable from aggressive atmospheres and mechanical stresses. The braided screen can also be used for earthing purposes.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Max. permiss. current carrying capacity at +340°C (A)	Weight approx. kg / km	AWG-No.
52018	2 x 0,5	7,1	10,0	3,3	84,0	20
52019	3 x 0,5	7,3	15,0	3,1	89,0	20
52020	4 x 0,5	8,4	19,0	3,0	111,0	20
52021	5 x 0,5	8,9	25,0	2,9	126,0	20
52022	6 x 0,5	9,5	30,0	2,8	146,0	20
52023	7 x 0,5	9,6	34,0	2,7	158,0	20
52024	2 x 0,75	7,6	14,4	5,1	95,0	19
52025	3 x 0,75	7,9	21,6	5,1	109,0	19
52026	4 x 0,75	8,9	29,0	4,9	131,0	19
52027	5 x 0,75	9,7	36,0	4,7	157,0	19
52028	6 x 0,75	10,4	43,0	4,5	177,0	19
52029	7 x 0,75	10,6	50,0	4,4	190,0	19
52030	2 x 1	7,8	19,0	7,0	105,0	18
52031	3 x 1	8,7	29,0	6,7	126,0	18
52032	4 x 1	9,2	38,0	6,4	148,0	18
52033	5 x 1	10,0	48,0	6,2	174,0	18
52034	6 x 1	10,7	58,0	6,0	198,0	18
52035	7 x 1	10,9	67,0	5,8	212,0	18
52036	2 x 1,5	8,9	29,0	9,4	132,0	16
52037	3 x 1,5	9,2	43,0	9,0	153,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Max. permiss. current carrying capacity at +340°C (A)	Weight approx. kg / km	AWG-No.
52038	4 x 1,5	10,0	58,0	8,6	183,0	16
52039	5 x 1,5	10,9	72,0	8,3	212,0	16
52040	6 x 1,5	11,6	88,0	8,0	241,0	16
52041	7 x 1,5	11,9	101,0	7,8	259,0	16
52042	2 x 2,5	10,1	48,0	12,2	191,0	14
52043	3 x 2,5	10,6	72,0	11,6	213,0	14
52044	4 x 2,5	11,5	96,0	11,2	256,0	14
52045	5 x 2,5	12,7	120,0	10,8	307,0	14
52046	6 x 2,5	14,9	144,0	10,4	359,0	14
52047	7 x 2,5	15,1	168,0	10,1	388,0	14
52048	2 x 4	11,9	77,0	16,0	260,0	12
52049	3 x 4	12,3	115,0	15,3	303,0	12
52050	4 x 4	15,1	154,0	14,6	378,0	12
52051	5 x 4	15,6	192,0	14,1	458,0	12
52052	7 x 4	16,6	270,0	13,3	593,0	12
52053	3 x 6	16,3	173,0	20,0	442,0	10
52054	4 x 6	18,3	230,0	19,0	567,0	10
52055	5 x 6	19,8	288,0	18,0	671,0	10
52056	4 x 10	22,1	384,0	26,0	866,0	8
52057	4 x 16	26,6	615,0	34,0	1203,0	6

Dimensions and specifications may be changed without prior notice. (RE01)


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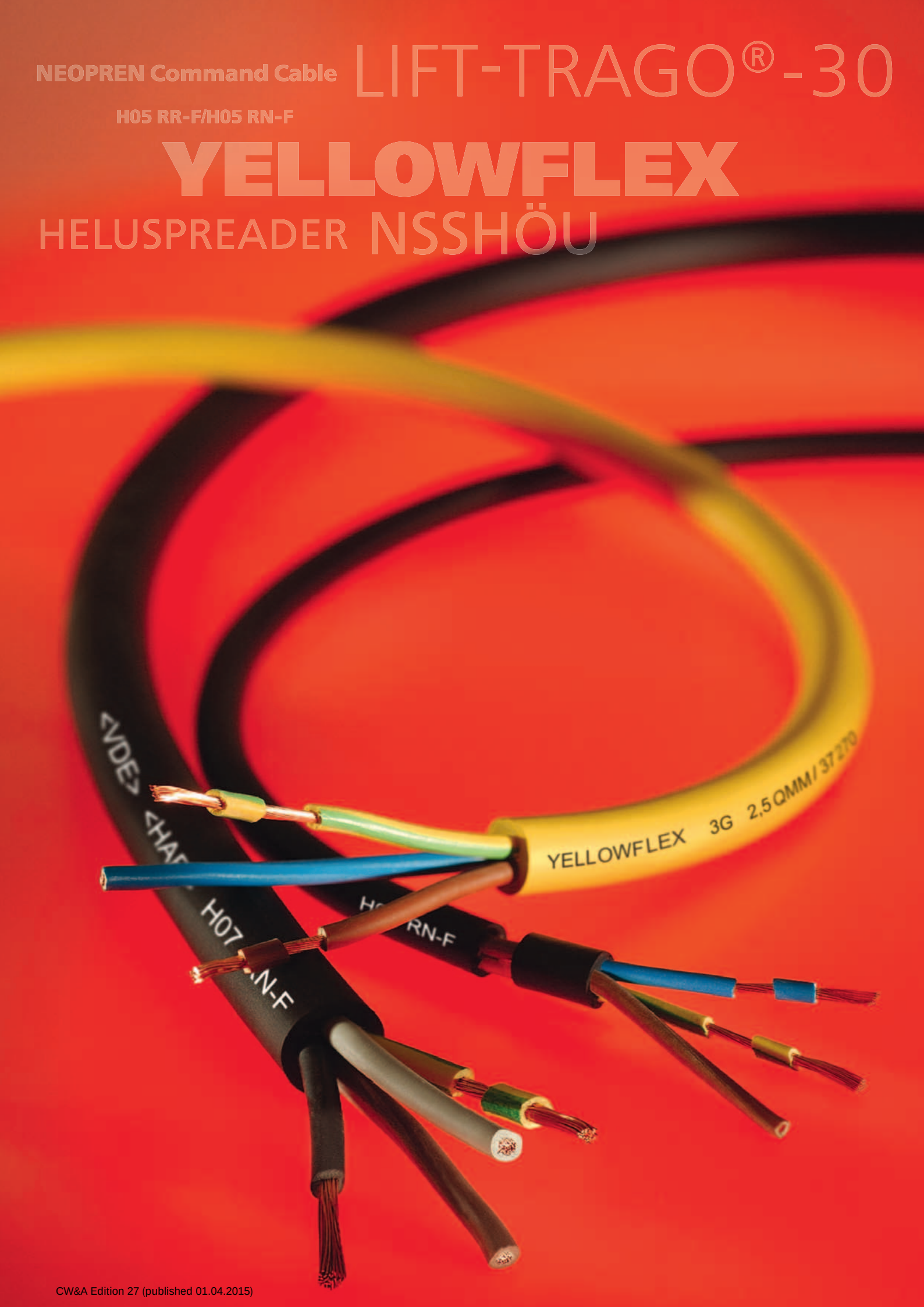
NEOPREN Command Cable

LIFT-TRAGO®-30

H05 RR-F/H05 RN-F

YELLOWFLEX

HELUSPREADER NSSHÖU



CW&A Edition 27 (published 01.04.2015)

ALLWEATHER & RUBBER CABLES

	Temperature (°C) - flexing	Temperature (°C) - fixed	Nominal voltage U_0/U	Bending radius - flexing x Ø	Bending radius - fixed x Ø	Halogen-free	UV-resistant	Outdoor use	Drag chain	Colored cores/VDE 0293	Screened/shielded	HAR/VDE REG no./VDE	UL/CSA	Page
Allweather & rubber cables														
YELLOWFLEX	-25 to +60	-30 to +60	450/750	7.5x	4x			X		X				240
H05RR-F / H05RN-F		-30 to +60	300/500	7.5x	7.5x			(X)		X		X		241
H07RN-F		-30 to +60	450/750	7.5x	4x			X		X		X		242
A07RN-F		-30 to +60	450/750	7.5x	4x			X		X		X		244
NEOPRENE control cable	-25 to +60	-40 to +80	300/500	12.5x	12.5x			X		X				245
NSSHÖU	-25 to +80	-40 to +80	0.6/1 kV	10x	4x			X		X		X		246
LIFT-TRAGO®-30 / -60	-5 to +50	-40 to +70	300/500	20x	20x									247
TRAGO / Lift-2S	-15 to +70	-40 to +70	300/500	20x	20x		X	X		X				248
BAULIFTKABEL B101 / B102 / B103	-10 to +80	-10 to +80	300/500	10x	10x		X	X						249
HELUSPREADER YSLTÖ-J	-20 to +60	-20 to +60	300/500	15x	15x		X	X						250

The selection table is intended as an initial orientation.
Please see the relevant page of the catalogue for detailed information on the product properties.

F

YELLOWFLEX cold flexible, robust, meter marking



Technical data

- Rubber sheathed cable adapted to DIN VDE 0285-525-2-21 / DIN EN 50525-2-21
- **Temperature range** flexing -25°C to +60°C fixed installation -30°C to +60°C
- Permissible **operating temperature** at conductor +60°C
- **Nominal voltage** U_0/U 450/750 V with protected fixed installation U_0/U 600/1000 V
- Highest permissible **operating voltage** in three-phase and one-phase a.c. systems U_0/U 476/825 V in d.c. systems U_0/U 619/1238 V
- **Test voltage** 2500 V
- **Minimum bending radius** for fixed installation 4x cable Ø for guiding over roller 7,5x cable Ø during winding on drums 5x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of rubber, EI4 to DIN VDE 0207-363-1 / DIN EN 50363-1
- Core identification to DIN VDE 0293-308
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Outer sheath of special EM2 to DIN VDE 0207-363-2-1/DIN EN 50363-2-1
- Sheath colour yellow (RAL 1021)
- with meter marking

Individual printing:

- **Article numbers** for individual printing:
  Part no. 37359 for 3G1,5 mm²
  Part no. 37360 for 3G2,5 mm²
  Part no. 37361 for 5G1,5 mm²
  Part no. 37362 for 5G2,5 mm²
- **Usual length:** 500m or 1000m drum
- **Minimum quantity** 500m drum
- price for 500m drum 102,25 Euro
  price for 1000m drum 153,40 Euro

Properties

- Increased stability
- Tear-resistant

Resistant to

- Atmospheric influences

Largely resistant to

- Oils and fats

Tests

- **Behaviour in fire** to DIN VDE 0482-332-1-2 DIN EN 60332-2-1, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor
  x = without green-yellow conductor.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- individual marking

Application

These robust rubber sheathed cables can be used where high demands are placed flexibility and mechanical stress. For application in dry, moist and wet rooms and in open air, in steel works and rolling mills in heating and air-conditioning systems, in the bottling industry, in machinery and plant construction, in the chemical industry as well as for the professional and the hobby enthusiast. The choice of yellow as the sheath colour ensures additional safety. Can be used in potentially explosive areas acc. to DIN VDE 0165.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
37259	2 x 1	7,7 - 10,0	19,0	98,0	18
37260	3 G 1	8,3 - 10,7	29,0	131,0	18
37261	4 G 1	9,2 - 11,9	38,0	150,0	18
37262	5 G 1	10,2 - 13,1	48,0	220,0	18
37263	2 x 1,5	8,5 - 11,0	29,0	135,0	16
37264	3 G 1,5	9,2 - 11,9	43,0	165,0	16
37265	4 G 1,5	10,2 - 13,1	58,0	200,0	16
37266	5 G 1,5	11,2 - 14,4	72,0	241,0	16
37267	7 G 1,5	16,5 - 16,5	101,0	375,0	16
37268	12 G 1,5	17,6 - 22,4	175,0	460,0	16
37269	2 x 2,5	10,2 - 13,1	48,0	194,0	14
37270	3 G 2,5	10,9 - 14,0	72,0	235,0	14
37271	4 G 2,5	12,1 - 15,5	96,0	290,0	14
37272	5 G 2,5	13,3 - 17,0	120,0	347,0	14

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
37273	2 x 4	11,8 - 15,1	77,0	282,0	12
37274	3 G 4	12,7 - 16,2	115,0	322,0	12
37275	4 G 4	14,0 - 17,9	154,0	397,0	12
37276	5 G 4	15,6 - 19,9	192,0	486,0	12
37277	4 G 6	15,7 - 20,0	230,0	541,0	10
37278	5 G 6	17,5 - 22,2	288,0	652,0	10
37279	4 G 10	20,9 - 26,5	384,0	952,0	8
37280	5 G 10	22,9 - 29,1	480,0	1203,0	8
37281	4 G 16	23,8 - 30,1	614,0	1260,0	6
37282	5 G 16	26,4 - 33,3	768,0	1550,0	6
37283	4 G 25	28,9 - 36,6	960,0	1860,0	4
37284	5 G 25	32,0 - 40,4	1200,0	2250,0	4
37285	4 G 35	32,5 - 41,1	1344,0	2374,0	2
37286	5 G 35	40,6 - 40,6	1680,0	2752,0	2

Dimensions and specifications may be changed without prior notice. (RF01)



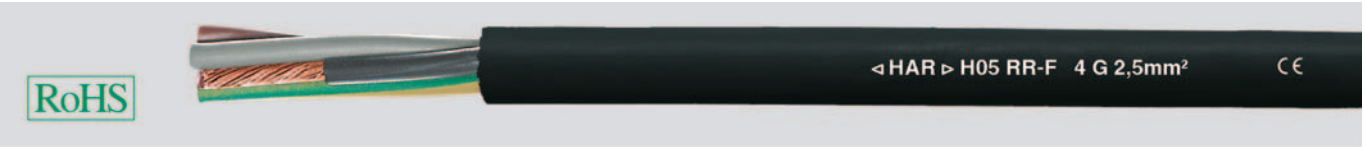
Suitable accessories can be found in Chapter X.

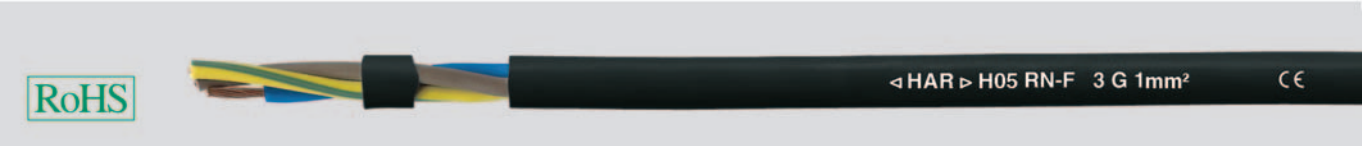
- Cable tie - T-WS



Also available as pre-assembled cable - see page 902.

H05RR-F / H05RN-F rubber-sheathed cable





Technical data

- to DIN VDE 0285-525-2-21 / DIN EN 50525-2-21, IEC 60245-4
- H05RR-F additionally to BS 6500
- **Temperature range** -30°C to +60°C
- Permissible **operating temperature** at conductor +60°C
- **Nominal voltage** U_0/U 300/500 V
- Max. **operating voltage** three-phase and one-phase a.c. U_0/U 318/550 V for direct current U_0/U 413/825 V
- **Test voltage** 2000 V
- **Minimum bending radius** 7,5x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of rubber EI4 to DIN VDE 0207-363-1 / DIN EN 50363-1
- Core identification to DIN VDE 0293-308
- Cores laid up
- Outer sheath black: RR-F = Rubber, EM3 to DIN VDE 0207-363-2-1/DIN EN 50363-2-1 RN-F = EM2 to DIN VDE 0207-363-2-1/DIN EN 50363-2-1

Properties

- Oils and fats are allowed to come in touch

Tests

- **Behaviour in fire** to DIN VDE 0482-332-1-2 DIN EN 60332-2-1, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- H05RR-F is replaced the former type NLH and NMH up to 2,5 mm².
- H05RN-F is replaced to former type NMHÖU up to 1 mm². at 1,5 mm² - not in VDE; adapted to VDE (H)05 RN-F Art.no. 36008 = national type: A05 RN-F Art-no. 36007 = (A)05 RN-F, outer sheath colour grey, for window shades manufacturer
- Further sizes are available on request.

Application

H05RR-F

These cables are suitable for connecting electrical appliances, for example vacuum cleaner, flat irons, soldering irons, kitchen appliances, toaster, stoves etc. They were also used for medium mechanical stress in households and offices. These cables are suitable for fixed installation in partition walls, furniture, decoration covering and in hollow spaces of prefabricated building parts. They are not suitable for use in open air, in industries (also permitted to tailor workshops and of that kind) or in agriculture plants and for connecting commercial electrical tools.

H05RN-F

These cables are suitable for connecting electrical equipment with low mechanical stress in dry, damp and wet places as well in open air, for example as connection cable for horticulture tools. These cables can be used in contact with fats and oils (for example deep fryer). They are also suitable for fixed installation, for example in furniture, decoration covering, partition walls and in hollow spaces of prefabricated building parts. The installation in hazardous areas is allowed.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

H05RR-F

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
35001	2 x 0,75	5,7 - 7,4	14,4	60,0	19
35005	3 G 0,75	6,2 - 8,1	21,6	74,0	19
35009	4 G 0,75	6,8 - 8,8	29,0	78,0	19
35019	5 G 0,75	7,6 - 9,9	36,0	99,0	19
35002	2 x 1	6,1 - 8,0	19,0	72,0	18
35006	3 G 1	6,5 - 8,5	29,0	85,0	18
35010	4 G 1	7,1 - 9,3	38,0	98,0	18
35020	5 G 1	8,0 - 10,3	48,0	134,0	18
35003	2 x 1,5	7,6 - 9,8	29,0	98,0	16
35007	3 G 1,5	8,0 - 10,4	43,0	120,0	16
35011	4 G 1,5	9,0 - 11,6	58,0	150,0	16
35013	5 G 1,5	9,8 - 12,7	72,0	180,0	16
35004	2 x 2,5	9,0 - 11,6	48,0	145,0	14
35008	3 G 2,5	9,6 - 12,4	72,0	170,0	14
35012	4 G 2,5	10,7 - 13,8	96,0	220,0	14
35014	5 G 2,5	11,9 - 15,3	120,0	270,0	14
35015	3 G 4	11,3 - 14,5	115,0	260,0	12
35017	4 G 4	12,7 - 16,2	154,0	340,0	12
35016	3 G 6	12,8 - 16,3	173,0	361,0	10
35018	4 G 6	14,2 - 18,1	230,0	462,0	10

H05RN-F

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
36001	2 x 0,75	5,7 - 7,4	14,4	78,0	19
36003	3 G 0,75	6,2 - 8,1	21,6	94,0	19
36007	4 G 0,75	6,8 - 8,8	29,0	90,0	19
36008	4 G 0,75	6,8 - 8,8	29,0	90,0	19
36002	2 x 1	6,1 - 8,0	19,0	94,0	18
36004	3 G 1	6,5 - 8,5	29,0	114,0	18
36005	3 G 1,5	8,6 - 11,0	43,0	157,0	16
36006	5 G 1,5	10,5 - 13,5	72,0	228,0	16

Dimensions and specifications may be changed without prior notice. (RF01)

H07RN-F rubber-sheathed cable, harmonized type



Technical data

- Rubber sheathed cable H07RN-F to DIN VDE 0285-525-2-21, BS 7919 DIN EN 50525-2-21, IEC 60245-4
- **Temperature range** -30°C to +60°C
- Permissible **operating temperature** at conductor +60°C
- **Nominal voltage** U_0/U 450/750 V in case of protected and fixed installation U_0/U 600/1000 V
- Max. permissible **operating voltage** in three phase and one phase a.c. system U_0/U 476/825 V direct current-system U_0/U 619/1238 V
- **Test voltage** 2500 V
- **Permanent tensile load** max. 15 N/mm²
- **Minimum bending radius** for fixed installation 4x cable Ø for guiding over roller 7,5x cable Ø during winding on drums 5x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of rubber EI4 to DIN VDE 0207-363-1 / DIN EN 50363-1
- Core identification to DIN VDE 0293-308
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Outer sheath of rubber EM2 to DIN VDE 0207-363-2-1/DIN EN 50363-2-1
- Sheath colour black

Properties

Resistant to

- Weather

Tests

- **Behaviour in fire** to DIN VDE 0482-332-1-2 DIN EN 60332-2-1, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- **Ozone resistant** of the insulation to DIN VDE 0472 part 805, test method A or part 805 A1, test method C
- **Oil resistant** test according to DIN VDE 0473-811-404,DIN EN 60811-404

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- The core identification of a single core sheathed, of an insulated wire is black.

Application

Heavy duty rubber-sheathed flexible cables are suited for use for medium mechanical stress in dry, damp and wet areas as well as in open air and in agriculture plants. They are used for equipment in industry works such as boilers, heating plates, hand lamps, electric tools such as drills, circular saws and homework tools as well as for transportable motors or machines at site. These cables are also suitable for fixed installation on plaster, in temporary buildings and residential barracks. They are suitable for direct laying on components and mechanical parts of machines, for example lifts and cranes. They can be used in case of protected and fixed installation in tubes or in equipment as well as rotor connecting cable of motors with a working voltage up to 1000 V alternating voltage or a direct voltage up to 750 V against ground. The operating direct voltage is permitted up to 900 V against ground when they are used in rail-coaches. Installation in hazardous areas according to DIN VDE 0165 is allowed.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
37001	1 x 1,5	5,7 - 7,1	14,4	58,0	16
37002	1 x 2,5	6,3 - 7,9	24,0	71,0	14
37003	1 x 4	7,2 - 9,0	38,0	100,0	12
37004	1 x 6	7,9 - 9,8	58,0	130,0	10
37005	1 x 10	9,5 - 11,9	96,0	230,0	8
37006	1 x 16	10,8 - 13,4	154,0	290,0	6
37007	1 x 25	12,7 - 15,8	240,0	420,0	4
37008	1 x 35	14,3 - 17,9	336,0	530,0	2
37009	1 x 50	16,5 - 20,6	480,0	750,0	1
37010	1 x 70	18,6 - 23,3	672,0	960,0	2/0
37011	1 x 95	20,8 - 26,0	912,0	1250,0	3/0
37012	1 x 120	22,8 - 28,6	1152,0	1560,0	4/0
37013	1 x 150	25,2 - 31,4	1440,0	1900,0	300 kcmil
37014	1 x 185	27,6 - 34,4	1776,0	2300,0	350 kcmil
37015	1 x 240	30,6 - 38,3	2304,0	2950,0	500 kcmil
37016	1 x 300	33,5 - 41,9	2880,0	3600,0	600 kcmil
37017	1 x 400	37,4 - 46,8	3840,0	4600,0	750 kcmil
37018	1 x 500	41,3 - 52,0	4800,0	6000,0	1000 kcmil
37019	2 x 1	7,7 - 10,0	19,0	98,0	18
37020	2 x 1,5	8,5 - 11,0	29,0	135,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
37021	2 x 2,5	10,2 - 13,1	48,0	193,0	14
37022	2 x 4	11,8 - 15,1	77,0	280,0	12
37023	2 x 6	13,1 - 16,8	115,0	330,0	10
37024	2 x 10	17,7 - 22,6	192,0	586,0	8
37025	2 x 16	20,2 - 25,7	307,0	810,0	6
37026	2 x 25	24,3 - 30,7	480,0	1160,0	4
37027	3 G 1	8,3 - 10,7	29,0	130,0	18
37028	3 G 1,5	9,2 - 11,9	43,0	165,0	16

Continuation ▸

H07RN-F rubber-sheathed cable, harmonized type

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
37029	3 G 2,5	10,9 - 14,0	72,0	235,0	14
37030	3 G 4	12,7 - 16,2	115,0	320,0	12
37031	3 G 6	14,1 - 18,0	173,0	420,0	10
37032	3 G 10	19,1 - 24,2	288,0	810,0	8
37033	3 G 16	21,8 - 27,6	461,0	1050,0	6
37034	3 G 25	26,1 - 33,0	720,0	1250,0	4
37035	3 G 35	29,3 - 37,1	1008,0	1900,0	2
37036	3 G 50	34,1 - 42,9	1440,0	2600,0	1
37037	3 G 70	38,4 - 48,3	2016,0	3400,0	2/0
37038	3 G 95	43,3 - 54,0	2736,0	4450,0	3/0
37039	3 G 120	47,4 - 60,0	3456,0	5180,0	4/0
37040	3 G 150	52,0 - 66,0	4320,0	6500,0	300 kcmil
37041	3 G 185	57,0 - 72,0	5328,0	7860,0	350 kcmil
37042	3 G 240	65,0 - 82,0	6912,0	10224,0	500 kcmil
37043	3 G 300	72,0 - 90,0	8640,0	12620,0	600 kcmil
37044	4 G 1	9,2 - 11,9	38,0	150,0	18
37045	4 G 1,5	10,2 - 13,1	58,0	200,0	16
37046	4 G 2,5	12,1 - 15,5	96,0	290,0	14
37047	4 G 4	14,0 - 17,9	154,0	395,0	12
37048	4 G 6	15,7 - 20,0	230,0	540,0	10
37049	4 G 10	20,9 - 26,5	384,0	950,0	8
37050	4 G 16	23,8 - 30,1	614,0	1260,0	6
37051	4 G 25	28,9 - 36,6	960,0	1860,0	4
37052	4 G 35	32,5 - 41,1	1344,0	2380,0	2
37053	4 G 50	37,7 - 47,5	1920,0	3190,0	1
37054	4 G 70	42,7 - 54,0	2688,0	4260,0	2/0
37055	4 G 95	48,4 - 61,0	3648,0	5600,0	3/0
37056	4 G 120	53,0 - 66,0	4608,0	6830,0	4/0
37057	4 G 150	58,0 - 73,0	5760,0	8320,0	300 kcmil
37058	4 G 185	64,0 - 80,0	7104,0	9800,0	350 kcmil
37059	4 G 240	72,0 - 91,0	9216,0	12100,0	500 kcmil
37060	4 G 300	80,0 - 101,0	11520,0	15200,0	600 kcmil
37061	5 G 1,5	11,2 - 14,4	72,0	240,0	16
37062	5 G 2,5	13,3 - 17,0	120,0	345,0	14
37063	5 G 4	15,6 - 19,9	192,0	485,0	12
37064	5 G 6	17,5 - 22,2	288,0	650,0	10
37065	5 G 10	22,9 - 29,1	480,0	1200,0	8
37066	5 G 16	26,4 - 33,3	768,0	1550,0	6
37067	5 G 25	32,0 - 40,4	1200,0	2250,0	4
37068	5 G 35	35,7 - 45,1	1680,0	2750,0	2
37091	5 G 50	41,8 - 53,0	2400,0	3950,0	1
37154	5 G 70	47,5 - 60,0	3360,0	4740,0	2/0
34090	5 G 95	54,0 - 67,0	4560,0	6600,0	3/0
34349	5 G 120	58,0 - 73,0	5760,0	8180,0	4/0
34127	5 G 150	64,0 - 80,0	7200,0	10600,0	300 kcmil
37092	7 G 1,5	14,7 - 18,7	101,0	375,0	16
37079	7 G 2,5	17,1 - 21,8	168,0	520,0	14
37093	12 G 1,5	17,6 - 22,4	175,0	460,0	16
37096	12 G 2,5	20,6 - 26,2	288,0	760,0	14
37097	18 G 2,5	24,4 - 30,9	432,0	850,0	14
37094	19 G 1,5	20,7 - 26,3	274,0	810,0	16
37098	19 G 2,5	25,5 - 31,0	456,0	1075,0	14
37095	24 G 1,5	24,3 - 30,7	346,0	1015,0	16
37099	24 G 2,5	28,8 - 36,4	576,0	1390,0	14

Dimensions and specifications may be changed without prior notice. (RF01)



Suitable accessories can be found in Chapter X.

- Cable tie - T-WS

F

A07RN-F rubber-sheathed cable, authorised national type



Technical data

- Rubber sheathed cable A07RN-F to DIN VDE 0285-525-2-21 / DIN EN 50525-2-21
- **Temperature range** -30°C to +60°C
- Permissible **operating temperature** at conductor +60°C
- **Nominal voltage** U_0/U 450/750 V in case of protected and fixed installation U_0/U 600/1000 V
- max. permissible **operating voltage** in three phase and one phase a.c. system U_0/U 476/825 V direct current-system U_0/U 619/1238 V
- **Test voltage** 2500 V
- **Permanent tensile load** max. 15 N/mm² under consideration of total copper cross-sections
- **Minimum bending radius** for fixed installation 4x cable Ø for guiding over roller 7,5x cable Ø during winding on drums 5x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insualtion of rubber EI4 to DIN VDE 0207-363-1 / DIN EN 50363-1
- Core identification to DIN VDE 0293-308
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering
- Cores stranded in layers in optimal lay-length
- Outer sheath of rubber EM2 to DIN VDE 0207-363-2-1/DIN EN 50363-2-1
- Sheath colour black

Properties

Resistant to

- Weather

Test

- **Behaviour in fire** to DIN VDE 0482-332-1-2 DIN EN 60332-2-1, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- **Ozone resistant** of the insulation to DIN VDE 0472 part 805, test method A or part 805 A1, test method C

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- A07RN-F = Authorized national rubber-sheathed cable
- Valid for design with central core + 7 cores.
- The core identification of a single core sheathed, of an insulated wire is black.

Application

Heavy duty rubber-sheathed flexible cables are suited for use for medium mechanical stress in dry, damp and wet areas as well as in open air and in agriculture plants. They are used for equipment in industry works such as boilers, heating plates, hand lamps, electric tools such as drills, circular saws and homework tools as well as for transportable motors or machines at site. These cables are also suitable for fixed installation on plaster, in temporary buildings and residential barracks. They are suitable for direct laying on components and mechanical parts of machines, for example lifts and cranes. They can be used in case of protected and fixed installation in tubes or in equipment as well as rotor connecting cable of motors with a working voltage up to 1000 V alternating voltage or a direct voltage up to 750 V against ground. The operating direct voltage is permitted up to 900 V against ground when they are used in rail-coaches. Installation in hazardous areas according to DIN VDE 0165 is allowed.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

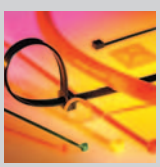
A07 RN-F (with green-yellow protective conductor)

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
37069	7 G 1,5	14,7 - 18,7	101,0	370,0	16
37070	7 G 2,5	17,1 - 21,8	168,0	500,0	14
37071	12 G 1,5	17,6 - 22,4	173,0	520,0	16
37072	12 G 2,5	20,6 - 26,2	288,0	720,0	14
37078	19 G 1,5	20,7 - 26,3	274,0	800,0	16
37073	19 G 2,5	25,5 - 31,0	456,0	1100,0	14
37074	24 G 2,5	28,8 - 36,4	576,0	1350,0	14
37075	27 G 1,5	25,5 - 31,5	385,0	1100,0	16
37076	27 G 2,5	30,0 - 37,0	640,0	1521,0	14
37077	37 G 2,5	34,0 - 37,5	720,0	1940,0	14

A07 RN-F (without green-yellow protective conductor)

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
37080	3 x 1,5	9,2 - 11,9	43,0	165,0	16
37081	3 x 2,5	10,9 - 14,0	72,0	235,0	14
37082	3 x 4	12,7 - 16,2	115,0	320,0	12
37083	3 x 6	14,1 - 18,0	173,0	495,0	10
37084	3 x 10	19,1 - 24,2	288,0	880,0	8
37085	3 x 16	21,8 - 27,6	461,0	1095,0	6
37086	3 x 25	26,1 - 33,0	720,0	1450,0	4
37087	3 x 35	29,3 - 37,1	1008,0	1900,0	2
37088	3 x 50	34,1 - 42,9	1440,0	2600,0	1
37089	4 x 10	20,9 - 26,5	384,0	1065,0	8
37090	4 x 25	28,9 - 36,6	960,0	1995,0	4

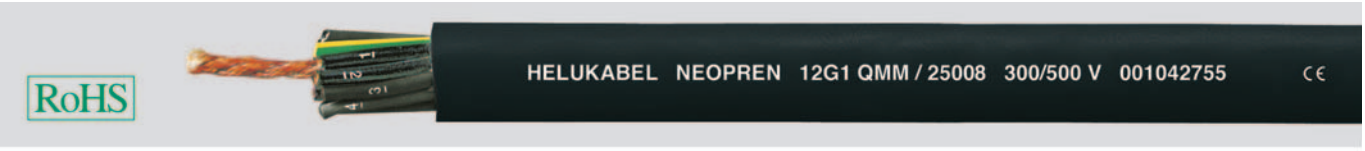
Dimensions and specifications may be changed without prior notice. (RF01)

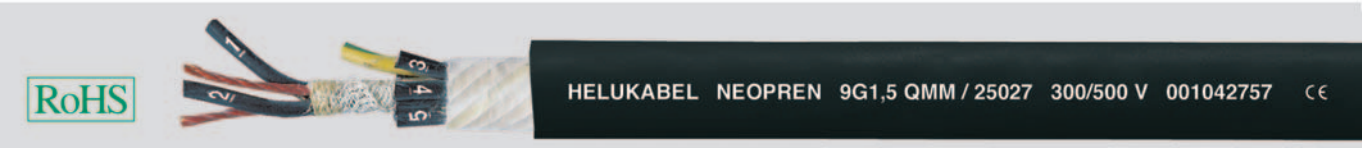


Suitable accessories can be found in Chapter X.

- Cable tie - T-WS

NEOPREN Command Cable flexible, colour or number coded with support organ





Technical data

- Special neoprene cable adapted to DIN VDE 0250 with strain bearing support strand
- **Temperature range** flexing -25°C to +60°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Minimum bending radius** for continuous bending without forced guiding operation 12,5x cable Ø for flexing with forced guiding operation 20x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6 col.4, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insulation of rubber
- Core identification to DIN VDE 0293-308
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Support organ (hemp or sisal-string etc.), and/or taping with load carrying thread as construction permits
- Outer sheath of neoprene
- Sheath colour black
- The braking strength oft he carrying element is depending on the number of cores, the cross section of cores and the construction of cable.

Properties

- Generally oil, flat and alkali resistant

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- Not suitable for a winding up and an unwinding on spring or motor cable reels.
- Break resistance must be taken into consideration.
- By the assembly the cables must be installed without torsion.
- The mobility of the stranded core is not be affected by using of clamps.
- The occuring pulling forces are to be carried by the support organ.

F

Application

As robust and weather resistant cable for machines, equipment and appliances, which are constantly exposed to the outdoor weather conditions (e. g. building machinery, conveyor and hoist systems, dry docks etc.). They are ideal for use as control cable in trailing cables. They are also suitable in dry, damp and wet areas for wall- and push-button panels and as power cable. The core insulation is ozone resistant and the outer sheath made of chloroprene is hardly flammable and abrasion resistant.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Tensile strength of susp. strand in N	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
25001	2 x 1	7,5	300	19,0	90,0	18
25002	3 G 1	8,5	150	29,0	111,0	18
25003	4 G 1	9,7	300	38,0	141,0	18
25004	5 G 1	11,5	300	48,0	170,0	18
25005	6 G 1	13,4	-	58,0	187,0	18
25006	7 G 1	13,8	2290	67,0	204,0	18
25007	9 G 1	15,8	2890	86,0	274,0	18
25008	12 G 1	17,5	6740	115,0	389,0	18
25009	16 G 1	19,2	570	154,0	432,0	18
25010	18 G 1	21,5	960	173,0	471,0	18
25011	19 G 1	22,0	-	182,0	565,0	18
25012	20 G 1	22,4	600	192,0	590,0	18
25013	24 G 1	23,6	2890	230,0	650,0	18
25074	30 G 1	24,6	-	290,0	785,0	18
25014	36 G 1	29,0	960	346,0	910,0	18
25015	37 G 1	30,5	-	355,0	936,0	18
25016	48 G 1	31,4	1440	461,0	1244,0	18
25017	50 G 1	32,6	-	480,0	1296,0	18
25018	54 G 1	32,9	2500	518,0	1399,0	18
25019	61 G 1	37,2	2290	586,0	1495,0	18
25020	2 x 1,5	8,5	300	29,0	95,0	16
25021	3 G 1,5	9,3	150	43,0	113,0	16
25022	4 G 1,5	10,5	570	58,0	150,0	16
25023	5 G 1,5	12,5	870	72,0	180,0	16
25024	6 G 1,5	14,3	-	86,0	245,0	16
25025	7 G 1,5	14,8	2600	101,0	309,0	16
25026	8 G 1,5	15,8	3460	115,0	333,0	16
25027	9 G 1,5	17,7	3850	130,0	360,0	16
25028	10 G 1,5	18,5	450	144,0	405,0	16
25029	11 G 1,5	20,1	-	158,0	458,0	16
25030	12 G 1,5	21,6	7710	173,0	516,0	16
25031	13 G 1,5	22,1	-	187,0	571,0	16
25032	15 G 1,5	22,8	680	216,0	590,0	16
25033	18 G 1,5	23,6	960	259,0	620,0	16
25034	19 G 1,5	24,1	860	274,0	670,0	16
25035	24 G 1,5	27,0	3850	346,0	817,0	16
25036	37 G 1,5	31,0	-	533,0	1220,0	16
25037	42 G 1,5	33,0	3460	605,0	1380,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Tensile strength of susp. strand in N	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
25038	48 G 1,5	34,9	-	691,0	1510,0	16
25039	50 G 1,5	36,7	-	720,0	1642,0	16
25040	61 G 1,5	41,8	-	878,0	1950,0	16
25041	2 x 2,5	10,0	300	48,0	142,0	14
25042	3 G 2,5	10,5	300	72,0	172,0	14
25043	4 G 2,5	11,6	570	96,0	210,0	14
25044	5 G 2,5	12,9	380	120,0	255,0	14
25045	6 G 2,5	14,5	-	144,0	318,0	14
25046	7 G 2,5	16,2	3460	168,0	383,0	14
25075	8 G 2,5	16,8	3850	192,0	450,0	14
25047	9 G 2,5	21,5	680	216,0	541,0	14
25048	11 G 2,5	23,3	-	264,0	638,0	14
25049	12 G 2,5	25,4	6060	288,0	690,0	14
25050	16 G 2,5	24,4	-	383,0	813,0	14
25051	18 G 2,5	26,3	2290	432,0	891,0	14
25052	19 G 2,5	27,5	-	456,0	946,0	14
25053	24 G 2,5	30,5	6060	576,0	1221,0	14
25054	36 G 2,5	33,3	-	864,0	1737,0	14
25055	37 G 2,5	40,8	2500	888,0	1784,0	14
25056	48 G 2,5	41,9	-	1152,0	2500,0	14
25057	50 G 2,5	43,3	-	1200,0	2630,0	14
25058	61 G 2,5	49,3	-	1464,0	8100,0	14
25059	3 G 4	13,6	-	115,0	372,0	12
25060	4 G 4	15,0	1000	154,0	407,0	12
25061	5 G 4	17,1	600	192,0	432,0	12
25062	7 G 4	21,5	-	269,0	495,0	12
25063	3 G 6	13,9	-	173,0	380,0	10
25064	4 G 6	15,2	1000	230,0	445,0	10
25065	5 G 6	19,2	900	288,0	569,0	10
25066	7 G 6	21,1	-	403,0	702,0	10
25067	3 G 10	18,1	-	288,0	530,0	8
25068	4 G 10	20,6	1200	384,0	724,0	8
25069	5 G 10	22,6	1500	480,0	923,0	8
25070	7 G 10	27,4	-	672,0	1288,0	8
25071	3 G 16	21,3	-	461,0	865,0	6
25072	4 G 16	25,2	1920	614,0	1028,0	6
25073	5 G 16	26,5	2400	768,0	1260,0	6

Dimensions and specifications may be changed without prior notice. (RF01)

NSSHÖU heavy dusty rubber cable 0,6/1kV



Technical data

- Rubber sheath cable to DIN VDE 0250 part 812
- **Temperature range** flexing -25°C to +80°C fixed installation -40°C to +80°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Operating voltage** in three-phase and one-phase a.c. U_0/U 0,7/1,2 kV Direct current system U_0/U 0,9/1,8 kV
- **Test voltage** 3000 V
- **Insulation resistance** min. 20 MOhm x km
- **Tensile strength** statical load: total cross-section x15 N/mm²
- **Minimum bending radius** fixed installation 4x cable Ø flexing 10x cable Ø without forced operation 15x cable Ø

Cable structure

- Tinned copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of rubber (EPR) compound type 3GI3 to DIN VDE 0207 part 20
- Core identification to DIN VDE 0293-308
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Inner sheath of rubber compound type GM1b to DIN VDE 0207 part 21
- Outer sheath of rubber compound type 5GM5 to DIN VDE 0207 part 21
- Sheath colour yellow

Properties

- Ozone resistance
- High insulation resistance
- Resistant against hot penetration
- Low abrasion
- High notch resistant
- The code identification of a single core sheathed of an insulated wire is black.

Resistant against

- oils
- fats and chemicals

Tests

- **Behaviour in fire** to DIN VDE 0482-332-1-2 DIN EN 60332-2-1, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- **Oil resistant** to DIN EN 60811-404

Note

- G = with green-yellow conductor x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Are suited as a connecting cable for very high mechanical stress in underground mining and tools for use in industries and outdoor use. They are also used for mining industry, surface mining, stone-pits, on building sites, outdoors as well as indoors. Suitable for fixed installation on plaster in dry, damp and wet areas. A long duration of life is guaranteed under extreme operating conditions. Not suitable for drumming and use in all types of machinery, such as robots, handling units and energy transfer units, where constant mobility is essential. The insulation of a plastic-rubber compound on EPR basis improves the resistance to ozone in order to avoid the formation of cracks due to ozone and insulation damages in switch-boards.

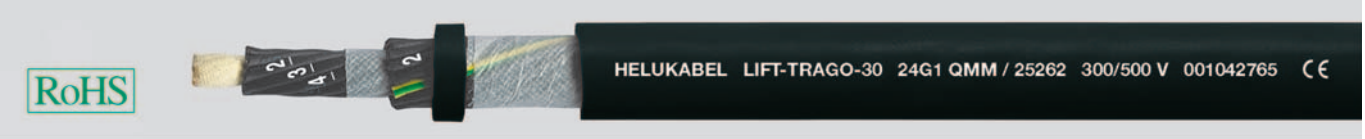
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
38001	1 x 16	13,5	154,0	336,0	6
38002	1 x 25	16,5	240,0	473,0	4
38003	1 x 35	18,0	336,0	635,0	2
38004	1 x 50	20,0	480,0	866,0	1
38005	1 x 70	22,0	672,0	1145,0	2/0
38006	1 x 95	25,0	912,0	1475,0	3/0
38007	1 x 120	27,5	1152,0	1832,0	4/0
38008	1 x 150	30,0	1440,0	2000,0	300 kcmil
38009	1 x 185	34,0	1776,0	2450,0	350 kcmil
38010	1 x 240	37,0	2304,0	3190,0	500 kcmil
38011	2 x 2,5	16,0	48,0	205,0	14
38012	3 G 1,5	15,0	43,0	173,0	16
38013	3 G 2,5	16,5	72,0	247,0	14
38014	3 G 4	20,0	115,0	336,0	12
38015	3 G 6	22,0	173,0	520,0	10
38016	4 G 1,5	16,0	58,0	210,0	16
38017	4 G 2,5	19,0	96,0	305,0	14
38018	4 G 4	21,5	154,0	415,0	12
38019	4 G 6	23,0	230,0	641,0	10
38020	4 G 10	27,5	384,0	1113,0	8
38021	4 G 16	37,0	614,0	1412,0	6
38022	4 G 25	39,0	960,0	2095,0	4

Part no.	No.cores x cross-sec. mm²	Outer Ø max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
38023	4 G 35	42,5	1344,0	2777,0	2
38024	4 G 50	49,0	1920,0	3817,0	1
38025	4 G 70	53,5	2688,0	5071,0	2/0
38026	4 G 95	61,5	3648,0	6636,0	3/0
38027	4 G 120	68,0	4608,0	7000,0	4/0
38028	5 G 1,5	17,0	72,0	252,0	16
38029	5 G 2,5	20,0	120,0	362,0	14
38030	5 G 4	23,0	192,0	509,0	12
38031	5 G 6	26,5	288,0	798,0	10
38035	5 G 10	30,0	480,0	1120,0	8
38036	5 G 16	34,0	768,0	1680,0	6
38037	5 G 25	42,0	1200,0	2430,0	4
38038	7 G 1,5	19,5	101,0	470,0	16
38032	7 G 2,5	21,5	168,0	546,0	14
38039	10 G 1,5	22,0	144,0	560,0	16
38033	12 G 2,5	28,0	288,0	851,0	14
38040	18 G 2,5	33,0	432,0	1230,0	14
38034	19 G 2,5	33,5	466,0	1260,0	14

Dimensions and specifications may be changed without prior notice. (RF01)

LIFT-TRAGO®-30 / -60 lift hoist control cable, pendal length 30m resp. 60m





Technical data

- Lift hoist control cables with strain bearing element to IEC 60227-6 edition 2001-06 and adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51
- **Temperature range**
  flexing -5°C to +50°C
  fixed installation -40°C to +70°C
- **Max. conductor temperature**
  under load +70°C
  circuit conditions +150°C
- **Nominal voltage**
  U_0/U 300/500 V
- **Test voltage** 3000 V
- **Breakdown voltage**
  min. 6000 V
- **Minimum bending radius**
  20x cable Ø
- **Insulation resistance**
  min. 20 MOhm x km
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insualtion of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor in the outer layer
- Cores stranded with optimal lay-length acc. to the number of cores in one or two layers, over a central Suspension strand of textile.
  LIFT-TRAGO®-30 - Fleece wrapping
  LIFT-TRAGO®-60 - Support braiding of textile suspension strands
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Colour black (RAL 9005)

Properties

- Extensively oil resistant
  Chemical Resistance - see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- Cable for pendal length 60 m and above available on request.

Application

These cables are used as control or feeder cables in lifts and hoists.

- 30 m pendal length - LIFT-TRAGO®-30
- 60 m pendal length - LIFT-TRAGO®-60

Suspension height for medium mechanical stresses in dry and moist rooms.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

LIFT-TRAGO®-30

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	Support core	Pendal length max. m	AWG-No.
25259	7 G 1	11,5	67,0	170,0	Textile	30	18
25260	12 G 1	15,7	115,0	325,0	Textile	30	18
25261	18 G 1	16,1	173,0	390,0	Textile	30	18
25262	24 G 1	19,2	230,0	530,0	Textile	30	18

LIFT-TRAGO®-60

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	Support core	Pendal length max. m	AWG-No.
25263	7 G 1	12,3	67,0	185,0	Textile	60	18
25264	12 G 1	16,2	115,0	335,0	Textile	60	18
25265	18 G 1	16,7	173,0	400,0	Textile	60	18
25266	24 G 1	19,8	230,0	540,0	Textile	60	18
25267	30 G 1	22,5	288,0	690,0	Textile	60	18
25268	36 G 1	28,2	346,0	930,0	Steel	60	18

Dimensions and specifications may be changed without prior notice. (RF01)



Suitable accessories can be found in Chapter X.

• Cable tie - T-WS

TRAGO / Lift-2S Lift and Hoist Control Cables 300/500 V



Technical data

- Lift hoist control cables with strain bearing element Special PVC-compound for core and sheath, adapted to DIN VDE 0250
- **Temperature range**
  flexing -15°C to +70°C
  fixed installation -40°C to +70°C
- **Max. conductor temperature**
  under load +70°C
  circuit conditions +150°C
- **Nominal voltage**
  U_0/U 300/500 V
- **Test voltage** 3000 V
- **Breakdown voltage**
  min. 6000 V
- **Minimum bending radius**
  20x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insualtion of special PVC, TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293
- GN-YE conductor
- Special hemp support braid for **Trago** type with central support core of hemp
  for **Lift-2S** type with 2 outer steel support wires
- Cores stranded in layers with optimal lay-length
- Multi-layer wrapping functioning as a support braid
- Outer sheath of special PVC TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour black (RAL 9005)

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- UV-resistant

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

These cables are used as control or feeder cables in lifts and hoists. The special attention given to both production and material quality for these cables has made them ideal even for use under extreme conditions. HELUKABEL®-Lift-2S has also proven itself to be ideally suited for installation in conveyor systems and manual control units. The external steel support wires can be dismounted without damaging the cable insulation.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

TRAGO with central support

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	Support core	Pendal length max. m	AWG-No.
25080	7 G 0,75	15,4	50,0	290,0	Hemp	250	19
25081	12 G 0,75	19,2	86,0	360,0	Hemp	220	19
25082	18 G 0,75	21,0	130,0	455,0	Hemp	110	19
25083	24 G 0,75	23,0	173,0	535,0	Hemp	90	19
25084	7 G 1	14,9	67,0	222,0	Hemp	80	18
25085	12 G 1	20,0	115,0	415,0	Hemp	80	18
25086	18 G 1	21,4	173,0	450,0	Hemp	70	18
25087	20 G 1	21,6	192,0	490,0	Hemp	70	18
25088	24 G 1	23,2	230,0	605,0	Hemp	60	18
25089	36 G 1	26,1	346,0	950,0	Hemp	90	18

Lift-2S with 2 external support cores

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	Support core	Pendal length max. m	AWG-No.
25091	12 G 1	13,5	115,2	446,0	Steel	50	18
25092	18 G 1	16,2	172,8	528,0	Steel	50	18
25093	25 G 1	19,0	240,0	660,0	Steel	50	18
25094	30 G 1	21,9	288,0	760,0	Steel	50	18
25095	8 G 1,5	14,7	115,0	425,0	Steel	50	16
25096	12 G 1,5	16,0	172,8	505,0	Steel	50	16
25097	15 G 1,5	19,5	230,0	575,0	Steel	50	16
25098	18 G 1,5	19,3	259,0	640,0	Steel	50	16
25099	20 G 1,5	19,5	288,0	715,0	Steel	50	16
25100	24 G 1,5	22,5	346,0	820,0	Steel	50	16

Dimensions and specifications may be changed without prior notice. (RF01)



Suitable accessories can be found in Chapter X.
• Cable tie - T-WS

Bauliftkabel B101 / B102 / B103 to be used at plant elevators





Technical data

- **Temperature range**
  flexing -10°C to +80°C
- **Nominal voltage**
  control cores 300/500 V
  power supply cores 0,6/1 kV
- **A.c. test voltage**, 50 Hz
  control cores 1500 V
  power supply cores 3000 V
- **Minimum bending radius**
  10x cable Ø

Cable structure

- Bare copper-conductor, extra fine-wire, high flexible
- Core insulation of plastic, flexible at low temperatures
- Core identification black cores with continuous white numbering
- GN-YE conductor
- Outer sheath of special plastic, flexible at low temperatures
- Sheath colour black

Properties

- Sheath UV-resistant
- In carriage version with special support braiding and with PUR sheath particularly resistant to wear, oil, hydrolysis and microbial attack

Note

- Optional separate copper screening of the control cores

F

Application

These hybrid cables are used for power supply and control of vertical lifts in the construction industry. There are 3 cable versions.
Bauliftkabel B101: Here the cable is drawn vertically from a drum as a drag cable via the load platform. The load platform pulls the cable along as it moves up. During the downwards motion the cable returns to the drum automatically. Our special versions are used at heights of up to about 150 m.
Bauliftkabel B102: For greater heights, a so-called carriage version is employed, in which the cable is fed at the centre of the tower, i. e. half the way up.
Bauliftkabel B103: Here the cable is guided via a spring-loaded drum. These vertical construction lifts are used during new construction and renovation work on high buildings. The rack lattice elements are fastened at intervals to the exterior facade.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Bauliftkabel B101

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
73519	5 G 2,5 + 10 x 1,0	20,0	220,0	306,0	-
73913	5 G 2,5 + 11 x 1,0	20,0	225,6	320,0	14
70402	3 G 4 + 7 x 1,0	17,4	184,0	360,0	12
70931	4 G 6 + 9 x 1,0	20,5	330,0	555,0	10
70377	4 G 6 + 10 x 1,0	21,0	340,0	575,0	10
71901	4 G 6 + 15 x 1,0	22,0	388,0	625,0	10
71369	4 G 10 + 10 x 1,0	25,0	480,0	870,0	8
78123	4 G 16 + 6 x 1,0	26,1	700,0	1250,0	6
78124	4 G 16 + 10 x 1,0	29,0	710,0	1300,0	6
78125	4 G 16 + 15 x 1,0	31,5	760,0	1380,0	6
73726	4 G 16 + 1 x 2,5 + 4 x 1,0	28,5	830,0	1460,0	6

Bauliftkabel B102

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
74293	4 G 16 + 1 x 2,5 + 2 x 2 x 1,0	28,5	830,0	1080,0	6
74670	4 G 16 + 1 x 2,5 + 2 x 2 x 1,0	28,5	787,0	1080,0	6
74297	4 G 25 + 1 x 2,5 + 2 x 2 x 1,0	33,4	1176,0	1500,0	4
78122	4 G 35 + 4 x 2,5 + 2 x 2 x 1,0 + 1 x 1,0	38,0	1500,0	1850,0	2

Bauliftkabel B103

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
77532	4 G 2,5 + 3 x 1,0	13,0	125,0	230,0	14
77538	4 G 2,5 + 3 x 1,0	15,3	125,0	280,0	14

Dimensions and specifications may be changed without prior notice.



Suitable accessories can be found in Chapter X.

• Cable tie - T-WS

HELUSPREADER YSLTÖ-J spreader cable for vertical basket enterprise



Technical data

- Special cable adapted to DIN VDE 0250
- **Temperature range** flexing -20°C to +60°C fixed installation -20°C to +60°C
- max. **Operating temperature** at conductor +90°C
- max. **Short circuit temperature** at conductor +150°C
- **Nominal voltage** U_0/U 300/500 V
- max. **Tensile load** 2000 N
- **Minimum bending radius** 15x cable Ø
- **Current carrying capacity** to DIN VDE 0298 part 4

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5 or cl.6, fine-wire or extra-fine-wire, BS 6360 cl.5 or cl.6, IEC 60228 cl.5 or cl.6
- Core insulation of special EPR
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor
- Cores laid-up in lay of length, stranding with optimal length of twists around a Kevlar element
- Outer sheath of special polychloropren
- Sheath colour black (RAL 9005)

Properties

- weather resistant
- UV-resistant
- high abrasion resistance

Note

- G = with green-yellow conductor Delivery on request:
- also as -K model, temperature range -40°C to +80°C
- further dimensions and special designs
- AWG sizes are approximate equivalent values. The actual cross-section is in mm²

Application

As Spreader cable with high mechanical stresses in vertical basket operation in dry, moist, wet environment and in open air. Please note that at the installation the cable must be placed counterwise and free of twist into the basket.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	Tensile strain max. N	AWG-No.
40160	36 G 2,5	38,1 - 41,0	864,0	2500,0	2000	14
40161	42 G 2,5	40,8 - 43,8	1008,0	3000,0	2000	14
40162	48 G 2,5	45,7 - 48,7	1152,0	3650,0	2000	14
40163	54 G 2,5	47,0 - 51,0	1296,0	4100,0	2000	14

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	Tensile strain max. N	AWG-No.
40164	36 G 3,3	42,4 - 45,5	1140,0	3200,0	2000	12
40165	42 G 3,3	46,6 - 49,6	1330,0	3750,0	2000	12
40166	48 G 3,3	52,0 - 55,0	1521,0	4450,0	2000	12
40167	54 G 3,3	56,6 - 60,0	1711,0	5000,0	2000	12

Dimensions and specifications may be changed without prior notice. (RG01)



Suitable accessories can be found in Chapter X.

• Cable tie - T-WS




NSHTÖU
(N)TSCGEWöu
TROMMPUR®
Flugzeugheber-T
NSHTÖU
NSHTÖU
NSHTÖU

TRAILING CABLES

	Temperature (°C) - flexing	Temperature (°C) - fixed	Nominal voltage U_0/U	Bending radius - flexing x Ø	Bending radius - fixed x Ø	Halogen-free	UV-resistant	Outdoor use	Drag chain	Colored cores/VDE 0293	Screened/shielded	HAR/VDE REG no./VDE	UL/CSA	Page
Trailing Cables														
TROMMPUR®	-40 bis +80	-40 to +80	300/500	10x	10x	X	X	X		X				254
Flugzeugheber-T	-20 to +80	-20 to +80	300/500	15x	15x		X	X						255
NSHTÖU	-35 to +70	-40 to +70	0.6/1 kV	7.5x	7.5x		X	X		X		X		256
(N)SHTÖU-V	-25 to +80	-25 to +80	0.6/1 kV	7.5x	7.5x			X		X				257
(N)TSCGEWÖU	-20 to +60	-20 to +80	6-20 kV	15x	15x		X	X						258

The selection table is intended as an initial orientation.
Please see the relevant page of the catalogue for detailed information on the product properties.

G

TROMMPUR® PUR trailing and control cable, halogen-free



Technical data

- Special PUR insulation and sheath adapted to DIN VDE 0250
- Strain bearing support strand
- **Temperature range**
  -40°C to +80°C
  (up to +100°C for short periods)
- **Nominal voltage**
  up to 1 mm² U_0/U 300/500 V
  from 1,5 mm² U_0/U 450/750 V
- **Test voltage**
  up to 1 mm² = 2000 V
  from 1,5 mm² = 2500 V
- **Breakdown voltage**
  up to 1 mm² = 4000 V
  from 1,5 mm² = 5000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  10x cable Ø
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6 col.4, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insulation of special PUR
- Support core
- Core identification to DIN VDE 0293 (flexible cables)
- Cores stranded in layers with optimal lay-length
- Core wrapping with fleece
- Support braiding of synthetic fibres
- Outer sheath of halogen-free PUR
- Sheath colour orange

Properties

- High flexibility at low temperatures
- Usable for foodstuffs
- Abrasion and tear resistant
- Loadable under torsional stress

Resistant to

- Oils and fats
- Non-alcoholic fuels and kerosene
- Atmospheric influences
- UV-radiation
- Oxygen and ozone
- Microbes and rotting
- Sea and waste water
- Vibrations

Note

- G = with green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

TROMMPUR® has taken the development of the neoprene type cables one step further. It is a robust, all-weather cable, halogen-free, tear and abrasion resistant and suitable for use in drag-chains, in ship docks, on building sites, for conveyor systems, in mining, for tunnels and roadbuilding. For the connecting the ski lift terminal positions to the control unit, surveillance of the joining rods in ski lift cables, as feeder cables for very high currents as for example in pump engineering, mining, locomotive and rail-carriage construction, for oil rig platforms, emergency power generators etc.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	Breaking strain ca. kp	AWG-No.
26035	14 G 0,75	16,5	154,0	320,0	250	19
26036	12 G 1	17,5	115,0	300,0	500	18
26037	18 G 1	23,0	173,0	480,0	500	18
26038	3 G 1,5	9,5	43,0	110,0	200	16
26039	5 G 1,5	12,5	72,0	220,0	200	16
26040	7 G 1,5	15,5	101,0	270,0	250	16
26041	12 G 1,5	21,0	173,0	450,0	750	16
26042	18 G 1,5	27,0	259,0	620,0	750	16
26043	24 G 1,5	30,0	346,0	850,0	750	16
26044	30 G 1,5	34,0	533,0	1100,0	750	16
26045	42 G 1,5	40,0	605,0	1600,0	750	16
26046	4 G 2,5	14,0	96,0	250,0	200	14
26047	5 G 2,5	15,0	120,0	280,0	250	14
26048	7 G 2,5	18,0	168,0	360,0	300	14
26049	12 G 2,5	25,0	288,0	740,0	750	14
26050	24 G 2,5	36,0	576,0	1400,0	750	14
26051	30 G 2,5	40,0	864,0	1740,0	750	14
26052	36 G 2,5	44,0	998,0	2050,0	750	14
26053	7 G 4	22,0	269,0	600,0	500	12
26054	4 G 10	22,0	384,0	650,0	500	8
26055	4 G 16	27,0	614,0	1100,0	500	6
26059	5 G 16	34,0	768,0	1600,0	750	6
26056	4 G 25	30,0	960,0	1600,0	500	4
26057	4 G 35	36,0	1344,0	2050,0	1000	2
26058	4 G 50	42,0	1920,0	2800,0	1000	1

Dimensions and specifications may be changed without prior notice. (RG01)

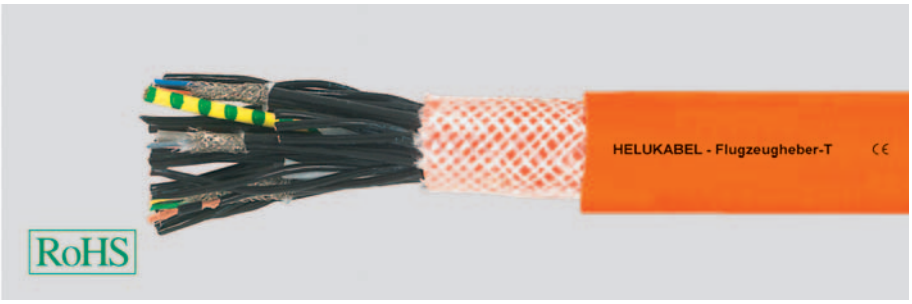


Suitable accessories can be found in Chapter X.

• Tool - HAM 1

Flugzeugheber-T trailing, PUR





Technical data

- **Temperature range**
  flexing -20°C to +80°C
- **Nominal voltage**
  control cores 300/500 V
  power supply cores 600/1000 V
- **A.C. test voltage**, 50 Hz
  control cores 1500 V
  power supply cores 4000 V
- **Minimum bending radius**
  for flexible installation 15x cable Ø

Cable structure

Part no. 70736

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- **Power supply cores** (4 mm²) and **control cores** (0,75 mm²)
  - Core insulation of cold flexible special PVC
  - Core identification black with numbering 4 mm² No.1-5 + 0,75 mm² No.6-20
- **Data pair** (0,34 mm²)
  - Core insulation data pair of polyethylene
  - Core identification to DIN 47100
  - Cores twisted in pairs
  - Foil wrapping
  - Tinned copper braided screen, approx. 85% coverage
  - Inner sheath of cold flexible special PVC
- Cores stranded with elements
- Inner sheath of cold flexible special PVC
- Outer sheath of PUR with integrated support braiding
- Sheath colour grey (RAL 7001)

Part no. 77548

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- **Power supply cores** (2,5 mm²) and **control cores** (1 mm²)
  - Core insulation of TPE-E
  - Core identification black with numbering
  - GN-YE conductor
- **Data pair** (0,34 mm²)
  - Core insulation of polyethylene
  - Core identification to DIN 47100
  - Cores twisted in pairs
  - Foil wrapping of aluminium-coated polyester
  - Tinned copper braided screen, approx. 85% coverage
- Cores stranded with elements
- Outer sheath of PUR with integrated support braiding
- Sheath colour orange (RAL 2003)

Properties

- PUR outer sheath: low adhesion, extremely, abrasion resistant, halogen-free, resistant to UV, oil, hydrolysis and microbial attack

G

Application

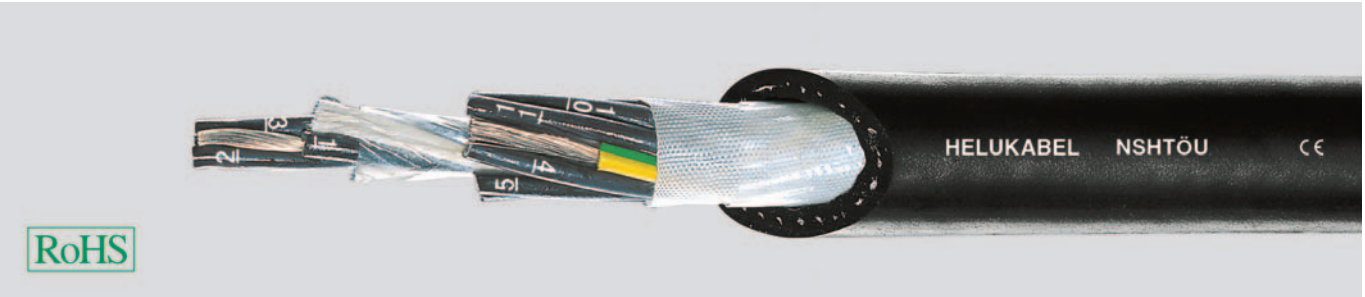
This hybrid cable is designed for the aircraft industry, and contains cores for power supply, control cores, and cores for a positioning laser. The cable is used to control and position a support robot, which absorbs loads at specific points when loading extremely heavy items, for example during loading of aircraft assemblies in large transport aircraft of the Airbus industry. The cable is trailing, UV and weather-resistant, and is provided with an extremely wear-resistant and petrol-resistant special sheath. Part no. 77548 is designed for similar applications, as a load-reducing lifter in aircraft assembly.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
70736	5 x 4 + 5 x 3 G 0,75 + 2 x 2 x 0,34	25,6	390,0	600,0	12

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
77548	5 x 2,5 + 18 G 1,0 + 4 x 2 x 0,34	27,0	461,0	750,0	14

Dimensions and specifications may be changed without prior notice.

NSHTÖU drum cable, VDE approved



Technical data

- Special-crane-drum cable to DIN VDE 0250 part 814
- **Temperature range** flexing -35°C to +70°C fixed installation -40°C to +70°C
- max. **Temperature at conductor** in operation +60°C in short-circuit +200°C
- **Nominal voltage** U_0/U 0,6/1 kV
- max. **permissible operating voltages** in three-phase and one-phase a.c. system U_0/U 0,7/1,2 kV in direct current system U_0/U 0,9/1,8 kV
- **Test voltage** 2500 V
- **Insulation resistance** min. 10 MOhm x km
- **Minimum bending radius** 7,5 x cable Ø
- **Radiation resistance** up to 20x10⁶ cJ/kg (up to 20 Mrad)

Cable structure

- Tinned copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of rubber compound type GI1 to DIN VDE 0207 part 20
- Core identification to DIN VDE 0293
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering
- Cores stranded (without elongated central core) with max. lay-length of 8x Ø over the stranding layers
- Textile tape
- Textile braiding as protection against torsion, embedded in inner filling sheath
- Outer sheath of neoprene compound type 5GM2 to DIN VDE 0207 part 21
- Sheath colour black

Properties

- Designed and developed for horizontal drum-operation
- Permissible running speed up to max. 120 m/min
- Polychloroprene-rubber (neoprene)-sheath, extremely cold resistant
- Due to the neoprene outer sheath, the cables **is resistant** against ozone and radiation, oils, acids, fats, gazoline, solvents and chemicals
- During the installation and operation the tensile stress on conductor may not increase 15 N/mm²
- Accelaration not more than 0,4 m/s²
- During operation, 1-2 convolutions should remain on the operating drum
- In case of high mechanical stress, especially of high dynamic tensile stress result high accelaration, the permissible stress must be defined in each case

Tests

- Behaviour in fire to DIN VDE 0482-332-1-2 DIN EN 60332-2-1, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Oil resistant acc. to DIN VDE 0473-811-404,DIN EN 60811-404

Note

- G = with green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Trailing cables are used for high mechanical stress, especially for applications with frequent winding and unwinding with simultaneous tensile and torsional stress, for building machinery, conveyors, shifts and cranes. They are used as robust and all weather resistant cables of roughest operations in mining and in flexible handling equipment and railway motors. The cables are suitable for outdoor installation in dry, damp and wet places as well in open air. For applications which go beyond standard solutions we recommend that you fill out our especially developed questionnaire for reeling cables. Please read the installation instructions.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
26001	3 G 1,5	13,6	47,0	236,0	16
26029	4 G 1,5	14,0	58,0	274,0	16
26002	5 G 1,5	14,5	81,0	316,0	16
26003	7 G 1,5	18,8	115,0	440,0	16
26004	12 G 1,5	21,0	196,0	606,0	16
26005	16 G 1,5	24,5	259,0	696,0	16
26006	18 G 1,5	25,5	271,0	750,0	16
26007	24 G 1,5	27,5	390,0	1150,0	16
26008	30 G 1,5	29,5	432,0	1325,0	16
26009	3 G 2,5	15,3	74,0	305,0	14
26010	4 G 2,5	16,5	98,0	350,0	14
26011	5 G 2,5	17,5	124,0	465,0	14
26012	7 G 2,5	20,0	168,0	576,0	14
26013	12 G 2,5	23,5	308,0	850,0	14
26014	18 G 2,5	28,0	451,0	1181,0	14
26015	24 G 2,5	32,5	615,0	1550,0	14
26016	30 G 2,5	34,0	770,0	1810,0	14
26017	40 G 2,5	42,5	1080,0	3110,0	14
26018	50 G 2,5	46,5	1200,0	3200,0	14

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
26019	4 G 4	18,5	158,0	510,0	12
26030	5 G 4	21,5	220,0	635,0	12
26020	4 G 6	21,0	241,0	650,0	10
26031	5 G 6	23,5	317,0	800,0	10
26021	4 G 10	26,0	404,0	1010,0	8
26022	5 G 10	28,0	508,0	1200,0	8
26023	4 G 16	29,0	642,0	1300,0	6
26032	5 G 16	31,5	768,0	1700,0	6
26024	4 G 25	35,0	1005,0	2000,0	4
26025	4 G 35	37,5	1344,0	2610,0	2
26026	4 G 50	44,5	2010,0	3500,0	1
26027	4 G 70	49,0	2688,0	4600,0	2/0
26028	4 G 95	56,0	3648,0	6100,0	3/0

Dimensions and specifications may be changed without prior notice. (RG01)

(N)SHTÖU-V Trailing-Cable



Technical data

- Special trailing cable adapted to DIN VDE 0250, Part 814
- **Temperature range** flexing -25°C to +80°C
- max. T**emperature at conductor** in operation +90°C in short-circuit +250°C
- **Nominal voltage** U_0/U 0,6/1 kV
- max. **permissible operating voltage** in three-phase and one-phase a.c. system U_0/U 0,7/1,2 kV in direct current system U_0/U 0,9/1,8 kV
- **Test voltage** 4 kV
- **Insulation resistance** min. 10 MOhm x km
- **Minimum bending radius** 7,5x cable Ø

Cable structure

- Tinned copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special rubber compound type 3GI3 to DIN VDE 207 part 20
- Core identification to DIN VDE 0293-308 (HD 308 S2)
- Cores stranded (without elongated central core) with max. lay-length of 8x Ø over the stranded layers)
- Depending on dimension/structure with Kevlar fillers
- Inner sheathof special rubber compound type 5GM5 to DIN VDE 0207 part 21
- Torsion protection between inner and outer sheath
- Outer sheath of special rubber compound type 5GM5 to DIN VDE 0207 part 21
- Sheath colour yellow

Properties

- Permitted running speed up 180 m/min
- Highly resistant to acids, fats, gasoline, solvents and chemicals
- During installation and operation, the tensile stress must not exceed 30 N/mm²

Tests

- Behaviour in fire to DIN VDE 0482-332-1-2 DIN EN 60332-2-1, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Oil resistant to DIN VDE 0473-811-404,DIN EN 60811-404

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

G

Application

For vertical drum operation under extreme mechanical stress and on moving cable carrieres. Used as a rugged feeder to construction machines, conveyor, transport and crane systems in dry, damp, wet environments and outdoors. For applications that go beyond standard solutions we recommend you to our specially developed questionnaire for reeling cables. Please note installation instructions.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Power supply Cable

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight app. kg / km	Tensile strain max. N	AWG-No.
31040	3 G 1,5	10,9 - 13,6	45,0	191,0	130	16
31041	3 G 2,5	12,3 - 14,8	74,0	240,0	220	14
31042	3 G 4	14,9 - 17,6	115,0	362,0	360	12
31043	3 G 6	16,2 - 18,9	173,0	450,0	540	10
31044	3 G 10	19,6 - 22,6	288,0	682,0	900	8
31045	3 G 16	21,8 - 24,9	461,0	890,0	1440	6
31046	3 G 25	27,5 - 30,8	720,0	1200,0	2250	4
31047	3 x 50 + 3 G 25/3	36,9 - 40,6	1685,0	2810,0	4500	1
31048	3 x 70 + 3 G 35/3	40,4 - 44,4	2355,0	3760,0	6300	2/0
31049	3 x 95 + 3 G 50/3	46,6 - 50,8	3215,0	4700,0	8550	3/0
31050	3 x 120 + 3 G 70/3	50,8 - 55,2	4130,0	5950,0	10800	4/0
31051	3 x 150 + 3 G 70/3	55,4 - 60,0	4990,0	7050,0	13500	300 kcmil
31052	3 x 185 + 3 G 95/3	60,8 - 65,7	6250,0	8800,0	16650	350 kcmil
31053	3 x 240 + 3 G 120/3	68,8 - 74,0	8065,0	11700,0	21600	500 kcmil
31054	4 G 1,5	11,8 - 14,5	58,0	220,0	180	16
31055	4 G 2,5	14,4 - 17,1	99,0	330,0	300	14
31056	4 G 4	16,2 - 18,8	158,0	440,0	480	12
31057	4 G 6	17,4 - 20,2	241,0	530,0	720	10
31058	4 G 10	24,4 - 21,3	404,0	835,0	1200	8
31059	4 G 16	24,7 - 27,9	642,0	1175,0	1920	6
31060	4 G 25	31,4 - 34,9	1005,0	1850,0	3000	4
31061	4 G 35	37,5 - 33,9	1344,0	2250,0	4200	2
31062	4 G 50	40,3 - 44,2	2010,0	3210,0	6000	1
31063	4 G 70	44,5 - 48,6	2687,0	4210,0	8400	2/0
31064	4 G 95	51,1 - 55,5	3646,0	5550,0	11400	3/0
31065	4 G 120	57,4 - 62,0	4605,0	7010,0	14400	4/0
31066	4 G 150	62,6 - 67,6	5765,0	8450,0	18000	300 kcmil
31067	4 G 185	68,1 - 73,2	7110,0	10000,0	22200	350 kcmil
31068	5 G 1,5	12,8 - 15,5	73,0	258,0	220	16
31069	5 G 2,5	15,5 - 18,2	124,0	389,0	370	14
31070	5 G 4	17,4 - 20,2	220,0	511,0	600	12
31071	5 G 6	19,6 - 22,7	317,0	688,0	900	10
31072	5 G 10	23,2 - 26,3	508,0	1002,0	1500	8
31073	5 G 16	26,7 - 30,2	768,0	1395,0	2400	6
31074	5 G 25	34,1 - 37,7	1200,0	2205,0	3750	4
31075	5 G 35	38,3 - 42,2	1680,0	2960,0	5250	2
31076	5 G 50	43,8 - 47,8	2400,0	3950,0	7500	1
31077	5 G 70	50,2 - 54,6	3360,0	5455,0	10500	2/0

Control Cable (Kevlar fillers)

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight app. kg / km	Tensile strain max. N	AWG-No.
31078	49 G 1	31,0 - 34,5	470,0	1420,0	3450	18
31079	7 G 1,5	14,6 - 16,9	115,0	320,0	2318	16
31080	12 G 1,5	20,6 - 23,4	196,0	620,0	2540	16
31081	18 G 1,5	20,3 - 22,9	271,0	650,0	2810	16
31082	24 G 1,5	24,2 - 27,4	390,0	930,0	3080	16
31083	30 G 1,5	27,7 - 31,1	432,0	1190,0	3350	16
31084	36 G 1,5	27,9 - 31,3	518,0	1240,0	3620	16
31085	44 G 1,5	31,2 - 34,8	634,0	1530,0	3980	16
31086	48 G 1,5	31,8 - 35,4	691,0	1610,0	4160	16
31087	56 G 1,5	35,9 - 39,7	807,0	2020,0	4520	16
31088	7 G 2,5	17,5 - 19,8	168,0	480,0	2520	14
31089	12 G 2,5	23,8 - 26,7	308,0	915,0	2900	14
31090	18 G 2,5	23,4 - 26,2	451,0	945,0	3350	14
31091	24 G 2,5	28,2 - 31,1	615,0	1330,0	3800	14
31092	30 G 2,5	31,1 - 34,4	770,0	1615,0	4250	14
31093	36 G 2,5	31,3 - 34,7	866,0	1710,0	4680	14
31094	44 G 2,5	36,2 - 40,2	1057,0	2240,0	5250	14
31095	48 G 2,5	37,2 - 41,0	1153,0	2410,0	5550	14
31096	56 G 2,5	41,6 - 46,0	1344,0	2930,0	6150	14

Dimensions and specifications may be changed without prior notice. (RG01)

(N)TSCGEWÖU extremely torsionally stiff



Technical data

- Medium voltage power cable adapted to VDE 0250 part 813
- **Temperature range**
  flexing -20°C to +60°C
  fixed installation -20°C to +80°C
- **Nominal voltages**
  U_0/U 3,6/6 kV
  U_0/U 6/10 kV
  U_0/U 8,7/15 kV
  U_0/U 12/20 kV
- **Operating voltages max.**
  3,6/6 kV = 4,2/7,2 kV
  6/10 kV = 6,9/12 kV
  8,7/15 kV = 10,4/18 kV
  12/20 kV = 13,9/24 kV
- **Test voltages**
  3,6/6 kV = 11 kV
  6/10 kV = 17 kV
  8,7/15 kV = 24 kV
  12/20 kV = 29 kV
- **Minimum bending radius**
  15x outer Ø

Cable structure

- Tinned copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Inner semi-conducting layer
- Core insulation of HEPR
- Outer semi-conducting layer
- Ground conductor with semi-conductive layer
- Cores concentrically stranded
- Inner sheath, sheath colour red
- Antitorsional protection
- Outer sheath of chloroprene rubber compound type 5GM3
- Sheath colour red

Properties

- maximum permissible speed 200 m/min is allowed when operating drums in one direction
- extremly torsion resistant
- resistant against oils and fats, athmosperic exposure and UV-radiation

Note

- Further dimensions and special designs on request

Application

Reeling medium voltage supply train for use in high mechanical stresses, such as in in container cranes or large mobile equipment as well as excavators in the mining industry for days, in dry, damp, wet areas and outdoors.

3,6/6kV

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Permanent load N	Tensile strain max. N	Cop. weight kg / km	Weight app. kg / km	
38533	3 x 25 + 3 x 10	37,0 - 40,0	1500	2200	1008,0	2280,0	-
38534	3 x 35 + 3 x 10	40,0 - 43,0	2000	3100	1292,0	2750,0	-
38535	3 x 50 + 3 x 10	44,0 - 47,0	3000	4300	1728,0	3400,0	-
38536	3 x 70 + 3 x 16	47,0 - 50,0	4100	5100	2477,0	4100,0	-
38537	3 x 95 + 3 x 16	52,0 - 56,0	5600	7000	3197,0	5450,0	-
38538	3 x 120 + 3 x 25	56,0 - 60,0	7100	8500	4176,0	6650,0	-

6/10kV

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Permanent load N	Tensile strain max. N	Cop. weight kg / km	Weight app. kg / km	
38539	3 x 25 + 3 x 10	39,0 - 42,0	1500	2200	1008,0	2400,0	-
38540	3 x 35 + 3 x 10	42,0 - 45,0	2000	3100	1292,0	2900,0	-
38541	3 x 50 + 3 x 10	45,0 - 48,0	3000	4300	1728,0	3450,0	-
38542	3 x 70 + 3 x 16	50,0 - 54,0	4100	5100	2477,0	4600,0	-
38543	3 x 95 + 3 x 16	54,0 - 58,0	5600	7000	3197,0	5770,0	-
38544	3 x 120 + 3 x 25	58,0 - 62,0	7100	8500	4176,0	6900,0	-

8,7/15kV

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Permanent load N	Tensile strain max. N	Cop. weight kg / km	Weight app. kg / km	
38545	3 x 25 + 3 x 10	43,0 - 46,0	1500	2200	1008,0	2750,0	-
38546	3 x 35 + 3 x 10	46,0 - 48,0	2000	3100	1292,0	3210,0	-
38547	3 x 50 + 3 x 10	49,0 - 52,0	3000	4300	1728,0	3950,0	-
39040	3 x 70 + 3 x 16	53,0 - 57,0	4100	5100	2477,0	5000,0	-
39041	3 x 95 + 3 x 16	58,0 - 62,0	5600	7000	3197,0	6150,0	-
39042	3 x 120 + 3 x 25	63,0 - 67,0	7100	8500	4176,0	7700,0	-

12/20kV

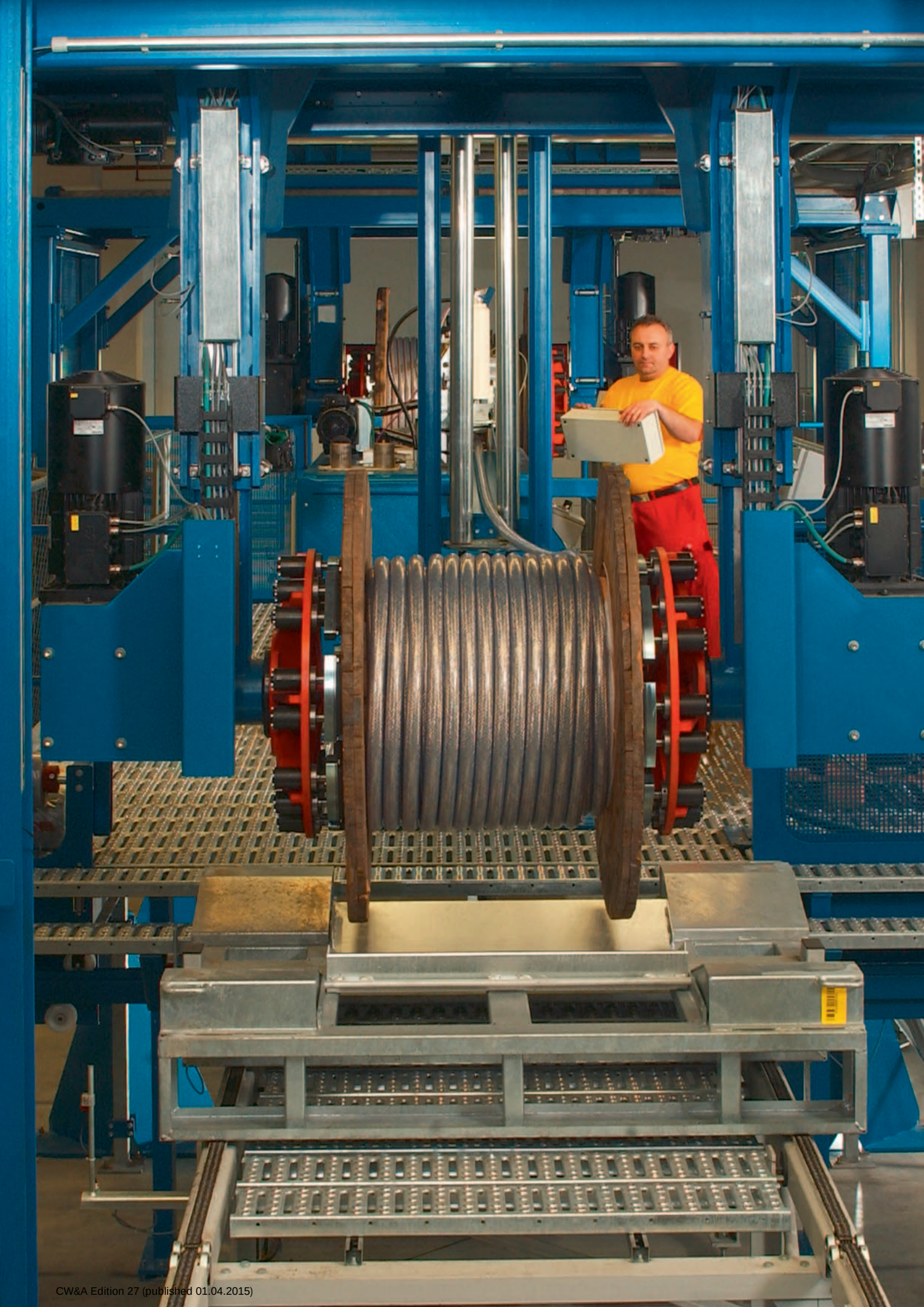
Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Permanent load N	Tensile strain max. N	Cop. weight kg / km	Weight app. kg / km	
39043	3 x 25 + 3 x 10	46,0 - 49,0	1500	2200	1008,0	3040,0	-
39044	3 x 35 + 3 x 10	49,0 - 52,0	2000	3100	1292,0	3510,0	-
39045	3 x 50 + 3 x 10	53,0 - 57,0	3000	4300	1728,0	4410,0	-
39046	3 x 70 + 3 x 16	57,0 - 61,0	4100	5100	2477,0	5420,0	-
39047	3 x 95 + 3 x 16	62,0 - 66,0	5600	7000	3197,0	6750,0	-
39048	3 x 120 + 3 x 25	67,0 - 70,0	7100	8500	4176,0	8050,0	-

Dimensions and specifications may be changed without prior notice. (RQ03)



Suitable accessories can be found in Chapter X.

• Tool - HAM 1





ROBOFLEX® 150

ROBOFLEX® recycle

ROBOFLEX® sewer robot

ROBOFLEX® 2001

CW&A Edition 27 (published 01.04.2015)

ROBOT CABLES

	Temperature (°C) - flexing	Temperature (°C) - fixed	Nominal voltage U_0/U	Bending radius - flexing x Ø	Bending radius - fixed x Ø	Halogen-free	UV-resistant	Outdoor use	Drag chain	Colored cores/VDE 0293	Screened/shielded	HAR/VDE REG no./VDE	UL/CSA	Page
Robot cables														
ROBOFLEX® recycle	-30 to +105	-40 to +105	300	7.5x	7.5x	X	X	X		X				262
ROBOFLEX® 2001 / 2001-C	-30 to +80	-40 to +80	300/500	7.5x	7.5x		X	X			/ X			264
ROBOFLEX® 150,...151,...152,...153	-40 to +80	-40 to +80	300/500	15x	15x	X	X	X		/ X	X			265
ROBOFLEX® sewer robot	-40 to +80	-40 to +80	300/500				X	X						267

The selection table is intended as an initial orientation.
Please see the relevant page of the catalogue for detailed information on the product properties.

H

ROBOFLEX® recycle



Technical data

- **Approval:**
  UL/cUL approved, UL-Style 20233
- **Production**
  in accordance with VDE standards
- **Temperature range:**
  fixed installation -40°C to +105°C
  flexibel -30°C to +105°C
- **Nominal voltage:**
  300 V
- **Test voltage:**
  2000 V
- **Minimum bending radius:**
  7.5 x cable diameter (for flexible installation)
- **Traversing speed:**
  max. 3.3 m/s for 5 m of horizontal traverse path length
- **Acceleration:**
  max. 5 m/s²
- **Flexing and torsion cycles:**
  min. 10 million.
- **Torsional stress:**
  +/- 360°/m

Cable structure

Assembly (3-pin)

- Bare copper litz wire
- Core insulation TPE
- Cores stranded in layers
- -D-screen: screened version for robot application
- -C-screen: in drag chain systems
- Sheath, special mix
- weld splatter resistant, dull, low adhesion
- Sheath colour: see below

Properties

- very good resistance to oil as per DIN VDE 0473-811-404/DIN EN 60811-404
- good resistance to acids, alkalis and solvents
- not cross-linked
- weld splatter resistant
- recyclable
- halogen-free
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- Free of substances harmful to paint adhesion substances
- very high mechanical load capacity
- abrasion resistant
- wear-resistant
- Highly flexible
- UV-resistant

Application

The cables with this new sheath material cover all requirements for very large mechanical stresses for abrasion, tear resistance, torsion, flexing, flexibility and oil resistance. Using for automation technology, plant and machine construction, fixture construction for handling devices, welding devices and welding tongs, assembly and handling devices, machining production, welding robots and tool machines, blast furnaces and rolling mills. The completely new feature of this cable is the weld splatter resistance without the otherwise usual and required cross-linking process. Our newly developed non-cross-linked thermoplastic elastomer is fully recyclable. In contrast to this, the usual, cross-linked, thermoplastic elastomers cannot be recycled and put a not insignificant stress on our environment. This must be particularly interesting for customers who have an environment management system according to DIN EN ISO 14001 and thus place a great deal of importance on the use of recyclable materials. A significantly longer service life than that of existing cables on the market, because it can be used in highly flexible applications, for example on robots (torsion) and in drag chains (dynamic load).

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

ROBOFLEX® recycle

Part no.	Sheath colour	Cable structure No.cores x cross-sec. mm²	Core colours	High flex **	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
701889	BK RAL 9005	3 x 0,25	BN, BU, BK	X	4,4	7,2	22,0	-
701891	YE RAL 1021	3 x 0,25	BN, BU, BK	X	4,4	7,2	22,0	-
701890	GY RAL 7001	3 x 0,25	BN, BU, BK	X	4,4	7,2	22,0	-
701894	YE RAL 1021	4 x 0,25	BN, BU, BK, WH	X	4,7	9,6	26,0	-
701892	BK RAL 9005	4 x 0,25	BN, BU, BK, WH	X	4,7	9,6	26,0	-
701893	GY RAL 7001	4 x 0,25	BN, BU, BK, WH	X	4,7	9,6	26,0	-
701897	YE RAL 1021	5 x 0,25	BN, BU, BK, WH, GY	X	4,8	12,0	30,0	-
701895	BK RAL 9005	5 x 0,25	BN, BU, BK, WH, GY	X	4,8	12,0	30,0	-
701896	GY RAL 7001	5 x 0,25	BN, BU, BK, WH, GY	X	4,8	12,0	30,0	-
702805	YE RAL 1021	8 x 0,25	DIN 47100	X	6,0	19,2	55,0	-
702803	BK RAL 9005	8 x 0,25	DIN 47100	X	6,0	19,2	55,0	-
702804	GY RAL 7001	8 x 0,25	DIN 47100	X	6,0	19,2	55,0	-
701900	YE RAL 1021	3 x 0,34	BN, BU, BK	X	4,9	9,8	30,0	-
701898	BK RAL 9005	3 x 0,34	BN, BU, BK	X	4,9	9,8	30,0	-
701899	GY RAL 7001	3 x 0,34	BN, BU, BK	X	4,9	9,8	30,0	-

Continuation ▸

ROBOFLEX® recycle



ROBOFLEX® recycle

Part no.	Sheath colour	Cable structure No.cores x cross-sec. mm²	Core colours	High flex **	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
701903	YE RAL 1021	4 x 0,34	BN, BU, BK, WH	X	5,2	13,1	43,0	-
701901	BK RAL 9005	4 x 0,34	BN, BU, BK, WH	X	5,2	13,1	43,0	-
701902	GY RAL 7001	4 x 0,34	BN, BU, BK, WH	X	5,2	13,1	43,0	-
701906	YE RAL 1021	5 x 0,34	BN, BU, BK, WH, GY	X	5,9	16,4	54,0	-
701904	BK RAL 9005	5 x 0,34	BN, BU, BK, WH, GY	X	5,9	16,4	54,0	-
701905	GY RAL 7001	5 x 0,34	BN, BU, BK, WH, GY	X	5,9	16,4	54,0	-
702808	YE RAL 1021	8 x 0,34	DIN 47100	X	6,8	26,1	78,0	-
702806	BK RAL 9005	8 x 0,34	DIN 47100	X	6,8	26,1	78,0	-
702807	GY RAL 7001	8 x 0,34	DIN 47100	X	6,8	26,1	78,0	-
701910	YE RAL 1021	5 G 0,5	BK with number, GN-YE	X	6,0	24,0	65,0	-
701908	BK RAL 9005	5 G 0,5	BK with number, GN-YE	X	6,0	24,0	65,0	-
701909	GY RAL 7001	5 G 0,5	BK with number, GN-YE	X	6,0	24,0	65,0	-
701913	YE RAL 1021	5 G 0,75	BK with number, GN-YE	X	7,0	36,0	80,0	-
701911	BK RAL 9005	5 G 0,75	BK with number, GN-YE	X	7,0	36,0	80,0	-
701912	GY RAL 7001	5 G 0,75	BK with number, GN-YE	X	7,0	36,0	80,0	-

ROBOFLEX® recycle screened, D-screen

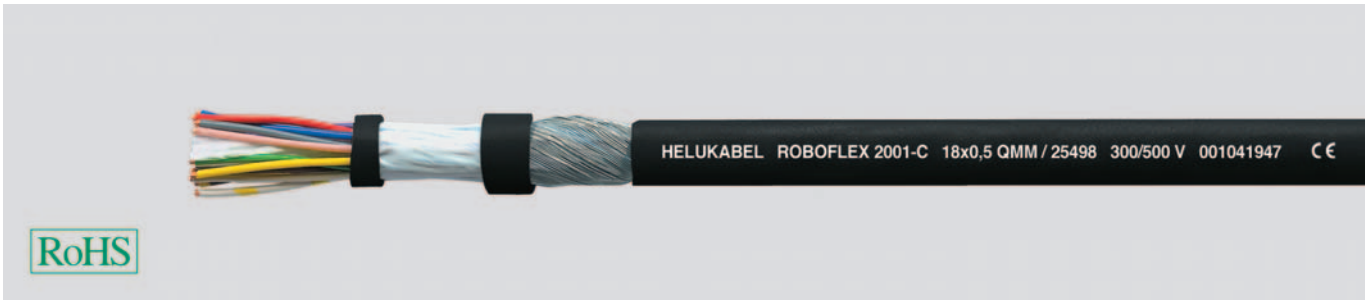
Part no.	Sheath colour	Cable structure No.cores x cross-sec. mm²	Core colours	High flex **	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
703843	BK RAL 9005	3 x 0,25	BN, BU, BK	X	5,0	17,0	44,6	-
703845	YE RAL 1021	3 x 0,25	BN, BU, BK	X	5,0	17,0	44,6	-
703844	GY RAL 7001	3 x 0,25	BN, BU, BK	X	5,0	17,0	44,6	-
703848	YE RAL 1021	4 x 0,25	BN, BU, BK, WH	X	5,2	19,4	46,3	-
703846	BK RAL 9005	4 x 0,25	BN, BU, BK, WH	X	5,2	19,4	46,3	-
703847	GY RAL 7001	4 x 0,25	BN, BU, BK, WH	X	5,2	19,4	46,3	-
703851	YE RAL 1021	5 x 0,25	BN, BU, BK, WH, GY	X	5,3	22,5	50,0	-
703849	BK RAL 9005	5 x 0,25	BN, BU, BK, WH, GY	X	5,3	22,5	50,0	-
703850	GY RAL 7001	5 x 0,25	BN, BU, BK, WH, GY	X	5,3	22,5	50,0	-
703869	YE RAL 1021	8 x 0,25	DIN 47100	X	6,8	34,1	53,5	-
703867	BK RAL 9005	8 x 0,25	DIN 47100	X	6,8	34,1	53,5	-
703868	GY RAL 7001	8 x 0,25	DIN 47100	X	6,8	34,1	53,5	-
703854	YE RAL 1021	3 x 0,34	BN, BU, BK	X	5,2	19,6	48,2	-
703852	BK RAL 9005	3 x 0,34	BN, BU, BK	X	5,2	19,6	48,2	-
703853	GY RAL 7001	3 x 0,34	BN, BU, BK	X	5,2	19,6	48,2	-
703857	YE RAL 1021	4 x 0,34	BN, BU, BK, WH	X	5,4	23,7	53,0	-
703855	BK RAL 9005	4 x 0,34	BN, BU, BK, WH	X	5,4	23,7	53,0	-
703856	GY RAL 7001	4 x 0,34	BN, BU, BK, WH	X	5,4	23,7	53,0	-
703860	YE RAL 1021	5 x 0,34	BN, BU, BK, WH, GY	X	5,8	28,7	61,9	-
703858	BK RAL 9005	5 x 0,34	BN, BU, BK, WH, GY	X	5,8	28,7	61,9	-
703859	GY RAL 7001	5 x 0,34	BN, BU, BK, WH, GY	X	5,8	28,7	61,9	-
703872	YE RAL 1021	8 x 0,34	DIN 47100	X	7,3	58,0	85,0	-
703870	BK RAL 9005	8 x 0,34	DIN 47100	X	7,3	58,0	85,0	-
703871	GY RAL 7001	8 x 0,34	DIN 47100	X	7,3	58,0	85,0	-
703863	YE RAL 1021	5 G 0,5	BK with number, GN-YE	X	7,0	52,0	76,0	-
703861	BK RAL 9005	5 G 0,5	BK with number, GN-YE	X	7,0	52,0	76,0	-
703866	YE RAL 1021	5 G 0,75	BK with number, GN-YE	X	7,6	70,0	93,0	-
703864	BK RAL 9005	5 G 0,75	BK with number, GN-YE	X	7,6	70,0	93,0	-
703865	GY RAL 7001	5 G 0,75	BK with number, GN-YE	X	7,6	70,0	93,0	-

ROBOFLEX® recycle screened, C-screen

Part no.	Sheath colour	Cable structure No.cores x cross-sec. mm²	Core colours	High flex **	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
703873	BK RAL 9005	3 x 0,25	BN, BU, BK	X	5,0	17,0	44,6	-
703875	YE RAL 1021	3 x 0,25	BN, BU, BK	X	5,0	17,0	44,6	-
703874	GY RAL 7001	3 x 0,25	BN, BU, BK	X	5,0	17,0	44,6	-
703878	YE RAL 1021	4 x 0,25	BN, BU, BK, WH	X	5,2	19,4	46,3	-
703876	BK RAL 9005	4 x 0,25	BN, BU, BK, WH	X	5,2	19,4	46,3	-
703877	GY RAL 7001	4 x 0,25	BN, BU, BK, WH	X	5,2	19,4	46,3	-
703881	YE RAL 1021	5 x 0,25	BN, BU, BK, WH, GY	X	5,3	22,5	50,0	-
703879	BK RAL 9005	5 x 0,25	BN, BU, BK, WH, GY	X	5,3	22,5	50,0	-
703880	GY RAL 7001	5 x 0,25	BN, BU, BK, WH, GY	X	5,3	22,5	50,0	-
703899	YE RAL 1021	8 x 0,25	DIN 47100	X	6,8	34,1	53,5	-
703897	BK RAL 9005	8 x 0,25	DIN 47100	X	6,8	34,1	53,5	-
703898	GY RAL 7001	8 x 0,25	DIN 47100	X	6,8	34,1	53,5	-
703884	YE RAL 1021	3 x 0,34	BN, BU, BK	X	5,2	19,6	48,2	-
703882	BK RAL 9005	3 x 0,34	BN, BU, BK	X	5,2	19,6	48,2	-
703883	GY RAL 7001	3 x 0,34	BN, BU, BK	X	5,2	19,6	48,2	-
703887	YE RAL 1021	4 x 0,34	BN, BU, BK, WH	X	5,4	23,7	53,0	-
703885	BK RAL 9005	4 x 0,34	BN, BU, BK, WH	X	5,4	23,7	53,0	-
703886	GY RAL 7001	4 x 0,34	BN, BU, BK, WH	X	5,4	23,7	53,0	-
703890	YE RAL 1021	5 x 0,34	BN, BU, BK, WH, GY	X	5,8	28,7	61,9	-
703888	BK RAL 9005	5 x 0,34	BN, BU, BK, WH, GY	X	5,8	28,7	61,9	-
703889	GY RAL 7001	5 x 0,34	BN, BU, BK, WH, GY	X	5,8	28,7	61,9	-
703902	YE RAL 1021	8 x 0,34	DIN 47100	X	7,3	58,0	85,0	-
703900	BK RAL 9005	8 x 0,34	DIN 47100	X	7,3	58,0	85,0	-
703901	GY RAL 7001	8 x 0,34	DIN 47100	X	7,3	58,0	85,0	-
703893	YE RAL 1021	5 G 0,5	BK with number, GN-YE	X	7,0	52,0	76,0	-
703891	BK RAL 9005	5 G 0,5	BK with number, GN-YE	X	7,0	52,0	76,0	-
703892	GY RAL 7001	5 G 0,5	BK with number, GN-YE	X	7,0	52,0	76,0	-
703896	YE RAL 1021	5 G 0,75	BK with number, GN-YE	X	7,6	70,0	93,0	-
703894	BK RAL 9005	5 G 0,75	BK with number, GN-YE	X	7,6	70,0	93,0	-
703895	GY RAL 7001	5 G 0,75	BK with number, GN-YE	X	7,6	70,0	93,0	-

Dimensions and specifications may be changed without prior notice.

ROBOFLEX® 2001 / 2001-C Robot cables, meter marking



Technical data

- Special TPE-E/PUR adapted to DIN VDE 0250 / DIN VDE 0285-525-1 / DIN EN 50525-1
  Temperature range
  flexing -30°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage**
  up to 0,34 mm² 350 V (operating peak voltage)
  from 0,5 mm² U_0/U 300/500 V
- **Test voltage**
  up to 0,34 mm² 1,5 kV, 5 minutes
  from 0,5 mm² 3,0 kV, 5 minutes
- **Mutual capacitance**
  core/core approx. 100 nF/km
  core/screen approx. 120 nF/km
- **Inductance approx**.
  0,69 mH/km
- **Minimum bending radius**
  7,5x cabel Ø

Cable structure

- Bare copper, stranded to DIN VDE 0295 and IEC 60228, fine or extra fine wires, cl.5 or cl.6, BS 6360 cl.5 or 6, up to 0,34 mm² cl.5, above 0,5 mm² cl.6
- Special core insulation, PP
- Cores coded
  up to 0,34 mm² according DIN 47100
  above 0,5 mm² black cores with continuous white numbering acc. to DIN VDE 0293
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Special separating foil
- Cable structure C-type, cu-screen of helically wound, approx. 85-95% coverage
- Outher sheath, special polyurethane
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- High flexibility at low temperatures
- High abrasion resistance
- Loadable under torsion stress ±360°/meter
- Low adhesion
- **Resistant to**
  Microbes and rotting
  Oxygene and ozone
  Vibrations
  UV-radiation
- **Largely resistant to**
  Oil and fats resistant
- AWG sizes are approximate equivalent values. The actual cross-section is in mm²

Application

These special robotic control and signal cables specially designed for torsion and bending stresses in robots and connecting handling tools.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

ROBOFLEX® 2001

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
25459	7 x 0,25	5,8	16,8	48,0	24
25439	12 x 0,25	7,6	28,8	71,0	24
25460	25 x 0,25	10,6	60,0	143,0	24
25461	2 x 0,34	4,0	6,6	28,0	22
25462	3 x 0,34	4,0	9,8	34,0	22
25440	7 x 0,34	5,7	22,8	51,0	22
25449	12 x 0,34	8,3	39,2	69,0	22
25463	12 G 0,5	10,4	57,8	90,0	20
25519	16 G 0,5	11,6	76,8	277,0	20
25464	18 G 0,5	12,7	86,4	121,0	20
25465	25 G 0,5	14,2	120,0	256,0	20
25466	4 G 0,75	6,0	28,8	63,0	19
25450	7 G 0,75	7,9	50,4	96,0	19
25467	12 G 0,75	11,5	84,4	171,0	19
25468	14 G 0,75	12,8	100,8	200,0	19
25469	2 x 1	5,5	19,2	48,0	18
25470	3 G 1	6,0	29,0	60,0	18
25471	4 G 1	6,3	38,4	78,0	18
25472	7 G 1	8,5	67,2	131,0	18
25473	12 G 1	12,5	115,2	216,0	18
25474	18 G 1	15,4	172,8	306,0	18
25475	25 G 1	17,4	240,0	432,0	18
25476	34 G 1	21,3	326,4	569,0	18
25477	41 G 1	23,2	393,6	694,0	18
25520	3 G 1,5	6,9	43,2	94,0	16
25529	4 G 1,5	7,9	57,6	107,0	16
25559	5 G 1,5	8,6	72,0	121,0	18
25509	8 G 1,5	11,1	115,2	292,0	16
25478	12 G 1,5	15,5	172,8	356,0	16
25479	18 G 1,5	19,3	259,2	445,0	16
25480	25 G 1,5	21,8	360,0	636,0	16
25481	3 G 2,5	8,4	72,0	136,0	14
25482	4 G 2,5	9,1	96,0	170,0	14
25483	3 G 4	10,3	116,0	227,0	12
25530	4 G 4	11,2	153,6	261,0	12
25510	4 G 6	14,1	230,4	341,0	10
25484	3 G 10	15,6	288,0	518,0	8
25485	3 G 16	18,2	460,8	722,0	6
25486	3 G 25	22,9	720,0	1180,0	4
25487	3 G 35	26,5	1008,0	1600,0	2

ROBOFLEX® 2001-C

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
25539	10 x 0,14	7,8	34,2	62,0	26
25488	12 x 0,14	7,8	42,1	95,0	26
25489	18 x 0,14	9,7	54,5	120,0	26
25490	25 x 0,14	10,9	69,0	158,0	26
25491	12 x 0,25	8,3	59,5	126,0	24
25492	18 x 0,25	10,1	80,0	164,0	24
25493	25 x 0,25	11,1	103,0	215,0	24
25494	12 x 0,34	8,8	78,0	160,0	22
25495	18 x 0,34	10,8	101,0	210,0	22
25496	25 x 0,34	12,0	158,0	305,0	22
25497	12 G 0,5	11,2	117,0	175,0	20
25498	18 G 0,5	13,6	160,0	231,0	20
25499	25 G 0,5	14,8	255,0	347,0	20
25500	12 G 0,75	11,8	155,0	220,0	19
25501	18 G 0,75	15,0	210,0	305,0	19
25502	25 G 0,75	16,6	275,0	415,0	19
705462	3 G 1	6,3	76,0	90,0	18
25503	12 G 1	13,0	190,0	265,0	18
25504	18 G 1	16,1	245,0	390,0	18
25505	25 G 1	18,1	345,0	540,0	18
25506	12 G 1,5	16,2	260,0	345,0	16
25507	18 G 1,5	20,3	370,0	485,0	16
25508	25 G 1,5	22,5	498,0	710,0	16

Dimensions and specifications may be changed without prior notice. (RH01)

ROBOFLEX® 150,...151,...152,...153 PUR, halogen-free,

for torsional stress, meter marking





Technical data

- Special TPE-E/PUR robot cable based on DIN VDE 0250 / DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range** flexing -40°C to +80°C
- **Nominal voltage** up to 0,34 mm² 350 V from 0.5 mm² U_0/U 300/500 V
- **Test voltage** up to 0,34 mm² 1500 V from 0.5 mm² 3000 V
- **Insulation resistance** min. 20 MOhm x km
- Max. **torsion angle** ±360°/metre
- **Mutual capacitance** core/core approx. 100 nF/km core/screen approx. 120 nF/km
- **Minimum bending radius** 15x cable Ø

Cable structure

- Bare copper, stranded to DIN VDE 0295 and IEC 60228, fine or extra fine wires, cl.5 or cl.6, BS 6360 cl.5 or 6, up to 0,34 mm² cl.5, above 0,5 mm² cl.6
- TPE-E core insulation
- Black cores continuous white numbering acc. to DIN VDE 0293 + gnye
- Special optimised stranding
- High-grade slide wrapping
- with meter marking
- Tinned copper twist screen
- PUR outer sheath
- Sheath colour: grey (RAL 7001) or black

Part. nos. 77261-77263, 76158, 70561, 77267, 77268, 76165, 76166, 77424

- Core colours DIN 47100

Part no. 71820, 74658, 77264, 75253, 76167

- Construction as above, but 0,5 (1,5) mm² cores screened with aluminium-coated polyester foil

Part no. 72214

- Construction as above, but 0,5 mm² pair screened with tinned twist screen

Part no. 77265, 77266, 77269, 77270

- Construction as above, but 1,0 mm² pair only, screened with tinned twist screen

Part no. 77469

- Construction as above, but
- 6 cores, 1,5 mm², screened with tinned twist screen
- 4 pairs, 0,25 mm², screened with tinned twist screen
- Sheath colour: orange (RAL 2003)
- with meter marking

Properties

- PUR outer sheath, low adhesion, abrasion resistant, halogen-free, resistant to UV, oil, hydrolysis and microbial attack
- The smooth, high-grade core insulation, together with special stranding configuration and slide wrapping ensure long service life under combined bending and torsional stresses
- AWG sizes are approximate equivalent values. The actual cross-section is in mm²

H

Application

These cables are specially designed for combined torsional and bending stresses. They are employed both for power supply and for the transmission of control and monitoring signals. ROBOFLEX® cables are used in assembly and welding robots, in handling and automation centres, in transport and conveyor equipment, and on turntables and swivel tables. In other words, anywhere where there is no defined cable routing with only alternating bending cycles on a single plane such as in drag chains.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Continuation ▸

ROBOFLEX® 150, ...151, ...152, ...153 PUR, halogen-free,

for torsional stress, meter marking

ROBOFLEX® 150 (screened), Sheath colour grey

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
77261	(12 x 0,25)	8,3	59,5	126,0	24
77266	23 x 1 + (2 x 1,0)	17,4	262,0	473,0	-
71789	(4 x 1,5)	8,9	81,7	150,0	16
75251	(4 x 2,5)	11,2	134,0	280,0	14
75252	(4 x 4)	13,1	200,0	400,0	12
76157	(4 x 6)	15,4	286,0	550,0	10
77262	(3 x 2 x 0,14)	5,8	17,0	43,0	26
77263	(4 x 2 x 0,14)	6,9	37,0	75,0	26
76158	(5 x 2 x 0,34)	9,2	65,0	116,0	22
70561	(8 x 2 x 0,34)	10,2	90,0	150,0	22
71820	(4 x 1,5 + (2 x 0,62))	10,5	106,8	195,0	16
74658	(4 x 1,5 + (2 x 0,5))	10,7	95,0	180,0	16
77264	(4 x 1,5 + (2 x 1,0))	11,1	128,0	220,0	16
75253	(4 x 2,5 + (2 x 0,5))	12,5	180,0	270,0	14
72214	(4 x 4 + (2 x 0,62))	13,5	260,0	340,0	12
76159	(4 x 4 + (2 x 1,0))	14,0	237,0	350,0	12
76160	(4 x 6 + (2 x 1,0))	16,0	341,0	500,0	10
77265	16 x 1 + (2 x 1,0)	16,7	197,0	380,0	18

ROBOFLEX® 151, Sheath colour grey

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
70116	12 G 0,5	8,3	57,6	131,0	20
76168	4 G 1,5	8,5	57,6	106,0	16
76169	4 G 2,5	10,8	96,0	196,0	14
76170	4 G 4	12,7	153,6	283,0	12
76171	4 G 6	15,0	230,4	432,0	10

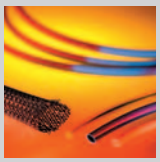
ROBOFLEX® 152 (screened), Sheath colour black

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
76161	(4 x 1,5)	8,9	81,7	150,0	16
76162	(4 x 2,5)	11,2	164,0	280,0	14
76163	(4 x 4)	13,1	222,0	400,0	12
76164	(4 x 6)	15,4	305,0	550,0	10
77267	(3 x 2 x 0,14)	5,8	23,0	43,0	26
77268	(4 x 2 x 0,14)	6,9	26,6	55,0	26
77424	(3 x 2 x 0,25)	7,3	32,0	65,0	24
76165	(5 x 2 x 0,34)	9,2	65,0	116,0	22
76166	(8 x 2 x 0,34)	10,2	90,0	150,0	22
75415	(4 x 1,5 + (2 x 0,5))	10,7	95,0	170,0	16
75416	(4 x 2,5 + (2 x 0,5))	11,8	115,0	220,0	14
75940	(4 x 2,5 + (2 x 1,0))	12,3	147,0	250,0	14
75167	(4 x 4 + (2 x 0,5))	13,5	260,0	340,0	12
75417	(4 x 4 + (2 x 1,0))	14,0	237,0	350,0	12
75418	(4 x 6 + (2 x 1,0))	16,0	316,0	500,0	10
77269	16 x 1 + (2 x 1,0)	16,7	176,0	380,0	18
77270	23 x 1 + (2 x 1,0)	17,4	262,0	473,0	18
77469	5 x 2,5 + (6 x 1,5) + 4 x (2 x 0,25)	16,7	320,0	460,0	14

ROBOFLEX® 153, Sheath colour black

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
76172	4 G 1,5	8,5	57,6	106,0	16
76174	4 G 4	12,7	153,6	283,0	12
76175	4 G 6	15,0	230,4	432,0	10

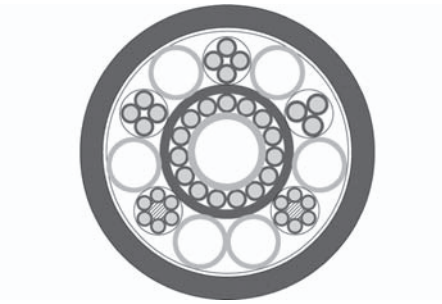
Dimensions and specifications may be changed without prior notice.

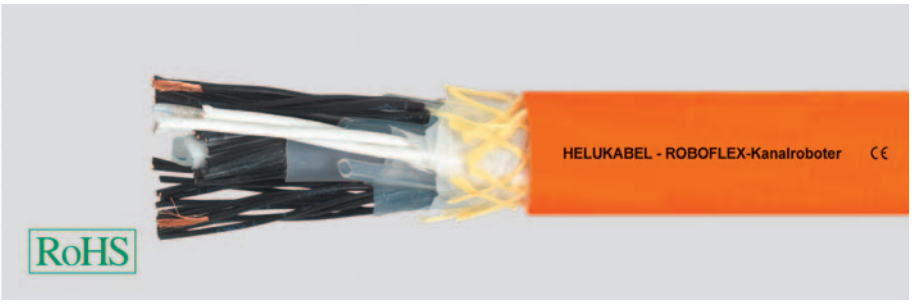


Suitable accessories can be found in Chapter X.

- Heat shrink tubing - SPSP coils

ROBOFLEX® sewer robot trailing





Technical data

- **Temperature range** flexing -40°C to +80°C
- **Nominal voltage** 300/500 V
- **Test voltage** 3000 V
- **Insulation resistance** min. 20 MOhm x km

Cable structure

Part No. 74540

- Bare copper, ultra-fine wire conductors acc. to DIN VDE 0295 cl.6 and/or IEC 60228 cl.6
- Core insulation TPE-E, black with numbering
- 3 COAX 187/U stranded
- Cores and COAX elements and PVC sleeves, special stranded
- PUR outer sheath with embedded high-tensile and high-torsion resistant Kevlar braid
- Sheath colour orange (RAL 2003)

Part No. 70581

- Bare copper, ultra-fine wire conductors acc. to DIN VDE 0295 cl.6 or IEC 60228 cl.6
- PVC core insulation, colour code DIN 47100
- Cores stranded with COAX
- Overall screening with tinned copper braid, coverage approx. 85%
- Special PVC sheath
- Sheath colour grey (RAL 7001)

Part No. 76397 (trailing cable for video cameras)

- Tinned copper conductor, fine wire stranded
- Core insulation of cell polypropylene
- Screen of aluminium-coated polyester foil and tinned copper braiding
- PUR outer sheath
- Sheath colour blue (RAL 5015)

Properties

- To enhance reliability and tensile strength, a high-tensile and high-torsion resistant Kevlar braid is incorporated into the extremely robust PUR sheath

Part No. 74540+76397

- PUR sheath: low adhesion, extremely abrasion resistant, halogen-free, resistant to UV, oil, hydrolysis and microbial attack

Part No. 70581

- Special PVC sheath, largely oil resistant, self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B) chemical resistant, (see table Technical Information)

H

Application

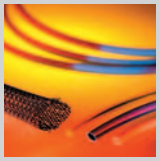
These cables are designed for use with autonomous sewer robots. These robots are used to inspect municipal sewer networks and if necessary to locate leaks or blockages. Some of these robots are even able to seal such leaks after detecting them. Besides cores for power supply, they also contain data cables, hoses for various drives, and coaxial cables for the video camera mounted on the robot.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part No.	No cores x cross-sec mm²	Outer Ø ca. mm	Cop. weight kg/km	Weight ca. kg/km
74540	22x0,5+6x0,75+ 3x1+4x1,5+COAX +PVC sleeves	26,8	206,0	450
700766	4x0,14+12x1+ 3x2,5+1xCOAX +4xPA sleeves	33,5	394,2	1080

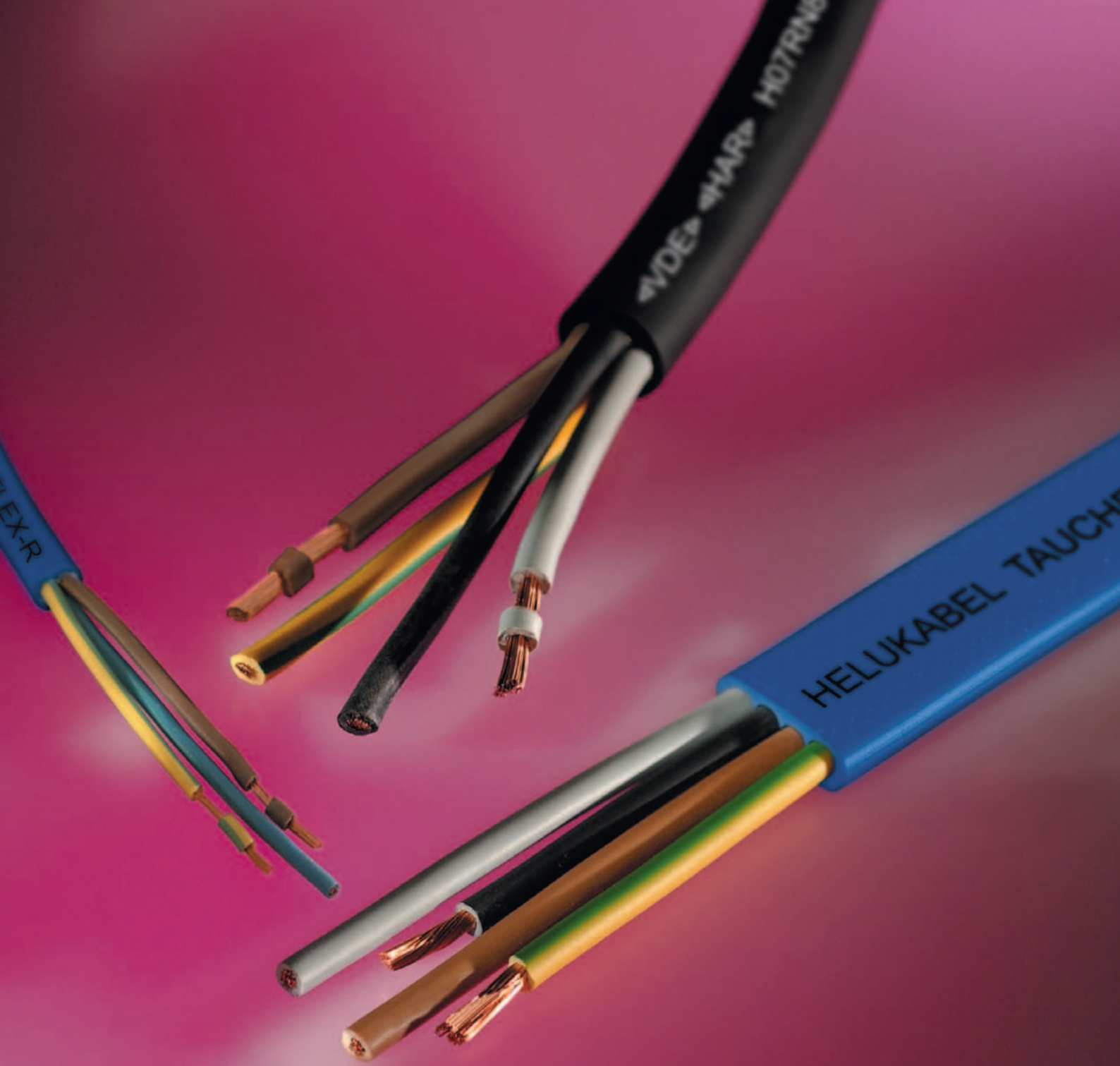
Part No.	No cores x cross-sec mm²	Outer Ø ca. mm	Cop. weight kg/km	Weight ca. kg/km
70581	12 x 0,25+1 x COAX	8,0	73,0	108
76397	1 x 1,22	6,5	24,0	50

Dimensions and specifications may be changed without prior notice. (RH01)



Suitable accessories can be found in Chapter X.

• Heat shrink tubing - SPSP coils



Tauchflex-R

H07RN8-F

Tauchflex-FL

WATER-RESISTANT CABLES

	Temperature (°C) - flexing	Temperature (°C) - fixed	Nominal voltage U_0/U	Bending radius - flexing x Ø	Bending radius - fixed x Ø	Halogen-free	UV-resistant	Outdoor use	Drag chain	Colored cores/VDE 0293	Screened/shielded	HAR/VDE REG no./VDE	UL/CSA	Page
Water-resistant cables														
Tauchflex-R	-25 to +80	-40 to +80	450/750	5x	4x			X		X				270
Tauchflex-FL	-25 to +80	-40 to +80	450/750	5x	4x			X		X				271
H07 RN8-F	-25 to +40	-40 to +40	450/750	6x	4x			X		X		X		272

The selection table is intended as an initial orientation.
Please see the relevant page of the catalogue for detailed information on the product properties.

I

Tauchflex-R 750 V, blue, submersible-pump cable



Technical data

- Special cables corresponding apapted to DIN VDE 0250/DIN VDE 0285-525-2-21/ DIN EN 50525-2-21
- **Temperature range** (max. temperature for the outer surface) -40°C to +80°C
- **Temperature limit in water**: max. +40°C, max. +60°C with limited duration of life
  Temperature limit in air: flexible -25°C to +80°C fixed installation -40°C to +80°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** U_0/U 450/750 V
- **Operating voltage** at alternating and three-phase currents U_0/U 413/825 V at direct currents U_0/U 619/1238 V
- **Test voltage** 2,5 kV, 15 min
- Max. permitted **tensile stress** per mm² conductor 15 N
- **Minimum bending radius**
  flexing
  up to 8 mm cable Ø: 3x cable Ø
  > 8-12 mm cable Ø: 4x cable Ø
  > 12 mm cable Ø: 5x cable Ø
  fixed installation
  up to 12 mm cable Ø: 3x cable Ø
  > 12 mm cable Ø: 4x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation to EPR
- Core identification to DIN VDE 0293
- GN-YE conductor, 3 cores and above
- Cores standed in layers with optimal lay-length
- Outer sheath of special EPR
- Sheath colour blue

Properties

- Good insulation properties when submerged in water
- Minimal weight gain under water
- The mechanical stability of the insulation materials remains constant even when submerged
- As rotor-connection cable for motors up to 1000 V with protected fixed installation in tubes.

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Tauchflex-R is a special cable for use as a connecting and control cable for submersible motor pumps, underwater floodlights, floating switch and has proven its worth for constant use in drinking water, process water and service water up to an immersion depth of 300 m.
Tauchflex-R can also be installed for use in dry, damp and humid areas as well as in the open air. Not suitable for the installation in hazardous areas.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
37100	1 x 1,5	6,0	14,0	54,0	16
37101	1 x 2,5	6,7	24,0	76,0	14
37102	1 x 4	7,2	38,0	105,0	12
37103	1 x 6	7,9	58,0	135,0	10
37104	1 x 10	9,5	96,0	200,0	8
37105	1 x 16	11,5	154,0	290,0	6
37106	1 x 25	13,5	240,0	400,0	4
37107	1 x 35	15,0	336,0	560,0	2
37108	1 x 50	17,5	480,0	730,0	1
37109	1 x 70	20,0	672,0	1000,0	2/0
37110	1 x 95	22,5	912,0	1250,0	3/0
37111	1 x 120	24,0	1152,0	1650,0	4/0
37112	1 x 150	25,2	1440,0	2000,0	300 kcmil
37113	1 x 185	27,6	1776,0	2460,0	350 kcmil
37114	1 x 240	30,6	2304,0	3050,0	500 kcmil
37115	1 x 300	33,5	2880,0	3700,0	600 kcmil
37116	2 x 1,5	8,5	29,0	130,0	16
37117	2 x 2,5	10,2	48,0	190,0	14
37118	2 x 4	11,8	77,0	260,0	12
37119	2 x 6	13,1	115,0	350,0	10
37120	2 x 10	17,7	192,0	550,0	8
37121	2 x 16	20,2	307,0	900,0	6
37122	2 x 25	24,3	480,0	1300,0	4
37123	3 G 1,5	9,5	43,0	150,0	16
37124	3 G 2,5	11,0	72,0	205,0	14
37125	3 G 4	13,0	115,0	330,0	12
37126	3 G 6	14,5	173,0	470,0	10

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
37127	3 G 10	19,0	288,0	750,0	8
37128	3 G 16	23,5	461,0	1110,0	6
37129	3 G 25	28,5	720,0	1450,0	4
37130	3 G 35	32,0	1008,0	2150,0	2
37131	3 G 50	37,0	1440,0	2800,0	1
37132	3 G 70	42,0	2016,0	3750,0	2/0
37133	3 G 95	43,3	2736,0	4590,0	3/0
37134	3 G 120	49,0	3456,0	5400,0	4/0
37135	4 G 1,5	10,7	58,0	190,0	16
37136	4 G 2,5	12,3	96,0	270,0	14
37137	4 G 4	14,0	154,0	380,0	12
37138	4 G 6	15,5	230,0	520,0	10
37139	4 G 10	21,0	384,0	955,0	8
37140	4 G 16	25,5	614,0	1400,0	6
37141	4 G 25	31,0	960,0	1950,0	4
37142	4 G 35	35,0	1344,0	2650,0	2
37143	4 G 50	41,0	1920,0	3600,0	1
37144	4 G 70	46,5	2688,0	4890,0	2/0
37145	4 G 95	51,6	3648,0	6180,0	3/0
37146	4 G 120	56,1	4608,0	7200,0	4/0
37147	5 G 1,5	11,2	72,0	225,0	16
37148	5 G 2,5	13,3	120,0	335,0	14
37149	5 G 4	15,6	192,0	470,0	12
37150	5 G 6	17,5	288,0	645,0	10
37151	5 G 10	22,9	480,0	1150,0	8
37152	5 G 16	26,4	768,0	1690,0	6
37153	5 G 25	32,0	1200,0	2400,0	4

Dimensions and specifications may be changed without prior notice. (RI01)

Tauchflex-FL 750 V, blue, submersible pump cable



Technical data

- Special cables corresponding adapted to DIN VDE 0250/DIN VDE 0285-525-2-21/ DIN EN 50525-2-21
- **Temperature range** (max. temperature for the outer surface) -40°C to +80°C
- **Temperature limit in water:** max. +40°C, max. +60°C with limited duration of life
  Temperature limit in air: flexible -25°C to +80°C fixed installation -40°C to +80°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** U_0/U 450/750 V
- **Operating voltage** atalternating and three-phase currents U_0/U 413/825 V at direct currents U_0/U 619/1238 V
- **Test voltage** 2,5 kV, 15 min.
- Max. permitted **tensile stress** per mm² conductor 15 N
- **Minimum bending radius** flexing 5x cable thickness fixed installation 4x cable thickness

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of EPR
- Core identification to DIN VDE 0293
- GN-YE conductor, 3 cores and above
- Cores laying parallel
- Outer sheath of special ERP
- Sheath colour blue

Properties

- Good insulation properties when submerged in water
- Minimal weight gain under water
- The mechanical stability of the insulation materials remains constant even when submerged
- As rotor-connection cable for motors up to 1000 V with protected fixed installation in tubes.

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Tauchflex-FL is a special cable for use as a connecting and control cable for submersible motor pumps, underwater floodlights, floating switch and has proven its worth for constant use in drinking water, process water and service water up to an immersion depth of 300 m.
Tauchflex-FL can also be installed for use in dry, damp and humid areas as well as in the open air. Not suitable for the installation in hazardous areas.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer dimension approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
37155	3 x 1,5	7,0 x 13,0	43,0	125,0	16
37156	3 x 2,5	8,0 x 16,0	72,0	185,0	14
37157	3 x 4	9,0 x 19,0	115,0	290,0	12
37158	3 x 6	10,0 x 23,0	173,0	400,0	10
37159	3 x 10	12,0 x 28,0	288,0	615,0	8
37160	3 x 16	14,0 x 31,0	461,0	890,0	6
37161	3 x 25	17,0 x 37,0	720,0	1155,0	4
37162	3 x 35	17,0 x 38,0	1008,0	1540,0	2
37163	3 x 50	20,0 x 45,0	1440,0	2190,0	1
37164	3 x 70	22,0 x 52,0	2016,0	2890,0	2/0
37165	3 x 95	25,0 x 58,0	2736,0	3800,0	3/0
37166	3 x 120	27,0 x 64,0	3456,0	4700,0	4/0

Part no.	No.cores x cross-sec. mm²	Outer dimension approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
37167	4 G 1,5	7,0 x 17,0	58,0	160,0	16
37168	4 G 2,5	8,0 x 20,0	96,0	245,0	14
37169	4 G 4	9,0 x 24,0	154,0	330,0	12
37170	4 G 6	10,0 x 26,0	230,0	450,0	10
37171	4 G 10	11,0 x 31,0	384,0	850,0	8
37172	4 G 16	13,0 x 36,0	614,0	1200,0	6
37173	4 G 25	15,0 x 45,0	960,0	1590,0	4
37174	4 G 35	17,0 x 48,0	1344,0	2085,0	2
37175	4 G 50	20,0 x 59,0	1920,0	2890,0	1

Dimensions and specifications may be changed without prior notice. (RI01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HELUTOP® HT-MS Plus

H07RN8-F waterproof rubber-sheathed cable, harmonized type



Technical data

- Water resistant heavy hose pipe to DIN VDE 0285-525-2-21 / DIN EN 50525-2-21
- **Temperature range**
  flexing -25°C
  fixed installation -40°C
  in water max. +40°C
- Permissible **operating temperature** at conductor +60°C
- **Nominal voltage** U_0/U 450/750 V
  in case of protected and fixed installation U_0/U 600/1000 V
- **Test voltage** 2500 V
- **Permanent tensile load** max. 15 N/mm²
- **Minimum bending radius**
  flexing 6x cable Ø
  fixed installation 4x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of rubber compound type EI4 to DIN VDE 0207-363-1 / DIN EN 50363-1
- Core identification to DIN VDE 0293-308
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Outer sheath of special polychoroprene rubber
- Outer sheath black

Properties

- **Resistant to**
  Ozone
  Weather
- The core identification of a single core sheathed, of an insulated wire is black.

Tests

- Oil resistant acc. to DIN VDE 0473-811-404/ DIN EN 60811-404
- **Behaviour in fire**
  to DIN VDE 0482-332-1-2
  DIN EN 60332-2-1, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Specifically designed for use in fresh water up to 10 m water depth and a maximum water temperature of 40°C for connection of submersible pumps and similar applications. Not suitable for underwater power transmission systems or in waterways or in areas where mechanical damage is possible which represent a potential danger.

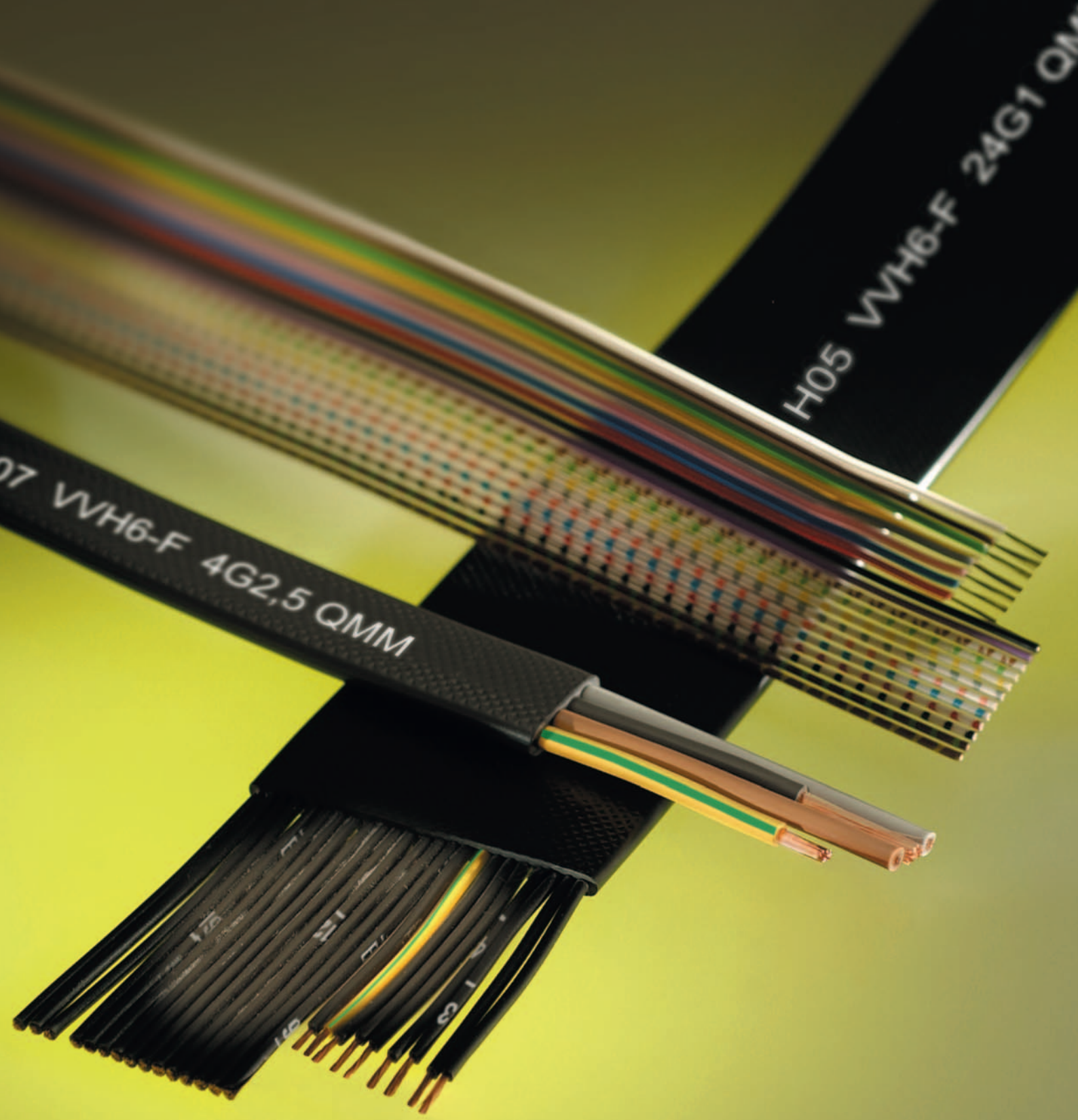
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
37287	1 x 1,5	5,7 - 7,1	14,4	58,0	16
37288	1 x 2,5	6,3 - 7,9	24,0	71,0	14
37289	1 x 4	7,2 - 9,0	38,0	100,0	12
37290	1 x 6	7,9 - 9,8	58,0	130,0	10
37291	1 x 10	9,5 - 11,9	96,0	230,0	8
37292	1 x 16	10,8 - 13,4	154,0	290,0	6
37293	1 x 25	12,7 - 15,8	240,0	420,0	4
37294	1 x 35	14,3 - 17,9	336,0	530,0	2
37295	1 x 50	16,5 - 20,6	480,0	750,0	1
37296	1 x 70	18,6 - 23,3	672,0	960,0	2/0
37297	1 x 95	20,8 - 26,0	912,0	1250,0	3/0
37298	1 x 120	22,8 - 28,6	1152,0	1560,0	4/0
37299	1 x 150	25,2 - 31,4	1440,0	1900,0	300 kcmil
37300	1 x 185	27,6 - 34,4	1776,0	2300,0	350 kcmil
37301	1 x 240	30,6 - 38,3	2304,0	2950,0	500 kcmil
37302	1 x 300	33,5 - 41,9	2880,0	3600,0	600 kcmil
37303	1 x 400	37,4 - 46,8	3840,0	4600,0	750 kcmil
37304	1 x 500	41,3 - 52,0	4800,0	6000,0	1000 kcmil
37305	2 x 1	7,7 - 10,0	19,0	98,0	18
37306	2 x 1,5	8,5 - 11,0	29,0	135,0	16
37307	2 x 2,5	10,2 - 13,1	48,0	193,0	14
37308	2 x 4	11,8 - 15,1	77,0	280,0	12
37309	2 x 6	13,1 - 16,8	115,0	330,0	10
37310	2 x 10	17,7 - 22,6	192,0	586,0	8
37311	2 x 16	20,2 - 25,7	307,0	810,0	6
37312	2 x 25	24,3 - 30,7	480,0	1160,0	4
37313	3 G 1	8,3 - 10,7	29,0	130,0	18
37314	3 G 1,5	9,2 - 11,9	43,0	165,0	16
37315	3 G 2,5	10,9 - 14,0	72,0	235,0	14
37316	3 G 4	12,7 - 16,2	115,0	320,0	12
37317	3 G 6	14,1 - 18,0	173,0	420,0	10
37318	3 G 10	19,1 - 24,2	288,0	810,0	8
37319	3 G 16	21,8 - 27,6	461,0	1050,0	6
37320	3 G 25	26,1 - 33,0	720,0	1250,0	4
37321	3 G 35	29,3 - 37,1	1008,0	1900,0	2
37322	3 G 50	34,1 - 42,9	1440,0	2600,0	1

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
37323	3 G 70	38,4 - 48,3	2016,0	3400,0	2/0
37324	3 G 95	43,3 - 54,0	2736,0	4450,0	3/0
37325	3 G 120	47,4 - 60,0	3456,0	5180,0	4/0
37326	3 G 150	52,0 - 66,0	4320,0	6500,0	300 kcmil
37327	3 G 185	57,0 - 72,0	5328,0	7860,0	350 kcmil
37328	3 G 240	65,0 - 82,0	6192,0	10224,0	500 kcmil
37329	3 G 300	72,0 - 90,0	8640,0	12620,0	600 kcmil
37330	4 G 1	9,2 - 11,9	38,0	150,0	18
37331	4 G 1,5	10,2 - 13,1	58,0	200,0	16
37332	4 G 2,5	12,1 - 15,5	96,0	290,0	14
37333	4 G 4	14,0 - 17,9	154,0	395,0	12
37334	4 G 6	15,7 - 20,0	230,0	540,0	10
37335	4 G 10	20,9 - 26,5	384,0	950,0	8
37336	4 G 16	23,8 - 30,1	614,0	1260,0	6
37337	4 G 25	28,9 - 36,6	960,0	1860,0	4
37338	4 G 35	32,5 - 41,1	1344,0	2380,0	2
37339	4 G 50	37,7 - 47,5	1920,0	3190,0	1
37340	4 G 70	42,7 - 54,0	2688,0	4260,0	2/0
37341	4 G 95	48,4 - 61,0	3648,0	5600,0	3/0
37342	4 G 120	53,0 - 66,0	4608,0	6830,0	4/0
37343	4 G 150	58,0 - 73,0	5760,0	8320,0	300 kcmil
37344	4 G 185	64,0 - 80,0	7104,0	9800,0	350 kcmil
37345	4 G 240	72,0 - 91,0	9216,0	12100,0	500 kcmil
37346	4 G 300	80,0 - 101,0	11520,0	15200,0	600 kcmil
37354	5 G 1	10,2 - 13,1	48,0	175,0	18
37347	5 G 1,5	11,2 - 14,4	72,0	240,0	16
37348	5 G 2,5	13,3 - 17,0	120,0	345,0	14
37349	5 G 4	15,6 - 19,9	192,0	485,0	12
37350	5 G 6	17,5 - 22,2	288,0	650,0	10
37351	5 G 10	22,9 - 29,1	480,0	1200,0	8
37352	5 G 16	26,4 - 33,3	768,0	1550,0	6
37353	5 G 25	32,0 - 40,4	1200,0	2250,0	4
37355	6 G 1,5	13,4 - 17,2	87,0	171,0	16
37356	6 G 2,5	15,7 - 20,0	144,0	279,0	14
37357	12 G 1,5	17,6 - 22,4	173,0	340,0	16
37358	12 G 2,5	20,6 - 26,2	288,0	571,0	14

Dimensions and specifications may be changed without prior notice. (RI01)





TUBEFLEX-(St)-CY

NEO-Flat-C

Ribbon Cables

TUBEFLEX-Y

PVC-Flat (H05 VVH-F/H07 VVH6-F)

NEO-Flat

PVC-Flat-CY

CW&A Edition 27 (published 01.04.2015)

FLAT & RIBBON CABLES

	Temperature (°C) - flexing	Temperature (°C) - fixed	Nominal voltage U_0/U	Bending radius - flexing x Ø	Bending radius - fixed x Ø	Halogen-free	UV-resistant	Outdoor use	Drag chain	Colored cores/VDE 0293	Screened/shielded	HAR/VDE REG no./VDE	UL/CSA	Page
Flat & ribbon cables														
PVC-flat	-5 to +70	-40 to +80	300/500	10x	10x					X				276
NEO-flat	-30 to +80	-40 to +80	300/500	10x	10x			X		X				277
PVC-flat-CY	-5 to +70	-40 to +80	300/500	15x	15x					X	X			278
NEO-flat-C	-30 to +80	-40 to +80	300/500	15x	15x			X		X	X			279
Ribbon	-5 to +70	-5 to +70	350/600							X				280
TUBEFLEX-Y	-20 to +80	-20 to +80	300	15x	15x									281
TUBEFLEX-(St)-CY	-20 to +80	-20 to +80	300	15x	15x						X			282

The selection table is intended as an initial orientation.
Please see the relevant page of the catalogue for detailed information on the product properties.

J

PVC-flat 300/500 V and 450/750 V



Technical data

- Special PVC-flat cable adapted to EN 50214 / DIN VDE 0283-2
  Temperature range
  flexing -5°C to +70°C
  fixed installation -40°C to +80°C
- **Nominal voltage**
  up to 1 mm² U_0/U 300/500 V
  from 1,5 mm² U_0/U 450/750 V
- **Test voltage**
  up to 1 mm² 2000 V
  from 1,5 mm² 2500 V
- **Minimum bending radius**
  10x cable thickness
- **Radiation resistance**
  up to 80x106 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293
  - up to 5 cores coloured
  - from 7 cores, black with continuous white numbering
- Cores laying parallel
- GN-YE conductor
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour black (RAL 9005)

Properties

- Extensively oil resistant, oil-/ chemical Resistance - see table Technical Informations
- Extremely small bending radius
- High flexibility
- Minimum waste of space
- Packeting possibility
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- Part no. 27012 (6x4).
- G = with green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

PVC type of flat cables are used mainly as trailing cable for crane installations, floor conveyer systems and shelf control units.

Installation notes

Cables reels with flat cables must be transported in standing position on the flange. A bending flexibility can be achieved on a plane surface. For this purpose, the corresponding fitting instructions should be followed.

- Put the cable trolly on the guiding rail or upon carrier beam and push them together at the starting point. The distance between the bedding surface of two cable trollys must be wider than the double thickness of a cable-packet.
- During the packeting performance, it must be started with the smaller cross-section which lays on the bedding surface and will be builded successively so that the biggest cross-section is laying on the top.
- Further, be careful of a symmetrical load distribution.
- In case of multicore flat cables with small cross-section, smaller than 2,5 mm², is very critical due to its low tensile stress. In such case, you should add 10% reserve wire for calculation.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer dimension approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
26980	4 G 0,75	4,3 x 12,6	28,8	90,0	19
26981	5 G 0,75	4,3 x 16,1	36,0	115,0	19
26982	6 G 0,75	4,3 x 19,4	43,2	141,0	19
26983	9 G 0,75	4,3 x 26,4	64,8	198,0	19
26984	10 G 0,75	4,3 x 30,1	72,0	224,0	19
26985	12 G 0,75	4,3 x 33,8	84,4	258,0	19
26986	16 G 0,75	4,3 x 44,4	115,2	340,0	19
26987	18 G 0,75	4,3 x 49,2	129,6	380,0	19
26988	20 G 0,75	4,3 x 55,0	144,0	424,0	19
26989	24 G 0,75	4,3 x 65,6	172,8	509,0	19
26990	3 G 1	4,5 x 10,8	28,8	80,0	18
26991	4 G 1	4,5 x 13,4	38,4	104,0	18
26992	5 G 1	4,5 x 16,0	48,0	134,0	18
26993	6 G 1	4,5 x 20,6	57,6	161,0	18
26994	9 G 1	4,5 x 28,4	86,4	230,0	18
26995	10 G 1	4,5 x 30,0	96,0	256,0	18
26996	12 G 1	4,5 x 36,2	115,2	298,0	18
26997	16 G 1	4,5 x 47,6	153,6	395,0	18
26998	18 G 1	4,5 x 52,8	172,8	441,0	18
26999	20 G 1	4,5 x 59,0	192,0	495,0	18
27000	24 G 1	4,5 x 70,4	230,4	590,0	18
27001	4 G 1,5	4,5 x 13,7	58,0	133,0	16
27002	5 G 1,5	4,5 x 17,9	72,0	169,0	16
27003	7 G 1,5	4,5 x 23,5	101,0	235,0	16
27004	8 G 1,5	4,5 x 26,8	115,0	265,0	16
27005	10 G 1,5	4,5 x 33,5	144,0	332,0	16

Part no.	No.cores x cross-sec. mm²	Outer dimension approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
27006	12 G 1,5	4,5 x 38,9	173,0	421,0	16
27028	16 G 1,5	4,5 x 51,5	230,4	555,0	16
27030	24 G 1,5	4,5 x 83,0	346,0	820,0	16
27007	4 G 2,5	5,5 x 17,0	96,0	205,0	14
27008	5 G 2,5	5,5 x 21,5	120,0	256,0	14
27009	7 G 2,5	5,5 x 30,3	168,0	344,0	14
27010	8 G 2,5	5,5 x 31,9	192,0	389,0	14
27011	12 G 2,5	5,8 x 47,1	288,0	580,0	14
27029	16 G 2,5	5,8 x 55,1	384,0	674,0	14
27012	24 G 2,5	15,0 x 63,0	604,0	950,0	14
27027	24 G 2,5	5,8 x 120,0	604,0	950,0	14
27013	4 G 4	7,0 x 21,8	154,0	344,0	12
27014	5 G 4	7,0 x 27,4	192,0	428,0	12
27015	7 G 4	7,9 x 36,6	269,0	590,0	12
27016	4 G 6	8,2 x 24,8	230,0	424,0	10
27017	5 G 6	8,2 x 31,8	288,0	530,0	10
27018	7 G 6	8,2 x 42,6	403,0	760,0	10
27019	4 G 10	10,0 x 29,6	384,0	710,0	8
27020	4 G 16	11,2 x 34,4	614,0	1014,0	6
27025	5 G 16	13,0 x 46,6	768,0	1370,0	6
27021	4 G 25	13,7 x 42,6	960,0	1365,0	4
27026	5 G 25	15,5 x 55,5	1200,0	2000,0	4
27022	4 G 35	15,4 x 47,6	1344,0	2100,0	2
27023	4 G 50	18,2 x 57,0	1920,0	2940,0	1
27024	4 G 70	20,0 x 64,2	2688,0	4090,0	2/0

Dimensions and specifications may be changed without prior notice. (RJ01)

NEO-Flat (N)GFLGÖU



Technical data

- Special Neoprene-flat cable adapted to DIN VDE 0250 part 809
- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Minimum bending radius**
  10x cable thickness
- **Radiation resistance**
  up to 50x10⁶ cJ/kg (up to 50 Mrad)

Cable structure

- Copper-conductor bare or tinned to DIN VDE 0295, BS 6360, IEC 60228
- Conductor construcktion
  35-120 mm² class 5: fine-wire
  1,5-25 mm² class 6 col.4: extra-fine-wire
- Special rubber core insulation
- Core identification to DIN VDE 0293
  - up to 5 cores coloured
  - from 7 cores, black with continuous white numbering
- Cores laying parallel
- GN-YE conductor
- Outer sheath of special rubber 5GM3, to DIN VDE 0207 part 21
- Sheath colour black

Properties

- Special rubber outer sheath, cold-resistant
- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- Extremely small bending radius
- High flexibility
- Minimum waste of space
- Packeting possibility
- Outdoor application

Tests

- **Behaviour in fire**
  to DIN VDE 0482-332-1-2
  DIN EN 60332-2-1, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor
- Part no. 28007 and 28013 (6x4).
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

J

Application

Neoprene type of flat cables are used mainly as trailing cable for crane installations, floor conveyer systems and shelf control units. These cables are also available for export with UL-approval on request.

Installation notes

Cables reels with flat cables must be transported in standing position on the flange. A bending flexibility can be achieved on a plane surface. For this purpose, the corresponding fitting instructions should be followed.

- Put the cable trolly on the guiding rail or upon carrier beam and push them together at the starting point. The distance between the bedding surface of two cable trollys must be wider than the double thickness of a cable-packet.
- During the packeting performance, it must be started with the smaller cross-section which lays on the bedding surface and will be builded successively so that the biggest cross-section is laying on the top.
- Further, be careful of a symmetrical load distribution.
- In case of multicore flat cables with small cross-section, smaller than 2,5 mm², is very critical due to its low tensile stress. In such case, you should add 10% reserve wire for calculation.

CE = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²		Outer dimension approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
28001	4 G 1,5		5,9 x 16,2	58,0	234,0	16
28002	5 G 1,5		5,9 x 23,7	72,0	304,0	16
28003	7 G 1,5		5,9 x 30,5	101,0	391,0	16
28004	8 G 1,5		5,9 x 34,0	115,0	441,0	16
28005	10 G 1,5		5,9 x 43,5	144,0	460,0	16
28006	12 G 1,5		6,5 x 50,4	173,0	646,0	16
28007	24 G 1,5	(6 x 4)	13,0 x 56,0	346,0	1290,0	16
28008	4 G 2,5		7,2 x 19,6	96,0	316,0	14
28009	5 G 2,5		7,2 x 27,8	120,0	391,0	14
28010	7 G 2,5		7,2 x 36,1	168,0	533,0	14
28011	8 G 2,5		7,2 x 40,2	192,0	602,0	14
28012	12 G 2,5		7,8 x 59,4	288,0	890,0	14
28013	24 G 2,5	(6 x 4)	15,5 x 66,8	576,0	1480,0	14
28014	4 G 4		8,8 x 24,2	154,0	506,0	12
28015	5 G 4		8,8 x 33,4	192,0	621,0	12
28016	7 G 4		8,8 x 42,5	269,0	851,0	12
28017	4 G 6		9,6 x 27,4	230,0	661,0	10
28018	5 G 6		9,6 x 37,4	288,0	740,0	10
28019	7 G 6		9,6 x 47,2	403,0	1004,0	10
28020	4 G 10		10,4 x 30,8	384,0	1027,0	8
28021	5 G 10		10,4 x 41,6	480,0	1171,0	8

Part no.	No.cores x cross-sec. mm²	Outer dimension approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
28022	4 G 16	11,6 x 35,6	614,0	1430,0	6
28023	5 G 16	12,2 x 48,2	768,0	1590,0	6
28024	4 G 25	14,1 x 45,8	960,0	1890,0	4
28025	5 G 25	14,7 x 58,3	1200,0	2215,0	4
28026	7 G 25	15,3 x 78,7	1680,0	3000,0	4
28027	4 G 35	15,8 x 50,8	1344,0	2460,0	2
28028	5 G 35	16,4 x 64,4	1680,0	2880,0	2
28029	7 G 35	16,4 x 86,4	2352,0	4100,0	2
28030	4 G 50	18,6 x 60,2	1920,0	3385,0	1
28031	4 G 70	21,0 x 68,0	2688,0	4480,0	2/0
28032	4 G 95	24,1 x 78,6	3648,0	5990,0	3/0
28033	4 G 120	25,5 x 84,2	4608,0	7240,0	4/0

Dimensions and specifications may be changed without prior notice. (RJ01)

PVC-flat-CY screened, EMC-preferred type



Technical data

- Special PVC-flat cable, screened, adapted to DIN VDE 0283 part 2
- **Temperature range** flexing -5°C to +70°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Breakdown voltage** min. 6000 V
- **Minimum bending radius** 15x cable thickness
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC
- Core identification see table below
- Cores screened individually or in bunches
- Copper screened braiding, approx. 85% coverage
- Outer sheath of special PVC
- Sheath colour black (RAL 9005)

Properties

- Extensively oil resistant
- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

PVC screened flat cables are used mainly as trailing cable for crane installations, floor conveyer systems and shelf control units.

Installation notes

Cables reels with flat cables must be transported in standing position on the flange. A bending flexibility can be achieved on a plane surface. For this purpose, the corresponding fitting instructions should be followed.

- Put the cable trolly on the guiding rail or upon carrier beam and push them together at the starting point. The distance between the bedding surface of two cable trollys must be wider than the double thickness of a cable-packet.
- During the packeting performance, it must be started with the smaller cross-section which lays on the bedding surface and will be builded successively so that the biggest cross-section is laying on the top.
- Further, be careful of a symmetrical load distribution.
- In case of multicore flat cables with small cross-section, smaller than 2,5 mm², is very critical due to its low tensile stress. In such case, you should add 10% reserve wire for calculation.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Core marking	Outer dimension approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
27100	5 G 0,5	Colour coded, DIN VDE 0293	21,0 x 3,4	64,0	140,0	20
27101	5 x 4 x 0,5	Colour coded, (blue, red, green, yellow)	37,4 x 7,2	175,0	280,0	20
27102	8 x 7 x 0,5	Cont. white numbering, DIN VDE 0293	68,6 x 11,7	480,0	1180,0	20
27090	4 G 0,75	Colour coded, DIN VDE 0293	15,0 x 5,0	70,0	147,0	19
27103	4 x 4 G 1	Cont. white numbering	33,5 x 11,0	310,0	625,0	18
26754	4 x 4 x 1	Colour coded, (blue, red, green, yellow)	33,5 x 11,0	310,0	625,0	18
27091	4 G 1,5	Colour coded, DIN VDE 0293	18,7 x 5,9	116,0	210,0	16
27092	8 G 1,5	Cont. white numbering	35,6 x 5,9	217,0	400,0	16
27093	12 G 1,5	Cont. white numbering	52,1 x 5,9	266,0	610,0	16
27094	4 G 2,5	Colour coded, DIN VDE 0293	21,0 x 6,9	170,0	270,0	14
27104	6 G 2,5	Cont. white numbering, DIN VDE 0293	37,4 x 7,2	240,0	320,0	14
27095	4 G 4	Colour coded, DIN VDE 0293	24,5 x 7,7	225,0	400,0	12
27096	4 G 6	Colour coded, DIN VDE 0293	30,1 x 9,2	328,0	520,0	10
27097	4 G 10	Colour coded, DIN VDE 0293	35,8 x 10,5	525,0	840,0	8
27098	4 G 16	Colour coded, DIN VDE 0293	41,3 x 12,6	788,0	1280,0	6
27099	4 G 25	Colour coded, DIN VDE 0293	48,4 x 14,4	1170,0	1800,0	4

Dimensions and specifications may be changed without prior notice. (RJ01)



Suitable accessories can be found in Chapter X.
• Cable Gland - STK-F
• Cable Gland - STS-F

NEO-Flat-C (MCHÖU) screened, EMC-preferred type



Technical data

- Special-Neoprene-flat cable, screened, adapted to DIN VDE 0250 part 809
- **Temperature range**
  flexing -30°C bis +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 3000 V
- **Minimum bending radius**
  15x cable thickness
- **Radiation resistance**
  up to 50x10⁶ cJ/kg (up to 50 Mrad)

Cable structure

- Copper-conductor bare or tinned to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insulation of special rubber
- Core identification to DIN VDE 0293
  - up to 5 cores coloured
  - from 7 cores, black with continuous white numbering
- GN-YE conductor
- Cores screened individually
- Cores laying parallel
- Copper screened braiding, approx. 85% coverage
- Outer sheath of special Neoprene
- Outer sheath coulor black (RAL 9005)

Properties

- Outer sheath cold resistant
- Extensively oil resistant
- Extremely small bending radius
- High flexibility
- Minimum waste of space
- Packeting possibility
- The high degree of screening density assures disturbance-free transmission of all signal and impulses
- Outdoor application

Tests

- **Behaviour in fire**
  to DIN VDE 0482-332-1-2
  DIN EN 60332-2-1, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

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Application

Neoprene screened flat cables are used mainly as trailing cable for crane installations, floor conveyer systems and shelf control units. These cables are also available for export with UL-approval on request.

Installation notes

Cables reels with flat cables must be transported in standing position on the flange. A bending flexibility can be achieved on a plane surface. For this purpose, the corresponding fitting instructions should be followed.

- Put the cable trolly on the guiding rail or upon carrier beam and push them together at the starting point. The distance between the bedding surface of two cable trollys must be wider than the double thickness of a cable-packet.
- During the packeting performance, it must be started with the smaller cross-section which lays on the bedding surface and will be builded successively so that the biggest cross-section is laying on the top.
- Further, be careful of a symmetrical load distribution.
- In case of multicore flat cables with small cross-section, smaller than 2,5 mm², is very critical due to its low tensile stress. In such case, you should add 10% reserve wire for calculation.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer dimension approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
28100	8 G 1,5	7,9 x 42,0	231,0	520,0	16
28101	12 G 1,5	7,9 x 61,0	346,0	790,0	16
28102	4 G 2,5	8,5 x 25,5	164,0	420,0	14

Part no.	No.cores x cross-sec. mm²	Outer dimension approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
28103	6 G 2,5	8,5 x 34,5	247,0	540,0	14
28104	12 G 2,5	8,9 x 68,0	494,0	1000,0	14
28302	4 G 25	16,0 x 51,0	1116,0	1650,0	4

Dimensions and specifications may be changed without prior notice. (RJ01)



Suitable accessories can be found in Chapter X.

- Cable Gland - STK-F
- Cable Gland - STS-F

Ribbon Cables Type L, Type L AWG 28, Type D



Technical data

Type L (stranded wire)
- **Pitch** 2,54 mm
- **Nominal voltage**
  0,14 mm² = 350 V
  0,25 to 0,75 mm² = 600 V
- **Test voltage**
  0,14 mm² = 1200 V
  0,25 to 0,75 mm² = 2000 V

Type L AWG 28 (stranded wire)
- **Pitch** 1,27 mm
- **Heat-resistance** up to 105°C
- **Nominal voltage** 300 V
- **Test voltage** 2000 V

Type D (solid)
- **Pitch** 2,5 mm
- **Nominal voltage** 500 V
- **Test voltage** 1500 V

Cable structure

Type L (stranded wire)
- Tinned copper, fine wire stranded to DIN VDE 0295 cl.5, BS 6360 cl.5
- Core insulation of PVC, flame retardant
- Cores colour coded

Type L AWG 28 (stranded wire)
- Tinned copper 7x0,127
- Core insulation of PVC, flame retardant
- Cores single coloured, edge marking on one side
- Cores moulded, can be separated easily

Type D (solid)
- Cu-solid, tinned 0,5 mm Ø
- Core insulation of PVC
- Cores moulded, can be separated easily
- Cores colour coded

Properties

Type L AWG 28 (stranded wire)
- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- Pitch
  (Distance between centre point)

Application

Ribbon cables are used as connecting and control cables wherever there is a need to install quickly and with a minimum waste of space. These cables offer an excellent degree of flexibility.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Typ L (colour coded)

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
44001	2 x 0,14	3,9 x 1,4	2,7	7,0	26
44002	3 x 0,14	6,4 x 1,4	4,0	11,0	26
44003	4 x 0,14	8,9 x 1,4	5,4	14,0	26
44004	5 x 0,14	11,3 x 1,4	6,7	18,0	26
44005	6 x 0,14	13,9 x 1,4	8,1	21,0	26
44006	7 x 0,14	16,4 x 1,4	9,4	25,0	26
44007	8 x 0,14	18,9 x 1,4	10,7	28,0	26
44008	9 x 0,14	21,4 x 1,4	13,4	32,0	26
44009	10 x 0,14	23,9 x 1,4	14,4	35,0	26
44010	11 x 0,14	26,4 x 1,4	15,3	39,0	26
44011	12 x 0,14	28,9 x 1,4	16,1	42,0	26
44012	16 x 0,14	38,9 x 1,4	21,5	56,0	26
44013	20 x 0,14	48,9 x 1,4	27,0	70,0	26
44014	4 x 0,25	9,1 x 1,6	9,6	21,0	24
44015	5 x 0,25	11,6 x 1,6	12,0	26,0	24
44016	6 x 0,25	14,1 x 1,6	14,4	31,0	24
44017	7 x 0,25	16,6 x 1,6	16,8	36,0	24
44018	8 x 0,25	19,1 x 1,6	19,2	42,0	24
44019	10 x 0,25	24,1 x 1,6	24,0	52,0	24
44020	12 x 0,25	29,1 x 1,6	28,8	62,0	24
44021	16 x 0,25	39,1 x 1,6	38,4	83,0	24
44022	20 x 0,25	49,1 x 1,6	48,0	104,0	24
44023	4 x 0,5	9,0 x 2,0	19,2	38,0	20
44024	5 x 0,5	12,0 x 2,0	24,0	48,0	20
44025	6 x 0,5	15,0 x 2,0	28,8	57,0	20
44026	7 x 0,5	17,0 x 2,0	33,6	66,0	20
44027	8 x 0,5	20,0 x 2,0	38,4	76,0	20
44028	10 x 0,5	23,0 x 2,0	48,0	95,0	20
44029	12 x 0,5	30,0 x 2,0	58,0	114,0	20
44030	16 x 0,5	40,0 x 2,0	77,0	151,0	20
44031	20 x 0,5	50,0 x 2,0	101,0	190,0	20
44032	4 x 0,75	10,6 x 2,5	29,0	52,0	19
44033	5 x 0,75	13,3 x 2,5	36,0	64,0	19
44034	6 x 0,75	16,0 x 2,5	43,2	77,0	19
44035	7 x 0,75	18,7 x 2,5	50,0	90,0	19
44036	8 x 0,75	21,4 x 2,5	58,0	103,0	19
44037	10 x 0,75	26,8 x 2,5	72,0	130,0	19
44038	12 x 0,75	32,2 x 2,5	86,0	155,0	19
44039	16 x 0,75	43,0 x 2,5	112,0	206,0	19
44040	20 x 0,75	53,4 x 2,5	151,0	260,0	19

Typ L AWG 28 (single coloured, edge marking on one side)

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
44041	10 x 0,08	12,7 x 0,9	13,4	30,0	28
44042	14 x 0,08	17,8 x 0,9	18,0	50,0	28
44043	16 x 0,08	20,3 x 0,9	20,0	53,0	28
44044	20 x 0,08	25,4 x 0,9	25,0	65,0	28
44045	26 x 0,08	33,0 x 0,9	32,0	75,0	28
44046	34 x 0,08	43,2 x 0,9	43,0	90,0	28
44047	40 x 0,08	50,8 x 0,9	48,0	125,0	28
44048	48 x 0,08	61,0 x 0,9	59,0	145,0	28

Typ D (colour coded)

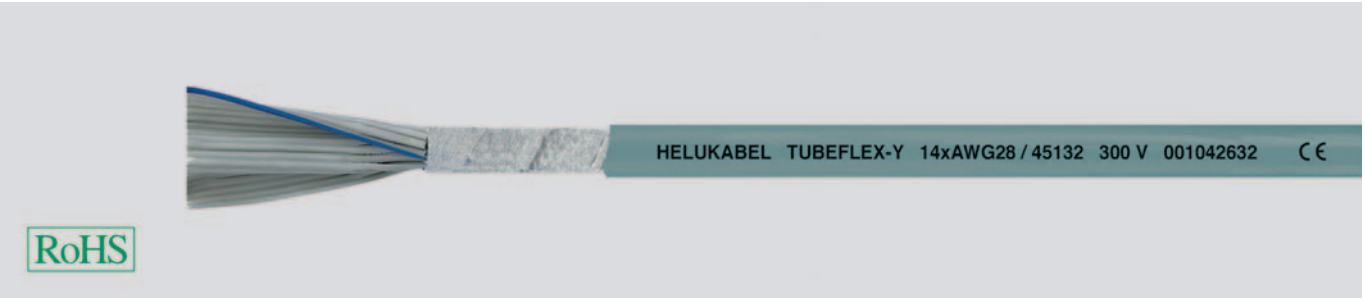
Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
44049	2 x 0,5	3,9 x 1,4	10,0	10,0	20
44050	3 x 0,5	6,4 x 1,4	14,0	14,0	20
44051	4 x 0,5	8,9 x 1,4	19,0	17,0	20
44052	5 x 0,5	11,4 x 1,4	24,0	21,0	20
44053	6 x 0,5	13,9 x 1,4	29,0	25,0	20
44054	7 x 0,5	16,4 x 1,4	34,0	29,0	20
44055	8 x 0,5	18,9 x 1,4	38,0	33,0	20
44056	9 x 0,5	21,4 x 1,4	42,0	37,0	20
44057	10 x 0,5	23,9 x 1,4	48,0	41,0	20
44058	11 x 0,5	26,4 x 1,4	56,0	47,0	20

Standard-colour-code (not to DIN 47100)

1 white	12 white-green	23 brown-blue
2 brown	13 white-yellow	24 brown-red
3 green	14 white-grey	25 brown-black
4 yellow	15 white-pink	26 green-grey
5 grey	16 white-blue	27 green-pink
6 pink	17 white-red	28 green-blue
7 blue	18 white-black	29 green-red
8 red	19 brown-green	30 green-black
9 black	20 brown-yellow	31 yellow-grey
10 violet	21 brown-grey	32 yellow-pink
11 white-brown	22 brown-pink	33 yellow-blue

Dimensions and specifications may be changed without prior notice. (RJ01)

TUBEFLEX-Y roundshaped flat ribbon cable for IDC-technique, pitch 1,27 mm



Technical data

- Roundshaped special Flat Ribbon Cable
- **Conductor resistance** at 20°C
  max. 230 Ohm/km
- **Temperature range**
  -20°C up to +80°C
- **Voltage rating**
  max. 300 V
- **Test voltage**
  core/core 2000 V
- **Dielectric strength, Spark-test**
  3000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Capacitance** (side cores)
  ca. 75 pF/m
- **Impedance** 115 Ohm
- **Minimum bending radius**
  15x cable Ø
- **Radiation resistance**
  up to $80x10^6$ cJ/kg (up to 80 Mrad)

Cable structure

- Stranded tinned copper conductor,
  size AWG 28
  7x0,127 mm = 0,09 mm²
- Core insualtion of special PVC
- Cores colour grey, edge marking on one side
- Cores laying parallel and adjacent, alternately spliced or separated and periodically slotted
- Roundshaped flat ribbon cable, folded
- Taping
- Outer sheath of special PVC
- Outer sheath Colour grey

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- **Very interesting for cable pre-assemblers**!

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

J

Application

TUBEFLEX-Y Flat ribbon cable, due to its roundshape offers considerable advantages compared with other flat ribbon cables during the installation and assembly. This roundshaped cable bids enormous profits by using the quick and economical possibilities under continuance with the efficient connection in IDC-technique. All conductors can be contacted at one working procedure without stripping the insulation. The accurate to size pitch-image of the ribbon cable is obtained due to an adapted backshaping before the plug installation.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x AWG-No.	Flat ribbon dimension Width mm	Outer sheath nominal wall-thickness mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
45130	9 x 28	11,43	0,8	6,1	8,7	35,0
45131	10 x 28	12,70	0,8	6,2	9,7	36,0
45132	14 x 28	17,78	0,8	7,2	13,6	48,0
45133	16 x 28	20,30	0,8	7,2	15,5	51,0
45134	20 x 28	25,40	0,8	7,3	19,4	57,0
45135	24 x 28	30,48	0,8	8,6	23,2	66,0
45136	25 x 28	31,75	0,8	8,6	24,2	69,0
45137	26 x 28	33,02	0,8	8,6	25,2	70,0

Part no.	No.cores x AWG-No.	Flat ribbon dimension Width mm	Outer sheath nominal wall-thickness mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
45138	30 x 28	38,10	0,8	9,0	29,0	81,0
45139	34 x 28	43,20	0,8	10,0	32,9	87,0
45140	36 x 28	45,72	0,8	10,2	34,9	91,0
45141	37 x 28	47,00	1,0	10,3	35,8	93,0
45142	40 x 28	50,80	1,0	10,7	38,7	101,0
45143	50 x 28	63,50	1,0	11,1	48,4	118,0
45144	60 x 28	76,20	1,0	12,5	58,1	135,0
45145	64 x 28	81,30	1,0	13,0	62,0	147,0

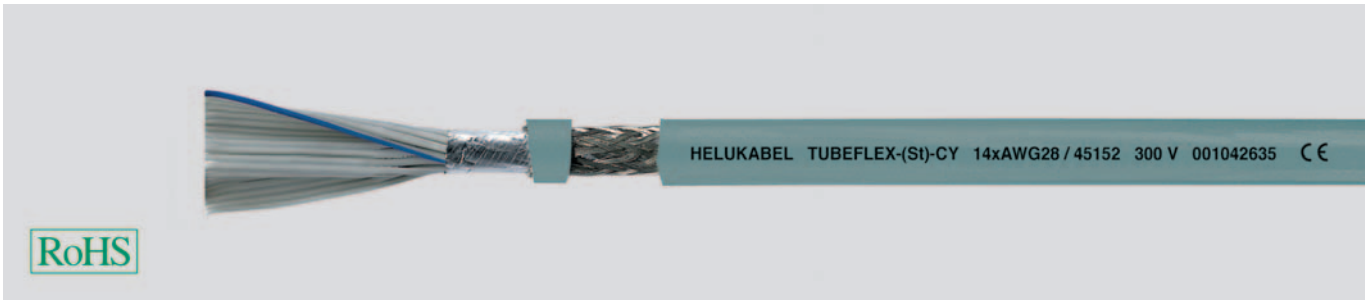
Dimensions and specifications may be changed without prior notice. (RJ01)



Suitable accessories can be found in Chapter X.

- Cable Gland - STK-F
- Cable Gland - STS-F

TUBEFLEX-(St)-CY roundshaped flat ribbon cable, screened, for IDC-technique, pitch 1,27mm, EMC-preferred type



Technical data

- Roundshaped special Flat Ribbon Cable, screened
- **Conductor resistance** at 20°C max. 230 Ohm/km
- **Temperature range** -20°C up to +80°C
- **Voltage rating** max. 300 V
- **Test voltage** core/core 2000 V core/screen 2000 V
- **Dielectric strength, Spark-test** 3000 V
- **Insulation resistance** min. 20 MOhm x km
- **Capacitance** (side cores) ca. 75 pF/m
- **Impedance** 115 Ohm
- **Minimum bending radius** 15x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Stranded tinned copper conductor, size AWG 28 7x0,127 mm = 0,09 mm²
- Core insualtion of special PVC
- Cores colour grey, edge marking on one side
- Cores laying parallel and adjacent, alternately spliced or separated and periodically slotted
- Roundshaped flat ribbon cable, folded
- Dual shielding: (St) - plastic coated Alu-foil and C - tinned copper wire braiding with optimal surface coverage
- Outer sheath of special PVC
- Outer sheath Colour grey

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- **Very interesting for cable pre-assemblers!**
- The dual shielding with plastic coated aluminium foil (St) and the additional tinned copper wire braiding (C) protects against high frequency interference and ensures disturbance-free signal and impuls transfer.

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Application

TUBEFLEX-(St)-CY Flat ribbon cable, due to its roundshape offers considerable advantages compared with other flat ribbon cables during the installation and assembly. This roundshaped cable bids enormous profits by using the quick and economical possibilities under continuance with the efficient connection in IDC-technique. All conductors can be contacted at one working procedure without stripping the insulation. The accurate to size pitch-image of the ribbon cable is obtained due to an adapted backshaping before the plug installation.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x AWG-No.	Flat ribbon dimension Width mm	Outer sheath nominal wall-thickness mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
45150	9 x 28	11,43	0,8	6,3	30,9	56,0
45151	10 x 28	12,70	0,8	6,4	31,9	57,0
45152	14 x 28	17,78	0,8	7,2	35,6	70,0
45153	16 x 28	20,30	0,8	7,4	42,0	75,0
45154	20 x 28	25,40	0,8	7,8	45,8	83,0
45155	24 x 28	30,48	0,8	9,0	54,3	97,0
45156	25 x 28	31,75	0,8	9,0	55,2	100,0
45157	26 x 28	33,02	0,8	9,0	60,0	101,0
45158	30 x 28	38,10	0,8	9,2	60,4	113,0
45159	34 x 28	43,20	0,8	10,2	68,1	122,0
45160	36 x 28	45,72	0,8	10,4	70,1	126,0
45161	37 x 28	47,00	1,0	10,5	71,1	128,0
45162	40 x 28	50,80	1,0	11,3	74,1	135,0
45163	50 x 28	63,50	1,0	11,6	88,3	160,0
45164	60 x 28	76,20	1,0	12,9	98,7	172,0
45165	64 x 28	81,30	1,0	13,3	107,2	192,0

Dimensions and specifications may be changed without prior notice. (RJ01)



Suitable accessories can be found in Chapter X.

- Cable Gland - STK-F
- Cable Gland - STS-F


VOGEL
XTRUMATIC®
VOGEL
TRUMATIC®
3.028
96.18
3.018



LiYW/H05 V2-K

H05 V-K

TOPFLEX® 300

HELUTHERM® 1200

GALVANICABEL®

SiF/SiFF

HELUFLON®-PTEF-5Y

NSHXAFÖ 3kV

KOMPOSPEED® 600

SINGLE CONDUCTORS

	Temperature (°C) - flexing	Temperature (°C) - fixed	Nominal voltage U_0/U	Bending radius - flexing x Ø	Bending radius - fixed x Ø	Halogen-free	UV-resistant	Outdoor use	Drag chain	Colored cores/VDE 0293	Screened/shielded	HAR/VDE REG no./VDE	UL/CSA	Page
Single Conductors														
LiYv	-5 to +70	-30 to +80	500		4x					X				287
H05V-K	-5 to +70	-30 to +80	300/500		4x					X		X		289
H07V-K / (H)07V-K	-5 to +70	-30 to +80	450/750		6x					X		X		291
H05V-K / (H)07V-K	-5 to +70	-30 to +80	300/500		6x					X		X		293
H05V-U / H07V-U	-5 to +70	-30 to +80	300/500		6x					X		X		294
H07V-R	-5 to +70	-30 to +80	450/750		6x					X		X		295
H05V-K, H07V-K, LiY - barrel opening														296
TOPFLEX® 303 X07V-K-Yö	-5 to +80	-40 to +80	0,6/1kV	12x	12x					X				297
LifY single core	-15 to +80	-15 to +80	300/500	8x	8x					X				298
PUR single cores		-40 to +80	1kV	10x	5x	X	X	X		X				299
H05Z-K / H07Z-K		-40 to +90	300/500		6x	X				X		X		300
H05G-U / -K / H07G-U / -R / -K	-25 to +110	-40 to +110	300/500		6x					X		X		302
LiYW / H05V2-K	+5 to +90	+5 to -90/105	300/500		4x					X				303
H07V2-K	+5 to +90	+5 to +90	450/750		10-15x					X		X		304
HELUTHERM® 145	-35 to +120	-55 to +145	300/500	12,5x	4x	X	X	X		X				305
SiF / SiFF		-60 to +180	300/500		6x	X				X				307
SiF/GL, SiD, SiD/GL		-60 to +180	300/500	15x	15x	X				X				308
FZ-LSi	+180	+180	6-10kV	7,5x	7,5x					X				309
FZ-LS	+180	+180	15-20kV	7,5x	7,5x					X				309
Neon Light Cables	+180	+180	3,5-7,5kV	7,5x	7,5x	X				X				309
HELUFLON®-FEP-6Y	-100 to +205	-100 to +205	600	10x	4x		X	X		X				310
HELUFLON®-PTFE-5Y	-190 to +260	-190 to +260	600	10x	4x		X	X		X				311
HELUFLON®-PTFE-5Y	-190 to +260	-190 to +260	1000	10x	4x		X	X		X				311
HELUTHERM® 400		-60 to +400	500	15x	15x	X				X				312
HELUTHERM® 600 / 600-ES		-60 to +600	500	15x	15x	X					/X			313
HELUTHERM® 800 / 800-ES		-120 to +750	500	15x	15x	X					/X			314
HELUTHERM® 1200 / 1200-ES		-170 to +1000	500	15x	15x	X					/X			315
Ground wire ESUY/ESY	-5 to +70	-5 to +70		12x	12x									316
GALVANIC CABLE®	-40 to + 80	-50 to +80	0,6/1kV	15x	15x	X	X	X						317
H01N2-D / -E	-25 to +80	-40 to +80	100/100	12x/10x	12x/10x			X				X		318
NSGAFÖU 3kV	-25 to +80	-40 to +80	1,8/3kV	10x	6x							X		319
NSHXAFÖ 3kV	-25 to +70	-40 to +90	1,8/3kV	10x	6x	X						X		320
TOPFLEX® 300	-5 to +80	-40 to +80	0,6/1kV	7,5x	7,5x			(X)	X					321
KOMPOSPEED® 600 / 600-C	-30 to +90	-40 to +100	0,6/1kV	5/7,5x	3/4x	X	X	X	X		/X			322

The selection table is intended as an initial orientation.
Please see the relevant page of the catalogue for detailed information on the product properties.

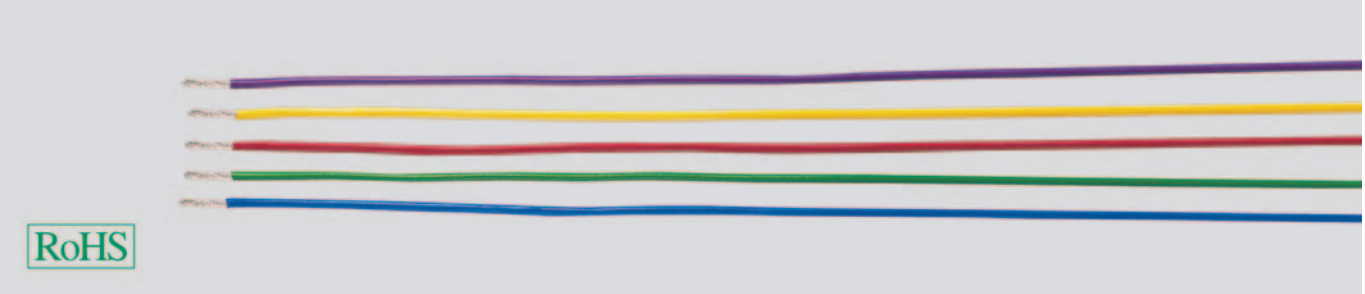
SELECTION TABLE - DRAG CHAIN CABLES

	Max. movement distance in m (10 m up to 25-cores)	Min. bending radius - flexing (D=outerØ)	Max. speed (m/s)	Max. acceleration (m/s²)	Max. cycles	Material	Nominal voltage U_0/U / Operating voltage	Temperature (°C) - flexing	Approvals	Page	UL/CSA equivalent
Single cores for drag chain cables											
KOMPOSPEED® 600	100	5 x D	4	10	11 Mio	Poly/ Poly	600/1000V	-30° to +90°		**322**	**504**
KOMPOSPEED® 600-C	100	7.5 x D	4	10	11 Mio	Poly/CU/Poly	600/1000V	-30° to +90°		**322**	**505**
TOPFLEX® 300	5	7.5 x D	2	10	9 Mio	PVC/PVC	600/1000V	-5° to +80°		**321**	**500**

A cycle is a double lift: a representative sample has been tested and measurot in our Test Workshop. The cycle count is only valid when appropriatel and professionally installed (see the installation manual: cable installation in drag chains, see pages 1036 and 1037).

The selection table is intended as an initial orientation.
Please see the relevant page of the catalogue for detailed information on the product properties and the selection tables cables in drag chains, see pages 1030 and 1031.

LiYv PVC-Single Cores, fine wire stranded, tinned



Technical data

- PVC single cores adapted to DIN VDE 0812
- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -30°C to +80°C
- **Operating peak voltage**
  0,14 mm² = 500 V
  0,25-1,5 mm² = 900 V
- **Test voltage**
  0,14 mm² = 1200 V
  0,25-1,5 mm² = 2500 V
- **Insulation resistance**
  min. 10 MOhm x km
- **Minimum bending radius**
  fixed installation 4x core Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Tinned copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of PVC compound type YI3 to DIN VDE 0812
- Core identification see table below

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- For 2-coloured combinations ring marking.

Application

PVC insulated flexible hook-up wires are used for the connection for low voltage applications, communication apparatus, electronic assemblies and equipment, racks, switchboards etc. correspondingly of VDE 0800 part 1 for the temperature range up to +70°C. Those stranded hook-up wires are not permitted to install for heavy current application outside of the equipment.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

LiYv

Cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	PK	GN	TRANS	D-BU	OG	o.col.	2-col.
approx. RAL			9005	-	5015	8003	3000	9003	7000	4005	1021	3015	6018	-	5010	2003	-	-



Packing — **Spool (standard 100m capacity)**

LiYv spool																		
Part no.			26405	26406	26407	26408	26409	26410	26411	26412	26413	26414	26415	26416	26417	26418	26419	26420
0,14	1,1	1,4																
Part no.			26421	26422	26423	26424	26425	26426	26427	26428	26429	26430	26431	26432	26433	26434	26435	26436
0,25	1,3	2,4																
Part no.			26437	26438	26439	26440	26441	26442	26443	26444	26445	26446	26447	26448	26449	26450	26451	26452
0,5	1,8	4,8																
Part no.			26453	26454	26455	26456	26457	26458	26459	26460	26461	26462	26463	26464	26465	26466	26467	26468
0,75	2,0	7,2																
Part no.			26469	26470	26471	26472	26473	26474	26475	26476	26477	26478	26479	26480	26481	26482	26483	26484
1	2,1	9,6																
Part no.			26485	26486	26487	26488	26489	26490	26491	26492	26493	26494	26495	26496	26497	26498	26499	26500
1,5	2,6	14,4																

Continuation ▸

LiYv PVC-Single Cores, fine wire stranded, tinned

LiYv

Cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	PK	GN	TRANS	D-BU	OG	o.col.	2-col.
approx. RAL			9005	-	5015	8003	3000	9003	7000	4005	1021	3015	6018	-	5010	2003	-	-



Packing — **Barrel (with various capacity)**

LiYv barrel																		
Part no.			26505	26506	26507	26508	26509	26510	26511	26512	26513	26514	26515	26516	26517	26518	26519	26520
0,25	1,3	2,4																
Part no.			26521	26522	26523	26524	26525	26526	26527	26528	26529	26530	26531	26532	26533	26534	26535	26536
0,5	1,8	4,8																
Part no.			26537	26538	26539	26540	26541	26542	26543	26544	26545	26546	26547	26548	26549	26550	26551	26552
0,75	2,0	7,2																
Part no.			26553	26554	26555	26556	26557	26558	26559	26560	26561	26562	26563	26564	26565	26566	26567	26568
1	2,1	9,6																
Part no.			26569	26570	26571	26572	26573	26574	26575	26576	26577	26578	26579	26580	26581	26582	26583	26584
1,5	2,6	14,4																

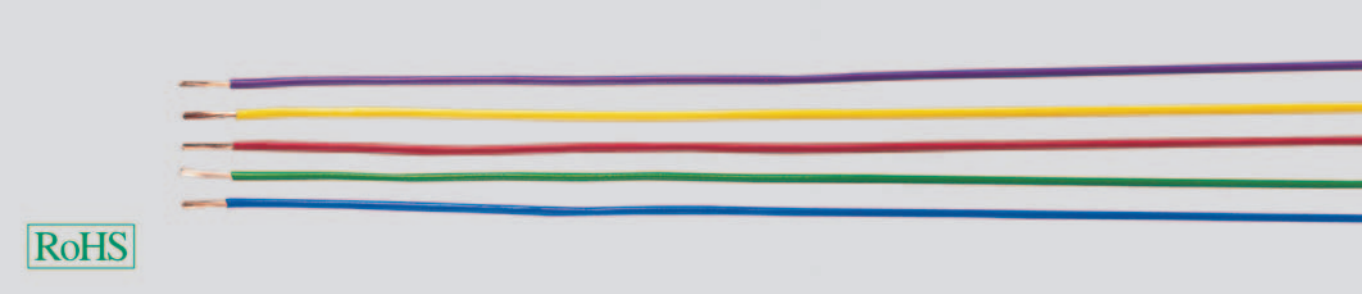
Dimensions and specifications may be changed without prior notice.



Suitable accessories can be found in Chapter X.

- Core end sleeve - ADI
- Core end sleeve - ADU

H05V-K PVC-Single Cores, fine wire stranded



Technical data

- PVC single cores to DIN VDE 0285-525-2-31 / DIN EN 50525-2-31 and IEC 60227-3
- **Temperature range** flexing -5°C to +70°C fixed installation -30°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 2000 V
- **Insulation resistance** min. 10 MOhm x km
- **Minimum bending radius** fixed insatallation 4x core Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare Cu-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of PVC compound type TI1 to DIN VDE 0207-363-3 / DIN EN 50363-3 and IEC 60227-3
- Core identification see table below

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- The following colours are recommended: black, white, blue, grey, brown, red, orange, turquoise, violet and pink. Exceptions are the colours green and yellow; these are only permitted if the safety regulations allows. Green is permitted for the identification of luminous decorative chains. All 2-coloured combinations of the abovesingle colours are allowed

K

Application

These single cores are determined for the installation to the inside of apparatus as well as for the protective laying to the lightings, in dry rooms, in production facilities, switch and distributor boards, in tubes, under and surface mounting of plasters.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

H05V-K

Cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	PK	GN	TRANS	D-BU	OG	o.col.	2-col.	U-BU
approx. RAL			9005	-	5015	8003	3000	9003	7001	4005	1021	3015	6018	-	5010	2003	-	-	5002



Coil in cardboard (100m)

Packing																			
H05V-K coil																			
Part no.			29081	29082	29083	29084	29085	29086	29087	29088	29089	29090	29091	29092	29093	29094	29095	29096	26386
0,5	2,1 - 2,5	4,8																	
Part no.			29097	29098	29099	29100	29101	29102	29103	29104	29105	29106	29107	29108	29109	29110	29111	29112	26387
0,75	2,2 - 2,7	7,2																	
Part no.			29113	29114	29115	29116	29117	29118	29119	29120	29121	29122	29123	29124	29125	29126	29127	29128	26388
1	2,4 - 2,8	9,6																	



Spool (with various capacity)

Packing																			
H05V-K spool																			
Part no.			26590	26591	26592	26593	26594	26595	26596	26597	26598	26599	26600	26601	26602	26603	26604	26605	26389
0,5	2,1 - 2,5	4,8																	
Part no.			26606	26607	26608	26609	26610	26611	26612	26613	26614	26615	26616	26617	26618	26619	26620	26621	26390
0,75	2,2 - 2,7	7,2																	
Part no.			26622	26623	26624	26625	26626	26627	26628	26629	26630	26631	26632	26633	26634	26635	26636	26637	26391
1	2,4 - 2,8	9,6																	

Continuation ▸

H05V-K PVC-Single Cores, fine wire stranded

H05V-K

Cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	PK	GN	TRANS	D-BU	OG	o.col.	2-col.	U-BU
approx. RAL			9005	-	5015	8003	3000	9003	7001	4005	1021	3015	6018	-	5010	2003	-	-	-



Packing — **Barrel (with various capacity)**

H05V-K barrel																			
Part no.			26640	26641	26642	26643	26644	26645	26646	26647	26648	26649	26650	26651	26652	26653	26654	26655	26392
0,5	2,1 - 2,5	4,8																	
Part no.			26656	26657	26658	26659	26660	26661	26662	26663	26664	26665	26666	26667	26668	26669	26670	26671	26393
0,75	2,2 - 2,7	7,2																	
Part no.			26672	26673	26674	26675	26676	26677	26678	26679	26680	26681	26682	26683	26684	26685	26686	26687	26394
1	2,4 - 2,8	9,6																	

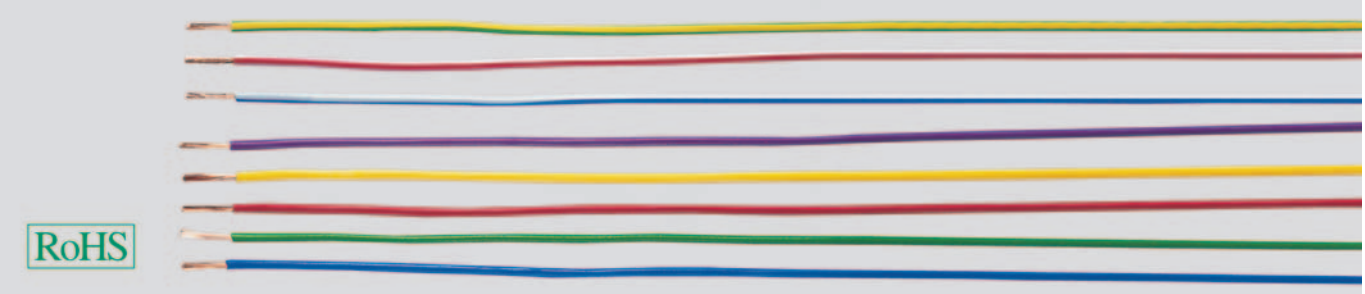
Dimensions and specifications may be changed without prior notice. (RK01)



Suitable accessories can be found in Chapter X.

- Core end sleeve - ADI
- Core end sleeve - ADU

H07V-K / (H)07V-K PVC-Single Cores, fine wire stranded



Technical data

- PVC single cores to DIN VDE 0285-525-2-31 / DIN EN 50525-2-31 and IEC 60227-3
- **Temperature range** flexing -5°C to +70°C fixed installation -30°C to +80°C
- **Nominal voltage** U_0/U 450/750 V
- **Test voltage** 2500 V
- **Insulation resistance** min. 10 MOhm x km
- **Minimum bending radius** fixed installation core Ø ≤ 8 mm: 4x core Ø core Ø > 8-1 2 mm: 5x core Ø core Ø > 12 mm: 6x core Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare Cu-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of PVC compound type TI1 to DIN VDE 0207-363-3 / DIN EN 50363-3 and IEC 60227-3
- Core identification see table below

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- The following colours are recommended (only single colour): black, white, blue, grey, brown, red, orange, turquoise, violet and pink. Two-coloured combinations are not allowed, with exceptions of green-yellow.
- Colours yellow, green, transparent only in (H)07V-K available.
- Two-coloured combination is only permitted for (H)07V-K.

K

Application

These single cores are suitable for laying in tubes, under and surface mounting of plasters and also in closed installation conduits. These are not allowed to install for direct laying on cable trays, channels or tanks. These types are permitted for the inner wiring of equipment, distributor and switchboards and also for protective laying to the lightings with a nominal voltage up to 1000 V alternating current or up to 750 V direct current against earth.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

H07V-K, (H)07V-K

Cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	PK	GN	TRANS	D-BU	OG	2-col.	U-BU
approx. RAL			9005	-	5015	8003	3000	9003	7001	4005	1021	3015	6018	-	5010	2003	-	5002



Packing — **Coil in cardboard (100m)**

H07V-K coil																		
Part no.			29129	29130	29131	29132	29133	29134	29135	29136	29137	29138	29139	29140	29141	29142	29144	26395
1,5	2,8 - 3,4	14,4																
Part no.			29145	29146	29147	29148	29149	29150	29151	29152	29153	29154	29155	29156	29157	29158	29160	26396
2,5	3,4 - 4,1	24,0																
Part no.			29161	29162	29163	29164	29165	29166	29167	29168	29169	29170	29171	29172	29173	29174	29176	26397
4	3,9 - 4,8	38,0																
Part no.			29177	29178	29179	29180	29181	29182	29183	29184	29185	29186	29187	29188	29189	29190	29192	26398
6	4,4 - 5,3	58,0																



Packing — **Spool (with various capacity)**

H07V-K spool																		
Part no.			26690	26691	26692	26693	26694	26695	26696	26697	26698	26699	26700	26701	26702	26703	26705	26399
1,5	2,8 - 3,4	14,4																
Part no.			26706	26707	26708	26709	26710	26711	26712	26713	26714	26715	26716	26717	26718	26719	26721	26400
2,5	3,4 - 4,1	24,0																
Part no.			26722	26723	26724	26725	26726	26727	26728	26729	26730	26731	26732	26733	26734	26735	26737	26401
4	3,9 - 4,8	38,0																
Part no.			26738	26739	26740	26741	26742	26743	26744	26745	26746	26747	26748	26749	26750	26751	26753	26402
6	4,4 - 5,3	58,0																

Continuation ▸

H07V-K / (H)07V-K PVC-Single Cores, fine wire stranded

H07V-K, (H)07V-K

Cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	PK	GN	TRANS	D-BU	OG	2-col.	U-BU
approx. RAL			9005	-	5015	8003	3000	9003	7001	4005	1021	3015	6018	-	5010	2003	-	-



Packing — **Barrel (with various capacity)**

H07V-K barrel																		
Part no.			26755	26756	26757	26758	26759	26760	26761	26762	26763	26764	26765	26766	26767	26768	26770	26403
1,5	2,8 - 3,4	14,4																
Part no.			26771	26772	26773	26774	26775	26776	26777	26778	26779	26780	26781	26782	26783	26784	26786	26404
2,5	3,4 - 4,1	24,0																
Part no.			26787	26788	26789	26790	26791	26792	26793	26794	26795	26796	26797	26798	26799	26800	26802	26819
4	3,9 - 4,8	38,0																
Part no.			26803	26804	26805	26806	26807	26808	26809	26810	26811	26812	26813	26814	26815	26816	26818	26820
6	4,4 - 5,3	58,0																



Packing — **Coil in foil (100m)**

H07V-K coil																		
Part no.			26060	26061	26062	26063	26064	26065	26066	26067	26068	26069	26092	26099	26108	26109	26111	26821
1,5	2,8 - 3,4	14,4																
Part no.			26112	26113	26114	26115	26116	26117	26118	26119	29855	29856	29857	29858	29859	29890	29892	26822
2,5	3,4 - 4,1	24,0																
Part no.			29893	29894	29895	29896	29897	29898	29899	29905	29906	29907	29908	29909	29910	29911	29913	26823
4	3,9 - 4,8	38,0																
Part no.			29914	29915	29916	29917	29918	29919	29921	29922	29923	29924	29925	29926	29927	29928	29933	26824
6	4,4 - 5,3	58,0																
Part no.			29193	29194	29195	29196	29197	29198	29199	29200	29201	29202	29203	29204	29205	29206	29208	-
10	5,7 - 6,8	96,0																
Part no.			29209	29210	29211	29212	29213	29214	29215	29216	29217	29218	29219	29220	29221	29222	29224	-
16	6,7 - 8,1	154,0																
Part no.			29225	29226	29227	29228	29229	29230	29231	29232	29233	29234	29235	29236	29237	29238	29240	-
25	8,4 - 10,2	240,0																
Part no.			29241	29242	29243	29244	29245	29246	29247	29248	29249	29250	29251	29252	29253	29254	29256	-
35	9,7 - 11,7	336,0																
Part no.			29257	29258	29259	29260	29261	29262	29263	29264	29265	29266	29267	29268	29269	29270	29272	-
50	11,5 - 13,9	480,0																
Part no.			29273	29274	29275	29276	29277	29278	29279	29280	29281	29282	29283	29284	29285	29286	29288	-
70	13,2 - 16,0	672,0																
Part no.			29289	29290	29291	29292	29293	29294	29295	29296	29297	29298	29299	29300	29301	29302	29304	-
95	15,1 - 18,2	912,0																
Part no.			29418	29419	29420	29421	29422	29423	29424	29425	29426	29427	29428	29429	29430	29431	29433	-
120	16,7 - 20,2	1152,0																
Part no.			29434	29435	29436	29437	29438	29439	29440	29441	29442	29443	29444	29445	29446	29447	29449	-
150	18,6 - 22,5	1440,0																
Part no.			29494	29495	29496	29497	29498	29499	29590	29591	29592	29593	29594	29595	29596	29597	29599	-
185	20,6 - 24,9	1776,0																
Part no.			29813	29814	29815	29816	29817	29818	29819	29840	29841	29842	29843	29844	29845	29846	29848	-
240	23,5 - 28,4	2304,0																



Packing — **Drum**

H07V-K drum																		
Part no.			26825	26826	26827	26828	26829	26830	26831	26832	26833	26834	26835	26836	26837	26838	26840	-
10	5,7 - 6,8	96,0																
Part no.			26841	26842	26843	26844	26845	26846	26847	26848	26849	26850	26851	26852	26853	26854	26856	-
16	6,7 - 8,1	154,0																
Part no.			26857	26858	26859	26860	26861	26862	26863	26864	26865	26866	26867	26868	26869	26870	26872	-
25	8,4 - 10,2	240,0																
Part no.			26873	26874	26875	26876	26877	26878	26879	26880	26881	26882	26883	26884	26885	26886	26888	-
35	9,7 - 11,7	336,0																
Part no.			26889	26890	26891	26892	26893	26894	26895	26896	26897	26898	26899	26900	26901	26902	26904	-
50	11,5 - 13,9	480,0																
Part no.			26905	26906	26907	26908	26909	26910	26911	26912	26913	26914	26915	26916	26917	26918	26920	-
70	13,2 - 16,0	672,0																
Part no.			26921	26922	26923	26924	26925	26926	26927	26928	26929	26930	26931	26932	26933	26934	26936	-
95	15,1 - 18,2	912,0																
Part no.			29305	29306	29307	29308	29309	29310	29311	29312	29313	29314	29315	29316	29317	29318	29320	-
120	16,7 - 20,2	1152,0																
Part no.			29321	29322	29323	29324	29325	29326	29327	29328	29329	29330	29331	29332	29333	29334	29336	-
150	18,6 - 22,5	1440,0																
Part no.			29337	29338	29339	29340	29341	29342	29343	29344	29345	29346	29347	29348	29349	29350	29352	-
185	20,6 - 24,9	1776,0																
Part no.			29353	29354	29355	29356	29357	29358	29359	29360	29361	29362	29363	29364	29365	29366	29368	-
240	23,5 - 28,4	2304,0																

Dimensions and specifications may be changed without prior notice. (RK01)

H05V-K / (H)07V-K PVC-single cores, fine wire stranded, 2-colour

Cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	RD/WH	BU/WH	BN/WH	D-BU/WH



Packing — **Coil in cardboard (100m)**

H05V-K coil						
Part no.			29370	29375	29380	29394
0,5	2,1 - 2,5	4,8				
Part no.			29371	29376	29381	29395
0,75	2,2 - 2,7	7,2				
Part no.			29372	29377	29382	29396
1	2,4 - 2,8	9,6				

Packing — **Coil in cardboard (100m)**

(H)07V-K coil						
Part no.			29373	29378	29383	29397
1,5	2,8 - 3,4	14,4				
Part no.			29374	29379	29384	29398
2,5	3,4 - 4,1	24,0				
Part no.			29385	29386	29387	29399
4	3,9 - 4,8	38,0				
Part no.			29388	29389	29390	29527
6	4,4 - 5,3	58,0				
Part no.			29391	29392	29393	29528
10	5,7 - 6,8	96,0				



Packing — **Spool (with various capacity)**

H05V-K spool						
Part no.			29745	29746	29747	29748
0,5	2,1 - 2,5	4,8				
Part no.			29749	29750	29751	29752
0,75	2,2 - 2,7	7,2				
Part no.			29753	29754	29755	29756
1	2,4 - 2,8	9,6				

Packing — **Spool (with various capacity)**

(H)07V-K spool						
Part no.			29757	29758	29759	29760
1,5	2,8 - 3,4	14,4				
Part no.			29761	29762	29763	29764
2,5	3,4 - 4,1	24,0				
Part no.			29765	29766	29767	29768
4	3,9 - 4,8	38,0				
Part no.			29769	29770	29771	29772
6	4,4 - 5,3	58,0				
Part no.			29773	29774	29775	29776
10	5,7 - 6,8	96,0				



Packing — **Barrel (with various capacity)**

H05V-K barrel						
Part no.			28948	28949	28950	28951
0,5	2,1 - 2,5	4,8				
Part no.			28952	28953	28954	28955
0,75	2,2 - 2,7	7,2				
Part no.			28956	28957	28958	28959
1	2,4 - 2,8	9,6				

Packing — **Barrel (with various capacity)**

(H)07V-K barrel						
Part no.			28960	28961	28962	28963
1,5	2,8 - 3,4	14,4				
Part no.			28964	28965	28966	28967
2,5	3,4 - 4,1	24,0				
Part no.			28968	28969	28970	28971
4	3,9 - 4,8	38,0				
Part no.			28972	28973	28974	28975
6	4,4 - 5,3	58,0				
Part no.			28976	28977	28978	28979
10	5,7 - 6,8	96,0				

Dimensions and specifications may be changed without prior notice.

H05V-U / H07V-U PVC-single cores, single wire stranded

H05V-U

Cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	o.col.	o.col.	o.col.	o.col.	o.col.	o.col.	o.col.	o.col.
approx. RAL			9005	-	5015	8003	3000	9003	7001	4005	-	-	-	-	-	-	-	-
Packing			Coil in cardboard (100m)															
H05V-U coil																		
Part no.			28761	28762	28763	28764	28765	28766	28767	28768	-	-	-	-	-	-	-	-
0,5	1,9 - 2,3	4,8																
Part no.			28769	28770	28771	28772	28773	28774	28775	28776	-	-	-	-	-	-	-	-
0,75	2,1 - 2,5	7,2																
Part no.			28777	28778	28779	28780	28781	28782	28783	28784	-	-	-	-	-	-	-	-
1	2,2 - 2,7	9,6																
Packing			Spool (with various capacity)															
H05V-U spool																		
Part no.			26937	26938	26939	26940	26941	26942	26943	26944	-	-	-	-	-	-	-	-
0,5	1,9 - 2,3	4,8																
Part no.			26945	26946	26947	26948	26949	26950	26951	26952	-	-	-	-	-	-	-	-
0,75	2,1 - 2,5	7,2																
Part no.			26953	26954	26955	26956	26957	26958	26959	26960	-	-	-	-	-	-	-	-
1	2,2 - 2,7	9,6																
Packing			Coil in cardboard (100m)															
H07V-U coil																		
Part no.			28785	28786	28787	28788	28789	28790	28791	28792	-	-	-	-	-	-	-	-
1,5	2,6 - 3,2	14,4																
Part no.			28793	28794	28795	28796	28797	28798	28799	28800	-	-	-	-	-	-	-	-
2,5	3,2 - 3,9	24,0																
Part no.			28801	28802	28803	28804	28805	28806	28807	28808	-	-	-	-	-	-	-	-
4	3,6 - 4,4	38,0																
Part no.			28809	28810	28811	28812	28813	28814	28815	28816	-	-	-	-	-	-	-	-
6	4,1 - 5,0	58,0																
Part no.			28817	28818	28819	28820	28821	28822	28823	28824	-	-	-	-	-	-	-	-
10	5,3 - 6,4	96,0																
Packing			Drum															
H07V-U drum																		
Part no.			28145	28146	28147	28148	28149	28150	28151	28152	-	-	-	-	-	-	-	-
1,5	2,6 - 3,2	14,4																
Part no.			28153	28154	28155	28156	28157	28158	28159	28160	-	-	-	-	-	-	-	-
2,5	3,2 - 3,9	24,0																
Part no.			28161	28162	28163	28164	28165	28166	28167	28168	-	-	-	-	-	-	-	-
4	3,6 - 4,4	38,0																
Part no.			28169	28170	28171	28172	28173	28174	28175	28176	-	-	-	-	-	-	-	-
6	4,1 - 5,0	58,0																
Part no.			28177	28178	28179	28180	28181	28182	28183	28184	-	-	-	-	-	-	-	-
10	5,3 - 6,4	96,0																

Dimensions and specifications may be changed without prior notice. (RK01)



Suitable accessories can be found in Chapter X.

- Core end sleeve - ADI
- Core end sleeve - ADU

H07V-R PVC-single cores, multi wire

H07V-R

Cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	o.col.	o.col.	o.col.	o.col.	o.col.	o.col.	o.col.	o.col.
approx. RAL			9005	-	5015	8003	3000	9003	7001	4005	-	-	-	-	-	-	-	-



Packing — **Coil in foil**

H07V-R coil																		
Part no.			28825	28826	28827	28828	28829	28830	28831	28832	-	-	-	-	-	-	-	-
16	6,4 - 7,8	154,0																
Part no.			28833	28834	28835	28836	28837	-	-	-	-	-	-	-	-	-	-	-
25	8,1 - 9,7	240,0																
Part no.			28838	28839	28840	28841	28842	-	-	-	-	-	-	-	-	-	-	-
35	9,0 - 10,9	336,0																
Part no.			28843	28844	28845	28846	28847	-	-	-	-	-	-	-	-	-	-	-
50	10,6 - 12,8	480,0																
Part no.			28848	28849	28850	28851	28852	-	-	-	-	-	-	-	-	-	-	-
70	12,1 - 14,6	672,0																
Part no.			28853	28854	28855	28856	28857	-	-	-	-	-	-	-	-	-	-	-
95	14,1 - 17,1	912,0																
Part no.			28858	28859	28860	28861	28862	-	-	-	-	-	-	-	-	-	-	-
120	15,6 - 18,8	1152,0																
Part no.			28863	28864	28865	28866	28867	-	-	-	-	-	-	-	-	-	-	-
150	17,3 - 20,9	1440,0																
Part no.			28868	28869	28870	28871	28872	-	-	-	-	-	-	-	-	-	-	-
185	19,3 - 23,3	1776,0																
Part no.			28873	28874	28875	28876	28877	-	-	-	-	-	-	-	-	-	-	-
240	22,0 - 26,6	2304,0																



Packing — **Drum**

H07V-R drum																		
Part no.			28185	28186	28187	28188	28189	28190	28191	28192	-	-	-	-	-	-	-	-
16	6,4 - 7,8	154,0																
Part no.			28193	28194	28195	28196	28197	-	-	-	-	-	-	-	-	-	-	-
25	8,1 - 9,7	240,0																
Part no.			28198	28199	28200	28201	28202	-	-	-	-	-	-	-	-	-	-	-
35	9,0 - 10,9	336,0																
Part no.			28203	28204	28205	28206	28207	-	-	-	-	-	-	-	-	-	-	-
50	10,6 - 12,8	480,0																
Part no.			28208	28209	28210	28211	28212	-	-	-	-	-	-	-	-	-	-	-
70	12,1 - 14,6	672,0																
Part no.			28213	28214	28215	28216	28217	-	-	-	-	-	-	-	-	-	-	-
95	14,1 - 17,1	912,0																
Part no.			28218	28219	28220	28221	28222	-	-	-	-	-	-	-	-	-	-	-
120	15,6 - 18,8	1152,0																
Part no.			28223	28224	28225	28226	28227	-	-	-	-	-	-	-	-	-	-	-
150	17,3 - 20,9	1440,0																
Part no.			28228	28229	28230	28231	28232	-	-	-	-	-	-	-	-	-	-	-
185	19,3 - 23,3	1776,0																
Part no.			28233	28234	28235	28236	28237	-	-	-	-	-	-	-	-	-	-	-
240	22,0 - 26,6	2304,0																

Dimensions and specifications may be changed without prior notice. (RK01)

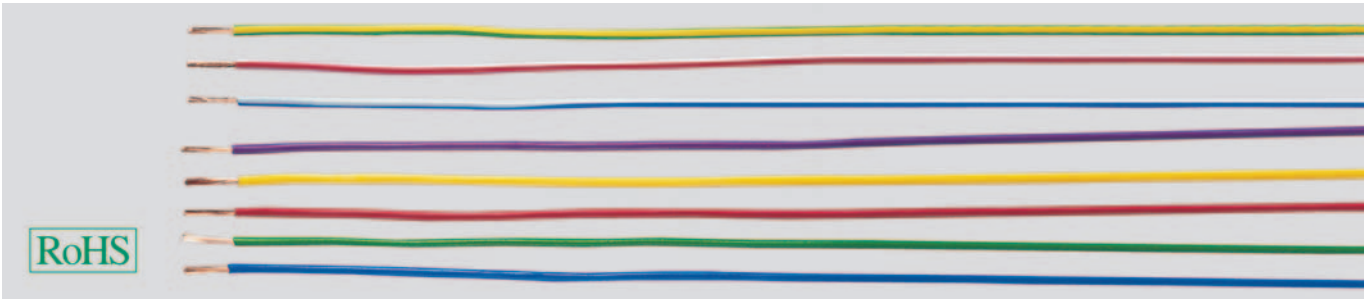


Suitable accessories can be found in Chapter X.

- Core end sleeve - ADI
- Core end sleeve - ADU

H05V-K, H07V-K

PVC-Single Cores



CE = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Barrels, one-way barrels or barrels on hire

Type cross section mm²	one-way cardboard 8-on guar dimension in mm	ca. contents in m
LiY		
0,25	500 x 500 x 420	10000
0,50	500 x 500 x 420	7000
0,75	500 x 500 x 420	5000
1,00	500 x 500 x 420	4000
1,50	500 x 500 x 420	3000

Type cross section mm²	one-way barrels 8-on guar dimension in mm	ca. contents in m
H05 V-K **H07 V-K**		
0,50	400 x 400 x 500	4000
0,75	400 x 400 x 500	3500
1,00	400 x 400 x 500	3000
1,50	400 x 400 x 500	2000
2,50	400 x 400 x 500	1200
4,00	400 x 400 x 500	900
6,00	400 x 400 x 500	800

Type cross section mm²	one-way barrels 8-on guar dimension in mm	ca. contents in m
H05 V-K **H07 V-K**		
0,50	400 x 400 x 800	7000
0,75	400 x 400 x 800	6000
1,00	400 x 400 x 800	5200
1,50	400 x 400 x 800	3500
2,50	400 x 400 x 800	2000



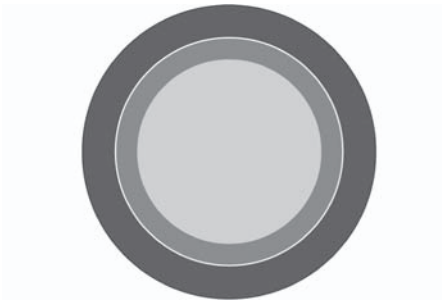
Delivery for one-way barrel

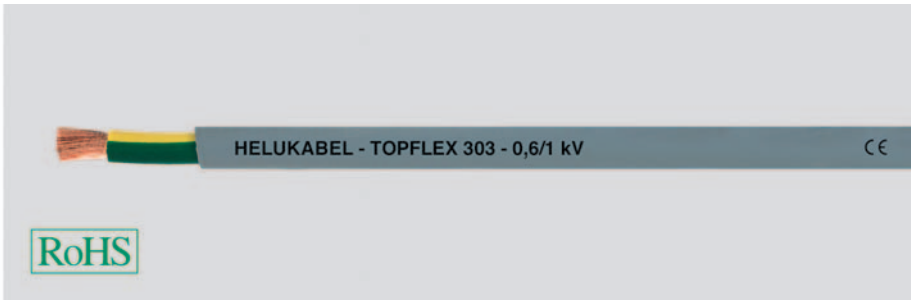
Works photo: HELUKABEL®

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- PVC self-extinguishing and flame retardant according to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

K = Fine stranded conductor

TOPFLEX® 303 X07V-K-YÖ double insulation 0,6/1kV flexible PVC single core, oil resistant





Technical data

- Special PVC single-core cable with double insulation and oil-resistant sheath
- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 600/1000 V
- **A.C. test voltage**, 50 Hz
  3000 V
- **Insulation resistance**
  min. 20 MOhm/km
- **Minimum bending radius**
  flexing 12x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insualtion of special PVC
- Core identification BK or GN-YE
- Outer sheath of special PVC compound type TM5 to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1
- Sheath colour grey

Properties

- Largely resistant to oil, weather, and chemicals; Chemical resistance (see table Technical Information)
- Improved mechanical protection due the double insulation

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

This cable is used for conditions of increased mechanical stress. For flexible use with free movement without tensile stress or forced movements in dry, moist and wet environments, but not suitable for use outdoors. The cable may be laid in trays, troughs and channels.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

K

core-/sheath-color black/grey

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
75460	1 x 6	6,0	58,0	84,0	10
75461	1 x 10	9,5	96,0	143,0	8
75462	1 x 16	10,3	154,0	209,0	6
75463	1 x 25	11,1	240,0	308,0	4
75464	1 x 35	15,0	336,0	440,0	2
75465	1 x 50	17,5	480,0	572,0	1
75466	1 x 70	20,0	672,0	792,0	2/0
75467	1 x 95	22,0	912,0	1155,0	3/0
72184	1 x 120	23,5	1152,0	1267,0	4/0
72185	1 x 150	26,5	1440,0	1650,0	300 kcmil
75468	1 x 185	29,0	1776,0	2134,0	350 kcmil
74221	1 x 240	31,0	2304,0	2943,0	500 kcmil
72082	1 x 300	35,0	2880,0	3600,0	600 kcmil

core-/sheath-color green-yellow/grey

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
75449	1 G 6	6,0	57,6	84,0	10
75469	1 G 10	9,5	96,0	143,0	8
73859	1 G 16	10,3	154,0	209,0	6
75470	1 G 25	11,1	240,0	325,0	4
75471	1 G 35	15,0	336,0	440,0	2
75472	1 G 50	17,5	480,0	572,0	1
75473	1 G 70	20,0	672,0	792,0	2/0
75474	1 G 95	22,0	912,0	1155,0	3/0
75475	1 G 120	23,5	1152,0	1267,0	4/0
75476	1 G 150	26,5	1440,0	1650,0	300 kcmil
75477	1 G 185	29,0	1776,0	2134,0	350 kcmil
75478	1 G 240	31,0	2304,0	2943,0	500 kcmil
75479	1 G 300	35,0	2280,0	3600,0	600 kcmil

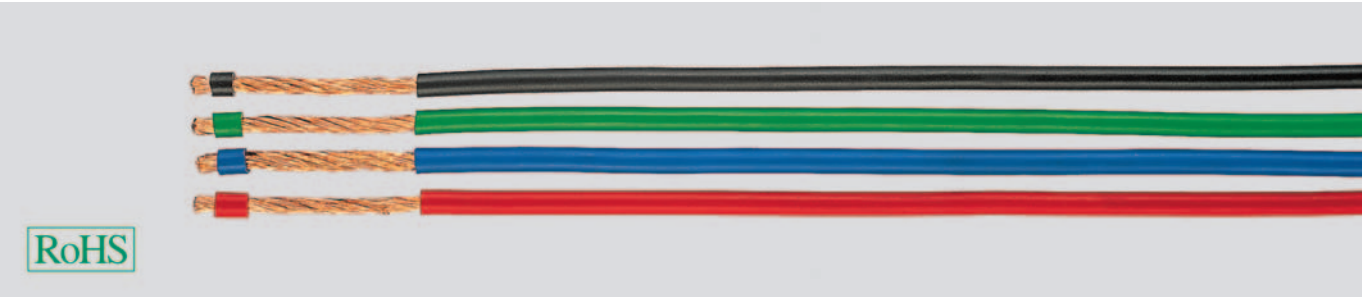
Dimensions and specifications may be changed without prior notice.



Suitable accessories can be found in Chapter X.

- Core end sleeve - ADI
- Core end sleeve - ADU

LifY Single Core extra fine wires with highest flexibility



Technical data

- Special plastic stranded wire
- by special design extremly flexible
- adapted to DIN VDE 0250, DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range**
  flexing -15°C to +80°C
- **Operating voltage**
  up to 0,25 mm² 300 V
  (not for purposes of high current and power installation)
- **Nominal voltage**
  0,5-1 mm² U_0/U 300/500 V
  from 1,5 mm² U_0/U 450/750 V
- **Test voltage**
  up to 0,25 mm² = 2 kV
  0,5-1 mm² = 2,5 kV
  from 1,5 mm² = 3 kV
- **Minimum bending radius**
  flexing 8x core Ø

Cable structure

- Bare Cu-conductors, extra fine-wire
- conductor construction see table below
- Core insulation of PVC (soft, smooth)
- stranded specially

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- Please complete the part number for these cores by adding the suffix for the colour required as per the list:
  00 = green, 01 = black, 02 = red, 03 = blue, 04 = brown, 05 = white, 06 = grey, 07 = violet, 08 = yellow, 09 = orange, 10 = transparent, 11 = pink, 12 = beige, 13 = 2-colour 15= darkblue
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

The LifY single cores are used as super flexible insulated strand wires for switch cabinets, as measuring cable for testing, laboratories, research etc.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	Core colour	Cross-sec. mm²	Cond. make-up (nom. val.) n x wire Ø	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
151xx	-	0,1	51 x 0,05	1,0	1,2	2,1	-
152xx	-	0,14	72 x 0,05	1,0	1,4	2,6	26
153xx	-	0,25	65 x 0,07	1,3	2,5	4,2	24
154xx	-	0,5	132 x 0,07	2,0	5,5	8,0	20
155xx	-	0,75	195 x 0,07	2,2	8,0	12,0	18
156xx	-	1	260 x 0,07	2,5	10,8	18,0	17
157xx	-	1,5	192 x 0,1	3,5	15,0	22,0	16
158xx	-	2,5	320 x 0,1	3,8	25,0	37,0	14
159xx	-	4	512 x 0,1	4,9	40,0	50,0	12
15093	BK	6	768 x 0,1	6,0	60,0	71,0	10
15135	GN-YE	6	768 x 0,1	6,0	60,0	71,0	10
15115	BU	6	768 x 0,1	6,0	60,0	71,0	10
15116	BN	6	768 x 0,1	6,0	60,0	71,0	10
15114	RD	6	768 x 0,1	6,0	60,0	71,0	10
15094	BK	10	1280 x 0,1	7,3	100,0	130,0	8
15136	GN-YE	10	1280 x 0,1	7,3	100,0	130,0	8
15118	BU	10	1280 x 0,1	7,3	100,0	130,0	8
15119	BN	10	1280 x 0,1	7,3	100,0	130,0	8
15117	RD	10	1280 x 0,1	7,3	100,0	130,0	8
15095	BK	16	2048 x 0,1	8,8	160,0	187,0	6
15137	GN-YE	16	2048 x 0,1	8,8	160,0	187,0	6
15121	BU	16	2048 x 0,1	8,8	160,0	187,0	6
15122	BN	16	2048 x 0,1	8,8	160,0	187,0	6
15120	RD	16	2048 x 0,1	8,8	160,0	187,0	6
15096	BK	25	3234 x 0,1	10,5	240,0	294,0	4
15138	GN-YE	25	3234 x 0,1	10,5	240,0	294,0	4
15124	BU	25	3234 x 0,1	10,5	240,0	294,0	4
15125	BN	25	3234 x 0,1	10,5	240,0	294,0	4
15123	RD	25	3234 x 0,1	10,5	240,0	294,0	4

Part no.	Core colour	Cross-sec. mm²	Cond. make-up (nom. val.) n x wire Ø	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
15097	BK	35	4508 x 0,1	11,7	336,0	380,0	2
15139	GN-YE	35	4508 x 0,1	11,7	336,0	380,0	2
15127	BU	35	4508 x 0,1	11,7	336,0	380,0	2
15128	BN	35	4508 x 0,1	11,7	336,0	380,0	2
15126	RD	35	4508 x 0,1	11,7	336,0	380,0	2
15098	BK	50	6468 x 0,1	14,7	480,0	521,0	1
15140	GN-YE	50	6468 x 0,1	14,7	480,0	521,0	1
15130	BU	50	6468 x 0,1	14,7	480,0	521,0	1
15131	BN	50	6468 x 0,1	14,7	480,0	521,0	1
15129	RD	50	6468 x 0,1	14,7	480,0	521,0	1
15099	BK	70	8967 x 0,1	15,5	672,0	740,0	2/0
15141	GN-YE	70	8967 x 0,1	15,5	672,0	740,0	2/0
15133	BU	70	8967 x 0,1	15,5	672,0	740,0	2/0
15134	BN	70	8967 x 0,1	15,5	672,0	740,0	2/0
15132	RD	70	8967 x 0,1	15,5	672,0	740,0	2/0

Dimensions and specifications may be changed without prior notice. (RK01)

PUR Single Core cold resistant, halogen-free



Technical data

- PUR-single cores, halogen-free
- **Temperature range**
  -40°C to +80°C
  (up to +100°C for short time)
- **Operating voltage** 1000 V
- **Test voltage**
  3500 V, 15 min.
- **Minimum bending radius**
  occasionally moved 10x core Ø
  fixed installation 5x core Ø
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PUR
- Core identification see table below

Properties

- Halogen-free
- Flexible at low temperatures up to -40°C
- Resistant against pressure
- Overroll steady
- Cut and scratchproof

Resistant to

- Oil
- See and waste water
- Acids
- Lye
- UV-radiation

Application

PUR-single cores are suited for installation in switch cabinets, cable assemblies and electronic equipment. Inductive loops in the road surface for controlling of light signalling equipment.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Cross-sec. mm² approx. RAL	Outer Ø approx. mm	Cop. weight kg / km	BK 9005	GN-YE -	BU 5015	BN 8003	RD 3000	WH 1013	GY 7000	VT 4005	YE 1021	PK 3015	TRANS -	D-BU 5010	OG 2003	BEIGE 1001	2-col. -
Part no.			50651	50650	50652	50653	50654	50655	50656	50657	50658	50661	50660	50662	50659	50663	50664
0,5	2,2	4,8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.			50666	50665	50667	50668	50669	50670	50671	50672	50673	50676	50675	50677	50674	50678	50679
0,75	2,4	7,2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.			50681	50680	50682	50683	50684	50685	50686	50687	50688	50691	50690	50692	50689	50693	50694
1	2,5	9,6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.			50696	50695	50697	50698	50699	50700	50701	50702	50703	50706	50705	50707	50704	50708	50709
1,5	3,0	14,4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.			50711	50710	50712	50713	50714	50715	50716	50717	50718	50721	50720	50722	50719	50723	50724
2,5	3,7	24,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.			50726	50725	50727	50728	50729	50730	50731	50732	50733	50736	50735	50737	50734	50738	50739
4	4,3	38,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.			50741	50740	50742	50743	50744	50745	50746	50747	50748	50751	50750	50752	50749	50753	50754
6	5,1	58,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.			50756	50755	50757	50758	50759	50760	50761	50762	50763	50766	50765	50767	50764	50768	50769
10	6,8	96,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.			50771	50770	50772	50773	50774	50775	50776	50777	50778	50781	50780	50782	50779	50783	50784
16	7,8	154,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.			50786	50785	50787	50788	50789	50790	50791	50792	50793	50796	50795	50797	50794	50798	50799
25	10,0	240,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.			50801	50800	50802	50803	50804	50805	50806	50807	50808	50811	50810	50812	50809	50813	50814
35	11,4	336,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.			50816	50815	50817	50818	50819	50820	50821	50822	50823	50826	50825	50827	50824	50828	50829
50	13,2	480,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.			50831	50830	50832	50833	50834	50835	50836	50837	50838	50841	50840	50842	50839	50843	50844
70	15,4	672,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.			50846	50845	50847	50848	50849	50850	50851	50852	50853	50856	50855	50857	50854	50858	50859
95	17,7	912,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.			50861	50860	50862	50863	50864	50865	50866	50867	50868	50871	50870	50872	50869	50873	50874
120	19,2	1152,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.			50876	50875	50877	50878	50879	50880	50881	50882	50883	50886	50885	50887	50884	50888	50889
150	22,0	1440,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

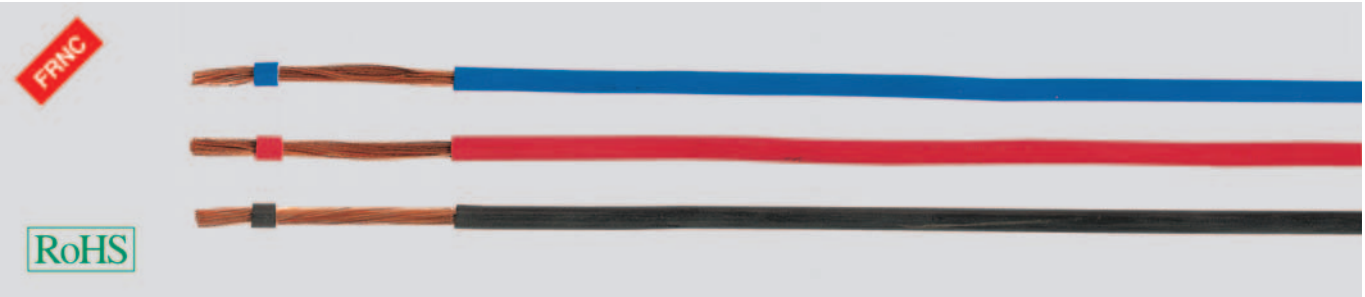
Dimensions and specifications may be changed without prior notice. (RK01)



Suitable accessories can be found in Chapter X.

- Core end sleeve - ADI
- Core end sleeve - ADU

H05Z-K / H07Z-K single core, halogen-free



Technical data

- Single cores for low emission of smoke and corrosive gases in case of fire to DIN VDE 0285-525-3-41 / DIN EN 50525-3-41
- **Conductor resistance** acc. to DIN VDE 0295 cl.5
- **Temperature range** -40°C to +90°C
- Permissible **working temperature** at conductor +90°C
- **Nominal voltage** H05Z-K = U_0/U 300/500 V H07Z-K = U_0/U 450/750 V
- **Test voltage** 2500 V
- **Insulation resistance** at 90°C to DIN VDE 0282 part 9
- **Minimum bending radius** fixed installation core Ø ≤ 8 mm: 4x core Ø core Ø > 8-12 mm: 5x core Ø core Ø > 12 mm: 6x core Ø
- **Radiation resistance** up to 20x10⁶ cJ/kg (up to 20 Mrad)

Cable structure

- Bare Cu-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Separating foil over conductor permitted
- Core insulation of cross-linked polyolefin compound type EI5 to DIN VDE 0207-363-5 / DIN EN 50363-5
- Core identification see table below
- **LS0H**= Low Smoke Zero Halogen

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Behaviour in fire self-extinguishing and flame retardant to DIN VDE 0482-332-1-2, DIN EN 60332-1-2,IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Ozone resistant acc. to DIN VDE 0473-811-403,DIN EN 60811-403
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)
- Halogen-free acc. to DIN VDE 0285-525-1,DIN EN 50525-1 appendix B

Note

- Type H07Z-K Colour yellow only as (H)07Z-K available

Application

Halogen-free single-core wires are used for installation in dry environments for wiring up lighting fixtures and units where valuable assets are to protected from further damage resulting from fire. These types are suitable for laying in tubes on and under plaster, as well as in closed installation ducts.

H07Z-K, suitable for protected, permanent laying in or on lighting installations or switching and control equipment up to 1000 V AC or 750 V DC to earth.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

H05Z-K

Cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	D-BU	OG	U-BU
Part no.				52872	52873	52874	52875	52876	52877	52878	52879	52880	52945	52946	53071
0,5	2,1 - 2,6	4,8	9,0	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				52881	52882	52883	52884	52885	52886	52887	52888	52889	52947	52948	53072
0,75	2,2 - 2,8	7,2	12,4	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				52890	52891	52892	52893	52894	52895	52896	52897	52898	52949	52950	53073
1	2,4 - 2,9	9,6	15,0	-	-	-	-	-	-	-	-	-	-	-	-

H07Z-K

Cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	D-BU	OG	U-BU
Part no.				51768	51769	51770	51771	51772	51773	51774	51775	51776	52951	52952	53074
1,5	2,8 - 3,5	14,4	24,0	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51777	51778	51779	51780	51781	51782	51783	51784	51785	52953	52954	53075
2,5	3,4 - 4,3	24,0	35,0	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51786	51787	51788	51789	51790	51791	51792	51793	51794	52955	52956	53076
4	3,9 - 4,9	38,0	51,0	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51795	51796	51797	51798	51799	51800	51801	51802	51803	52957	52958	53077
6	4,4 - 5,5	58,0	71,0	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51804	51805	51806	51807	51808	51809	51810	51811	51812	52959	52960	53078
10	5,7 - 7,1	96,0	118,0	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51813	51814	51815	51816	51817	51818	51819	51820	51821	52961	52962	53079
16	6,7 - 8,4	154,0	180,0	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51822	51823	51824	51825	51826	51827	51828	51829	51830	52963	52964	53080
25	8,4 - 10,6	240,0	278,0	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51831	51832	51833	51834	51835	51836	51837	51838	51839	52965	52966	53081
35	9,7 - 12,1	336,0	375,0	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51840	51841	51842	51843	51844	51845	51846	51847	51848	52967	52968	53082
50	11,5 - 14,4	480,0	560,0	-	-	-	-	-	-	-	-	-	-	-	-

Continuation ▸

H05Z-K / H07Z-K single core, halogen-free

H07Z-K

Cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	D-BU	OG	U-BU
Part no.				51849	51850	51851	51852	51853	51854	51855	51856	51857	52969	52970	53083
70	13,2 - 16,6	672,0	780,0	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51858	51859	51860	51861	51862	51863	51864	51865	51866	52971	52972	53084
95	15,1 - 18,8	912,0	952,0	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51867	51868	51869	51870	51871	51872	51873	51874	51875	52973	52974	53085
120	16,7 - 20,9	1152,0	1200,0	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51876	51877	51878	51879	51880	51881	51882	51883	51884	52975	52976	53086
150	18,6 - 23,3	1440,0	1505,0	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51885	51886	51887	51888	51889	51890	51891	51892	51893	52977	52978	53087
185	20,6 - 25,8	1776,0	1845,0	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51894	51895	51896	51897	51898	51899	51900	51901	51902	52979	52980	53088
240	23,5 - 29,4	2304,0	2400,0	-	-	-	-	-	-	-	-	-	-	-	-

H05Z-K two colour, coil in foil

Cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight	RD/WH	BU/WH	BN/WH	D-BU/WH
Part no.				51392	51393	51394	51395
0,5	2,1 - 2,6	4,8	9,0				
Part no.				51396	51397	51398	51399
0,75	2,2 - 2,8	7,2	12,4				
Part no.				51400	51401	51402	51403
1	2,2 - 2,8	9,6	15,0				

H07Z-K two colour, coil in foil

Cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight	RD/WH	BU/WH	BN/WH	D-BU/WH
Part no.				51404	51405	51406	51407
1,5	2,8 - 3,5	14,4	24,0				
Part no.				51408	51409	51410	51411
2,5	3,4 - 4,3	24,0	35,0				
Part no.				51412	51413	51414	51415
4	3,9 - 4,9	38,0	51,0				
Part no.				51416	51417	51418	50899
6	4,4 - 5,5	58,0	71,0				

H05Z-K, barrel (with various capacity)

Cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	D-BU	OG	U-BU
Part no.				52809	52810	52811	52812	52813	52814	52815	52816	-	52817	52819	-
0,5	2,1 - 2,6	4,8	9,0	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				52821	52822	52823	52824	52825	52826	52827	52828	-	52829	52831	-
0,75	2,2 - 2,8	7,2	12,4	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				52833	52834	52835	52836	52837	52838	52839	52840	-	52841	52843	-
1	2,4 - 2,9	9,6	15,0	-	-	-	-	-	-	-	-	-	-	-	-

H07Z-K, barrel (with various capacity)

Cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	D-BU	OG	U-BU
Part no.				52845	52846	52847	52848	52849	52850	52851	52852	-	52853	52855	-
1,5	2,8 - 3,5	14,4	24,0	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				52857	52858	52859	52860	52861	52862	52863	52864	-	52865	52867	-
2,5	3,4 - 4,3	24,0	35,0	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				52135	52136	52137	52138	52139	52140	52141	52142	-	52143	52144	-
4	3,9 - 4,9	38,0	51,0	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				52145	52146	52147	52148	52149	52150	52151	52152	-	52153	52154	-
6	4,4 - 5,5	58,0	71,0	-	-	-	-	-	-	-	-	-	-	-	-

Dimensions and specifications may be changed without prior notice. (RK01)



Suitable accessories can be found in Chapter X.

- Core end sleeve - ADI
- Core end sleeve - ADU

CW&A Edition 27 (published 01.04.2015)

H05G-U / -K / H07G-U / -R / -K



Technical data

- Heat-resistant (+110°C) rubber-insulated cable to DIN VDE 0285-525-2-42/ DIN EN 50525-2-42
- **Max. permissible operating temperature**
  at conductor +110°C
- **Lowest ambient temperatures**
  flexing up to -25°C
  fixed installation up to -40°C
- **Nominal voltage**
  H05G = U_0/U 300/500 V
  H07G = U_0/U 450/750 V
- **Test voltage**
  H05G = 2000 V
  H05G = 2500 V
- **Minimum bending radius**
  fixed installation
  core Ø ≤ 8 mm: 4x core Ø
  core Ø > 8-12 mm: 5x core Ø
  core Ø > 12 mm: 6x core Ø

Cable structure

- Tinned Cu-conductor, to DIN VDE 0295, IEC 60228, BS 6360
  class 1: single-wire
  class 2: multi-wire
  class 5: fine-wire
- Separating foil over conductor permitted
- Core insulation of rubber compound type EI3 (EVA) to DIN VDE 0207-363-1 / DIN EN 50363-1

Properties

- Single core colours green and yellow can only be applied where the safety regulations are allowed
- The identification for the lighting chain cable is green permitted

Note

- Please complete the part number for these cores by adding the suffix for the colour required as per the list:
  00 = green
  01 = black
  02 = blue
  03 = brown
  04 = grey
  05 = orange
  06 = pink
  07 = turquoise
  08 = white
  09 = violet
  10 = yellow
  11 = green-yellow
- bare conductor on request
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

For inside wiring of switch boards and distributors as well as of operating parts such as in or on lights, for the connection of electric heaters with a nominal voltage up to 1000 V alternating voltage or up to 750 V direct voltage against ground. These single cores are all allowed for laying in tubes, on and under plaster.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

H05G-U (single wire)

Part no.	Cross-section mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
541xx	0,5	1,9 - 2,4	4,8	10,0	20
542xx	0,75	2,1 - 2,6	7,2	15,0	18
543xx	1	2,2 - 2,8	9,6	16,0	17

H05G-K (fine wire)

Part no.	Cross-section mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
550xx	0,5	2,1 - 2,6	4,8	13,0	20
551xx	0,75	2,2 - 2,8	7,2	16,0	18
552xx	1	2,4 - 2,9	9,6	22,0	17

H07G-U (single wire)

Part no.	Cross-section mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
544xx	1,5	2,8 - 3,5	14,4	24,0	16
545xx	2,5	3,4 - 4,3	24,0	35,0	14
546xx	4	4,0 - 5,0	38,0	53,0	12

H07G-K (fine wire)

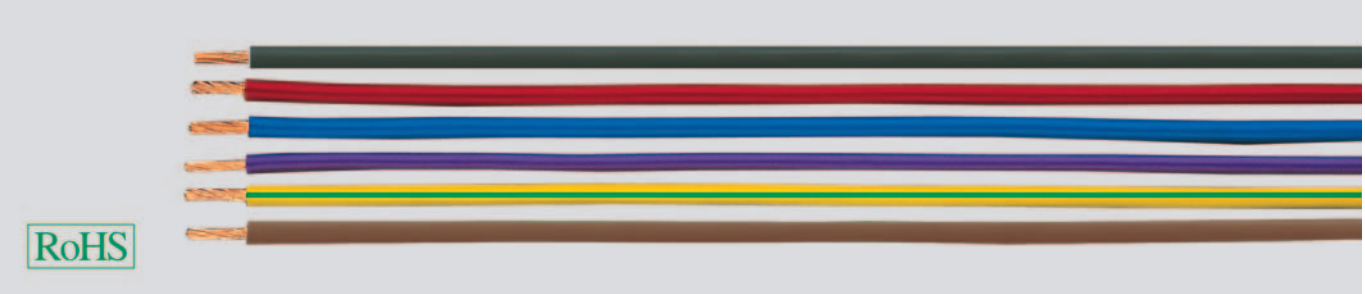
Part no.	Cross-section mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
553xx	1,5	3,0 - 3,7	14,4	24,0	16
554xx	2,5	3,6 - 4,5	24,0	42,0	14
555xx	4	4,3 - 5,4	38,0	61,0	12
556xx	6	4,8 - 6,0	58,0	78,0	10
557xx	10	6,0 - 7,6	96,0	130,0	8
558xx	16	7,1 - 8,9	154,0	212,0	6
559xx	25	8,8 - 11,0	240,0	323,0	4
560xx	35	10,1 - 12,6	336,0	422,0	2
561xx	50	11,9 - 14,9	480,0	527,0	1
562xx	70	13,6 - 17,0	672,0	726,0	2/0
563xx	95	15,5 - 19,3	912,0	937,0	3/0
564xx	120	17,1 - 21,4	1152,0	1192,0	4/0

H07G-R (multi wire)

Part no.	Cross-section mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
547xx	6	4,7 - 5,9	58,0	72,0	10
548xx	10	6,0 - 7,4	96,0	123,0	8
549xx	16	6,8 - 8,5	154,0	184,0	6

Dimensions and specifications may be changed without prior notice. (RK01)

LiYW / H05V2-K PVC-Single Cores, 90°C, heat-resistant



Technical data

- Special PVC single core with increased heat-resistance
  LiYW up to 105°C adapted to DIN VDE 0285-525-1/DIN EN 50525-1
  H05V2-K to 90°C acc. to DIN VDE 0285-525-2-31/ DIN EN 50525-2-31
- **Temperature range**
  LiYW
  flexing +5°C to +105°C
  fixed installation -10°C to +105°C
  H05V2-K
  flexing +5°C to + 90°C
- **max. Temperatur** at conductor under permanent load +90°C
- **Nominal voltage**
  LiYW U_0/U 300/500 V
  H05V2-K U_0/U 300/500 V
- **Test voltage** 2000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  fixed installation 4x core Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, from 0,5 mm² to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Wire make-up for:
  0,14 mm² = 18x0,1 mm
  0,25 mm² = 14x0,15 mm
- **LiYW** special core insulation up to +105°C heat-resistant, adapted to DIN VDE 0207
  H05V2-K core insulation up to +90°C heat-resistant, compound type TI3 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification see table below

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- Heat-resistant special PVC compound of selected stabilizer and plasticizer
- Not to be used in contact with objects higher than 85°C

Tests

- All requirements and test methods conform DIN VDE 0285-525-2-31, DIN EN 50525-2-31, deviates however the maximal permissible operating temperature up to +105°C for LiYW
- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

K

Application

Therm insulated wires are ideal for use in power current installation, switch cabinets, motors and transformers which are subject to direct contact with high temperatures (e. g. varnishing machines and drying towers etc.). These are also suitable for inside wiring of electrical equipments such as lighting and heating apparatus.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

LiYW 105°C

Cross-section mm²	Outer Ø mm	Cop. weight kg / km	Weight approx. kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	D-BU
Part no.				29500	29501	29502	29503	29504	29505	29506	29507	29508
0,14	1,3	1,4	3,2	-	-	-	-	-	-	-	-	-
Part no.				29509	29510	29511	29512	29513	29514	29515	29516	29517
0,25	1,8	2,4	4,3	-	-	-	-	-	-	-	-	-
Part no.				29518	29519	29520	29521	29522	29523	29524	29525	29526
0,5	2,6	4,8	7,2	-	-	-	-	-	-	-	-	-

H05V2-K 90°C

Cross-section mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No. BK	AWG-No. GN-YE	AWG-No. BU	AWG-No. BN	AWG-No. RD	AWG-No. WH	AWG-No. GY	AWG-No. VT	AWG-No. D-BU
Part no.				29942	29943	29944	29945	29946	29947	29948	29949	29950
0,5	2,1 - 2,5	4,8	8,7	20	20	20	20	20	20	20	20	20
Part no.				29951	29952	29953	29954	29955	29956	29957	29958	29959
0,75	2,2 - 2,7	7,2	11,9	18	18	18	18	18	18	18	18	18
Part no.				29960	29961	29962	29963	29964	29965	29966	29967	29968
1	2,4 - 2,8	9,6	14,0	17	17	17	17	17	17	17	17	17

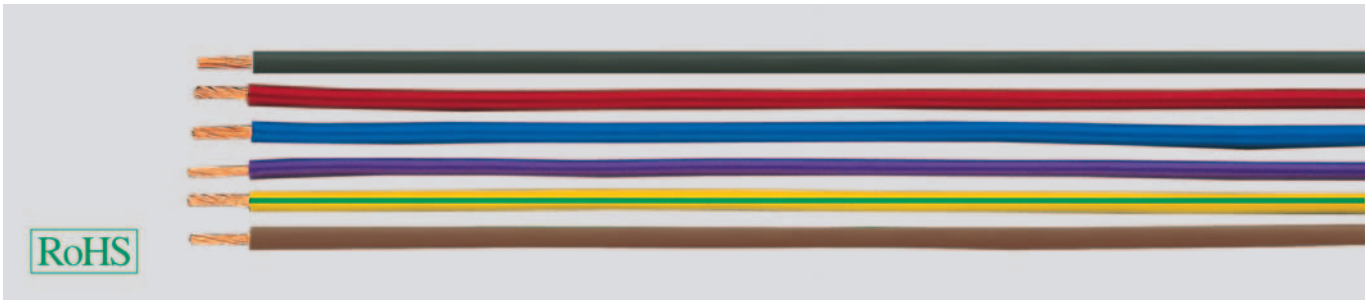
Dimensions and specifications may be changed without prior notice. (RK01)



Suitable accessories can be found in Chapter X.

- Core end sleeve - ADI
- Core end sleeve - ADU

H07V2-K PVC single core, 90°C, heat resistant



Technical data

- Special PVC single core with increased heat-resistance up to 90°C acc. to DIN VDE 0285-525-2-31/ DIN EN 50525-2-31
- **Temperature range** flexing +5°C to +90°C
- **max. Temperature** at conductor under permanent load: +90°C
- **Nominal voltage** U_0/U 450/750 V
- **Test voltage** 2000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** 10-15x core Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of heat-resistant PVC compound type TI3 to DIN VDE 0207-363-3/DIN EN 50363-3
- Core identification see table below

Properties

- Heat-resistant special PVC compound of selected stabilizer and plasticizer
- Not to be used in contact with objects higher than 85°C
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Application

Therm insulated wires are ideal for use in power current installation, switch cabinets, motors and transformers which are subject to direct contact with high temperatures (e. g. varnishing machines and drying towers etc.). These are also suitable for inside wiring of electrical equipments such as lighting and heating apparatus. Suitable for fixed protected installation in, or on lighting or controlgear for voltages up to 1000 V a.c. or, up to 750 V d.c. to earth.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Cross-section mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	D-BU
Part no.				29970	29971	29972	29973	29974	29975	29976	29977	29978
1,5	2,8 - 3,4	14,4	20,0	-	-	-	-	-	-	-	-	-
Part no.				29979	29980	29981	29982	29983	29984	29985	29986	29987
2,5	3,4 - 4,1	24,0	33,3	-	-	-	-	-	-	-	-	-
Part no.				29988	29989	29990	29991	29992	29993	29994	29995	29996
4	3,9 - 4,8	38,0	48,3	-	-	-	-	-	-	-	-	-
Part no.				29997	29998	29999	30000	30001	30002	30003	30004	30005
6	4,4 - 5,3	58,0	68,5	-	-	-	-	-	-	-	-	-
Part no.				30006	30007	30008	30009	30010	30011	30012	30013	30014
10	5,7 - 6,8	96,0	115,0	-	-	-	-	-	-	-	-	-
Part no.				30015	30016	30017	30018	30019	30020	30021	30022	30023
16	6,7 - 8,1	154,0	170,0	-	-	-	-	-	-	-	-	-
Part no.				30024	30025	30026	30027	30028	30029	30030	30031	30032
25	8,4 - 10,2	240,0	270,0	-	-	-	-	-	-	-	-	-
Part no.				30033	30034	30035	30036	30037	30038	30039	30040	30041
35	9,7 - 11,7	336,0	367,0	-	-	-	-	-	-	-	-	-

Dimensions and specifications may be changed without prior notice. (RK01)



Suitable accessories can be found in Chapter X.

- Core end sleeve - ADI
- Core end sleeve - ADU

HELUTHERM® 145 flexible, cross-linked, halogen-free



Technical data

- Halogen-free single cores with increased heat resistance
- **Temperature range**
  flexing -35°C to +120°C
  fixed installation -55°C to +145°C
- **Nominal voltage**
  up to 1 mm² = U_0/U 300/500 V
  from 1,5 mm² = U_0/U 450/ 750 V
  at fixed and protected installation
  from 1,5 mm² = U_0/U 600/1000 V
- **Test voltage** 3500 V
- **Minimum bending radius**
  flexing 12,5x core Ø
  fixed installation 4x core Ø
- **Caloric load values**
  see Technical Informations
- **Approval**
  Germanischer Lloyd

Cable structure

- Tinned copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of polyolefin-copolymer cross-linked and halogen-free
- Core identification see table below

Tests

- Flame test (unit flame test) acc. to DIN VDE 0482-332-3-22, BS 4066 Teil 3, DIN EN 60332-3-22, IEC 60332-3-22 (previously DIN VDE 0472 part 804 test method C)
- Flame test (cable) acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Properties

- Lower propagation of fire
- Low development of smoke and fumes
- Good abrasion and notch resistance
- Good resistance to oils and weathering
- Resistant to UV radiation and ozone
- Resistant to soldering temperatures
- Thermal class B
- These single-core cables are resistant to melting, even when in contact with a soldering iron at temperatures of between 300°C and 380°C, because of the cross-linking for the insulation material
- Due to the high temperature profile the cross-section of conductor can under certain circumstances be reduced, hereby enabling a saving in space requirement and weight
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

K

Application

These temperature resistant single-core cables are used for the internal wiring of lighting fixtures, heaters, electrical machinery, switching systems and distributors in equipment and plant and machinery, suitable for laying in tubes on and under plaster, in closed installation ducts, as well as for traffic systems and outdoor applications. These cables are not approved for direct routing on racks, gutters or tanks. For a protected installation, these cables may be used at a nominal voltage of up to 1000 V alternating current or a direct current up to 750 V when earthed. The maximum operating d. c. voltage used in rail vehicles shall not exceed 900 V when earthed. These halogen-free single core cables are characterised by their amazingly high long-time resistance to temperature and feature among the leading halogen-free, flame resistant products in the world. These single core cables significantly contribute to safety and the environment.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	GN	D-BU	OG	BEIGE	2-col.
Part no. 0,25	1,6	2,4	4,0	50999	50998	51070	51071	51072	51073	51074	51075	51076	51078	51079	51077	51164	51165
Part no. 0,34	1,7	3,2	5,0	51167	51166	51168	51169	51170	51171	51172	51173	51174	51176	51177	51175	51178	51179
Part no. 0,5	1,9	4,8	7,0	51281	51280	51282	51283	51284	51285	51286	51287	51288	51290	51291	51289	51292	51293
Part no. 0,75	2,2	7,2	11,0	51295	51294	51296	51297	51298	51299	51300	51301	51302	51304	51305	51303	51306	51307
Part no. 1	2,5	9,6	14,0	51309	51308	51310	51311	51312	51313	51314	51315	51316	51318	51319	51317	51320	51321
Part no. 1,5	2,9	14,4	20,0	51323	51322	51324	51325	51326	51327	51328	51329	51330	51332	51333	51331	51334	51335
Part no. 2,5	3,5	24,0	30,0	51337	51336	51338	51339	51340	51341	51342	51343	51344	51346	51347	51345	51348	51349
Part no. 4	4,3	38,0	47,0	51351	51350	51352	51353	51354	51355	51356	51357	51358	51360	51361	51359	51362	51363
Part no. 6	5,0	58,0	72,0	51365	51364	51366	51367	51368	51369	51370	51371	51372	51374	51375	51373	51376	51377
Part no. 10	6,3	96,0	120,0	51379	51378	51380	51381	51382	51383	51384	51385	51386	51388	51389	51387	51390	51391

Continuation ▸

HELUTHERM® 145 flexible, cross-linked, halogen-free

Cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	GN	D-BU	OG	BEIGE	2-col.
Part no. 16	7,3	154,0	182,0	51420	51419	51421	51422	51423	51424	51425	51426	51427	51429	51430	51428	51431	51432
Part no. 25	9,6	240,0	272,0	51434	51433	51435	51436	51437	51438	51439	51440	51441	51443	51444	51442	51445	51446
Part no. 35	10,8	336,0	371,0	51448	51447	51449	51450	51451	51452	51453	51454	51455	51457	51458	51456	51459	51460
Part no. 50	12,6	480,0	530,0	51462	51461	51463	51464	51465	51466	51467	51468	51469	51471	51472	51470	51473	51474
Part no. 70	14,6	672,0	730,0	51476	51475	51477	51478	51479	51480	51481	51482	51483	51485	51486	51484	51487	51488
Part no. 95	16,5	912,0	964,0	51490	51489	51491	51492	51493	51494	51495	51496	51497	51499	51500	51498	51501	51502
Part no. 120	18,0	1152,0	1235,0	51504	51503	51505	51506	51507	51508	51509	51510	51511	51513	51514	51512	51515	51516
Part no. 150	20,0	1440,0	1523,0	51518	51517	51519	51520	51521	51522	51523	51524	51525	51527	51528	51526	51529	51530
Part no. 185	22,2	1776,0	1850,0	51532	51531	51533	51534	51535	51536	51537	51538	51539	51541	51542	51540	51543	51544
Part no. 240	24,5	2304,0	2432,0	51546	51545	51547	51548	51549	51550	51551	51552	51553	51555	51556	51554	51557	51558

Dimensions and specifications may be changed without prior notice. (RK01)



Suitable accessories can be found in Chapter X.

- Core end sleeve - ADI
- Core end sleeve - ADU

SiF / SiFF silicon single cores, halogen-free



Technical data

- Spezial-silicon single core with higher heat-resistance range adapted to DIN VDE 0250 Teil 1 and part 502
- **Temperatue range** -60°C to +180°C (up to +220°C for short time)
- **Temperature limit at the conductor** in operation +180°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 2000 V
- **Breakdown voltage** min. 5000 V
- **Minimum bending radius** 6x core Ø
- **Radiation resistance** up to 20 x 10^6 cJ/kg (up to 20 Mrad)

Cable structure

Type SiF

- Tinned copper-conductor,from 0,5 mm² to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Conductor construction 0,25 mm² = 14x0,15 mm
- Core insulation of silicone

Type SiFF

- Tinned Cu-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6 (single wire Ø 0,07 mm)
- Core insulation of silicone

Properties

- **Resistant to** high molecular oils, fats from vegetables and animals, alcohols, plasticizers and clophenes, diluted acids, lyes and salt dissolution, oxidation substances, tropical influences and weather, lake water, oxygen
- High flash points
- For laying as a fixed installation only in open or ventilated pipe systems as well as in ducts. Otherwise the mechanical properties of the silicon are reduced by the enclosed air at temperatures exceeding 90°C.

Tests

- Corrosiveness of combustion gases (Halogen-free) acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Behaviour in fire no flame propagation acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2,IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- Please complete the part number for these cables by adding the suffix for the colour required as per the list:
  00 = green, 01 = black, 02 = red, 03 = blue, 04 = brown, 05 = white, 06 = grey, 07 = violet, 08 = yellow, 09 = orange, 10 = transparent, 11 = pink, 12 = beige, 13 = 2-colour
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Special single cores for use in high, resp. low temperature areas. They are used mainly in the steel producing industries, in aviation industries as well as in ship building, cement, glas and ceramic factories. As this single cores are halogen-free, especially suited for use in power stations.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

SiF

Part no.	Cross-section mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
232xx	0,25	1,9	2,4	5,5	24
233xx	0,5	2,1	4,8	8,6	20
234xx	0,75	2,4	7,2	11,8	18
235xx	1	2,5	9,6	13,5	17
236xx	1,5	2,8	14,4	18,5	16
237xx	2,5	3,4	24,0	30,0	14
238xx	4	4,2	38,0	47,3	12
239xx	6	5,0	58,0	71,1	10
246xx	10	6,6	96,0	119,4	8
247xx	16	7,4	154,0	187,7	6
248xx	25	9,2	240,0	289,6	4

SiF (wire colour black)

Part no.	Cross-section mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
23953	35	10,3	336,0	398,3	2
23954	50	11,8	480,0	559,7	1
23955	70	13,6	672,0	765,8	2/0
23956	95	15,6	912,0	1031,5	3/0
23957	120	17,6	1152,0	1284,6	4/0
23958	150	19,6	1440,0	1563,4	300 kcmil
23959	185	22,4	1776,0	1858,2	350 kcmil

SiFF

Part no.	Cross-section mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
451xx	0,25	1,9	2,4	6,0	24
452xx	0,5	2,2	4,8	10,0	20
453xx	0,75	2,5	7,2	13,0	18
454xx	1	2,6	9,6	15,0	17
455xx	1,5	3,1	14,4	19,0	16
456xx	2,5	3,7	24,0	32,0	14
457xx	4	4,4	38,0	50,0	12
458xx	6	5,2	58,0	73,0	10
459xx	10	6,8	96,0	125,0	8

Dimensions and specifications may be changed without prior notice. (RK01)

SiF/GL, SiD, SiD/GL silicon single cores, halogen-free



Technical data

- Spezial-silicon single core with higher heat-resistance range adapted to DIN VDE 0250 Teil 1 and part 502
- **Temperatue range** -60°C to +180°C (for short time +220°C)
- **Temperature limit at the conductor** in operation +180°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 2000 V
- **Breakdown voltage** min. 5000 V
- **Minimum bending radius** 15x core Ø (SID only for permanent installation)
- **Radiation resistance** up to 20 x 10^6 cJ/kg (up to 20 Mrad)

Cable structure

Type SiF/GL

- Tinned copper-conductor, from 0,5 mm² to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Conductor construction: 0,25 mm² = 14x0,15 mm
- Core insulation of silicone
- Glass-fibre braiding

Type SiD

- Tinned copper-conductor, single-wire
- Core insulation of silicone

Type SiD/GL

- Tinned copper-conductor, single-wire
- Core insulation of silicone
- Glass-fibre braiding

Properties

- **Resistant to** high molecular oils, fats from vegetables and animals, alcohols, plasticizers and clophenes, diluted acids, lyes and salt dissolution, oxidation substances, tropical influences and weather, lake water, oxygen
- High flash points
- For laying as a fixed installation only in open or ventilated pipe systems as well as in ducts. Otherwise the mechanical properties of the silicon are reduced by the enclosed air at temperatures exceeding 90°C.

Tests

- Corrosiveness of combustion gases (Halogen-free) acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Behaviour in fire no flame propagation acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2,IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- Please complete the part number for these cables by adding the suffix for the colour required as per the list:
  00 = green, 01 = black, 02 = red,
  03 = blue, 04 = brown, 05 = white,
  06 = grey, 07 = violet, 08 = yellow,
  09 = orange, 10 = transparent,
  11 = pink, 12 = beige, 13 = 2-colour
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Special single cores for use in high, resp. low temperature areas. They are used mainly in the steel producing industries, in aviation industries as well as in ship building, cement, glas and ceramic factories. As this single cores are halogen-free, especially suited for use in power stations.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

SiF/GL

Part no.	Cross-section mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
47001	0,25	2,4	2,4	7,7	24
47002	0,5	2,5	4,8	12,4	20
47003	0,75	2,8	7,2	16,2	18
47004	1	2,9	9,6	18,2	17
47005	1,5	3,2	14,4	23,4	16
47006	2,5	3,8	24,0	35,2	14
47007	4	4,6	38,0	53,5	12
47008	6	5,4	58,0	77,4	10
47009	10	7,6	96,0	129,2	8
47010	16	8,4	154,0	198,4	6
47011	25	10,2	240,0	303,0	4
47012	35	11,3	336,0	413,2	2
47013	50	13,4	480,0	577,8	1

SiD

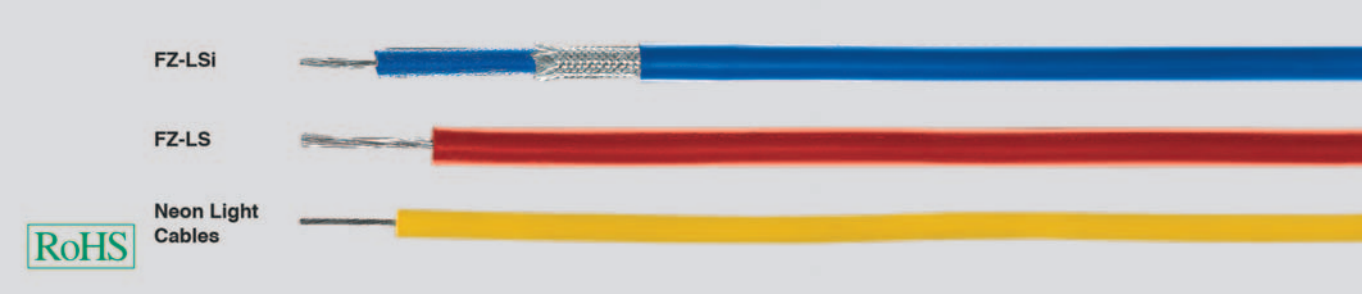
Part no.	Cross-section mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
461xx	0,2	1,7	1,9	4,2	-
462xx	0,28	1,8	2,7	5,1	-
463xx	0,5	2,0	4,8	7,5	20
464xx	0,75	2,1	7,2	10,2	18
465xx	1	2,3	9,6	12,6	17
466xx	1,5	2,5	14,4	18,1	16
467xx	2,5	3,2	24,0	28,7	14
468xx	4	3,9	38,0	45,2	12
469xx	6	4,4	58,0	64,3	10

SiD/GL

Part no.	Cross-section mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
47014	0,5	2,4	4,8	10,0	20
47015	0,75	2,6	7,2	15,0	18
47016	1	2,7	9,6	19,0	17
47017	1,5	3,0	14,4	28,0	16
47018	2,5	3,6	24,0	40,0	14
47019	4	4,3	36,0	55,0	12
47020	6	5,0	58,0	80,0	10

Dimensions and specifications may be changed without prior notice. (RK01)

FZ-LSi / FZ-LS / Neon Light Cables



Technical data

FZ-LSi, blue
- **Test voltage** 20 kV
- **Breakdown voltage** min. 30 kV
- **Ignition voltage** (kV eff.)
  0,5 mm² = 6 kV
  1,0 mm² = 8 kV
  1,5 mm² = 10 kV

FZ-LS, red
- **Test voltage**
  for 5 mm Ø = 15 kV
  for 7 mm Ø = 20 kV
- **Breakdown voltage**
  for 5 mm Ø = min. 25 kV
  for 7 mm Ø = min. 35 kV

Neon-light-Cable, yellow
- **Nominal voltage**
  3,5 kV, 4,0 kV or 7,5 kV
- **Test voltage** 10 kV
- **Specific volume resistivity**
  min. 10^{12} Ohm x cm
- **Minimum bending radius**
  7,5x cable Ø
- **Radiation resistance**
  up to 20x10^{6} cJ/kg (up to 20 Mrad)

Cable structure

FZ-LSi, blue
- Tinned copper-conductor
- Conductor consturction see table below
- Core insulation of silicone compound type 2GI1 to DIN VDE 0207 part 20
- Glass-fibre braiding
- Outer sheath of silicone compound type 2GM1 to DIN VDE 0207 part 21
- Sheath colour blue

FZ-LS, red
- Tinned copper-conductor, 19x0,25 mm Ø
- Core insulation of silicone compound type 2GI1 to DIN VDE 0207 part 20
- Sheath colour redbrown

Neon-light-cable, yellow
- in adapted to DIN VDE 0250 part 1+5
- Tinned copper-conductor, 30x0,25 mm
- Core insulation of silicone compound type 2GI1 to DIN VDE 0207 part 20
- Sheath colour yellow

Properties

Neon-light-cable, yellow
- Halogen-free
  acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Behaviour in fire no flame propagation
  acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2,IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- No formation of corrosive gases
- Low smoke density
- Very good weather resistance

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

K

Application

FZ-LSi, blue
This ignition cable is suitable for use at high and extremely alternating ambient temperatures up to +180°C. Applications include engine manufacturing, valve manufacturing and heating technology. As protection against mechanical damages a glass fibre braiding and a silicone sheath covers the core insulation.

FZ-LS, red
This ignition cable is suitable for use at high and extremely alternating ambient temperatures up to +180°C. Applications include the lamp and lighting industry and cooling and airconditioning technology.

Neon-light-cable, yellow
This cable is primarily suitable for use at high and extremely alternating ambient temperatures such as in the lamp and lighting industry. Protected installation is required.

FZ-LSi ignition cable

Part no.	Core colour	Cross-sec. mm²	Cond. make-up (nom. val.) n x wire Ø	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
23110	BU	0,5	7 x 0,3	5,0	4,8	36,0	20
23106	BU	1	19 x 0,25	7,5	9,5	65,0	17
23107	BU	1,5	28 x 0,26	8,5	14,4	88,0	16

FZ-LS high-voltage ignition cable 15 and 20kV

Part no.	Core colour	Cross-sec. mm²	Cond. make-up (nom. val.) n x wire Ø	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
23109	red-brown	1	19 x 0,25	5,0	9,6	34,0	17
23108	red-brown	1	19 x 0,25	7,0	9,6	60,0	17

neon light cables (neon cable) 3,5kV, 4,0kV and 7,5kV

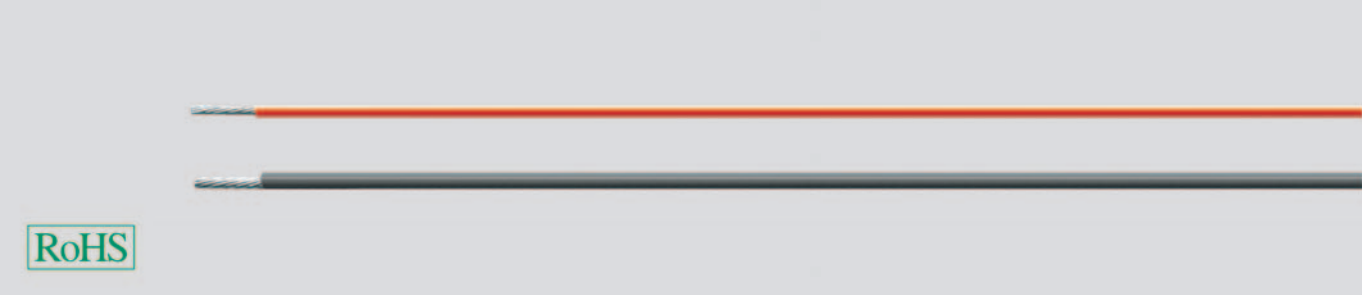
Part no.	Core colour	Cross-sec. mm²	Cond. make-up (nom. val.) n x wire Ø	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
23147	YE	1,5	30 x 0,25	4,4	14,4	32,0	16
23148	YE	1,5	30 x 0,25	6,6	14,4	59,0	16
23149	YE	1,5	30 x 0,25	7,6	14,4	75,0	16

Dimensions and specifications may be changed without prior notice. (RK01)



Suitable accessories can be found in Chapter X.
- Core end sleeve - ADI
- Core end sleeve - ADU

HELUFLON®-FEP-6Y fluorinated polymeric materials, single core, 600 V



Technical data

- Fluorinated polymeric insulation FEP (Fluorethylenepropylene)
- **Temperature range**
  -100°C to +205°C
  (up to +230°C for short time)
- **Nominal voltage** 600 V
- **Test voltage** 2500 V
- **Insulation resistance**
  min. 2 GOhm x km
- **Minimum bending radius**
  flexing 10x core Ø
  fixed installation 4x core Ø
- **Radiation resistance**
  up to $1x10^6$ cJ/kg (up to 1 Mrad)
- **Conductor temperature range**
  bare copper +130°C
  tinned copper +180°C
  silver pl. copper +260°C

Cable structure

- Stranded copper wire, bare, tinned, silver
- Make-up fine wire stranded to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation FEP-HELUFLON®

Properties

- Higher insulation resistance
- Low dielectric loss
- Not flammable
- Min. 20 kV dielectric strength
- Resistant to micro-cultures
- Do not permit any fungus-formation
- Absolute ozone resistant
- Absolute weather resistant
- Water absorption <0,01%
- Minimal water vapour permeability (approx. 0,18 mgr/cm² in 24 hours)
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- Please complete the above part-no. for the colour required using the following table:
  1 = black, 2 = red, 3 = blue,
  4 = brown, 5 = white, 6 = transparent,
  7 = 2-colour, 8 = other colours
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

HELUFLON® single cores are predominantly used for installing in control cabinets subjected to high thermal effects as well as in brickworks, heaters, kitchen fitments and measuring appliances as well as in the chemical industry. These single cores are non-flammable and resistant to acids, alkalis, solvents, oil and petrol.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Copper wire, tinned

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
2551x	1 x 0,14	1,0	1,4	2,6	26
2552x	1 x 0,25	1,1	2,4	4,1	24
2553x	1 x 0,5	1,4	4,8	8,0	20
2554x	1 x 0,75	1,5	7,2	9,7	18
2555x	1 x 1	1,8	9,6	12,7	17
2556x	1 x 1,5	2,2	14,4	17,9	16
2557x	1 x 2,5	2,6	24,0	26,4	14
2558x	1 x 4	3,2	38,0	43,1	12
2559x	1 x 6	3,9	58,0	65,9	10
2560x	1 x 10	5,1	96,0	115,0	8
2561x	1 x 16	6,7	154,0	175,0	6

Copper wire, bare

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
2490x	1 x 0,14	1,0	1,35	2,6	26
2491x	1 x 0,25	1,1	2,4	4,1	24
2492x	1 x 0,5	1,4	4,8	8,0	20
2493x	1 x 0,75	1,5	7,2	9,7	18
2494x	1 x 1	1,8	9,6	12,7	17
2495x	1 x 1,5	2,2	14,4	17,9	16

Copper wire, bare

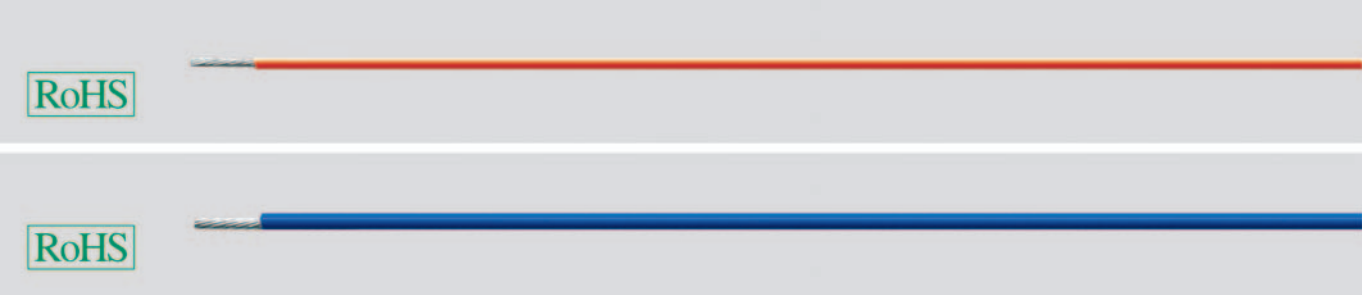
Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
2496x	1 x 2,5	2,6	24,0	26,4	14
2497x	1 x 4	3,2	38,0	43,1	12
2498x	1 x 6	3,9	58,0	65,9	10
2499x	1 x 10	5,1	96,0	115,0	8
2037x	1 x 16	6,7	154,0	175,0	6

copper wires, silvered

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	AG weight kg / km	Weight approx. kg / km	AWG-No.
2026x	1 x 0,14	1,0	1,35	0,09	2,6	26
2027x	1 x 0,25	1,1	2,4	0,13	4,1	24
2028x	1 x 0,5	1,4	4,8	0,17	8,0	20
2029x	1 x 0,75	1,5	7,2	0,20	9,7	18
2030x	1 x 1	1,8	9,6	0,26	12,7	17
2031x	1 x 1,5	2,2	14,4	0,35	17,9	16
2032x	1 x 2,5	2,6	24,0	0,70	26,4	14
2033x	1 x 4	3,2	38,0	1,20	43,1	12
2034x	1 x 6	3,9	58,0	1,70	65,9	10
2035x	1 x 10	5,1	96,0	2,80	115,0	8
2036x	1 x 16	6,7	154,0	4,80	175,0	6

Dimensions and specifications may be changed without prior notice. (RK01)

HELUFLON®-PTFE-5Y fluorinated polymeric materials, single core, 600 V or 1000 V



Technical data

- Fluorinated polymeric insulation PTFE (Polytetrafluorethylene)
- Design to DIN VDE 0881 an IEC 60673
- **Temperature range**
  -190°C to +260°C
  (up to +300°C for short time)
- **Nominal voltage**
  type E = 600 V
  type EE = 1000 V
- **Test voltage**
  type E = 3,4 kV
  type EE = 5 kV
- **Insulation resistance**
  min. 1 GOhm x km
- **Minimum bending radius**
  10x core Ø
- **Radiation resistance**
  up to $1x10^5$ cJ/kg (up to 0,1 Mrad)
- **Conductor temperature range**
  bare copper +130°C
  tinned copper +180°C
  silver pl. copper +200°C
  nickel pl. copper +260°C

Cable structure

- Stranded copper wire, silver
- Core insulation PTFE-HELUFLON® to DIN VDE 207 part 6
- PTFE as per MIL-W 16878

Properties

- Higher insulation resistance
- Low dielectric loss
- Not flammable
- Resistant to micro-cultures
- Do not permit any fungus-formation
- Absolute ozone resistant
- Absolute weather resistant
- Water absorption <0,01%
- Minimal water vapour permeability (approx. 0,18 mgr/cm² in 24 hours)
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- Please complete the above part-no. for the colour required using the following table:
  1 = black, 2 = red, 3 = blue,
  4 = brown, 5 = white, 6 = transparent,
  7 = 2-colour, 8 = other colour
- Conductor bare, tinned or nickel plated on request

Application

HELUFLON® single cores are predominantly used for installing in control cabinets subjected to high thermal effects as well as in brickworks, heaters, kitchen fitments and measuring appliances as well as in the chemical industry. These single cores are non-flammable and resistant to acids, alkalis, solvents, oil and petrol.

CE = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

600 V

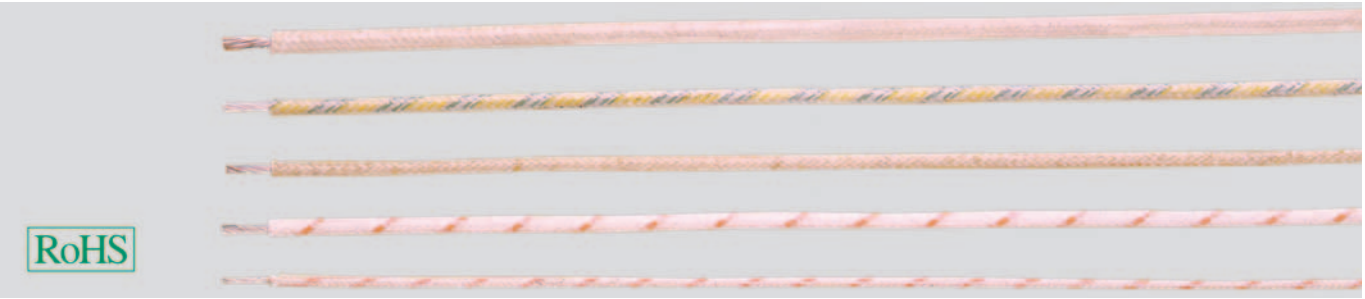
Part no.	AWG-No.	No. cond.	Cross-section mm²	Outer Ø approx. mm	Cop. weight kg / km	AG weight kg / km	Weight approx. kg / km
2511x	32	7	0,03	0,70	0,4	0,03	0,4
2512x	30	7	0,06	0,81	0,6	0,04	0,59
2513x	28	7	0,09	0,89	0,9	0,06	0,93
2514x	26	7	0,14	0,99	1,4	0,07	1,47
2515x	26	19	0,14	0,99	1,4	0,09	1,58
2516x	24	7	0,21	1,12	2,3	0,07	2,31
2517x	24	19	0,24	1,12	2,3	0,13	2,52
2518x	22	7	0,35	1,27	3,5	0,10	3,68
2519x	22	19	0,38	1,27	3,5	0,17	3,99
2520x	20	7	0,57	1,47	5,6	0,12	6,0
2521x	20	19	0,57	1,47	6,1	0,18	6,4
2522x	18	7	0,90	1,74	9,6	0,22	9,45
2523x	18	19	0,95	1,74	9,6	0,27	10,2
2524x	16	19	1,23	2,04	13,5	0,29	12,9
2525x	14	19	1,94	2,40	18,0	0,38	20,3

1000 V

Part no.	AWG-No.	No. cond.	Cross-section mm²	Outer Ø approx. mm	Cop. weight kg / km	AG weight kg / km	Weight approx. kg / km
2531x	32	7	0,03	1,00	0,4	0,03	0,42
2532x	30	7	0,06	1,07	0,6	0,04	0,65
2533x	28	7	0,09	1,14	0,9	0,06	1,0
2534x	26	7	0,14	1,24	1,4	0,07	1,56
2535x	26	19	0,14	1,24	1,4	0,09	1,68
2536x	24	7	0,21	1,37	2,3	0,07	2,4
2537x	24	19	0,24	1,37	2,3	0,13	2,65
2538x	22	7	0,35	1,52	3,5	0,10	3,85
2539x	22	19	0,38	1,50	3,5	0,17	4,2
2540x	20	7	0,57	1,72	5,6	0,12	6,3
2541x	20	19	0,57	1,72	6,1	0,18	6,9
2542x	18	7	0,90	2,00	9,6	0,22	10,65
2543x	18	19	0,95	2,00	9,6	0,27	13,65
2544x	16	19	1,23	2,26	13,5	0,29	21,38
2545x	14	19	1,94	2,76	18,0	0,38	33,95

Dimensions and specifications may be changed without prior notice. (RK01)

HELUTHERM® 400 Insulation class C, halogen-free



Technical data

- Special core insulation mono or multi coloured
- **Temperature range**
  -60°C to +400°C
  operating temperature
  (up to +450°C for short time)
- **Nominal voltage** 500 V
- **Test voltage** 2000 V
- **Minimum bending radius**
  15x outer Ø
- **Radiation resistance**
  up to 1x10^{10} cJ/kg (up to 1x10^{4} Mrad)

Cable structure

- Stranded nickel conductor
- Overlapping with special heat-resistant impregnation
- Colour identification through helix (colour see table)

Properties

- These cables have very good electronic, chemical and radiation resistant properties

Note

- Also available with additional Kapton film at extra cost.

Application

The wide temperature range offered by this cable type makes it especially suited for use in the aviation and aerospace industries, for atomic power stations and in the steel making and chemical industries. For the critical applications, for example mechanical stress, we advise for consultation.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Cross-sec. mm²	Conductor construction	Outer Ø approx. mm	Nickel weight kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	PK	OG	BEIGE	TRANS	2-col.
Part no.				50901	50900	50902	50903	50904	50905	50906	50907	50908	50911	50909	50912	50910	50913
0,5	16 x 0,2	2,2	4,8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				50915	50914	50916	50917	50918	50919	50920	50921	50922	50925	50923	50926	50924	50927
0,75	24 x 0,2	2,4	7,2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				50929	50928	50930	50931	50932	50933	50934	50935	50936	50939	50937	50940	50938	50941
1	32 x 0,2	2,7	9,6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				50943	50942	50944	50945	50946	50947	50948	50949	50950	50953	50951	50954	50952	50955
1,5	30 x 0,25	2,8	14,4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				50957	50956	50958	50959	50960	50961	50962	50963	50964	50967	50965	50968	50966	50969
2,5	50 x 0,25	3,4	24,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				50971	50970	50972	50973	50974	50975	50976	50977	50978	50981	50979	50982	50980	50983
4	56 x 0,3	4,5	38,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				50985	50984	50986	50987	50988	50989	50990	50991	50992	50995	50993	50996	50994	50997
6	84 x 0,3	4,9	58,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				50890	50209	50891	50892	50893	50894	50895	50896	50897	51560	50898	51561	51559	51562
10	141 x 0,3	5,8	96,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51564	51563	51565	51566	51567	51568	51569	51570	51571	51574	51572	51575	51573	51576
16	226 x 0,3	7,4	154,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51578	51577	51579	51580	51581	51582	51583	51584	51585	51588	51586	51589	51587	51590
25	196 x 0,4	9,6	240,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51592	51591	51593	51594	51595	51596	51597	51598	51599	51602	51600	51603	51601	51604
35	276 x 0,4	11,5	336,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51606	51605	51607	51608	51609	51610	51611	51612	51613	51616	51614	51617	51615	51618
50	396 x 0,4	12,7	480,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51620	51619	51621	51622	51623	51624	51625	51626	51627	51630	51628	51631	51629	51632
70	360 x 0,5	16,0	672,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51634	51633	51635	51636	51637	51638	51639	51640	51641	51644	51642	51645	51643	51646
95	485 x 0,5	18,0	912,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51648	51647	51649	51650	51651	51652	51653	51654	51655	51658	51656	51659	51657	51660
120	608 x 0,5	19,0	1152,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51662	51661	51663	51664	51665	51666	51667	51668	51669	51672	51670	51673	51671	51674
150	756 x 0,5	22,0	1440,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51676	51675	51677	51678	51679	51680	51681	51682	51683	51686	51684	51687	51685	51688
185	944 x 0,5	24,0	1776,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Part no.				51690	51689	51691	51692	51693	51694	51695	51696	51697	51700	51698	51701	51699	51702
240	1222 x 0,5	27,0	2304,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Dimensions and specifications may be changed without prior notice. (RK01)



Suitable accessories can be found in Chapter X.

- Core end sleeve - ADI
- Core end sleeve - ADU

HELUTHERM® 600 / 600-ES halogen-free / high-grade steel braiding





Technical data

- Special core insulation for high temperatures
- **Temperature range** -60°C to +600°C
- **Permissible temperature** +400°C to +600°C (up to +700°C for short time)
- **Nominal voltage** 500 V
- **Test voltage** 2500 V
- **Minimum bending radius** 15x outer Ø

Cable structure

HELUTHERM® 600

- Stranded nickel conductor
- Double-insulated glass-fibre braiding, impregnated with silicone
- Braiding of special mineral fibres and additional impregnation with silicone

HELUTHERM® 600-ES

- As per above
- Additional braided high-grade steel, coverage approx. 80%

Properties

- Asbestos and cadmium-free

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

HELUTHERM® 600

Cables are used in applications where extremely high connecting and ambient temperatures occur, e. g. in iron and steel works, rolling mills, foundries, glass and ceramic plants, in power construction as well as for wiring resistances in electrical heating equipment, furnaces and in thermoplastic forming. Good characteristics in the presence of moisture and chemical effects.

HELUTHERM® 600-ES

The robust braiding of high-grade steel protects the cable from aggressive atmospheres and mechanical stresses. The high-grade braiding also gives this cable an attractive appearance. The braided screen can also be used for earthing purposes.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

K

HELUTHERM® 600

Part no.	No.cores x cross-sec. mm²	Conductor construction	Outer Ø approx. mm	Conductor resistance at 20°C Ohm / km	Max. permiss. current carrying capacity at +400°C (A)	Nickel weight kg / km	Weight approx. kg / km	AWG-No.
51703	1 x 0,25	4 x 0,3	2,0	346	1,5	2,4	9,5	24
51704	1 x 0,5	7 x 0,3	2,3	175	2,5	4,8	11,5	20
51705	1 x 0,75	11 x 0,3	2,6	115	4,5	7,2	15,0	18
51706	1 x 1	14 x 0,3	2,8	88	5,5	9,6	17,8	17
51707	1 x 1,5	21 x 0,3	3,2	59	7	14,4	24,0	16
51708	1 x 2,5	35 x 0,3	3,7	35	10	24,0	36,0	14
51709	1 x 4	56 x 0,3	4,5	22	13,5	38,0	54,5	12
51710	1 x 6	84 x 0,3	6,0	14,6	16	58,0	77,0	10
51711	1 x 10	140 x 0,3	8,0	8,8	21	96,0	150,0	8
51712	1 x 16	228 x 0,3	9,1	5,5	28	154,0	225,0	6
51713	1 x 25	354 x 0,3	10,8	3,5	36	240,0	340,0	4
51714	1 x 35	495 x 0,3	13,0	2,5	58	336,0	440,0	2
51715	1 x 50	707 x 0,3	13,5	1,5	70	480,0	600,0	1

HELUTHERM® 600-ES

Part no.	No.cores x cross-sec. mm²	Conductor construction	Outer Ø approx. mm	Conductor resistance at 20°C Ohm / km	Max. permiss. current carrying capacity at +400°C (A)	Nickel weight kg / km	Weight approx. kg / km	AWG-No.
50475	1 x 0,5	7 x 0,3	3,2	175	2,5	4,8	21,0	20
50476	1 x 0,75	11 x 0,3	3,5	115	4,5	7,2	29,0	18
50477	1 x 1	14 x 0,3	3,7	88	5,5	9,6	38,0	17
50478	1 x 1,5	21 x 0,3	4,1	59	7	14,4	44,0	16
50479	1 x 2,5	35 x 0,3	4,6	35	10	24,0	56,0	14
50480	1 x 4	56 x 0,3	5,4	22	13,5	38,0	78,0	12
50481	1 x 6	84 x 0,3	6,9	14,6	16	58,0	112,0	10
50482	1 x 10	140 x 0,3	8,9	8,8	21	96,0	198,0	8
50483	1 x 16	228 x 0,3	10,0	5,5	28	154,0	281,0	6
50484	1 x 25	354 x 0,3	11,7	3,5	36	240,0	410,0	4
50485	1 x 35	495 x 0,3	15,1	2,5	58	336,0	536,0	2
50486	1 x 50	707 x 0,3	15,6	1,5	70	480,0	697,0	1

Dimensions and specifications may be changed without prior notice. (RK01)



Suitable accessories can be found in Chapter X.

- Core end sleeve - ADI
- Core end sleeve - ADU

HELUTHERM® 800 / 800-ES halogen-free / high-grade steel braiding





Technical data

- Special core insulation for high temperatures
- **Temperature range** -120°C to +750°C
- **Permissible temperature** +600°C to +800°C (up to +1200°C for short time)
- **Nominal voltage** 500 V
- **Test voltage** 2000 V
- **Minimum bending radius** 15x outer Ø

Cable structure

HELUTHERM® 800

- Stranded nickel conductor
- Double-insulated glass-fibre braiding, impregnated with silicone
- Braiding of special mineral fibres and additional impregnation with silicone

HELUTHERM® 800-ES

- As per above
- Additional braided high-grade steel, coverage approx. 80%

Properties

- Asbestos and cadmium-free

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

HELUTHERM® 800

Cables are used in applications where extremely high connecting and ambient temperatures occur, e. g. in iron and steel works, rolling mills, foundries, glass and ceramic plants, in power construction as well as for wiring resistances in electrical heating equipment, furnaces and in thermoplastic forming. Good characteristics in the presence of moisture and chemical effects.

HELUTHERM® 800-ES

The robust braiding of high-grade steel protects the cable from aggressive atmospheres and mechanical stresses. The high-grade braiding also gives this cable an attractive appearance. The braided screen can also be used for earthing purposes.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

HELUTHERM® 800

Part no.	No.cores x cross-sec. mm²	Conductor construction	Outer Ø approx. mm	Conductor resistance at 20°C Ohm / km	Max. permiss. current carrying capacity at +700°C (A)	Nickel weight kg / km	Weight approx. kg / km	AWG-No.
51716	1 x 0,25	4 x 0,3	2,2	346	1	2,4	10,2	24
51717	1 x 0,5	7 x 0,3	2,3	175	2	4,8	12,0	20
51718	1 x 0,75	11 x 0,3	2,9	115	3	7,2	16,0	18
51719	1 x 1	14 x 0,3	3,2	88	4	9,6	19,0	17
51720	1 x 1,5	21 x 0,3	3,2	59	5	14,4	26,5	16
51721	1 x 2,5	35 x 0,3	3,7	35	7	24,0	38,8	14
51722	1 x 4	56 x 0,3	4,5	22	9	38,0	57,0	12
51723	1 x 6	84 x 0,3	5,9	14,6	12	58,0	81,0	10
51724	1 x 10	140 x 0,3	8,0	8,8	14	96,0	156,0	8
51725	1 x 16	228 x 0,3	9,0	5,5	20	154,0	240,0	6
51726	1 x 25	354 x 0,3	10,6	3,5	24	240,0	370,0	4
51727	1 x 35	495 x 0,3	13,4	2,5	40	336,0	490,0	2
51728	1 x 50	707 x 0,3	14,0	1,5	48	480,0	645,0	1

HELUTHERM® 800-ES

Part no.	No.cores x cross-sec. mm²	Conductor construction	Outer Ø approx. mm	Conductor resistance at 20°C Ohm / km	Max. permiss. current carrying capacity at +700°C (A)	Nickel weight kg / km	Weight approx. kg / km	AWG-No.
50488	1 x 0,5	7 x 0,3	3,5	175	2	4,8	23,0	20
50489	1 x 0,75	11 x 0,3	3,8	115	3	7,2	31,0	18
50490	1 x 1	14 x 0,3	4,1	88	4	9,6	40,0	17
50491	1 x 1,5	21 x 0,3	4,5	59	5	14,4	47,0	16
50492	1 x 2,5	35 x 0,3	4,9	35	7	24,0	59,0	14
50493	1 x 4	56 x 0,3	5,8	22	9	38,0	82,0	12
50494	1 x 6	84 x 0,3	7,3	14,6	12	58,0	118,0	10
50495	1 x 10	140 x 0,3	9,4	8,8	14	96,0	209,0	8
50496	1 x 16	228 x 0,3	10,5	5,5	20	154,0	298,0	6
50497	1 x 25	354 x 0,3	12,2	3,5	24	240,0	452,0	4
50498	1 x 35	495 x 0,3	15,5	2,5	40	336,0	592,0	2
50499	1 x 50	707 x 0,3	16,1	1,5	48	480,0	650,0	1

Dimensions and specifications may be changed without prior notice. (RK01)

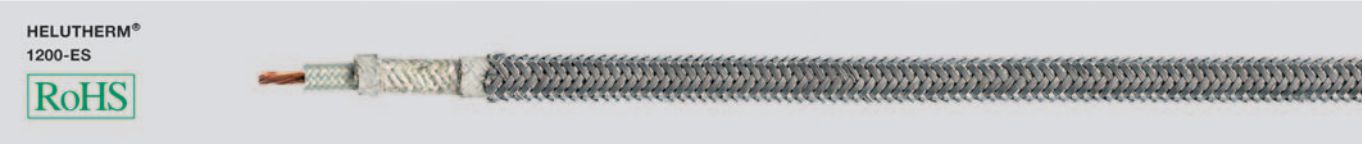


Suitable accessories can be found in Chapter X.

- Core end sleeve - ADI
- Core end sleeve - ADU

HELUTHERM® 1200 / 1200-ES halogen-free / high-grade steel braiding





Technical data

- Special core insulation for high temperatures
- **Temperature range** -170°C to +1000°C
- **Permissible temperature** +800°C to +1100°C (up to +1400°C for short time)
- **Nominal voltage** 500 V
- **Test voltage** 2000 V
- **Minimum bending radius** 15x outer Ø

Cable structure

HELUTHERM® 1200

- Stranded nickel conductor
- Double-insulated glass-fibre braiding, impregnated with silicone
- Braiding of special mineral fibres and additional impregnation with silicone

HELUTHERM® 1200-ES

- As per above
- Additional braided high-grade steel, coverage approx. 80%

Properties

- Asbestos and cadmium-free

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

HELUTHERM® 1200

Cables are used in applications, where extremely high connecting and ambient temperatures occur, e. g. in iron and steel works, rolling mills, foundries, glass and ceramic plants, in furnace and power plant construction as well for wiring resistances in electrical heating equipment, furnaces and in thermoplastic forming. Good characteristics in the presence of moisture and chemical effects.

HELUTHERM® 1200-ES

The robust braiding of high-grade steel protects the cable from aggressive atmospheres and mechanical stresses. The high-grade braiding also gives this cable an attractive appearance. The braided screen can also be used for earthing purposes.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

K

HELUTHERM® 1200

Part no.	No.cores x cross-sec. mm²	Conductor construction	Outer Ø approx. mm	Conductor resistance at 20°C Ohm / km	Max. permiss. current carrying capacity at +700°C (A)	Nickel weight kg / km	Weight approx. kg / km	AWG-No.
51729	1 x 0,5	7 x 0,3	2,3	175	2	4,8	12,3	20
51730	1 x 0,75	11 x 0,3	2,6	115	3	7,2	16,1	18
51731	1 x 1	14 x 0,3	2,8	88	4	9,6	19,8	17
51732	1 x 1,5	21 x 0,3	3,2	59	5	14,4	27,5	16
51733	1 x 2,5	35 x 0,3	3,7	35	7	24,0	39,8	14
51734	1 x 4	56 x 0,3	4,5	22	9	38,0	58,0	12
51735	1 x 6	84 x 0,3	5,9	14,6	12	58,0	83,0	10
51736	1 x 10	140 x 0,3	8,0	8,8	14	96,0	160,0	8
51737	1 x 16	228 x 0,3	9,0	5,5	20	154,0	244,0	6
51738	1 x 25	354 x 0,3	10,6	3,5	24	240,0	376,0	4
51739	1 x 35	495 x 0,3	13,6	2,5	40	336,0	495,0	2
51740	1 x 50	707 x 0,3	14,5	1,5	48	480,0	654,0	1

HELUTHERM® 1200-ES

Part no.	No.cores x cross-sec. mm²	Conductor construction	Outer Ø approx. mm	Conductor resistance at 20°C Ohm / km	Max. permiss. current carrying capacity at +700°C (A)	Nickel weight kg / km	Weight approx. kg / km	AWG-No.
50635	1 x 0,5	7 x 0,3	3,6	175	2	4,8	26,0	20
50636	1 x 0,75	11 x 0,3	3,8	115	3	7,2	34,0	18
50637	1 x 1	14 x 0,3	4,2	88	4	9,6	42,0	17
50638	1 x 1,5	21 x 0,3	4,7	59	5	14,4	53,0	16
50639	1 x 2,5	35 x 0,3	5,0	35	7	24,0	64,0	14
50640	1 x 4	56 x 0,3	6,0	22	9	38,0	87,0	12
50641	1 x 6	84 x 0,3	7,5	14,6	12	58,0	120,0	10
50642	1 x 10	140 x 0,3	9,7	8,8	14	96,0	218,0	8
50643	1 x 16	228 x 0,3	10,9	5,5	20	154,0	314,0	6
50644	1 x 25	354 x 0,3	12,9	3,5	24	240,0	453,0	4
50645	1 x 35	495 x 0,3	15,7	2,5	40	336,0	593,0	2
50646	1 x 50	707 x 0,3	16,7	1,5	48	480,0	760,0	1

Dimensions and specifications may be changed without prior notice. (RK01)



Suitable accessories can be found in Chapter X.

- Core end sleeve - ADI
- Core end sleeve - ADU

Earth Conductors ESUY and ESY



Technical data

ESUY (H00 V-D)

- Earthing cable of braid wires over core strands in adapted to DIN VDE 0283 part 3 and EN 61138

ESY

- Earthing cable in adapted to DIN VDE 0283 part 3 and EN 61138

ESUY (H00 V-D) and ESY

- **Conductor resistance** at 20°C according DIN VDE 0283 part 3
- **Temperature range** -5°C to +70°C
- **Test voltage** 2000 V
- **Spark test** (during winding)
  16 mm² to 35 mm² = 5000 V
  50 mm² to 70 mm² = 6000 V
  95 mm² to 240 mm² = 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimal bending radius** 12x outer Ø

Cable structure

ESUY (H00V-D)

- Bare copper-conductor, extra fine-wire, high flexible
- Braiding of bare copper wires over the stranded copper conductor
- Outer sheath of PVC compound type TM2 according DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour transparent (glass clear)

ESY

- Bare Cu-conductor, fine-wire
- Copper conductors of stranded wires
- Outer sheath of PVC compound type TM2 according DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour transparent (glass clear)

Properties

- For these cable types no nominal voltages are mentioned, as these are: only used for earthing performances
- For further requirements see European Norm EN 61230 and DIN VDE 0683 part 100: "Live working - Portable equipment for earthing and earthing"

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

ESUY (H00V-D)

These high flexible earth conductors are used for earthing of portable equipment and short-circuiting. These cables specially perform a protective function in repair live working of high voltage power supply company as EVU, in railway systems, failing current equipment, alternating current systems and in networks of transmission and distribution. Because of that these are designated as safety cables.

ESY

These earthing cables offer special characteristics with low weights, high flexibility to a wide temperature range and the behavior in high temperature. The protective sheath over conductor assures the essential function for protection against the mechanical and chemical stresses.

ESUY (H00V-D), high flexible

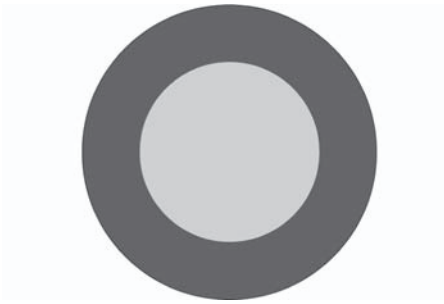
Part no.	Cross-section mm²	Cond. make-up n x wire Ø	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
28930	16	4200 x 0,07	8,3	194,0	230,0	6
28931	25	3192 x 0,1	9,5	280,0	335,0	4
28932	35	4480 x 0,1	11,2	415,0	475,0	2
28933	50	6383 x 0,1	13,2	585,0	670,0	1
28934	70	8918 x 0,1	15,6	820,0	905,0	2/0
28935	95	12100 x 0,1	17,4	1090,0	1220,0	3/0
28936	120	15300 x 0,1	19,8	1360,0	1505,0	4/0
28937	150	19152 x 0,1	23,4	1650,0	1940,0	300 kcmil
28938	185	23580 x 0,1	26,6	2150,0	2390,0	350 kcmil
28939	240	30600 x 0,1	30,2	2750,0	3090,0	500 kcmil

ESY, flexible

Part no.	Cross-section mm²	Cond. make-up n x wire Ø	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
28940	16	525 x 0,2	8,4	155,0	185,0	6
28941	25	798 x 0,2	9,8	240,0	270,0	4
28942	35	1120 x 0,2	11,4	336,0	390,0	2
28943	50	1617 x 0,2	13,8	480,0	575,0	1
28944	70	2254 x 0,2	16,4	672,0	810,0	2/0
28945	95	3087 x 0,2	18,2	912,0	1080,0	3/0
28946	120	3822 x 0,2	20,1	1152,0	1320,0	4/0
28947	150	4802 x 0,2	23,0	1440,0	1680,0	300 kcmil

Dimensions and specifications may be changed without prior notice. (RK01)

GALVANICABLE® high-current cable, high flexible and halogen-free





Technical data

- **Temperature range**
  flexing -40°C to +80°C
  fixed installation -50°C to +80°C
- **Nominal voltage**
  U_0/U 0,6/1 kV
- **Test voltage**
  3500 V
- **Insulation resistance**
  min. 20 MOhm/km
- **Minimum bending radius**
  15x cable Ø

Cable structure

- Bare copper, ultra-fine wire conductors acc. to DIN VDE 0295 cl.6 and IEC 60228 cl.6
- Extremely thick PUR wearing sheath
- Natural colour, smooth, glossy

Properties

- PUR wearing sheath: extremely abrasion resistant, halogen-free, resistant to UV, oil, hydrolysis and microbial attack
- Chemical resistance:
  PUR demonstrates significantly better chemical resistance when compared with other materials, e.g. rubber or PVC
- The extremely thick polyurethane sheath stands for a longer life

Application

This cable is employed as a highly-flexible high-current cathode cable for electroplating drum systems and as a wearing cable in the chemical industry. Special feature: Despite the extremely thick wearing sheath, the highly flexible conductor enables good contact when installing the pear push. Good flexibility is likewise ensured when the pear push comes into contact with the parts to be electroplated.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
700768	1 x 35	17,2	336,0	548,0	2
75497	1 x 50	19,0	480,0	686,0	1
75498	1 x 70	21,5	672,0	950,0	2/0
75499	1 x 95	24,0	912,0	1386,0	3/0

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
74749	1 x 120	27,0	1152,0	1520,0	4/0
700769	1 x 150	28,0	1440,0	2002,0	300 kcmil
700770	1 x 185	30,5	1776,0	2610,0	350 kcmil
700771	1 x 240	36,0	2304,0	3820,0	500 kcmil

Dimensions and specifications may be changed without prior notice.



Suitable accessories can be found in Chapter X.

- Core end sleeve - ADI
- Core end sleeve - ADU

H01N2-D / H01N2-E 100 V, VDE approved, welding cable



Technical data

- Harmonized welding cable with rubber sheath, according to DIN VDE 0285-525-2-81 / DIN EN 50525-2-81
- **Temperature range** flexing -25°C to +80°C fixed installation -40°C to +80°C
- **Admissible working temperature** at conductor +85°C
- **Nominal voltage** U_0/U 100/100 V
- **Test voltage** 1000 V
- **Minimum bending radius** H01N2-D 12x outer Ø H01N2-E 10x outer Ø

Cable structure

- Bare Cu- conductor, extra fine-wire to DIN VDE 0295, BS 6360, IEC 60228
- Separator over conductor
- Neoprene outer sheath, chlorinated rubber compound EM5
- Sheath colour black
- Without green-yellow marking

Properties

- Test according to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Oil resistant to DIN VDE 0473-811-404/ DIN EN 60811-404
- The cable also maintains its high flexibilty under the effect of ozone, light, oxygen, inert gas, oil or petrol

Note

- No. wires = Gauiding value; the number of individual wires are without obligation.
- Tinned conductor on request
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

For use between the welding generator and the hand-electrode and the workpiece. For use in the automobile industry, in shipbuilding, in transport and conveyor systems, tool making machinery, welding robots etc. These cables retain their high flexibility even under influence of ozone, light, oxygen, protective gases, oil and petrol. The robust construction makes these cables resistant to both to cold and the heat as well as to flames. They are suitable for use in open spaces and in dry and damp conditions.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

H01N2-D: Cables with standard flexibility

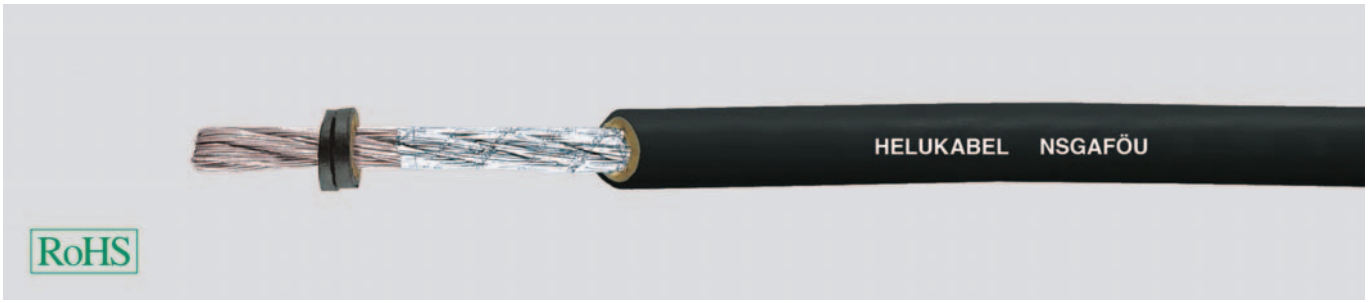
Part no.	No.cores x cross-sec. mm²	No.wires x single wire Ø mm	Sheat Nominal value mm	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
31001	1 x 10	320 x 0,2	2,0	7,7 - 9,7	96,0	135,0	8
31002	1 x 16	512 x 0,2	2,0	8,8 - 11,0	154,0	205,0	6
31003	1 x 25	800 x 0,2	2,0	10,1 - 12,7	240,0	302,0	4
31004	1 x 35	1120 x 0,2	2,0	11,4 - 14,2	336,0	420,0	2
31005	1 x 50	1600 x 0,2	2,2	13,2 - 16,5	480,0	586,0	1
31006	1 x 70	2240 x 0,2	2,4	15,3 - 19,2	672,0	798,0	2/0
31007	1 x 95	3024 x 0,2	2,6	17,1 - 21,4	912,0	1015,0	3/0
31008	1 x 120	614 x 0,5	2,8	19,2 - 24,0	1152,0	1310,0	4/0
31030	1 x 150	765 x 0,5	3,0	21,2 - 26,4	1440,0	1620,0	300 kcmil
31031	1 x 185	944 x 0,5	3,2	23,1 - 28,9	1776,0	1916,0	350 kcmil
31009	1 x 240	1225 x 0,5	3,4	25,0 - 29,5	2304,0	2540,0	500 kcmil

H01N2-E: Cables with extreme high flexibility

Part no.	No.cores x cross-sec. mm²	No.wires x single wire Ø mm	Sheat Nominal value mm	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
31032	1 x 10	566 x 0,15	1,2	6,2 - 7,8	96,0	119,0	8
31033	1 x 16	903 x 0,15	1,2	7,3 - 9,1	154,0	181,0	6
31034	1 x 25	1407 x 0,15	1,2	8,6 - 10,8	240,0	270,0	4
31035	1 x 35	1974 x 0,15	1,2	9,8 - 12,3	336,0	363,0	2
31036	1 x 50	2830 x 0,15	1,5	11,9 - 14,8	480,0	528,0	1
31037	1 x 70	3952 x 0,15	1,5	13,6 - 17,0	672,0	716,0	2/0
31038	1 x 95	5370 x 0,15	1,8	15,6 - 19,5	912,0	1012,0	3/0
31039	1 x 120	3819 x 0,2	1,8	17,2 - 21,6	1152,0	1190,0	4/0
31019	1 x 150	4788 x 0,2	1,8	18,8 - 23,5	1440,0	1305,0	300 kcmil
31020	1 x 185	5852 x 0,2	1,8	20,4 - 25,5	1776,0	1511,0	350 kcmil

Dimensions and specifications may be changed without prior notice. (RK01)

NSGAFÖU 3kV Special Rubber-Insulated Cable, VDE approved, short-circuit up to 1000 V



Technical data

- Special rubber-insulated single core cables to DIN VDE 0250 part 602
- **Temperature range**
  flexing -25°C to +80°C
  fixed installation -40°C to +80°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** U_0/U 1,8/3 kV
- Max. permissible **operating voltage** in three and one-phase alternating current operation U_0/U 2,1/3,6 kV, for direct current operation U_0/U 2,7/5,4 kV
- **Test voltage** 6 kV
- **Minimum bending radius**
  flexing 10x outer Ø
  fixed installation 6x outer Ø

Cable structure

- Tinned copper, fine wire conductors, bunch stranded to DIN VDE 0295 cl.5 and IEC 60228 cl.5
- EPR-insulation, compound type 3GI3 to DIN VDE 0207 part 20
- Outer casing: Polychloroprene 5GM3 acc. to DIN VDE 0207 part 21
- Colour black

Properties

- Oil resistant
  Test to DIN VDE 0473-811-404/ DIN EN 60811-404
- Behaviour in fire
  to DIN VDE 0482-332-1-2
  DIN EN 60332-2-1, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Considered as being short-circuit safe and inherently earth-fault-proof are those operating materials and conducting assemblies where because of suitable measures and/or means applied, neither a short circuit nor a short to ground is to be expected under operating conditions which are in accordance with those specified for the intended application.

Note

- Version in 6 kV available on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

K

Application

Particularly suitable for protection against short circuits in laying and for inherently earth-fault-proof routing in rail vehicles and omnibuses. Also suitable for laying in dry environments.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
38501	1 x 1,5	7,0	14,4	62,0	16
38502	1 x 2,5	7,5	24,0	76,0	14
38503	1 x 4	9,0	38,0	95,0	12
38504	1 x 6	9,5	58,0	140,0	10
38505	1 x 10	11,0	96,0	190,0	8
38506	1 x 16	13,0	154,0	270,0	6
38507	1 x 25	15,0	240,0	410,0	4
38508	1 x 35	16,5	336,0	490,0	2

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
38509	1 x 50	18,0	480,0	650,0	1
38510	1 x 70	20,5	672,0	900,0	2/0
38511	1 x 95	24,0	912,0	1200,0	3/0
38513	1 x 120	26,0	1152,0	1450,0	4/0
38514	1 x 150	28,0	1440,0	1800,0	300 kcmil
38512	1 x 185	31,0	1776,0	2200,0	350 kcmil
38515	1 x 240	34,5	2304,0	2650,0	500 kcmil
38516	1 x 300	38,0	2880,0	3250,0	600 kcmil

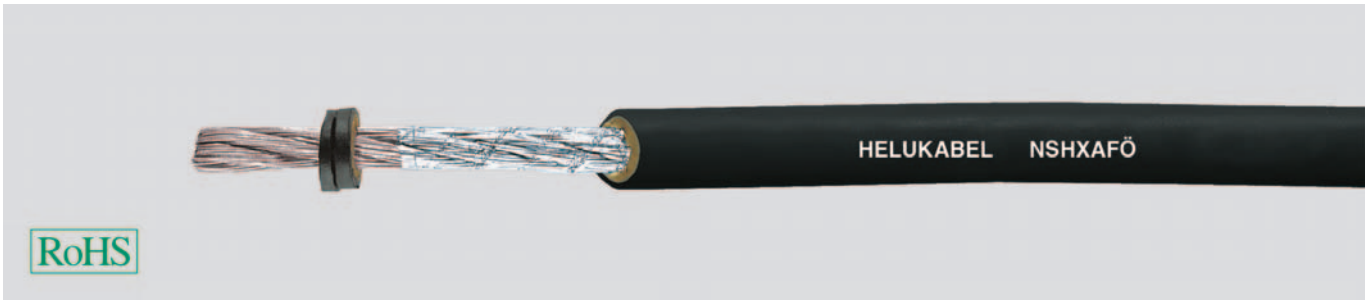
Dimensions and specifications may be changed without prior notice. (RK01)



Suitable accessories can be found in Chapter X.

- Core end sleeve - ADI
- Core end sleeve - ADU

NSHXAFö 3kV halogen-free Special Rubber-Insulated Cable, VDE approved, short-circuit up to 1000 V



Technical data

- Special rubber core cable acc. to E DIN VDE 0250 part 606
- **Temperature range** flexing -25°C to +70°C fixed installation -40°C to +90°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** U_0/U 1,8/3 kV
- Highest permissible **operating voltage** in three-phase and one-phase a.c. systems U_0/U 2,1/3,6 kV in d.c. systems U_0/U 2,7/5,4 kV
- **Test voltage** 6 kV
- **Minimum bending radius** flexing 10x outer Ø fixed 6x outer Ø

Cable structure

- Tinned copper conductor, fine wire to DIN VDE 0295 cl.5, BS 6360 cl.5 and/or IEC 60228 cl.5
- EPR-insulation, 3GI3 acc. to DIN VDE 0207 part 20
- Outer casing: halogen-free polymer compound HM3 acc. to DIN VDE 0207 part 24
- Colour black

Properties

Tests

- Corrosiveness of corrosive gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 607542 (equivalent DIN VDE 0472 part 813)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (equivalent DIN VDE 0472 part 816)
- Oil resistant acc. to DIN VDE 0473-811-404, DIN EN 60811-404
- Behaviour in fire to DIN VDE 0482-332-1-2 DIN EN 60332-2-1, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Particularly suitable for protection against short circuits in laying and for inherently earth-fault-proof routing in rail vehicles and omnibuses. Also suitable for laying in dry environments. In switching units and distributors, they are considered to be short circuit and inherently earth proof to 1000 V. Note: Considered as being short-circuit safe and inherently earth-fault-proof are those operating materials and conducting assemblies where because of suitable measures and/or means applied, neither a short circuit nor a short to ground is to be expected under operating conditions which are in accordance with those specified for the intended application.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
38517	1 x 1,5	5,9	14,4	62,0	16
38518	1 x 2,5	6,2	24,0	76,0	14
38519	1 x 4	6,8	38,0	95,0	12
38520	1 x 6	7,4	58,0	140,0	10
38521	1 x 10	8,7	96,0	190,0	8
38522	1 x 16	9,5	154,0	270,0	6
38523	1 x 25	11,9	240,0	410,0	4
38524	1 x 35	13,1	336,0	490,0	2

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
38525	1 x 50	14,5	480,0	650,0	1
38526	1 x 70	16,3	672,0	900,0	4
38527	1 x 95	19,2	912,0	1200,0	3/0
38528	1 x 120	21,0	1152,0	1450,0	4/0
38529	1 x 150	22,8	1440,0	1800,0	300 kcmil
38530	1 x 185	24,8	1776,0	2200,0	350 kcmil
38531	1 x 240	27,1	2304,0	2650,0	500 kcmil
38532	1 x 300	30,3	2880,0	3250,0	600 kcmil

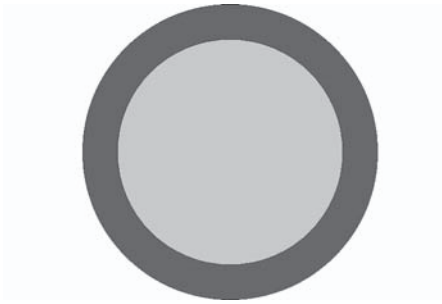
Dimensions and specifications may be changed without prior notice. (RK01)

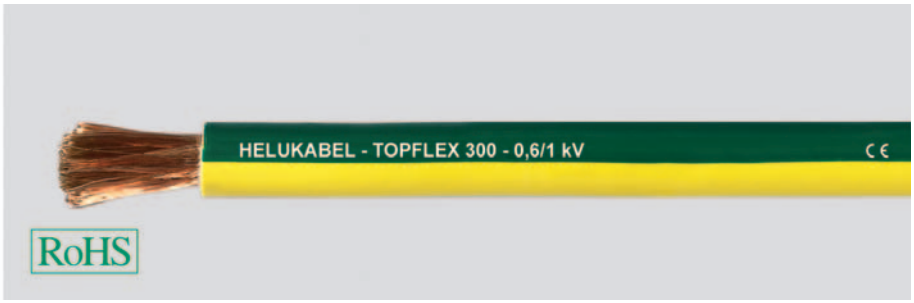


Suitable accessories can be found in Chapter X.

- Core end sleeve - ADI
- Core end sleeve - ADU

TOPFLEX® 300 high flexible PVC single core, 0,6/1kV for drag chain and free move application





Technical data

- Special PVC single-core cable with oil-resistant insulation based on DIN VDE 0285-525-2-31/DIN EN 50525-2-31
- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage**
  U_0/U 600/1000 V
- **A.C. test voltage**, 50 Hz
  3000 V
- **Insulation resistance**
  min. 20 MOhm/km
- **Minimum bending radius**
  for flexible installation
  7,5 cable Ø

Cable structure

- Bare copper, extra fine wire conductor to DIN VDE 0295 cl.6 and IEC 60228 cl.6
- Oil-resistant special PVC insulation
- Colour see table, or as desired
- If this cable is to be double-insulated, then its external diameter and weight must be adapted.
- Caution with existing cables.

Properties

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Chemical resistance see table Technical Information

Application

Thanks to their outstanding alternating bending stress characteristics, these cables are ideally suited for use in drag chains, and also for use in handling devices, robots, and nearly any area requiring flexible used and free motion. Due to its resistance to mineral oils these cables are well suited for use in mechanical engineering, tool making, and systems engineering, and in steel mills and rolling mills in particularly critical areas. Suitable for installation in dry, damp and wet environments. With the black sheath, can also be used outdoors.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

K

TOPFLEX® 300 black

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
79623	1 x 2,5	4,2	24,0	42,0	14
79624	1 x 4	5,1	38,4	58,0	12
79625	1 x 6	6,0	57,6	85,0	10
79626	1 x 10	7,4	96,0	130,0	8
75431	1 x 16	8,8	154,0	210,0	6
75432	1 x 25	10,7	240,0	300,0	4
75433	1 x 35	12,1	336,0	420,0	2
70519	1 x 50	14,0	480,0	580,0	1
75434	1 x 70	16,3	672,0	780,0	2/0
73714	1 x 95	18,3	912,0	1010,0	3/0
75435	1 x 120	20,0	1152,0	1200,0	4/0
75436	1 x 150	23,0	1440,0	1600,0	300 kcmil
72872	1 x 185	24,8	1776,0	2030,0	350 kcmil
75437	1 x 240	28,7	2304,0	2600,0	500 kcmil

TOPFLEX® 300 green-yellow

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
79627	1 G 2,5	4,2	24,0	42,0	14
79628	1 G 4	5,1	38,4	58,0	12
79629	1 G 6	6,0	57,6	85,0	10
79630	1 G 10	7,4	96,0	130,0	8
75438	1 G 16	8,8	154,0	210,0	6
75439	1 G 25	10,7	240,0	300,0	4
75440	1 G 35	12,1	336,0	420,0	2
70536	1 G 50	14,0	480,0	580,0	1
75441	1 G 70	16,3	672,0	780,0	2/0
75442	1 G 95	18,3	912,0	1010,0	3/0
73885	1 G 120	20,0	1152,0	1200,0	4/0
75443	1 G 150	23,0	1440,0	1600,0	300 kcmil
75444	1 G 185	24,8	1776,0	2030,0	350 kcmil
75445	1 G 240	28,7	2304,0	2600,0	500 kcmil

TOPFLEX® 300 red

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
79631	1 x 2,5	4,2	24,0	42,0	14
79632	1 x 4	5,1	38,4	58,0	12
79633	1 x 6	6,0	57,6	85,0	10
79634	1 x 10	7,4	96,0	130,0	8
78106	1 x 16	8,8	154,0	210,0	6
78107	1 x 25	10,7	240,0	300,0	4
78108	1 x 35	12,1	336,0	420,0	2
70518	1 x 50	14,0	480,0	580,0	1
78109	1 x 70	16,3	672,0	780,0	2/0
78110	1 x 95	18,3	912,0	1010,0	3/0
78111	1 x 120	20,0	1152,0	1200,0	4/0

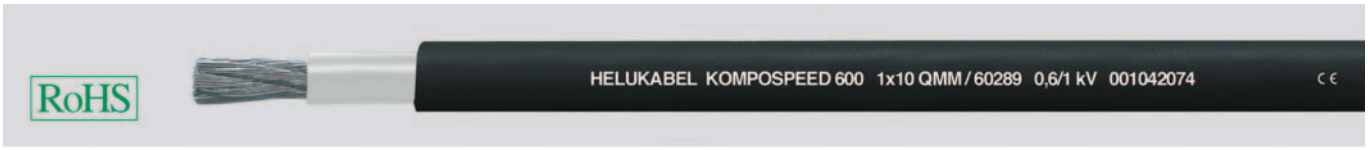
TOPFLEX® 300 blue

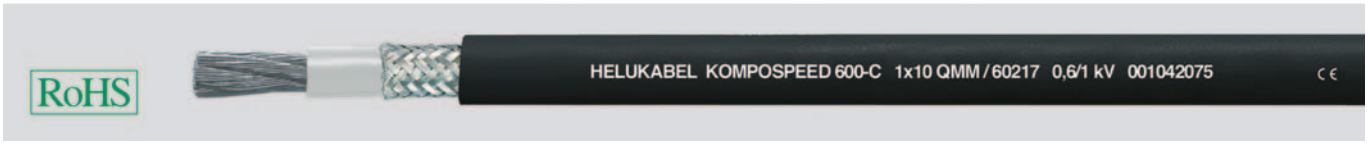
Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
79635	1 x 2,5	4,2	24,0	42,0	14
79636	1 x 4	5,1	38,4	58,0	12
79637	1 x 6	6,0	57,6	85,0	10
79638	1 x 10	7,4	96,0	130,0	8
78112	1 x 16	8,8	154,0	210,0	6
78113	1 x 25	10,7	240,0	300,0	4
78114	1 x 35	12,1	336,0	420,0	2
78115	1 x 50	14,0	480,0	580,0	1
78116	1 x 70	16,3	672,0	780,0	2/0
78117	1 x 95	18,3	912,0	1010,0	3/0
73884	1 x 120	20,0	1152,0	1200,0	4/0

Dimensions and specifications may be changed without prior notice.

KOMPOSPEED® 600 / 600-C 0,6/1kV, halogen-free, special

single cores for drag chains, EMC-preferred type





Technical data

- Special drag chain single cores for high mechanical stress, adapted to DIN VDE 0285-525-2-31/ DIN EN 50525-2-31
- **Temperature range**
  flexing -30°C to +90°C
  fixed installation -40°C to +100°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** U_0/U 600/1000 V
- **Test voltage** 3000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius**
  KOMPOSPEED® 600
  flexing installation 5x outer Ø
  fixed installation 3x outer Ø
  KOMPOSPEED® 600-C
  flexing installation 7,5x outer Ø
  fixed installation 4x outer Ø

Cable structure

KOMPOSPEED® 600

- Tinned copper, extra fine wire conductors, bunch stranded to DIN VDE 0295 cl.6, col. 4, BS 6360 cl.6 and IEC 60228 cl.6
- Core insulation of special thermoplastic polymer, natural coloured
- Outer sheath of special polyolefin black (RAL 9005)

KOMPOSPEED® 600-C

- Structure as above up to core insulation
- Screen of tinned cu-braid, coverage approx. 85%
- Outer sheath of special polyolefin black (RAL 9005)

Properties

- Very good oil resistant
- Halogen free
- Abrasion resistant
- **Resistant to**
  Coolants
  Microbes
  UV-radiation
  Weather
  Hydrofluoric acid
  Hydrochloric acid
  Diluted sulfuric acid
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

The special single cores are used for permanent flexible applications in machineries, machine tools, composting appliances and sewage-treatment plants, animal stalls and greenhouses and used for permanent flexible application for movable automated machinery parts and multi-shift operation as well as in open air. These cables are installed for flexible use with free movements without tensile stress or forced movements and suitable for application in drag chains. The selected tinned copper wire conductor and tinned copper wire braid permit the installation in aggressive environments as well as hydrogen sulfide, ammonia and sulfur dioxide.
For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

KOMPOSPEED® 600-C

These screened cables are particularly suitable for the interference-free trans mission in instrumentation and control engineering applications (electromagnetic compatibillity).
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

KOMPOSPEED® 600

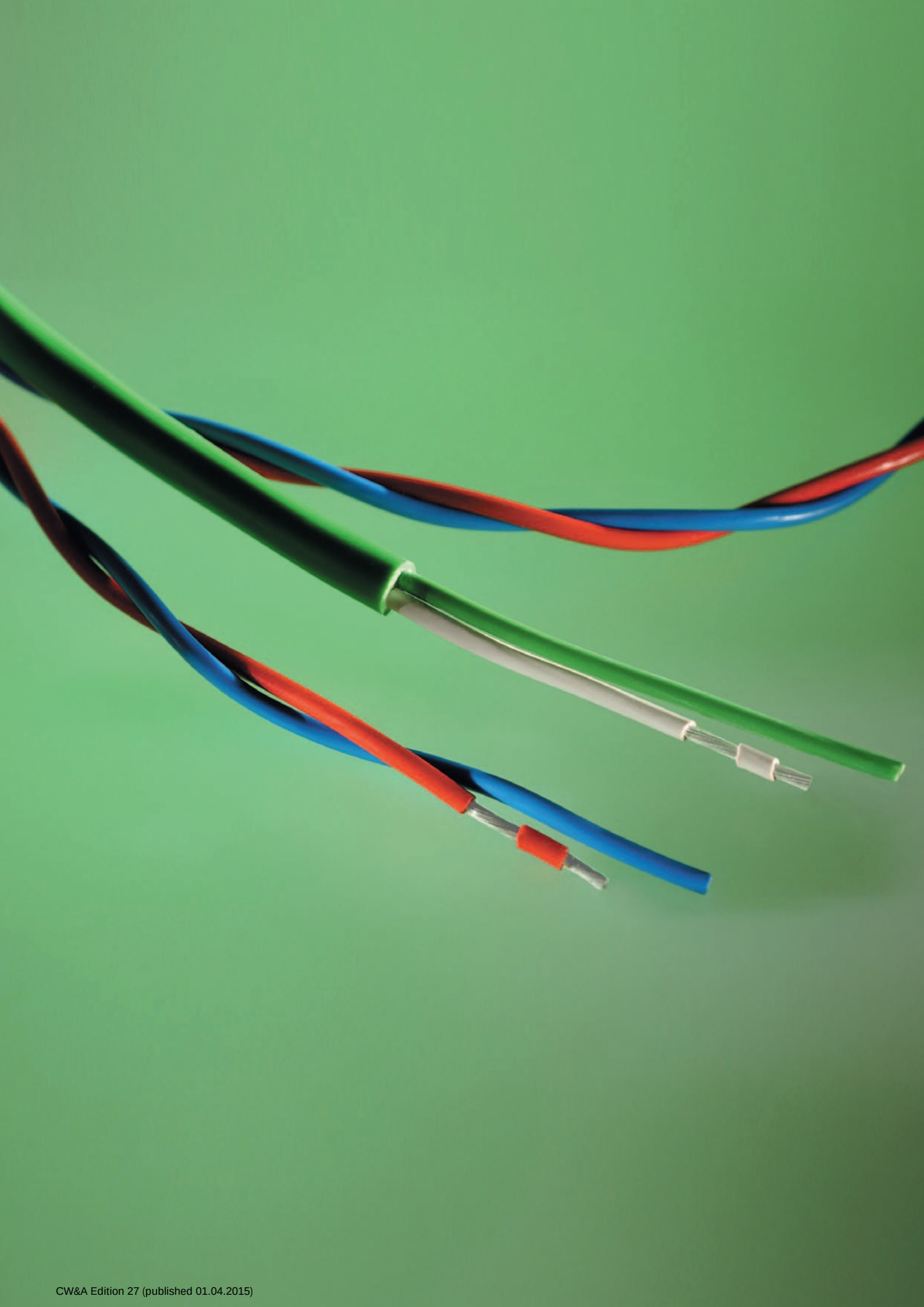
Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
60288	1 x 6	6,5	58,0	83,0	10
60289	1 x 10	8,4	96,0	132,0	8
60290	1 x 16	9,5	154,0	188,0	6
60291	1 x 25	11,2	240,0	281,0	4
60292	1 x 35	13,0	336,0	404,0	2
60293	1 x 50	15,4	480,0	531,0	1
60294	1 x 70	17,2	672,0	729,0	2/0
60295	1 x 95	20,0	912,0	1049,0	3/0
60296	1 x 120	21,0	1152,0	1220,0	4/0
60297	1 x 150	23,8	1440,0	1510,0	300 kcmil
60298	1 x 185	26,2	1776,0	1932,0	350 kcmil

KOMPOSPEED® 600-C

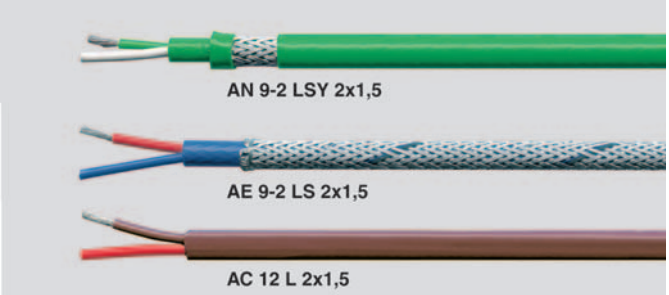
Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
60216	1 x 6	7,3	71,0	101,0	10
60217	1 x 10	9,1	122,0	168,0	8
60218	1 x 16	10,1	180,0	217,0	6
60219	1 x 25	12,2	282,0	342,0	4
60220	1 x 35	14,2	386,0	468,0	2
60221	1 x 50	17,0	535,0	584,0	1
60222	1 x 70	19,2	750,0	822,0	2/0
60223	1 x 95	21,8	1004,0	1190,0	3/0
60224	1 x 120	23,8	1260,0	1400,0	4/0
60225	1 x 150	26,0	1570,0	1710,0	300 kcmil
60226	1 x 185	28,8	1911,0	2021,0	350 kcmil
62500	1 x 240	34,0	2470,0	2850,0	500 kcmil

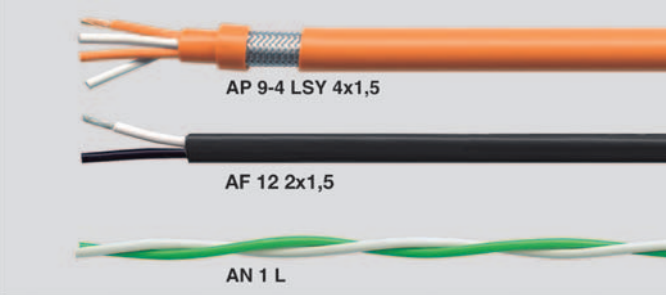
Dimensions and specifications may be changed without prior notice. (RK01)


DEMAG
0,25t



COMPENSATING CABLES





Technical data

- Special insulation of PVC, silicone, fluorpolymers, or glass fiber depending on the requirement
- **Conductor resistance** in accordance with DIN 43713

Fe:	0.080 ohm/m
CuNi:	0.327 ohm/m
NiCr:	0.07 ohm/m
Ni:	0.3 ohm/m
PtRh:	0.023 ohm/m
Pt:	0.041 ohm/m

– **Test voltages** for PVC, fluorpolymers and silicone-cables

core/core	500 V
core/screen	500 V
screen/screen	500 V

– **Test voltage** for glass-fiber lines

core/core	500 V

– **Insulation resistance**
for PVC, silicone and fluoropolymers
min. 10 MOhm x km

– **Operating capacity**
(approx. value) – nF/km

	Stranded 1.5 mm²	Solid 1.5 mm²	Stranded 0.22 mm²
•PVC			
core	135	138	115
pair			
screened	240	245	180
•FEP			
core	60	60	45
pair			
screened	120	120	70
•Silicone			
core	80	70	45

– **Inductivity** (guide value)
for PVC, fluorpolymers and silicone versions < 1 mH/km

– **Corrosiveness of fire gases (halogen–free)**

• **Silicone + glass–fiber**
test in accordance with VDE 0472 Part 813 and IEC 60754-1

• No development of corrosive gases

Fire behavior

Self-extinguishing and flame-retardant in accordance with VDE 0482 322-1-2, DIN EN 60332-1-2/IEC 60332-1 (corresponds to DIN VDE 0472 Part 804 test type B)

Structure

- Conductors made of special materials
- Conductor type: Fe-Cu Ni, SoNiCr-SoNi, SoPtRh-SoPt, Cu-CuNi
- Insulation of PVC, silicone, fluorpolymers or glass-fiber
- Core coding: Single color (see Color table)
- Coding of the pairs, starting at 2 pairs the individual pairs are marked with imprinted numbering
- Jacket material of PVC, silicone, fluorpolymers or glass-fiber braid
- Braided screen of galvanized steel wire (type SY) or Cu-braid (type CY)

Measuring

For temperature measuring, the temperature-dependent characteristics of materials are taken into consideration, for example, the expansion thermometers or thermocouples, etc. Temperature measuring devices with a thermocouple as transducer usually consist of thermocouple, the connecting line from the connection point to the reference junction, a reference junction with a known temperature and a voltage measuring device.
The connecting line between the thermocouple and the reference junction must have the same thermo-electric properties as the thermocouple itself. The temperature differential is measured between the measuring point and the reference junction. Tolerance of the meter resistances ±10%.

Hazardous areas

The compensating cables for thermocouples with plastic insulation can be imprinted with longitudinal colored stripes depending on the type of the thermocouple, as follows:
Cu/Cu-Ni = brown, Fe/Cu-Ni = dark blue, NiCr/Ni = green, Pt-Rh/Pt = white
In the case of compensating cables for thermocouples with mineral insulation or with metal braiding, for color coding of the intrinsically safe property, a light blue band of sufficient width must also be woven in.

Use

For instrumentation and control technology, compensating cables (also referred to as compensation cables) are required for precise temperature measurements. They are used as a thermo-electric extension from the thermocouple to the measurement device.
The compensating cable consists of a positive core and a negative core, that generate the same thermo-electric voltage at connector head temperatures up to +200°C, as the thermocouple in accordance with DIN 43710.

Materials

(Compensating wires and strands) There is a distinction between original materials and substitutes.

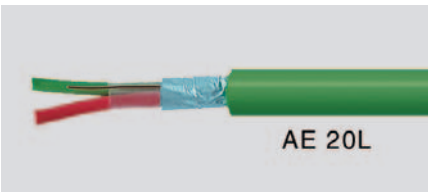
- Compensating wires and strands of **original materials** are made of the same material as the associated thermocouple and they are referred to as thermocable or thermocouple cable.
- Compensating wires and strands of **substitute materials** that consist of alloys and which are not identical to the associated thermocouple are called compensating cables.
  - **Substitute materials** are used for the Type K and Type N thermocouples
  - **Precious metal thermocouples** Type R, Type S, Type B consist of thermal materials.

Thermocouple cables

Thermocouple cables are made of the same element material as the thermocouple and are tested to the same temperatures. We offer thermocouple cables on customer request only.

Note

Thermal materials consist of very expensive materials while the substitutes are significantly cheaper.



L

COLOR CODING AND TEMPERATURE RANGES FOR THERMAL CABLES & COMPENSATING CABLES

Code letter of the thermocouple	Material combination		NF C 42-324		BS 4937	
	+ (plus)	- (minus)	Identification THL	AGL	Identification THL	AGL
T	**Cu**	**Cu Ni**	**TX** -25°C to +100°C	**TC** -25°C to +100°C	**TX** 0°C to +100°C	
U	**Cu**	**Cu Ni**				
J	**Fe**	**Cu Ni**	**JX** -25°C to +200°C	**JC** -25°C to +250°C	**JX** 0°C to +200°C	
L	**Fe**	**Cu Ni**				
E	**Ni Cr**	**Cu Ni**	**EX** -25°C to +200°C	**EC** -25°C to +250°C	**EX** 0°C to +200°C	
	Ni Cr	**Ni**	**KX** -25°C to +200°C	**KC** -25°C to +200°C	**KX** 0°C to +200°C	
K	**Ni Cr**	**Ni**		**WC** 0°C to +100°C		
	Ni Cr	**Ni**		**VC** 0°C to +100°C		**VX** 0°C to +100°C
N	**Ni Cr Si**	**Ni Si**				
R **S**	**PtRh 13** **PtRh 10**	**Pt** **Pt**		**SC** 0°C to +200°C		**SX** 0°C to +200°C
B	**PtRh 30**	**PtRh 6**		**BC** 0°C to +100°C		

The highest application temperature of the insulating materials or the application temperature range of the conductor material limits the application temperature range of the cable. The lower value is valid.

As a rule, intrinsically safe cables have a blue jacket color and an identification stripe assigned to the element.

ANSI MC 96.1		DIN IEC 584		DIN 43710*	
Identification		Identification		Identification	
THL	AGL	THL	AGL	THL	AGL
TX 0°C to +100°C		**TX** -25°C to +100°C			
				UX** 0°C to +200°C	
JX 0°C to +200°C		**JX**** -25°C to +200°C			
				LX** 0°C to +200°C	
EX 0°C to +200°C		**EX** -25°C to +200°C			
KX 0°C to +200°C		**KX** -25°C to +200°C			
			KCA** 0°C to +150°C		
			KCB 0°C to +100°C		
		NX -25°C to +200°C	**NC** 0°C to +150°C		
	SX 0°C to +200°C		**RCA/SCA** 0°C to +100°C **RCB/SCB**** 0°C to +200°C		
	BX 0°C to +100°C	(According to DIN 43710/85)	**BC** 0°C to +100°C		

THL = Thermocouple wire
AGL = Compensating cable

Example: KCA Compensating cable KCA (plus) ≙ positive core for AGL KC
KCA (minus) ≙ negative core for AGL KC

*) DIN 43710 was withdrawn in April 1994. Thus the element types "U" and "L" are no longer standardized.

** standard type

L

COMPENSATING CABLES

Materials for compensating cables

Standards	Element type			Material of the compensating cable		
	Type	Plus pole (+)	Minus pole (-)	Code	Plus pole (+)	Minus pole (-)
DIN 43710	U	Cu	CuNi	UX	Cu	CuNi
	L	Fe	CuNi	LX	Fe	CuNi
DIN IEC 584	T	Cu	CuNi	TX	Cu	CuNi
	E	NiCr	CuNi	EX	NiCr	CuNi
	J	Fe	CuNi	JX	Fe	CuNi
	K	NiCr	Ni	KX	NiCr	Ni
	K	NiCr	Ni	KC 1	Fe	CuNi
	K	NiCr	Ni	KC 2	Cu	CuNi
	R/S	Pt 13/10 Rh	Pt	RC A/SC A	Cu	CuNi
	R/S	Pt 13/10 Rh	Pt	RC B/SC B	Cu	CuNi
NF	T	Cu	CuNi	TX	Cu	CuNi
	E	NiCr	CuNi	EX	NiCr	CuNi
	J	Fe	CuNi	JX	Fe	CuNi
	K	NiCr	Ni	KX	NiCr	Ni
	K	NiCr	Ni	VC	Cu	CuNi
	K	NiCr	Ni	WC	Fe	CuNi
	R/S	Pt 13/10 Rh	Pt	RC/SC	Cu	CuNi
	B	Pt 30 Rh	Pt 6 Rh	BC	Cu-ALY	Cu
ANSI	T	Cu	CuNi	TX	Cu	CuNi
	E	NiCr	CuNi	EX	NiCr	CuNi
	J	Fe	CuNi	JX	Fe	CuNi
	K	NiCr	Ni	KX	NiCr	Ni
	R/S	Pt 13/10 Rh	Pt	RX/SX	Cu	CuNi
	B	Pt 30 Rh	Pt 6 Rh	BX	Cu	Cu

Properties of the wires for thermocouples and compensating cables

Materials	Main components approx. %				Density at 20°C	Spec. resistance at 20°C	Resistance value (guide value) in ohm/m	
	Cu	Ni	Mn	Other	$\frac{g}{cm^3}$	µohm · cm	mm ø 0.20	mm ø 1.38
CuNi	55	44	1	-	8.85	49	15.60	0.328
SoNi	51	45	2	Fe2	8.85	51	16.26	0.341
NiCr	-	Rest	-	Cr 10	8.7	72	22.90	0.481
Ni	-	95	MnAlSi	5	8.55	27	8.59	0.180
SoPt	95	3	2	-	8.9	12	3.82	0.0802
ECu	In accordance with DIN 46 431				8.9	1.7	0.54	0.011
Fe	-	-	-	-	7.85	12	3.82	0.08
BPX	97	-	3	-	8.9	12.5	3.98	0.084

COMPENSATING CABLES

Part no.	Thermocouple element material in accordance with DIN 43713	Thermocouple type	Type	Core insulation	Jacket/ armoring jacket	Outer ø approx. mm	Form	Temperature range of insulation °C	Installation temperature range °C	min. bending radius x cable ø	Weight approx. kg/km
Single-pair: 2 x 1.5 mm² (L = stranded wire, conductor make-up 48 x 0.20 mm; M = solid conductor, conductor ø 1.38 mm)											
48001	FE-CuNi (Ko)	L	AE 1 L stranded	PVC	-	5.4	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	40
48002	SoNiCr-SoNi	K	AN 1 L stranded	PVC	-	5.4	round			7.5	40
48003	SoPtRh-SoPt	S	AP 1 L stranded	PVC	-	5.4	round			7.5	40
48230	Cu-CuNi (Ko)	U	AC 1 L stranded	PVC	-	5.4	round			7.5	40
48478	Fe-CuNi	J	AF 1 L stranded	PVC	-	5.4	round			7.5	40
48004	Fe-CuNi (Ko)	L	AE 1 M stranded	PVC	-	5.4	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	10	40
48005	SoNiCr-SoNi	K	AN 1 M stranded	PVC	-	5.4	round			10	40
48006	SoPtRh-SoPt	S	AP 1 M stranded	PVC	-	5.4	round			10	40
48231	Cu-CuNi (Ko)	U	AC 1 M stranded	PVC	-	5.4	round			10	40
48007	Fe-CuNi (Ko)	L	AE 1 L-SIL stranded	silicone	-	5.4	round	-60°C to +180°C	stationary -25°C to +180°C flexing -25°C to +180°C (short time +200°C)	7.5	40
48008	SoNiCr-SoNi	K	AN 1 L-SIL stranded	silicone	-	5.4	round			7.5	40
48009	SoPtRh-SoPt	S	AP 1 L-SIL stranded	silicone	-	5.4	round			7.5	40
48232	Cu-CuNi (Ko)	U	AC 1 L-SIL stranded	silicone	-	5.4	round			7.5	40
48233	Fe-CuNi (Ko)	L	AE 2 M-SIL stranded	silicone	Textile tape/ lead sheath/ tin. steel wire braid	7.8	round	-60°C to +180°C	stationary -25°C to +180°C flexing -25°C to +180°C (short time +200°C	15	248
48234	SoNiCr-SoNi	K	AN 2 M-SIL stranded	silicone		7.8	round			15	248
48235	SoPtRh-SoPt	S	AP 2 M-SIL stranded	silicone		7.8	round			15	248
48236	Cu-CuNi (Ko)	U	AC 2 M-SIL stranded	silicone		7.8	round			15	248
48010	Fe-CuNi (Ko)	L	AE 3 L parallel	glass-fiber	glass-fiber braid	5.0x7.2	oval	-60°C to +200°C	stationary -25°C to +200°C flexing -25°C to +200°C	7.5	64
48011	SoNiCr-SoNi	K	AN 3 L parallel	glass-fiber		5.0x7.2	oval			7.5	64
48012	SoPtRh-SoPt	S	AP 3 L parallel	glass-fiber		5.0x7.2	oval			7.5	64
48237	Cu-CuNi (Ko)	U	AC 3 L parallel	glass-fiber		5.0x7.2	oval			7.5	64
48238	Fe-CuNi (Ko)	L	AE 3 Ln-SIL parallel	silicone	silicone	5.2x7.4	oval	-60°C to +180°C	stationary -25°C to +180°C flexing -25°C to +180°C (short time +200°C)	7.5	62
48239	SoNiCr-SoNi	K	AN 3 Ln-SIL parallel	silicone		5.2x7.4	oval			7.5	62
48240	SoPtRh-SoPt	S	AP 3 Ln-SIL parallel	silicone		5.2x7.4	oval			7.5	62
48241	Cu-CuNi (Ko)	U	AC 3 Ln-SIL parallel	silicone		5.2x7.4	oval			7.5	62
48013	Fe-CuNi (Ko)	L	AE 4 L parallel	glass-fiber	Glass-fiber braid/ galv. steel wire braid	5.8x8.0	oval	-60°C to +200°C	stationary -25°C to +200°C flexing -25°C to +200°C	7.5	87
48014	SoNiCr-SoNi	K	AN 4 L parallel	glass-fiber		5.8x8.0	oval			7.5	87
48015	SoPtRh-SoPt	S	AP 4 L parallel	glass-fiber		5.8x8.0	oval			7.5	87
48242	Cu-CuNi (Ko)	U	AC 4 L parallel	glass-fiber		5.8x8.0	oval			7.5	87
48016	Fe-CuNi (Ko)	L	AE 4 Ln-SIL	silicone	silicone/ galv. steel wire braid	6.0x8.2	oval	-60°C to +180°C	stationary -25°C to +180°C flexing -25°C to +180°C (short time +200°C)	7.5	85
48017	SoNiCr-SoNi	K	AN 4 Ln-SIL	silicone		6.0x8.2	oval			7.5	85
48018	SoPtRh-SoPt	S	AP 4 Ln-SIL	silicone		6.0x8.2	oval			7.5	85
48243	Cu-CuNi (Ko)	U	AC 4 Ln-SIL	silicone		6.0x8.2	oval			7.5	85
48244	Fe-CuNi (Ko)	L	AE 5 L	PVC	PETP tape/ galv. Cu-round wire braid/ PVC jacket	8.1	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	93
48245	SoNiCr-SoNi	K	AN 5 L	PVC		8.1	round			7.5	93
48246	SoPtRh-SoPt	S	AP 5 L	PVC		8.1	round			7.5	93
48247	Cu-CuNi (Ko)	U	AC 5 L	PVC		8.1	round			7.5	93
48248	Fe-CuNi (Ko)	L	AE 6 L-SIL	silicone	PETP tape/ bl. Cu-ground wire 0.5 mm ø / Alu tape/silicone	8.0	round	-60°C to +180°C	stationary -25°C to +180°C flexing -25°C to +180°C (short time +200°C)	7.5	94
48249	SoNiCr-SoNi	K	AN 6 L-SIL	silicone		8.0	round			7.5	94
48250	SoPtRh-SoPt	S	AP 6 L-SIL	silicone		8.0	round			7.5	94
48251	Cu-CuNi (Ko)	U	AC 6 L-SIL	silicone		8.0	round			7.5	94
48252	Fe-CuNi (Ko)	L	AE 6 M-SIL	silicone	PETP tape/ bl. Cu-ground wire 0.5 mm ø / Alu tape/silicone	7.8	round	-60°C to +180°C	stationary -25°C to +180°C flexing -25°C to +180°C (short time +200°C)	12	92
48253	SoNiCr-SoNi	K	AN 6 M-SIL	silicone		7.8	round			12	92
48254	SoPtRh-SoPt	S	AP 6 M-SIL	silicone		7.8	round			12	92
48255	Cu-CuNi (Ko)	U	AC 6 M-SIL	silicone		7.8	round			12	92
48019	Fe-CuNi (Ko)	L	AE 7 L parallel	PVC	glass-fiber	5.5x8.2	oval	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	60
48020	SoNiCr-SoNi	K	AN 7 L parallel	PVC		5.5x8.2	oval			7.5	60
48021	SoPtRh-SoPt	S	AP 7 L parallel	PVC		5.5x8.2	oval			7.5	60
48256	Cu-CuNi (Ko)	U	AC 7 L parallel	PVC		5.5x8.2	oval			7.5	60
48022	Fe-CuNi (Ko)	L	AE 8 L	PVC	Glass-fiber/ galv. steel wire braid	6.9x9.0	oval	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	82
48023	SoNiCr-SoNi	K	AN 8 L	PVC		6.9x9.0	oval			7.5	82
48024	SoPtRh-SoPt	S	AP 8 L	PVC		6.9x9.0	oval			7.5	82
48257	Cu-CuNi (Ko)	U	AC 8 L	PVC		6.9x9.0	oval			7.5	82
48025	Fe-CuNi (Ko)	L	AE 9 L	PVC	PVC	7.0	round	-10°C to +80°	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	79
48026	SoNiCr-SoNi	K	AN 9 L	PVC		7.0	round			7.5	79
48027	SoPtRh-SoPt	S	AP 9 L	PVC		7.0	round			7.5	79
48258	Cu-CuNi (Ko)	U	AC 9 L	PVC		7.0	round			7.5	79
48479	Fe-CuNi	J	AF 9 L	PVC		7.0	round			7.5	79
48028	Fe-CuNi (Ko)	L	AE 9-2 LS	PVC	PVC/galv. steel wire braid	7.8	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	108
48029	SoNiCr-SoNi	K	AN 9-2 LS	PVC		7.8	round			7.5	108
48030	SoPtRh-SoPt	S	AP 9-2 LS	PVC		7.8	round			7.5	108
48259	Cu-CuNi (Ko)	U	AC 9-2 LS	PVC		7.8	round			7.5	108
48480	Fe-CuNi	J	AF 9-2 LS	PVC		7.8	round			7.5	108
48031	Fe-CuNi (Ko)	L	AE 9-2 LSY	PVC	PVC/galv. steel wire braid/ PVC	9.8	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	147
48032	SoNiCr-SoNi	K	AN 9-2 LSY	PVC		9.8	round			7.5	147
48069	SoPtRh-SoPt	S	AP 9-2 LSY	PVC		9.8	round			7.5	147
48260	Cu-CuNi (Ko)	U	AC 9-2 LSY	PVC		9.8	round			7.5	147

L = stranded conductor
M = solid conductor
tin. = tinned
galv. = galvanized

L

COMPENSATING CABLES

Part no.	Thermocouple element material in accordance with DIN 43713	Thermocouple type	Type	Core insulation	Jacket/ armoring jacket	Outer ø approx. mm	Form	Temperature range of insulation °C	Installation temperature range °C	min. bending radius x cable ø	Weight approx. kg/km
Single-pair: 2 x 1.5 mm² (L = stranded wire, conductor make-up 48 x 0.20 mm; M = solid conductor, conductor ø 1.38 mm)											
48033	FE-CuNi (Ko)	L	AE 9 M	PVC	PVC	7.0	round	-10°C to +80°	stationary -25°C to +70°C flexing -5°C to +70°C	12	79
48034	SoNiCr-SoNi	K	AN 9 M	PVC		7.0	round			12	79
48035	SoPtRh-SoPt	S	AP 9 M	PVC		7.0	round			12	79
48261	Cu-CuNi (Ko)	U	AC 9 M	PVC		7.0	round			12	79
48262	Fe-CuNi (Ko)	L	AE 9-2 MSY	PVC	PVC/galv. steel wire braid/ PVC	9.6	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	12	144
48263	SoNiCr-SoNi	K	AN 9-2 MSY	PVC		9.6	round			12	144
48264	SoPtRh-SoPt	S	AP 9-2 MSY	PVC		9.6	round			12	144
48265	Cu-CuNi (Ko)	U	AC 9-2 MSY	PVC		9.6	round			12	144
48036	Fe-CuNi (Ko)	L	AE 10 L-SIL parallel	silicone	glass-fiber	5.5x8.2	oval	-60°C to +180°C	stationary -25°C to +180°C flexing -25°C to +180°C (short time +200°C)	7.5	59
48037	SoNiCr-SoNi	K	AN 10 L-SIL parallel	silicone		5.5x8.2	oval			7.5	59
48038	SoPtRh-SoPt	S	AP 10 L-SIL parallel	silicone		5.5x8.2	oval			7.5	59
48266	Cu-CuNi (Ko)	U	AC 10 L-SIL parallel	silicone		5.5x8.2	oval			7.5	59
48039	Fe-CuNi (Ko)	L	AE 11 L	silicone	Glass-fiber/ galv. steel wire braid	6.3x9.0	oval	-60°C to +180°C	stationary -25°C to +180°C flexing -25°C to +180°C (short time +200°C)	7.5	82
48040	SoNiCr-SoNi	K	AN 11 L	silicone		6.3x9.0	oval			7.5	82
48041	SoPtRh-SoPt	S	AP 11 L	silicone		6.3x9.0	oval			7.5	82
48267	Cu-CuNi (Ko)	U	AC 11 L	silicone		6.3x9.0	oval			7.5	82
48042	Fe-CuNi (Ko)	L	AE 11 Lr	silicone	Glass-fiber/ galv. steel wire braid	6.7	round	-60°C to +180°C	stationary -25°C to +180°C flexing -25°C to +180°C (short time +200°C)	7.5	83
48043	SoNiCr-SoNi	K	AN 11 Lr	silicone		6.7	round			7.5	83
48044	SoPtRh-SoPt	S	AP 11 Lr	silicone		6.7	round			7.5	83
48268	Cu-CuNi (Ko)	U	AC 11 Lr	silicone		6.7	round			7.5	83
48045	Fe-CuNi (Ko)	L	AE 11 Mr	silicone	Glass-fiber/ galv. steel wire braid	6.5	round	-60°C to +180°C	stationary -25°C to +180°C flexing -25°C to +180°C (short time +200°C)	12	83
48046	SoNiCr-SoNi	K	AN 11 Mr	silicone		6.5	round			12	83
48047	SoPtRh-SoPt	S	AP 11 Mr	silicone		6.5	round			12	83
48269	Cu-CuNi (Ko)	U	AC 11 Mr	silicone		6.5	round			12	83
48048	Fe-CuNi (Ko)	L	AE 12 L parallel	PVC	PVC	4.3x7.0	oval	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	69
48049	SoNiCr-SoNi	K	AN12 L parallel	PVC		4.3x7.0	oval			7.5	69
48050	SoPtRh-SoPt	S	AP 12 L parallel	PVC		4.3x7.0	oval			7.5	69
48270	Cu-CuNi (Ko)	U	AC 12 L parallel	PVC		4.3x7.0	oval			7.5	69
48481	Fe-CuNi	J	AF 12 L parallel	PVC		4.3x7.0	oval			7.5	69
48051	Fe-CuNi (Ko)	L	AE 12 M parallel	PVC	PVC	4.2x6.8	oval	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	12	61
48052	SoNiCr-SoNi	K	AN12 M parallel	PVC		4.2x6.8	oval			12	61
48053	SoPtRh-SoPt	S	AP 12 M parallel	PVC		4.2x6.8	oval			12	61
48271	Cu-CuNi (Ko)	U	AC 12 M parallel	PVC		4.2x6.8	oval			12	61
48054	Fe-CuNi (Ko)	L	AE 13 L parallel	silicone	Glass-fiber	3.2x5.9	oval	-60°C to +180°C	stationary -25°C to +180°C flexing -25°C to +180°C (short time +200°C)	7.5	45
48055	SoNiCr-SoNi	K	AN 13 L parallel	silicone		3.2x5.9	oval			7.5	45
48056	SoPtRh-SoPt	S	AP 13 L parallel	silicone		3.2x5.9	oval			7.5	45
48272	Cu-CuNi (Ko)	U	AC 13 L parallel	silicone		3.2x5.9	oval			7.5	45
48057	Fe-CuNi (Ko)	L	AE 13 M	silicone	Glass-fiber	3.5x6.0	oval	-60°C to +180°C	stationary -25°C to +180°C flexing -25°C to +180°C (short time +200°C)	12	45
48058	SoNiCr-SoNi	K	AN 13 M	silicone		3.5x6.0	oval			12	45
48059	SoPtRh-SoPt	S	AP 13 M	silicone		3.5x6.0	oval			12	45
48273	Cu-CuNi (Ko)	U	AC 13 M	silicone		3.5x6.0	oval			12	45
48060	Fe-CuNi (Ko)	L	AE 14 L	silicone	Special foamed silicone mixture/ galv. Steel hose	11.7	round	-60°C to +180°C	stationary -25°C to +180°C flexing -25°C to +180°C (short time +200°C)	7.5	196
48061	SoNiCr-SoNi	K	AN 14 L	silicone		11.7	round			7.5	196
48062	SoPtRh-SoPt	S	AP 14 L	silicone		11.7	round			7.5	196
48274	Cu-CuNi (Ko)	U	AC 14 L	silicone		11.7	round			7.5	196
48063	Fe-CuNi (Ko)	L	AE 15 L	silicone	silicone	7.7	round	-60°C to +180°C	stationary -25°C to +180°C flexing -25°C to +180°C (short time +200°C)	7.5	76
48064	SoNiCr-SoNi	K	AN 15 L	silicone		7.7	round			7.5	76
48065	SoPtRh-SoPt	S	AP 15 L	silicone		7.7	round			7.5	76
48275	Cu-CuNi (Ko)	U	AC 15 L	silicone		7.7	round			7.5	76
48482	Fe-CuNi	J	AF 15 L	silicone		7.7	round			7.5	76
48066	Fe-CuNi (Ko)	L	AE 15 LS	silicone	silicone/ galv. steel wire braid	7.8	round	-10°C to +180°C	stationary -25°C to +180°C flexing -25°C to +180°C (short time +200°C)	7.5	105
48067	SoNiCr-SoNi	K	AN 15 LS	silicone		7.8	round			7.5	105
48068	SoPtRh-SoPt	S	AP 15 LS	silicone		7.8	round			7.5	105
48276	Cu-CuNi (Ko)	U	AC 15 LS	silicone		7.8	round			7.5	105
48277	Fe-CuNi (Ko)	L	AE 16 L-SIL parallel	silicone	-	2.8x5.6	oval	-10°C to +180°C	stationary -25°C to +180°C flexing -25°C to +180°C (short time +200°C)	7.5	38
48278	SoNiCr-SoNi	K	AN 16 L-SIL parallel	silicone		2.8x5.6	oval			7.5	38
48279	SoPtRh-SoPt	S	AP 16 L-SIL parallel	silicone		2.8x5.6	oval			7.5	38
48280	Cu-CuNi (Ko)	U	AC 16 L-SIL parallel	silicone		2.8x5.6	oval			7.5	38
48281	Fe-CuNi (Ko)	L	AE 18 L	HELUFLON®-FEP	HELUFLON®-FEP	4.4	round	-100°C to 200°C	stationary -25°C to +205°C flexing -25°C to +205°C	7.5	37
48282	SoNiCr-SoNi	K	AN 18 L	HELUFLON®-FEP		4.4	round			7.5	37
48283	SoPtRh-SoPt	S	AP 18 L	HELUFLON®-FEP		4.4	round			7.5	37
48284	Cu-CuNi (Ko)	U	AC 18 L	HELUFLON®-FEP		4.4	round			7.5	37
48285	Fe-CuNi (Ko)	L	AE 19 L	HELUFLON®-FEP	PETP tape/ tin. Cu-round wire braid/ HELUFLON®-FEP	5.6	round	-100°C to 200°C	stationary -25°C to +205°C flexing -25°C to +205°C	7.5	60
48286	SoNiCr-SoNi	K	AN 19 L	HELUFLON®-FEP		5.6	round			7.5	60
48287	SoPtRh-SoPt	S	AP 19 L	HELUFLON®-FEP		5.6	round			7.5	60
48288	Cu-CuNi (Ko)	U	AC 19 L	HELUFLON®-FEP		5.6	round			7.5	60

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tin. = tinned
galv. = galvanized

COMPENSATING CABLES

Part no.	Thermocouple element material in accordance with DIN 43713	Thermocouple type	Type	Core insulation	Jacket/ armoring jacket	Outer ø approx. mm	Form	Temperature range of insulation °C	Installation temperature range °C	min. bending radius x cable ø	Weight approx. kg/km
Single-pair: 2 x 1.5 mm² (L = stranded wire, conductor make-up 48 x 0.20 mm; M = solid conductor, conductor ø 1.38 mm)											
48289	FE-CuNi (Ko)	L	AE 20 L	PVC	PETP tape/ bl. Cu-ground wire 0.5 mm ø / Alu-tape/PVC	8.0	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	75
48290	SoNiCr-SoNi	K	AE 20 L	PVC		8.0	round			7.5	75
48291	SoPtRh-SoPt	S	AE 20 L	PVC		8.0	round			7.5	75
48292	Cu-CuNi (Ko)	U	AE 20 L	PVC		8.0	round			7.5	75
48293	Fe-CuNi (Ko)	L	AE 20 M	PVC	PETP tape/ bl. Cu-ground wire 0.5 mm ø / Alu-tape/PVC	8.2	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	12	82
48294	SoNiCr-SoNi	K	AE 20 M	PVC		8.2	round			12	82
48295	SoPtRh-SoPt	S	AE 20 M	PVC		8.2	round			12	82
48296	Cu-CuNi (Ko)	U	AE 20 M	PVC		8.2	round			12	82
Multiple-pair: 2 pair (4 x 1.5 mm²) (L = stranded wire, conductor make-up 48 x 0.20 mm; M = solid conductor, conductor ø 1.38 mm)											
48100	Fe-CuNi (Ko)	L	AE 9-4 L	PVC	PVC	8.3	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	125
48101	SoNiCr-SoNi	K	AN 9-4 L	PVC		8.3	round			7.5	125
48102	SoPtRh-SoPt	S	AP 9-4 L	PVC		8.3	round			7.5	125
48297	Cu-CuNi (Ko)	U	AC 9-4 L	PVC		8.3	round			7.5	125
48483	Fe-CuNi	J	AF 9-4 L	PVC		8.3	round			7.5	125
48298	Fe-CuNi (Ko)	L	AE 9-4 LS	PVC	PVC/ galv. steel wire braid	8.9	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	155
48299	SoNiCr-SoNi	K	AN 9-4 LS	PVC		8.9	round			7.5	155
48300	SoPtRh-SoPt	S	AP 9-4 LS	PVC		8.9	round			7.5	155
48301	Cu-CuNi (Ko)	U	AC 9-4 LS	PVC		8.9	round			7.5	155
48137	Fe-CuNi (Ko)	L	AE 9-4 LSY	PVC	PVC/ galv. steel wire braid/ PVC	11.4	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	220
48138	SoNiCr-SoNi	K	AN 9-4 LSY	PVC		11.4	round			7.5	220
48139	SoPtRh-SoPt	S	AP 9-4 LSY	PVC		11.4	round			7.5	220
48302	Cu-CuNi (Ko)	U	AC 9-4 LSY	PVC		11.4	round			7.5	220
48303	Fe-CuNi (Ko)	L	AE 9-4 MSY	PVC	PVC/ galv. steel wire braid/ PVC	11.0	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	12	210
48304	SoNiCr-SoNi	K	AN 9-4 MSY	PVC		11.0	round			12	210
48305	SoPtRh-SoPt	S	AP 9-4 MSY	PVC		11.0	round			12	210
48306	Cu-CuNi (Ko)	U	AC 9-4 MSY	PVC		11.0	round			12	210
48307	Fe-CuNi (Ko)	L	AE 20-4 M	PVC	PETP tape/ bl. Cu-ground wire 0.5 mm ø / Alu-tape/PVC	10.8	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	12	137
48308	SoNiCr-SoNi	K	AN 20-4 M	PVC		10.8	round			12	137
48309	SoPtRh-SoPt	S	AP 20-4 M	PVC		10.8	round			12	137
48310	Cu-CuNi (Ko)	U	AC 20-4 M	PVC		10.8	round			12	137
Multiple-pair: 4 x 1.5 mm² (L = stranded wire, conductor make-up 48 x 0.20 mm)											
48474	Fe-CuNi (Ko)	L	AE 11-4 Lr	silicone	Glass-fiber/galv. steel wire braid	7.8	round	-60°C to +180°C	stationary -25°C to +180°C flexing -25°C to +180°C (short time +200°C)	7.5	11.8
48475	SoNiCr-SoNi	K	AE 11-4 Lr	silicone		7.8	round			7.5	11.8
48476	SoPtRh-SoPt	S	AE 11-4 Lr	silicone		7.8	round			7.5	11.8
48477	Cu-CuNi (Ko)	U	AE 11-4 Lr	silicone		7.8	round			7.5	11.8
Multiple-pair: 3 pairs (6 x 1.5 mm²) (L = stranded wire, conductor make-up 48 x 0.20 mm; M = solid conductor, conductor ø 1.38 mm)											
48103	Fe-CuNi (Ko)	L	AE 9-6 L	PVC	PVC	10.3	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	190
48104	SoNiCr-SoNi	K	AN 9-6 L	PVC		10.3	round			7.5	190
48105	SoPtRh-SoPt	S	AP 9-6 L	PVC		10.3	round			7.5	190
48311	Cu-CuNi (Ko)	U	AC 9-6 L	PVC		10.3	round			7.5	190
48484	Fe-CuNi	J	AF 9-6 L	PVC		10.3	round			7.5	190
48312	Fe-CuNi (Ko)	L	AE 9-6 LS	PVC	PVC/ galv. steel wire braid	10.9	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	226
48313	SoNiCr-SoNi	K	AN 9-6 LS	PVC		10.9	round			7.5	266
48314	SoPtRh-SoPt	S	AP 9-6 LS	PVC		10.9	round			7.5	226
48315	Cu-CuNi (Ko)	U	AC 9-6 LS	PVC		10.9	round			7.5	226
48140	Fe-CuNi (Ko)	L	AE 9-6 LSY	PVC	PVC/ galv. steel wire braid/ PVC	13.4	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	292
48141	SoNiCr-SoNi	K	AN 9-6 LSY	PVC		13.4	round			7.5	292
48142	SoPtRh-SoPt	S	AP 9-6 LSY	PVC		13.4	round			7.5	292
48316	Cu-CuNi (Ko)	U	AC 9-6 LSY	PVC		13.4	round			7.5	292
48317	Fe-CuNi (Ko)	L	AE 9-6 MSY	PVC	PVC/ galv. steel wire braid/ PVC	12.5	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	12	272
48318	SoNiCr-SoNi	K	AN 9-6 MSY	PVC		12.5	round			12	272
48319	SoPtRh-SoPt	S	AP 9-6 MSY	PVC		12.5	round			12	272
48320	Cu-CuNi (Ko)	U	AC 9-6 MSY	PVC		12.5	round			12	272
48321	Fe-CuNi (Ko)	L	AE 20-6 M	PVC	PETP tape/ bl. Cu-ground wire 0.5 mm ø / Alu-tape/PVC	12.4	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	12	186
48322	SoNiCr-SoNi	K	AN 20-6 M	PVC		12.4	round			12	186
48323	SoPtRh-SoPt	S	AP 20-6 M	PVC		12.4	round			12	186
48324	Cu-CuNi (Ko)	U	AC 20-6 M	PVC		12.4	round			12	186
Multiple-pair: 4 pairs (8 x 1.5 mm²) (L = stranded wire, conductor make-up 48 x 0.20 mm											
48106	Fe-CuNi (Ko)	L	AE 9-8 L	PVC	PVC	11.0	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	238
48107	SoNiCr-SoNi	K	AN 9-8 L	PVC		11.0	round			7.5	238
48108	SoPtRh-SoPt	S	AP 9-8 L	PVC		11.0	round			7.5	238
48325	Cu-CuNi (Ko)	U	AC 9-8 L	PVC		11.0	round			7.5	238
48485	Fe-CuNi	J	AF 9-8 L	PVC		11.0	round			7.5	238
48143	Fe-CuNi (Ko)	L	AE 9-8 LSY	PVC	PVC/ galv. steel wire braid/ PVC	14.0	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	410
48144	SoNiCr-SoNi	K	AN 9-8 LSY	PVC		14.0	round			7.5	410
48145	SoPtRh-SoPt	S	AP 9-8 LSY	PVC		14.0	round			7.5	410
48326	Cu-CuNi (Ko)	U	AC 9-8 LSY	PVC		14.0	round			7.5	410

L = stranded conductor
M = solid conductor
tin. = tinned
galv. = galvanized

COMPENSATING CABLES

Part no.	Thermocouple element material in accordance with DIN 43713	Thermocouple type	Type	Core insulation	Jacket/ armoring jacket	Outer ø approx. mm	Form	Temperature range of insulation °C	Installation temperature range °C	min. bending radius x cable ø	Weight approx. kg/km
Multiple-pair: 5 pairs (10 x 1.5 mm²) (L = stranded wire, conductor make-up 48 x 0.20 mm											
48109	FE-CuNi (Ko)	L	AE 9-10 L	PVC	PVC	13.0	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	284
48110	SoNiCr-SoNi	K	AN 9-10 L	PVC		13.0	round			7.5	284
48111	SoPtRh-SoPt	S	AP 9-10 L	PVC		13.0	round			7.5	284
48327	Cu-CuNi (Ko)	U	AC 9-10 L	PVC		13.0	round			7.5	284
48486	FE-CuNi (Ko)	J	AF 9-10 L	PVC		13.0	round			7.5	284
48146	Fe-CuNi (Ko)	L	AE 9-10 LSY	PVC	PVC/ galv. steel wire braid/ PVC	16.5	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	475
48147	SoNiCr-SoNi	K	AN 9-10 LSY	PVC		16.5	round			7.5	475
48148	SoPtRh-SoPt	S	AP 9-10 LSY	PVC		16.5	round			7.5	475
48328	Cu-CuNi (Ko)	U	AC 9-10 LSY	PVC		16.5	round			7.5	475
Multiple-pair: 6 pairs (12 x 1.5 mm²) (L = stranded wire, conductor make-up 48 x 0.20 mm; M = solid conductor, conductor ø 1.38 mm)											
48112	Fe-CuNi (Ko)	L	AE 9-12 L	PVC	PVC	13.5	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	320
48113	SoNiCr-SoNi	K	AN 9-12 L	PVC		13.5	round			7.5	320
48114	SoPtRh-SoPt	S	AP 9-12 L	PVC		13.5	round			7.5	320
48329	Cu-CuNi (Ko)	U	AC 9-12 L	PVC		13.5	round			7.5	320
48487	Fe-CuNi	J	AF 9-12 L	PVC		13.5	round			7.5	320
48330	Fe-CuNi (Ko)	L	AE 9-12 LS	PVC	PVC/ galv. steel wire braid	14.2	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	384
48331	SoNiCr-SoNi	K	AN 9-12 LS	PVC		14.2	round			7.5	384
48332	SoPtRh-SoPt	S	AP 9-12 LS	PVC		14.2	round			7.5	384
48333	Cu-CuNi (Ko)	U	AC 9-12 LS	PVC		14.2	round			7.5	384
48149	Fe-CuNi (Ko)	L	AE 9-12 LSY	PVC	PVC/ galv. steel wire braid/ PVC	17.5	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	483
48150	SoNiCr-SoNi	K	AN 9-12 LSY	PVC		17.5	round			7.5	483
48151	SoPtRh-SoPt	S	AP 9-12 LSY	PVC		17.5	round			7.5	483
48334	Cu-CuNi (Ko)	U	AC 9-12 LSY	PVC		17.5	round			7.5	483
48335	Fe-CuNi (Ko)	L	AE 9-12 MSY	PVC	PVC/ galv. steel wire braid/ PVC	16.5	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	12	478
48336	SoNiCr-SoNi	K	AN 9-12 MSY	PVC		16.5	round			12	478
48337	SoPtRh-SoPt	S	AP 9-12 MSY	PVC		16.5	round			12	478
48338	Cu-CuNi (Ko)	U	AC 9-12 MSY	PVC		16.5	round			12	478
48339	Fe-CuNi (Ko)	L	AE 20-12 M	PVC	PETP tape/ bl. Cu-ground wire 0.5 mm ø/ Alu-tape/PVC	16.3	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	12	362
48340	SoNiCr-SoNi	K	AN 20-12 M	PVC		16.3	round			12	362
48341	SoPtRh-SoPt	S	AP 20-12 M	PVC		16.3	round			12	362
48342	Cu-CuNi (Ko)	U	AC 20-12 M	PVC		16.3	round			12	362
Multiple-pair: 7 pairs (14 x 1.5 mm²) (L = stranded wire, conductor make-up 48 x 0.20 mm											
48115	Fe-CuNi (Ko)	L	AE 9-14 L	PVC	PVC	14.5	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	396
48116	SoNiCr-SoNi	K	AN 9-14 L	PVC		14.5	round			7.5	396
48117	SoPtRh-SoPt	S	AP 9-14 L	PVC		14.5	round			7.5	396
48343	Cu-CuNi (Ko)	U	AC 9-14 L	PVC		14.5	round			7.5	396
48488	Fe-CuNi	J	AF 9-14 L	PVC		14.5	round			7.5	396
48152	Fe-CuNi (Ko)	L	AE 9-14 LSY	PVC	PVC/ galv. steel wire braid/ PVC	18.5	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	640
48153	SoNiCr-SoNi	K	AN 9-14 LSY	PVC		18.5	round			7.5	640
48154	SoPtRh-SoPt	S	AP 9-14 LSY	PVC		18.5	round			7.5	640
48344	Cu-CuNi (Ko)	U	AC 9-14 LSY	PVC		18.5	round			7.5	640
Multiple-pair: 8 pairs (16 x 1.5 mm²) (L = stranded wire, conductor make-up 48 x 0.20 mm; M = solid conductor, conductor ø 1.38 mm)											
48118	Fe-CuNi (Ko)	L	AE 9-16 L	PVC	PVC	15.1	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	419
48119	SoNiCr-SoNi	K	AN 9-16 L	PVC		15.1	round			7.5	419
48120	SoPtRh-SoPt	S	AP 9-16 L	PVC		15.1	round			7.5	419
48345	Cu-CuNi (Ko)	U	AC 9-16 L	PVC		15.1	round			7.5	419
48489	Fe-CuNi	J	AF 9-16 L	PVC		15.1	round			7.5	419
48346	Fe-CuNi (Ko)	L	AE 9-16 LS	PVC	PVC/ galv. steel wire braid	16.1	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	495
48347	SoNiCr-SoNi	K	AN 9-16 LS	PVC		16.1	round			7.5	495
48348	SoPtRh-SoPt	S	AP 9-16 LS	PVC		16.1	round			7.5	495
48349	Cu-CuNi (Ko)	U	AC 9-16 LS	PVC		16.1	round			7.5	495
48155	Fe-CuNi (Ko)	L	AE 9-16 LSY	PVC	PVC/galv. steel wire braid/ PVC	19.3	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	623
48156	SoNiCr-SoNi	K	AN 9-16 LSY	PVC		19.3	round			7.5	623
48157	SoPtRh-SoPt	S	AP 9-16 LSY	PVC		19.3	round			7.5	623
48350	Cu-CuNi (Ko)	U	AC 9-16 LSY	PVC		19.3	round			7.5	623
48351	Fe-CuNi (Ko)	L	AE 9-16 MSY	PVC	PVC/galv. steel wire braid/ PVC	18.7	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	12	616
48352	SoNiCr-SoNi	K	AN 9-16 MSY	PVC		18.7	round			12	616
48353	SoPtRh-SoPt	S	AP 9-16 MSY	PVC		18.7	round			12	616
48354	Cu-CuNi (Ko)	U	AC 9-16 MSY	PVC		18.7	round			12	616
48355	Fe-CuNi (Ko)	L	AE 20-16 M	PVC	PETP tape/ bl. Cu-ground wire 0.5 mm ø/ Alu-tape/PVC	16.8	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	12	423
48356	SoNiCr-SoNi	K	AN 20-16 M	PVC		16.8	round			12	423
48357	SoPtRh-SoPt	S	AP 20-16 M	PVC		16.8	round			12	423
48358	Cu-CuNi (Ko)	U	AC 20-16 M	PVC		16.8	round			12	423

L = stranded conductor
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tin. = tinned
galv. = galvanized

COMPENSATING CABLES

Part no.	Thermocouple element material in accordance with DIN 43713	Thermocouple type	Type	Core insulation	Jacket/ armoring jacket	Outer ø approx. mm	Form	Temperature range of insulation °C	Installation temperature range °C	min. bending radius x cable ø	Weight approx. kg/km
Multiple-pair: 9 pairs (18 x 1.5 mm²) (L = stranded wire, conductor make-up 48 x 0.20 mm											
48121	FE-CuNi (Ko)	L	AE 9-18 L	PVC	PVC	16.5	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	480
48122	SoNiCr-SoNi	K	AE 9-18 L	PVC		16.5	round			7.5	480
48123	SoPtRh-SoPt	S	AE 9-18 L	PVC		16.5	round			7.5	480
48359	Cu-CuNi (Ko)	U	AE 9-18 L	PVC		16.5	round			7.5	480
48490	FE-CuNi	J	AF 9-18 L	PVC		16.5	round			7.5	480
48158	Fe-CuNi (Ko)	L	AE 9-18 LSY	PVC	PVC/ galv. steel wire braid/ PVC	20.5	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	758
48159	SoNiCr-SoNi	K	AE 9-18 LSY	PVC		20.5	round			7.5	758
48160	SoPtRh-SoPt	S	AE 9-18 LSY	PVC		20.5	round			7.5	758
48360	Cu-CuNi (Ko)	U	AE 9-18 LSY	PVC		20.5	round			7.5	758
Multiple-pair: 10 pairs (20 x 1.5 mm²) (L = stranded wire, conductor make-up 48 x 0.20 mm; M = solid conductor, conductor ø 1.38 mm)											
48124	Fe-CuNi (Ko)	L	AE 9-20 L	PVC	PVC	16.7	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	520
48125	SoNiCr-SoNi	K	AN 9-20 L	PVC		16.7	round			7.5	520
48126	SoPtRh-SoPt	S	AP 9-20 L	PVC		16.7	round			7.5	520
48361	Cu-CuNi (Ko)	U	AC 9-20 L	PVC		16.7	round			7.5	520
48491	Fe-CuNi	J	AF 9-20 L	PVC		16.7	round			7.5	520
48362	Fe-CuNi (Ko)	L	AE 9-20 LS	PVC	PVC/ galv. steel wire braid	17.7	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	613
48363	SoNiCr-SoNi	K	AN 9-20 LS	PVC		17.7	round			7.5	613
48364	SoPtRh-SoPt	S	AP 9-20 LS	PVC		17.7	round			7.5	613
48365	Cu-CuNi (Ko)	U	AC 9-20 LS	PVC		17.7	round			7.5	613
48161	Fe-CuNi (Ko)	L	AE 9-20 LSY	PVC	PVC/ galv. steel wire braid/ PVC	20.9	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	752
48162	SoNiCr-SoNi	K	AN 9-20 LSY	PVC		20.9	round			7.5	752
48163	SoPtRh-SoPt	S	AP 9-20 LSY	PVC		20.9	round			7.5	752
48366	Cu-CuNi (Ko)	U	AC 9-20 LSY	PVC		20.9	round			7.5	752
48367	Fe-CuNi (Ko)	L	AE 9-20 MSY	PVC	PVC/ galv. steel wire braid/ PVC	20.3	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	12	744
48368	SoNiCr-SoNi	K	AN 9-20 MSY	PVC		20.3	round			12	744
48369	SoPtRh-SoPt	S	AP 9-20 MSY	PVC		20.3	round			12	744
48370	Cu-CuNi (Ko)	U	AC 9-20 MSY	PVC		20.3	round			12	744
48371	Fe-CuNi (Ko)	L	AE 20-20 M	PVC	PETP tape/ bl. Cu-ground wire 0.5 mm ø/ Alu-tape/PVC	20.3	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	12	542
48372	SoNiCr-SoNi	K	AN 20-20 M	PVC		20.3	round			12	542
48373	SoPtRh-SoPt	S	AP 20-20 M	PVC		20.3	round			12	542
48374	Cu-CuNi (Ko)	U	AC 20-20 M	PVC		20.3	round			12	542
Multiple-pair: 12 pairs (24 x 1.5 mm²) (L = stranded wire, conductor make-up 48 x 0.20 mm; M = solid conductor, conductor ø 1.38 mm)											
48127	Fe-CuNi (Ko)	L	AE 9-24 L	PVC	PVC	19.0	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	614
48128	SoNiCr-SoNi	K	AN 9-24 L	PVC		19.0	round			7.5	614
48129	SoPtRh-SoPt	S	AP 9-24 L	PVC		19.0	round			7.5	614
48375	Cu-CuNi (Ko)	U	AC 9-24 L	PVC		19.0	round			7.5	614
48492	Fe-CuNi	J	AF 9-24 L	PVC		19.0	round			7.5	614
48376	Fe-CuNi (Ko)	L	AE 9-24 LS	PVC	PVC/ galv. steel wire braid	20.2	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	738
48377	SoNiCr-SoNi	K	AN 9-24 LS	PVC		20.2	round			7.5	738
48378	SoPtRh-SoPt	S	AP 9-24 LS	PVC		20.2	round			7.5	738
48379	Cu-CuNi (Ko)	U	AC 9-24 LS	PVC		20.2	round			7.5	738
48164	Fe-CuNi (Ko)	L	AE 9-24 LSY	PVC	PVC/ galv. steel wire braid/ PVC	24.2	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	938
48165	SoNiCr-SoNi	K	AN 9-24 LSY	PVC		24.2	round			7.5	938
48166	SoPtRh-SoPt	S	AP 9-24 LSY	PVC		24.2	round			7.5	938
48380	Cu-CuNi (Ko)	U	AC 9-24 LSY	PVC		24.2	round			7.5	938
48381	Fe-CuNi (Ko)	L	AE 9-24 MSY	PVC	PVC/ galv. steel wire braid/ PVC	23.1	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	12	907
48382	SoNiCr-SoNi	K	AN 9-24 MSY	PVC		23.1	round			12	907
48383	SoPtRh-SoPt	S	AP 9-24 MSY	PVC		23.1	round			12	907
48384	Cu-CuNi (Ko)	U	AC 9-24 MSY	PVC		23.1	round			12	907
48385	Fe-CuNi (Ko)	L	AE 20-24 M	PVC	PETP tape/ bl. Cu-ground wire 0.5 mm ø/ Alu-tape/PVC	22.5	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	12	638
48386	SoNiCr-SoNi	K	AN 20-24 M	PVC		22.5	round			12	638
48387	SoPtRh-SoPt	S	AP 20-24 M	PVC		22.5	round			12	638
48388	Cu-CuNi (Ko)	U	AC 20-24 M	PVC		22.5	round			12	638
Multiple-pair: 16 pairs (32 x 1.5 mm²) (L = stranded wire, conductor make-up 48 x 0.20 mm; M = solid conductor, conductor ø 1.38 mm)											
48389	Fe-CuNi (Ko)	L	AE 9-32 L	PVC	PVC	20.9	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	793
48390	SoNiCr-SoNi	K	AN 9-32 L	PVC		20.9	round			7.5	793
48391	SoPtRh-SoPt	S	AP 9-32 L	PVC		20.9	round			7.5	793
48392	Cu-CuNi (Ko)	U	AC 9-32 L	PVC		20.9	round			7.5	793
48493	Fe-CuNi	J	AF 9-32 L	PVC		20.9	round			7.5	793
48393	Fe-CuNi (Ko)	L	AE 9-32 LS	PVC	PVC/ galv. steel wire braid	22.1	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	923
48394	SoNiCr-SoNi	K	AN 9-32 LS	PVC		22.1	round			7.5	923
48395	SoPtRh-SoPt	S	AP 9-32 LS	PVC		22.1	round			7.5	923
48396	Cu-CuNi (Ko)	U	AC 9-32 LS	PVC		22.1	round			7.5	923

L = stranded conductor
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COMPENSATING CABLES

Part no.	Thermocouple element material in accordance with DIN 43713	Thermocouple type	Type	Core insulation	Jacket/ armoring jacket	Outer ø approx. mm	Form	Temperature range of insulation °C	Installation temperature range °C	min. bending radius x cable ø	Weight approx. kg/km
Multiple-pair: 16 pairs (32 x 1.5 mm²) (L = stranded wire, conductor make-up 48 x 0.20 mm; M = solid conductor, conductor ø 1.38 mm)											
48397	FE-CuNi (Ko)	L	AE 9-32 LSY	PVC	PVC/ galv. steel wire braid/ PVC	26.1	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	1141
48398	SoNiCr-SoNi	K	AN 9-32 LSY	PVC		26.1	round			7.5	1141
48399	SoPtRh-SoPt	S	AP 9-32 LSY	PVC		26.1	round			7.5	1141
48400	Cu-CuNi (Ko)	U	AC 9-32 LSY	PVC		26.1	round			7.5	1141
48401	Fe-CuNi (Ko)	L	AE 9-32 MSY	PVC	PVC/ galv. steel wire braid/ PVC	25.3	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	12	1130
48402	SoNiCr-SoNi	K	AN 9-32 MSY	PVC		25.3	round			12	1130
48403	SoPtRh-SoPt	S	AP 9-32 MSY	PVC		25.3	round			12	1130
48404	Cu-CuNi (Ko)	U	AC 9-32 MSY	PVC		25.3	round			12	1130
48405	Fe-CuNi (Ko)	L	AE 20-32 M	PVC	PETP-tape/ bl. Cu-ground wire 0.5 mm ø/ Alu-tape/PVC	25.1	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	12	847
48406	SoNiCr-SoNi	K	AN 20-32 M	PVC		25.1	round			12	847
48407	SoPtRh-SoPt	S	AP 20-32 M	PVC		25.1	round			12	847
48408	Cu-CuNi (Ko)	U	AC 20-32 M	PVC		25.1	round			12	847
Multiple-pair: 18 pair (36 x 1.5 mm²) (L = stranded wire, conductor make-up 48 x 0.20 mm; M = solid conductor, conductor ø 1.38 mm)											
48130	Fe-CuNi (Ko)	L	AE 9-36 L	PVC	PVC	22.1	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	904
48132	SoNiCr-SoNi	K	AN 9-36 L	PVC		22.1	round			7.5	904
48133	SoPtRh-SoPt	S	AP 9-36 L	PVC		22.1	round			7.5	904
48409	Cu-CuNi (Ko)	U	AC 9-36 L	PVC		22.1	round			7.5	904
48494	Fe-CuNi	J	AF 9-36 L	PVC		22.1	round			7.5	904
48410	Fe-CuNi (Ko)	L	AE 9-36 LS	PVC	PVC/ galv. steel wire braid	23.3	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	1040
48411	SoNiCr-SoNi	K	AN 9-36 LS	PVC		23.3	round			7.5	1040
48412	SoPtRh-SoPt	S	AP 9-36 LS	PVC		23.3	round			7.5	1040
48413	Cu-CuNi (Ko)	U	AC 9-36 LS	PVC		23.3	round			7.5	1040
48167	Fe-CuNi (Ko)	L	AE 9-36 LSY	PVC	PVC/ galv. steel wire braid/ PVC	27.3	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	1268
48169	SoNiCr-SoNi	K	AN 9-36 LSY	PVC		27.3	round			7.5	1268
48170	SoPtRh-SoPt	S	AP 9-36 LSY	PVC		27.3	round			7.5	1268
48414	Cu-CuNi (Ko)	U	AC 9-36 LSY	PVC		27.3	round			7.5	1268
48415	Fe-CuNi (Ko)	L	AE 9-36 MSY	PVC	PVC/ galv. steel wire braid/ PVC	26.1	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	12	1232
48416	SoNiCr-SoNi	K	AN 9-36 MSY	PVC		26.1	round			12	1232
48417	SoPtRh-SoPt	S	AP 9-36 MSY	PVC		26.1	round			12	1232
48418	Cu-CuNi (Ko)	U	AC 9-36 MSY	PVC		26.1	round			12	1232
48419	Fe-CuNi (Ko)	L	AE 20-36 M	PVC	PETP-tape/ bl. Cu-ground wire 0.5 mm ø / Alu-tape/PVC	26.0	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	12	944
48420	SoNiCr-SoNi	K	AN 20-36 M	PVC		26.0	round			12	944
48421	SoPtRh-SoPt	S	AP 20-36 M	PVC		26.0	round			12	944
48422	Cu-CuNi (Ko)	U	AC 20-36 M	PVC		26.0	round			12	944
Multiple-pair: 19 pairs (38 x 1.5 mm²) (L = stranded wire, conductor make-up 48 x 0.20 mm)											
48134	Fe-CuNi (Ko)	L	AE 9-38 L	PVC	PVC	22.5	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	937
48135	SoNiCr-SoNi	K	AN 9-38 L	PVC		22.5	round			7.5	937
48136	SoPtRh-SoPt	S	AP 9-38 L	PVC		22.5	round			7.5	937
48423	Cu-CuNi (Ko)	U	AC 9-38 L	PVC		22.5	round			7.5	937
48171	Fe-CuNi (Ko)	L	AE 9-38 LSY	PVC	PVC/ galv. steel wire braid/ PVC	26.5	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	1340
48172	SoNiCr-SoNi	K	AN 9-38 LSY	PVC		26.5	round			7.5	1340
48173	SoPtRh-SoPt	S	AP 9-38 LSY	PVC		26.5	round			7.5	1340
48424	Cu-CuNi (Ko)	U	AC 9-38 LSY	PVC		26.5	round			7.5	1340
Multiple-pair: 20 pairs (40 x 1.5 mm²) (L = stranded wire, conductor make-up 48 x 0.20 mm; M = solid conductor, conductor ø 1.38 mm)											
48425	Fe-CuNi (Ko)	L	AE 9-40 L	PVC	PVC	24.1	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	1032
48426	SoNiCr-SoNi	K	AN 9-40 L	PVC		24.1	round			7.5	1032
48427	SoPtRh-SoPt	S	AP 9-40 L	PVC		24.1	round			7.5	1032
48428	Cu-CuNi (Ko)	U	AC 9-40 L	PVC		24.1	round			7.5	1032
48429	Fe-CuNi (Ko)	L	AE 9-40 LS	PVC	PVC/ galv. steel wire braid	25.3	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	1200
48430	SoNiCr-SoNi	K	AN 9-40 LS	PVC		25.3	round			7.5	1200
48431	SoPtRh-SoPt	S	AP 9-40 LS	PVC		25.3	round			7.5	1200
48432	Cu-CuNi (Ko)	U	AC 9-40 LS	PVC		25.3	round			7.5	1200
48433	Fe-CuNi (Ko)	L	AE 9-40 LSY	PVC	PVC/ galv. steel wire braid/ PVC	29.3	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	1446
48434	SoNiCr-SoNi	K	AN 9-40 LSY	PVC		29.3	round			7.5	1446
48435	SoPtRh-SoPt	S	AP 9-40 LSY	PVC		29.3	round			7.5	1446
48436	Cu-CuNi (Ko)	U	AC 9-40 LSY	PVC		29.3	round			7.5	1446
48437	Fe-CuNi (Ko)	L	AE 9-40 MSY	PVC	PVC/ galv. steel wire braid/ PVC	28.0	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	12	1381
48438	SoNiCr-SoNi	K	AN 9-40 MSY	PVC		28.0	round			12	1381
48439	SoPtRh-SoPt	S	AP 9-40 MSY	PVC		28.0	round			12	1381
48440	Cu-CuNi (Ko)	U	AC 9-40 MSY	PVC		28.0	round			12	1381
48441	Fe-CuNi (Ko)	L	AE 9-40M	PVC	PETP-tape/ bl. Cu-ground wire 0.5 mm ø /Alu-tape/ PVC	26.0	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	12	1001
48442	SoNiCr-SoNi	K	AN 9-40 M	PVC		26.0	round			12	1001
48443	SoPtRh-SoPt	S	AP 9-40 M	PVC		26.0	round			12	1001
48444	Cu-CuNi (Ko)	U	AC 9-40 M	PVC		26.0	round			12	1001

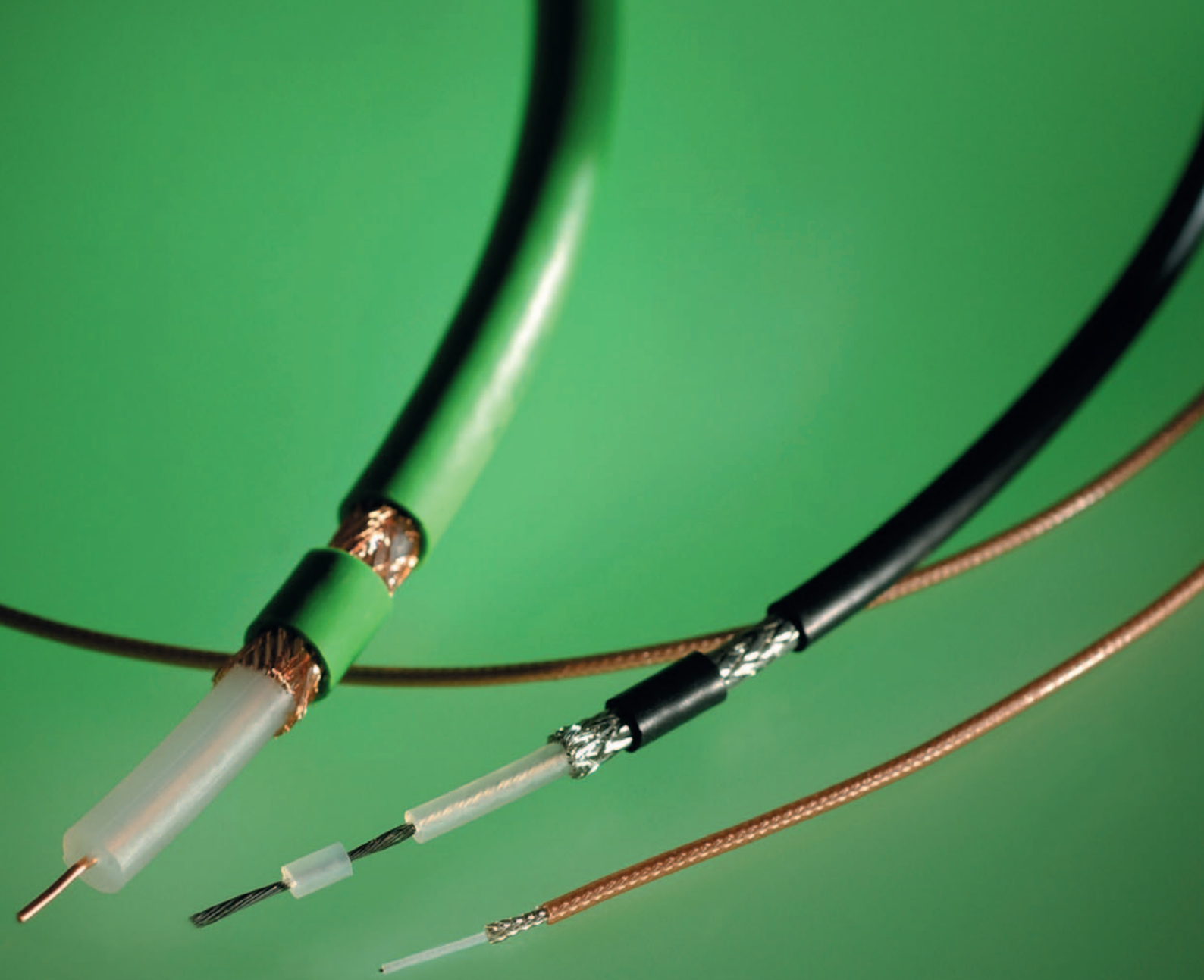
L = stranded conductor
M = solid conductor
tin. = tinned
galv. = galvanized

COMPENSATING CABLES

Part no.	Thermocouple element material in accordance with DIN 43713	Thermocouple type	Type	Core insulation	Jacket/ armoring jacket	Outer ø approx. mm	Form	Temperature range of insulation °C	Installation temperature range °C	min. bending radius x cable ø	Weight approx. kg/km
Single-pair: 2 x 0.22 mm² (L = stranded wire, conductor make-up 7 x 0.20 mm)											
48200	FE-CuNi (Ko)	L	AE 1 L	PVC	-	1.0	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	10
48201	SoNiCr-SoNi	K	AE 1 L	PVC		1.0	round			7.5	10
48202	SoPtRh-SoPt	S	AE 1 L	PVC		1.0	round			7.5	10
48460	Cu-CuNi (Ko)	U	AE 1 L	PVC		1.0	round			7.5	10
Single-pair: 2 x 0.22 mm² (L = stranded wire, conductor make-up 7 x 0.20 mm)											
48203	Fe-CuNi (Ko)	L	AE 9-022	PVC	PVC	4.0	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	22
48204	SoNiCr-SoNi	K	AE 9-022	PVC		4.0	round			7.5	22
48205	SoPtRh-SoPt	S	AE 9-022	PVC		4.0	round			7.5	22
48461	Cu-CuNi (Ko)	U	AE 9-022	PVC		4.0	round			7.5	22
48206	Fe-CuNi (Ko)	L	AE 5-022	PVC	PETP tape/ galv. Cu-round wire braid/ PVC	4.9	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	31
48207	SoNiCr-SoNi	K	AN 5-022	PVC		4.9	round			7.5	31
48208	SoPtRh-SoPt	S	AP 5-022	PVC		4.9	round			7.5	31
48462	Cu-CuNi (Ko)	U	AC 5-022	PVC		4.9	round			7.5	31
48463	Fe-CuNi (Ko)	L	AE 15-022	glass-fiber	silicone	3.4	round	-40°C to +200°C	stationary -25°C to +180°C flexing -25°C to +180°C (short time +200°C)	7.5	16
48464	SoNiCr-SoNi	K	AN 15-022	glass-fiber		3.4	round			7.5	16
48465	SoPtRh-SoPt	S	AP 15-022	glass-fiber		3.4	round			7.5	16
48466	Cu-CuNi (Ko)	U	AC 15-022	glass-fiber		3.4	round			7.5	16
48209	Fe-CuNi (Ko)	L	AE 15-G 022	glass-fiber	silicone/glass-fiber	3.9	round	-40°C to +200°C	stationary -25°C to +180°C flexing -25°C to +180°C (short time +200°C)	7.5	22
48210	SoNiCr-SoNi	K	AN 15-G 022	glass-fiber		3.9	round			7.5	22
48211	SoPtRh-SoPt	S	AP 15-G 022	glass-fiber		3.9	round			7.5	22
48467	Cu-CuNi (Ko)	U	AC 15-G 022	glass-fiber		3.9	round			7.5	22
48212	Fe-CuNi (Ko)	L	AE (GI-SIL-GI-S)	glass-fiber	silicone/ Glass-fiber/ galv. steel wire braid	5.0	round	-40°C to +200°C	stationary -25°C to +180°C flexing -25°C to +180°C (short time +200°C)	7.5	25
48213	SoNiCr-SoNi	K	AN (GI-SIL-GI-S)	glass-fiber		5.0	round			7.5	25
48214	SoPtRh-SoPt	S	AP (GI-SIL-GI-S)	glass-fiber		5.0	round			7.5	25
48468	Cu-CuNi (Ko)	U	AC (GI-SIL-GI-S)	glass-fiber		5.0	round			7.5	25
Single-pair: 2 x 0.5 mm² (L = stranded wire, conductor make-up 16 x 0.20 mm)											
48215	Fe-CuNi (Ko)	L	AE (GI-SIL)	glass-fiber	silicone	4.6	round	-40°C to +200°C	stationary -25°C to +200°C flexing -25°C to +200°C	7.5	18
48216	SoNiCr-SoNi	K	AN (GI-SIL)	glass-fiber		4.6	round			7.5	18
48217	SoPtRh-SoPt	S	AP (GI-SIL)	glass-fiber		4.6	round			7.5	18
48469	Cu-CuNi (Ko)	U	AC (GI-SIL)	glass-fiber		4.6	round			7.5	18
Single-pair: 2 x 0.75 mm² (L = stranded wire, conductor make-up 24 x 0.20 mm)											
48218	Fe-CuNi (Ko)	L	AE (PVC-PVC)	PVC	PVC	6.0	round	-10°C to +80°C	stationary -25°C to +70°C flexing -5°C to +70°C	7.5	25
48219	SoNiCr-SoNi	K	AN (PVC-PVC)	PVC		6.0	round			7.5	25
48220	SoPtRh-SoPt	S	AP (PVC-PVC)	PVC		6.0	round			7.5	25
48470	Cu-CuNi (Ko)	U	AC (PVC-PVC)	PVC		6.0	round			7.5	25
Multiple-pair: 4 x 0.22 mm² (stranded wire, conductor make-up 7 x 0.20 mm)											
48221	Fe-CuNi (Ko)	L	AE (PVC-PVC)	PVC	PVC	6.0	round	-10°C to +80°C	stationary -20°C to +80°C flexing -5°C to +80°C	7.5	33
48222	SoNiCr-SoNi	K	AN (PVC-PVC)	PVC		6.0	round			7.5	33
48223	SoPtRh-SoPt	S	AP (PVC-PVC)	PVC		6.0	round			7.5	33
48471	Cu-CuNi (Ko)	U	AC (PVC-PVC)	PVC		6.0	round			7.5	33
48224	Fe-CuNi (Ko)	L	AE (PVC-C-PVC)	PVC	galv. Cu-braid/ PVC jacket	6.0	round	-10°C to +80°C	stationary -20°C to +80°C flexing -5°C to +80°C	7.5	37
48225	SoNiCr-SoNi	K	AN (PVC-C-PVC)	PVC		6.0	round			7.5	37
48226	SoPtRh-SoPt	S	AP (PVC-C-PVC)	PVC		6.0	round			7.5	37
48472	Cu-CuNi (Ko)	U	AC (PVC-C-PVC)	PVC		6.0	round			7.5	37
48227	Fe-CuNi (Ko)	L	AE (GIL-SIL)	glass-fiber	silicone	6.0	round	-40°C to +200°C	stationary -25°C to +180°C flexing -25°C to +180°C	7.5	35
48228	SoNiCr-SoNi	K	AN (GIL-SIL)	glass-fiber		6.0	round			7.5	35
48229	SoPtRh-SoPt	S	AP (GIL-SIL)	glass-fiber		6.0	round			7.5	35
48473	Cu-CuNi (Ko)	U	AC (GIL-SIL)	glass-fiber		6.0	round			7.5	35

L = stranded conductor
M = solid conductor
tin. = tinned
galv. = galvanized

L



RG-Coaxial Cable

Multimedia Coaxial Cable

CATV-Cable

SAT-Coaxial Cable

RGB-COAX-CY/RGB-COAX-(ST) Y

Halogen-Free RG-Coaxial Cables

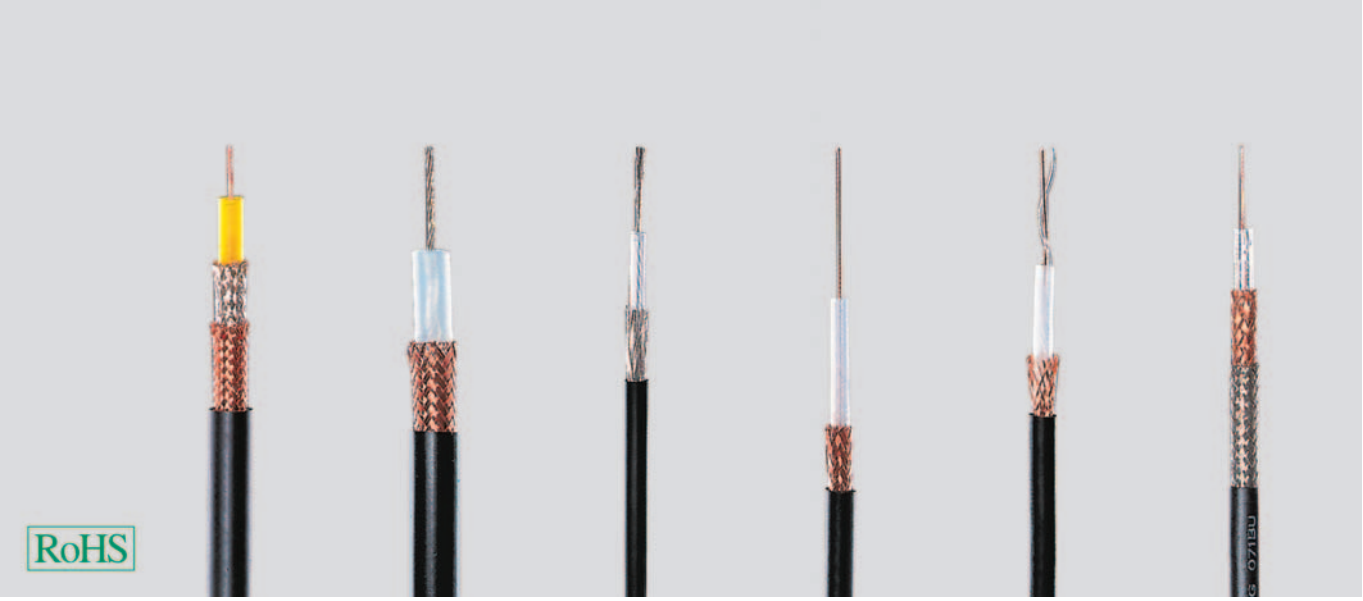
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COAXIAL CABLES

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M

RG-Coaxial Cables



Type	**RG 6 A/U**	**RG 11 A/U**	**RG 58 C/U**	**RG 59 B/U**	**RG 62 A/U**	**RG 71 B/U**
Part no.	40001	40002	40003	40004	40005	40006
Cable structure						
Inner conductor diameter mm	1 x 0,7 Steel/copper, bare	7 x 0,4 Tinned copper	19 x 0,2 Tinned copper	1 x 0,6 Steel/copper, bare	1 x 0,6 Steel/copper, bare	1 x 0,6 Steel/copper, bare
Insulation Ø mm	4,7 PE	7,3 PE	2,95 PE	3,7 PE	3,7 PE, hollow	3,7 PE, hollow
Outer conductor	2 braids Silvered copper Copper, bare	Braid Copper, bare -	Braid Tinned copper -	Braid Copper, bare -	Braid Copper, bare -	2 braids Copper, bare Tinned copper
Outer sheath	PVC	PVC	PVC	PVC	PVC	PVC
Min. bending radius approx. mm	40	50	25	30	30	30
Temperature range °C	-35 to +80	-35 to +80	-35 to +80	-35 to +80	-35 to +80	-50 to +70
Copper weight kg/km	72,0	58,0	29,0	28,0	28,0	48,0
Outer Ø approx. mm	8,4	10,3	5,0	6,2	6,2	6,2
Weight approx. kg / km	115	140	38	57	52	62
Electrical characteristics						
Impedance (Ohm)	**75 ± 3**	**75 ± 3**	**50 ± 2**	**75 ± 3**	**93 ± 5**	**93 ± 3**
Frequency range f (max.) GHz	3	3	3	3	3	3
Propagation velocity v/c	0,7	0,7	0,7	0,7	0,8	0,8
Attenuation at 20°C (db/100m)						
100 MHz	8,8	7,5	17	11,5	10,5	10,5
200 MHz	13,5	11	24	16,5	15	15
500 MHz	21	18,5	39	27	24,5	24,5
800 MHz	27,5	24	51	35	32,5	32,5
1000 MHz	-	30	56	41	35	-
1350 MHz	-	-	-	-	-	-
1750 MHz	-	-	-	-	-	-
CapacitancepF/m	67	67	101	67	42,5	42,5
Rel. velocity of propagation %	67	67	67	67	83	83
Insulation resistance MOhm x kmmin.	10^5	10^5	10^5	10^5	10^5	10^5
Loop resistance max. (Ohm/km)	110	23	53	171	155	136
Nominal peak voltagekVs	3	5	2	4	1	2
Dielectric strength 50 HzkVeff	7	10	5	7	3	3

Dimensions and specifications may be changed without prior notice. (RM01)

Note

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers.
- RG-Coaxial types are in accordance with US-Military specifications MIL-C-17.
- RG/U: R=Radio, G=Guide, U=Utility

Application

Coaxial cables are used in high frequency transmission, especially for transmitters and receivers, computers, radio and TV transmissions. The varied mechanical, thermal and electronic properties of Coaxial cables mean that they can be used up into the GHz levels, as per cable type.

RG-Coaxial Cables



Type	**RG 174 A/U**	**RG 174 U**	**RG 178 B/U**	**RG 179 B/U**	**RG 180 B/U**	**RG 187 A/U**
Part no.	40197	400189	40007	40008	40009	40010
Cable structure						
Inner conductor diameter mm	7 x 0,2 Steel/copper, bare	7 x 0,2 Steel/copper, bare	7 x 0,1 Steel/copper, silvered	7 x 0,1 Steel/copper, silvered	7 x 0,1 Steel/copper, silvered	7 x 0,1 Steel/copper, silvered
Insulation Ø mm	1,52 PE	1,52 PE	0,86 PTFE	1,6 PTFE	2,6 PTFE	1,6 PTFE
Outer conductor	Braid Tinned copper -	Braid Tinned copper -	Braid Silvered copper -	Braid Silvered copper -	Braid Silvered copper -	Braid Silvered copper -
Outer sheath	PVC	PVC	FEP	FEP	FEP	PFA
Min. bending radius approx. mm	15	15	10	15	25	15
Temperature range °C	-35 to +80	-35 to +80	-55 to +200	-55 to +200	-55 to +200	-55 to +260
Copper weight kg/km	7,0	7,0	7,0	8,0	11,0	9,0
Outer Ø approx. mm	2,8	2,6	1,8	2,5	3,7	2,6
Weight approx. kg / km	11	11	8	16	28	17
Electrical characteristics						
Impedance (Ohm)	**50 ± 2**	**50 ± 2**	**50 ± 2**	**75 ± 3**	**95 ± 5**	**75 ± 3**
Frequency range f (max.) GHz	1	1	3	3	3	3
Propagation velocity v/c	0,7	0,7	0,7	0,7	0,7	0,7
Attenuation at 20°C (db/100m)						
100 MHz	30	30	43	28	20	28
200 MHz	45	45	62	41	33	41
500 MHz	73	73	102	69	-	69
800 MHz	93	93	134	92	-	92
1000 MHz	-	-	-	-	-	-
1350 MHz	-	-	-	-	-	-
1750 MHz	-	-	-	-	-	-
CapacitancepF/m	101	101	93	63	50	64
Rel. velocity of propagation %	70	70	70	70	70	70
Insulation resistance MOhm x kmmin.	10^5	10^5	10^5	10^5	10^5	10^5
Loop resistance max. (Ohm/km)	360	360	860	840	840	840
Nominal peak voltagekVs	1	1	1	1	2	1
Dielectric strength 50 HzkVeff	2	2	2	2	2	2

Dimensions and specifications may be changed without prior notice.

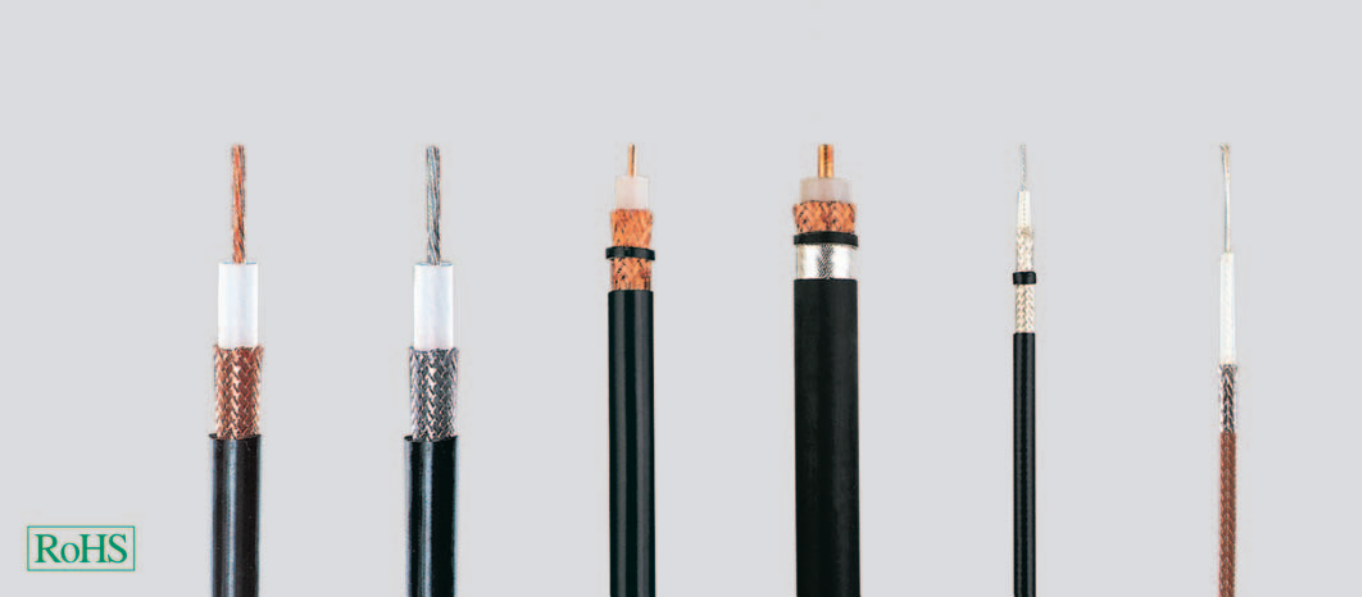
Note

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers.
- The colour at FEP and PFA outer sheath is brown or white as per production outlet.
- RG-Coaxial types are in accordance with US-Military specifications MIL-C-17.
- RG/U: R=Radio, G=Guide, U=Utility

Application

Coaxial cables are used in high frequency transmission, especially for transmitters and receivers, computers, radio and TV transmissions. The varied mechanical, thermal and electronic properties of Coaxial cables mean that they can be used up into the GHz levels, as per cable type.

RG-Coaxial Cables



Type	**RG 213**	**RG 214 U**	**RG 217**	**RG 218**	**RG 223 U**	**RG 316 B/U**
Part no.	40012	40011	40200	40201	40202	40203
Cable structure						
Inner conductor diameter mm	7 x 0,8 Copper, bare	7 x 0,8 Silvered copper	1 x 2,7 Copper, bare	1 x 4,95 Copper, bare	1 x 0,9 Silvered copper	7 x 0,2 Steel/copper, silvered
Insulation Ø mm	7,24 PE	7,24 PE	9,4 PE	17,3 PE	2,95 PE	1,52 PTFE
Outer conductor	Braid Copper, bare -	2 braids 2x silvered copper -	2 braids Copper, bare -	Braid Copper, bare -	2 braids 2x silvered copper -	Braid Silvered copper -
Outer sheath	PVC	PVC	PVC	PVC	PVC	PTFE/ alt. FEP
Min. bending radius approx. mm	50	50	70	110	25	15
Temperature range °C	-35 to +80	-35 to +80	-35 to +80	-35 to +80	-35 to +80	-55 to +200
Copper weight kg/km	85,0	120,0	187,0	348,0	44,0	9,0
Outer Ø approx. mm	10,3	10,8	13,84	22,1	5,2	2,5
Weight approx. kg / km	159	198	300	710	60	15
Electrical characteristics						
Impedance (Ohm)	**50 ± 2**	**50 ± 2**	**50 ± 2**	**50 ± 2**	**50 ± 2**	**50 ± 2**
Frequency range f (max.) GHz	3	11	3	3	3	3
Propagation velocity v/c	0,7	0,7	0,66	0,66	0,7	0,7
Attenuation at 20°C (db/100m)						
100 MHz	7	7	4,8	2,9	17	28
200 MHz	10,2	10,2	7,1	4,5	23	40
500 MHz	17	17	12,3	8,1	38	68
800 MHz	23	23	16,8	11,2	50	90
1000 MHz	-	-	-	-	-	-
1350 MHz	-	-	-	-	-	-
1750 MHz	-	-	-	-	-	-
CapacitancepF/m	101	101	101	101	101	95
Rel. velocity of propagation %	100	67	100	100	67	70
Insulation resistance MOhm x kmmin.	10^5	10^5	10^5	10^5	10^5	10^5
Loop resistance max. (Ohm/km)	10	10	5	2	36	310
Nominal peak voltagekVs	5	5	7	11	2	1
Dielectric strength 50 HzkVeff	10	10	10	15	5	2

Dimensions and specifications may be changed without prior notice.

Note

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers.
- The colour outer sheath at PTFE is brown or transparent as per production outlet.
- RG-Coaxial types are in accordance with US-Military specifications MIL-C-17.
- RG/U: R=Radio, G=Guide, U=Utility

Application

Coaxial cables are used in high frequency transmission, especially for transmitters and receivers, computers, radio and TV transmissions. The varied mechanical, thermal and electronic properties of Coaxial cables mean that they can be used up into the GHz levels, as per cable type.

Halogen-Free RG-Coaxial Cables



Type RG.../U	**11 A/U**	**58 C/U**	**59 B/U**	**62 A/U**	**71 B/U**	**213 U**	**214 U**
Part no.	40190	40191	40192	40193	40194	40195	40196
Cable structure							
Inner conductor diameter mm	7 x 0,4 Tinned copper	19 x 0,2 Tinned copper	1 x 0,6 Steel/copper, bare	1 x 0,6 Steel/copper, bare	1 x 0,6 Steel/copper, bare	7 x 0,8 Copper, bare	7 x 0,8 Silvered copper
Insulation Ø mm	7,3 PE	2,95 PE	3,7 PE	3,7 PE, hollow	3,7 PE, hollow	7,24 PE	7,24 PE
Outer conductor	Braid Copper, bare -	Braid Tinned copper -	Braid Copper, bare -	Braid Copper, bare -	2 braids Copper, bare Tinned copper	Braid Copper, bare -	2 braids 2x silvered copper -
Outer sheath	HM2	HM2	HM2	HM2	HM2	HM2	HM2
Min. bending radius approx. mm	50	25	30	30	30	50	50
Temperature range °C	-35 to +80	-35 to +80	-35 to +80	-35 to +80	-50 to +70	-35 to +80	-35 to +80
Copper weight kg/km	58,0	29,0	28,0	28,0	48,0	85,0	120,0
Outer Ø approx. mm	10,3	5,4	6,4	6,4	6,9	10,3	10,8
Weight approx. kg / km	144	38	57	54	64	155	203
Electrical characteristics							
Impedance (Ohm)	**75 ± 3**	**50 ± 2**	**75 ± 3**	**93 ± 5**	**93 ± 3**	**50 ± 2**	**50 ± 2**
Frequency range f (max.) GHz	3	3	3	3	3	3	11
Propagation velocity v/c	0,7	0,7	0,7	0,8	0,8	0,7	0,7
Attenuation at 20°C (db/100m)							
3 MHz	1,3	2,9	2	2	2	1,2	1,2
10 MHz	2,4	5,3	3,8	3,7	3,7	2,3	2,3
100 MHz	7,8	17	12,2	12	12,5	7,5	7,5
200 MHz	11,3	24,4	17,6	17,3	17,3	10,9	10,9
500 MHz	18,7	39,2	27,2	24,7	24,7	17,2	17,2
800 MHz	23,4	47,8	35,2	34,6	34,6	22,6	22,6
CapacitancepF/m	68	0	68	42,5	42,5	101	101
Rel. velocity of propagation %	67	67	67	43	43	101	101
Insulation resistance MOhm x kmmin.	10^5	10^5	10^5	10^5	10^5	10^5	10^5
Loop resistance max. (Ohm/km)	23	53	171	155	136	10	10
Nominal peak voltagekVs	5	2	2	1	1	5	5
Dielectric strength 50 HzkVeff.	10	5	7	3	3	10	10

Dimensions and specifications may be changed without prior notice. (RM01)

Note

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers.
- H-outer sheath = halogen-free material (HM2)
- RG-Coaxial types are in accordance with US-Military specifications MIL-C-17.
- RG/U: R=Radio, G=Guide, U=Utility
- FRNC = Flame Retardant Non-Corrosive

Application

Coaxial cables are used in high frequency transmission, especially for transmitters and receivers, computers, radio and TV transmissions where no flame propagation under behaviour in fire is permitted. The varied mechanical, thermal and electronic properties of Coaxial cables mean that they can be used up into the GHz levels, as per cable type.

CATV-Cables with alu- or copper foil and braiding



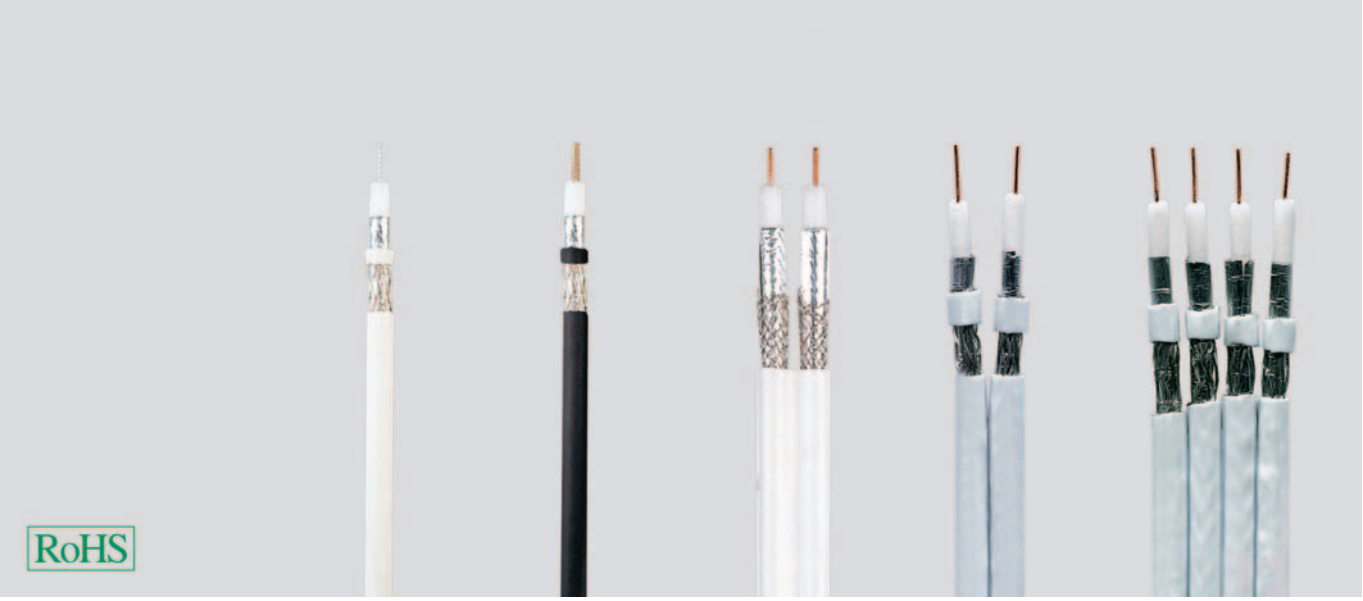
used as Type Part no.	0.7/4.4 ALG 40135	Underground 1.1/7.3 ALG 40139	Outdoor span 1.1/7.3 ALG-T 40140	Underground 1.8/11.5 FG 40141	BK-Underground A-2YK2Y1 iKx 1.1/7.3 40142	BK-Underground A-2Y0K2Y1 nKx 2.2/8.8 40143	BK-Underground A-2Y0K2Y1 qKx 3.3/13.5 40144	BK-Underground A-2Y0K2Y1 sKx 4.9/19.4 40179
Cable structure								
Inner conductor diameter mm	0,7 Copper, bare	1,1 Copper, bare	1,1 Copper, bare	1,8 Copper, bare	1,1 Copper, bare	2,2 Copper, bare	3,3 Copper, bare	4,9 Copper, bare
Insulation Ø mm	4,4 PE	7,3 PE	7,3 PE	11,5 PE	7,3 PE	8,8 PE, hollow	13,5 PE, hollow	19,4 PE, hollow
Outer conductor	Polyester foil coated with aluminium on both sides Braid -	Polyester foil coated with aluminium on both sides Braid -	Polyester foil coated with aluminium on both sides Braid -	Copper tape Braid -	Copper tube, welded - -	Copper tube, welded - -	Copper tube, welded - -	Copper tube, welded - -
Outer sheath	PVC	PE	PE	PE	PE	PE	PE	PE
Sheath colour	white	black	black	black	black	black	black	black
Outer Ø approx. mm	6,6	10,5	2,8	15,0	11,0	12,5	17,0	24,4
Min. bending radius approx. mm	35	100	150	150	160	200	300	400
Strain/suspending wire N	-	-	5500	-	-	-	-	-
Weight approx. kg / km	44	98	177	218	142	183	347	500
Electrical characteristics								
Impedance (Ohm)	**75 ± 3**	**75 ± 3**	**75 ± 3**	**75 ± 3**	**75 ± 2**	**75 ± 2**	**75 ± 1**	**75 ± 1**
CapacitancepF/m	67	67	67	67	65	51	51	50
Propagation velocity v/c	0,7	0,7	0,7	0,7	0,7	0,88	0,88	0,89
Attenuation at 20°C (db/100m)								
100 MHz	9	5,2	5,2	3,5	5,4	2,8	1,9	1,3
200 MHz	12	7,3	7,3	5,2	7,9	4	2,7	1,9
500 MHz	21,2	12,6	12,6	9	12,9	6,6	4,4	3,1
800 MHz	27,5	16,8	16,8	12	17,3	8,4	5,7	4,1
950 MHz	30,5	18,8	18,8	13	18,9	9,3	6,3	4,4
1350 MHz	37	23	23	-	-	-	-	-
1750 MHz	43	27,7	27,7	-	-	-	-	-
2050 MHz	47,5	30,2	30,2	-	-	-	-	-
Structural return loss min. (dB) between								
30 and 300 MHz	30	32	32	30	26	26	28	28
300 and 600 MHz	30	32	32	30	23	23	25	25
600 and 960 MHz	25	30	30	28	21	21	23	23
960 and 1750 MHz	23	27	27	25	-	-	-	-
DC resistance at 20°C								
Inner conductor max.Ohm/km	47	18,5	18,5	7,3	22	5,6	2,5	1
Outer conductor max.Ohm/km	23	11	11	6,5	3,1	3	2	1
Screening efficiency (dB)								
50 and 100 MHz≥	75	80	80	80	110	110	110	110
100 and 500 MHz≥	75	85	85	85	110	110	110	110
500 and 1000 MHz≥	75	85	85	85	110	110	110	110
1000 and 2050 MHz≥	75	78	78	80	110	110	110	110
Post office approved	G670009A	G670011A	G622015B	G622010B	-	-	-	-

Dimensions and specifications may be changed without prior notice. (RM01)

Note

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers.
- BK-underground: broadband cable in accordance with FTZ 15 TV 11 (post cable)
- **AL**=Aluminium, **ALPR**=Polyesterfoil coated with Aluminium on both sides
  BK-cable=broadband communication cable, **Cu**=Copper, **CuR**=Cu-tube welded, **CuW**=Copperweld, **F**=Foil, **G**=Braid, **PE**=Polyethylene, **PEH**=Polyethylene air-space insulation, **PVC**=Polyvinylchloride

SAT-Coaxial Cables up to 2150 MHz, for satellite-receivers, double screened



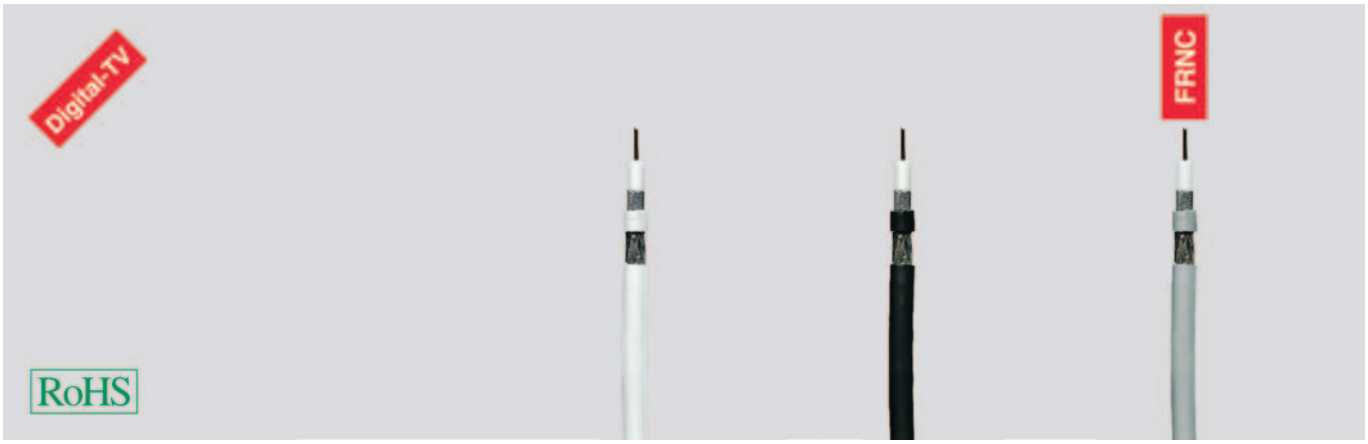
Type	**1,1/4,8**	**1.65/7.2 ALG**	**SAT-MINI 1**	**DUO 2x0.7/2.9**	**QUADRO 4x0.7/2.9**
Part no.	40150	40151	40159	40168	40169
Cable structure					
Inner conductor diameter mm	1,1 Tinned copper	1,6 Copper, bare	0,8 Copper, bare	0,65 Copper, bare	0,6 Copper, bare
Insulation Ø mm	5 Cell PE	7,2 Cell PE	3,5 Cell PE	3 Cell PE	3 Cell PE
Core colours	-	-	-	-	-
Outer conductor	Polyester foil coated with aluminium on both sides Braid -	Polyester foil coated with aluminium on both sides Braid -	Polyester foil coated with aluminium on both sides Braid -	Polyester foil coated with aluminium on both sides Braid -	Polyester foil coated with aluminium on both sides Braid -
Outer sheath	PVC	PE	PVC	PVC	PVC
Sheath colour	white	black	white	white	white
Outer Ø approx. mm	6,8	10,1	5,4 x 10,8	8,6 x 4,3	20,0 x 4,3
Min. bending radius approx. mm	50	60	40	35	80
Weight approx. kg / km	49	81	62	40	82
Electrical characteristics					
Impedance (Ohm)	**75 ± 3**	**75 ± 3**	**75 ± 3**	**75 ± 3**	**75 ± 3**
CapacitancepF/m	55	55	55	55	55
Propagation velocity v/c	0,8	0,82	0,82	0,8	0,8
Attenuation at 20°C (db/100m)					
100 MHz	5	3,7	8	8,9	8,9
200 MHz	7,3	5,1	11,5	13,5	13,5
500 MHz	13	9	18,5	22	22
800 MHz	17,2	11,8	23,5	28	28
950 MHz	19,5	13,6	25,5	31,5	31,5
1350 MHz	23,5	16,8	31	37	37
1750 MHz	27,6	19,7	35,5	42,3	42,3
2050 MHz	30	22	39,5	45,9	45,9
2150 MHz	31	22,5	43	50,4	50,4
Structural return loss min. (dB) between					
30 and 300 MHz	28	31	27	20	20
300 and 600 MHz	28	30	25	17	18
600 and 960 MHz	26	30	20	17	15
960 and 2050 MHz	24	28	20	-	-
DC resistance at 20°C					
Inner conductor max.Ohm/km	18	9	36	110	52
Outer conductor max.Ohm/km	20	12	28	22	26
Max. nominal voltage (V)	-	-	-	-	-
Screening efficiency (dB)					
50 and 100 MHz≥	75	80	78	75	75
100 and 500 MHz≥	75	85	78	75	75
500 and 1000 MHz≥	75	85	75	75	75
1000 and 2050 MHz≥	75	78	75	75	75
Post office approved	G670010A	G622016B	-	-	-
Copper weight kg/km	21,0	35,0	30,0	16,0	50,0

Dimensions and specifications may be changed without prior notice. (RM01)

Note

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers.
- **AL**=Aluminium, **ALPR**=Polyesterfoil coated with Aluminium on both sides
  Cu=Copper, **CuW**=Copperweld, **F**=Foil, **G**=Braid, **PE**=Polyethylene, **PEH**=Polyethylene air-space insulation, **PVC**=Polyvinylchloride, **vz**=tinned

Multimedia-Coaxial Cables SAT 1,0/4,6GH, up to 2400MHz, for digital-tv, double screened, screening efficieny >90dB



used as	**inner/outer**	**Underground**	**Safety zones**
Type	**1.0/4.6 GH-Y**	**1.0/4.6 GH-2Y**	**1.0/4.6 GH-FRNC**
Part no.	40176	40177	40178
Cable structure			
Inner conductor diameter mm	1 Copper with skin	1 Copper with skin	1 Copper with skin
Insulation Ø mm	4,6 Cell polyethylene with skin and PIB coating	4,6 Cell polyethylene with skin and PIB coating	4,6 Cell polyethylene with skin and PIB coating
Outer conductor	Polyester foil coated with aluminium on both sides	Polyester foil coated with aluminium on both sides	Polyester foil coated with aluminium on both sides
Outer sheath	PVC	PE	FRNC
Sheath colour	white	black	grey
Outer Ø approx. mm	6,6	6,6	6,6
Approv. bending radius approx. mm	45	45	45
Weight approx. kg / km	40	40	40
Electrical characteristics			
Impedance (Ohm)	**75 ± 1**	**75 ± 1**	**75 ± 1**
CapacitancepF/m	55	55	55
Propagation velocity v/c	0,8	0,85	0,85
Attenuation at 20°C (db/100m)			
100 MHz	5,8	5,8	5,8
200 MHz	7,8	7,8	7,8
450 MHz	12,5	12,5	12,5
600 MHz	14,7	14,7	14,7
800 MHz	17,2	17,2	17,2
1000 MHz	19,1	19,1	19,1
1750 MHz	26,2	26,2	26,2
2050 MHz	28,5	28,5	28,5
2400 MHz	31,3	31,3	31,3
Structural return loss min. (dB) between			
30 and 300 MHz	30	30	30
300 and 600 MHz	32	32	32
600 and 960 MHz	31	31	31
960 and 1750 MHz	26	26	26
1750 and 2400 MHz	30	30	30
DC resistance at 20°C			
Inner conductor max.Ohm/km	18	18	18
Outer conductor max.Ohm/km	20	20	20
Max. nominal voltage (V)	-	-	-
Screening efficiency (dB) ≥	90	90	90
Copper weight kg/km	22,0	22,0	22,0

Dimensions and specifications may be changed without prior notice. (RM01)

Note

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers.
- **FRNC**=Flame Retardant Non Corrosive, **PEE**= Cell-Polyethylene, **PIB**= Polyisobutylene, **ALPR**=Polyesterfoil coated with Aluminium on both sides **F**=Foil, **G**=Braid, **GH**=Braid-covering ca. 88%

Application

- **Copper inner-conductor 1,02 with skin-effect**
  Protection against humidity and corrosion / Solid compound of dielectric. No change of position during installation in narrow bending radius.
- **Dielectric 4,6 mm Ø : - special PE-compound, foaming by GAS-INJEKTION**
  Important improvement of propagation velocity values / Very high transmission speed of individual signals (presumption for Multimedia) / Improvement for the resistance to ageing / Reduction of attenuation-loss by approx. 2dB
- **The over surface of dielectric consists too a skin-coating (smooth over surface)**
  Protection against humidity and other chemical influences / Minimum impedance tolerance ± 2 Ohm / This coaxial cable is crimpable / Installation in narrow bending radius, no kinking risk / The transmission-loss of signals are hardly measurable to the advance in years / Additionally to the skin-effect, the dielectric contains a gel-coating (special PIB-cpmpound) / We therefore offer a **15 years guarantee for attenuation-loss** by installation at 20°C room-temperature
- **Screening**
  a) AL/PR-foil, polyesterfoil coated with aluminium on both sides or b) Copper braiding of tinned wires, **screening efficiency >90 dB**

SAT-Coaxial Cables for digital-tv, screening efficieny >90dB / >95dB, for satellite-receivers, double screened



used as Type	inner 0,7/2,9	inner/outer 0,7/4,5	inner/outer 0,8/3,5	inner 1,1/5,0	Underground 1.6/7,0	inner 1,1/5,0 FRNC	inner/outer 1,1/5,0 FRNC	inner 1.6/7.0 FRNC
Part no.	40015	40016	40085	40017	40018	40019	40021	40020
Cable structure								
Inner conductor diameter mm	0,6 Copper, bare	0,75 Tinned copper	0,8 Copper, bare	1,1 Copper, bare	1,63 Copper, bare	1,1 Copper, bare	1,1 Copper, bare	1,6 Copper, bare
Insulation Ø mm	3 Polyethylene, foamed	4,5 Polyethylene, foamed	3,5 Polyethylene, foamed	4,8 Polyethylene, foamed	7,1 Polyethylene, foamed	4,8 Cell PE, foamed	4,8 Cell PE, foamed	7,1 Polyethylene, foamed
Outer conductor	ALPR-FG	ALPR-FG	ALPR-FG	ALPR-FG	ALPR-FG	ALPR-FG	ALPR-FG	ALPR-FG
	-	-	-	-	-	-	-	-
1st Screen - ALPR	foil	foil	foil	foil	foil	foil	foil	foil
2nd Screen - Cu-Braid	Braid	Braid	Braid	Braid	Braid	Braid	Braid	Braid
Outer sheath	PVC	PVC	PVC	PVC	PE	FRNC	FRNC	FRNC
Sheath colour	white	white	white	white	black	white	black	white
Outer Ø approx. mm	4,3	6,6	5,0	6,9	10,3	6,8	6,8	10,0
Min. bending radius approx. mm	43	35	50	45	60	48	48	60
Weight approx. kg / km	20	40	32	47	110	47	47	110
Electrical characteristics								
Impedance (Ohm)	**75 ± 3**	**75 ± 3**	**75 ± 3**	**75 ± 2**	**75 ± 2**	**75 ± 2**	**75 ± 2**	**75 ± 2**
CapacitancepF/m	55	67	53	55	55	53	55	53
Propagation velocity v/c	0,8	0,66	0,8	0,8	0,85	0,8	0,8	0,8
Attenuation at 20°C (db/100m)								
100 MHz	8,1	7,1	6,3	4,9	3	4,7	4,9	3,8
200 MHz	13,3	10,4	11,5	7,7	6,1	7	7,2	5,5
450 MHz	20,9	16,8	17,1	11,6	9	11,5	11,6	8,6
800 MHz	-	25	-	-	-	17	-	12,1
1000 MHz	31,5	27,4	26,5	18,9	14,3	18,1	18,9	13,2
1750 MHz	42,2	37,4	36,4	26,6	20,1	25	26,6	17,5
2050 MHz	45,8	40,5	39,7	28,2	22,5	27,3	28,2	19
2250 MHz	49,9	44,3	43,1	29,5	24	28	29,5	19,9
2400 MHz	55,5	45	-	31,9	-	29,3	31,9	22,5
Structural return loss min. (dB) between								
30 and 300 MHz	20	20	35	25	40	25	40	25
300 and 600 MHz	18	18	35	18	35	18	40	18
600 and 960 MHz	16	18	30	17	35	17	35	17
960 and 1750 MHz	-	-	30	15	30	15	30	15
DC resistance at 20°C								
Inner conductor max.Ohm/km	52	110	36	18	9	18	18	9
Outer conductor max.Ohm/km	29	22	28	14	21	14	14	21
Max. nominal voltage (V)	-	-	-	-	-	-	-	-
Screening efficiency (dB)								
50 and 100 MHz≥	95	90	90	95	90	90	95	90
100 and 500 MHz≥	95	90	90	95	90	90	95	90
500 and 1000 MHz≥	95	90	90	95	90	90	95	90
1000 and 2050 MHz≥	95	90	90	95	90	90	95	90
Copper weight kg/km	12,5	9,0	9,0	25,0	32,0	25,0	25,0	50,5

Dimensions and specifications may be changed without prior notice. (RM01)

RGB-COAX-CY / RGB-COAX-(St)Y transmission cables for colour monitor



Technical data

- **Base cable 0,37/1,5 or 0,6/3,7**
- **Temperature range**
  fixed installation -10°C to +80°C
  flexing -5°C to +50°C
- **Mutual capacitance** 67 nF/km
- **Impedance** 75 Ohm
- **Attenuation**
  RGB-Coax 0,37/1,5
  1 MHz = 2,0 dB/100m
  2 MHz = 2,8 dB/100m
  5 MHz = 4,0 dB/100m
  10 MHz = 5,8 dB/100m
  20 MHz = 8,4 dB/100m
  50 MHz = 13,9 dB/100m
  100 MHz = 19,8 dB/100m
  200 MHz = 28,5 dB/100m
  RGB-Coax 0,6/3,7
  1 MHz = 1,1 dB/100m
  2 MHz = 1,5 dB/100m
  5 MHz = 2,5 dB/100m
  10 MHz = 3,5 dB/100m
  20 MHz = 4,5 dB/100m
  50 MHz = 7,2 dB/100m
  100 MHz = 10,4 dB/100m
  200 MHz = 15,1 dB/100m
- **Minimum bending radius**
  15x cable Ø

Cable structure

RGB-COAX-CY ... x0,37/1,5

- Inner conductor bare copper, solid, conductor Ø 0,37 mm
- Dielectric (insulation) of cell-Polyethylene
- Outer conductor of tinned copper wire braiding
- PVC-sheath in colour
  red, green, blue for 3xRGB COAX
  red, green, blue, white, black for 5xRGB COAX
- 3 or 5 Coax twisted with optimal lay-length
- Foil taping
- Overall braid-screening, tinned copper with optimal surface coverage and drain-wire
- PVC-outer sheath, black

RGB-COAX-CY 3x0,37/1,5 + 3x0,25

- Cable structure as per above, but with 3 additional control cores (3x0,25) in the interstices, colour brown, green, white

RGB-COAX-(St)Y ... x0,6/3,7 (deviation)

- Inner conductor, bare copper, solid, conductor Ø 0,6 mm
- Outer conductor of tinned or bare copper wire braiding
- Foil taping
- Plastic coated aluminium foil and drain wire
- Outer sheath of PVC, green or black

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers.

Application

RGB cables are suitable for the transmission of both analogue and digital video signals.
They are used particularly as connecting cables for data systems, engineering applications (CAD, high-definition graphics) and in television studios. The three main signals (red, green, blue) are transmitted separately. Depending on the application, it is possible to supply the base cable with further coaxial cables or with symmetrical signal cores for the intensity and horizontal or vertical synchronisation.

RGB-COAX-CY ... 0,37/1,5

Part no.	No. RGB-Coax n x mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
40145	3 x 0,37/1,5	7,2	23,0	59,0
40147	3 x 0,37/1,5 + 3 x 0,25	8,2	60,5	89,0
40146	5 x 0,37/1,5	9,0	36,0	89,0

RGB-COAX-(St)Y ... 0,6/3,7

Part no.	No. RGB-Coax n x mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
40148	3 x 0,6/3,7	16,0	66,0	278,0
40149	5 x 0,6/3,7	19,0	102,0	397,0

Dimensions and specifications may be changed without prior notice. (RM01)


DEMAG



TRAYCONTROL® 500

JZ-602-PUR

H05VV-F/SJT

TOPGEBER 512 PUR

MEGAFLEX® 500

MULTISPEED® 500-PVC UL/CSA

SUPER-PAAR-TRONIC 340-C-PUR

PURö-JZ-HF-FCP

MULTIFLEX 512® C-PUR UL/CSA

HELUTHERM® 145

CW&A Edition 27 (published 01.04.2015)

NFPA 79 EDITION 2012

Challenges and solutions

In 1897 the first edition of the National Electrical Code (NEC), also referred to as NFPA 70, was published. The NEC is the only code for electrical installations that is recognized at the national level in the USA. It deals with fire triggered by electricity. It is updated every three years, i.e. the 2012 edition appeared in 2011. In article 670 "Industrial Machinery", the NEC refers to NFPA code no. 79 (Electrical Standard for Industrial Machinery). This standard cites basic requirements imposed on the electrical equipment of machines and devices. Manufacturers and owners of machines and equipment must comply with this standard, for example, to meet product liability and insurance requirements.

Machines placed in service in the USA are always subject to an approval obligation. This can occur either through the individual acceptance of a piece of equipment prior to commissioning (e.g. in Germany) or through a test institute recognized in the USA. The final decision concerning commissioning is made on site through a local inspector, who may not necessarily be a specialist in the area of electronic equipment. The inspector can mandate the provisional stoppage of the machine if there are doubts relative to the machine's conformity with US standards.

NFPA 79: 2007 in chapter 12.2.7.3 "When part of a listed assembly suitable for the intended application, type AWM shall be permissible." Allows AWM cables, if they have been used as part of a listed system, and were suitable for the intended application.

However there are applications for which previously there were no NFPA 79 cables. For example, cables for use in energy drag chains or those with superstructures. There were objections and protests from the industry in this regard. The NFPA reacted accordingly and called in a committee of experts. As a result, in NFPA 79: Edition 2012, use of AWM cables under certain conditions was again approved. As before, unrestricted use is not permitted. Rather the responsibility for the implementation is now placed on the manufacturer or the erector of the equipment. Article 12.2.7. of edition 2007 was completely eliminated. All recommendations have been summarized in the new article 12.9.

SUMMARY

- Machines and equipment that is already certified (e.g. through UL) may continue to be repaired, modified, or extended in accordance with the previous rules.
- New certified machines and equipment may continue to be built in accordance with the previous rules. The certification will be recognized.
- For new machines and equipment without certification, in some areas higher requirements imposed on certain cables (e.g. UL Listing) could apply. In this case the important thing is to consult with the respective certification authority.

In many cases, HELUKABEL recommends the use of UL-listed lines, as before. Our technical dept. would be pleased to provide additional information at tel. +49 7150 92 09 -0.

THE COMPLETE ORIGINAL WORDING

12.9 Special Cables and Conductors

12.9.1 Other listed cables and conductors shall be permitted where identified as suitable for the identified use

12.9.2 Appliance Wiring Material (AWM) shall be permitted under 12.9.2.1 through 12.9.2.3

12.9.2.1 Where part of an assembly that has been identified for intended use

12.9.2.2 Where specified for use with approved equipment and used in accordance with the equipment manufacturers instructions.

12.9.2.3 Where its construction meets all applicable requirements of sections 12.2 – 12.6 with modifications as follows:
(1) Stranded conductors with wire sizes smaller than those listed in 12.2.2 shall have a minimum of 7 strands.
(2) Conductor insulation and cable jacket materials not specified in 12.3.1 have flame resistant properties in compliance with applicable standards for intended use such as FT2 (horizontal wire) flame test or VW-1 (Vertical Wire) flame test in ANSI/UL 1581-2001, Reference Standard for Electrical Wires, Cables and Flexible Cords.
(3) Minimum insulation thickness for single conductor AWM shall be as specified in 12.3.2. Minimum insulation thickness for conductors that are part of a multi conductor jacketed AWM cable shall be as specified by the AWM Style number and by the marked voltage rating of the cable.
(4) AWM shall be marked in accordance with 12.4.1, 12.4.3 and 12.4.4. The legend shall include manufacturer's name or trademark, AWM style number, voltage rating (unless marking is prohibited by 12.4.2), wire gauge(s), temperature rating and flame resistance. Additional markings for properties such as oil, water, UV and chemical resistance identifiers shall be permitted where in compliance with applicable standards for intended use. Where markings alone are insufficient to identify for the intended application, suitable information shall be included with the technical machine documentation.

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CABLES ACCORDING TO INTERNATIONAL APPROVALS

	Temperature (°C) - flexing	Temperature (°C) - fixed	Nominal voltage U_o/U / Nominal voltage	Bending radius - flexing x Ø	Bending radius - fixed x Ø	Halogen-free	UV-resistant	Outdoor use	Drag chain	Colored cores/VDE 0293	Screened/shielded	HAR/VDE REG no./VDE	UL/CSA	NFPA 79	Page
PVC control lines UL/CSA															
JZ-602	-5 to +90	-40 to +90	600	7.5x	4x							X			356
JZ-603	-5 to +90	-40 to +90	600	7.5x	4x						X	X			358
TRAYCONTROL® 500	-5 to +90	-40 to +90	600	4x	4x							X	X		359
TRAYCONTROL® 530	-5 to +90	-40 to +90	600	5x	5x							X	X		361
JZ-600 UL/CSA	-5 to +80	-40 to +80	1000	7.5x	4x		X	X				X			362
JZ 604 TC TRAY CABLE	-5 to +75	-25 to +75	600	7.5x	7.5x		X	X				X	X		364
TRAYCONTROL® 600		-40 to +90	600	5x	5x		X	X				X	X		366
H05VV-F/SJT	-5 to +60	-40 to +60	300	7.5x	7.5x					X		X	X		368
H05VV-F/SJT	-5 to +60	-40 to +60	300	7.5x	7.5x					X		X	X		369
H05VV-F/UL	-5 to +75	-40 to +75	300/500	7.5x	7.5x					X		X	X		370
FROR CEI 20-22 II	-5 to +70	-35 to +70	300/500	10x	10x					(X)					371
C.N.O.M.O	-5 to +80	-30 to +80	500	15x	15x										372
JZ-602-CY	-5 to +90	-40 to +90	600	10x	5x						X		X		373
JZ-603-CY	-5 to +90	-40 to +90	600	10x	5x						X	X	X		375
TRAYCONTROL® 500-C	-5 to +90	-40 to +90	600	6x	6x						X		X	X	376
JZ-600-Y-CY UL/CSA	-5 to +80	-40 to +80	1000	10x	5x		X	X			X		X		378
JZ 604-FCY TC TRAY CABLE	-5 to +75	-25 to +75	600	10x	10x		X	X			X		X	X	380
JZ 604-YCY TC TRAY CABLE	-5 to +75	-25 to +75	600	10x	10x		X	X			X		X	X	381
TRAYCONTROL® 600-C		-40 to +90	600	6x	6x		X	X			X		X	X	382
PUR/TPE control lines UL/CSA															
JZ-602-PUR	-5 to +80	-40 to +80	600	7.5x	4x		X	X					X		384
JZ-602-PUR DC/AC	-5 to +80	-40 to +80	600	7.5x	4x		X	X					X		386
JZ-600 PUR	-5 to +80	-40 to +80	1000	7.5x	4x		X	X					X		387
JZ-602-C-PUR	-5 to +80	-40 to +80	600	10x	5x		X	X			X		X		389
JZ-600-YC-PUR	-5 to +80	-40 to +80	1000	10x	5x		X	X			X		X		390
TRAYCONTROL® 670 HDP / 670-C HDP		-40 to +105	600	7.5x	7.5x			X			/ X		X	X	392
Halogen-free control lines UL/CSA															
MEGAFLEX® 500	-30 to +80	-40 to +80	600	10x	4x	X	X	X					X		394
MEGAFLEX® 600	-30 to +80	-40 to +80	600	10x	4x	X	X	X					X		396
MEGAFLEX® 500-C	-30 to +80	-40 to +80	600	10x	4x	X	X	X			X		X		398
MEGAFLEX® 600-C	-30 to +80	-40 to +80	600	10x	4x	X	X	X			X		X		400
Data lines UL/CSA															
Command Cable UL (LiYY)	-10 to +80	-20 to +80	300	15x	7.5x					X			X		403
Command Cable UL (LiYY)	-10 to +105	-20 to +105	600	15x	7.5x					X			X		404
TRAYCONTROL® 300		-25 to +105	300	6x	6x					X			X	X	405
Command Cable UL (LiYY-TP))	-10 to +80	-20 to +80	300	15x	7.5x					X			X		407
TRAYCONTROL® 300 TP		-25 to +105	300	6x	6x					X			X	X	409
VERTEILERFLEX two-approvals	-5 to +80	-30 to + 80	300/500	15x/7.5x	15x/7.5x				(X)	X			X		411
Command Cable UL (LiYCY)	-10 to +80	-20 to +80	300	15x	7.5x					X	X		X		413
Command Cable UL (LiYCY)	-10 to +105	-20 to +105	600	15x	7.5x					X	X		X		415
TRAYCONTROL® 300-C		-25 to +105	300	6x	6x					X	X		X	X	416

The selection table is intended as an initial orientation.
Please see the relevant page of the catalogue for detailed information on the product properties.

CABLES ACCORDING TO INTERNATIONAL APPROVALS

	Temperature (°C) - flexing	Temperature (°C) - fixed	Nominal voltage U_o/U / Nominal voltage	Bending radius - flexing x Ø	Bending radius - fixed x Ø	Halogen-free	UV-resistant	Outdoor use	Drag chain	Colored cores/VDE 0293	Screened/shielded	HAR/VDE REG no./VDE	UL/CSA	NFPA 79	Page
Data lines UL/CSA															
Command Cable UL (LiYCY-TP)	-10 to +80	-20 to +80	300	15x	7.5x					X	X		X		418
TRAYCONTROL® 300-C TP		-25 to +105	300	6x	6x					X	X		X	X	420
Drag chain cables UL/CSA															
JZ-602 RC	-5 to +90	-40 to +90	600	7.5x	4x		X	X	X				X		423
MULTIFLEX 600	-5 to +90	-40 to +90	600	7.5x	7.5x		X	X	X				X	X	424
MULTISPEED® 500-PVC UL/CSA	-5 to +80	-30 to +80	600	7.5x	4x		X	X	X				X		425
JZ-HF-FCY	-5 to +80	-40 to +80	1000	10x	5x				X		X		X		426
JZ-602 RC -CY	-5 to +90	-40 to +90	600	10x	5x		X	X	X		X		X		427
MULTIFLEX 600-C	-5 to +90	-40 to +90	600	10x	10x		X	X	X		X		X	X	428
MULTISPEED® 500-C-PVC UL/CSA	-5 to +80	-30 to +80	600	7.5x	4x		X	X	X		X		X		429
JZ-602 RC -PUR	-5 to +80	-40 to +80	600	7.5x	4x		X	X	X				X		430
MULTIFLEX 512® PUR UL/CSA	-30 to +80	-40 to +80	600	5x	3x	X	X	X	X				X		431
MULTISPEED® 500-PUR UL/CSA	-30 to +80	-40 to +80	600	7.5x	4x	X	X	X	X				X		433
PURö-JZ-HF-FCP	-5 to +80	-40 to +80	1000	10x	5x		X	X	X		X		X		435
JZ-602 RC -C-PUR	-5 to +80	-40 to +80	600	10x	5x		X	X	X		X		X		436
MULTIFLEX 512® C-PUR UL/CSA	-30 to +80	-40 to +80	600	7.5x	4x	X	X	X	X		X		X		437
MULTISPEED® 500-C-PUR UL/CSA	-30 to +80	-40 to +80	600	7.5x	4x	X	X	X	X		X		X		539
MULTISPEED® 500-TPE UL/CSA	-30 to +80	-40 to +80	600	5x	3x	X	X	X	X				X		441
MULTISPEED® 500-C-TPE UL/CSA	-30 to +80	-40 to +80	600	5x	3x	X	X	X	X		X		X		443
SUPERTRONIC®-310-PVC	-5 to +80	-40 to +80	300	5x	3x					X			X		445
SUPERTRONIC®-310-C-PVC	-5 to +80	-40 to +80	300	7.5x	4x					X	X		X		446
SUPERTRONIC®-330 PURö	-30 to +80	-40 to +80	300	5x	3x	X	X	X	X	X			X		447
MULTISPEED® TRONIC-PUR	-30 to +80	-40 to +80	300	7.5x	4x	X	X	X	X	X			X		448
SUPERTRONIC® 330 C-PURö	-30 to +80	-40 to +80	300	7.5x	4x	X	X	X	X	X	X		X		449
MULTISPEED® TRONIC-C-PUR	-30 to +80	-40 to +80	300	7.5x	4x	X	X	X	X	X	X		X		450
SUPER-PAAR-TRONIC 340-C-PUR	-30 to +80	-40 to +80	300	10x	5x	X	X	X	X	X	X		X		451
Motor, servo, feedback cables UL/CSA															
TOPFLEX® - EMV-UV-2YSLCYK-J	-5 to +80	-40 to +80	1000	20x	10x		X	X		X	X		X		453
TOPFLEX® - EMV-UV-3 PLUS 2YSLCYK-J	-5 to +80	-40 to +80	1000	20x	10x		X	X		X	X		X		455
TOPFLEX® MOTOR-EMV 103	-5 to +70	-40 to +80	1000	20x	10x					X	X		X		457
TOPFLEX® 600 VFD		-25 to +90	600	6x	6x		X	X			X		X	X	458
TOPFLEX® 650 VFD	-25 to +105	-25 to +105	600	6x	6x		X	X			X		X	X	459
TOPFLEX® 1000 VFD	-25 to +90	-25 to +90	600	15x	7.5x		X	X			X		X	X	460
TOPFLEX® EMV UV 2YSLC11Y-J	-5 to +80	-40 to +80	1000	20x	10x		X	X		X	X		X		461
TOPFLEX® MOTOR EMV 1/1	-30 to +80	-40 to +80	1000	20x	10x		X	X		X	X		X		462
TOPFLEX® MOTOR EMV 3/3	-30 to +80	-40 to +80	1000	20x	10x		X	X		X	X		X		463
TOPSERV® PVC 108, 112, 119	-0 to +60	-20 to +80	1000	15x	5x						X		X		465
TOPGEBER 511 PVC	-0 to +60	-20 to +80	30	15x	6x					X	X		X		467
TOPSERV® PUR 109, 113, 121	-30 to +80	-40 to +80	1000	7.5x	4x		X	X	X		X		X		468
TOPGEBER 512 PUR	-30 to +80	-40 to +80	30	10x	6x		X	X	X	X	X		X		470
TOPSERV® 600 VFD	-25 to +90	-25 to +90	600	7.5x	5x		X	X	X		X		X	X	472

The selection table is intended as an initial orientation.
Please see the relevant page of the catalogue for detailed information on the product properties.

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CABLES ACCORDING TO INTERNATIONAL APPROVALS

	Temperature (°C) - flexing	Temperature (°C) - fixed	Nominal voltage U_0/U / Nominal voltage	Bending radius - flexing x Ø	Bending radius - fixed x Ø	Halogen-free	UV-resistant	Outdoor use	Drag chain	Colored cores/VDE 0293	Screened/shielded	HAR/VDE REG no./VDE	UL/CSA	NFPA 79	Page
Motor, servo, feedback cables UL/CSA															
TOPSERV® 650 VFD	-25 to +105	-25 to +105	600	7.5x	5x		X	X	X		X		X	X	473
TOPSERV® Hybrid	-30 to +80	-40 to +80	1000	7.5x	4x		X	X	/X		X		X		474
Heat-resistant cables UL/CSA															
SiHF UL/CSA		-50 to +150	600	7.5x	4x	X		X		X			X		476
SiHF-C-Si UL/CSA		-50 to +150	600	10x	5x	X		X		X	X		X		478
All-weather cables & rubber cables UL/CSA															
Rubber cable/neoprene hose cable		-40 to +90	300				X	X		X			X		480
H07RN-F/SOOW		-40 to +90	600	10x	7.5x		X	X		X		X	X		481
Easy-to-wind cables UL/CSA															
TROMM-PUR®-H	-40 to +80	-50 to +80	1000	6x	6x	X	X	X					X		483
Single-core UL/CSA															
UL-Style 1007, CSA TR 64	-5 to +80	-30 to +80	300	10x	5x					X			X		485
UL-Style 1569, CSA TR 64	-5 to +105	-30 to +105	300	10x	5x					X			X		486
UL-Style 1015	-5 to +105	-30 to +105	600	10x	5x					X			X		487
THREENORM	+5 to +70	-10 to +70	600		6x					X		X	X		488
FIVENORM	+5 to +90	-40 to +90	600		6x					X		X	X	X	490
THHN/THWN		/ +90	600	8x	8x								X	X	493
PVC single-cores	-5 to +80	-30 to +80	300/300		6x					X					494
HELUTHERM® 145	-35 to +105	-55 to +105	300	12.5x	4x	X	X	X		X			X		495
HELUTHERM® 145	-35 to +105	-55 to +105	600	12.5x	4x	X	X	X		X			X		496
UL-Style 3135		-60 to +200	600	15x	15x	X				X			X		497
Single 600-J/-O	-5 to +90	-40 to +90	600	7.5x	4x		X	X					X		498
Single 600-CY -J/-O	-5 to +90	-40 to +90	600	7.5x	4x		X	X			X		X		499
TOPFLEX® 302 / 302-UL	-15 to +80	-40 to +80	0.6/1 kV	5x	5x		X	X					/X		500
Single 602-RC -J/O	-5 to +90	-40 to +90	600	7.5x	3x				X				X		501
Single 602-RC-CY -J/O	-5 to +90	-40 to +90	600	7.5x	3x				X		X		X		502
TOPFLEX® 304 / 304-C	-5 to +80	-40 to +80	1000	5x	5x				X		/X		X		503
MULTISPEED® 600-PUR -J/-O	-30 to +80	-40 to +80	1000	5x	3x	X	X	X	X				X		504
MULTISPEED® 600-C-PUR -J/-O	-30 to +80	-40 to +80	1000	5x	3x	X	X	X	X		X		X		505
TOPFLEX® 301 / 301-C	-15 to +80		1000	7.5x	7.5x		X	X	X		/X		X		506
British standard cables															
HELUKABEL BS 5308-1		-20 to +65	300/500		6x					X	X				508
HELUKABEL BS 5308-2		-20 to +65	300/500		6x					X	X				509
HELUKABEL BS 5467	0 to +90	-15 to +90	0.6/1 kV		8x			X		X	X				510
HELUKABEL BS 6724	0 to +90	-20 to +90	0.6/1 kV		8x	X				X	X				511

The selection table is intended as an initial orientation.
Please see the relevant page of the catalogue for detailed information on the product properties.

SELECTION TABLE - DRAG CHAIN CABLES

	Max. movement distance in m (10 m up to 25-cores)	Min. bending radius - flexing (D=outerØ)	Max. speed (m/s)	Max. acceleration (m/s²)	Max. cycles	Material	Nominal voltage U_0/U / Operating voltage	Temperature (°C) - flexing	Approvals	Page
PVC drag chain cables UL/CSA										
SUPERTRONIC®-310-PVC	5	5 x D	2	10	9 Mio	PVC/PVC	300V	-5° to +80°	UL/CSA	445
SUPERTRONIC®-310-C-PVC	5	7.5 x D	2	10	9 Mio	PVC/CU/PVC	300V	-5° to +80°	UL/CSA	446
MULTISPEED® 500-PVC UL/CSA	100	7.5 x D	5	50	9 Mio	PP/PVC	600V	-5° to +80°	UL/CSA	425
MULTISPEED® 500-C-PVC UL/CSA	100	7.5 x D	5	50	9 Mio	PP/CU/PVC	600V	-5° to +80°	UL/CSA	429
JZ-HF-FCY	10	10 x D	2	10	9 Mio	PVC/CU/PVC	1000V	-5° to +80°	UL/CSA	426
JZ-602 RC	10	7.5 x D	2	10	9 Mio	PVC/PVC	600V	-5° to +90°	UL/CSA	423
JZ-602 RC-CY	10	10 x D	2	10	9 Mio	PVC/CU/PVC	600V	-5° to +90°	UL/CSA	427
MULTIFLEX 600	10	7.5 x D	2	10	9 Mio	PVC/PVC	600V	-5° to +90°	UL/CSA	424
MULTIFLEX 600-C	10	10 x D	2	10	9 Mio	PVC/CU/PVC	600V	-5° to +90°	UL/CSA	428
PUR & TPE drag chain cables UL/CSA										
SUPERTRONIC®-330 PURö	15	5 x D	4	10	11 Mio	PP/PUR	300V	-30° to +80°	UL/CSA	447
SUPERTRONIC®-330 C-PURö	15	7.5 x D	4	10	11 Mio	PP/CU/PUR	300V	-30° to +80°	UL/CSA	449
SUPER-PAAR-TRONIC 340-C-PUR	30	10 x D	4	50	11 Mio	PP/CU/PUR	300V	-30° to +80°	UL/CSA	451
JZ-602 RC-PUR	15	7.5 x D	3	10	9 Mio	PVC/PUR	600V	-5° to +80°	UL/CSA	430
JZ 602 RC-C-PUR	15	10 x D	3	10	9 Mio	PVC/CU/PUR	600V	-5° to +80°	UL/CSA	436
PURö-JZ-HF-FCP	15	10 x D	3	10	9 Mio	PVC/CU/PUR	1000V	-5° to +80°	UL/CSA	435
MULTIFLEX 512®-PUR UL/CSA	100	5 x D	4	10	11 Mio	PP/PUR	600V	-30° to +80°	UL/CSA	431
MULTIFLEX 512®-C-PUR UL/CSA	100	7.5 x D	4	10	11 Mio	PP/CU/PUR	600V	-30° to +80°	UL/CSA	437
MULTISPEED®-TRONIC-PUR	450	7.5 x D	5	50	11 Mio	PP/PUR	300V	-30° to +80°	UL/CSA	448
MULTISPEED®-TRONIC-C-PUR	450	7.5 x D	5	50	11 Mio	PP/CU/PUR	300V	-30° to +80°	UL/CSA	450
MULTISPEED® 500-PUR UL/CSA	450	7.5 x D	5	50	11 Mio	PP/PUR	600V	-30° to +80°	UL/CSA	433
MULTISPEED® 500-C-PUR UL/CSA	450	7.5 x D	5	50	11 Mio	PP/CU/PUR	600V	-30° to +80°	UL/CSA	439
MULTISPEED® 500-TPE UL/CSA	450	5 x D	5	50	11 Mio	PP/TPE	600V	-30° to +80°	UL/CSA	441
MULTISPEED® 500-C-TPE UL/CSA	450	5 x D	5	50	11 Mio	PP/CU/TPE	600V	-30° to +80°	UL/CSA	443
Single-cores for drag chain cables UL/CSA										
SINGLE 602-RC-J/-O	5	7.5 x D	2	10	9 Mio	PVC/PVC	600V	-5° to +90°	UL/CSA	501
SINGLE 602-RC-CY-J/-O	5	7.5 x D	2	10	9 Mio	PVC/CU/PVC	600V	-5° to +90°	UL/CSA	502
MULTISPEED® 600-PUR-J/-O	450	5 x D	5	50	11 Mio	Poly/PUR	1000V	-30° to +80°	UL/CSA	504
MULTISPEED® 600-C-PUR-J/-O	450	5 x D	5	50	11 Mio	Poly/CU/TPE	1000V	-30° to +80°	UL/CSA	505
TOPFLEX® 301	5	7.5 x D	2	10	10 Mio	PVC/PUR	1000V	-15° to +80°	UL/CSA	506
TOPFLEX® 301 C	5	7.5 x D	2	10	10 Mio	PVC/CU/PUR	1000V	-15° to +80°	UL/CSA	506
TOPFLEX® 304	5	5 x D	2	10	9 Mio	PVC/PVC	1000V	-5° to +80°	UL/CSA	503
TOPFLEX® 304 C	5	5 x D	2	10	9 Mio	PVC/CU/PVC	1000V	-5° to +80°	UL/CSA	503

A cycle is a double lift: a representative sample has been tested and measurot in our Test Workshop. The cycle count is only valid when appropriatel and professionally installed (see the installation manual: cable installation in drag chains, see pages 1036 and 1037).

The selection table is intended as an initial orientation.
Please see the relevant page of the catalogue for detailed information on the product properties and the selection tables cables in drag chains, see pages 1030 and 1031.

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SELECTION TABLE - DRAG CHAIN CABLES

	Max. movement distance in m (10 m up to 25-cores)	Min. bending radius - flexing (D=outerØ)	Max. speed (m/s)	Max. acceleration (m/s²)	Max. cycles	Material	Nominal voltage U_0/U / Operating voltage	Temperature (°C) - flexing	Approvals	Page
Motor cables & servo cables for drag chain cables UL/CSA										
TOPSERV® 109 PUR	30	7.5 x D	4	10	11 Mio	PP/CU/PUR	1000V	-30° to +80°	UL/CSA	**468**
TOPSERV® 113 PUR	30	7.5 x D	4	10	11 Mio	PP/CU/PUR	1000V	-30° to +80°	UL/CSA	**468**
TOPSERV® 121 PUR	30	7.5 x D	4	10	11 Mio	PP/CU/PUR	1000V	-30° to +80°	UL/CSA	**468**
TOPSERV® 600 VFD	10	7.5 x D	2	10	9 Mio	PVC/CU/TPE	600V	-25° to +90°	UL/CSA	**472**
TOPSERV® 650 VFD	10	7.5 x D	2	10	9 Mio	PVC/CU/TPE	600V	-25° to +90°	UL/CSA	**473**
Feedback cables for drag chain cables UL/CSA										
TOPGEBER 512 PUR	30	10 x D	4	50	11 Mio	PP/CU/PUR	30V	-30° to +80°	UL/CSA	**470**
TOPSERV® HYBRID PVC	5	7.5 x D	0,5	2	5 Mio	PP/PVC	1000V	-30° to +80°	UL/CSA	**474**
TOPSERV® HYBRID PUR	50	7.5 x D	5	30	5 Mio	PP/PUR	1000V	-30° to +80°	UL/CSA	**474**

A cycle is a double lift: a representative sample has been tested and measurot in our Test Workshop. The cycle count is only valid when appropriatel and professionally installed (see the installation manual: cable installation in drag chains, see pages 1036 and 1037).

The selection table is intended as an initial orientation.
Please see the relevant page of the catalogue for detailed information on the product properties and the selection tables cables in drag chains, see pages 1030 and 1031.

UL/CSA CONTROL CABLES



JZ-602 two approval control cable, 90°C, 600 V, oil resistant, meter marking



Technical data

- Control cable of special-PVC acc. to UL CSA AWM I/II A/B Style 2587(sheath insulation) and CSA
- **Temperature range**
  flexing -5°C to +90°C
  fixed installation -40°C to +90°C
- **Nominal voltage**
  UL/CSA 600 V
- **Test voltage** 3000 V
- **Breakdown voltage** min. 6000 V
- **Insulation resistance**
  min 20 MOhm x km
- **Minimum bending radius**
  flexing 7,5x cable Ø
  fixed installation 4x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of PVC compound type TI3 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43 acc. to UL-Std.1581
- Core identification black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of special PVC compound type YM5 to DIN VDE 0207 part 5 and class 43 acc. to UL-Std.1581
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Resistant to mineral oils, synthetic oils and coolant
- The outer sheath is approved with an improved oil-resistance-test
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- Please note the cleanroom qualification when ordering.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type:
  JZ-602-CY, confer page 373

Application

UL-approved and CSA certified flexible control cable rated at 600 V. Used in machine tools, control systems, connection between control panels and machines, assembly lines and other industrial equipment. Suitable for installation in dry, moist or wet environment and moderate flexing applications.
CE = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83090	2 x 0,5	20	5,6	9,6	49,0
83091	3 G 0,5	20	5,9	14,0	58,0
83092	4 G 0,5	20	6,4	19,0	69,0
83093	5 G 0,5	20	6,9	24,0	84,0
83094	7 G 0,5	20	7,5	34,0	123,0
83100	8 G 0,5	20	8,3	38,4	140,0
83101	9 G 0,5	20	8,9	43,2	177,0
83095	12 G 0,5	20	9,8	58,0	192,0
83096	18 G 0,5	20	12,0	86,0	256,0
83097	25 G 0,5	20	14,3	120,0	358,0
83098	34 G 0,5	20	16,5	163,0	487,0
83099	41 G 0,5	20	17,9	197,0	580,0
83080	2 x 1	18	6,3	19,2	53,0
83081	3 G 1	18	6,6	27,0	61,0
83082	4 G 1	18	7,2	38,4	74,0
83565	3 x 1	18	6,6	27,0	61,0
83083	5 G 1	18	7,9	48,0	90,0
83084	7 G 1	18	8,7	67,0	130,0
83102	8 G 1	18	9,5	76,8	144,0
83103	9 G 1	18	10,4	86,4	180,0
83085	12 G 1	18	11,2	115,2	198,0
83086	18 G 1	18	14,1	173,0	274,0
83087	25 G 1	18	16,8	240,0	384,0
83088	34 G 1	18	19,5	326,0	494,0
83089	41 G 1	18	21,2	394,0	508,0
83070	2 x 1,5	16	6,8	28,8	73,0
83071	3 G 1,5	16	7,2	44,0	94,0
83072	4 G 1,5	16	7,9	58,0	117,0
83073	5 G 1,5	16	8,7	72,0	140,0
83074	7 G 1,5	16	9,7	101,0	186,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83104	9 G 1,5	16	11,5	129,7	244,0
83075	12 G 1,5	16	12,6	173,0	319,0
83076	18 G 1,5	16	15,8	260,0	451,0
83077	25 G 1,5	16	18,3	360,0	625,0
83078	34 G 1,5	16	21,4	490,0	840,0
83079	41 G 1,5	16	23,3	590,0	1032,0
83060	2 x 2,5	14	7,8	48,0	115,0
83061	3 G 2,5	14	8,5	72,0	143,0
83062	4 G 2,5	14	9,3	96,0	185,0
83063	5 G 2,5	14	10,4	120,0	221,0
83064	7 G 2,5	14	11,5	168,0	293,0
83065	9 G 2,5	14	13,9	216,0	429,0
83066	12 G 2,5	14	15,2	288,0	563,0
83067	18 G 2,5	14	18,7	432,0	854,0
83068	19 G 2,5	14	18,7	456,0	914,0
83069	25 G 2,5	14	22,2	600,0	1188,0
83051	3 G 4	12	9,7	115,0	232,0
83052	4 G 4	12	10,6	154,0	298,0
83053	5 G 4	12	11,8	192,0	358,0
83054	7 G 4	12	13,1	269,0	460,0
83041	3 G 6	10	11,3	173,0	360,0
83042	4 G 6	10	12,5	231,0	402,0
83043	5 G 6	10	13,9	288,0	484,0
83044	7 G 6	10	15,4	403,0	630,0
83031	3 G 10	8	14,7	288,0	535,0
83032	4 G 10	8	16,3	384,0	653,0
83033	5 G 10	8	18,3	480,0	786,0
83034	7 G 10	8	20,2	672,0	1100,0

Continuation ▸

JZ-602 two approval control cable, 90°C, 600 V, oil resistant, meter marking

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83020	2 x 16	6	18,8	307,0	640,0
83021	3 G 16	6	20,2	461,0	810,0
83022	4 G 16	6	22,3	615,0	1045,0
83023	5 G 16	6	24,9	768,0	1260,0
83024	7 G 16	6	27,5	1075,0	1760,0
83011	3 G 25	4	24,0	720,0	1180,0
83012	4 G 25	4	26,9	960,0	1507,0
83013	5 G 25	4	31,9	1200,0	1858,0
83014	7 G 25	4	33,0	1680,0	2830,0
83001	3 G 35	2	26,2	1008,0	1590,0
83002	4 G 35	2	29,7	1344,0	2123,0
83003	5 G 35	2	33,0	1680,0	2612,0
83004	3 G 50	1	31,9	1440,0	2652,0
83005	4 G 50	1	35,6	1920,0	3058,0
83006	5 G 50	1	39,7	2400,0	4093,0
83007	3 G 70	2/0	36,8	2016,0	3307,0
83008	4 G 70	2/0	40,9	2688,0	4254,0
83009	5 G 70	2/0	45,6	3360,0	5661,0
83010	3 G 95	3/0	40,9	2736,0	4867,0
83015	4 G 95	3/0	45,6	3648,0	5762,0
83016	5 G 95	3/0	50,7	4560,0	7208,0
83017	3 G 120	4/0	48,1	3456,0	5580,0
83018	4 G 120	4/0	53,3	4608,0	7280,0
83019	5 G 120	4/0	58,9	5760,0	8692,0

Dimensions and specifications may be changed without prior notice. (RN01)

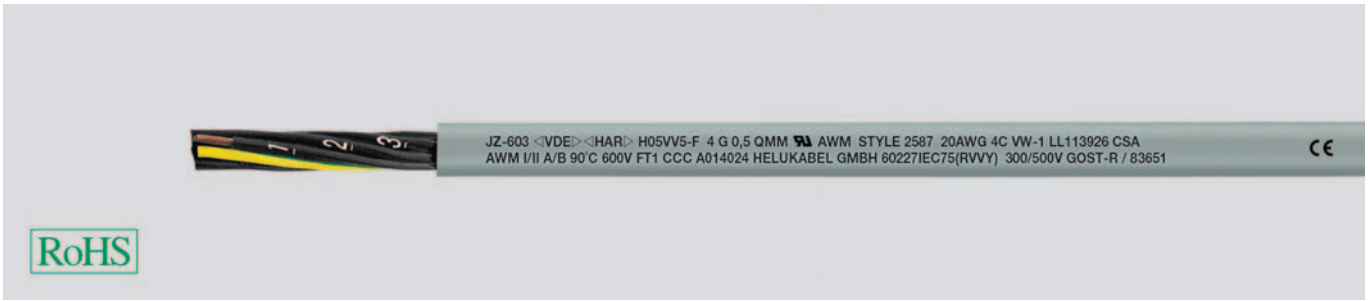


Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS

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JZ-603 Multi approval control cable, oil resistant, meter marking



Technical data

- Special PVC control cable with oil resistant outer sheath to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51 and UL-Style 2587
- **Temperature range**
  HAR
  flexing -5°C to +70°C
  fixed installation -40°C to +70°C
  UL/CSA
  flexing -5°C to +90°C
  fixed installation -40°C to +90°C
- **Nominal voltage**
  HAR U_0/U 300/500 V
  UL/CSA 600 V
- **Test voltage** 3000 V
- **Breakdown voltage** min. 6000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing 7,5x cable Ø
  fixed installation 4x cable Ø
- **Radiation resistance**
  up to 80x10^6 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43 acc. to UL-Std.1581
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of oil resistant special PVC compound type TM5 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1 and class 43 acc. to UL-Std.1581
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1
- Oil resistant to DIN VDE 0473-811-404/ DIN EN 60811-404, UL-Std.1581 part 50.182

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type:
  JZ-603-CY, confer page 375

Application

UL-CSA-HAR approved cables offer any company exporting anywhere in the world, primarily designed for exporters, used in machine tools, control systems, assembly lines and other industrial equipment. These cables are suitable for flexible use for mechanical stresses with free movements in dry, moist and wet rooms but not for open air.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

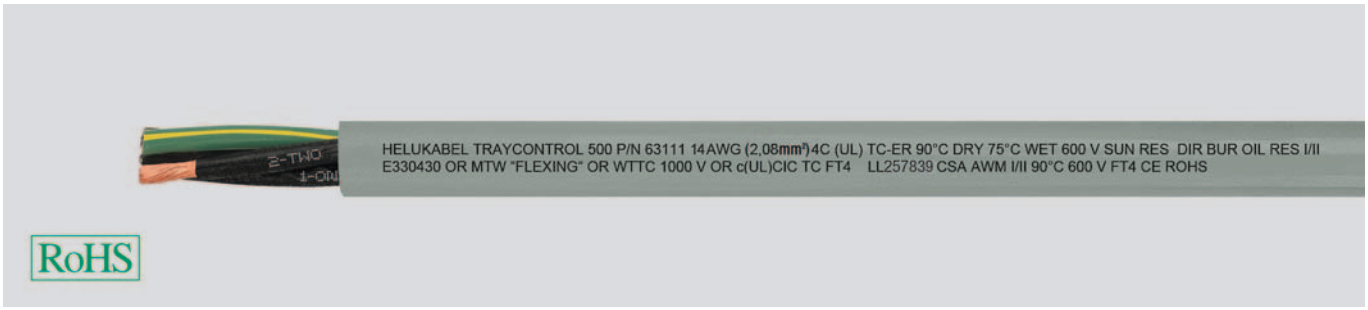
Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83704	2 x 0,5	20	5,8	9,6	52,0
83650	3 G 0,5	20	6,1	14,0	63,0
83651	4 G 0,5	20	6,7	19,0	69,0
83652	5 G 0,5	20	7,3	24,0	87,0
83653	7 G 0,5	20	8,8	34,0	119,0
83654	12 G 0,5	20	11,1	58,0	198,0
83655	18 G 0,5	20	12,9	86,0	266,0
83656	25 G 0,5	20	16,0	120,0	380,0
83657	34 G 0,5	20	17,7	163,0	508,0
83658	41 G 0,5	20	19,5	197,0	594,0
83659	50 G 0,5	20	21,3	240,0	715,0
83660	61 G 0,5	20	23,8	293,0	840,0
83705	2 x 0,75	19	6,1	14,4	66,0
83661	3 G 0,75	19	6,5	22,0	76,0
83662	4 G 0,75	19	7,1	29,0	85,0
83663	5 G 0,75	19	7,9	36,0	113,0
83664	7 G 0,75	19	9,5	50,0	144,0
83665	12 G 0,75	19	11,6	86,0	245,0
83666	18 G 0,75	19	13,9	130,0	327,0
83667	25 G 0,75	19	17,1	180,0	466,0
83668	34 G 0,75	19	19,1	245,0	626,0
83669	41 G 0,75	19	20,9	296,0	747,0
83670	50 G 0,75	19	23,0	360,0	896,0
83671	61 G 0,75	19	25,3	439,0	1070,0
83706	2 x 1	18	6,4	19,2	70,0
83672	3 G 1	18	6,8	29,0	88,0
83673	4 G 1	18	7,5	39,0	99,0
83674	5 G 1	18	8,4	48,0	132,0
83675	7 G 1	18	10,0	67,0	170,0
83676	12 G 1	18	12,5	115,0	285,0
83677	18 G 1	18	14,7	173,0	405,0
83678	25 G 1	18	18,0	240,0	570,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83679	34 G 1	18	20,3	326,0	742,0
83680	41 G 1	18	22,4	394,0	885,0
83681	50 G 1	18	24,3	480,0	1071,0
83682	61 G 1	18	26,8	586,0	1265,0
83707	2 x 1,5	16	7,4	28,8	91,0
83683	3 G 1,5	16	8,0	43,0	110,0
83684	4 G 1,5	16	8,7	58,0	141,0
83685	5 G 1,5	16	9,8	72,0	167,0
83686	7 G 1,5	16	11,9	101,0	225,0
83687	12 G 1,5	16	14,5	173,0	361,0
83688	18 G 1,5	16	17,4	259,0	518,0
83689	25 G 1,5	16	21,3	360,0	730,0
83690	34 G 1,5	16	24,1	490,0	945,0
83691	41 G 1,5	16	26,2	591,0	1135,0
83692	50 G 1,5	16	28,8	720,0	1381,0
83693	61 G 1,5	16	31,5	878,0	1640,0
83708	2 x 2,5	14	9,1	48,0	125,0
83694	3 G 2,5	14	9,9	72,0	169,0
83695	4 G 2,5	14	11,0	96,0	209,0
83696	5 G 2,5	14	12,0	120,0	256,0
83697	7 G 2,5	14	14,6	168,0	340,0
83698	12 G 2,5	14	18,1	288,0	579,0
83699	18 G 2,5	14	22,1	432,0	851,0
83700	25 G 2,5	14	26,5	600,0	1175,0
83701	34 G 2,5	14	29,9	816,0	1529,0
83702	50 G 2,5	14	35,2	1200,0	2290,0
83703	61 G 2,5	14	38,4	1464,0	2724,0

Dimensions and specifications may be changed without prior notice. (RN01)

TRAYCONTROL® 500 flexible, oil-resistant, open installation

TC-ER, PLTC-ER, ITC-ER, NFPA 79 Edition 2012



Technical data

- PVC control cable acc. to UL-Std.1277 and UL-Std.2277
- **Temperature range**
  flexing -5°C to +90°C
  fixed installation -40°C to +90°C
- **Nominal voltage**
  TC 600 V
  AWM 1000 V
  TC Wind Turbine (WTTC) 1000 V
- **Test voltage** 3000 V
- **Minimum bending radius**
  flexing 4x cable Ø
- **Insulation resistance**
  min. 20 MOhm x km
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper conductor, fine wire with AWG dimensions
- Core insulation of special PVC with transparent nylon skin
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Separator
- Outer sheath of special PVC
- Sheath colour grey (RAL 7001)
- With lenght marking in feet

Properties

- self-extinguishing and flame retardant acc. to CSA FT4
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- **UL:**TC-ER, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12), MTW, NFPA 79 2012, WTTC 1000V, DP-1, OIL RES I & II, 90°C dry / 75°C wet, Class 1 Div. 2 per NEC Art. 336, 392, 501, crush impact test acc. to UL 1277
  CSA:
  c(UL) CIC-TC FT4, CSA AWM I/II A/B FT4

Note

Advantages

- Highly-flexible, easy to install

Available on request

- with blue cores (DC)
- with red cores (AC)
- Black or TPE outer sheath

Application

HELUKABEL® TRAYCONTROL® 500 is a flexible, oil-resistant control cable. The special combination of TC-ER, PLTC-ER and ITC-ER allows this cable to be used as a connecting cable for industrial plant and machinery in accordance with NFPA 79 edition 2012. Approved for open, unprotected installation in cable trays to the machine. Its outstanding oil resistance (OIL RES I & II) guarantees a long service life for industrial applications in dry, damp and wet environments. Recommended applications: production lines, bottling plants, machine construction, switch cabinets, conveyor systems, packaging machines, automotive industry.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

N

Part no.	Cross-section mm²	No.cores x AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
63079	0,507	2 x 20	6,6	9,8	58,0
63080	0,507	3 x 20	7,0	14,6	61,0
63081	0,507	4 x 20	7,5	19,5	76,0
63082	0,507	5 x 20	8,1	24,4	89,0
63083	0,507	7 x 20	8,7	34,1	120,0
63084	0,507	9 x 20	9,8	43,8	201,0
63085	0,507	12 x 20	10,1	58,4	250,0
63086	0,507	18 x 20	12,9	87,6	295,0
63087	0,507	25 x 20	15,7	121,7	362,0
63088	0,963	2 x 18	7,3	18,5	68,0
63089	0,963	3 x 18	7,6	27,8	88,0
63090	0,963	4 x 18	8,2	37,0	98,0
63091	0,963	5 x 18	8,9	46,3	116,0
63092	0,963	7 x 18	9,6	64,8	149,0
63093	0,963	9 x 18	11,0	83,2	186,0
63094	0,963	10 x 18	11,6	92,5	199,0
63095	0,963	12 x 18	12,2	111,0	245,0
63096	0,963	15 x 18	13,5	138,7	292,0
63097	0,963	16 x 18	13,6	147,9	306,0
63098	0,963	18 x 18	15,0	166,4	366,0
63099	0,963	19 x 18	15,1	175,7	384,0
63100	0,963	25 x 18	17,4	231,2	451,0
63101	0,963	27 x 18	17,7	249,6	521,0
63102	0,963	34 x 18	19,7	314,4	625,0
63103	0,963	37 x 18	20,1	342,0	684,0
63104	0,963	41 x 18	21,0	379,0	744,0
63105	0,963	50 x 18	24,0	462,3	933,0
63106	0,963	61 x 18	25,2	564,0	1095,0

Part no.	Cross-section mm²	No.cores x AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
63107	1,31	2 x 16	7,8	25,2	80,0
63108	1,31	3 x 16	8,2	37,8	86,0
63109	1,31	4 x 16	8,8	50,3	115,0
63110	1,31	5 x 16	9,6	62,9	126,0
63112	1,31	6 x 16	10,2	75,5	164,0
63113	1,31	7 x 16	10,5	88,0	171,0
63114	1,31	8 x 16	11,1	100,7	201,0
63115	1,31	9 x 16	12,0	113,2	237,0
63116	1,31	10 x 16	12,4	125,8	259,0
63117	1,31	12 x 16	13,6	151,0	301,0
63118	1,31	14 x 16	14,5	176,1	365,0
63119	1,31	15 x 16	15,2	188,7	379,0
63120	1,31	16 x 16	16,0	201,3	405,0
63121	1,31	18 x 16	16,4	226,4	443,0
63122	1,31	19 x 16	16,6	239,0	458,0
63123	1,31	20 x 16	17,2	251,6	491,0
63124	1,31	25 x 16	18,9	314,5	564,0
63125	1,31	27 x 16	19,3	339,6	629,0
63126	1,31	30 x 16	20,0	377,3	701,0
63127	1,31	34 x 16	22,5	427,6	775,0
63128	1,31	40 x 16	23,5	503,1	946,0
63129	1,31	41 x 16	24,0	515,7	967,0
63130	1,31	50 x 16	26,1	628,8	1137,0
63131	1,31	61 x 16	27,5	767,2	1345,0
63132	2,08	2 x 14	8,9	40,0	100,0
63133	2,08	3 x 14	9,2	60,0	112,0
63111	2,08	4 x 14	10,1	80,0	141,0
63164	2,08	5 x 14	10,9	100,0	152,0

Continuation ▸

TRAYCONTROL® 500 flexible, oil-resistant, open installation

TC-ER, PLTC-ER, ITC-ER, NFPA 79 Edition 2012

Part no.	Cross-section mm²	No.cores x AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
63165	2,08	6 x 14	11,5	120,0	205,0
63166	2,08	7 x 14	12,0	140,0	216,0
63167	2,08	9 x 14	14,7	180,0	312,0
63168	2,08	10 x 14	15,8	200,0	378,0
63169	2,08	12 x 14	16,4	240,0	434,0
63170	2,08	16 x 14	18,0	320,0	550,0
63171	2,08	18 x 14	18,9	359,0	616,0
63172	2,08	19 x 14	19,0	380,0	634,0
63173	2,08	25 x 14	23,0	500,0	817,0
63174	3,31	2 x 12	9,7	63,0	132,0
63175	3,31	3 x 12	10,2	95,0	177,0
63176	3,31	4 x 12	11,2	127,0	201,0
63177	3,31	5 x 12	12,3	159,0	274,0
63178	3,31	6 x 12	13,6	191,0	315,0
63179	3,31	7 x 12	13,9	222,0	353,0
63180	3,31	9 x 12	16,4	286,0	476,0
63181	3,31	12 x 12	18,3	381,0	613,0
63182	3,31	16 x 12	19,8	508,0	783,0
63183	3,31	19 x 12	22,3	604,0	918,0
63184	3,31	20 x 12	23,1	636,0	961,0
63185	3,31	25 x 12	25,8	794,0	1236,0
63186	5,26	2 x 10	12,2	101,0	213,0
63187	5,26	3 x 10	12,9	151,5	283,0
63188	5,26	4 x 10	15,0	202,0	387,0
63189	5,26	5 x 10	16,3	252,5	473,0
63190	5,26	7 x 10	17,7	353,5	607,0
63191	5,26	9 x 10	20,6	454,5	771,0
63192	5,26	12 x 10	24,1	606,0	1061,0
63193	5,26	19 x 10	27,2	959,5	1528,0
63194	8,37	3 x 8	17,0	241,1	420,0
63195	8,37	4 x 8	19,2	321,4	662,0
63196	8,37	5 x 8	21,0	401,8	784,0
63197	13,3	3 x 6	19,5	383,1	701,0
63198	13,3	4 x 6	22,4	510,7	908,0
63199	13,3	5 x 6	24,5	638,4	1149,0
62802	21,2	3 x 4	24,4	610,6	1061,0
62803	21,2	4 x 4	27,0	814,1	1366,0
62804	21,2	5 x 4	29,9	1017,6	1631,0
62805	33,6	3 x 2	28,2	967,7	1480,0
62806	33,6	4 x 2	31,4	1290,3	1922,0
62807	33,6	5 x 2	34,6	1612,8	2363,0
62808	42,3	4 x 1	35,6	1624,0	2397,0
62809	52,9	4 x 1/0	38,7	2031,0	2938,0
62810	67,3	4 x 2/0	42,1	2584,0	3559,0
62811	84,4	4 x 3/0	49,4	3256,0	4181,0
62812	106,7	4 x 4/0	52,0	4097,0	5747,0

Dimensions and specifications may be changed without prior notice. (RN01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-E

TRAYCONTROL® 530 flexible TC-ER control cable with coloured cores



Technical data

- Flexible PVC tray cable to UL-Std.1277 and UL-Std.2277
  Temperature range
  flexing -5°C to +90°C
  fixed installation -40°C to +90°C
- **Nominal voltage**
  TC 600 V
  AWM 1000 V
  TC Wind Turbine (WTTC) 1000 V
- **Test voltage** 3000 V
- **Minimum bending radius**
  5x cable Ø

Cable structure

- Bare copper conductor, fine wire with AWG dimensions
- Core insulation of special PVC with transparent nylon skin
- Core identification
  2 cores = blue-with
  from 3 cores = blue cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Conductor cabled with non-wicking fillers
- Separator
- Outer sheath of special PVC
- Sheath colour grey (RAL 7001)

Properties

- self-extinguishing and flame retardant acc. to CSA FT4
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- **UL:** TC-ER, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12), MTW, NFPA 79 2012, WTTC 1000V, DP-1, OIL RES I & II, 90°C dry / 75°C wet, Class 1 Div. 2 per NEC Art. 336, 392, 501, crush impact test in accordance with UL 1277
- **CSA**:
  c(UL) CIC-TC FT4
  CSA AWM I/II
  A/B FT4

Note

Available on request

- with red, black, yellow or orange cores
- Black or TPE outer sheath

Application

TRAYCONTROL® 530 is a flexible, oil-resistant control cable. The special combination of TC-ER, PLTC-ER and ITC-ER allows this cable to be used as a connecting cable for AC, DC or control wiring in accordance with NFPA 79 Edition 2012. Approved for open, unprotected installation in cable trays to the machine. Its outstanding oil resistance (OIL RES I & II) guarantees a long service life for industrial applications in dry, damp and wet environments. Recommended Applications: automotive industry, machine tool, production lines.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

N

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
66840	2 x 1	18	7,0	19,0	68,0
66841	3 G 1	18	7,1	29,0	88,0
66842	4 G 1	18	8,0	38,0	98,0
66843	5 G 1	18	8,6	48,0	116,0
66844	7 G 1	18	9,3	67,0	149,0
66845	9 G 1	18	10,7	86,0	186,0
66846	10 G 1	18	11,6	96,0	199,0
66847	12 G 1	18	11,9	115,0	245,0
66848	15 G 1	18	13,2	144,0	292,0
66849	16 G 1	18	13,3	154,0	306,0
66850	18 G 1	18	14,6	173,0	366,0
66851	19 G 1	18	14,7	182,0	384,0
66852	25 G 1	18	17,0	240,0	451,0
66853	27 G 1	18	17,4	259,0	521,0
66854	33 G 1	18	18,7	317,0	590,0
66855	34 G 1	18	19,3	326,0	625,0
66856	41 G 1	18	20,7	394,0	744,0
66857	42 G 1	18	20,8	403,0	758,0
66858	49 G 1	18	23,0	470,0	917,0
66859	50 G 1	18	23,5	480,0	933,0
66860	61 G 1	18	24,9	624,0	1095,0
66861	65 G 1	18	25,6	624,0	1125,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
66862	2 x 1,32	16	7,5	25,0	80,0
66863	3 G 1,32	16	7,8	38,0	86,0
66864	4 G 1,32	16	8,5	51,0	115,0
66865	5 G 1,32	16	9,3	63,0	126,0
66866	7 G 1,32	16	10,1	89,0	171,0
66867	9 G 1,32	16	11,7	114,0	237,0
66868	10 G 1,32	16	12,4	127,0	259,0
66869	12 G 1,32	16	12,9	152,0	301,0
66870	15 G 1,32	16	15,0	190,0	379,0
66871	16 G 1,32	16	15,2	203,0	405,0
66872	18 G 1,32	16	15,9	228,0	443,0
66873	19 G 1,32	16	16,0	241,0	458,0
66874	25 G 1,32	16	18,6	317,0	564,0
66875	27 G 1,32	16	19,0	342,0	629,0
66876	33 G 1,32	16	20,4	418,0	758,0
66877	34 G 1,32	16	20,5	431,0	775,0
66878	41 G 1,32	16	23,4	520,0	967,0
66879	42 G 1,32	16	24,1	532,0	972,0
66880	49 G 1,32	16	25,5	621,0	1132,0
66881	50 G 1,32	16	25,6	634,0	1137,0
66882	61 G 1,32	16	27,2	773,0	1345,0
66883	65 G 1,32	16	28,5	824,0	1376,0

Dimensions and specifications may be changed without prior notice. (RN01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HELUTOP® HT-E

JZ-600 UL/CSA flexible, number coded, 1000 V, meter marking





Technical data

- Special PVC control cables adapted to DIN VDE 0276 part 627, DIN VDE 0285-525-2-51/ DIN EN 50525-2-51, with insulation thickness for 1 kV type and to UL-Std.758 Style 21179
- **Temperature range** flexing -5°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** VDE U_0/U 600/1000 V UL/CSA 1000 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43 acc. to UL-Std.1581
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1 and class 43 acc. to UL-Std.1581
- Sheath colour black (RAL 9005) or grey (RAL 7001)
- with meter marking

Properties

- Extensively oil resistant, oil-/ chemical Resistance - see table Technical Informations
- UV-resistant (building with black sheath)
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B) UL VW1, CSA FT1

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **JZ-600-Y-CY UL/CSA**, confer page 378

Application

Wiring cable for measuring and controlling purposes in tool machinery, conveyor belts and production lines, for plant installations, air conditioning and in steel production plants and rolling mills. Suitable for installation for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms as well as outside (fixed installation, building with black sheath). Is not suitable to be used as direct burrial- or as underwater cable. The cores have been numbered in such a way that the numbers are easily identifiable, even if the cable has only been stripped back a few cm. The core numbers have been underlined to avoid confusion. The earth core is located in the outer layer. The black, special PVC outer sheath is resistant to the ultra violet radiation. Mainly used in South-European, Eastern and Arabian countries.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no. Sheath colour black	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
11815	2 x 0,5	20	6,4	9,6	56,0
11816	3 G 0,5	20	6,8	14,4	68,0
11817	4 G 0,5	20	7,6	19,0	100,0
11818	5 G 0,5	20	8,2	24,0	117,0
11819	7 G 0,5	20	9,8	33,6	138,0
11820	12 G 0,5	20	12,2	58,0	200,0
11821	18 G 0,5	20	14,4	86,0	276,0
11822	25 G 0,5	20	17,2	120,0	335,0
11823	2 x 0,75	19	6,8	14,4	66,0
11824	3 G 0,75	19	7,2	21,6	74,0
11825	4 G 0,75	19	8,0	29,0	126,0
11826	5 G 0,75	19	8,8	36,0	140,0
11827	7 G 0,75	19	10,7	50,0	190,0
11828	12 G 0,75	19	13,1	86,0	257,0
11829	18 G 0,75	19	15,6	130,0	362,0
11830	25 G 0,75	19	18,9	180,0	486,0
11831	2 x 1	18	7,4	19,2	80,0
11832	3 G 1	18	8,0	29,2	96,0
11833	4 G 1	18	8,8	38,4	100,0
11834	5 G 1	18	9,8	48,0	130,0
11835	7 G 1	18	11,7	67,0	170,0
11836	12 G 1	18	14,5	115,0	290,0
11837	18 G 1	18	17,3	173,0	405,0
11838	25 G 1	18	21,1	240,0	570,0
11839	2 x 1,5	16	8,4	29,0	95,0
11840	3 G 1,5	16	9,1	43,0	112,0
11841	4 G 1,5	16	9,9	58,0	139,0
11842	5 G 1,5	16	11,0	72,0	170,0
11843	7 G 1,5	16	13,3	101,0	225,0
11844	12 G 1,5	16	16,6	173,0	370,0
11845	18 G 1,5	16	19,7	259,0	520,0
11846	25 G 1,5	16	23,9	360,0	730,0

Part no. Sheath colour grey	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
11880	2 x 0,5	20	6,4	9,6	56,0
11881	3 G 0,5	20	6,8	14,4	68,0
11882	4 G 0,5	20	7,6	19,0	100,0
11883	5 G 0,5	20	8,2	24,0	117,0
11884	7 G 0,5	20	9,8	33,6	138,0
11885	12 G 0,5	20	12,2	58,0	200,0
11886	18 G 0,5	20	14,4	86,0	276,0
11887	25 G 0,5	20	17,2	120,0	335,0
11888	2 x 0,75	19	6,8	14,4	66,0
11889	3 G 0,75	19	7,2	21,6	74,0
11890	4 G 0,75	19	8,0	29,0	126,0
11891	5 G 0,75	19	8,8	36,0	140,0
11892	7 G 0,75	19	10,7	50,0	190,0
11893	12 G 0,75	19	13,1	86,0	257,0
11894	18 G 0,75	19	15,6	130,0	362,0
11895	25 G 0,75	19	18,9	180,0	486,0
11896	2 x 1	18	7,4	19,2	80,0
11897	3 G 1	18	8,0	29,2	96,0
11898	4 G 1	18	8,8	38,4	100,0
11899	5 G 1	18	9,8	48,0	130,0
11900	7 G 1	18	11,7	67,0	170,0
11901	12 G 1	18	14,5	115,0	290,0
11902	18 G 1	18	17,3	173,0	405,0
11903	25 G 1	18	21,1	240,0	570,0
11904	2 x 1,5	16	8,4	29,0	95,0
11905	3 G 1,5	16	9,1	43,0	112,0
11906	4 G 1,5	16	9,9	58,0	139,0
11907	5 G 1,5	16	11,0	72,0	170,0
11908	7 G 1,5	16	13,3	101,0	225,0
11909	12 G 1,5	16	16,6	173,0	370,0
11910	18 G 1,5	16	19,7	259,0	520,0
11911	25 G 1,5	16	23,9	360,0	730,0

Continuation ▸

JZ-600 UL/CSA flexible, number coded, 1000 V, meter marking

Part no. Sheath colour black	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
11847	2 x 2,5	14	9,4	48,0	160,0
11848	3 G 2,5	14	9,9	72,0	175,0
11849	4 G 2,5	14	11,1	96,0	203,0
11850	5 G 2,5	14	12,4	120,0	251,0
11851	7 G 2,5	14	15,0	168,0	330,0
11852	12 G 2,5	14	18,4	288,0	553,0
11853	18 G 2,5	14	22,0	432,0	795,0
11854	25 G 2,5	14	26,9	600,0	1110,0
11855	2 x 4	12	11,4	77,0	180,0
11856	3 G 4	12	12,3	115,0	230,0
11857	4 G 4	12	13,8	154,0	310,0
11858	5 G 4	12	15,3	192,0	410,0
11859	7 G 4	12	16,8	269,0	540,0
11860	12 G 4	12	22,9	461,0	860,0
11861	3 G 6	10	14,1	173,0	370,0
11862	4 G 6	10	15,6	230,0	430,0
11863	5 G 6	10	17,3	288,0	650,0
11864	7 G 6	10	19,3	403,0	860,0
11865	3 G 10	8	16,5	288,0	660,0
11866	4 G 10	8	18,1	384,0	790,0
11867	5 G 10	8	20,5	480,0	960,0
11868	7 G 10	8	22,5	672,0	1300,0
11869	3 G 16	6	19,6	461,0	760,0
11870	4 G 16	6	21,7	614,0	1100,0
11871	5 G 16	6	24,2	768,0	1600,0
11872	7 G 16	6	25,7	1075,0	1890,0
11873	3 G 25	4	24,0	720,0	1450,0
11874	4 G 25	4	26,9	960,0	1600,0
11875	5 G 25	4	29,4	1200,0	2050,0
11876	7 G 25	4	32,8	1680,0	2900,0

Part no. Sheath colour grey	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
11912	2 x 2,5	14	9,4	48,0	160,0
11913	3 G 2,5	14	9,9	72,0	175,0
11914	4 G 2,5	14	11,1	96,0	203,0
11915	5 G 2,5	14	12,4	120,0	251,0
11916	7 G 2,5	14	15,0	168,0	330,0
11917	12 G 2,5	14	18,4	288,0	553,0
11918	18 G 2,5	14	22,0	432,0	795,0
11919	25 G 2,5	14	26,9	600,0	1110,0
11920	2 x 4	12	11,4	77,0	180,0
11921	3 G 4	12	12,3	115,0	230,0
11922	4 G 4	12	13,8	154,0	310,0
11923	5 G 4	12	15,3	192,0	410,0
11924	7 G 4	12	16,8	269,0	540,0
11925	12 G 4	12	22,9	461,0	860,0
11926	3 G 6	10	14,1	173,0	370,0
11927	4 G 6	10	15,6	230,0	430,0
11928	5 G 6	10	17,3	288,0	650,0
11929	7 G 6	10	19,3	403,0	860,0
11930	3 G 10	8	16,5	288,0	660,0
11931	4 G 10	8	18,4	384,0	790,0
11932	5 G 10	8	20,5	480,0	960,0
11933	7 G 10	8	22,5	672,0	1300,0
11934	3 G 16	6	19,6	461,0	760,0
11935	4 G 16	6	21,7	614,0	1100,0
11936	5 G 16	6	24,2	768,0	1600,0
11937	7 G 16	6	25,7	1075,0	1890,0
11938	3 G 25	4	24,0	720,0	1450,0
11939	4 G 25	4	26,9	960,0	1600,0
11940	5 G 25	4	29,3	1200,0	2050,0
11941	7 G 25	4	32,6	1680,0	2900,0

Dimensions and specifications may be changed without prior notice. (RN01)



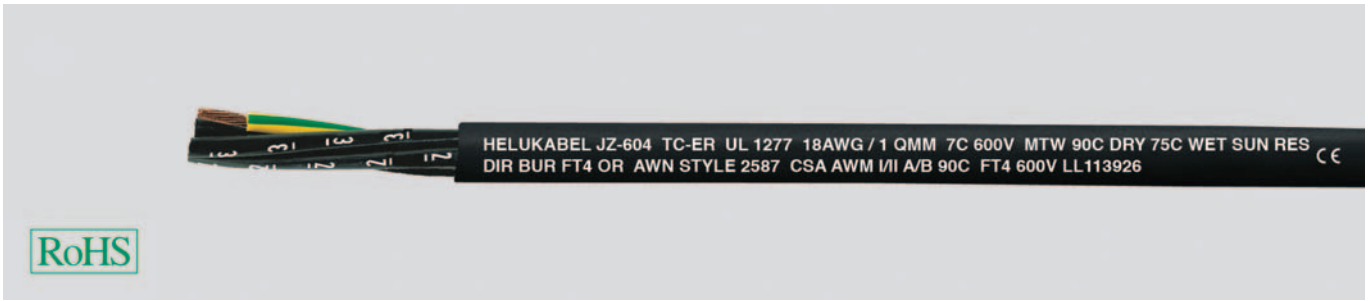
Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS

N

JZ-604 TC TRAY CABLE PVC power cable, exposed run, NFPA79

Edition 2012, 90°C, 600 V, meter marking



Technical data

- PVC power cable to UL-Std.1277 TRAY CABLE
- **Multinorm**
  The TRAY CABLE also conforms to the following standards:
  AWM-Style 2587 to UL-Std.758 and CSA C22.2 No 210 I/II A/B 90C 600 V
- **Temperature range**
  dry environment
  flexing -5°C to +90°C
  fixed installation -25°C to +90°C
  wet environment
  flexing -5°C to +75°C
  fixed installation -25°C to +75°C
- **Nominal voltage** UL 600 V
- **Test voltage** 3000 V
- **Breakdown voltage** min. 6000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  7,5x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, fine wire conductors, acc. to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of special PVC class 12 B to tab. 50.155 UL-standard 1581, type TFF acc. to UL-Std. 62(AWG 20-AWG 16)
  type THHW acc. to UL-Std. 83 (≥AWG 14)
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of special PVC acc. to UL-Std.1277 tab.11.2
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- self-extinguishing and flame retardant acc. to CSA FT4
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- uv-resistant

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type:
  JZ-604-FCY TC TRAY CABLE,
  confer page 380
  JZ-604-YCY TC TRAY CABLE,
  confer page 381

Application

USA NFPA79, edition 2012 conformant flexible power cables up to 600 V, for all machinery in tool and plant constuction, suitable for installation in dry, humid and damp environments, in the open and in pipes. For underground installation and for open, unprotected installation from the cable rack to machines and industrial plants.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
69661	2 x 1	18	8,0	19,2	72,0
69662	3 G 1	18	8,4	29,0	84,0
69663	4 G 1	18	9,1	39,0	96,0
69664	5 G 1	18	10,0	48,0	114,0
69665	7 G 1	18	11,7	67,0	147,0
69666	9 G 1	18	12,6	84,0	172,0
69667	10 G 1	18	14,3	96,0	206,0
69668	12 G 1	18	14,7	115,0	256,0
69669	18 G 1	18	17,1	173,0	367,0
69670	25 G 1	18	20,3	240,0	477,0
69671	34 G 1	18	23,7	326,0	551,0
69672	50 G 1	18	26,1	480,0	959,0
69673	2 x 1,5	16	8,4	28,8	88,0
69674	3 G 1,5	16	8,8	43,0	102,0
69675	4 G 1,5	16	9,6	58,0	119,0
69676	5 G 1,5	16	10,5	72,0	144,0
69677	7 G 1,5	16	12,3	101,0	192,0
69678	8 G 1,5	16	13,3	115,0	213,0
69679	9 G 1,5	16	13,3	130,0	261,0
69680	10 G 1,5	16	15,1	144,0	294,0
69681	12 G 1,5	16	15,6	173,0	328,0
69682	16 G 1,5	16	17,1	230,0	402,0
69683	18 G 1,5	16	18,2	259,0	427,0
69684	25 G 1,5	16	22,7	360,0	594,0
69685	34 G 1,5	16	25,3	489,0	714,0
69686	41 G 1,5	16	27,0	590,0	803,0
69687	50 G 1,5	16	27,3	720,0	1021,0
69688	61 G 1,5	16	29,4	878,0	1238,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
69689	2 x 2,5	14	9,4	48,0	108,0
69690	3 G 2,5	14	9,9	72,0	137,0
69691	4 G 2,5	14	10,8	96,0	157,0
69692	5 G 2,5	14	11,8	120,0	190,0
69693	7 G 2,5	14	14,7	168,0	253,0
69694	8 G 2,5	14	16,0	192,0	339,0
69695	9 G 2,5	14	16,0	216,0	341,0
69696	10 G 2,5	14	17,1	240,0	392,0
69697	12 G 2,5	14	17,7	288,0	470,0
69698	18 G 2,5	14	20,8	432,0	682,0
69699	25 G 2,5	14	25,8	600,0	891,0
69700	3 G 4	12	11,0	115,0	187,0
69701	4 G 4	12	12,0	154,0	226,0
69702	5 G 4	12	13,2	192,0	280,0
69703	7 G 4	12	16,5	269,0	390,0
69704	9 G 4	12	17,8	346,0	480,0
69705	12 G 4	12	19,9	461,0	841,0
69706	18 G 4	12	24,2	691,0	981,0
69707	3 G 6	10	12,5	173,0	290,0
69708	4 G 6	10	14,5	230,0	381,0
69709	5 G 6	10	15,8	288,0	465,0
69710	7 G 6	10	17,3	403,0	654,0
69711	3 G 10	8	16,9	288,0	511,0
69712	4 G 10	8	18,6	384,0	584,0
69713	5 G 10	8	20,4	480,0	781,0
69714	7 G 10	8	23,5	672,0	970,0

Continuation ▸

JZ-604 TC TRAY CABLE PVC power cable, exposed run, NFPA79

Edition 2012, 90°C, 600 V, meter marking

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
69715	3 G 16	6	21,0	461,0	651,0
69716	4 G 16	6	23,9	614,0	866,0
69717	5 G 16	6	26,3	768,0	1117,0
69718	7 G 16	6	28,8	1075,0	1364,0
69719	3 G 25	4	24,9	720,0	1090,0
69720	4 G 25	4	27,2	960,0	1421,0
69721	5 G 25	4	30,3	1200,0	1611,0
69722	7 G 25	4	33,1	1680,0	1943,0
69723	3 G 35	2	27,1	1008,0	1734,0
69724	4 G 35	2	29,8	1344,0	2011,0
69725	5 G 35	2	33,0	1680,0	2347,0
69726	3 G 50	1	33,2	1440,0	2041,0
69727	4 G 50	1	36,7	1920,0	2539,0
69728	5 G 50	1	41,5	2400,0	2894,0
69729	3 G 70	2/0	37,6	2016,0	2831,0
69730	4 G 70	2/0	42,0	2688,0	3494,0
69731	5 G 70	2/0	47,6	3360,0	4260,0
69732	3 G 95	3/0	41,8	2736,0	5010,0
69733	4 G 95	3/0	47,0	3648,0	6104,0
69734	5 G 95	3/0	52,5	4560,0	7891,0
69735	3 G 120	4/0	46,0	3456,0	5940,0
69736	4 G 120	4/0	51,5	4608,0	7604,0
69737	5 G 120	4/0	56,5	5760,0	8751,0

Dimensions and specifications may be changed without prior notice. (RN01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-E

N

TRAYCONTROL® 600 flexible, oil-resistant, open installation (TC-ER), NFPA 79 Edition 2012



Technical data

- PVC-power cable according to UL-Std.1277 and UL-Std.2277
  Temperature range
  UL/CSA TC -40°C to +90°C
  UL/AWM -40°C to +90°C
- **Nominal voltage**
  TC 600 V
  AWM 1000 V
  WTTC 1000 V
- **Test voltage** 3000 V
- **Minimum bending radius**
  5x cable Ø
- **Insulation resistance**
  min. 20 MOhm x km
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, fine wire with AWG dimensions
- Core insulation of special PVC with transparent nylon skin
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and abovein the outer layer
- Cores stranded in layers with optimal lay-length
- Separator
- Outer sheath of special PVC
- Sheath colour black (RAL 9005)
- With lenght marking in feet

Properties

- self-extinguishing and flame retardant according to CSA FT4
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- UV-resistant

Tests

- **UL:**
  TC-ER, PLTC-ER (AWG 18 - AWG 12),
  ITC-ER (AWG 18 - AWG 12),
  UL Type WTTC, UL Type MTW,
  NFPA 79 2012, Oil Res I (Oil Res II also available), 90° C dry / 75° C wet,
  Class 1 Div. 2 per NEC Art. 336, 392, 501
- **CSA**:
  c(UL) CIC-TC FT4
  CSA AWM I/II A/B FT4

Note

Advantages

- TC-ER, Tray Cable Exposed Run
- simple Installation
- outstanding flexibility

Application

USA NFPA 79 edition 2012 conformant flexible power cables up to 600 V (WTTC 1000 V), for all machinery in tool and plant constuction, suitable for installation in dry, humid and damp environments, in the open and in pipes. For underground installation and for open, unprotected installation from the cable rack to machines and industrial plants.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	Cross-section mm²	No.cores x AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
62020	0,507	2 x 20	6,6	9,8	60,0
62021	0,507	3 x 20	7,0	14,6	64,0
62022	0,507	4 x 20	7,5	19,5	79,0
62023	0,507	5 x 20	8,1	24,4	92,0
62024	0,507	7 x 20	8,7	34,1	124,0
62025	0,507	9 x 20	9,8	43,8	210,0
62026	0,507	12 x 20	10,1	58,4	263,0
62027	0,507	18 x 20	12,9	87,6	305,0
62028	0,507	25 x 20	15,7	121,7	371,0
62902	0,963	2 x 18	7,3	18,5	68,0
62903	0,963	3 x 18	7,6	27,8	68,0
62904	0,963	4 x 18	8,2	37,0	97,0
62905	0,963	5 x 18	8,9	46,3	116,0
62906	0,963	7 x 18	9,6	64,8	147,0
62907	0,963	9 x 18	11,0	83,2	186,0
62908	0,963	10 x 18	11,6	92,5	199,0
62909	0,963	12 x 18	12,2	111,0	250,0
62910	0,963	15 x 18	13,5	138,7	292,0
62911	0,963	16 x 18	13,6	147,9	306,0
62912	0,963	18 x 18	15,0	166,4	365,0
62913	0,963	19 x 18	15,1	175,7	384,0
62914	0,963	25 x 18	17,4	231,2	480,0
62915	0,963	27 x 18	17,7	249,6	521,0
62916	0,963	34 x 18	19,7	314,4	625,0
62917	0,963	37 x 18	20,1	342,0	684,0
62918	0,963	41 x 18	21,0	379,0	744,0
62919	0,963	50 x 18	24,0	462,3	933,0
62920	0,963	61 x 18	25,2	564,0	1095,0
62921	1,31	2 x 16	7,8	25,2	80,0
62922	1,31	3 x 16	8,2	37,8	86,0

Part no.	Cross-section mm²	No.cores x AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
62923	1,31	4 x 16	8,8	50,3	120,0
62924	1,31	5 x 16	9,6	62,9	130,0
62925	1,31	6 x 16	10,2	75,5	164,0
62926	1,31	7 x 16	10,5	88,0	188,0
62927	1,31	8 x 16	11,1	100,7	201,0
62928	1,31	9 x 16	12,0	113,2	238,0
62929	1,31	10 x 16	12,4	125,8	259,0
62930	1,31	12 x 16	13,6	151,0	301,0
62931	1,31	14 x 16	14,5	176,1	356,0
62932	1,31	15 x 16	15,2	188,7	379,0
62933	1,31	16 x 16	16,0	201,3	405,0
62934	1,31	18 x 16	16,4	226,4	430,0
62935	1,31	19 x 16	16,6	239,0	450,0
62936	1,31	20 x 16	17,2	251,6	481,0
62937	1,31	25 x 16	18,9	314,5	564,0
62938	1,31	27 x 16	19,3	339,6	629,0
62939	1,31	30 x 16	20,0	377,3	701,0
62940	1,31	34 x 16	22,5	427,6	775,0
62941	1,31	40 x 16	23,5	503,1	946,0
62942	1,31	41 x 16	24,0	515,7	967,0
62943	1,31	50 x 16	26,1	628,8	1137,0
62944	1,31	61 x 16	27,5	767,2	1345,0
62945	2,08	2 x 14	8,9	40,0	100,0
62946	2,08	3 x 14	9,2	60,0	117,0
62947	2,08	4 x 14	10,1	80,0	141,0
62948	2,08	5 x 14	10,9	100,0	152,0
62949	2,08	6 x 14	11,5	120,0	216,0
62950	2,08	7 x 14	12,0	140,0	255,0
62951	2,08	9 x 14	14,7	180,0	312,0
62952	2,08	10 x 14	15,8	200,0	378,0

Continuation ▸

TRAYCONTROL® 600 flexible, oil-resistant, open installation

(TC-ER), NFPA 79 Edition 2012

Part no.	Cross-section mm²	No.cores x AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
62953	2,08	12 x 14	16,4	240,0	434,0
62954	2,08	16 x 14	18,0	320,0	550,0
62955	2,08	18 x 14	18,9	359,0	616,0
62956	2,08	19 x 14	19,0	380,0	634,0
62957	2,08	25 x 14	23,0	500,0	817,0
62958	3,31	2 x 12	9,7	63,0	132,0
62959	3,31	3 x 12	10,2	95,0	177,0
62960	3,31	4 x 12	11,2	127,0	201,0
62961	3,31	5 x 12	12,3	159,0	274,0
62962	3,31	6 x 12	13,6	191,0	315,0
62963	3,31	7 x 12	13,9	222,0	353,0
62964	3,31	9 x 12	16,4	286,0	476,0
62965	3,31	12 x 12	18,3	381,0	613,0
62966	3,31	16 x 12	19,8	508,0	783,0
62967	3,31	19 x 12	22,3	604,0	918,0
62968	3,31	20 x 12	23,1	636,0	916,0
62969	3,31	25 x 12	25,8	794,0	1286,0
62970	5,26	2 x 10	12,2	101,0	213,0
62971	5,26	3 x 10	12,9	151,5	283,0
62972	5,26	4 x 10	15,0	202,0	387,0
62973	5,26	5 x 10	16,3	252,5	473,0
62974	5,26	7 x 10	17,7	353,5	607,0
62975	5,26	9 x 10	20,6	454,5	771,0
62976	5,26	12 x 10	24,1	606,0	1061,0
62977	5,26	19 x 10	27,2	959,5	1528,0
62978	8,37	4 x 8	19,2	321,4	615,0
62979	8,37	5 x 8	21,0	401,8	768,0
62980	13,3	3 x 6	19,5	383,1	700,0
62981	13,3	4 x 6	22,4	510,7	907,0
62982	13,3	5 x 6	24,5	638,4	1100,0
62983	21,2	3 x 4	24,4	610,6	1061,0
62984	21,2	4 x 4	27,0	814,1	1366,0
62985	21,2	5 x 4	29,9	1017,6	1631,0
62986	33,6	3 x 2	28,2	967,7	1480,0
62987	33,6	4 x 2	31,4	1290,3	1922,0
62988	33,6	5 x 2	34,6	1612,8	2360,0
62989	42,3	4 x 1	35,6	1624,0	2397,0
62990	52,9	4 x 1/0	38,7	2031,0	2938,0
62991	67,3	4 x 2/0	42,1	2584,0	3569,0
62992	84,4	4 x 3/0	49,4	3256,0	4181,0
62993	106,7	4 x 4/0	52,0	4097,0	5747,0
62994	128,4	4 x 250 kcmil	55,8	4931,0	7591,0
62995	181,9	4 x 350 kcmil	64,3	6985,0	8299,0
62996	257,6	4 x 500 kcmil	74,1	9892,0	11549,0

Dimensions and specifications may be changed without prior notice. (RN01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-E

N

H05VV-F/SJT 300 V



Technical data

- PVC control cable to DIN VDE 0285-525-2-11/ DIN EN 50525-2-11 IEC 60227-5 and UL-Std.62 and CSA 22.2 No. 49
- **Temperature range**
  HAR
  flexing -5°C to +70°C
  fixed installation -40°C to +70°C
  UL/CSA
  flexing -5°C to +60°C
  fixed installation -40°C to +60°C
- **Nominal voltage**
  HAR U_0/U 300/500 V
  UL/CSA 300 V
- **Test voltage** 2500 V, 5 min.
- **Breakdown voltage** min. 5000 V
- **Spark-Test** 6000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  7,5x cable Ø
- **Radiation resistance**
  up to 80x10^6 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, fine-wire with AWG dimensions to UL-Std.62
- Core insulation of special PVC, compound type TI2 acc. to DIN VDE 0207-363-3/ DIN EN 50363-3 and class 43 acc. to UL-Std.62 (tab.50.182, UL-Std.1581) acc. to CSA C22.2 No 49 type SJT
- Core identification acc. to DIN VDE 0293-308 one coloured
- GN-YE conductor, 3 cores and above
- Core stranded with optimal lay-length
- Outer sheath of PVC, compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1 and class 43 acc. to UL-Std.62 (tab. 50.182, UL-Std.1581) acc. to CSA-Std. C 22.2 No 49 type SJT
- Sheath colour black, white or grey

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B), CSA FT2

Application

These flexible PVC control cables, VDE-HAR-UL-CSA approved, are designed for the export and also for the export-orientated-equipment. These cables are especially suited to use for the appliance with medium mechanical stresses with free movement without tensile stress in households, kitchens and offices, also for household appliances in damp and wet areas, e. g. refrigerators, washing machines, spin-driver etc. , as far as this cable is admitted to the relevant specifications of the equipment. These cables are suited to be used for cooking and heating apparatus under the condition that cable does not come in direct contact with hot parts of the apparatus and no other influences or heat. The cables are suitable for fixed installation in furnitures, partition walls, decoration covering and in hollow spaces of prefabricated building parts. They are not suitable for use in open air, in industries (also permitted to tailor workshops and of that kind) and in agriculture plants and for connecting commercial electrical tools.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	Cross-section mm²	No.cores x AWG-No.	Sheath colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
28034	1,04	2 x 17	black	7,4	20,0	86,0
28066	1,04	2 x 17	grey	7,4	20,0	86,0
28050	1,04	2 x 17	white	7,4	20,0	86,0
28035	1,04	3 x 17	black	7,9	30,0	98,0
28067	1,04	3 x 17	grey	7,9	30,0	98,0
28051	1,04	3 x 17	white	7,9	30,0	98,0
28036	1,04	4 x 17	black	8,8	40,0	123,0
28068	1,04	4 x 17	grey	8,8	40,0	123,0
28052	1,04	4 x 17	white	8,8	40,0	123,0
28037	1,04	5 x 17	black	9,6	50,0	146,0
28069	1,04	5 x 17	grey	9,6	50,0	146,0
28053	1,04	5 x 17	white	9,6	50,0	146,0
28038	1,65	2 x 15	black	8,1	31,7	106,0
28070	1,65	2 x 15	grey	8,1	31,7	106,0
28054	1,65	2 x 15	white	8,1	31,7	106,0
28039	1,65	3 x 15	black	8,7	47,5	128,0
28071	1,65	3 x 15	grey	8,7	47,5	128,0
28055	1,65	3 x 15	white	8,7	47,5	128,0
28040	1,65	4 x 15	black	9,8	63,4	164,0
28072	1,65	4 x 15	grey	9,8	63,4	164,0
28056	1,65	4 x 15	white	9,8	63,4	164,0
28041	1,65	5 x 15	black	10,8	79,2	201,0
28073	1,65	5 x 15	grey	10,8	79,2	201,0
28057	1,65	5 x 15	white	10,8	79,2	201,0

Part no.	Cross-section mm²	No.cores x AWG-No.	Sheath colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
28042	2,63	2 x 13	black	9,5	50,5	150,0
28074	2,63	2 x 13	grey	9,5	50,5	150,0
28058	2,63	2 x 13	white	9,5	50,5	150,0
28043	2,63	3 x 13	black	10,2	75,7	184,0
28075	2,63	3 x 13	grey	10,2	75,7	184,0
28059	2,63	3 x 13	white	10,2	75,7	184,0
28044	2,63	4 x 13	black	11,2	101,0	229,0
28076	2,63	4 x 13	grey	11,2	101,0	229,0
28060	2,63	4 x 13	white	11,2	101,0	229,0
28045	2,63	5 x 13	black	12,5	126,2	281,0
28077	2,63	5 x 13	grey	12,5	126,2	281,0
28061	2,63	5 x 13	white	12,5	126,2	281,0
28046	4,17	2 x 11	black	10,8	80,1	204,0
28078	4,17	2 x 11	grey	10,8	80,1	204,0
28062	4,17	2 x 11	white	10,8	80,1	204,0
28047	4,17	3 x 11	black	11,6	120,1	254,0
28079	4,17	3 x 11	grey	11,6	120,1	254,0
28063	4,17	3 x 11	white	11,6	120,1	254,0
28048	4,17	4 x 11	black	12,8	160,1	315,0
28080	4,17	4 x 11	grey	12,8	160,1	315,0
28064	4,17	4 x 11	white	12,8	160,1	315,0
28049	4,17	5 x 11	black	14,4	200,2	393,0
28081	4,17	5 x 11	grey	14,4	200,2	393,0
28065	4,17	5 x 11	white	14,4	200,2	393,0

Dimensions and specifications may be changed without prior notice. (RN01)

H05VV-F/SJT 300 V



Technical data

- PVC control cable to DIN VDE 0285-525-2-11/ DIN EN 50525-2-11, IEC 60227-5 and UL-Std.62 and CSA 22.2 No. 49
- **Temperature range**
  HAR
  flexing -5°C to +70°C
  fixed installation -40°C to +70°C
  UL/CSA
  flexing -5°C to +60°C
  fixed installation -40°C to +60°C
- **Nominal voltage**
  HAR U_0/U 300/500 V
  UL/CSA 300 V
- **Test voltage** 2500 V, 5 min.
- **Breakdown voltage** min. 5000 V
- **Spark-Test** 6000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  7,5x cable Ø
- **Radiation resistance**
  up to 80x10^6 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, fine-wire with AWG dimensions acc. to UL-Std.62
- Core insulation of PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43 acc. to UL-Std. 62 (tab.50.182, UL-Std.1581) acc. to CSA C22.2 No 49 type SJT
- Core identification to DIN VDE 0293-308 coloured
- GN-YE conductor, 3 cores and above
- Core stranded with optimal lay-length
- Outer sheath of PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1 and class 43 acc. to UL-Std.62 (tab.50.182, UL-Std.1581) acc. to CSA-Std. C 22.2 No 49 type SJT
- Sheath colour by request

Properties

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B), CSA FT2
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- Please complete the part number for these cables by adding the suffix for the colour required as per the list:
  0 = approx.RAL 5015 blue
  1 = approx.RAL 6018 green
  2 = approx.RAL 8003 brown
  3 = approx.RAL 1021 yellow
  4 = approx.RAL 3000 red
  5 = approx.RAL 2003 orange
  6 = approx.RAL 4005 violet
  7 = gold
  8 = dusty gold
  Further colours on request.

Application

These flexible PVC control cables, VDE-HAR-UL-CSA approved, are designed for the export and also for the export-orientated-equipment. These cables are especially suited to use for the appliance with medium mechanical stresses with free movement without tensile stress in households, kitchens and offices, also for household appliances in damp and wet areas, e. g. refrigerators, washing machines, spin-driver etc. , as far as this cable is admitted to the relevant specifications of the equipment. These cables are suited to be used for cooking and heating apparatus under the condition that cable does not come in direct contact with hot parts of the apparatus and no other influences or heat. The cables are suitable for fixed installation in furnitures, partition walls, decoration covering and in hollow spaces of prefabricated building parts. They are not suitable for use in open air, in industries (also permitted to tailor workshops and of that kind) and in agriculture plants and for connecting commercial electrical tools.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

N

Part no.	Cross-section mm²	No.cores x AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
3110x	1,04	2 x 17	7,4	20,0	86,0
3111x	1,04	3 G 17	7,9	30,0	98,0
3112x	1,04	4 G 17	8,8	40,0	123,0
3113x	1,04	5 G 17	9,6	50,0	146,0
3114x	1,65	2 x 15	8,1	31,7	106,0
3115x	1,65	3 G 15	8,7	47,5	128,0
3116x	1,65	4 G 15	9,8	63,4	164,0
3117x	1,65	5 G 15	10,8	79,2	201,0

Part no.	Cross-section mm²	No.cores x AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
3118x	2,63	2 x 13	9,5	50,5	150,0
3119x	2,63	3 G 13	10,2	75,7	184,0
3120x	2,63	4 G 13	11,2	101,0	229,0
3121x	2,63	5 G 13	12,5	126,2	281,0
3122x	4,17	2 x 11	10,8	80,1	204,0
3123x	4,17	3 G 11	11,6	120,1	254,0
3124x	4,17	4 G 11	12,8	160,1	315,0
3125x	4,17	5 G 11	14,4	200,2	393,0

Dimensions and specifications may be changed without prior notice. (RN01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS

H05VV-F/UL 500 V



Technical data

- PVC control cable to DIN VDE 0285-525-2-11/ DIN EN 50525-2-11, IEC 60227-5 and UL-Std. 758 AWM-Style 20195
- **Temperature range**
  HAR
  flexing -5°C to +70°C
  fixed installation -40°C to +70°C
  UL
  flexing -5°C to +75°C
  fixed installation -40°C to +75°C
- **Nominal voltage**
  HAR U_0/U 300/500 V
  UL U_0/U 300/500 V
- **Test voltage** 2500 V
- **Breakdown voltage** min. 5000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  7,5x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, fine wire to DIN VDE 0295 cl.5, BS 6360 cl.5, IEC 60228 cl.5 acc. to UL-Std.62
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293-308, one coloured
- Core stranded in layers with optimal lay-length
- GN-YE conductor, 3 cores and above
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour by request

Properties

- PVC self-extinguishing and flame retardant acc. to VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- AWG sizes are approximate equivalent
- values. The actual cross-section is in mm².
- Please complete the part number for these cables by adding the suffix for the colour required as per the list:
  0 = approx.RAL 9005 black
  1 = approx.RAL 9003 white
  2 = approx.RAL 5015 blue
  3 = approx.RAL 6018 green
  4 = approx.RAL 8003 brown
  5 = approx.RAL 1021 yellow
  6 = approx.RAL 3000 red
  7 = approx.RAL 2003 orange
  8 = approx.RAL 4005 violet
  9 = approx.RAL 7001/7032 grey
  Further colours on request.

Application

These flexible PVC control cables, VDE-HAR-AWM approved, are designed for the export and also for the export-orientated-equipment. These cables are especially suited to use for the appliance with medium mechanical stresses with free movement without tensile stress in households, kitchens and offices, also for household appliances in damp and wet areas, e. g. refrigerators, washing machines, spin-driver etc. , as far as this cable is admitted to the relevant specifications of the equipment. These cables are suited to be used for cooking and heating apparatus under the condition that cable does not come in direct contact with hot parts of the apparatus and no other influences or heat. The cables are suitable for fixed installation in furnitures, partition walls, decoration covering and in hollow spaces of prefabricated building parts. They are not suitable for use in open air, in industries (also permitted to tailor workshops and of that kind) and in agriculture plants and for connecting commercial electrical tools.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
3269x	2 x 0,75	18	6,4	14,4	50,0
3270x	3 G 0,75	18	6,8	21,6	60,0
3271x	4 G 0,75	18	7,4	29,0	73,0
3272x	5 G 0,75	18	8,3	36,0	88,0
3273x	2 x 1	17	7,3	19,0	57,0
3274x	3 G 1	17	7,8	29,0	73,0
3275x	4 G 1	17	8,6	38,0	85,0
3276x	5 G 1	17	9,4	48,0	105,0
3277x	2 x 1,5	15	7,9	29,0	82,0
3278x	3 G 1,5	15	8,4	43,0	95,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
3279x	4 G 1,5	15	9,3	58,0	117,0
3280x	5 G 1,5	15	10,4	72,0	144,0
3281x	3 G 2,5	13	10,0	72,0	152,0
3282x	4 G 2,5	13	10,9	96,0	192,0
3283x	5 G 2,5	13	12,2	120,0	243,0

Dimensions and specifications may be changed without prior notice. (RN01)



Suitable accessories can be found in Chapter X.
• Cable Gland - HELUTOP® HT-PA
• Cable Gland - HELUTOP® HT-MS

FROR CEI 20-22 II



Technical data

- Special PVC-sheath flexible cord as per Italian standard CEI 20-22
- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -35°C to +70°C
- **Nominal voltage**
  up to 5-cores U_0/U 450/750 V
  from 7-cores U_0/U 300/500 V
- **Test voltage** 2000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (80 Mrad)
- **Minimum bending radius**
  10x cable Ø

Cable structure

- Bare copper conductor, fine wire stranded to CEI 20-29 cl.5
- Special PVC compound TI2
- Core identification up to 4 cores to HELUKABEL®-JB colour code, from 5 cores black with continuous white number printing
- GN-YE conductor
- Cores stranded in layers with optimal
- lay-length
- Outer sheath of special PVC
- Sheath colour grey, similar to RAL 7035, with printing CEI 20-22 II

Properties

- Oil- and petrol resistant as per CEI 20-22 II
- **Conditionally resistant to**
  Oil
  Solvents
  Acids
  Lyes
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant, test methods analog to IEC 60332-3

Note

- G = with green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Well known companies (FIAT, COMAU, etc.) use this cable for measurement and control purposes on machine tools and conveyors, as well as on production lines in equipment production and for special mechanical engineering. These cables are used for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms but not suitable for open air. Due to special conductor insulation- and sheath compound, this cable is flame resistant in case of fire and self-extinguishing. The good oil- and petrol resistance allows the usage of this cable also in problem areas.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
60250	3 G 1	8,5	29,0	85,0	17
60251	4 G 1	9,5	39,0	100,0	17
60252	5 G 1	10,5	48,0	123,0	17
60253	7 G 1	10,8	67,0	160,0	17
60254	12 G 1	13,8	115,0	270,0	17
60255	18 G 1	16,5	173,0	380,0	17
60256	25 G 1	19,5	240,0	500,0	17
60284	27 G 1	20,0	259,0	560,0	17
60285	33 G 1	20,8	317,0	700,0	17
60257	34 G 1	21,0	326,0	720,0	17
60258	42 G 1	23,3	405,0	800,0	17
60259	50 G 1	25,0	480,0	1050,0	17
60260	3 G 1,5	9,6	43,0	105,0	16
60261	4 G 1,5	11,0	58,0	150,0	16
60262	5 G 1,5	12,0	72,0	190,0	16
60263	7 G 1,5	12,5	101,0	220,0	16
60264	12 G 1,5	16,0	173,0	350,0	16
60265	18 G 1,5	18,8	259,0	515,0	16
60266	25 G 1,5	23,0	360,0	705,0	16
60267	34 G 1,5	26,0	490,0	990,0	16
60286	37 G 1,5	26,5	533,0	1005,0	16
60268	42 G 1,5	29,5	605,0	1080,0	16
60269	50 G 1,5	30,5	720,0	1330,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
60287	3 G 2,5	11,3	72,0	190,0	14
60270	4 G 2,5	12,3	96,0	215,0	14
60271	5 G 2,5	12,6	120,0	270,0	14
60272	7 G 2,5	14,5	168,0	350,0	14
60273	12 G 2,5	18,0	288,0	550,0	14
60274	4 G 4	14,0	154,0	300,0	12
60275	7 G 4	16,0	269,0	500,0	12
60276	4 G 6	16,0	230,0	430,0	10
60277	4 G 10	19,0	384,0	700,0	8
60278	4 G 16	23,0	614,0	1000,0	6
60279	4 G 25	28,0	960,0	1550,0	4
60280	4 G 35	31,0	1344,0	2070,0	2
60281	4 G 50	37,0	1920,0	2850,0	1
60282	4 G 70	43,0	2688,0	4000,0	2/0
60283	4 G 95	50,0	3648,0	5400,0	3/0

Dimensions and specifications may be changed without prior notice. (RN01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS

C.N.O.M.O Type N0VV5-F according to NFC 32-206



Technical data

- Special PVC based core insulation
- As per to the french motor industry standard for tool machines 04-24-22
- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -30°C to +80°C
- **Nominal voltage** 500 V
- **Test voltage** 2000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (80 Mrad)
- **Minimum bending radius**
  15x cable Ø

Cable structure

- Bare copper conductor, fine wire stranded to NFC 32-013 class 5 bzw. IEC 60228 class 5
- Core insulation of special PVC
- Core indetification red or black cores with continuous white numbering
- GN-YE conductor
- Cores stranded in layers with optimal lay-length
- Outer sheath of special PVC
- Sheath colour gray

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant, text method B and IEC 60332-1
- **Resistant to**
  Oil
  Petrol
  Cutting oil acc. to C.N.O.M.O recommendation E 03.40.150N (VDE 0472 part 803)

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- Further types and sizes available on request.

Application

These cables are constructed specially for the french automobile industries and used for the installation in tool making machines, production lines, industrial plants, air conditioning as well as for use in steel production. These cables are used for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms but not suitable for open air.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

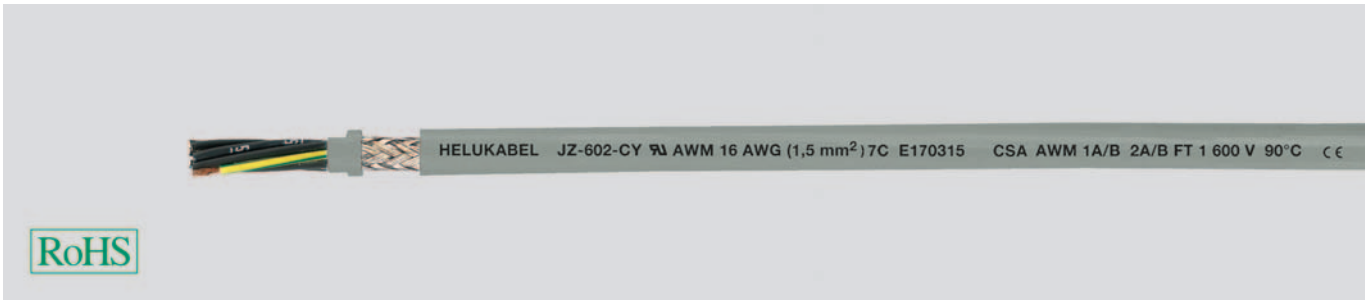
Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
60000	2 x 0,75	6,2	14,4	50,0	18
60001	3 G 0,75	6,6	21,6	59,0	18
60002	4 G 0,75	7,2	29,0	72,0	18
60003	5 G 0,75	8,0	36,0	87,0	18
60004	6 G 0,75	8,9	50,0	105,0	18
60005	12 G 0,75	11,6	86,0	175,0	18
60006	18 G 0,75	13,9	144,0	267,0	18
60007	27 G 0,75	17,2	230,0	404,0	18
60008	36 G 0,75	19,7	288,0	503,0	18
60009	48 G 0,75	22,8	360,0	670,0	18
60010	60 G 0,75	24,9	439,0	805,0	18
60011	2 x 1	6,5	19,0	56,0	17
60012	3 G 1	6,9	29,0	72,0	17
60013	4 G 1	7,7	38,0	84,0	17
60014	5 G 1	8,5	48,0	104,0	17
60015	6 G 1	9,2	67,0	124,0	17
60016	12 G 1	12,4	115,0	219,0	17
60017	18 G 1	15,2	192,0	314,0	17
60018	27 G 1	18,7	308,0	485,0	17
60019	36 G 1	21,1	384,0	620,0	17
60020	48 G 1	24,3	480,0	809,0	17
60021	60 G 1	26,4	586,0	1000,0	17
60022	2 x 1,5	7,5	29,0	76,0	16
60023	3 G 1,5	8,1	43,0	94,0	16
60024	4 G 1,5	9,1	58,0	116,0	16
60025	5 G 1,5	10,1	72,0	143,0	16
60026	6 G 1,5	11,0	101,0	173,0	16
60027	12 G 1,5	15,1	173,0	307,0	16
60028	18 G 1,5	17,9	263,0	464,0	16
60029	24 G 1,5	21,0	341,0	629,0	16
60030	27 G 1,5	21,8	372,0	708,0	16
60031	36 G 1,5	24,5	498,0	985,0	16
60032	48 G 1,5	28,4	641,0	1175,0	16
60033	60 G 1,5	31,3	878,0	1415,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
60034	2 x 2,5	10,5	48,0	122,0	14
60035	3 G 2,5	11,0	72,0	151,0	14
60036	4 G 2,5	12,0	96,0	191,0	14
60037	5 G 2,5	13,1	120,0	244,0	14
60038	6 G 2,5	15,0	168,0	292,0	14
60039	12 G 2,5	18,0	288,0	524,0	14
60040	2 x 4	10,4	77,0	178,0	12
60041	3 G 4	11,3	115,0	230,0	12
60042	4 G 4	12,8	154,0	300,0	12
60043	5 G 4	14,2	192,0	362,0	12
60044	2 x 6	11,6	115,0	218,0	10
60045	3 G 6	12,7	173,0	325,0	10
60046	4 G 6	14,2	230,0	481,0	10
60047	5 G 6	15,7	288,0	584,0	10
60048	2 x 10	15,0	194,0	505,0	8
60049	3 G 10	16,6	288,0	610,0	8
60050	4 G 10	18,4	384,0	736,0	8
60051	5 G 10	20,9	480,0	913,0	8

Dimensions and specifications may be changed without prior notice. (RN01)

JZ-602-CY screened two approval control cable, oil resistant,

EMC-preferred type, 90°C, 600 V, meter marking



Technical data

- Special PVC-insulated sheathed cable acc. to UL AWM Style 10012 (core insulation) Style 2587 and CSA
- **Temperature range**
  flexing -5°C to +90°C
  fixed installation -40°C to +90°C
- **Nominal voltage**
  UL/CSA 600 V
- **Test voltage** 3000 V
- **Breakdown voltage** min. 6000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)
- **Coupling resistance**
  max. 250 Ohm/km

Cable structure

- Bare copper, fine wire stranded to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of PVC compound type TI3 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43 acc. to UL-Std.1581
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- PVC-insulated inner sheath YM5 to DIN VDE 0207 part 5
- Braided screen of tinned Cu wires approx. 85% coverage
- Outer sheath of special PVC compound type YM5 to DIN VDE 0207 part 5 and class 43 acc. to UL-Std.1581
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Resistant to mineral oils, synthetic oils and coolant. The outer sheath is approved with an improved oil-resistance-test.
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- Cleanroom qualification tested with analog type. Please note "cleanroom qualified" when ordering.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type:
  JZ-602, confer page 356

Application

UL and CSA approved flexible control cables up to 600 V, for all machinery in tooling and plant construction, suitable for installation in dry, moist or wet environments for medium mechanical loads. Designed for the export-orientated machinery manufacturer, specifically for USA and Canada. The thick braiding screen ensures compliance with electromagnetic requirements.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

N

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
82990	2 x 0,5	20	7,4	35,0	93,0
82991	3 G 0,5	20	7,7	42,0	124,0
82992	4 G 0,5	20	8,2	47,0	133,0
82993	5 G 0,5	20	9,0	56,0	153,0
82994	7 G 0,5	20	9,6	69,0	191,0
82995	9 G 0,5	20	11,2	87,0	243,0
82996	12 G 0,5	20	12,3	108,0	322,0
82997	18 G 0,5	20	14,7	145,0	374,0
82998	25 G 0,5	20	17,0	240,0	436,0
82999	34 G 0,5	20	21,4	312,0	560,0
83000	41 G 0,5	20	21,4	348,0	663,0
82979	2 x 1	18	8,1	50,0	107,0
82980	3 G 1	18	8,5	60,0	130,0
82981	4 G 1	18	9,2	71,0	155,0
82982	5 G 1	18	10,1	88,0	181,0
82983	7 G 1	18	10,8	111,0	209,0
82984	9 G 1	18	12,7	139,0	321,0
82985	12 G 1	18	14,1	184,0	341,0
82986	18 G 1	18	16,6	260,0	473,0
82987	25 G 1	18	19,7	349,0	650,0
82988	34 G 1	18	22,6	486,0	781,0
82989	41 G 1	18	24,7	531,0	892,0
82968	2 x 1,5	16	8,6	63,0	136,0
82969	3 G 1,5	16	9,2	80,0	165,0
82970	4 G 1,5	16	10,0	97,0	192,0
82971	5 G 1,5	16	11,0	119,0	224,0
82972	7 G 1,5	16	11,8	147,0	273,0
82973	9 G 1,5	16	14,0	182,0	340,0
82974	12 G 1,5	16	15,3	267,0	461,0
82975	18 G 1,5	16	18,5	374,0	674,0
82976	25 G 1,5	16	21,8	526,0	950,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
82977	34 G 1,5	16	25,2	629,0	1203,0
82978	41 G 1,5	16	27,6	801,0	1588,0
82959	2 x 2,5	14	10,1	96,0	173,0
82960	3 G 2,5	14	10,6	144,0	220,0
82961	4 G 2,5	14	11,6	148,0	270,0
82962	5 G 2,5	14	12,7	181,0	329,0
82963	7 G 2,5	14	14,0	255,0	428,0
82964	9 G 2,5	14	16,4	309,0	580,0
82965	12 G 2,5	14	18,1	441,0	761,0
82966	18 G 2,5	14	22,2	570,0	1140,0
82967	25 G 2,5	14	27,0	738,0	1551,0
82954	2 x 4	12	11,2	120,0	209,0
82955	3 G 4	12	11,9	174,0	310,0
82956	4 G 4	12	13,3	230,0	456,0
82957	5 G 4	12	14,6	273,0	532,0
82958	7 G 4	12	15,9	316,0	737,0
82949	2 x 6	10	12,9	173,0	318,0
82950	3 G 6	10	14,0	240,0	411,0
82951	4 G 6	10	15,4	305,0	572,0
82952	5 G 6	10	17,0	439,0	732,0
82953	7 G 6	10	18,3	505,0	961,0
82945	3 G 10	8	16,3	350,0	741,0
82946	4 G 10	8	19,4	535,0	988,0
82947	5 G 10	8	21,6	592,0	1202,0
82948	7 G 10	8	23,9	810,0	1743,0
82941	3 G 16	6	23,9	585,0	1088,0
82942	4 G 16	6	26,4	740,0	1662,0

Continuation ▸

JZ-602-CY screened two approval control cable, oil resistant,

EMC-preferred type, 90°C, 600 V, meter marking

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
82943	5 G 16	6	29,6	895,0	2021,0
82944	7 G 16	6	32,6	1282,0	2720,0
82937	3 G 25	4	28,3	1070,0	1947,0
82938	4 G 25	4	31,4	1140,0	2591,0
82939	5 G 25	4	34,6	1380,0	3197,0
82940	7 G 25	4	38,1	1870,0	4530,0
82934	3 G 35	2	31,3	1240,0	2701,0
82935	4 G 35	2	34,4	1576,0	3277,0
82936	5 G 35	2	38,1	1930,0	4530,0
82488	3 G 50	1	37,0	1675,0	2870,0
82780	4 G 50	1	40,9	2155,0	3960,0
82781	5 G 50	1	45,0	2794,0	4371,0
82782	3 G 70	2/0	42,1	2288,0	3647,0
82783	4 G 70	2/0	46,2	3120,0	4882,0
82914	5 G 70	2/0	50,9	3705,0	5876,0
82915	3 G 95	3/0	46,2	3010,0	4751,0
82916	4 G 95	3/0	50,0	4043,0	6368,0
82917	5 G 95	3/0	56,0	5026,0	7843,0
82918	3 G 120	4/0	52,8	3812,0	5899,0
82919	4 G 120	4/0	58,2	5069,0	8010,0
82920	5 G 120	4/0	63,8	5877,0	9205,0

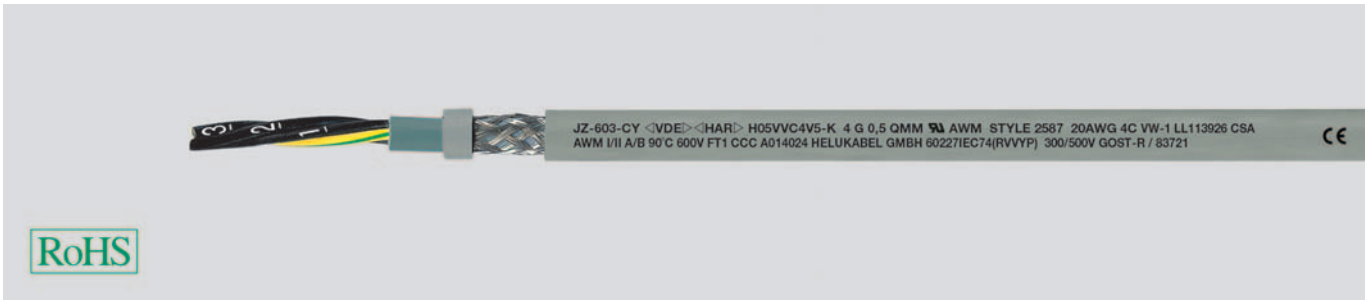
Dimensions and specifications may be changed without prior notice. (RN01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS

JZ-603-CY Multi approval control cable, oil resistant, Cu-screened, EMC-preferred, meter marking



Technical data

- Special PVC control cable with oil resistant outer sheath to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51 and to UL-Style 2587
- **Temperature range**
  HAR
  flexing -5°C to +70°C
  fixed installation -40°C to +70°C
  UL/CSA
  flexing -5°C to +90°C
  fixed installation -40°C to +90°C
- **Nominal voltage**
  HAR U_0/U 300/500 V
  UL/CSA 600 V
- **Test voltage** 3000 V
- **Breakdown voltage** min. 6000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Radiation resistance**
  up to 80x10^6 cJ/kg (up to 80 Mrad)
- **Coupling resistance**
  max. 250 Ohm/km

Cable structure

- Bare copper, fine wire conductor to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43 acc. to UL-Std.1581
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor in the outer layer
- Cores stranded in layers with optimal lay-lengt
- PVC based inner sheath
- Tinned copper braiding screening, 85% coverage
- Outer sheath of special PVC, oil resistant compound type TM5 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1 and class 43 acc. to UL-Std.1581
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Oil resistant to DIN VDE 0473-811-404/ DIN EN 60811-404, UL 1581 part 50.182
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B) UL VW-1, CSA FT1

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type:
  JZ-603, confer page 358

Application

UL-CSA-HAR approved cables offer any company exporting anywhere in the world, primarily designed for exporters, used in machine tools, control systems, assembly lines and other industrial equipment. These cables are suitable for flexible use for medium mechanical stresses with free movements in dry, moist and wet rooms but not for open air.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

N

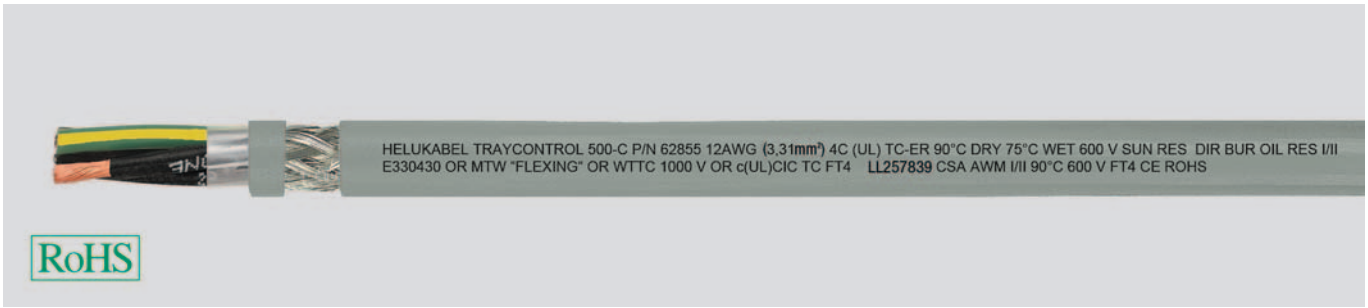
Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83709	2 x 0,5	20	8,0	41,0	90,0
83720	3 G 0,5	20	8,3	45,0	105,0
83721	4 G 0,5	20	8,9	54,0	123,0
83722	5 G 0,5	20	9,7	66,0	147,0
83723	7 G 0,5	20	11,2	79,0	195,0
83724	12 G 0,5	20	13,6	137,0	276,0
83725	18 G 0,5	20	15,4	156,0	418,0
83726	25 G 0,5	20	18,6	250,0	504,0
83727	34 G 0,5	20	20,8	316,0	632,0
83728	41 G 0,5	20	22,6	348,0	750,0
83729	50 G 0,5	20	24,8	407,0	968,0
83730	61 G 0,5	20	26,0	520,0	1068,0
83710	2 x 0,75	19	8,3	46,0	101,0
83731	3 G 0,75	19	8,6	57,0	127,0
83732	4 G 0,75	19	9,4	63,0	155,0
83733	5 G 0,75	19	10,1	76,0	180,0
83734	7 G 0,75	19	11,9	100,0	225,0
83735	12 G 0,75	19	14,2	175,0	326,0
83736	18 G 0,75	19	16,6	240,0	457,0
83737	25 G 0,75	19	20,0	306,0	635,0
83738	34 G 0,75	19	22,4	346,0	805,0
83739	41 G 0,75	19	24,0	403,0	908,0
83740	50 G 0,75	19	26,2	470,0	1155,0
83741	61 G 0,75	19	30,0	550,0	1400,0
83711	2 x 1	18	8,6	54,0	113,0
83742	3 G 1	18	9,2	64,0	144,0
83743	4 G 1	18	9,8	76,0	178,0
83744	5 G 1	18	10,7	89,0	205,0
83745	7 G 1	18	12,5	114,0	263,0
83746	12 G 1	18	15,1	186,0	424,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83747	18 G 1	18	17,3	284,0	560,0
83748	25 G 1	18	21,1	387,0	760,0
83749	34 G 1	18	23,5	500,0	945,0
83750	41 G 1	18	25,5	578,0	1151,0
83751	50 G 1	18	27,6	681,0	1300,0
83752	61 G 1	18	32,4	710,0	1500,0
83712	2 x 1,5	16	9,6	64,0	144,0
83753	3 G 1,5	16	10,1	82,0	160,0
83754	4 G 1,5	16	11,0	99,0	210,0
83755	5 G 1,5	16	12,3	123,0	240,0
83756	7 G 1,5	16	14,2	148,0	305,0
83757	12 G 1,5	16	17,1	274,0	482,0
83758	18 G 1,5	16	20,0	386,0	611,0
83759	25 G 1,5	16	24,0	531,0	950,0
83760	34 G 1,5	16	27,1	671,0	1200,0
83761	41 G 1,5	16	29,7	840,0	1400,0
83762	50 G 1,5	16	31,8	997,0	1665,0
83763	61 G 1,5	16	34,6	1120,0	1852,0
83713	2 x 2,5	14	11,4	110,0	189,0
83764	3 G 2,5	14	12,0	148,0	244,0
83765	4 G 2,5	14	13,4	169,0	296,0
83766	5 G 2,5	14	14,6	220,0	367,0
83767	7 G 2,5	14	17,2	284,0	478,0
83768	12 G 2,5	14	21,2	470,0	622,0
83769	18 G 2,5	14	24,8	572,0	1010,0
83770	25 G 2,5	14	29,8	740,0	1375,0
83771	34 G 2,5	14	33,4	1179,0	1893,0
83772	50 G 2,5	14	39,0	1660,0	2666,0
83773	61 G 2,5	14	41,0	1992,0	3077,0

Dimensions and specifications may be changed without prior notice. (RN01)

TRAYCONTROL® 500-C flexible, oil-resistant, screened,

EMC-preferred type, open installation TC-ER, PLTC-ER, ITC-ER, NFPA 79 Edition 2012



Technical data

- PVC control cable acc. to UL-Std.1277 and UL-Std.2277
- **Temperature range**
  flexing -5°C to +90°C
  fixed installation -40°C to +90°C
- **Nominal voltage**
  TC 600 V
  AWM 1000 V
  TC Wind Turbine (WTTC) 1000 V
- **Test voltage** 3000 V
- **Coupling resistance**
  max. 250 Ohm/km
- **Minimum bending radius**
  flexing 6x cable Ø
- **Insulation resistance**
  min. 20 MOhm x km
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper conductor, fine wire with AWG dimensions
- Core insulation of special PVC with transparent nylon skin
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Separating foil
- Braided screening of tinned copper wires, coverage approx. 85%
- Separator
- Outer sheath of special PVC
- Sheath colour - grey (RAL 7001)
- with lenght marking in feet

Properties

- self-extinguishing and flame retardant acc. to CSA FT4
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- **UL**:
  TC-ER, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12), MTW, NFPA 79 2012, WTTC 1000V, DP-1, OIL RES I & II, 90°C dry / 75°C wet, Class 1 Div. 2 per NEC Art 336, 392, 501, crush impact test in accordance with UL 1277
- **CSA**:
  c(UL) CIC-TC FT4, CSA AWM I/II A/B FT4

Note

Advantages

- Highly-flexible, easy to install

Available on request

- with blue cores (DC)
- with red cores (AC)
- Black or TPE outer sheath

Application

HELUKABEL® TRAYCONTROL® 500-C is a flexible, screened and oil-resistant control cable. The special combination of TC-ER, PLTC-ER and ITC-ER allows this cable to be used as a connecting cable for industrial plant and machinery in accordance with NFPA 79 edition 2012. Approved for open, unprotected installation in cable trays to the machine. Its outstanding oil resistance (OIL RES I & II) guarantees a long service life for industrial applications in dry, damp and wet environments. Recommended applications: production lines, bottling plants, machine construction, switch cabinets, conveyor systems, packaging machines, automotive industry.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	Cross-section mm²	No.cores x AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
62813	0,507	2 x 20	7,0	35,0	95,0
62814	0,507	3 x 20	7,6	42,0	115,0
62815	0,507	7 x 20	9,4	69,0	164,0
62816	0,507	12 x 20	11,0	108,0	266,0
62817	0,507	25 x 20	16,1	240,0	435,0
62818	0,963	2 x 18	8,1	50,0	110,0
62819	0,963	3 x 18	8,2	60,0	118,0
62820	0,963	4 x 18	8,8	71,0	136,0
62821	0,963	5 x 18	9,4	88,0	148,0
62822	0,963	7 x 18	10,1	111,0	192,0
62823	0,963	9 x 18	11,4	140,0	244,0
62824	0,963	10 x 18	12,0	150,0	283,0
62825	0,963	12 x 18	12,9	184,0	329,0
62826	0,963	15 x 18	14,8	207,0	377,0
62827	0,963	18 x 18	15,7	260,0	435,0
62828	0,963	19 x 18	15,7	280,0	443,0
62829	0,963	25 x 18	17,7	349,0	571,0
62830	1,31	3 x 16	8,9	74,0	144,0
62831	1,31	4 x 16	9,6	90,0	172,0
62832	1,31	5 x 16	10,3	104,0	188,0
62833	1,31	6 x 16	10,5	120,0	203,0
62834	1,31	7 x 16	11,3	134,0	244,0
62835	1,31	9 x 16	12,6	165,0	308,0
62836	1,31	10 x 16	12,9	180,0	346,0
62837	1,31	12 x 16	15,1	244,0	423,0
62838	1,31	15 x 16	16,4	270,0	441,0
62839	1,31	18 x 16	17,3	319,0	512,0
62840	1,31	19 x 16	17,6	327,0	503,0

Part no.	Cross-section mm²	No.cores x AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
62841	1,31	20 x 16	17,5	340,0	524,0
62842	1,31	25 x 16	19,6	434,0	704,0
62843	2,08	3 x 14	9,8	112,0	179,0
62844	2,08	4 x 14	10,7	121,0	222,0
62845	2,08	5 x 14	11,6	150,0	266,0
62846	2,08	7 x 14	12,5	200,0	326,0
62847	2,08	9 x 14	15,0	240,0	435,0
62848	2,08	10 x 14	16,3	264,0	427,0
62849	2,08	12 x 14	16,9	350,0	592,0
62850	2,08	15 x 14	18,3	409,0	635,0
62851	2,08	18 x 14	19,5	471,0	780,0
62852	2,08	19 x 14	19,7	505,0	799,0
62853	2,08	25 x 14	23,3	652,0	1042,0
62854	3,31	3 x 12	11,4	137,0	237,0
62855	3,31	4 x 12	12,2	169,0	314,0
62856	3,31	5 x 12	13,4	201,0	386,0
62857	3,31	6 x 12	14,6	236,0	425,0
62858	3,31	7 x 12	15,5	262,0	496,0
62859	3,31	9 x 12	17,7	334,0	740,0
62860	3,31	12 x 12	19,7	434,0	887,0
62861	3,31	15 x 12	21,0	531,0	903,0
62862	3,31	19 x 12	23,1	720,0	1123,0
62863	3,31	20 x 12	25,0	764,0	1490,0
62864	3,31	25 x 12	27,1	914,0	1865,0
62865	5,26	3 x 10	14,1	240,0	389,0
62866	5,26	4 x 10	15,5	305,0	549,0
62867	5,26	5 x 10	16,8	399,0	610,0
62868	5,26	7 x 10	18,2	505,0	851,0

Continuation ▸

TRAYCONTROL® 500-C flexible, oil-resistant, screened,

EMC-preferred type, open installation TC-ER, PLTC-ER, ITC-ER, NFPA 79 Edition 2012

Part no.	Cross-section mm²	No.cores x AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
62869	5,26	9 x 10	20,9	704,0	1132,0
62870	5,26	12 x 10	24,4	940,0	1523,0
62871	5,26	19 x 10	27,5	1210,0	1952,0
62872	8,37	4 x 8	19,9	535,0	852,0
62873	13,3	4 x 6	23,3	740,0	1202,0
62874	21,2	4 x 4	28,6	1140,0	1971,0
62875	33,6	4 x 2	33,2	1576,0	2887,0

Dimensions and specifications may be changed without prior notice. (RN01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

N

JZ-600-Y-CY UL/CSA flexible, number coded, 1000 V, EMC-preferred type, meter marking



Technical data

- Special PVC control cables adapted to DIN VDE 0276 part 627, DIN VDE 0285-525-2-51/ DIN EN 50525-2-51, with insulation thickness for 1 kV type and UL-Std.758 Style 21179
- **Temperature range** flexing -5°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** VDE U_0/U 600/1000 V UL/CSA 1000 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)
- **Coupling resistance** max. 250 Ohm/km

Cable structure

- Bare copper, fine wire conductors, acc. to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43 acc. to UL-Std.1581
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- PVC-insulated inner sheath TM2, to DIN VDE 0207-363-4-1/DIN EN 50363-4-1, class 43 acc. to UL-Std.1581
- Braided screen of tinned Cu wires, coverage approx. 85%
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1 and class 43 acc. to UL-Std.1581
- Sheath colour black (RAL 9005) or grey (RAL 7001)
- with meter marking

Properties

- Extensively oil resistant, oil-/ chemical Resistance - see table Technical Informations
- UV-resistant (building with black sheath)
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **JZ-600 UL/CSA**, confer page 362

Application

PVC control cable for measuring, monitoring and control purposes in tool machinery, conveyor belts and production lines in machinery, in air conditioning, in foundries and steel mills. Suitable for installation for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms as well as outside (fixed installation, building with black sheath). Is not suitable to be used as direct burrial- or as underwater cable. Interference-free transmission of signals and pulses is assured by the high degree of screening.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no. Sheath colour black	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
12345	2 x 0,5	20	8,3	41,0	129,0
12346	3 G 0,5	20	8,6	45,0	150,0
12347	4 G 0,5	20	9,4	54,0	170,0
12348	5 G 0,5	20	10,1	66,0	199,0
12349	7 G 0,5	20	12,1	79,0	235,0
12350	12 G 0,5	20	14,7	137,0	320,0
12351	18 G 0,5	20	17,3	156,0	428,0
12352	25 G 0,5	20	20,6	250,0	503,0
12353	2 x 0,75	19	8,7	46,0	143,0
12354	3 G 0,75	19	9,0	57,0	155,0
12355	4 G 0,75	19	9,9	63,0	190,0
12356	5 G 0,75	19	10,8	76,0	228,0
12357	7 G 0,75	19	13,0	100,0	323,0
12358	12 G 0,75	19	15,8	175,0	410,0
12359	18 G 0,75	19	17,9	240,0	560,0
12360	25 G 0,75	19	22,8	306,0	730,0
12361	2 x 1	18	9,4	54,0	150,0
12362	3 G 1	18	9,8	64,0	163,0
12363	4 G 1	18	10,8	76,0	200,0
12364	5 G 1	18	12,1	89,0	239,0
12365	7 G 1	18	14,5	114,0	289,0
12366	12 G 1	18	17,4	186,0	464,0
12367	18 G 1	18	20,7	284,0	628,0
12368	25 G 1	18	24,8	387,0	855,0
12369	2 x 1,5	16	10,2	64,0	162,0
12370	3 G 1,5	16	10,9	82,0	187,0
12371	4 G 1,5	16	12,2	99,0	240,0

Part no. Sheath colour grey	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
12410	2 x 0,5	20	8,3	41,0	129,0
12411	3 G 0,5	20	8,6	45,0	150,0
12412	4 G 0,5	20	9,4	54,0	170,0
12413	5 G 0,5	20	10,1	66,0	199,0
12414	7 G 0,5	20	12,1	79,0	235,0
12415	12 G 0,5	20	14,7	137,0	320,0
12416	18 G 0,5	20	17,3	156,0	428,0
12417	25 G 0,5	20	20,6	250,0	503,0
12418	2 x 0,75	19	8,7	46,0	143,0
12419	3 G 0,75	19	9,0	57,0	155,0
12420	4 G 0,75	19	9,9	63,0	190,0
12421	5 G 0,75	19	10,8	76,0	228,0
12422	7 G 0,75	19	13,0	100,0	323,0
12423	12 G 0,75	19	15,8	175,0	410,0
12424	18 G 0,75	19	17,9	240,0	560,0
12425	25 G 0,75	19	22,8	306,0	730,0
12426	2 x 1	18	9,4	54,0	150,0
12427	3 G 1	18	9,8	64,0	163,0
12428	4 G 1	18	10,8	76,0	200,0
12429	5 G 1	18	12,1	89,0	239,0
12430	7 G 1	18	14,5	114,0	289,0
12431	12 G 1	18	17,4	186,0	464,0
12432	18 G 1	18	20,7	284,0	628,0
12433	25 G 1	18	24,8	387,0	855,0
12434	2 x 1,5	16	10,2	64,0	162,0
12435	3 G 1,5	16	10,9	82,0	187,0
12436	4 G 1,5	16	12,2	99,0	240,0

Continuation ▸

JZ-600-Y-CY UL/CSA flexible, number coded, 1000 V, EMC-preferred type, meter marking

Part no. Sheath colour black	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
12372	5 G 1,5	16	13,3	123,0	289,0
12373	7 G 1,5	16	16,0	148,0	383,0
12374	12 G 1,5	16	19,6	274,0	592,0
12375	18 G 1,5	16	23,4	386,0	806,0
12376	25 G 1,5	16	28,2	531,0	1241,0
12377	2 x 2,5	14	11,5	110,0	272,0
12378	3 G 2,5	14	12,2	148,0	298,0
12379	4 G 2,5	14	13,4	169,0	345,0
12380	5 G 2,5	14	14,9	220,0	427,0
12381	7 G 2,5	14	17,9	284,0	561,0
12382	12 G 2,5	14	21,9	470,0	857,0
12383	18 G 2,5	14	26,1	572,0	1355,0
12384	25 G 2,5	14	31,9	740,0	1995,0
12385	2 x 4	12	14,3	124,0	306,0
12386	3 G 4	12	15,1	178,0	391,0
12387	4 G 4	12	16,7	234,0	527,0
12388	5 G 4	12	18,6	284,0	700,0
12389	7 G 4	12	20,0	321,0	920,0
12390	3 G 6	10	17,0	245,0	629,0
12391	4 G 6	10	18,7	316,0	731,0
12392	5 G 6	10	20,7	442,0	1105,0
12393	7 G 6	10	23,0	530,0	1465,0
12394	3 G 10	8	19,6	367,0	1125,0
12395	4 G 10	8	21,9	549,0	1345,0
12396	5 G 10	8	24,1	604,0	1635,0
12397	7 G 10	8	26,8	820,0	2210,0
12398	3 G 16	6	23,5	653,0	1395,0
12399	4 G 16	6	26,4	807,0	1870,0
12400	5 G 16	6	28,8	940,0	2720,0
12401	7 G 16	6	31,9	1345,0	3213,0
12402	3 G 25	4	28,0	920,0	2465,0
12403	4 G 25	4	32,5	1169,0	2750,0
12404	5 G 25	4	35,7	1420,0	3490,0
12405	7 G 25	4	39,0	1921,0	4980,0

Part no. Sheath colour grey	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
12437	5 G 1,5	16	13,3	123,0	289,0
12438	7 G 1,5	16	16,0	148,0	383,0
12439	12 G 1,5	16	19,6	274,0	592,0
12440	18 G 1,5	16	23,4	386,0	806,0
12441	25 G 1,5	16	28,2	531,0	1241,0
12442	2 x 2,5	14	11,5	110,0	272,0
12443	3 G 2,5	14	12,2	148,0	298,0
12444	4 G 2,5	14	13,4	169,0	345,0
12445	5 G 2,5	14	14,9	220,0	427,0
12446	7 G 2,5	14	17,9	284,0	561,0
12447	12 G 2,5	14	21,9	470,0	857,0
12448	18 G 2,5	14	26,1	572,0	1355,0
12449	25 G 2,5	14	31,9	740,0	1995,0
12450	2 x 4	12	14,3	124,0	306,0
12451	3 G 4	12	15,1	178,0	391,0
12452	4 G 4	12	16,7	234,0	527,0
12453	5 G 4	12	18,6	284,0	700,0
12454	7 G 4	12	20,0	321,0	920,0
12455	3 G 6	10	17,0	245,0	629,0
12456	4 G 6	10	18,7	316,0	731,0
12457	5 G 6	10	20,7	442,0	1105,0
12458	7 G 6	10	23,0	530,0	1465,0
12459	3 G 10	8	19,6	367,0	1125,0
12460	4 G 10	8	21,9	549,0	1345,0
12461	5 G 10	8	24,1	604,0	1635,0
12462	7 G 10	8	26,8	820,0	2210,0
12463	3 G 16	6	23,5	653,0	1395,0
12464	4 G 16	6	26,4	807,0	1870,0
12465	5 G 16	6	28,8	940,0	2720,0
12466	7 G 16	6	31,9	1345,0	3213,0
12467	3 G 25	4	28,0	920,0	2465,0
12468	4 G 25	4	32,5	1169,0	2750,0
12469	5 G 25	4	35,7	1420,0	3490,0
12470	7 G 25	4	39,0	1921,0	4980,0

Dimensions and specifications may be changed without prior notice. (RN01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

N

JZ-604-FCY TC TRAY CABLE PVC power cable, exposed run, screened, NFPA 79 Edition 2012, 90°C, 600 V, EMC-preferred type, meter marking



Technical data

- PVC power cable, screened to UL-Std.1277 TRAY CABLE
- **Multinorm** AWM-Style 2587 to UL-Std.758 and CSA C22.2 No 210 I/II A/B 90°C 600 V
- **Temperature range** dry environment flexing -5°C to +90°C fixed installation -25°C to +90°C wet environment flexing -5°C to +75°C fixed installation -25°C to +75°C
- **Nominal voltage** UL 600 V
- **Test voltage** 3000 V
- **Breakdown voltage** min. 6000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** 10x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)
- **Coupling resistance** max. 250 Ohm/km

Cable structure

- Bare copper, fine wire conductors, acc. to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of special PVC class 12 B to tab.50.155 acc. to UL-Std.1581, type TFF acc. to UL-Std. 62 (AWG 20-AWG 16), type THHW acc. to UL-Std.83 (AWG 14)
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Special separation foil
- Tinned copper braided screening, approx. 85% coverage
- Outer sheath of special PVC acc. to UL-Std.1277 tab.11.2
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- self-extinguishing and flame retardant acc. to CSA FT4
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- uv-resistant

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **JZ-604 TC TRAY CABLE**, confer page 364

Application

USA NFPA 79 edition 2012 conformant flexible power cables up to 600 V, for all machinery in tool and plant constuction, suitable for installation in dry, humid and damp environments, in the open and in pipes. For underground installation and for open, unprotected installation from the cable rack to machines and industrial plants.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
69750	2 x 1	18	8,6	50,0	151,0
69751	3 G 1	18	9,0	60,0	164,0
69752	4 G 1	18	9,7	71,0	200,0
69753	5 G 1	18	10,5	88,0	229,0
69754	7 G 1	18	12,2	111,0	306,0
69755	9 G 1	18	13,2	139,0	371,0
69756	10 G 1	18	15,0	150,0	411,0
69757	12 G 1	18	15,4	184,0	460,0
69758	18 G 1	18	17,8	260,0	624,0
69759	25 G 1	18	21,9	349,0	845,0
69760	34 G 1	18	24,5	486,0	984,0
69761	50 G 1	18	26,2	625,0	1096,0
69762	2 x 1,5	16	9,0	63,0	161,0
69763	3 G 1,5	16	9,4	80,0	181,0
69764	4 G 1,5	16	10,2	97,0	240,0
69765	5 G 1,5	16	11,1	119,0	274,0
69766	7 G 1,5	16	12,9	147,0	367,0
69767	8 G 1,5	16	14,5	170,0	431,0
69768	9 G 1,5	16	14,5	182,0	437,0
69769	10 G 1,5	16	15,8	193,0	511,0
69770	12 G 1,5	16	16,2	267,0	598,0
69771	16 G 1,5	16	17,9	315,0	630,0
69772	18 G 1,5	16	18,9	374,0	787,0
69773	25 G 1,5	16	22,3	526,0	1240,0
69774	34 G 1,5	16	24,9	629,0	1401,0
69775	41 G 1,5	16	26,7	801,0	2671,0
69776	50 G 1,5	16	33,7	885,0	3614,0
69777	61 G 1,5	16	36,0	1100,0	4089,0
69778	2 x 2,5	14	10,0	96,0	269,0
69779	3 G 2,5	14	10,5	144,0	294,0
69780	4 G 2,5	14	11,4	148,0	341,0
69781	5 G 2,5	14	12,4	181,0	420,0
69782	7 G 2,5	14	15,3	255,0	551,0
69783	8 G 2,5	14	16,5	285,0	583,0
69784	9 G 2,5	14	16,5	309,0	593,0
69785	10 G 2,5	14	17,9	340,0	631,0
69786	12 G 2,5	14	18,4	441,0	847,0
69787	18 G 2,5	14	22,4	570,0	1336,0
69788	25 G 2,5	14	26,5	738,0	1921,0
69789	3 G 4	12	11,6	174,0	381,0
69790	4 G 4	12	12,6	230,0	504,0
69791	5 G 4	12	14,5	273,0	692,0
69792	7 G 4	12	17,1	316,0	908,0
69793	9 G 4	12	18,4	402,0	1104,0
69794	12 G 4	12	20,5	507,0	1497,0
69795	18 G 4	12	25,0	751,0	2104,0
69796	3 G 6	10	13,8	240,0	623,0
69797	4 G 6	10	15,1	305,0	729,0
69798	5 G 6	10	16,4	439,0	1082,0
69799	7 G 6	10	18,0	505,0	1414,0
69800	3 G 10	8	17,6	350,0	1108,0
69801	4 G 10	8	19,3	535,0	1324,0
69802	5 G 10	8	22,1	592,0	1596,0
69803	7 G 10	8	24,2	810,0	2186,0

Dimensions and specifications may be changed without prior notice. (RN01)

JZ-604-YCY TC TRAY CABLE PVC power cable, exposed run, screened, NFPA 79 Edition 2012, 90°C, 600 V, EMC-preferred type, meter marking



Technical data

- PVC power cable, screened to UL-Std.1277 TRAY CABLE
- **Multinorm**
  also conforms to the following standards: AWM-Style 2587 to UL-Std.758 (cUL) and CSA type TC FT4 to C22.2 no 230, CSA C22.2 No 210 I/II A/B 90°C 600 V FT4
- **Temperature range**
  dry environment
  flexing -5°C to +90°C
  fixed installation -25°C to +90°C
  wet environment
  flexing -5°C to +75°C
  fixed installation -25°C to +75°C
- **Nominal voltage** UL 600 V
- **Test voltage** 3000 V
- **Breakdown voltage** min. 6000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  10x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)
- **Coupling resistance**
  max. 250 Ohm/km

Cable structure

- Bare copper, fine wire conductors, acc. to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of special PVC class 12 B to tab.50.155 acc. to UL-Std.1581 type TFF acc. to UL-Std.62 (AWG 20-AWG 16)
  type THHW to UL-Std.83 (AWG 14)
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- PVC-inner sheath acc. to UL-Std.1277 tab.11.2
- Tinned copper braided screening, approx. 85% coverage
- Outer sheath of special PVC acc. to UL-Std.1277 tab.11.2,
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- self-extinguishing and flame retardant acc. to CSA FT4
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- uv-resistant

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type:
  JZ 604 TC TRAY CABLE, confer page 364

Application

USA NFPA 79 edition 2012 conformant flexible power cables up to 600 V, for all machinery in tool and plant constuction, suitable for installation in dry, humid and damp environments, in the open and in pipes. For underground installation and for open, unprotected installation from the cable rack to machines and industrial plants.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

N

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
69804	3 G 16	6	25,2	653,0	1385,0
69805	4 G 16	6	27,8	807,0	1861,0
69806	5 G 16	6	31,2	940,0	2614,0
69807	7 G 16	6	34,5	1345,0	3211,0
69808	3 G 25	4	29,0	920,0	2455,0
69809	4 G 25	4	32,4	1169,0	2721,0
69810	5 G 25	4	34,2	1420,0	3490,0
69811	7 G 25	4	40,3	1921,0	4960,0
69812	3 G 35	2	32,4	1250,0	3130,0
69813	4 G 35	2	36,2	1680,0	4100,0
69814	5 G 35	2	40,5	2020,0	4921,0
69815	3 G 50	1	40,4	1887,0	4560,0
69816	4 G 50	1	45,5	2370,0	5761,0
69817	5 G 50	1	50,0	2880,0	7186,0
69818	3 G 70	2/0	47,1	2516,0	5580,0
69819	4 G 70	2/0	51,1	3257,0	7387,0
69820	5 G 70	2/0	56,0	4032,0	9290,0
69821	3 G 95	3/0	50,1	3086,0	8520,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
69822	4 G 95	3/0	55,0	4060,0	10200,0
69823	5 G 95	3/0	60,5	5244,0	13800,0
69824	3 G 120	4/0	54,0	4176,0	11090,0
69825	4 G 120	4/0	59,5	5231,0	13620,0
69826	5 G 120	4/0	64,5	6624,0	15420,0

Dimensions and specifications may be changed without prior notice. (RN01)

TRAYCONTROL® 600-C flexible, oil-resistant, screened,

EMC-preferred type, open installation (TC-ER), NFPA 79 Edition 2012



RoHS

Technical data

- PVC power cable acc. to UL-Std.1277 and UL-Std.2277
- **Temperature range**
  UL+CSA TC -40°C to +90°C
  AWM -40°C to +90°C
- **Nominal voltage**
  TC 600 V
  AWM 1000 V
  WTTC 1000 V
- **Test voltage** 3000 V
- **Coupling resistance**
  max. 250 Ohm/km
- **Minimum bending radius**
  6x cable Ø
- **Insulation resistance**
  min. 20 MOhm x km
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper conductor, fine wire with AWG dimensions
- Core insulation of special PVC with transparent nylon skin
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-lengths
- Separating foil
- Braided screening of tinned copper wires, coverage approx. 85%
- Separator
- Outer sheath of special PVC
- Sheath colour - black (RAL 9005)
- with lenght marking in feet

Properties

- self-extinguishing and flame retardant acc. to CSA FT4
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- **UV-resistant**

Tests

- **UL:**
  TC-ER, PLTC-ER (AWG 18 - AWG 12),
  ITC-ER (AWG 18 - AWG 12),
  UL Type WTTC, UL Type MTW
  NFPA 79 2012, Oil Res I (Oil Res II also available), 90°C dry / 75°C wet,
  Class 1 Div. 2 per NEC Art. 336, 392, 501
- **CSA**:
  c (UL) CIC-TC FT4,
  CSA AWM I/II A/B FT4

Note

- **Advantages**
- TC-ER, Tray Cable Exposed Run
- Simple installation
- Outstanding flexibility

Application

USA NFPA 79 edition 2012 compliant, screened, flexible power cable to 600 V (WTTC 1000 V), for all tool and plant construction machinery, suitable for installation in dry, damp and wet environments, outdoors and in pipes. For underground installation and for open, unprotected installtion from the cable tray to the machine and industrial plants.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	Cross-section mm²	No.cores x AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
63049	0,963	3 x 18	8,2	31,0	118,0
63050	0,963	4 x 18	8,8	52,0	136,0
63051	0,963	5 x 18	9,4	62,0	149,0
63052	0,963	7 x 18	10,1	83,0	193,0
63053	0,963	12 x 18	12,9	143,0	328,0
63054	0,963	18 x 18	15,7	207,0	431,0
63055	0,963	25 x 18	17,7	284,0	569,0
62997	1,31	3 x 16	8,9	57,0	144,0
63056	1,31	4 x 16	9,6	72,0	172,0
63057	1,31	5 x 16	10,3	84,0	186,0
63058	1,31	7 x 16	11,3	124,0	243,0
63059	1,31	12 x 16	15,1	199,0	421,0
63060	1,31	18 x 16	17,3	290,0	510,0
63061	1,31	25 x 16	19,6	384,0	704,0
63062	2,08	3 x 14	9,8	85,0	178,0
63063	2,08	4 x 14	10,7	115,0	220,0

Part no.	Cross-section mm²	No.cores x AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
63064	2,08	5 x 14	11,6	139,0	264,0
63065	2,08	7 x 14	12,5	185,0	325,0
63066	2,08	12 x 14	16,9	309,0	591,0
63067	2,08	18 x 14	19,5	448,0	780,0
63068	2,08	25 x 14	23,3	632,0	1041,0
63069	3,31	4 x 12	12,2	179,0	313,0
63070	3,31	5 x 12	13,4	223,0	384,0
63071	3,31	7 x 12	15,5	298,0	492,0
63072	5,26	4 x 10	15,5	256,0	547,0
63073	5,26	5 x 10	16,8	312,0	608,0
63074	5,26	7 x 10	18,2	430,0	850,0
63075	8,37	4 x 8	19,9	426,0	851,0
63076	13,3	4 x 6	23,3	657,0	1197,0
63077	21,2	4 x 4	28,6	1026,0	1970,0
63078	33,6	4 x 2	33,2	1412,0	2874,0

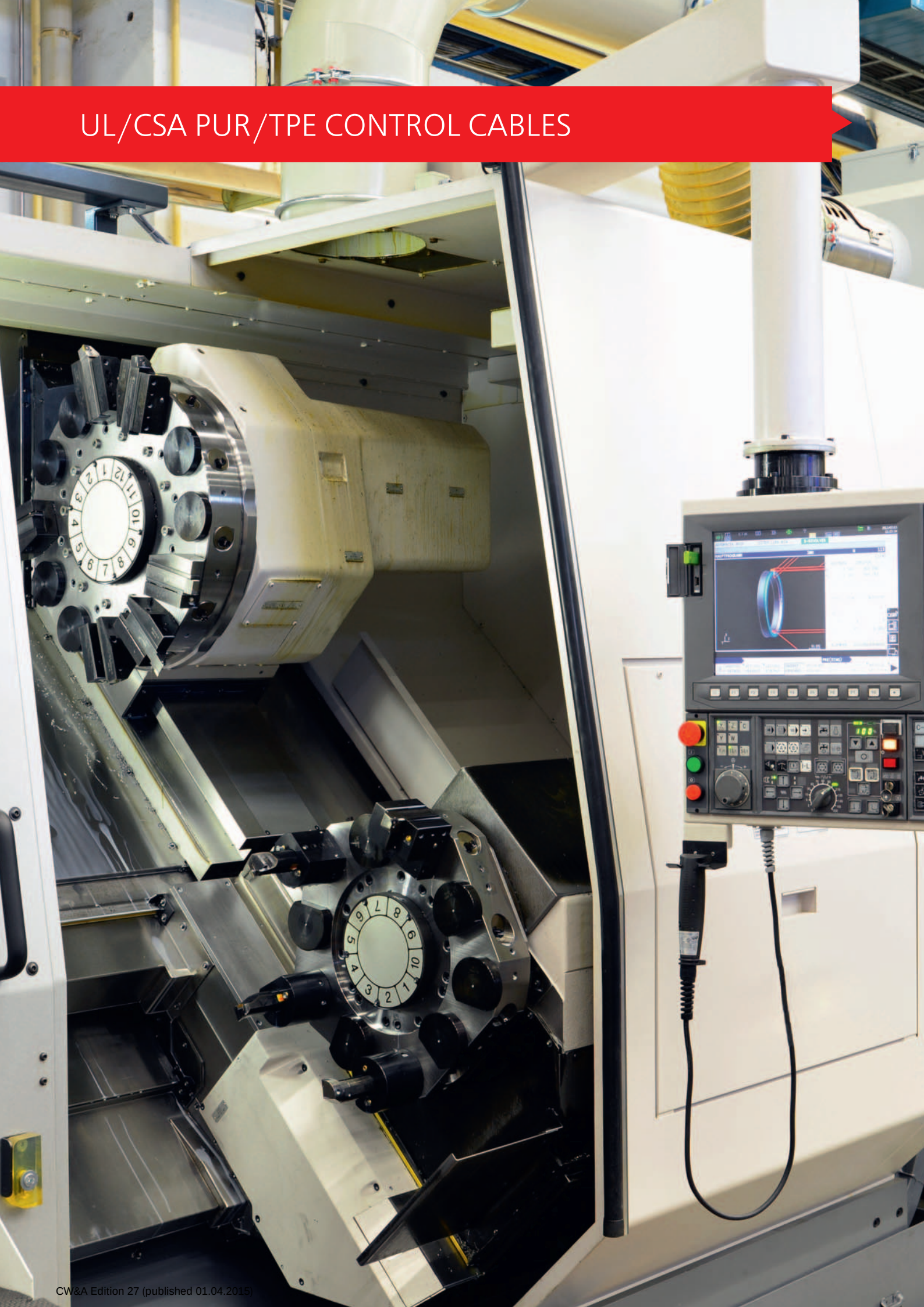
Dimensions and specifications may be changed without prior notice. (RN01)



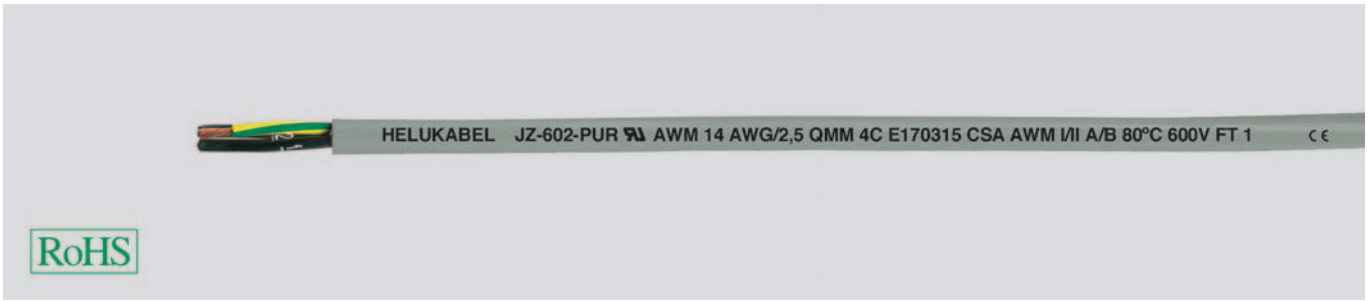
Suitable accessories can be found in Chapter X.

• Cable Gland - HELUTOP® HT-MS-EP4

UL/CSA PUR/TPE CONTROL CABLES



JZ-602-PUR 80°C, 600 V, two approval control cable, meter marking



Technical data

- Control cable of special-PUR to UL CSA AWM I/II A/B Style 20939 (sheath insulation) and CSA
- **Temperature range** flexing -5°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** UL/CSA 600 V
- **Test voltage** 3000 V
- **Breakdown voltage** min. 6000 V
- **Insulation resistance** min 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper, fine wire stranded to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of PVC compound type TI3 to DIN VDE 0207-363-3 / DIN EN 50363-3 and UL-Style 10012
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of special **full-polyurethane**
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Resistant to mineral oils, synthetic oils, coolant, UV-radiation, oxygene, ozon and hydrolysis. Conditionally resistant to microbes.
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **JZ-602-C-PUR**, confer page 389

Application

UL and CSA approved flexible control cable rated at 600 V, primarily designed for exporters to the US or Canadian market. Used in machine tools, control systems, connection between control panels and machines, assembly lines and other industrial equipment. Suitable for installation in dry, moist, wet and outdoor environment and moderate flexing applications.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
12471	2 x 0,5	20	5,8	9,6	52,0
12472	3 G 0,5	20	6,2	14,0	64,0
12473	4 G 0,5	20	6,6	19,0	72,0
12474	5 G 0,5	20	7,2	24,0	88,0
12475	7 G 0,5	20	8,4	34,0	130,0
12476	8 G 0,5	20	9,5	38,4	145,0
12477	9 G 0,5	20	10,3	43,2	180,0
12478	12 G 0,5	20	10,8	58,0	196,0
12479	18 G 0,5	20	12,8	86,0	260,0
12480	25 G 0,5	20	15,4	120,0	368,0
12481	34 G 0,5	20	17,6	163,0	502,0
12482	41 G 0,5	20	19,7	197,0	594,0
12483	2 x 1	18	6,2	19,2	57,0
12484	3 G 1	18	6,6	27,0	68,0
12485	4 G 1	18	7,2	38,4	79,0
12486	5 G 1	18	7,8	48,0	97,0
12487	7 G 1	18	9,1	67,0	141,0
12488	8 G 1	18	9,9	76,8	152,0
12489	9 G 1	18	11,0	86,4	190,0
12490	12 G 1	18	11,7	115,2	211,0
12491	18 G 1	18	14,0	173,0	284,0
12492	25 G 1	18	17,0	240,0	394,0
12493	34 G 1	18	19,2	326,0	521,0
12494	41 G 1	18	21,0	394,0	609,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
12495	2 x 1,5	16	6,8	28,8	75,0
12496	3 G 1,5	16	7,4	44,0	96,0
12497	4 G 1,5	16	8,0	58,0	117,0
12498	5 G 1,5	16	8,6	72,0	140,0
12499	7 G 1,5	16	10,5	101,0	186,0
12500	9 G 1,5	16	12,7	129,7	244,0
12501	12 G 1,5	16	13,3	173,0	319,0
12502	18 G 1,5	16	15,7	260,0	451,0
12503	25 G 1,5	16	18,8	360,0	625,0
12504	34 G 1,5	16	22,0	490,0	850,0
12505	41 G 1,5	16	23,6	590,0	1041,0
12506	2 x 2,5	14	8,1	48,0	115,0
12507	3 G 2,5	14	8,6	72,0	143,0
12508	4 G 2,5	14	10,0	96,0	185,0
12509	5 G 2,5	14	10,8	120,0	221,0
12510	7 G 2,5	14	13,0	168,0	293,0
12511	9 G 2,5	14	15,5	216,0	429,0
12512	12 G 2,5	14	16,6	288,0	563,0
12513	18 G 2,5	14	19,5	432,0	854,0
12514	19 G 2,5	14	19,5	456,0	914,0
12515	25 G 2,5	14	23,8	600,0	1188,0
12516	3 G 4	12	11,1	115,0	232,0
12517	4 G 4	12	12,4	154,0	298,0

Continuation ▸

JZ-602-PUR 80°C, 600 V, two approval control cable, meter marking

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
12518	5 G 4	12	13,7	192,0	358,0
12519	7 G 4	12	16,2	269,0	460,0
12520	3 G 6	10	12,8	173,0	360,0
12521	4 G 6	10	14,1	231,0	402,0
12522	5 G 6	10	15,7	288,0	484,0
12523	7 G 6	10	19,2	403,0	630,0
12524	3 G 10	8	16,8	288,0	535,0
12525	4 G 10	8	18,3	384,0	653,0
12526	5 G 10	8	20,1	480,0	786,0
12527	7 G 10	8	22,4	672,0	1100,0
12528	2 x 16	6	19,2	307,0	640,0
12529	3 G 16	6	20,5	461,0	810,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
12530	4 G 16	6	23,0	615,0	1045,0
12531	5 G 16	6	25,5	768,0	1260,0
12532	7 G 16	6	28,2	1075,0	1760,0
12533	3 G 25	4	25,0	720,0	1180,0
12534	4 G 25	4	28,1	960,0	1507,0
12535	5 G 25	4	30,9	1200,0	1858,0
12536	7 G 25	4	35,5	1680,0	2830,0
12537	3 G 35	2	28,6	1008,0	1590,0
12538	4 G 35	2	31,7	1344,0	2123,0
12539	5 G 35	2	35,5	1680,0	2612,0
12540	4 G 50	1	35,8	1920,0	3058,0
12541	4 G 70	2/0	41,6	2688,0	4254,0
12542	4 G 95	3/0	46,0	3648,0	5762,0
12543	4 G 120	4/0	52,8	4608,0	7280,0

Dimensions and specifications may be changed without prior notice. (RN01)

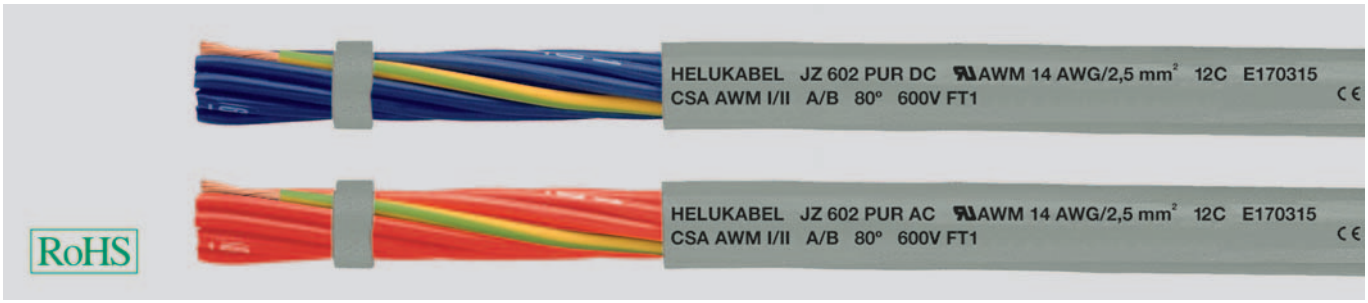


Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS
- Cable Gland - HELUTOP® HT-MS-EP 4

N

JZ-602-PUR DC/AC 80°C, 600 V, two approval control cable, meter marking



Technical data

- Control cable of special-PUR to UL CSA AWM I/II A/B Style 20939 (sheath insulation) and CSA
- **Temperature range** flexing -5°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** UL/CSA 600 V
- **Test voltage** 3000 V
- **Breakdown voltage** min. 6000 V
- **Insulation resistance** min 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper, fine wire stranded to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of PVC compound type TI3 to DIN VDE 0207-363-3 / DIN EN 50363-3 and UL-Style 10012
- Core identification blue (DC) or red (AC) with continuous white numbering
- GN-YE conductor
- Cores stranded in layers with optimal lay-length
- Outer sheath of special **full-polyurethane**
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Resistant to mineral oils, synthetic oils, coolant, UV-radiation, oxygene, ozon and hydrolysis. Conditionally resistant to microbes.
- High abrasion resistance
- Tear and cut resistant
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor
- DC = blue cores;
- AC = red cores;
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

For use on conveyor belts, tooling machines, conveyor system, production lines and automotive production plants. Also for medium mechanical stress in flexible applications with free movement and without tensile stress. UL and CSA approved control cables espacially for U. S. and Canadian markets.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

JZ-602 PUR DC (blue core)

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
12805	3 G 1	18	6,6	27,0	68,0
12806	4 G 1	18	7,2	38,0	79,0
12807	5 G 1	18	7,8	48,0	97,0
12808	7 G 1	18	9,1	67,0	141,0
12809	12 G 1	18	11,7	115,0	211,0
12810	18 G 1	18	14,0	173,0	284,0
12811	25 G 1	18	17,0	240,0	394,0
12812	3 G 1,5	16	7,4	44,0	96,0
12813	4 G 1,5	16	8,0	58,0	117,0
12814	5 G 1,5	16	8,6	72,0	140,0
12815	7 G 1,5	16	10,5	101,0	186,0
12816	12 G 1,5	16	13,3	173,0	319,0
12817	18 G 1,5	16	15,7	260,0	451,0
12818	25 G 1,5	16	18,8	360,0	625,0
12819	3 G 2,5	14	8,6	72,0	143,0
12820	4 G 2,5	14	10,0	96,0	185,0
12821	5 G 2,5	14	10,8	120,0	221,0
12822	7 G 2,5	14	13,0	168,0	293,0
12823	12 G 2,5	14	16,6	288,0	563,0
12824	18 G 2,5	14	19,5	432,0	854,0
12825	25 G 2,5	14	23,8	600,0	1188,0

JZ-602 PUR AC (red core)

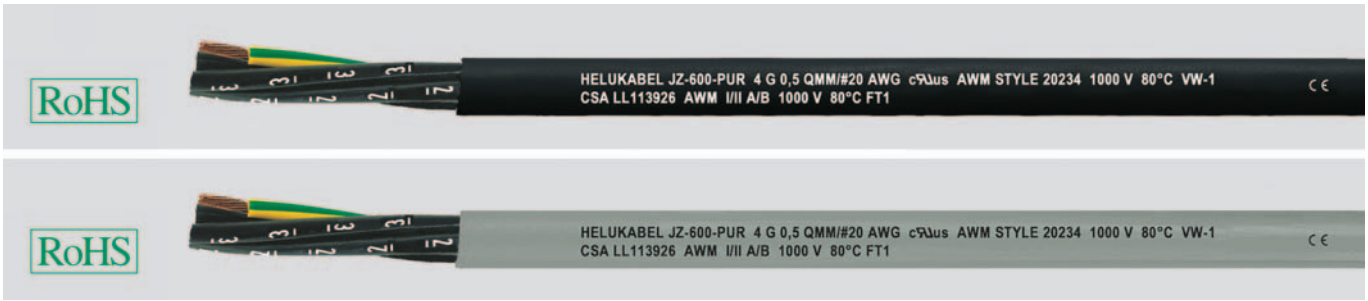
Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
12826	3 G 1	18	6,6	27,0	68,0
12827	4 G 1	18	7,2	38,0	79,0
12828	5 G 1	18	7,8	48,0	97,0
12829	7 G 1	18	9,1	67,0	141,0
12830	12 G 1	18	11,7	115,0	211,0
12831	18 G 1	18	14,0	173,0	284,0
12832	25 G 1	18	17,0	240,0	394,0
12833	3 G 1,5	16	7,4	44,0	96,0
12834	4 G 1,5	16	8,0	58,0	117,0
12835	5 G 1,5	16	8,6	72,0	140,0
12836	7 G 1,5	16	10,5	101,0	186,0
12837	12 G 1,5	16	13,3	173,0	319,0
12838	18 G 1,5	16	15,7	260,0	451,0
12839	25 G 1,5	16	18,8	360,0	625,0
12840	3 G 2,5	14	8,6	72,0	143,0
12841	4 G 2,5	14	10,0	96,0	185,0
12842	5 G 2,5	14	10,8	120,0	221,0
12843	7 G 2,5	14	13,0	168,0	293,0
12844	12 G 2,5	14	16,6	288,0	563,0
12845	18 G 2,5	14	19,5	432,0	854,0
12846	25 G 2,5	14	23,8	600,0	1188,0

Dimensions and specifications may be changed without prior notice. (RN01)



Suitable accessories can be found in Chapter X.
• Cable Gland - HELUTOP® HT-PA
• Cable Gland - HELUTOP® HT-MS
• Cable Gland - HELUTOP® HT-MS-EP 4

JZ-600 PUR tear and coolant resistant, 1000 V, meter marking



Technical data

- Special PUR control cables Adapted to DIN VDE 0276 part 627, DIN VDE 0285-525-2-51/ DIN EN 50525-2-51, with insulation thickness for 1 kV type and UL-Std.758 Style 20234
- **Temperature range** flexing -5°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** VDE U_0/U 600/1000 V UL/CSA 1000 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper, fine wire conductors, as per DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43 acc. to UL-Std.1581 UL-Style 10012
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of special full-polyurethane adapted to DIN VDE 0207-363-10-2/ DIN EN 50363-10-2, flame retardant acc. to UL-Std.758
- Sheath colour black (RAL 9005) or grey (RAL 7001)
- with meter marking

Properties

- High abrasion resistance
- High flexibility
- Resistant to ultra violet rays
- Wear resistant
- resistant to mineral oils and coolant emulsions
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **JZ-600-YC-PUR**, confer page 390

Application

Extremely robust, control cable resistant to mineral oils and to coolant emulsions. In tool machinery, conveyor belts and production lines, for plant installations, air conditioning and in steel production plants and rolling mills. Suitable for installation for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms as well as outside. Interesting for the export-oriented machinery plants.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

N

Part no. Sheath colour black	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
28240	2 x 0,5	20	6,9	9,6	60,0
28241	3 G 0,5	20	7,3	14,4	70,0
28242	4 G 0,5	20	7,9	19,0	104,0
28243	5 G 0,5	20	8,5	24,0	120,0
28244	7 G 0,5	20	9,9	33,6	141,0
28245	12 G 0,5	20	12,2	58,0	208,0
28246	18 G 0,5	20	14,4	86,0	289,0
28247	25 G 0,5	20	17,2	120,0	342,0
28248	2 x 0,75	19	7,3	14,4	70,0
28249	3 G 0,75	19	7,7	21,6	78,0
28250	4 G 0,75	19	8,3	29,0	134,0
28251	5 G 0,75	19	9,1	36,0	149,0
28252	7 G 0,75	19	10,7	50,0	201,0
28253	12 G 0,75	19	13,1	86,0	269,0
28254	18 G 0,75	19	15,6	130,0	378,0
28255	25 G 0,75	19	18,9	180,0	498,0
28256	2 x 1	18	7,9	19,2	86,0
28257	3 G 1	18	8,3	29,0	100,0
28258	4 G 1	18	9,1	38,4	107,0
28259	5 G 1	18	9,9	48,0	130,0
28260	7 G 1	18	11,7	67,0	174,0
28261	12 G 1	18	14,5	115,0	290,0
28262	18 G 1	18	17,3	173,0	405,0
28263	25 G 1	18	21,1	240,0	570,0
28264	2 x 1,5	16	8,7	29,0	97,0
28265	3 G 1,5	16	9,2	43,0	118,0
28266	4 G 1,5	16	10,0	58,0	141,0
28267	5 G 1,5	16	11,0	72,0	181,0
28268	7 G 1,5	16	13,3	101,0	234,0
28269	12 G 1,5	16	16,6	173,0	370,0
28270	18 G 1,5	16	19,7	259,0	520,0
28271	25 G 1,5	16	23,9	360,0	730,0

Part no. Sheath colour grey	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
28305	2 x 0,5	20	6,9	9,6	60,0
28306	3 G 0,5	20	7,3	14,4	70,0
28307	4 G 0,5	20	7,9	19,0	104,0
28308	5 G 0,5	20	8,5	24,0	120,0
28309	7 G 0,5	20	9,9	33,6	141,0
28310	12 G 0,5	20	12,2	58,0	208,0
28311	18 G 0,5	20	14,4	86,0	289,0
28312	25 G 0,5	20	17,2	120,0	342,0
28313	2 x 0,75	19	7,3	14,4	70,0
28314	3 G 0,75	19	7,7	21,6	78,0
28315	4 G 0,75	19	8,3	29,0	134,0
28316	5 G 0,75	19	9,1	36,0	149,0
28317	7 G 0,75	19	10,7	50,0	201,0
28318	12 G 0,75	19	13,1	86,0	269,0
28319	18 G 0,75	19	15,6	130,0	378,0
28320	25 G 0,75	19	18,9	180,0	498,0
28321	2 x 1	18	7,9	19,2	86,0
28322	3 G 1	18	8,3	29,0	100,0
28323	4 G 1	18	9,1	38,4	107,0
28324	5 G 1	18	9,9	48,0	130,0
28325	7 G 1	18	11,7	67,0	174,0
28326	12 G 1	18	14,5	115,0	290,0
28327	18 G 1	18	17,3	173,0	405,0
28328	25 G 1	18	21,1	240,0	570,0
28329	2 x 1,5	16	8,7	29,0	97,0
28330	3 G 1,5	16	9,2	43,0	118,0
28331	4 G 1,5	16	10,0	58,0	141,0
28332	5 G 1,5	16	11,0	72,0	181,0
28333	7 G 1,5	16	13,3	101,0	234,0
28334	12 G 1,5	16	16,6	173,0	370,0
28335	18 G 1,5	16	19,7	259,0	520,0
28336	25 G 1,5	16	23,9	360,0	730,0

Continuation ▸

JZ-600 PUR tear and coolant resistant, 1000 V, meter marking

Part no. Sheath colour black	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
28272	2 x 2,5	14	9,5	48,0	170,0
28273	3 G 2,5	14	10,0	72,0	181,0
28274	4 G 2,5	14	11,1	96,0	203,0
28275	5 G 2,5	14	12,4	120,0	251,0
28276	7 G 2,5	14	15,0	168,0	330,0
28277	12 G 2,5	14	18,4	288,0	553,0
28278	18 G 2,5	14	22,0	432,0	795,0
28279	25 G 2,5	14	26,9	600,0	1110,0
28280	2 x 4	12	11,4	77,0	190,0
28281	3 G 4	12	12,3	115,0	235,0
28282	4 G 4	12	13,8	154,0	310,0
28283	5 G 4	12	15,3	192,0	410,0
28284	7 G 4	12	16,8	269,0	540,0
28285	12 G 4	12	22,9	461,0	860,0
28286	3 G 6	10	14,1	173,0	370,0
28287	4 G 6	10	15,6	230,0	430,0
28288	5 G 6	10	17,3	288,0	650,0
28289	7 G 6	10	19,3	403,0	860,0
28290	3 G 10	8	16,5	288,0	660,0
28291	4 G 10	8	18,4	384,0	790,0
28292	5 G 10	8	20,5	480,0	960,0
28293	7 G 10	8	22,5	672,0	1300,0
28294	3 G 16	6	19,6	461,0	709,0
28295	4 G 16	6	21,7	614,0	1114,0
28296	5 G 16	6	24,2	768,0	1620,0
28297	7 G 16	6	25,7	1075,0	1900,0
28298	3 G 25	4	24,0	720,0	1450,0
28299	4 G 25	4	26,9	960,0	1600,0
28300	5 G 25	4	29,3	1200,0	2050,0
28301	7 G 25	4	32,6	1680,0	2900,0

Part no. Sheath colour grey	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
28337	2 x 2,5	14	9,5	48,0	170,0
28338	3 G 2,5	14	10,0	72,0	181,0
28339	4 G 2,5	14	11,1	96,0	203,0
28340	5 G 2,5	14	12,4	120,0	251,0
28341	7 G 2,5	14	15,0	168,0	330,0
28342	12 G 2,5	14	18,4	288,0	553,0
28343	18 G 2,5	14	22,0	432,0	795,0
28344	25 G 2,5	14	26,9	600,0	1110,0
28345	2 x 4	12	11,4	77,0	190,0
28346	3 G 4	12	12,3	115,0	235,0
28347	4 G 4	12	13,8	154,0	310,0
28348	5 G 4	12	15,3	192,0	410,0
28349	7 G 4	12	16,8	269,0	540,0
28350	12 G 4	12	22,9	461,0	860,0
28351	3 G 6	10	14,1	173,0	370,0
28352	4 G 6	10	15,6	230,0	430,0
28353	5 G 6	10	17,3	288,0	650,0
28354	7 G 6	10	19,3	403,0	860,0
28355	3 G 10	8	16,5	288,0	660,0
28356	4 G 10	8	18,4	384,0	790,0
28357	5 G 10	8	20,5	480,0	960,0
28358	7 G 10	8	22,5	672,0	1300,0
28359	3 G 16	6	19,6	461,0	709,0
28360	4 G 16	6	21,7	614,0	1114,0
28361	5 G 16	6	24,2	768,0	1620,0
28362	7 G 16	6	25,8	1075,0	1900,0
28363	3 G 25	4	24,0	720,0	1450,0
28364	4 G 25	4	26,9	960,0	1600,0
28365	5 G 25	4	29,3	1200,0	2050,0
28366	7 G 25	4	32,6	1680,0	2900,0

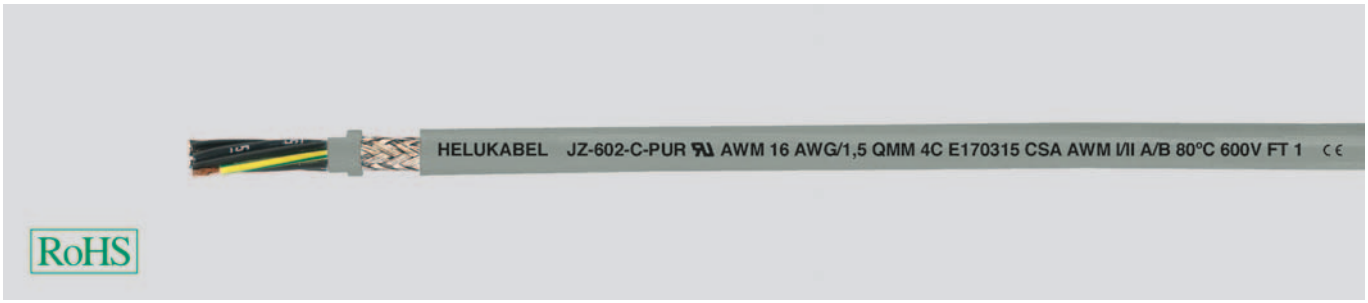
Dimensions and specifications may be changed without prior notice. (RN01)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-PA
- Cable Gland - HELUTOP® HT-MS
- Cable Gland - HELUTOP® HT-MS-EP 4

JZ-602-C-PUR screened two approval control cable, 80°C, 600 V, EMC-preferred type, meter marking



Technical data

- Special PUR-insulated to UL CSA AWM I/II A/B Style 20939 and CSA
- **Temperature range** flexing -5°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** UL/CSA 600 V
- **Test voltage** 3000 V
- **Breakdown voltage** min. 6000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Radiation resistance** up to 100x10⁶ cJ/kg (up to 100 Mrad)
- **Coupling resistance** max. 250 Ohm/km

Cable structure

- Bare copper, fine wire stranded to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3 and UL-Style 10012
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- PVC-insulated inner sheath YM5 to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1
- Braided screen of tinned Cu wires, approx. 85% coverage
- Outer sheath of **full-polyurethane**
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Resistant to mineral oils, synthetic oils and coolant, UV-radiation, osygene, ozon and hydrolysis. Conditionally resistant to microbes.
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **JZ-602 PUR**, confer page 384

Application

UL and CSA approved flexible control cables up to 600 V, for all machinery in tooling and plant construction, suitable for installation in dry, moist, wet and outdoor environments for medium mechanical loads. Designed for the export-orientated machinery manufacturer, specifically for USA and Canada.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

N

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
12550	2 x 0,5	20	7,7	41,0	93,0
12551	3 G 0,5	20	8,0	45,0	124,0
12552	4 G 0,5	20	8,6	54,0	133,0
12553	5 G 0,5	20	9,2	66,0	153,0
12554	7 G 0,5	20	10,5	79,0	191,0
12555	9 G 0,5	20	12,3	94,0	243,0
12556	12 G 0,5	20	13,0	137,0	322,0
12557	18 G 0,5	20	15,6	156,0	374,0
12558	25 G 0,5	20	18,2	250,0	436,0
12559	34 G 0,5	20	20,1	316,0	560,0
12560	41 G 0,5	20	22,4	348,0	663,0
12561	2 x 1	18	8,1	54,0	107,0
12562	3 G 1	18	8,4	64,0	130,0
12563	4 G 1	18	9,1	76,0	155,0
12564	5 G 1	18	10,0	89,0	181,0
12565	7 G 1	18	11,3	114,0	209,0
12566	9 G 1	18	13,3	144,0	321,0
12567	12 G 1	18	13,8	186,0	341,0
12568	18 G 1	18	16,2	284,0	473,0
12569	25 G 1	18	19,5	387,0	650,0
12570	34 G 1	18	22,5	500,0	781,0
12571	41 G 1	18	24,2	578,0	892,0
12572	2 x 1,5	16	8,7	64,0	136,0
12573	3 G 1,5	16	9,2	82,0	165,0
12574	4 G 1,5	16	10,0	99,0	192,0
12575	5 G 1,5	16	10,8	123,0	224,0
12576	7 G 1,5	16	12,9	148,0	273,0
12577	9 G 1,5	16	14,8	187,0	340,0
12578	12 G 1,5	16	15,6	274,0	461,0
12579	18 G 1,5	16	18,3	386,0	674,0
12580	25 G 1,5	16	22,5	531,0	950,0
12581	34 G 1,5	16	25,1	671,0	1203,0
12582	41 G 1,5	16	27,3	840,0	1588,0
12583	2 x 2,5	14	10,3	110,0	173,0
12584	3 G 2,5	14	10,8	148,0	220,0
12585	4 G 2,5	14	11,8	169,0	270,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
12586	5 G 2,5	14	13,2	220,0	329,0
12587	7 G 2,5	14	15,6	284,0	428,0
12588	9 G 2,5	14	18,1	349,0	580,0
12589	12 G 2,5	14	19,2	470,0	761,0
12590	18 G 2,5	14	23,0	572,0	1140,0
12591	25 G 2,5	14	28,3	740,0	1551,0
12592	2 x 4	12	12,5	124,0	209,0
12593	3 G 4	12	13,1	178,0	310,0
12594	4 G 4	12	14,5	234,0	456,0
12595	5 G 4	12	15,8	284,0	532,0
12596	7 G 4	12	19,0	321,0	737,0
12597	2 x 6	10	14,2	176,0	318,0
12598	3 G 6	10	15,2	245,0	411,0
12599	4 G 6	10	16,6	316,0	572,0
12600	5 G 6	10	18,4	442,0	732,0
12601	7 G 6	10	22,2	530,0	961,0
12602	3 G 10	8	19,1	367,0	741,0
12603	4 G 10	8	21,1	549,0	988,0
12604	5 G 10	8	23,7	604,0	1202,0
12605	7 G 10	8	26,5	820,0	1743,0
12606	3 G 16	6	24,2	653,0	1088,0
12607	4 G 16	6	27,2	807,0	1662,0
12608	5 G 16	6	30,6	940,0	2021,0
12609	7 G 16	6	33,6	1345,0	2720,0
12610	3 G 25	4	30,2	920,0	1947,0
12611	4 G 25	4	33,3	1169,0	2591,0
12612	5 G 25	4	36,8	1420,0	3197,0
12613	7 G 25	4	40,6	1921,0	4530,0
12614	3 G 35	2	33,8	1250,0	2701,0
12615	4 G 35	2	37,7	1680,0	3277,0
12616	5 G 35	2	41,5	2020,0	4530,0
12617	4 G 50	1	40,5	2370,0	3370,0
12618	4 G 70	2/0	46,1	3257,0	4630,0
12619	4 G 95	3/0	50,7	4060,0	6114,0
12620	4 G 120	4/0	57,0	5231,0	7417,0

Dimensions and specifications may be changed without prior notice. (RN01)

JZ-600-YC-PUR tear and coolant resistant, 1000 V, Cu-screened, EMC-preferred type, meter marking





Technical data

- Special PUR control cables acc. to DIN VDE 0276 part 627, DIN VDE 0285-525-2-51/ DIN EN 50525-2-51, with insulation thickness for 1 kV type and UL-Std.758 Style 20234
- **Temperature range** flexing -5°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** VDE U_0/U 600/1000 V UL/CSA 1000 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)
- **Coupling resistance** max. 250 Ohm/km

Cable structure

- Bare copper, fine wire conductors, acc. to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43 acc. to UL-Std.1581 UL-Style 10012
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Oil resistant PVC inner sheath, TM5 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1 and class 43 acc. to UL-Std.1581
- Tinned copper braided screening, approx. 85% coverage
- Outer sheath, special full-polyurethane compound type TMPU adapted to DIN VDE 0207-363-10-2/ DIN EN 50363-10-2, flame retardant acc. to UL-Std.758
- Sheath colour black (RAL 9005) or grey (RAL 7001)
- with meter marking

Properties

- High abrasion resistance
- High flexibility
- Resistant to ultra violet rays
- Wear resistant
- resistant to mineral oils and coolant emulsions
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **JZ-600 PUR**, confer page 387

Application

Extremely robust sheated cable, used in machinery, tools and plant, in rolling and steel mills at particularly critical poinst. For medium mechanical stress for flexible use with free movement without tensile stress or forced movements in dry, damp and wet rooms and outdoors. Through the good flexibility quickly and safely to install. Designed for the export-oriented engineering.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no. Sheath colour black	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
28370	2 x 0,5	20	9,0	41,0	131,0
28371	3 G 0,5	20	9,3	45,0	154,0
28372	4 G 0,5	20	9,9	54,0	176,0
28373	5 G 0,5	20	10,6	66,0	204,0
28374	7 G 0,5	20	12,2	79,0	237,0
28375	12 G 0,5	20	14,7	137,0	323,0
28376	18 G 0,5	20	17,3	156,0	431,0
28377	25 G 0,5	20	20,6	250,0	507,0
28378	2 x 0,75	19	9,4	46,0	143,0
28379	3 G 0,75	19	9,8	57,0	158,0
28380	4 G 0,75	19	10,4	63,0	193,0
28381	5 G 0,75	19	11,1	76,0	231,0
28382	7 G 0,75	19	13,0	100,0	337,0
28383	12 G 0,75	19	15,8	175,0	424,0
28384	18 G 0,75	19	17,9	240,0	568,0
28385	25 G 0,75	19	22,8	306,0	741,0
28386	2 x 1	18	9,9	54,0	158,0
28387	3 G 1	18	10,3	64,0	169,0
28388	4 G 1	18	11,1	76,0	207,0
28389	5 G 1	18	12,2	89,0	244,0
28390	7 G 1	18	14,5	114,0	292,0
28391	12 G 1	18	17,4	186,0	472,0
28392	18 G 1	18	20,7	284,0	634,0
28393	25 G 1	18	24,8	387,0	861,0

Part no. Sheath colour grey	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
28430	2 x 0,5	20	9,0	41,0	131,0
28431	3 G 0,5	20	9,3	45,0	154,0
28432	4 G 0,5	20	9,9	54,0	176,0
28433	5 G 0,5	20	10,6	66,0	204,0
28434	7 G 0,5	20	12,2	79,0	237,0
28435	12 G 0,5	20	14,7	137,0	323,0
28436	18 G 0,5	20	17,3	156,0	431,0
28437	25 G 0,5	20	20,6	250,0	507,0
28438	2 x 0,75	19	9,4	46,0	143,0
28439	3 G 0,75	19	9,8	57,0	158,0
28440	4 G 0,75	19	10,4	63,0	193,0
28441	5 G 0,75	19	11,1	76,0	231,0
28442	7 G 0,75	19	13,0	100,0	337,0
28443	12 G 0,75	19	15,8	175,0	424,0
28444	18 G 0,75	19	17,9	240,0	568,0
28445	25 G 0,75	19	22,8	306,0	741,0
28446	2 x 1	18	9,9	54,0	158,0
28447	3 G 1	18	10,3	64,0	169,0
28448	4 G 1	18	11,1	76,0	207,0
28449	5 G 1	18	12,2	89,0	244,0
28450	7 G 1	18	14,5	114,0	292,0
28451	12 G 1	18	17,4	186,0	472,0
28452	18 G 1	18	20,7	284,0	634,0
28453	25 G 1	18	24,8	387,0	861,0

Continuation ▸

JZ-600-YC-PUR tear and coolant resistant, 1000 V, Cu-screened, EMC-preferred type, meter marking



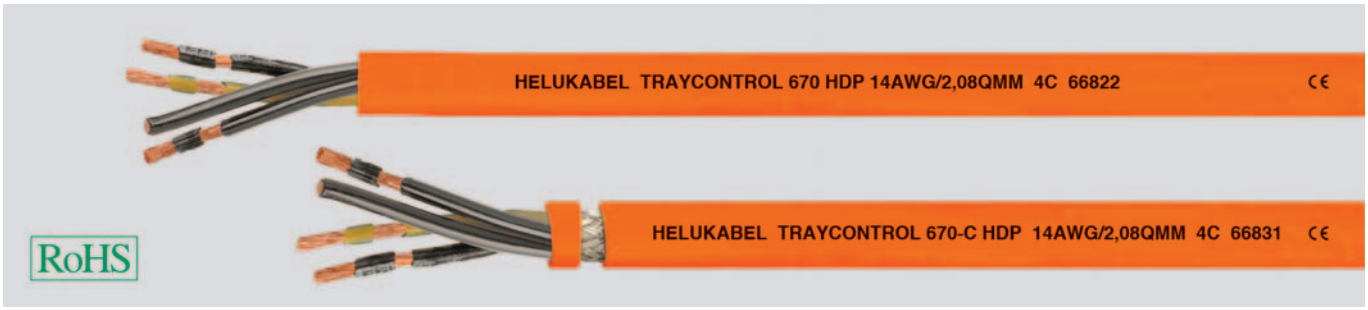
Part no. Sheath colour black	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
28394	2 x 1,5	16	10,7	64,0	166,0
28395	3 G 1,5	16	11,2	82,0	192,0
28396	4 G 1,5	16	12,3	99,0	246,0
28397	5 G 1,5	16	13,3	123,0	294,0
28398	7 G 1,5	16	16,0	148,0	392,0
28399	12 G 1,5	16	19,6	274,0	599,0
28400	18 G 1,5	16	23,4	386,0	817,0
28401	25 G 1,5	16	28,2	531,0	1261,0
28402	2 x 2,5	14	11,8	110,0	280,0
28403	3 G 2,5	14	12,3	148,0	301,0
28404	4 G 2,5	14	13,4	169,0	352,0
28405	5 G 2,5	14	14,9	220,0	433,0
28406	7 G 2,5	14	17,9	284,0	569,0
28407	12 G 2,5	14	21,9	470,0	864,0
28408	18 G 2,5	14	26,1	572,0	1365,0
28409	25 G 2,5	14	31,9	740,0	1997,0
28410	2 x 4	12	14,3	124,0	310,0
28411	3 G 4	12	15,1	178,0	396,0
28412	4 G 4	12	16,7	234,0	531,0
28413	5 G 4	12	18,6	284,0	704,0
28414	7 G 4	12	20,0	321,0	932,0
28415	3 G 6	10	17,0	245,0	633,0
28416	4 G 6	10	18,7	316,0	742,0
28417	5 G 6	10	20,7	442,0	1117,0
28418	3 G 10	8	19,6	367,0	1131,0
28419	4 G 10	8	21,9	549,0	1357,0
28420	5 G 10	8	24,1	604,0	1646,0
28421	3 G 16	6	23,5	653,0	1397,0
28422	4 G 16	6	26,4	807,0	1880,0
28423	5 G 16	6	28,8	940,0	2721,0

Part no. Sheath colour grey	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
28454	2 x 1,5	16	10,7	64,0	166,0
28455	3 G 1,5	16	11,2	82,0	192,0
28456	4 G 1,5	16	12,3	99,0	246,0
28457	5 G 1,5	16	13,3	123,0	294,0
28458	7 G 1,5	16	16,0	148,0	392,0
28459	12 G 1,5	16	19,6	274,0	599,0
28460	18 G 1,5	16	23,4	386,0	817,0
28461	25 G 1,5	16	28,2	531,0	1261,0
28462	2 x 2,5	14	11,8	110,0	280,0
28463	3 G 2,5	14	12,3	148,0	301,0
28464	4 G 2,5	14	13,4	169,0	352,0
28465	5 G 2,5	14	14,9	220,0	433,0
28466	7 G 2,5	14	17,9	284,0	569,0
28467	12 G 2,5	14	21,9	470,0	864,0
28468	18 G 2,5	14	26,1	572,0	1365,0
28469	25 G 2,5	14	31,9	740,0	1997,0
28470	2 x 4	12	14,3	124,0	310,0
28471	3 G 4	12	15,1	178,0	396,0
28472	4 G 4	12	16,7	234,0	531,0
28473	5 G 4	12	18,6	284,0	704,0
28474	7 G 4	12	20,0	321,0	932,0
28475	3 G 6	10	17,0	245,0	633,0
28476	4 G 6	10	18,7	316,0	742,0
28477	5 G 6	10	20,7	442,0	1117,0
28478	3 G 10	8	19,6	367,0	1131,0
28479	4 G 10	8	21,9	549,0	1357,0
28480	5 G 10	8	24,1	604,0	1646,0
28481	3 G 16	6	23,5	653,0	1397,0
28482	4 G 16	6	26,4	807,0	1880,0
28483	5 G 16	6	28,8	940,0	2721,0

Dimensions and specifications may be changed without prior notice. (RN01)

N

TRAYCONTROL® 670 HDP / 670-C HDP flexible, oil-resistant, open installation (TC-ER), NFPA 79 Edition 2012



Technical data

- TPE motor supply cable acc. to UL-Std.1277 and UL-Std.2277
- **Temperature range** flexing -40°C bis +105°C
- **Nominal voltage** TC 600 V AWM 1000 V TC Wind Turbine (WTTC) 1000 V
- **Test voltage** 4000 V
- **Minimum bending radius** 7,5 cable Ø
- **Coupling resistance (-C-type)** max. 250 Ohm/km

Cable structure

- Bare copper-conductor, fine-wire with AWG dimensions
- Core insulation of special PVC with transparent nylon skin
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor in the outer layer
- Cores stranded in layers with optimal lay-length
- Separator
- Outer sheath of special TPE
- Sheath colour orange (RAL 2003)
- with length marking in feet
- **C-Type** Screening with braid of tinned copper wires, optimal coverage, approx. 85%

Properties

- self-extinguishing and flame retardant acc. to CSA FT4
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- **UL:** TC-ER, WTTC, MTW, NFPA 79 2012, UL AWM 105°C, OIL RES I & II, 75° C wet Bus Drop Cable, Class 1 Div. 2 per NEC Art. 336, 318, 501
- **CSA:** c (UL) CIC-TC FT4, AWM I/II A/B FT4

Note

- HDP = Heavy Duty Power

Application

HELUKABEL® TRAYCONTROL® 670 HDP / 670-C-HDP are multi-conductor severe duty motor supply cables with Bus Drop, TC-ER and CIC/TC approval. Superior oil performance for long cable life and permitted to be used in hazardous (classified) locations Class I Div 2 per NEC 336, 318 and 501. Special extruded sheath and fine copper stranding approved for exposed run, pipes and burial installation. Excellent flexibility and easier to pull than standard tray cables. Suitable for installation in the open unprotected installation on cable tray and from cable tray to machines according to NFPA 79 edition 2012.
Recommended Applications: Motor connections in industrial and automation environments, machine tool, automotive and renewable energies.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

TRAYCONTROL® 670 HDP

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
66820	4 x 1	18	8,4	39,0	103,0
66821	4 G 1,32	16	9,2	51,0	133,0
66822	4 G 2,08	14	10,0	80,0	170,0
66823	4 G 3,31	12	11,2	127,0	229,0
66824	4 G 6	10	15,2	230,0	393,0
66825	4 G 10	8	19,3	384,0	626,0
66826	4 G 16	6	22,4	614,0	885,0
66827	4 G 25	4	26,7	960,0	1301,0
66828	4 G 35	2	31,5	1344,0	1983,0

TRAYCONTROL® 670-C HDP

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
66829	4 x 1	18	9,8	52,0	133,0
66830	4 G 1,32	16	10,5	72,0	159,0
66831	4 G 2,08	14	11,7	115,0	222,0
66832	4 G 3,31	12	12,8	179,0	283,0
66833	4 G 6	10	16,9	256,0	460,0
66834	4 G 10	8	22,1	426,0	741,0
66835	4 G 16	6	26,2	657,0	1059,0
66836	4 G 25	4	30,8	1026,0	1497,0
66837	4 G 35	2	35,0	1412,0	2058,0

Dimensions and specifications may be changed without prior notice. (RN01)



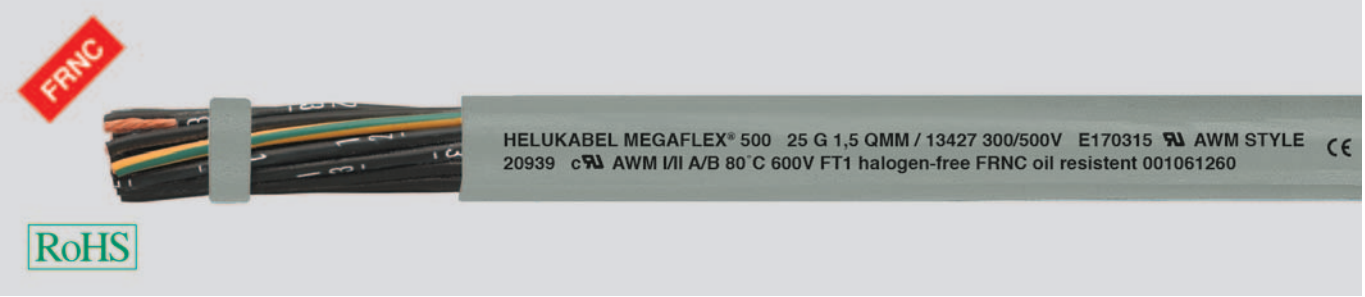
Suitable accessories can be found in Chapter X.

• Cable Gland - HELUTOP® HT-E

UL/CSA HALOGEN-FREE CONTROL CABLES



MEGAFLEX® 500 halogen-free, flame retardant, oil-resistant, UV-resistant, flexible, meter marking



Technical data

- Halogen-free flexible control cable adapted to DIN VDE 0285-525-3-11/ DIN EN 50525-3-11, to UL-Style 20939, UL-Std.758
- **Temperature range** flexing -30°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V UL/CSA 600 V
- **Test voltage** 3000 V
- **Minimum bending radius** flexing 10x cable Ø fixed installation 4x cable Ø
- **Flexibility** Alternate bending test acc. to DIN VDE 0473-396 / DIN EN 50396

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of halogen-free special polymer
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Outer sheath of halogen-free special polymer
- Sheath colour grey (RAL 7001)
- with meter marking
- **LS0H**= Low Smoke Zero Halogen

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- Also available as a 0,6/1 kV cable MEGAFLEX® 600
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **MEGAFLEX® 500-C**, confer page 398

Properties

- Highly flame-retardant
- Resistant to oils and greases
- Resistant to UV and weathering
- Hydrolysis resistant
- Flexible, abrasion- and wear-resistant
- Ozone-resistant, recycleable
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2 / IEC 60332-1 (previously DIN VDE 0472 part 804 test method B), CSA FT1
- Corrosiveness of combustion gases acc. to NF X 10-702
- Halogen-free acc. to DIN VDE 0482 part 267 / DIN EN 50267-2-1 / IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)
- Oil-resistant to DIN VDE 0473-811-404/ DIN EN 60811-404
- Hydrolysis-resistant to DIN EN 61234-1
- Ozone-resistant to DIN VDE 0473-811-403/DIN EN 60811-403

Application

For fixed installation or flexible application, with free movements without forcing which do not constantly recur and without tensile stress, for high mechanical strain. As a measuring and control cable primarily in machinery and plant construction, in air-conditoning systems, at the warehouse and conveyor systems, in ship-building and in the renewable energies such as in the construction of wind power stations.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
13344	2 x 0,5	20	5,0	9,6	43,0
13345	3 G 0,5	20	5,3	14,4	50,0
13346	3 x 0,5	20	5,3	14,4	50,0
13347	4 G 0,5	20	5,7	19,0	60,0
13348	4 x 0,5	20	5,7	19,0	60,0
13349	5 G 0,5	20	6,2	24,0	71,0
13350	5 x 0,5	20	6,2	24,0	71,0
13351	7 G 0,5	20	7,4	33,6	84,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
13352	8 G 0,5	20	8,0	38,0	101,0
13353	10 G 0,5	20	8,8	48,0	121,0
13354	12 G 0,5	20	9,1	58,0	142,0
13355	16 G 0,5	20	10,0	76,0	183,0
13356	18 G 0,5	20	10,7	86,0	204,0
13357	20 G 0,5	20	11,2	96,0	227,0
13359	25 G 0,5	20	12,7	120,0	283,0
13360	30 G 0,5	20	13,5	144,0	324,0

Continuation ▸

MEGAFLEX® 500 halogen-free, flame retardant, oil-resistant,

UV-resistant, flexible, meter marking

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
13361	34 G 0,5	20	14,5	163,0	367,0
13362	37 G 0,5	20	14,5	178,0	381,0
13363	41 G 0,5	20	15,8	197,0	417,0
13364	42 G 0,5	20	15,8	202,0	454,0
13365	50 G 0,5	20	17,3	240,0	519,0
13366	61 G 0,5	20	18,5	293,0	635,0
13367	65 G 0,5	20	19,4	312,0	694,0
13368	2 x 0,75	19	5,4	14,4	47,0
13369	3 G 0,75	19	5,7	21,6	56,0
13370	3 x 0,75	19	5,7	21,6	56,0
13371	4 G 0,75	19	6,2	29,0	69,0
13372	4 x 0,75	19	6,2	29,0	69,0
13373	5 G 0,75	19	6,8	36,0	83,0
13374	5 x 0,75	19	6,8	36,0	83,0
13375	7 G 0,75	19	8,1	50,0	114,0
13376	7 x 0,75	19	8,1	50,0	114,0
13377	8 G 0,75	19	8,9	58,0	136,0
13378	10 G 0,75	19	9,6	72,0	172,0
13379	12 G 0,75	19	9,9	86,0	183,0
13380	16 G 0,75	19	11,2	115,0	241,0
13381	18 G 0,75	19	11,9	130,0	266,0
13382	20 G 0,75	19	12,6	144,0	291,0
13383	25 G 0,75	19	14,1	180,0	374,0
13384	30 G 0,75	19	15,4	216,0	450,0
13385	34 G 0,75	19	16,4	245,0	517,0
13386	37 G 0,75	19	16,4	260,0	541,0
13387	41 G 0,75	19	17,6	296,0	611,0
13388	42 G 0,75	19	17,6	302,0	621,0
13389	50 G 0,75	19	19,8	360,0	742,0
13390	61 G 0,75	19	20,9	439,0	853,0
13392	65 G 0,75	19	21,8	468,0	909,0
13393	2 x 1	18	5,7	19,2	63,0
13394	3 G 1	18	6,0	29,0	74,0
13395	3 x 1	18	6,0	29,0	74,0
13396	4 G 1	18	6,6	38,4	90,0
13397	4 x 1	18	6,6	38,4	90,0
13398	5 G 1	18	7,2	48,0	109,0
13399	7 G 1	18	8,6	67,0	151,0
13400	8 G 1	18	9,4	77,0	184,0
13401	10 G 1	18	10,4	96,0	224,0
13402	12 G 1	18	10,7	115,0	243,0
13403	16 G 1	18	12,0	154,0	314,0
13404	18 G 1	18	12,7	173,0	361,0
13405	20 G 1	18	13,5	192,0	387,0
13406	25 G 1	18	15,2	240,0	496,0
13407	34 G 1	18	17,4	326,0	670,0
13408	37 G 1	18	17,4	355,0	713,0
13409	41 G 1	18	18,9	394,0	784,0
13410	42 G 1	18	18,9	403,0	824,0
13411	50 G 1	18	21,0	480,0	952,0
13412	61 G 1	18	22,2	586,0	1140,0
13413	65 G 1	18	23,2	628,0	1201,0
13414	2 x 1,5	16	6,3	29,0	70,0
13415	3 G 1,5	16	6,6	43,0	94,0
13416	3 x 1,5	16	6,6	43,0	94,0
13417	4 G 1,5	16	7,2	58,0	112,0
13418	5 G 1,5	16	7,9	72,0	141,0
13419	7 G 1,5	16	9,5	101,0	191,0
13420	8 G 1,5	16	10,4	115,0	224,0
13421	10 G 1,5	16	11,3	144,0	282,0
13422	12 G 1,5	16	11,7	173,0	311,0
13423	16 G 1,5	16	13,3	230,0	392,0
13425	18 G 1,5	16	14,0	259,0	450,0
13426	20 G 1,5	16	14,9	288,0	497,0
13427	25 G 1,5	16	16,8	360,0	630,0
13428	34 G 1,5	16	19,4	490,0	842,0
13429	37 G 1,5	16	19,4	533,0	897,0
13430	50 G 1,5	16	23,4	720,0	1277,0
13431	61 G 1,5	16	24,8	878,0	1460,0
13432	65 G 1,5	16	25,8	936,0	1612,0
13433	2 x 2,5	14	7,6	48,0	118,0
13434	3 G 2,5	14	8,3	72,0	151,0
13435	4 G 2,5	14	9,1	96,0	181,0
13436	5 G 2,5	14	10,2	120,0	224,0
13437	7 G 2,5	14	12,1	168,0	316,0
13438	8 G 2,5	14	13,2	192,0	370,0
13439	10 G 2,5	14	14,6	240,0	451,0
13440	12 G 2,5	14	15,2	288,0	499,0
13441	16 G 2,5	14	16,8	384,0	720,0
13442	18 G 2,5	14	18,1	432,0	769,0
13443	20 G 2,5	14	19,0	480,0	911,0
13444	25 G 2,5	14	22,2	600,0	1047,0
13445	30 G 2,5	14	22,9	720,0	1280,0
13446	2 x 4	12	9,2	77,0	199,0
13447	3 G 4	12	9,9	115,0	247,0
13448	4 G 4	12	11,0	154,0	299,0
13449	5 G 4	12	12,1	192,0	369,0
13450	7 G 4	12	13,3	269,0	463,0
13451	8 G 4	12	15,9	307,0	601,0
13452	10 G 4	12	17,3	384,0	698,0
13453	12 G 4	12	18,3	461,0	790,0
13454	16 G 4	12	20,2	614,0	1130,0
13455	18 G 4	12	21,8	691,0	1280,0
13456	2 x 6	10	10,8	115,0	266,0
13457	3 G 6	10	11,7	173,0	360,0
13458	4 G 6	10	13,0	230,0	429,0
13459	5 G 6	10	14,5	288,0	529,0
13460	7 G 6	10	16,0	403,0	631,0
13461	2 x 10	8	14,0	192,0	440,0
13462	3 G 10	8	15,0	288,0	550,0
13463	4 G 10	8	16,8	384,0	708,0
13464	5 G 10	8	18,7	480,0	862,0
13465	7 G 10	8	20,6	672,0	1124,0
13466	2 x 16	6	16,5	307,0	642,0
13467	3 G 16	6	17,6	461,0	830,0
13468	4 G 16	6	19,7	641,0	1060,0
13469	5 G 16	6	21,9	768,0	1270,0
13470	7 G 16	6	24,4	1075,0	1794,0
13471	3 G 25	4	22,5	720,0	1190,0
13472	4 G 25	4	25,2	960,0	1594,0
13473	5 G 25	4	27,9	1200,0	2014,0
13474	3 G 35	2	26,3	1008,0	1590,0
13475	4 G 35	2	28,5	1344,0	2200,0
13476	5 G 35	2	31,2	1680,0	2693,0
13477	3 G 50	1	30,2	1440,0	2571,0
13478	4 G 50	1	34,0	1920,0	3087,0
13479	5 G 50	1	37,8	2400,0	3980,0
13480	3 G 70	2/0	37,0	2016,0	3207,0
13481	4 G 70	2/0	41,5	2688,0	4077,0
13482	5 G 70	2/0	46,2	3360,0	5501,0
13483	3 G 95	3/0	41,4	2736,0	4708,0
13484	4 G 95	3/0	46,2	3648,0	5590,0
13485	5 G 95	3/0	51,5	4560,0	6972,0
13486	3 G 120	4/0	45,7	3456,0	5515,0
13487	4 G 120	4/0	51,2	4608,0	7100,0
13488	3 G 150	300 kcmil	52,8	4320,0	6279,0
13489	4 G 150	300 kcmil	58,3	5760,0	7781,0

Dimensions and specifications may be changed without prior notice. (RA03)

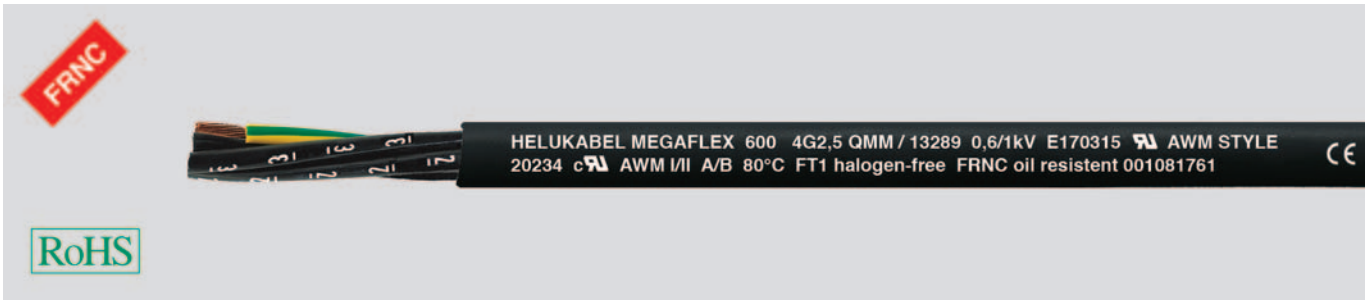


Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-E

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MEGAFLEX® 600 halogen-free, flame retardant, oil-resistant, UV-resistant, flexible, meter marking



Technical data

- Halogen-free flexible control cable to UL-Style 20234, UL-Std.758
- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 600/1000 V
- **Test voltage** 4000 V
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 4x cable Ø
- **Flexibility**
  Alternate bending test acc. to DIN VDE 0473-396 / DIN EN 50396

Cable structure

- Bare copper, fine wire conductors, to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of halogen-free special polymer
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layer with optimal lay-length
- Outer sheath, halogen-free special polymer
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- Halogen-free
- Highly flame-retardant
- Resistant to oils and greases
- Resistant to UV and weathering
- Hydrolysis resistant
- Flexible, abrasion- and wear-resistant
- Ozone-resistantRecycleable

Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (previously DIN VDE 0472 part 804 test method B)
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- Corrosiveness of combustion gases acc. to NF X 10-702
- Halogen-free acc. to DIN VDE 0482 part 267/ EN 50267-2-1/ IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2/ IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)
- Oil-resistant to DIN VDE 0473-811-404/ DIN EN 60811-404
- Hydrolysis-resistant to DIN EN 61234-1
- Ozone-resistant to DIN VDE 0473-811-403/DIN EN 60811-403

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- screened analogue type:
  MEGAFLEX® 600-C, confer page 400

Application

For fixed installation or flexible application, with occasional not permanently recurring free movement without forced motion and without tensile stress, for high mechanical strain. As a measuring and control cable in tool machinery, conveyor belts and production lines, plant engineering, climate engineering, in foundries and steel mills. Especially suited for wind power plant and computer equipment.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
13200	2 x 0,5	20	6,4	9,6	56,0
13201	3 G 0,5	20	6,8	14,4	68,0
13202	3 x 0,5	20	6,8	14,4	68,0
13203	4 G 0,5	20	7,6	19,0	100,0
13204	4 x 0,5	20	7,6	19,0	100,0
13205	5 G 0,5	20	8,2	24,0	117,0
13206	5 x 0,5	20	8,2	24,0	117,0
13207	7 G 0,5	20	9,8	33,6	138,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
13208	8 G 0,5	20	10,7	38,0	150,0
13209	10 G 0,5	20	11,6	48,0	176,0
13210	12 G 0,5	20	12,2	58,0	200,0
13211	16 G 0,5	20	13,7	76,0	250,0
13212	18 G 0,5	20	14,4	86,0	276,0
13213	20 G 0,5	20	15,3	96,0	293,0
13214	25 G 0,5	20	17,2	120,0	335,0
13215	30 G 0,5	20	18,0	144,0	348,0

Continuation ▸

MEGAFLEX® 600 halogen-free, flame retardant, oil-resistant, UV-resistant, flexible, meter marking

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
13216	34 G 0,5	20	19,8	163,0	520,0
13217	37 G 0,5	20	15,0	178,0	561,0
13218	41 G 0,5	20	21,3	197,0	590,0
13219	42 G 0,5	20	21,2	202,0	595,0
13220	50 G 0,5	20	23,4	240,0	715,0
13221	61 G 0,5	20	26,0	293,0	840,0
13222	65 G 0,5	20	26,8	312,0	880,0
13223	2 x 0,75	19	6,8	14,4	66,0
13224	3 G 0,75	19	7,2	21,6	74,0
13225	3 x 0,75	19	7,2	21,6	74,0
13226	4 G 0,75	19	8,0	29,0	126,0
13227	4 x 0,75	19	8,0	29,0	126,0
13228	5 G 0,75	19	8,8	36,0	140,0
13229	5 x 0,75	19	8,8	36,0	140,0
13230	7 G 0,75	19	10,7	50,0	190,0
13231	7 x 0,75	19	10,7	50,0	190,0
13232	8 G 0,75	19	11,5	58,0	212,0
13233	10 G 0,75	19	12,7	72,0	238,0
13234	12 G 0,75	19	13,1	86,0	257,0
13235	16 G 0,75	19	14,6	115,0	304,0
13236	18 G 0,75	19	15,6	130,0	362,0
13237	20 G 0,75	19	16,6	144,0	394,0
13238	25 G 0,75	19	18,9	180,0	486,0
13239	30 G 0,75	19	15,4	216,0	450,0
13241	34 G 0,75	19	21,5	245,0	638,0
13242	37 G 0,75	19	21,5	260,0	696,0
13243	41 G 0,75	19	23,2	296,0	750,0
13244	42 G 0,75	19	23,2	302,0	770,0
13245	50 G 0,75	19	25,6	360,0	895,0
13246	61 G 0,75	19	28,2	439,0	1070,0
13247	65 G 0,75	19	29,0	468,0	1110,0
13248	2 x 1	18	7,4	19,2	80,0
13249	3 G 1	18	8,0	29,0	96,0
13250	3 x 1	18	8,0	29,0	96,0
13251	4 G 1	18	8,8	38,4	100,0
13252	4 x 1	18	8,8	38,4	100,0
13253	5 G 1	18	9,8	48,0	130,0
13254	7 G 1	18	11,7	67,0	170,0
13255	8 G 1	18	12,8	77,0	230,0
13256	10 G 1	18	14,3	96,0	270,0
13257	12 G 1	18	14,5	115,0	290,0
13258	16 G 1	18	16,5	154,0	360,0
13259	18 G 1	18	17,3	173,0	405,0
13260	20 G 1	18	18,4	192,0	450,0
13261	25 G 1	18	21,1	240,0	570,0
13262	34 G 1	18	24,0	326,0	750,0
13263	37 G 1	18	24,3	355,0	790,0
13264	41 G 1	18	25,9	394,0	890,0
13265	42 G 1	18	25,9	403,0	900,0
13266	50 G 1	18	28,5	480,0	1100,0
13267	61 G 1	18	31,4	586,0	1266,0
13268	65 G 1	18	32,5	628,0	1560,0
13269	2 x 1,5	16	8,4	29,0	95,0
13270	3 G 1,5	16	9,1	43,0	112,0
13271	3 x 1,5	16	9,1	43,0	112,0
13272	4 G 1,5	16	9,9	58,0	139,0
13273	5 G 1,5	16	11,0	72,0	170,0
13274	7 G 1,5	16	13,3	101,0	225,0
13275	8 G 1,5	16	14,5	115,0	250,0
13276	10 G 1,5	16	16,1	144,0	300,0
13277	12 G 1,5	16	16,6	173,0	370,0
13278	16 G 1,5	16	18,5	230,0	450,0
13279	18 G 1,5	16	19,7	259,0	520,0
13280	20 G 1,5	16	20,9	288,0	600,0
13281	25 G 1,5	16	23,9	360,0	730,0
13282	34 G 1,5	16	27,2	490,0	950,0
13283	37 G 1,5	16	29,4	533,0	1094,0
13284	50 G 1,5	16	32,5	720,0	1400,0
13285	61 G 1,5	16	35,7	878,0	1700,0
13286	65 G 1,5	16	36,8	936,0	1900,0
13287	2 x 2,5	14	9,4	48,0	160,0
13288	3 G 2,5	14	9,9	72,0	175,0
13289	4 G 2,5	14	11,1	96,0	203,0
13290	5 G 2,5	14	12,4	120,0	251,0
13291	7 G 2,5	14	15,0	168,0	330,0
13292	8 G 2,5	14	16,1	192,0	400,0
13293	10 G 2,5	14	17,0	240,0	461,0
13294	12 G 2,5	14	18,4	288,0	553,0
13295	16 G 2,5	14	19,4	384,0	742,0
13296	18 G 2,5	14	22,0	432,0	795,0
13297	20 G 2,5	14	32,2	480,0	924,0
13298	25 G 2,5	14	26,9	600,0	1110,0
13299	30 G 2,5	14	28,1	720,0	1370,0
13300	2 x 4	12	11,4	77,0	180,0
13301	3 G 4	12	12,3	115,0	230,0
13302	4 G 4	12	13,8	154,0	310,0
13303	5 G 4	12	15,3	192,0	410,0
13304	7 G 4	12	16,8	269,0	540,0
13305	8 G 4	12	20,0	307,0	710,0
13306	10 G 4	12	21,6	384,0	760,0
13307	12 G 4	12	22,9	461,0	860,0
13308	16 G 4	12	23,6	614,0	910,0
13309	18 G 4	12	24,2	691,0	980,0
13310	2 x 6	10	13,1	115,0	205,0
13311	3 G 6	10	14,1	173,0	370,0
13312	4 G 6	10	15,6	230,0	430,0
13313	5 G 6	10	17,3	288,0	650,0
13314	7 G 6	10	19,3	403,0	860,0
13315	2 x 10	8	15,4	192,0	330,0
13316	3 G 10	8	16,5	288,0	660,0
13317	4 G 10	8	18,1	384,0	790,0
13318	5 G 10	8	20,5	480,0	960,0
13319	7 G 10	8	22,5	672,0	1300,0
13320	2 x 16	6	18,3	307,0	580,0
13321	3 G 16	6	19,6	461,0	700,0
13322	4 G 16	6	21,7	641,0	1100,0
13323	5 G 16	6	24,2	768,0	1600,0
13324	7 G 16	6	25,7	1075,0	1890,0
13325	3 G 25	4	24,0	720,0	1450,0
13326	4 G 25	4	26,9	960,0	1600,0
13327	5 G 25	4	29,4	1200,0	2050,0
13328	3 G 35	2	26,2	1008,0	1900,0
13329	4 G 35	2	29,4	1344,0	2400,0
13330	5 G 35	2	32,8	1680,0	2900,0
13331	3 G 50	1	31,6	1440,0	2700,0
13332	4 G 50	1	35,5	1920,0	3400,0
13333	5 G 50	1	40,0	2400,0	4361,0
13334	3 G 70	2/0	36,7	2016,0	3300,0
13335	4 G 70	2/0	40,7	2688,0	4400,0
13336	5 G 70	2/0	45,7	3360,0	5807,0
13337	3 G 95	3/0	41,2	2736,0	5050,0
13338	4 G 95	3/0	46,2	3648,0	6010,0
13339	5 G 95	3/0	50,7	4560,0	7752,0
13340	3 G 120	4/0	45,9	3456,0	5620,0
13341	4 G 120	4/0	50,3	4608,0	7500,0
13342	3 G 150	300 kcmil	52,7	4320,0	6390,0
13343	4 G 150	300 kcmil	58,8	5760,0	6840,0

Dimensions and specifications may be changed without prior notice. (RA03)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-E

N

MEGAFLEX® 500-C halogen-free, flame retardant, oil-resistant,

UV-resistant, flexible, screened, EMC-preferred types, meter marking



Technical data

- Halogen-free flexible control cable adapted to DIN VDE 0285-525-3-11 / DIN EN 50525-3-11, to UL-Style 20939, UL-Std.758
- **Temperature range** flexing -30°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/500 V UL/CSA 600 V
- **Test voltage** 3000 V
- **Coupling resistance** max. 250 Ohm/km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 4x cable Ø
- **Flexibility** Alternate bending test acc. to DIN VDE 0473-396 / DIN EN 50396

Cable structure

- Bare copper, fine wire conductors, to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of halogen-free special polymer
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Separating foil
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of halogen-free special polymer
- Sheath colour grey (RAL 7001)
- with meter marking
- **LS0H**= Low Smoke Zero Halogen

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **MEGAFLEX® 500**, confer page 394

Properties

- Halogen-free
- Highly flame-retardant
- Resistant to oils and greases
- Resistant to UV and weathering
- Flexible, abrasion- and wear-resistant
- Ozone-resistant
- Recycleable
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (previously DIN VDE 0472 part 804 test method B) CSA FT1
- Corrosiveness of combustion gases acc. to NF X 10-702
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)
- Oil-resistant to DIN VDE 0473-811-404 / DIN EN 60811-404
- Hydrolysis resistant to DIN EN 61234-1
- Ozone-resistant to DIN VDE 0473-811-403/ DIN EN 60811-403

Application

For fixed installation or flexible application that does not permanently recurring free movement without forced motion and without tensile stress, for high mechanical strain. As a measuring and control cable e. g. in machine and plant engineering, air conditioning in the warehouse and materials handling, shipbuilding and in the newable energies such as wind power stations.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
13500	2 x 0,5	20	5,7	35,0	46,0
13501	3 G 0,5	20	6,0	42,0	56,0
13502	3 x 0,5	20	6,0	42,0	56,0
13503	4 G 0,5	20	6,5	47,0	62,0
13504	4 x 0,5	20	6,5	47,0	62,0
13505	5 G 0,5	20	7,0	56,0	75,0
13506	5 x 0,5	20	7,0	56,0	75,0
13507	7 G 0,5	20	7,9	69,0	98,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
13508	8 G 0,5	20	8,5	80,0	116,0
13509	10 G 0,5	20	9,3	94,0	135,0
13510	12 G 0,5	20	9,6	108,0	158,0
13511	16 G 0,5	20	10,7	129,0	210,0
13512	18 G 0,5	20	11,2	145,0	216,0
13514	20 G 0,5	20	11,9	172,0	240,0
13515	25 G 0,5	20	13,4	240,0	315,0

Continuation ▸

MEGAFLEX® 500-C halogen-free, flame retardant, oil-resistant,

UV-resistant, flexible, screened, EMC-preferred types, meter marking

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
13516	2 x 0,75	19	6,1	40,0	60,0
13517	3 G 0,75	19	6,4	52,0	68,0
13518	3 x 0,75	19	6,4	52,0	68,0
13519	4 G 0,75	19	6,9	60,0	78,0
13520	4 x 0,75	19	6,9	60,0	78,0
13521	5 G 0,75	19	7,4	71,0	95,0
13522	5 x 0,75	19	7,4	71,0	95,0
13523	7 G 0,75	19	8,6	91,0	130,0
13524	7 x 0,75	19	8,6	91,0	130,0
13525	8 G 0,75	19	9,4	110,0	145,0
13526	10 G 0,75	19	10,2	137,0	180,0
13527	12 G 0,75	19	10,4	142,0	203,0
13528	16 G 0,75	19	11,6	200,0	275,0
13529	18 G 0,75	19	12,4	212,0	290,0
13530	20 G 0,75	19	12,9	238,0	320,0
13531	25 G 0,75	19	14,8	281,0	413,0
13532	2 x 1	18	6,4	50,0	66,0
13533	3 G 1	18	6,7	60,0	80,0
13534	3 x 1	18	6,7	60,0	80,0
13535	4 G 1	18	7,3	71,0	100,0
13536	4 x 1	18	7,3	71,0	100,0
13537	5 G 1	18	7,8	88,0	130,0
13538	7 G 1	18	9,1	111,0	160,0
13539	8 G 1	18	9,9	127,0	197,0
13540	10 G 1	18	10,8	150,0	232,0
13541	12 G 1	18	11,2	184,0	260,0
13542	16 G 1	18	12,3	209,0	346,0
13543	18 G 1	18	13,2	260,0	382,0
13544	20 G 1	18	13,8	317,0	440,0
13545	25 G 1	18	15,8	349,0	540,0
13546	2 x 1,5	16	7,0	63,0	88,0
13547	3 G 1,5	16	7,3	80,0	100,0
13548	3 x 1,5	16	7,3	80,0	100,0
13549	4 G 1,5	16	7,9	97,0	125,0
13550	5 G 1,5	16	8,6	119,0	158,0
13552	7 G 1,5	16	10,2	147,0	210,0
13554	8 G 1,5	16	11,1	170,0	244,0
13556	10 G 1,5	16	12,0	193,0	315,0
13557	12 G 1,5	16	12,5	267,0	340,0
13558	16 G 1,5	16	13,8	315,0	424,0
13559	18 G 1,5	16	15,0	374,0	480,0
13560	20 G 1,5	16	15,7	396,0	545,0
13561	25 G 1,5	16	18,0	526,0	702,0
13562	2 x 2,5	14	8,3	96,0	132,0
13563	3 G 2,5	14	9,0	144,0	168,0
13565	4 G 2,5	14	9,8	148,0	195,0
13566	5 G 2,5	14	10,9	181,0	256,0
13567	7 G 2,5	14	12,9	255,0	345,0
13568	8 G 2,5	17	13,8	285,0	390,0
13569	10 G 2,5	14	15,8	340,0	482,0
13570	12 G 2,5	14	15,9	441,0	572,0
13571	2 x 4	12	9,8	120,0	220,0
13572	3 G 4	12	10,6	174,0	251,0
13573	4 G 4	12	11,5	230,0	305,0
13574	5 G 4	12	12,7	273,0	388,0
13575	7 G 4	12	13,9	316,0	504,0
13576	2 x 6	10	11,5	173,0	270,0
13577	3 G 6	10	12,4	240,0	351,0
13578	4 G 6	10	13,8	305,0	464,0
13579	5 G 6	10	15,7	439,0	546,0
13580	7 G 6	10	16,6	505,0	670,0
13581	2 x 10	8	14,9	255,0	461,0
13582	3 G 10	8	15,9	350,0	574,0
13583	4 G 10	8	17,8	535,0	785,0
13584	5 G 10	8	19,6	592,0	914,0
13585	7 G 10	8	21,6	810,0	1308,0
13586	2 x 16	6	17,3	422,0	670,0
13587	3 G 16	6	18,5	585,0	911,0
13588	4 G 16	6	20,8	740,0	1105,0
13589	5 G 16	6	22,9	895,0	1293,0
13590	7 G 16	6	25,0	1282,0	2149,0
13591	4 G 25	4	26,2	1140,0	1911,0
13592	4 x 35	2	30,4	1576,0	2542,0
13593	4 G 50	1	34,6	2155,0	3550,0
13594	4 G 70	2/0	41,3	3120,0	4939,0
13595	4 G 95	3/0	46,2	4043,0	6690,0
13596	4 G 120	4/0	51,0	5069,0	8453,0
13597	4 G 150	300 kcmil	59,0	5792,0	9104,0

Dimensions and specifications may be changed without prior notice. (RA03)

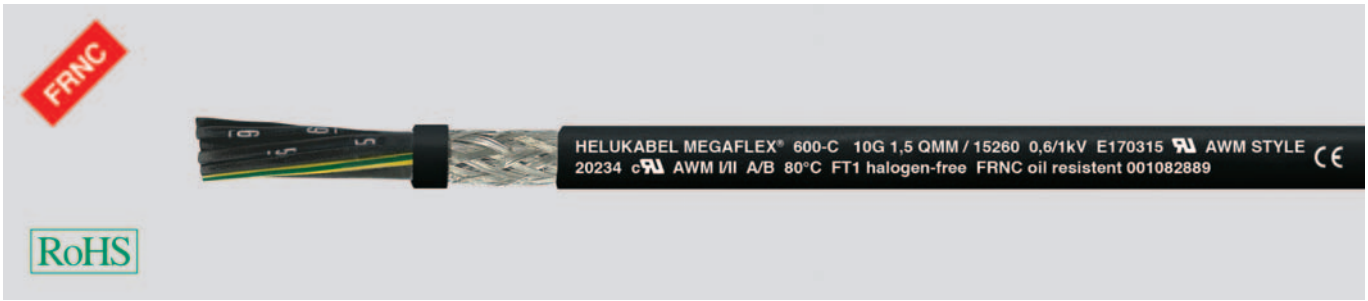


Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-E

N

MEGAFLEX® 600-C halogen-free, flame retardant, oil-resistant, UV-resistant, flexible, meter marking



Technical data

- Halogen-free flexible control cable to UL-Style 20234, UL-Std.758
- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 600/1000 V
- **Test voltage** 4000 V
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 4x cable Ø
- **Flexibility**
  Alternate bending test acc. to DIN VDE 0473-396 / DIN EN 50396
- **Coupling resistance**
  max. 250 Ohm/km

Cable structure

- Bare copper, fine wire conductors, to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of halogen-free special polymer
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layer with optimal lay-length
- Separating foil
- Tinned copper braided screening, coverage approx. 85%
- Outer sheath, halogen-free special polymer
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- Halogen-free
- Highly flame-retardant
- Resistant to oils and greases
- Resistant to UV and weathering
- Flexible, abrasion- and wear-resistant
- Ozone-resistant
- Recycleable

Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (previously DIN VDE 0472 part 804 test method B)
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- Corrosiveness of combustion gases acc. to NF X 10-702
- Halogen-free according to DIN VDE 0482 part 267/ EN 50267-2-1/ IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2/ IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)
- Oil-resistant to DIN VDE 0473-811-404/DIN EN 60811-404
- hydrolysebeständig nach DIN EN 61234-1
- Ozone-resistant to DIN VDE 0473-811-403/DIN EN 60811-403

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- unscreened analogue type:
  MEGAFLEX® 600, confer page 396

Application

For fixed installation or flexible application, with occasional not permanently recurring free movement without forced motionand without tensile stress, for high mechanical strain. As a measuring and control cable in tool machinery, conveyor belts and production lines, plant engineering, climate engineering,in foundries and steel mills. Especially suited for wind power plant and computer equipment.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
15217	2 x 0,5	20	6,9	35,0	46,0
15218	3 G 0,5	20	7,3	42,0	56,0
15219	3 x 0,5	20	7,3	42,0	56,0
15220	4 G 0,5	20	8,1	47,0	62,0
15221	4 x 0,5	20	8,1	47,0	62,0
15222	5 G 0,5	20	8,7	56,0	75,0
15223	5 x 0,5	20	8,7	56,0	75,0
15224	7 G 0,5	20	10,3	69,0	98,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
15225	10 G 0,5	20	12,1	94,0	135,0
15226	12 G 0,5	20	12,7	108,0	158,0
15227	18 G 0,5	20	14,9	145,0	216,0
15228	20 G 0,5	20	15,8	172,0	240,0
15229	25 G 0,5	20	17,7	240,0	315,0
15230	2 x 0,75	18	7,3	40,0	60,0
15231	3 G 0,75	18	7,7	52,0	68,0
15232	3 x 0,75	18	7,7	52,0	68,0

Continuation ▸

MEGAFLEX® 600-C halogen-free, flame retardant, oil-resistant,

UV-resistant, flexible, meter marking

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
15233	4 G 0,75	18	8,5	60,0	78,0
15234	4 x 0,75	18	8,5	60,0	78,0
15235	5 G 0,75	18	9,3	71,0	95,0
15236	5 x 0,75	18	9,3	71,0	95,0
15237	7 G 0,75	18	10,7	91,0	130,0
15238	7 x 0,75	18	10,7	91,0	130,0
15239	12 G 0,75	18	13,1	142,0	203,0
15240	18 G 0,75	18	16,2	212,0	290,0
15241	20 G 0,75	18	17,2	238,0	320,0
15242	25 G 0,75	18	19,5	281,0	413,0
15243	2 x 1	17	8,0	50,0	66,0
15244	3 G 1	17	8,6	60,0	80,0
15245	3 x 1	17	8,6	60,0	80,0
15246	4 G 1	17	9,4	71,0	100,0
15247	4 G 1	17	9,4	71,0	100,0
15248	5 G 1	17	10,4	88,0	130,0
15249	10 G 1	17	14,9	150,0	232,0
15250	12 G 1	17	14,5	184,0	260,0
15251	18 G 1	17	17,9	260,0	382,0
15252	20 G 1	17	19,0	317,0	440,0
15253	25 G 1	17	21,7	349,0	540,0
15254	2 x 1,5	16	9,0	63,0	88,0
15255	3 G 1,5	16	9,7	80,0	100,0
15256	3 x 1,5	16	9,7	80,0	100,0
15257	4 G 1,5	16	10,5	97,0	125,0
15258	5 G 1,5	16	11,6	119,0	158,0
15259	7 G 1,5	16	13,9	147,0	210,0
15260	10 G 1,5	16	16,7	193,0	315,0
15261	12 G 1,5	16	17,2	267,0	340,0
15262	18 G 1,5	16	20,5	374,0	480,0
15263	20 G 1,5	16	21,7	396,0	545,0
15264	25 G 1,5	16	24,7	526,0	702,0
15265	2 x 2,5	14	10,2	96,0	132,0
15266	3 G 2,5	14	10,7	144,0	168,0
15267	4 G 2,5	14	11,9	148,0	195,0
15268	5 x 2,5	14	13,2	181,0	256,0
15269	7 G 2,5	14	15,8	255,0	345,0
15270	10 G 2,5	14	17,0	340,0	482,0
15271	12 G 2,5	14	19,2	441,0	572,0
15272	3 G 4	12	13,1	174,0	251,0
15273	4 G 4	12	14,6	230,0	305,0
15274	5 G 4	12	16,1	273,0	388,0
15275	7 G 4	12	17,6	316,0	504,0
15276	3 G 6	10	14,9	240,0	351,0
15277	4 G 6	10	16,4	305,0	464,0
15278	5 G 6	10	18,1	439,0	546,0
15279	7 G 6	10	20,1	505,0	670,0
15280	3 G 10	8	16,6	350,0	574,0
15281	4 G 10	8	18,1	535,0	785,0
15282	5 G 10	8	20,6	592,0	914,0
15283	7 G 10	8	22,6	810,0	1308,0

Dimensions and specifications may be changed without prior notice. (RA03)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-E

N

UL/CSA DATA CABLES



Command Cable UL (LiYY) Style 2464/300 V, (80°C)



Technical data

- Special PVC command cable, approved to UL-Style 2464, cores acc. to AWG 26-20 to UL-Style 1061/1729 AWG 18-16 to UL-Style 1007/1569
- **Temperature range**
  flexing -10°C to +80°C
  fixed installation -20°C to +80°C
- **Nominal voltage** 300 V
- **Test voltage** 1500 V
- **Breakdown voltage** min. 3000 V
- **Minimum bending radius**
  fixed 7,5x cable Ø
  flexing 15x cable Ø

Cable structure

- Tinned copper, fine wire conductors AWG 26-20, ASTM-B 174-95 class J-M, AWG 18-16 ASTM-B 286
  Conductor make-up to:
  0,14 mm² = 7x0,162 mm
  0,23 mm² = 7x0,202 mm
  0,34 mm² = 7x0,254 mm
  0,56 mm² = 7x0,32 mm
  0,82 mm² = 19x0,235 mm
  1,30 mm² = 19x0,31 mm
- Core insulation of special PVC class 43 respectively semirigid acc. to UL-Std.1581 tab.50.182 and 50.183
- Core identification to DIN 47100 or international colour code
- Cores stranded in layers with optimal lay-length
- Outer sheath of special PVC class 43 acc. to UL-Std.1581 tab.50.182
- Sheath colour
  black (international colour code)
  grey (DIN 47100 / preferred type for stock)

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC flame retardant according to UL VW-1, CSA FT1
- **Conditionally resistant to**
  Oil
  Solvents
  Acids
  Lyes

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **command cable UL (LiYCY)**, confer page 413

Application

As a flexible connector and connecting cable, as control, signal and measuring line of machine tools, conveyor belts and plant construction, air conditioning systems, in foundries and steel mills.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no. Sheath colour grey	Part no. Sheath colour black	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83137	83045	2 x 0,14	26	3,6	3,6	13,0
83138	83046	3 x 0,14	26	3,8	4,0	15,0
83139	83047	4 x 0,14	26	4,0	5,4	18,0
83140	83048	6 x 0,14	26	4,6	8,1	25,0
83141	83049	10 x 0,14	26	5,6	13,4	38,0
83142	83050	12 x 0,14	26	5,8	16,2	46,0
83143	83055	16 x 0,14	26	6,3	21,5	56,0
83144	83056	18 x 0,14	26	6,6	34,4	62,0
83145	83057	24 x 0,14	26	7,5	32,4	82,0
83146	83058	27 x 0,14	26	7,6	36,3	97,0
83147	83059	30 x 0,14	26	8,0	40,4	110,0
83153	83130	2 x 0,23	24	3,8	4,6	16,0
83154	83131	3 x 0,23	24	4,0	7,1	19,0
83155	83132	4 x 0,23	24	4,3	9,4	23,0
83156	83133	6 x 0,23	24	4,9	14,2	32,0
83157	83134	10 x 0,23	24	6,0	23,8	55,0
83158	83135	12 x 0,23	24	6,2	28,5	60,0
83159	83136	16 x 0,23	24	6,8	38,1	75,0
83160	83371	18 x 0,23	24	7,1	43,1	82,0
83161	83372	24 x 0,23	24	8,1	59,7	116,0
83162	83373	27 x 0,23	24	8,4	64,7	140,0
83163	83374	30 x 0,23	24	8,9	71,9	150,0
83169	83375	2 x 0,34	22	4,1	6,5	25,0
83170	83376	3 x 0,34	22	4,3	9,8	30,0
83171	83377	4 x 0,34	22	4,6	13,0	45,0
83172	83378	6 x 0,34	22	5,4	19,6	60,0
83173	83379	10 x 0,34	22	6,6	32,5	80,0
83174	83380	12 x 0,34	22	6,8	39,1	105,0
83175	83381	16 x 0,34	22	7,5	52,0	130,0
83176	83382	18 x 0,34	22	8,1	59,0	140,0
83177	83383	24 x 0,34	22	9,4	79,0	190,0
83178	83384	27 x 0,34	22	9,7	88,0	207,0
83179	83385	30 x 0,34	22	10,2	97,8	225,0
83185	83386	2 x 0,56	20	4,6	9,8	30,0
83186	83387	3 x 0,56	20	4,8	14,6	33,0
83187	83388	4 x 0,56	20	5,2	19,4	41,0

Part no. Sheath colour grey	Part no. Sheath colour black	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83188	83389	6 x 0,56	20	6,1	29,0	65,0
83189	83390	10 x 0,56	20	7,6	48,2	102,0
83190	83391	12 x 0,56	20	7,8	58,2	120,0
83191	83392	16 x 0,56	20	8,7	77,3	152,0
83192	83393	18 x 0,56	20	9,3	87,0	168,0
83193	83394	24 x 0,56	20	10,9	116,3	224,0
83194	83395	27 x 0,56	20	11,2	129,8	260,0
83195	83396	30 x 0,56	20	11,8	144,6	300,0
83201	83397	2 x 0,82	18	6,1	15,2	50,0
83202	83398	3 x 0,82	18	6,4	23,2	62,0
83203	83399	4 x 0,82	18	6,9	31,3	72,0
83204	83474	6 x 0,82	18	8,1	47,0	100,0
83205	83475	10 x 0,82	18	10,4	78,2	180,0
83206	83476	12 x 0,82	18	10,9	94,0	182,0
83207	83477	16 x 0,82	18	12,2	125,1	240,0
83208	83478	18 x 0,82	18	13,0	141,1	270,0
83209	83479	24 x 0,82	18	15,2	188,2	370,0
83210	83480	27 x 0,82	18	15,8	212,0	400,0
83211	83481	30 x 0,82	18	16,3	235,6	470,0
83217	83482	2 x 1,3	16	6,6	24,4	70,0
83218	83483	3 x 1,3	16	7,0	37,1	90,0
83219	83484	4 x 1,3	16	7,6	49,4	110,0
83220	83491	6 x 1,3	16	9,2	74,2	160,0
83221	83492	10 x 1,3	16	11,8	124,0	250,0
83222	83493	12 x 1,3	16	12,2	149,0	300,0
83223	83494	16 x 1,3	16	13,7	198,7	400,0
83224	83495	18 x 1,3	16	14,6	224,0	450,0
83225	83496	24 x 1,3	16	17,0	298,4	650,0
83226	83497	27 x 1,3	16	17,6	336,0	680,0
83227	83498	30 x 1,3	16	18,6	373,6	750,0

Dimensions and specifications may be changed without prior notice. (RN02)

Command Cable UL (LiYY) Style 2516, 600 V, 105°C



Technical data

- Special PVC command cable, approved to UL-Style 2516
- **Temperature range**
  flexing -10°C to +105°C
  fixed installation -20°C to +105°C
- **Nominal voltage** 600 V
- **Test voltage** 2000 V
- **Breakdown voltage** min. 4000 V
- **Minimum bending radius**
  fixed 7,5x cable Ø
  flexing 15x cable Ø

Cable structure

- Tinned copper, fine wire conductors acc. to ASTM-B 174, class J-K
  Conductor make-up to:
  2,08 mm² = 41x0,254 mm
  3,20 mm² = 65x0,254 mm
- Core insulation of special PVC class 43 acc. to UL-Std.1581 tab.50.182 (105°C)
- Core identification to DIN 47100 or international colour code
- Cores stranded in layers with optimal lay-length
- Outer sheath of special PVC class 43 acc. to UL-Std.1581 tab.50.182 (105°C)
- Sheath colour
  black (international colour code)
  grey (DIN 47100 / preferred type from stock)

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC flame retardant acc. to UL VW-1, CSA FT1
- **Conditionally resistant to**
  Oil
  Solvents
  Acids
  Lyes

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type:
  command cable UL (LiYCY),
  confer page 415

Application

As a flexible connector and connecting cable, as control, signal and measuring line of machine tools, conveyor belts and plant construction, air conditioning systems, in foundries and steel mills.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no. Sheath colour grey	Part no. Sheath colour black	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83233	83624	2 x 2,08	14	8,4	39,6	120,0
83234	83625	3 x 2,08	14	8,9	59,6	150,0
83235	83626	4 x 2,08	14	9,6	79,2	190,0
83236	83627	6 x 2,08	14	11,4	119,0	300,0
83237	83628	10 x 2,08	14	15,1	198,4	450,0
83238	83629	12 x 2,08	14	15,6	238,7	500,0
83239	83630	16 x 2,08	14	17,2	319,0	700,0
83240	83631	18 x 2,08	14	18,3	358,4	750,0
83241	83632	24 x 2,08	14	21,5	478,4	900,0
83242	83633	27 x 2,08	14	22,7	538,1	1100,0
83243	83634	30 x 2,08	14	23,5	598,4	1150,0
83244	83635	36 x 2,08	14	25,4	717,2	1800,0

Part no. Sheath colour grey	Part no. Sheath colour black	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83245	83636	2 x 3,2	12	9,3	61,0	150,0
83246	83637	3 x 3,2	12	9,8	91,4	210,0
83247	83638	4 x 3,2	12	10,8	121,6	300,0
83248	83639	6 x 3,2	12	12,8	183,7	430,0
83249	83640	10 x 3,2	12	17,0	305,9	500,0
83250	83641	12 x 3,2	12	17,5	367,6	700,0
83251	83642	16 x 3,2	12	19,8	490,9	810,0
83252	83643	18 x 3,2	12	21,0	551,7	970,0
83253	83644	24 x 3,2	12	24,8	736,4	1200,0

Dimensions and specifications may be changed without prior notice. (RN02)



Suitable accessories can be found in Chapter X.

• Cable tie

TRAYCONTROL® 300 flexible, oil-resistant, NFPA 79 Edition 2012



Technical data

- Flexible PVC data and control cable
- **Temperature range** -25°C to +105°C
- **Nominal voltage** 300 V
- **Test voltage** 2000 V
- **Minimum bending radius** flexing 6x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Tinned copper conductor, fine wire with AWG dimensions
- Outer sheath of special PVC (AWG 22 -AWG 16 with transparent nylon skin)
- Core identification to international colour code
- Cores stranded in layers with optimal lay-lengths
- Separator
- Outer sheath of special PVC
- Sheath colour grey (RAL 7001)
- With length marking in feet

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- self-extinguishing and flame retardant acc. to CSA FT4
- **UL (AWG 22 - AWG 16):** PLTC-ER, ITC-ER, Type CM, NFPA 79 2012, OIL RES I & II, Class I Div. 2, NEC Art. 501, 725, 760 & 800, AWM 2517
- **UL (AWG 24 - AWG 28):** CM, AWM 2464, rated OIL RES I & II, NEC Art. 725, 760 & 800, NFPA 79 2012
- **CSA**: CSA CMG FT4, AWM I/II A/B FT4

Note

Advantages

- highly-flexible easy to install
- Oil-resistant to OIL RES I & II

Available on request

- PUR or TPE outer sheath
- Sheath colour to suit customer requirements

Application

HELUKABEL® TRAYCONTROL® 300 is a multi-core PVC data and control cable. Cross-sections with PLTC-ER and ITC-ER approval suitable for open, unprotected installation in cable trays to the machine; their outstanding oil resistance (OIL RES I & II) makes them ideally suited as connecting and joining cables and also for control, signal and measuring systems in industrial plants. The flexible cable structure facilitates installation inside and outside of machines and switch cabinets. Applications: tool machines, control panels, control and instrumentation technology, production automation, cable ducts, renewable energies.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

N

Part no.	Cross-section mm²	No.cores x AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
62625	0,093	2 x 28	3,9	1,8	12,0
62626	0,093	3 x 28	4,2	2,7	18,0
62627	0,093	4 x 28	4,4	3,6	21,0
62628	0,093	6 x 28	4,9	5,4	27,0
62629	0,093	8 x 28	5,2	7,2	30,0
62630	0,093	10 x 28	5,8	8,9	30,0
62631	0,093	15 x 28	6,4	13,4	43,0
62632	0,093	20 x 28	7,0	17,9	54,0
62633	0,093	25 x 28	8,0	22,3	63,0
62634	0,093	30 x 28	8,4	26,8	73,0
62635	0,093	40 x 28	9,1	35,7	89,0
62636	0,093	50 x 28	10,1	44,7	109,0
62637	0,154	2 x 26	4,2	3,0	18,0
62638	0,154	3 x 26	4,3	4,4	21,0
62639	0,154	4 x 26	4,5	5,9	24,0
62640	0,154	6 x 26	5,2	8,9	30,0
62641	0,154	8 x 26	5,5	11,8	34,0
62642	0,154	10 x 26	6,2	14,8	42,0
62643	0,154	15 x 26	6,8	22,2	52,0
62644	0,154	20 x 26	7,7	29,6	67,0
62645	0,154	25 x 26	8,5	37,0	80,0
62646	0,154	30 x 26	8,8	44,4	92,0
62647	0,154	40 x 26	9,6	59,1	116,0
62648	0,154	50 x 26	10,8	73,9	145,0
62649	0,241	2 x 24	4,4	4,7	19,0
62650	0,241	3 x 24	4,6	7,0	22,0
62651	0,241	4 x 24	4,9	9,3	27,0
62652	0,241	6 x 24	5,6	13,9	33,0
62653	0,241	8 x 24	5,9	18,5	42,0
62654	0,241	10 x 24	6,6	23,2	49,0

Part no.	Cross-section mm²	No.cores x AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
62655	0,241	15 x 24	7,4	34,7	69,0
62656	0,241	20 x 24	8,4	46,3	86,0
62657	0,241	25 x 24	9,3	57,9	103,0
62658	0,241	30 x 24	9,6	69,4	131,0
62659	0,241	40 x 24	11,2	92,6	173,0
62660	0,241	50 x 24	12,4	115,7	219,0
62661	0,382	2 x 22	6,1	7,4	22,0
62662	0,382	3 x 22	6,7	11,0	28,0
62663	0,382	4 x 22	7,2	14,7	32,0
62664	0,382	6 x 22	7,8	22,0	46,0
62665	0,382	8 x 22	8,8	29,4	54,0
62666	0,382	10 x 22	9,1	36,7	66,0
62667	0,382	15 x 22	9,7	55,0	90,0
62668	0,382	20 x 22	10,5	73,4	115,0
62669	0,382	25 x 22	11,9	91,7	141,0
62670	0,382	30 x 22	12,3	110,0	176,0
62671	0,382	40 x 22	13,5	146,7	234,0
62672	0,382	50 x 22	14,9	183,4	293,0
62673	0,616	2 x 20	6,9	11,9	57,0
62674	0,616	3 x 20	7,2	17,8	60,0
62675	0,616	4 x 20	7,8	23,7	73,0
62676	0,616	6 x 20	9,0	35,5	97,0
62677	0,616	8 x 20	9,6	47,4	133,0
62678	0,616	10 x 20	10,8	59,2	143,0
62679	0,616	15 x 20	12,4	88,8	177,0
62680	0,616	20 x 20	14,5	118,3	261,0
62681	0,616	25 x 20	15,3	147,9	353,0
62682	0,616	30 x 20	15,9	177,5	419,0
62683	0,616	40 x 20	18,1	236,6	562,0
62684	0,616	50 x 20	20,1	295,7	699,0

Continuation ▸

TRAYCONTROL® 300 flexible, oil-resistant, NFPA 79 Edition 2012

Part no.	Cross-section mm²	No.cores x AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
62685	0,963	2 x 18	7,4	18,5	61,0
62686	0,963	3 x 18	7,6	27,8	64,0
62687	0,963	4 x 18	8,3	37,0	77,0
62688	0,963	6 x 18	9,5	55,5	101,0
62689	0,963	8 x 18	10,1	74,0	142,0
62690	0,963	10 x 18	12,1	92,5	195,0
62691	0,963	15 x 18	13,6	138,7	247,0
62692	0,963	20 x 18	14,9	184,9	328,0
62693	0,963	25 x 18	17,6	231,2	407,0
62694	0,963	30 x 18	17,7	277,4	539,0
62695	0,963	40 x 18	19,5	369,8	717,0
62696	0,963	50 x 18	21,8	462,3	894,0

Part no.	Cross-section mm²	No.cores x AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
62697	1,31	2 x 16	7,5	25,2	83,0
62698	1,31	3 x 16	8,4	37,8	91,0
62699	1,31	4 x 16	8,8	50,3	109,0
62700	1,31	6 x 16	10,1	75,5	162,0
62702	1,31	8 x 16	11,4	100,7	243,0
62703	1,31	10 x 16	13,0	125,8	267,0
62704	1,31	15 x 16	14,7	188,7	364,0
62705	1,31	20 x 16	16,1	251,6	493,0
62706	1,31	25 x 16	18,3	314,5	608,0
62707	1,31	30 x 16	19,2	377,3	729,0
62708	1,31	40 x 16	21,3	503,1	967,0
62709	1,31	50 x 16	23,9	628,8	1214,0

Dimensions and specifications may be changed without prior notice. (RN02)



Suitable accessories can be found in Chapter X.

- Cable tie

Command Cable UL (LiYY-TP) Style 2464, 300 V, 80°C



Technical data

- Special PVC command cable, approved to UL-Style 2464, cores acc. to UL-Style 1061/1729
- **Temperature range**
  flexing -10°C to +80°C
  fixed installation -20°C to +80°C
- **Nominal voltage** 300 V
- **Test voltage** 1500 V
- **Breakdown voltage** min. 3000 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Minimum bending radius**
  fixed 7,5x cable Ø
  flexing 15x cable Ø

Cable structure

- Tinned copper, fine wire conductors acc. to ASTM-B 174-95 class J-M
- conductor make-up to
- 0,14 mm² = 7x0,162 mm
- 0,23 mm² = 7x0,202 mm
- 0,34 mm² = 7x0,254 mm
- 0,56 mm² = 7x0,32 mm
- Core insulation of special PVC class 43 respectively semirigid acc. to UL-Std.1581 tab.50.182 and 50183
- Core identification (pair) to DIN 47100, with colour repetition from pair no. 23 or international colour code
- Cores stranded in pairs with optimal lay-length
- Pairs stranded in layers with optimal lay-length
- Seperator-foil
- Outer sheath of special PVC class 43 acc. to UL-Std.1581 tab.50.182
- Sheath colour
  black (international colour code)
  grey (DIN 47100 - preferred type)

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC flame retardant acc. to UL VW-1, CSA FT1
- **Conditionally resistant to**
  Oil
  Solvents
  Acids
  Lyes

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type:
  command cable UL (LiYCY-TP),
  confer page 418

Application

Twisted pair control cable for use in tool making machinery conveyor system and production lines, in industrial plants and in air conditioning as well as in the steel producing industries.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

N

Part no. Sheath colour grey	No.pairs x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83904	1 x 2 x 0,14	26	3,6	2,7	20,0
83905	2 x 2 x 0,14	26	5,1	5,4	24,0
83906	3 x 2 x 0,14	26	5,3	8,1	30,0
83907	4 x 2 x 0,14	26	5,8	10,8	38,0
83908	5 x 2 x 0,14	26	6,2	13,6	44,0
83909	6 x 2 x 0,14	26	6,8	16,2	51,0
83910	7 x 2 x 0,14	26	6,8	19,0	57,0
83911	8 x 2 x 0,14	26	7,3	21,7	64,0
83912	10 x 2 x 0,14	26	7,4	26,7	76,0
83913	12 x 2 x 0,14	26	9,1	32,6	93,0
83914	14 x 2 x 0,14	26	9,8	37,4	103,0
83915	15 x 2 x 0,14	26	10,6	40,7	109,0
83916	16 x 2 x 0,14	26	10,6	43,4	112,0
83917	18 x 2 x 0,14	26	11,1	48,5	119,0
83918	20 x 2 x 0,14	26	11,9	54,2	130,0
83919	22 x 2 x 0,14	26	12,4	59,3	150,0
83920	24 x 2 x 0,14	26	13,1	64,7	169,0
83921	25 x 2 x 0,14	26	13,4	67,2	178,0
83922	1 x 2 x 0,23	24	3,8	4,8	32,0
83923	2 x 2 x 0,23	24	5,3	9,7	36,0
83924	3 x 2 x 0,23	24	5,7	14,7	48,0
83925	4 x 2 x 0,23	24	6,2	19,6	56,0
83926	5 x 2 x 0,23	24	6,6	24,6	71,0
83927	6 x 2 x 0,23	24	7,2	29,3	80,0
83928	7 x 2 x 0,23	24	7,2	34,1	89,0
83929	8 x 2 x 0,23	24	7,8	39,1	98,0
83930	10 x 2 x 0,23	24	9,2	48,9	111,0
83931	12 x 2 x 0,23	24	9,7	59,4	135,0
83932	14 x 2 x 0,23	24	10,2	68,7	160,0

Part no. Sheath colour black	No.pairs x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
65214	1 x 2 x 0,14	26	3,6	2,7	20,0
65215	2 x 2 x 0,14	26	5,1	5,4	24,0
65216	3 x 2 x 0,14	26	5,3	8,1	30,0
65217	4 x 2 x 0,14	26	5,8	10,8	38,0
65218	5 x 2 x 0,14	26	6,2	13,6	44,0
65219	6 x 2 x 0,14	26	6,8	16,2	51,0
65220	7 x 2 x 0,14	26	6,8	19,0	57,0
65221	8 x 2 x 0,14	26	7,3	21,7	64,0
65222	10 x 2 x 0,14	26	7,4	26,7	76,0
65223	12 x 2 x 0,14	26	9,1	32,6	93,0
65224	14 x 2 x 0,14	26	9,8	37,4	103,0
65225	15 x 2 x 0,14	26	10,6	40,7	109,0
65226	16 x 2 x 0,14	26	10,6	43,4	112,0
65227	18 x 2 x 0,14	26	11,1	48,5	119,0
65228	20 x 2 x 0,14	26	11,9	54,2	130,0
65229	22 x 2 x 0,14	26	12,4	59,3	150,0
65230	24 x 2 x 0,14	26	13,1	64,7	169,0
65231	25 x 2 x 0,14	26	13,4	67,2	178,0
65232	1 x 2 x 0,23	24	3,8	4,8	32,0
65233	2 x 2 x 0,23	24	5,3	9,7	36,0
65234	3 x 2 x 0,23	24	5,7	14,7	48,0
65235	4 x 2 x 0,23	24	2,0	19,6	56,0
65236	5 x 2 x 0,23	24	6,0	24,6	56,0
65237	6 x 2 x 0,23	24	7,2	29,3	80,0
65238	7 x 2 x 0,23	24	7,2	34,1	89,0
65239	8 x 2 x 0,23	24	7,8	39,1	98,0
65240	10 x 2 x 0,23	24	9,2	48,9	111,0
65241	12 x 2 x 0,23	24	9,7	59,4	135,0
65242	14 x 2 x 0,23	24	10,2	68,7	160,0

Continuation ▸

Command Cable UL (LiYY-TP) Style 2464, 300 V, 80°C

Part no. Sheath colour grey	No.pairs x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83933	15 x 2 x 0,23	24	10,9	73,7	171,0
83934	16 x 2 x 0,23	24	10,9	79,1	185,0
83935	18 x 2 x 0,23	24	11,5	88,9	209,0
83936	20 x 2 x 0,23	24	12,2	98,4	230,0
83937	22 x 2 x 0,23	24	13,0	108,6	248,0
83938	24 x 2 x 0,23	24	13,7	117,9	279,0
83939	25 x 2 x 0,23	24	14,2	123,5	292,0
83940	1 x 2 x 0,34	22	4,2	6,5	38,0
83941	2 x 2 x 0,34	22	5,9	13,0	44,0
83942	3 x 2 x 0,34	22	6,3	19,5	60,0
83943	4 x 2 x 0,34	22	7,0	26,1	79,0
83944	5 x 2 x 0,34	22	7,6	32,6	92,0
83945	6 x 2 x 0,34	22	8,2	39,2	119,0
83946	7 x 2 x 0,34	22	8,2	45,7	128,0
83947	8 x 2 x 0,34	22	9,0	52,3	139,0
83948	10 x 2 x 0,34	22	10,7	65,3	171,0
83949	12 x 2 x 0,34	22	11,3	78,4	194,0
83950	14 x 2 x 0,34	22	12,1	91,5	222,0
83951	15 x 2 x 0,34	22	12,7	97,8	231,0
83952	16 x 2 x 0,34	22	12,7	104,6	240,0
83953	18 x 2 x 0,34	22	13,6	117,8	264,0
83954	20 x 2 x 0,34	22	14,4	130,7	291,0
83955	22 x 2 x 0,34	22	15,1	143,6	300,0
83956	24 x 2 x 0,34	22	16,2	156,8	359,0
83957	25 x 2 x 0,34	22	16,7	163,3	381,0
83958	1 x 2 x 0,56	20	4,6	10,8	60,0
83959	2 x 2 x 0,56	20	6,5	21,5	80,0
83960	3 x 2 x 0,56	20	7,1	32,3	94,0
83961	4 x 2 x 0,56	20	7,8	43,1	104,0
83962	5 x 2 x 0,56	20	8,6	53,8	130,0
83963	6 x 2 x 0,56	20	9,6	64,6	151,0
83964	7 x 2 x 0,56	20	9,6	75,3	174,0
83965	8 x 2 x 0,56	20	12,2	86,1	262,0
83966	10 x 2 x 0,56	20	12,5	107,7	298,0
83967	12 x 2 x 0,56	20	13,1	129,1	302,0
83968	14 x 2 x 0,56	20	13,8	150,6	327,0
83969	15 x 2 x 0,56	20	14,7	161,3	370,0
83970	16 x 2 x 0,56	20	14,7	172,1	402,0
83971	18 x 2 x 0,56	20	15,7	193,6	480,0
83972	20 x 2 x 0,56	20	16,7	215,1	551,0
83973	22 x 2 x 0,56	20	17,2	236,6	621,0
83974	24 x 2 x 0,56	20	18,6	258,0	703,0
83975	25 x 2 x 0,56	20	19,2	268,9	721,0

Part no. Sheath colour black	No.pairs x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
65243	15 x 2 x 0,23	24	10,9	73,7	171,0
65244	16 x 2 x 0,23	24	10,9	79,1	185,0
65245	18 x 2 x 0,23	24	11,5	88,9	209,0
65246	20 x 2 x 0,23	24	12,2	98,4	230,0
65247	22 x 2 x 0,23	24	13,0	108,6	248,0
65248	24 x 2 x 0,23	24	13,7	117,9	279,0
65249	25 x 2 x 0,23	24	14,2	123,5	292,0
65250	1 x 2 x 0,34	22	4,2	6,5	38,0
65251	2 x 2 x 0,34	22	5,9	13,0	44,0
65252	3 x 2 x 0,34	22	6,3	19,5	60,0
65253	4 x 2 x 0,34	22	7,0	26,1	79,0
65254	5 x 2 x 0,34	22	7,6	32,6	92,0
65255	6 x 2 x 0,34	22	8,2	39,2	119,0
65256	7 x 2 x 0,34	22	8,2	45,7	128,0
65257	8 x 2 x 0,34	22	9,0	52,3	139,0
65258	10 x 2 x 0,34	22	10,7	65,3	171,0
65259	12 x 2 x 0,34	22	11,3	78,4	194,0
65260	14 x 2 x 0,34	22	12,1	91,5	222,0
65261	15 x 2 x 0,34	22	12,7	97,8	231,0
65262	16 x 2 x 0,34	22	12,7	104,6	240,0
65263	18 x 2 x 0,34	22	13,6	117,8	264,0
65264	20 x 2 x 0,34	22	14,4	130,7	291,0
65265	22 x 2 x 0,34	22	15,1	143,6	300,0
65266	24 x 2 x 0,34	22	16,2	156,8	359,0
65267	25 x 2 x 0,34	22	16,7	163,3	381,0
65268	1 x 2 x 0,56	20	4,6	10,8	60,0
65269	2 x 2 x 0,56	20	6,5	21,5	80,0
65270	3 x 2 x 0,56	20	7,1	32,3	94,0
65271	4 x 2 x 0,56	20	7,8	43,1	104,0
65272	5 x 2 x 0,56	20	8,6	53,8	130,0
65273	6 x 2 x 0,56	20	9,6	64,6	151,0
65274	7 x 2 x 0,56	20	9,6	75,3	174,0
65275	8 x 2 x 0,56	20	12,1	86,1	262,0
65276	10 x 2 x 0,56	20	12,5	107,7	298,0
65277	12 x 2 x 0,56	20	13,1	129,1	302,0
65278	14 x 2 x 0,56	20	13,8	150,6	327,0
65279	15 x 2 x 0,56	20	14,7	161,3	370,0
65280	16 x 2 x 0,56	20	14,7	172,1	402,0
65281	18 x 2 x 0,56	20	15,7	193,6	480,0
65282	20 x 2 x 0,56	20	16,7	215,1	551,0
65283	22 x 2 x 0,56	20	17,2	236,6	621,0
65284	24 x 2 x 0,56	20	18,6	258,0	703,0
65285	25 x 2 x 0,56	20	19,2	268,9	721,0

Dimensions and specifications may be changed without prior notice. (RN02)



Suitable accessories can be found in Chapter X.

- Cable tie

TRAYCONTROL® 300 TP twisted pair, flexible, oil-resistant,

NFPA 79 Edition 2012



Technical data

- Flexible PVC data and control cable
- **Temperature range** -25°C to +105°C
- **Nominal voltage** 300 V
- **Test voltage** 2000 V
- **Minimum bending radius** flexing 6x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Tinned copper conductor, fine wire stranded, with AWG measures
- Core insulation of special PVC (AWG 22 - AWG 18 with transparent nylon skin)
- Core identification (pair) acc. to international colour code
- Cores stranded in pairs with optimal lay-length
- Pairs stranded in layers with optimal lay-length
- Separator
- Outer sheath of special PVC
- Sheath colour - grey (RAL 7001)
- with length marking in feet

Properties

- Self-extinguishing and flame retardant in acc. to CSA FT4
- The materials used in manufacture are free of silicone, cadmium and substances that impair paint wetting

Tests

- **UL (AWG 22 - AWG 18)**: PLTC-ER, ITC-ER, Type CM, NFPA 79 2012, OIL RES I & II, Class I Div. 2, NEC Art. 501, 725, 760 & 800, AWM 2517
- **UL (AWG 24 - AWG 26)**: CM, AWM 2464, rated OIL RES I & II, NEC Art. 725, 760 & 800, NFPA 79 2012
- **CSA**: CSA CMG FT4, AWM I/II A/B FT4

Note

Advantages

- Highly-flexible, easy to install
- Oil-resistant to OIL RES I & II

Available on request

- PUR or TPE outer sheath
- Sheath colour to suit customer requirement

Application

HELUKABEL® TRAYCONTROL® 300 TP is a twisteded pair data and control cable. Cross-sections with PLTC-ER and ITC-ER approval for open, unprotected installation in cable trays to the machine; their outstanding oil resistance (OIL RES I & II) makes them ideally suited as connecting and joining cables and also for control, signal and measuring systems in industrial plants. The flexible cable structure facilitates installation inside and outside of machines and switch cabinets. Applications: tool machines, control panels, measuring devices, production automation, cable ducts, renewable energies.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

N

Part no.	Cross-section mm²	No.pairs x No.cores x AWG-no.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
62794	0,154	1 x 2 x 26	3,6	3,0	20,0
62795	0,154	2 x 2 x 26	5,1	5,0	24,0
62796	0,154	3 x 2 x 26	5,3	8,0	30,0
62797	0,154	4 x 2 x 26	5,8	11,0	38,0
62798	0,154	5 x 2 x 26	6,2	14,0	44,0
62799	0,154	6 x 2 x 26	6,8	16,0	51,0
62800	0,154	7 x 2 x 26	6,9	19,0	57,0
61928	0,154	8 x 2 x 26	7,3	22,0	64,0
61929	0,154	10 x 2 x 26	7,4	27,0	76,0
61930	0,154	12 x 2 x 26	9,1	33,0	93,0
61931	0,154	14 x 2 x 26	9,8	38,0	103,0
61932	0,154	15 x 2 x 26	10,6	41,0	109,0
61933	0,154	16 x 2 x 26	10,7	43,0	112,0
61934	0,154	18 x 2 x 26	11,1	49,0	119,0
61935	0,154	20 x 2 x 26	11,9	54,0	130,0
61936	0,154	22 x 2 x 26	12,4	59,0	150,0
61937	0,154	24 x 2 x 26	13,1	65,0	169,0
61938	0,154	25 x 2 x 26	13,4	67,0	178,0
61939	0,241	1 x 2 x 24	3,9	5,0	32,0
61940	0,241	2 x 2 x 24	5,9	10,0	36,0
61941	0,241	3 x 2 x 24	6,2	15,0	48,0
61942	0,241	4 x 2 x 24	6,5	20,0	56,0
61943	0,241	5 x 2 x 24	7,2	25,0	71,0
61944	0,241	6 x 2 x 24	8,1	29,0	80,0
61945	0,241	7 x 2 x 24	8,2	34,0	89,0
61946	0,241	8 x 2 x 24	8,9	39,0	98,0
61947	0,241	10 x 2 x 24	10,5	49,0	111,0
61948	0,241	12 x 2 x 26	11,0	59,0	135,0
61949	0,241	14 x 2 x 24	11,6	69,0	160,0
61950	0,241	15 x 2 x 24	12,0	74,0	171,0

Part no.	Cross-section mm²	No.pairs x No.cores x AWG-no.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
61951	0,241	16 x 2 x 24	12,1	79,0	185,0
61952	0,241	18 x 2 x 24	13,5	89,0	209,0
61953	0,241	20 x 2 x 24	14,4	98,0	230,0
61954	0,241	22 x 2 x 24	15,3	109,0	248,0
61955	0,241	24 x 2 x 24	16,1	118,0	279,0
61956	0,241	25 x 2 x 24	16,7	124,0	292,0
61957	0,382	1 x 2 x 22	4,2	7,0	38,0
61958	0,382	2 x 2 x 22	6,4	13,0	44,0
61959	0,382	3 x 2 x 22	6,8	20,0	60,0
61960	0,382	4 x 2 x 22	9,2	29,3	79,0
61961	0,382	5 x 2 x 22	8,2	33,0	92,0
61962	0,382	6 x 2 x 22	8,9	39,0	119,0
61963	0,382	7 x 2 x 22	9,0	46,0	128,0
61964	0,382	8 x 2 x 22	9,9	52,0	139,0
61965	0,382	10 x 2 x 22	11,7	65,0	171,0
61966	0,382	12 x 2 x 22	12,4	78,0	194,0
61967	0,382	14 x 2 x 22	13,0	92,0	222,0
61968	0,382	15 x 2 x 22	13,2	98,0	231,0
61969	0,382	16 x 2 x 22	13,3	105,0	240,0
61970	0,382	18 x 2 x 22	14,2	118,0	264,0
61971	0,382	20 x 2 x 22	15,1	131,0	291,0
61972	0,382	22 x 2 x 22	15,8	144,0	300,0
61973	0,382	24 x 2 x 22	17,0	157,0	359,0
61974	0,382	25 x 2 x 22	17,5	163,0	381,0
61975	0,616	1 x 2 x 20	5,2	11,0	60,0
61976	0,616	2 x 2 x 20	8,8	22,0	80,0
61977	0,616	3 x 2 x 20	9,3	32,0	94,0
61978	0,616	4 x 2 x 20	10,2	43,0	104,0
61979	0,616	5 x 2 x 20	11,3	54,0	130,0
61980	0,616	6 x 2 x 20	12,5	65,0	151,0

Continuation ▸

TRAYCONTROL® 300 TP twisted pair, flexible, oil-resistant,

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Part no.	Cross-section mm²	No.pairs x No.cores x AWG-no.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
61981	0,616	7 x 2 x 20	12,6	75,0	174,0
61982	0,616	8 x 2 x 20	15,9	86,0	262,0
61983	0,616	10 x 2 x 20	16,4	108,0	298,0
61984	0,616	12 x 2 x 20	17,2	129,0	302,0
61985	0,616	14 x 2 x 20	18,1	151,0	327,0
61986	0,616	15 x 2 x 20	18,5	161,0	370,0
61987	0,616	16 x 2 x 20	18,6	172,0	402,0
61988	0,616	18 x 2 x 20	19,9	194,0	480,0
61989	0,616	20 x 2 x 20	21,1	215,0	551,0
61990	0,616	22 x 2 x 20	21,8	237,0	621,0
61991	0,616	24 x 2 x 20	23,5	258,0	703,0
61992	0,616	25 x 2 x 20	24,3	269,0	721,0
61993	0,963	1 x 2 x 18	5,6	18,0	61,0
61994	0,963	2 x 2 x 18	9,6	36,0	77,0
61995	0,963	3 x 2 x 18	10,6	54,0	103,0
61996	0,963	6 x 2 x 18	13,7	107,0	216,0
61997	0,963	9 x 2 x 18	16,4	162,0	328,0
61998	0,963	15 x 2 x 18	20,4	271,0	542,0

Dimensions and specifications may be changed without prior notice. (RN02)

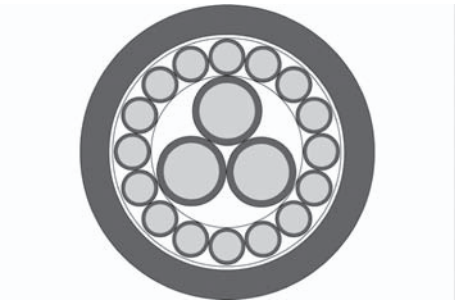


Suitable accessories can be found in Chapter X.

- Cable tie

SENSORFLEX® / VERTEILERFLEX two-approvals

sensor actuator and distributor cables PVC, PUR, PVC/PUR





Technical data

- Special PVC or PUR sheath acc. to
  - UL-Style 2464 for PVC
  - UL-Style 20233 for PUR
- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -30°C to +80°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage**
  up to 0,25 mm² 1200 V
  from 0,34 mm² 2000 V
- **Minimum bending radius**
  SENSORFLEX® two-approvals PVC
  15x cable Ø
  SENSORFLEX® two-approvals PUR
  7,5x cable Ø

Cable structure

PVC cables

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of PVC
- Core identification see table below
- Outer sheath of special PVC

PUR cables

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insulation of PVC
- Core identification see table below
- Outer sheath of PUR

Part no. 79907, 75642, 79850

- Construction as per SENSORFLEX® two-approvals
- Core insulation of polypropylene

Properties

PVC cables

- Extensively oil resistant; Chemical Resistance (see table Technical Informations)
- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

PUR cables

- Low adhesion, extremely abrasion resistant, resistant to hydrolysis and microbial attack

Special feature

- The cables with the highly flexible stranded conductor cl.6, are **suitable for drag chain applications**
- The types with **PVC/PUR** sheath material have a PVC inner sheath, with a PUR sheath applied over it by means of coextrusion

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

For decentralised installation and control technology. These cables are used in connector systems for sensors and actuators. In combination with injected circular connectors and installed actuator-sensor boxes, they constitute an important connecting element between the periphery and the PLC in production systems. The assembled cables offer attractive opportunities for reducing costs, not only in the field of automation technology, but also in the entire manufacturing industry. While previously it was necessary to carry out time-consuming wiring of switchgear cabinets and machines, now field bus technology has made it possible to move the periphery interfaces from the switchgear cabinets to the machines and systems. Moving the I/O points to the system periphery enables significant reductions in installation costs.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

SENSORFLEX® 2-APPROVALS

Part no.	Sheath colour	Cable structure No.cores x cross-sec. mm²	Sheath material	Core colours	Fine wire	High flex **	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
78284	GY RAL 7001	3 x 0,25	PUR	BN, BU, BK		X	4,4	7,2	18,0	24
79907	GY RAL 7001	4 x 0,25	PUR	BN, BU, BK, WH		X	4,7	9,6	18,0	24
78286	GY RAL 7001	6 x 0,25	PVC	BN, BU, BK, WH, GY, PK	X		5,2	14,4	36,0	24
76345	GY RAL 7001	3 x 0,34	PVC	BN, BU, BK	X		4,9	9,8	30,0	22
76347	GY RAL 7001	4 x 0,34	PVC	BN, BU, BK, WH		X	5,2	13,1	43,0	22
76348	GY RAL 7001	5 G 0,34	PVC/PUR	BN, BU, BK, WH, GN-YE	X		5,9	16,4	54,0	22
76349	GY RAL 7001	5 G 0,34	PVC/PUR	BN, BU, BK, WH, GN-YE		X	5,9	16,4	54,0	22
78287	GY RAL 7001	5 G 0,34	PVC/PUR	BK with number, GN-YE		X	5,9	16,4	54,0	22
79850	GY RAL 7001	5 G 0,34	PUR	BN, BU, BK, WH, GN-YE		X	5,9	16,4	54,0	22
73571	GY RAL 7001	3 G 0,75	PVC	BK with number, GN-YE	X		6,7	21,6	58,0	18
75642	BK RAL 9005	3 G 0,75	PUR	BK with number, GN-YE		X	5,9	21,6	58,0	18
76351	GY RAL 7001	3 G 0,75	PVC	BN, BU, GN-YE	X		6,7	28,8	88,0	18
78288	GY RAL 7001	3 G 0,75	PUR	BK with number, GN-YE		X	5,9	21,6	58,0	18

Continuation ▸

SENSORFLEX® / VERTEILERFLEX

two-approvals sensor actuator and distributor cables PVC, PUR, PVC/PUR

SENSORFLEX® 2-APPROVALS

Part no.	Sheath colour	Cable structure No.cores x cross-sec. mm²	Sheath material	Core colours	Fine wire	High flex **	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
74551	GY RAL 7001	4 G 0,75	PUR	BK with number, GN-YE		X	6,9	29,0	66,0	18
78289	GY RAL 7001	4 G 0,75	PVC/PUR	BK with number, GN-YE	X		7,0	29,0	66,0	18
77352	BK RAL 9005	2 x 1	PVC	SW mit Ziffer 1-2	X		7,2	19,2	56,0	17
78290	GY RAL 7001	2 x 1	PVC	SW mit Ziffer 1-2	X		7,2	19,2	56,0	17
76350	GY RAL 7001	11 G 1	PVC/PUR	BK with number 1-8, BN, BU, GN-YE	X		12,0	105,6	225,0	17
78291	GY RAL 7001	2 x 1,5	PVC	BN, BU	X		6,8	29,0	75,0	16
73587	GY RAL 7001	3 G 1,5	PVC	BN, BU, GN-YE	X		6,9	44,0	94,0	16

Dimensions and specifications may be changed without prior notice.



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

Command Cable UL (LiYCY) Style 2464, 300 V, 80°C,

EMC-preferred type



Technical data

- Special PVC command cable, approved to UL-Style 2464, cores acc. to UL-Style 1061/1729 for AWG 26-20, UL-Style 1007/1569 for AWG 18-16
- **Temperature range**
  flexing -10°C to +80°C
  fixed installation -20°C to +80°C
- **Nominal voltage** 300 V
- **Test voltage** 1500 V
- **Breakdown voltage** min. 3000 V
- **Minimum bending radius**
  fixed 7,5x cable Ø
  flexing 15x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km

Cable structure

- Tinned copper, fine wire conductors AWG 26-20 gem. ASTM-B 174-95 class J-M, AWG 18-16 gem. ASTM-B 286 conductor make-up to
  0,14 mm² = 7x0,162 mm
  0,23 mm² = 7x0,202 mm
  0,34 mm² = 7x0,254 mm
  0,56 mm² = 7x0,32 mm
  0,82 mm² = 19x0,235 mm
  1,30 mm² = 19x0,31 mm
- Core insulation of special PVC class 43 respectively semirigid acc. to UL-Std. 1581 tab.50.182 and 50.183
- Colour coded to DIN 47100 or international colour code
- Cores stranded in layers with optimal lay-length
- Seperator-foil
- Drain wire
- Tinned copper wire braiding, approx. 85% coverage
- Outer sheath of PVC class 43 acc. to UL-Std.1581 tab.50.182
- Sheath colour
  black (international colour code)
  grey (DIN 47100 - preferred type from stock)

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC flame retardant acc. to UL VW-1, CSA FT1
- **Conditionally resistant to**
  Oil
  Solvents
  Acids
  Lyes

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- non-screened analogue types: **command cable UL (LiYY)**, confer page 403

Application

As a flexible interconnecting cable for electronics, control and command technology, as well as in measurement, signal, and pulse technology. Fast and inexpensive contacting by cutting and clamping technology.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

N

Part no. Sheath colour grey	Part no. Sheath colour black	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83254	83976	2 x 0,14	26	3,9	12,6	20,0
83255	83977	3 x 0,14	26	4,2	13,7	25,0
83256	83978	4 x 0,14	26	4,4	14,9	28,0
83257	83979	6 x 0,14	26	5,0	18,9	30,0
83258	83980	10 x 0,14	26	6,1	29,5	50,0
83259	83981	12 x 0,14	26	6,3	31,4	53,0
83260	83982	16 x 0,14	26	6,8	43,9	60,0
83261	83983	18 x 0,14	26	7,1	52,1	70,0
83262	83984	24 x 0,14	26	8,0	62,8	100,0
83263	83985	27 x 0,14	26	8,4	66,3	105,0
83264	83986	30 x 0,14	26	8,6	70,4	110,0

Part no. Sheath colour grey	Part no. Sheath colour black	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83270	83987	2 x 0,23	24	4,3	16,1	20,0
83271	83988	3 x 0,23	24	4,5	18,9	25,0
83272	83989	4 x 0,23	24	4,8	23,0	30,0
83273	83990	6 x 0,23	24	5,4	32,8	40,0
83274	83991	10 x 0,23	24	6,5	50,9	60,0
83275	83992	12 x 0,23	24	6,7	59,1	70,0
83276	83993	16 x 0,23	24	7,4	68,4	90,0
83277	83994	18 x 0,23	24	7,7	79,5	123,0
83278	83995	24 x 0,23	24	8,8	97,3	131,0
83279	83996	27 x 0,23	24	9,0	122,0	160,0
83280	83997	30 x 0,23	24	9,3	132,0	170,0

Continuation ▸

Command Cable UL (LiYCY) Style 2464, 300 V, 80°C,

EMC-preferred type

Part no. Sheath colour grey	Part no. Sheath colour black	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83286	65044	2 x 0,34	22	4,6	18,1	40,0
83287	65045	3 x 0,34	22	4,8	22,2	50,0
83288	65046	4 x 0,34	22	5,1	28,7	60,0
83289	65047	6 x 0,34	22	6,0	45,4	80,0
83290	65048	10 x 0,34	22	7,3	66,1	130,0
83291	65049	12 x 0,34	22	7,5	70,8	140,0
83292	65050	16 x 0,34	22	8,2	88,4	160,0
83293	65051	18 x 0,34	22	8,7	104,1	170,0
83294	65052	24 x 0,34	22	9,9	129,0	220,0
83295	65053	27 x 0,34	22	10,4	138,4	250,0
83296	65054	30 x 0,34	22	10,9	159,0	280,0
83302	65055	2 x 0,56	20	5,1	29,4	50,0
83303	65056	3 x 0,56	20	5,3	39,7	55,0
83304	65057	4 x 0,56	20	5,6	46,1	61,0
83305	65058	6 x 0,56	20	6,6	66,8	90,0
83306	65059	10 x 0,56	20	8,1	93,1	133,0
83307	65060	12 x 0,56	20	8,4	117,4	151,0
83308	65061	16 x 0,56	20	9,5	130,4	190,0
83309	65062	18 x 0,56	20	9,9	151,4	216,0
83310	65063	24 x 0,56	20	11,5	237,0	339,0
83311	65064	27 x 0,56	20	12,0	257,4	374,0
83312	65065	30 x 0,56	20	12,4	297,0	397,0

Part no. Sheath colour grey	Part no. Sheath colour black	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83318	65066	2 x 0,82	18	6,5	39,1	60,0
83319	65067	3 x 0,82	18	6,8	50,0	75,0
83320	65068	4 x 0,82	18	7,4	59,1	90,0
83321	65069	6 x 0,82	18	8,8	89,1	125,0
83322	65070	10 x 0,82	18	10,9	141,4	180,0
83323	65071	12 x 0,82	18	11,2	152,8	220,0
83324	65072	16 x 0,82	18	12,9	184,1	290,0
83325	65073	18 x 0,82	18	13,5	207,2	300,0
83326	65074	24 x 0,82	18	15,6	272,6	450,0
83327	65075	27 x 0,82	18	15,9	289,1	470,0
83328	65076	30 x 0,82	18	16,6	317,4	490,0
83334	65077	2 x 1,3	16	6,9	59,1	90,0
83335	65078	3 x 1,3	16	7,3	74,1	160,0
83336	65079	4 x 1,3	16	7,9	96,4	200,0
83337	65080	6 x 1,3	16	9,6	137,4	290,0
83338	65081	10 x 1,3	16	12,4	191,7	450,0
83339	65082	12 x 1,3	16	12,8	251,7	600,0
83340	65083	16 x 1,3	16	12,8	276,1	650,0
83341	65084	18 x 1,3	16	15,5	364,1	680,0
83342	65085	24 x 1,3	16	18,1	442,4	900,0
83343	65086	27 x 1,3	16	18,7	494,7	990,0
83344	65087	30 x 1,3	16	19,5	521,4	1050,0

Dimensions and specifications may be changed without prior notice. (RN02)



Suitable accessories can be found in Chapter X.

- Cable tie

Command Cable UL (LiYCY) Style 2516/600 V, 105°C,

EMC-preferred type



Technical data

- Special PVC command cable, approved to UL-Style 2516 cores acc. UL-Style 10012
- **Temperature range**
  flexing -10°C to +105°C
  fixed installation -20°C to +105°C
- **Nominal voltage** 600 V
- **Test voltage** 2000 V
- **Breakdown voltage** min. 4000 V
- **Minimum bending radius**
  fixed 7,5x cable Ø
  flexing 15x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km

Cable structure

- Tinned copper, fine wire conductors acc. to ASTM-B 174, class J-K
  conductor make-up to
  2,08 mm² = 41x0,254 mm
  3,20 mm² = 65x0,254 mm
- Core insulation of special PVC class 43 acc. to UL-Std.1581 tabl.50.182 (105°C)
- Core identification to DIN 47100 or international colour code
- Cores stranded in layers with optimal lay-length
- Seperator-foil
- Drain wire
- Tinned copper wire braiding, approx. 85% coverage
- Outer sheath of PVC class 43 acc. to UL-Std.1581 tab.50.182 (105°C)
- Sheath colour
  black (international colour code)
  grey (DIN 47100/preferred type from stock)

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC flame retardant according to UL VW-1, CSA FT1
- **Conditionally resistant to**
  Oil
  Solvents
  Acids
  Lyes

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- non-screened analogue types:
  command cable UL (LiYY),
  confer page 404

Application

As a flexible interconnecting cable for electronics, control and command technology, as well as in measurement, signal, and pulse technology. Fast and inexpensive contacting by cutting and clamping technology.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

N

Part no. Sheath colour grey	Part no. Sheath colour black	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83350	65114	2 x 2,08	14	9,1	92,1	180,0
83351	65115	3 x 2,08	14	9,6	140,6	220,0
83352	65116	4 x 2,08	14	10,4	162,4	270,0
83353	65117	6 x 2,08	14	12,1	200,0	380,0
83354	65118	10 x 2,08	14	16,0	313,1	600,0
83355	65119	12 x 2,08	14	16,5	417,6	770,0
83356	65120	16 x 2,08	14	18,1	510,3	870,0
83357	65121	18 x 2,08	14	19,4	540,4	990,0
83358	65122	24 x 2,08	14	23,4	0,0	1300,0
83359	65123	27 x 2,08	14	23,9	604,2	1400,0
83360	65124	30 x 2,08	14	24,6	660,1	1610,0

Part no. Sheath colour grey	Part no. Sheath colour black	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83362	65125	2 x 3,2	12	10,0	131,4	200,0
83363	65126	3 x 3,2	12	10,6	162,6	240,0
83364	65127	4 x 3,2	12	11,4	221,7	300,0
83365	65128	6 x 3,2	12	14,4	328,1	400,0
83366	65129	10 x 3,2	12	17,8	401,8	580,0
83367	65130	12 x 3,2	12	18,4	460,2	800,0
83368	65131	16 x 3,2	12	20,6	532,3	900,0
83369	65132	18 x 3,2	12	22,7	573,4	1000,0
83370	65133	24 x 3,2	12	26,1	626,8	1300,0

Dimensions and specifications may be changed without prior notice. (RN02)



Suitable accessories can be found in Chapter X.

• Cable tie

TRAYCONTROL® 300-C flexible, oil-resistant, screened,

EMC-preferred type, NFPA 79 Edition 2012



Technical data

- Flexible screened PVC data and control cable
- **Temperature range** -25°C to +105°C
- **Nominal voltage** 300 V
- **Test voltage** 2000 V
- **Minimum bending radius** flexing 6x cable Ø
- **Coupling resistance** max. 250 Ohm/km
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Tinned copper conductor, fine wire with AWG dimensions
- Core insulation of special PVC (AWG 22 - AWG 16 with transparent nylon skin)
- Core identification to international colour code
- Cores stranded in layers with optimal lay-length
- 1. Screen with special aluminium film
- 2.Tinned copper braided screen, approx. 85%
- Separator
- Outer sheath of special PVC
- Sheath colour grey (RAL 7001)
- with length marking in feet

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- self-extinguishing and flame retardant acc. to CSA FT4
- **UL (AWG 22 - AWG 16)**: PLTC-ER, ITC-ER, Type CM, NFPA 79 2012, OIL RES I & II, Class I Div. 2, NEC Art. 501, 725, 760 & 800, AWM 2517
- **UL (AWG 24 - AWG 28)**: CM, AWM 2464, rated OIL RES I & II, NEC Art. 725, 760 & 800, NFPA 79 2012
- **CSA**: CSA CMG FT4, AWM I/II A/B FT4

Note

Advantages

- Highly-flexible, easy to install
- Oil-resistant to OIL RES I & II

Available on request

- PUR or TPE outer sheath
- Sheath colour to suit customer requirement

Application

HELUKABEL® TRAYCONTROL® 300 is a screened, multi-core PVC data and control cable. Cross-sections with PLTC-ER and ITC-ER approval suitable for open, unprotected installation in cable trays to the machine; their outstanding oil resistance (OIL RES I & II) makes them ideally suited as connecting and joining cables and also for control, signal and measuring systems in industrial plants. The flexible cable structure facilitates installation inside and outside of machines and switch cabinets. The double-screening with aluminium foil (100% coverage) and copper braid (approx. 85% coverage) guarantee superior EMC protection. Applications: tool machines, control panels, measuring devices, production automation, cable ducts, renewable energies.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	Cross-section mm²	No.cores x AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
62710	0,093	2 x 28	4,5	6,0	16,0
62711	0,093	3 x 28	4,7	7,0	22,0
62712	0,093	4 x 28	5,0	9,0	27,0
62713	0,093	6 x 28	5,5	12,0	34,0
62714	0,093	8 x 28	5,8	15,0	37,0
62715	0,093	10 x 28	6,4	18,0	43,0
62716	0,093	15 x 28	7,0	24,0	52,0
62717	0,093	20 x 28	7,6	30,0	67,0
62718	0,093	25 x 28	8,6	37,0	79,0
62719	0,093	30 x 28	8,9	43,0	88,0
62720	0,093	40 x 28	9,7	54,0	112,0
62721	0,093	50 x 28	11,4	67,0	131,0
62722	0,154	2 x 26	4,7	9,0	24,0
62723	0,154	3 x 26	4,9	10,0	27,0
62724	0,154	4 x 26	5,1	12,0	31,0
62725	0,154	6 x 26	5,8	16,0	39,0
62726	0,154	8 x 26	6,1	19,0	43,0
62727	0,154	10 x 26	6,8	24,0	51,0
62728	0,154	15 x 26	7,5	31,0	66,0
62729	0,154	20 x 26	8,3	40,0	79,0
62730	0,154	25 x 26	9,2	49,0	92,0
62731	0,154	30 x 26	9,5	57,0	110,0
62732	0,154	40 x 26	10,4	72,0	136,0
62733	0,154	50 x 26	12,1	88,0	165,0
62734	0,241	2 x 24	4,9	15,0	30,0
62735	0,241	3 x 24	5,1	16,0	33,0
62736	0,241	4 x 24	5,3	19,0	37,0
62737	0,241	6 x 24	6,1	27,0	48,0

Part no.	Cross-section mm²	No.cores x AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
62738	0,241	8 x 24	6,4	31,0	57,0
62739	0,241	10 x 24	7,3	39,0	67,0
62740	0,241	15 x 24	8,2	51,0	85,0
62741	0,241	20 x 24	9,0	64,0	106,0
62742	0,241	25 x 24	9,9	77,0	128,0
62743	0,241	30 x 24	10,3	92,0	155,0
62744	0,241	40 x 24	11,4	118,0	206,0
62745	0,241	50 x 24	13,2	148,0	249,0
62746	0,382	2 x 22	6,6	19,0	34,0
62747	0,382	3 x 22	5,5	22,0	40,0
62748	0,382	4 x 22	5,8	27,0	46,0
62749	0,382	6 x 22	6,5	34,0	60,0
62750	0,382	8 x 22	9,3	45,0	72,0
62751	0,382	10 x 22	9,8	69,0	85,0
62752	0,382	15 x 22	9,7	77,0	115,0
62753	0,382	20 x 22	11,1	92,0	140,0
62754	0,382	25 x 22	12,6	121,0	176,0
62755	0,382	30 x 22	13,0	139,0	210,0
62756	0,382	40 x 22	14,1	177,0	273,0
62757	0,382	50 x 22	15,5	215,0	331,0
62758	0,616	2 x 20	7,4	28,0	73,0
62759	0,616	3 x 20	7,7	34,0	77,0
62760	0,616	4 x 20	8,3	40,0	91,0
62761	0,616	6 x 20	8,6	54,0	118,0
62762	0,616	8 x 20	9,1	70,0	158,0
62763	0,616	10 x 20	10,4	83,0	173,0
62764	0,616	15 x 20	12,9	119,0	218,0
62765	0,616	20 x 20	14,8	130,0	298,0

Continuation ▸

TRAYCONTROL® 300-C flexible, oil-resistant, screened,

EMC-preferred type, NFPA 79 Edition 2012

Part no.	Cross-section mm²	No.cores x AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
62766	0,616	25 x 20	16,0	186,0	401,0
62767	0,616	30 x 20	16,5	224,0	477,0
62768	0,616	40 x 20	18,7	288,0	623,0
62769	0,616	50 x 20	20,7	337,0	752,0
62770	0,963	2 x 18	7,8	37,0	80,0
62771	0,963	3 x 18	8,1	49,0	86,0
62772	0,963	4 x 18	8,8	58,0	101,0
62773	0,963	6 x 18	10,0	82,0	130,0
62774	0,963	8 x 18	10,6	100,0	168,0
62775	0,963	10 x 18	12,8	124,0	226,0
62776	0,963	15 x 18	14,3	180,0	295,0
62777	0,963	20 x 18	15,5	234,0	386,0
62778	0,963	25 x 18	17,7	277,0	462,0
62779	0,963	30 x 18	18,4	323,0	590,0
62780	0,963	40 x 18	20,2	416,0	773,0
62781	0,963	50 x 18	22,4	508,0	958,0
62782	1,31	2 x 16	8,2	51,0	110,0
62783	1,31	3 x 16	8,9	63,0	116,0
62784	1,31	4 x 16	9,5	76,0	139,0
62785	1,31	6 x 16	10,8	104,0	195,0
62786	1,31	8 x 16	12,0	134,0	283,0
62787	1,31	10 x 16	13,9	168,0	316,0
62788	1,31	15 x 16	15,3	234,0	410,0
62789	1,31	20 x 16	17,0	301,0	551,0
62790	1,31	25 x 16	19,4	367,0	675,0
62791	1,31	30 x 16	20,1	428,0	794,0
62792	1,31	40 x 16	22,3	550,0	1033,0
62793	1,31	50 x 16	25,1	669,0	1274,0

Dimensions and specifications may be changed without prior notice. (RN02)

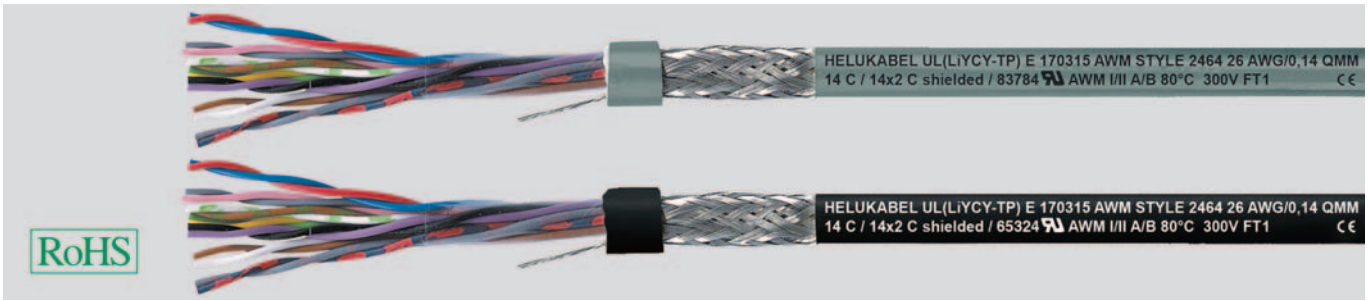


Suitable accessories can be found in Chapter X.

- Cable tie

Command Cable UL (LiYCY-TP) Style 2464/300 V, 80°C,

EMC-preferred type



Technical data

- Special PVC command cable, approved to UL-Style 2464, cores acc. to UL-Style 1061/1729
- **Temperature range** flexing -10°C to +80°C fixed installation -20°C to +80°C
- **Nominal voltage** 300 V
- **Test voltage** 1500 V
- **Breakdown voltage** min. 3000 V
- **Insulation resistance** min. 100 MOhm x km
- **Minimum bending radius** fixed 7,5x cable Ø flexing 15x cable Ø
- **Coupling resistance** max. 250 Ohm/km

Cable structure

- Tinned copper, fine wire conductors acc. to ASTM-B 174-95 class J-M Conductor make-up to 0,14 mm² = 7x0,162 mm 0,23 mm² = 7x0,202 mm 0,34 mm² = 7x0,254 mm 0,56 mm² = 7x0,32 mm
- Core insulation of special PVC class 43 respectively semirigid acc. to UL-Std.1581 tab.50.182 and 50183
- Core identification (pair) to DIN 47100 with colour repetition from pair no. 23 and above or international colour code
- Cores stranded in pairs to optimal lay-length
- Pairs stranded with optimal lay-length in layers
- Seperator-foil
- Drain wire
- Tinned copper wire braiding, approx. 85% coverage
- Outer sheath of special PVC class 43 acc. to UL-Std.1581 tab.50.182
- Sheath colour black (international colour code) grey (DIN 47100 - preferred type from stock)

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC flame retardant acc. to UL VW-1, CSA FT1
- **Conditionally resistant to** Oil Solvents Acids Lyes

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- non-screened analogue type: **command cable UL (LiYY-TP)**, confer page 407

Application

Flexiblescreenedpaircableconnection,as control,signaland measuring cablesin tool machinery,conveyor belts and,inplant construction,air conditioning,in foundries and steel mills.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no. Sheath colour grey	Sheath colour black	No.pairs x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83774	65314	1 x 2 x 0,14	26	4,0	15,7	32,0
83775	65315	2 x 2 x 0,14	26	5,6	19,5	39,0
83776	65316	3 x 2 x 0,14	26	5,8	23,7	47,0
83777	65317	4 x 2 x 0,14	26	6,3	26,9	55,0
83778	65318	5 x 2 x 0,14	26	6,7	31,2	68,0
83779	65319	6 x 2 x 0,14	26	7,3	49,7	86,0
83780	65320	7 x 2 x 0,14	26	7,3	52,0	92,0
83781	65321	8 x 2 x 0,14	26	7,8	53,9	97,0
83782	65322	10 x 2 x 0,14	26	9,1	59,6	111,0
83783	65323	12 x 2 x 0,14	26	9,8	67,1	141,0
83784	65324	14 x 2 x 0,14	26	10,5	75,2	150,0
83785	65325	15 x 2 x 0,14	26	11,1	77,3	154,0
83786	65326	16 x 2 x 0,14	26	11,1	80,4	155,0
83787	65327	18 x 2 x 0,14	26	11,8	84,2	170,0
83788	65328	20 x 2 x 0,14	26	12,4	98,2	183,0
83789	65329	22 x 2 x 0,14	26	13,1	104,1	207,0
83790	65330	24 x 2 x 0,14	26	13,6	112,0	228,0
83791	65331	25 x 2 x 0,14	26	15,1	114,4	239,0

Part no. Sheath colour grey	Sheath colour black	No.pairs x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83792	65332	1 x 2 x 0,23	24	4,2	16,4	46,0
83793	65333	2 x 2 x 0,23	24	5,9	27,4	53,0
83794	65334	3 x 2 x 0,23	24	6,2	31,7	65,0
83795	65335	4 x 2 x 0,23	24	6,7	37,4	79,0
83796	65336	5 x 2 x 0,23	24	7,2	54,7	98,0
83797	65337	6 x 2 x 0,23	24	7,7	65,6	114,0
83798	65338	7 x 2 x 0,23	24	7,7	60,2	121,0
83799	65339	8 x 2 x 0,23	24	8,4	74,1	129,0
83800	65340	10 x 2 x 0,23	24	9,9	109,3	152,0
83801	65341	12 x 2 x 0,23	24	10,2	115,8	189,0
83802	65342	14 x 2 x 0,23	24	10,9	120,7	213,0
83803	65343	15 x 2 x 0,23	24	11,4	132,4	225,0
83804	65344	16 x 2 x 0,23	24	11,4	141,6	227,0
83805	65345	18 x 2 x 0,23	24	12,2	146,6	238,0
83806	65346	20 x 2 x 0,23	24	12,7	160,6	270,0
83807	65347	22 x 2 x 0,23	24	13,5	170,8	300,0
83808	65348	24 x 2 x 0,23	24	14,5	229,7	321,0
83809	65349	25 x 2 x 0,23	24	14,8	231,4	340,0

Continuation ▸

Command Cable UL (LiYCY-TP) Style 2464/300 V, 80°C,

EMC-preferred type

Part no. Sheath colour grey	Sheath colour black	No.pairs x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83810	65350	1 x 2 x 0,34	22	4,6	17,0	58,0
83811	65351	2 x 2 x 0,34	22	6,4	36,7	65,0
83812	65352	3 x 2 x 0,34	22	6,9	44,6	78,0
83813	65353	4 x 2 x 0,34	22	7,5	54,1	88,0
83814	65354	5 x 2 x 0,34	22	8,1	63,4	110,0
83815	65355	6 x 2 x 0,34	22	8,8	73,4	126,0
83816	65356	7 x 2 x 0,34	22	8,8	79,4	140,0
83817	65357	8 x 2 x 0,34	22	9,7	88,4	148,0
83818	65358	10 x 2 x 0,34	22	11,5	107,0	184,0
83819	65359	12 x 2 x 0,34	22	12,0	122,4	210,0
83820	65360	14 x 2 x 0,34	22	12,6	138,2	241,0
83821	65361	15 x 2 x 0,34	22	13,4	154,3	245,0
83822	65362	16 x 2 x 0,34	22	13,4	161,4	251,0
83823	65363	18 x 2 x 0,34	22	14,4	197,9	275,0
83824	65364	20 x 2 x 0,34	22	15,0	211,4	300,0
83825	65365	22 x 2 x 0,34	22	15,9	217,6	320,0
83826	65366	24 x 2 x 0,34	22	17,0	230,4	371,0
83827	65367	25 x 2 x 0,34	22	17,3	138,5	402,0

Part no. Sheath colour grey	Sheath colour black	No.pairs x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
83828	65368	1 x 2 x 0,56	20	5,0	26,0	70,0
83829	65369	2 x 2 x 0,56	20	7,0	56,1	89,0
83830	65370	3 x 2 x 0,56	20	7,6	71,7	102,0
83831	65371	4 x 2 x 0,56	20	8,3	92,4	119,0
83832	65372	5 x 2 x 0,56	20	9,1	107,4	140,0
83833	65373	6 x 2 x 0,56	20	10,1	122,4	162,0
83834	65374	7 x 2 x 0,56	20	10,1	131,7	198,0
83835	65375	8 x 2 x 0,56	20	12,7	144,3	272,0
83836	65376	10 x 2 x 0,56	20	13,2	179,6	307,0
83837	65377	12 x 2 x 0,56	20	13,6	201,7	318,0
83838	65378	14 x 2 x 0,56	20	14,4	221,4	342,0
83839	65379	15 x 2 x 0,56	20	15,5	231,6	381,0
83840	65380	16 x 2 x 0,56	20	15,5	257,1	417,0
83841	65381	18 x 2 x 0,56	20	16,3	282,4	494,0
83842	65382	20 x 2 x 0,56	20	17,1	306,7	570,0
83843	65383	22 x 2 x 0,56	20	18,0	321,8	643,0
83844	65384	24 x 2 x 0,56	20	19,4	342,4	724,0
83845	65385	25 x 2 x 0,56	20	19,8	361,2	740,0

Dimensions and specifications may be changed without prior notice. (RN02)



Suitable accessories can be found in Chapter X.

- Cable tie

N

TRAYCONTROL® 300-C TP twisted pair, flexible, screened, oil-resistant, EMC-preferred type, NFPA 79 Edition 2012



Technical data

- Flexible screened PVC data and control cable
- **Temperature range** -25°C to +105°C
- **Nominal voltage** 300 V
- **Test voltage** 2000 V
- **Minimum bending radius** flexing 6x cable Ø
- **Coupling resistance** max. 250 Ohm/km
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Tinned copper conductor, fine wire stranded, with AWG measures
- Core insulation of special PVC (AWG 22 - AWG 18 with transparent nylon skin)
- Core identification (pair) acc. to international colour code
- Cores stranded in pairs with optimal lay-length
- Pairs stranded in layers with optimal lay-length
- 1. Screening with special aluminium foil 2. Tinned copper braided screen, approx. 85% coverage
- Separator
- Outer sheath of special PVC
- Sheath colour grey (RAL 7001)
- with length marking in feet

Properties

- Self-extinguishing and flame retardant in acc. to CSA FT4
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- **UL (AWG 22 - AWG 18)**: PLTC-ER, ITC-ER, CM, NFPA 79 2012, OIL RES I & II, Class I Div. 2, NEC Art. 501, 725, 760 & 800, AWM 2517
- **UL (AWG 24 - AWG 26)**: CM, AWM 2517, rated OIL RES I & II, NEC Art. 725, 760 & 800, NFPA 79 2012
- **CSA**: CSA CMG FT4, AWM I/II A/B FT4

Note

Advantages

- Highly-flexible, easy to install
- Oil-resistant to OIL RES I & II

Available on request

- PUR or TPE outer sheath
- Sheath colour to suit customer requirement

Application

HELUKABEL® TRAYCONTROL® 300 is a screened, twisted pair data and control cable. Cross-sections with PLTC-ER and ITC-ER approval suitable for open, unprotected installation in cable trays to the machine; their outstanding oil resistance (OIL RES I & II) makes them ideally suited as connecting and joining cables and also for control, signal and measuring systems in industrial plants. The flexible cable structure facilitates installation inside and outside of machines and switch cabinets. The double-screening with aluminium foil (100% coverage) and copper braid (approx. 85% coverage) guarantee superior EMC protection. Applications: tool machines, control panels, measuring devices, production automation, cable ducts, renewable energies.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	Cross-section mm²	No.pairs x No.cores x AWG-no.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
61999	0,154	1 x 2 x 26	4,7	16,0	32,0
59760	0,154	2 x 2 x 26	5,7	20,0	39,0
59761	0,154	3 x 2 x 26	5,9	24,0	47,0
59762	0,154	4 x 2 x 26	6,4	27,0	55,0
59763	0,154	5 x 2 x 26	6,8	31,0	68,0
59764	0,154	6 x 2 x 26	7,4	50,0	86,0
59765	0,154	7 x 2 x 26	7,5	52,0	92,0
59766	0,154	8 x 2 x 26	7,9	54,0	97,0
59767	0,154	10 x 2 x 26	9,2	60,0	111,0
59768	0,154	12 x 2 x 26	9,8	67,0	141,0
59769	0,154	14 x 2 x 26	10,4	75,0	150,0
59770	0,154	15 x 2 x 26	10,8	77,0	154,0
59771	0,154	16 x 2 x 26	11,2	80,0	155,0
59772	0,154	18 x 2 x 26	11,8	84,0	170,0
59773	0,154	20 x 2 x 26	12,4	98,0	183,0
59774	0,154	22 x 2 x 26	13,1	104,0	207,0
59775	0,154	24 x 2 x 26	13,6	112,0	228,0
59776	0,154	25 x 2 x 26	15,1	114,0	239,0
59777	0,241	1 x 2 x 24	4,9	16,0	46,0
59778	0,241	2 x 2 x 24	6,6	27,0	53,0
59779	0,241	3 x 2 x 24	6,9	32,0	65,0
59780	0,241	4 x 2 x 26	7,8	37,0	79,0
59781	0,241	5 x 2 x 24	8,0	55,0	98,0
59782	0,241	6 x 2 x 24	8,4	66,0	114,0
59783	0,241	7 x 2 x 24	8,8	60,0	121,0
59784	0,241	8 x 2 x 24	9,5	74,0	129,0

Part no.	Cross-section mm²	No.pairs x No.cores x AWG-no.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
59785	0,241	10 x 2 x 24	10,5	109,0	152,0
59786	0,241	12 x 2 x 24	10,8	116,0	189,0
59787	0,241	14 x 2 x 24	12,6	121,0	213,0
59788	0,241	15 x 2 x 24	12,4	132,0	225,0
59789	0,241	16 x 2 x 24	12,9	142,0	227,0
59790	0,241	18 x 2 x 24	13,8	147,0	238,0
59791	0,241	20 x 2 x 24	14,4	161,0	270,0
59792	0,241	22 x 2 x 24	15,3	171,0	300,0
59793	0,241	24 x 2 x 24	16,4	230,0	321,0
59794	0,241	25 x 2 x 24	16,7	231,0	340,0
59795	0,382	1 x 2 x 22	6,9	17,0	58,0
59796	0,382	2 x 2 x 22	9,3	37,0	65,0
59797	0,382	3 x 2 x 22	9,7	45,0	79,0
59798	0,382	4 x 2 x 22	10,5	54,0	88,0
59799	0,382	5 x 2 x 22	11,4	63,0	110,0
59800	0,382	6 x 2 x 22	12,1	73,0	126,0
59801	0,382	7 x 2 x 22	12,3	79,0	140,0
59802	0,382	8 x 2 x 22	13,2	88,0	148,0
59803	0,382	10 x 2 x 22	15,7	107,0	184,0
59804	0,382	12 x 2 x 22	16,0	122,0	210,0
59805	0,382	14 x 2 x 22	16,3	138,0	241,0
59806	0,382	15 x 2 x 22	16,6	154,0	245,0
59807	0,382	16 x 2 x 22	16,8	161,0	251,0
59808	0,382	18 x 2 x 22	17,8	198,0	275,0
59809	0,382	20 x 2 x 22	18,4	211,0	300,0
59810	0,382	22 x 2 x 22	19,3	218,0	320,0

Continuation ▸

TRAYCONTROL® 300-C TP twisted pair, flexible, screened, oil-resistant, EMC-preferred type, NFPA 79 Edition 2012

Part no.	Cross-section mm²	No.pairs x No.cores x AWG-no.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
59811	0,382	24 x 2 x 22	20,5	230,0	371,0
59812	0,382	25 x 2 x 22	20,8	239,0	402,0
59813	0,616	1 x 2 x 20	7,4	26,0	70,0
59814	0,616	2 x 2 x 20	10,0	56,0	89,0
59815	0,616	3 x 2 x 20	10,8	72,0	102,0
59816	0,616	4 x 2 x 20	11,5	92,0	119,0
59817	0,616	5 x 2 x 20	12,6	107,0	140,0
59818	0,616	6 x 2 x 20	13,4	122,0	162,0
59819	0,616	7 x 2 x 20	13,5	132,0	198,0
59820	0,616	8 x 2 x 20	16,9	144,0	272,0
59821	0,616	10 x 2 x 20	17,6	180,0	307,0
59822	0,616	12 x 2 x 20	18,1	202,0	318,0
59823	0,616	14 x 2 x 20	19,2	221,0	342,0
59824	0,616	15 x 2 x 20	19,5	232,0	381,0
59825	0,616	16 x 2 x 20	19,6	257,0	417,0
59826	0,616	18 x 2 x 20	20,6	282,0	494,0
59827	0,616	20 x 2 x 20	21,6	307,0	570,0
59828	0,616	22 x 2 x 20	22,7	322,0	643,0
59829	0,616	24 x 2 x 20	24,5	342,0	724,0
59830	0,616	25 x 2 x 20	24,9	361,0	740,0
59831	0,963	1 x 2 x 18	7,8	28,0	104,0
59832	0,963	2 x 2 x 18	10,3	57,0	121,0
59833	0,963	3 x 2 x 18	11,6	75,0	150,0
59834	0,963	6 x 2 x 18	14,7	139,0	328,0
59835	0,963	9 x 2 x 18	17,3	212,0	490,0
59836	0,963	15 x 2 x 18	21,4	358,0	811,0

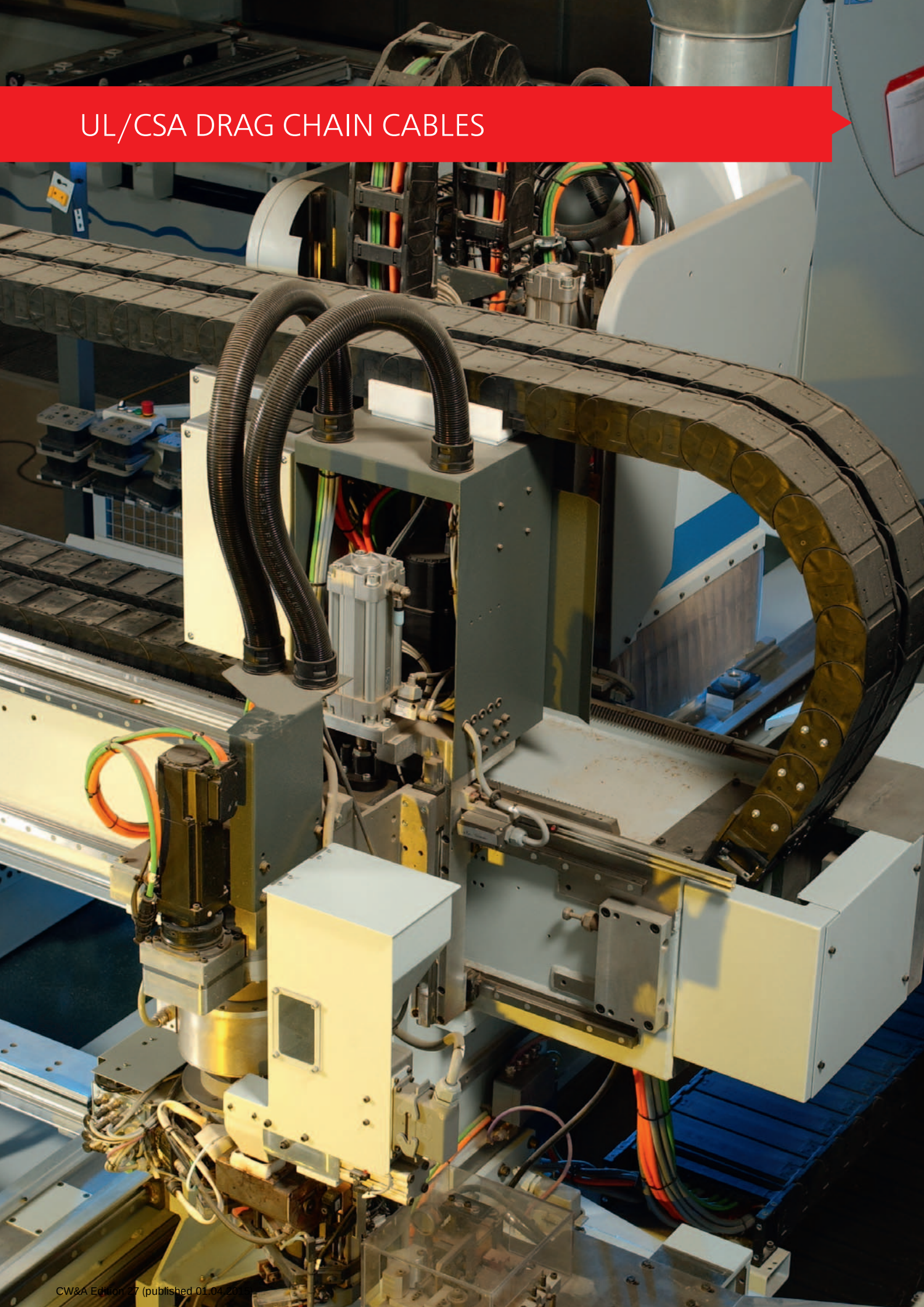
Dimensions and specifications may be changed without prior notice. (RN02)



Suitable accessories can be found in Chapter X.

- Cable tie

UL/CSA DRAG CHAIN CABLES



JZ-602 RC cable for drag chains, 90°C, 600 V, two approval control cable, meter marking



Technical data

- Control cable of special-PVC to UL AWM Style 10012 (core insulation) Style 2587 and CSA
- **Temperature range** flexing -5°C to +90°C fixed installation -40°C to +90°C
- **Nominal voltage** UL/CSA 600 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, extra fine wire conductors, to DIN VDE 0295 cl.6 col. 4, BS 6360 cl.6 and IEC 60228 cl.6
- Core insulation special PVC compound type YI8 to DIN VDE 0207 part 4 and class 43 acc. to UL-Std.1581
- Core identification to DIN VDE 0293 red cores with continuous white numbering
- GN-YE conductor in the outer layer
- Cores stranded in layers with optimal lay-length
- Wrapping with fleece over each layer
- Outer sheath of special PVC compound type YM5 to DIN VDE 0207 part 5, UL-Style 2587 and CSA C22.2 No 210
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1
- UV-resistant

Note

- G = with green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **JZ-602 RC -CY**, confer page 427

Application

For use in dry, damp and wet rooms with free movement without tensile stress or forced movements as highly flexible PVC control cable suitable for frequent lifting and bending stress in the machinery and tooling, robot technology and permanently moving machine parts. Convincingly proved in the standard use of drag chains. Interesting for the export-oriented machinery plant. For applications that go beyond standard solutions (e. g. composting facilities or high shelf conveyors with extremely high speed, etc.) we recommend you to our specially developed inquiry sheet for energy guiding systems, further technical details see selection table: Conductors for cable drag chains in the opening credits. For use in cable drag chains please note installation instruction.

RC = Robotics Cable

CE = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

N

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
89900	3 G 0,5	20	6,0	14,0	58,0
89901	4 G 0,5	20	6,5	19,0	69,0
89902	5 G 0,5	20	7,1	24,0	84,0
89903	7 G 0,5	20	8,2	34,0	123,0
89904	9 G 0,5	20	10,0	43,2	177,0
89905	12 G 0,5	20	10,5	58,2	192,0
89906	18 G 0,5	20	12,5	86,0	256,0
89907	25 G 0,5	20	15,2	120,0	358,0
89908	34 G 0,5	20	17,1	163,0	487,0
89909	3 G 1	18	6,6	23,8	88,0
89910	4 G 1	18	7,1	31,7	101,0
89911	5 G 1	18	7,8	39,6	126,0
89912	7 G 1	18	9,2	55,4	145,0
89913	9 G 1	18	11,0	71,2	168,0
89914	12 G 1	18	11,5	95,0	260,0
89915	15 G 1	18	13,2	119,0	300,0
89916	18 G 1	18	14,0	142,4	360,0
89917	25 G 1	18	17,2	197,8	640,0
89918	34 G 1	18	19,1	269,0	730,0
89919	3 G 1,5	16	7,4	44,0	94,0
89920	4 G 1,5	16	8,0	58,0	117,0
89921	5 G 1,5	16	8,8	72,0	140,0
89922	7 G 1,5	16	10,8	101,0	186,0
89923	9 G 1,5	16	12,8	129,7	244,0
89924	12 G 1,5	16	13,5	173,0	319,0
89925	18 G 1,5	16	16,0	260,0	451,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
89926	25 G 1,5	16	19,8	360,0	625,0
89927	34 G 1,5	16	22,4	490,0	840,0
89932	3 G 2,5	14	8,9	72,0	150,0
89928	4 G 2,5	14	10,1	96,0	185,0
89933	5 G 2,5	14	11,3	120,0	242,0
89929	7 G 2,5	14	13,6	168,0	293,0
89934	12 G 2,5	14	16,8	288,0	498,0
89935	3 G 4	12	10,9	115,0	231,0
89930	4 G 4	12	12,4	154,0	298,0
89936	5 G 4	12	13,8	192,0	370,0
89931	7 G 4	12	16,6	269,0	460,0
89937	4 G 6	10	14,6	231,0	430,0
89938	4 G 10	8	18,2	384,0	720,0
89939	4 G 16	6	22,6	615,0	1060,0
89940	4 G 25	4	26,5	960,0	1590,0
89941	4 G 35	2	30,8	1344,0	2105,0

Dimensions and specifications may be changed without prior notice. (RN05)

MULTIFLEX 600 highly flexible, oil-resistant, open installation

TC-ER, PLTC-ER, NFPA 79 Edition 2012



Technical data

- Highly-flexible PVC control cable according to UL-Std.1277
- **Temperature range**
  flexing -5°C to +90°C
  fixed installation -40°C to +90°C
- **Nominal voltage**
  TC 600 V
  TC Wind Turbine (WTTC) 1000 V
- **Test voltage** 3000 V
- **Minimum bending radius**
  flexing 7,5x cable Ø
- **Insulation resistance**
  min. 20 MOhm x km
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper conductor, extra-fine wire stranded, with AWG measures
- Core insulation of special PVC with transparent nylon skin
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and abovein the outer layer
- Cores stranded in layers with optimal lay-lengths
- Separator
- Outer sheath of special PVC
- Sheath colour black (RAL 9005)
- with length marking in feet

Properties

- Self-extinguishing and flame retardant in acc. to CSA FT4
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- UV-resistant

Tests

- **UL**:
  TC-ER, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12), MTW, NFPA 79 2012, WTTC 1000 V, DP-1, OIL RES I&II, 90°C dry / 75°C wet, Class 1 Div. 2 per NEC Art 336, 392, 501, crush impact test in accordance with UL 1277
- **CSA**:
  c(UL) CIC-TC FT4, CSA AWM I/II A/B FT4

Note

Advantages

- Highly-flexible, simple installation

Available on request

- with blue cores (DC)
- with red cores (AC)
- Grey or TPE outer sheath

Application

HELUKABEL® MULTIFLEX 600 is a highly-flexible, oil-resistant control cable. The special combination of TC-ER, PLTC-ER and ITC-ER allows this cable to be used as a connecting cable for industrial plant and machinery in accordance with NFPA 79 edition 2012. Approved for open, unprotected installation in cable trays to the machine. Its outstanding oil resistance (OIL RES I & II) guarantees a long service life; for industrial applications in dry, damp and wet environments. Recommended applications: production lines, bottling plants, machine construction, switch cabinets, conveyor systems, packaging machines, automotive industry. Please observe applicable installation regulations for use in energy supply chains.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
62502	2 x 0,5	20	6,9	10,0	53,0
62503	3 G 0,5	20	7,3	14,0	61,0
62504	4 G 0,5	20	8,0	19,0	72,0
62505	5 G 0,5	20	8,6	24,0	85,0
62506	7 G 0,5	20	9,9	34,0	110,0
62507	12 G 0,5	20	11,4	58,0	158,0
62508	18 G 0,5	20	14,2	86,0	241,0
62509	25 G 0,5	20	17,0	120,0	316,0
62510	34 G 0,5	20	18,9	163,0	439,0
62511	3 G 0,75	18	7,8	22,0	75,0
62512	4 G 0,75	18	8,6	29,0	91,0
62513	5 G 0,75	18	9,3	36,0	103,0
62514	7 G 0,75	18	10,8	50,0	136,0
62515	12 G 0,75	18	12,4	86,0	228,0
62516	15 G 0,75	18	13,8	108,0	273,0
62517	18 G 0,75	18	15,4	130,0	311,0
62518	25 G 0,75	18	18,5	180,0	498,0
62519	34 G 0,75	18	20,5	245,0	550,0
62520	36 G 0,75	18	20,6	259,0	570,0
62521	42 G 0,75	18	22,3	302,0	600,0
62522	3 G 1,5	16	8,6	43,0	100,0
62523	4 G 1,5	16	9,5	58,0	122,0
62524	5 G 1,5	16	10,3	72,0	148,0
62525	7 G 1,5	16	12,0	101,0	197,0
62526	9 G 1,5	16	14,2	130,0	244,0
62527	12 G 1,5	16	14,7	173,0	328,0
62528	18 G 1,5	16	17,2	259,0	459,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
62529	25 G 1,5	16	20,8	360,0	665,0
62530	34 G 1,5	16	23,0	490,0	1084,0
62531	41 G 1,5	16	25,1	590,0	1260,0
62532	50 G 1,5	16	27,7	720,0	1521,0
62533	60 G 1,5	16	29,5	864,0	1885,0
62534	3 G 2,5	14	9,8	72,0	160,0
63136	4 G 2,5	14	10,6	96,0	173,0
62535	5 G 2,5	14	11,9	120,0	268,0
62536	7 G 2,5	14	13,6	168,0	307,0
62537	9 G 2,5	14	16,1	216,0	437,0
62538	12 G 2,5	14	16,9	288,0	572,0
62539	18 G 2,5	14	20,1	432,0	800,0
62540	25 G 2,5	14	25,1	600,0	1100,0
62541	3 G 4	12	11,3	115,0	221,0
62542	4 G 4	12	12,4	154,0	247,0
62543	5 G 4	12	13,8	192,0	318,0
62544	7 G 4	12	16,9	269,0	438,0
62545	4 G 6	10	15,3	230,0	383,0
62546	5 G 6	10	16,6	288,0	481,0
62547	7 G 6	10	18,2	403,0	800,0
62548	4 G 10	8	19,7	384,0	671,0
62549	5 G 10	8	22,0	480,0	990,0
62550	4 G 16	6	23,7	614,0	951,0
62551	5 G 16	6	26,1	768,0	1500,0
62552	4 G 25	4	34,0	960,0	1700,0
62554	4 G 35	2	37,0	1344,0	2300,0

Dimensions and specifications may be changed without prior notice. (RN01)

MULTISPEED® 500-PVC UL/CSA high flexible, safety against high bending in drag chain systems, oil-resistant, low torsion, meter marking



Technical data

- Special drag chain cables for high mechanical stress in adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51 to UL-Std.758 AWM Style 21179
- **Temperature range** flexing -5°C to +80°C fixed installation -30°C to +80°C
- **Nominal voltage** VDE U_0/U 300/500 V UL 600 V
- **Test voltage** 3000 V
- **Insulation resistance** min. 100 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, fine wire conductors, Unilay with short pitch length
- Core insulation of special PP
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above
- Stranding: <7 cores: cores stranded in a layer with optimal lay-length around a filler as per construction ≥7 cores: cores stranded with optimal lay-length to bunch-construction with low torsion strength, optimal selected short lay-length around a filler
- Outer sheath special PVC, especially resistant against fatigue strength, extruded as filler with pressure
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers0

Tests

- PVC outer sheath self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1
- Low-adhesion
- Ozon and UV resistant
- High property of alternating bending strength
- longer service life due to low frictional resistance
- Better chemical resistance
- Oil resistance to DIN VDE 0473-811-404/ DIN EN 60811-404
- Reduced Ø, therefore low moving masses

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **MULTISPEED® 500-C-PVC UL/CSA**, confer page 429

N

Application

UL/CSA approved HELUKABEL® MULTISPEED® 500-PVC are installed there, where extreme requirements for the cables are necessary. Designed for the export-orientated machinery manufacturer, specifically for USA and Canada. Matched materials and stranding technique permit continuous use as a highly flexible cable for drag chains with long travel and high or slow speeds. For use in dry, damp rooms, and outdoors, with free movement without tensile stress or forced movements as a highly flexible PVC control cable suitable for frequent lifting and bending stress in engineering and tool manufacturing.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
24295	2 x 0,5	20	4,8	9,6	40,0
24296	3 G 0,5	20	5,1	14,4	45,0
24297	4 G 0,5	20	5,5	19,0	57,0
24298	5 G 0,5	20	6,0	24,0	66,0
24299	7 G 0,5	20	9,1	33,6	81,0
24300	12 G 0,5	20	10,0	58,0	133,0
24301	18 G 0,5	20	12,2	86,0	194,0
24302	25 G 0,5	20	14,3	120,0	274,0
24303	4 G 0,75	19	6,1	29,0	63,0
24304	5 G 0,75	19	6,6	36,0	79,0
24305	7 G 0,75	19	10,5	50,0	107,0
24306	12 G 0,75	19	11,4	86,0	169,0
24307	18 G 0,75	19	14,2	130,0	247,0
24308	25 G 0,75	19	16,3	180,0	366,0
24309	36 G 0,75	19	20,1	259,0	540,0
24310	42 G 0,75	19	22,2	302,0	630,0
24311	3 G 1	18	5,9	29,0	69,0
24312	4 G 1	18	6,4	38,4	86,0
24313	5 G 1	18	7,0	48,0	101,0
24314	7 G 1	18	11,2	67,0	140,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
24315	12 G 1	18	12,3	115,0	227,0
24316	18 G 1	18	15,1	173,0	351,0
24317	25 G 1	18	17,6	240,0	489,0
24318	3 G 1,5	16	6,7	43,0	88,0
24319	4 G 1,5	16	7,3	58,0	110,0
24320	5 G 1,5	16	8,0	72,0	130,0
24321	7 G 1,5	16	13,2	101,0	182,0
24322	12 G 1,5	16	14,4	173,0	319,0
24323	18 G 1,5	16	17,7	259,0	420,0
24324	25 G 1,5	16	20,5	360,0	604,0
24325	4 G 2,5	14	8,9	96,0	172,0
24326	5 G 2,5	14	9,9	120,0	219,0
24327	7 G 2,5	14	16,1	168,0	303,0
24328	12 G 2,5	14	17,8	288,0	504,0
24329	18 G 2,5	14	21,8	432,0	754,0
24330	25 G 2,5	14	24,4	600,0	940,0

Dimensions and specifications may be changed without prior notice. (RN05)

JZ-HF-FCY high flexible, cable for drag chains, oil resistant, EMC-preferred type, meter marking

NEW



Technical data

- Special PVC drag chain cable, extreme flexibility acc. to UL/CSA AWM I/II A/B Style 2570
- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage**
  VDE U_0/U 300/500 V
  UL/CSA 1000 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, fine wire conductors, to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of special PVC acc. to UL-Std.1581
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal selected lay-length
- Separating foil over each layer
- construction with Cu-screening, tinned, approx. 85%
- Minimum coverage 85%
- Outer sheath of special PVC compound type TM5 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1 acc. to UL-Std.1581
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2 / IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1
- low adhesion
- oil resistant to DIN VDE 0473-811-404 / DIN EN 60811-404

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type:
  JZ-602 RC, confer page 423
  MULTISPEED® 500-PVC UL/CSA, confer page 425

Application

UL/CSA approved, highly flexible, screened PVC drag-chain cable for laying in dry, damp and wet rooms, with free movement and without tensile load or forced movements, suitable for frequent lifting and bending stresses in the sector of machine manufacture and tool making. Thanks to the high level of shielding density, a fault-free transmission of signals or impulses is ensured. The ideal control line, offering protection against interference, for the above applications. Of interest for those machinery manufacturers, who are export orientated. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
12908	2 x 0,5	20	6,0	35,0	46,0
12909	3 G 0,5	20	6,3	42,0	56,0
12910	4 G 0,5	20	6,8	47,0	64,0
12911	5 G 0,5	20	7,4	56,0	77,0
12912	7 G 0,5	20	8,5	69,0	104,0
12913	12 G 0,5	20	10,1	108,0	158,0
12914	18 G 0,5	20	11,7	145,0	229,0
12915	25 G 0,5	20	14,0	240,0	320,0
12916	2 x 0,75	19	6,4	40,0	59,0
12917	3 G 0,75	19	6,8	52,0	68,0
12918	4 G 0,75	19	7,3	60,0	82,0
12919	5 G 0,75	19	7,9	71,0	101,0
12920	7 G 0,75	19	9,2	91,0	150,0
12921	12 G 0,75	19	11,0	142,0	212,0
12922	18 G 0,75	19	13,0	212,0	305,0
12923	25 G 0,75	19	15,8	281,0	430,0
12924	2 x 1	18	6,8	50,0	71,0
12925	3 G 1	18	7,2	60,0	90,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
12926	4 G 1	18	7,8	71,0	114,0
12927	5 G 1	18	8,4	88,0	136,0
12928	7 G 1	18	9,8	111,0	169,0
12929	12 G 1	18	12,0	184,0	270,0
12930	18 G 1	18	14,2	260,0	385,0
12931	25 G 1	18	16,8	349,0	530,0
12932	2 x 1,5	16	7,3	63,0	88,0
12933	3 G 1,5	16	7,7	80,0	104,0
12934	4 G 1,5	16	8,4	97,0	136,0
12935	5 G 1,5	16	9,1	119,0	170,0
12936	7 G 1,5	16	10,7	147,0	221,0
12937	12 G 1,5	16	13,0	267,0	348,0
12938	18 G 1,5	16	15,5	374,0	489,0
12939	25 G 1,5	16	18,7	526,0	710,0
12940	3 G 2,5	14	9,1	144,0	177,0
12941	4 G 2,5	14	9,9	148,0	204,0
12942	7 G 2,5	14	13,0	255,0	340,0
12943	4 G 4	12	11,2	230,0	310,0

Dimensions and specifications may be changed without prior notice. (RN05)

JZ-602 RC-CY special cable for drag chains, 90°C, 600 V, two approval control cable, EMC-preferred type, meter marking



Technical data

- Control cable of special-PVC to UL CSA AWM I/II A/B Style 2587 (sheath insulation) and CSA
- **Temperature range** flexing -5°C to +90°C fixed installation -40°C to +90°C (up to +105°C for short time)
- **Nominal voltage** UL/CSA 600 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min 20 MOhm x km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)
- **Coupling resistance** max. 250 Ohm/km

Cable structure

- Bare copper, extra fine wire conductors, to DIN VDE 0295 cl.6 col. 4, BS 6360 cl.5 and IEC 60228 cl.6
- Core insulation of special PVC compound type YI8 to DIN VDE 0207 part 4 and class 43 acc. to UL-Std.1581
- Core identification to DIN VDE 0293 red cores with continuous white numbering
- GN-YE conductor in the outer layer
- Cores stranded with optimal lay-length
- Core wrapping with fleece over each layer
- PVC-inner sheath
- Screening: braid coverage ca. 85% up to 17 mm Ø - layer of tinned copper wires >17 mm Ø - tinned copper wire
- Outer sheath of special PVC compound type YM5 to DIN VDE 0207 part 5, UL-Style 2587 and CSA C22.2 No 210
- Outer sheath black (RAL 9005)
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1
- UV-resistant

Note

- G = with green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **JZ-602 RC**, confer page 423

Application

These cable are used for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms. These special cables for drag chains are used for permanent flexible applications in machineries, machine tools, robot technics, for movable automated machinery parts. These cables have shown excellent performance in combination with standard cable trays. The dense screening assures disturbance-free transmission of all signals and impulses. An ideal disturbance-free control cable for the above applications. Interesting for the export-oriented machines and machinery plants. For applications which go beyond standard solutions we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

RC = Robotics Cable

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
89950	3 G 0,5	20	8,5	45,0	124,0
89951	4 G 0,5	20	9,0	52,0	135,0
89952	5 G 0,5	20	9,7	68,0	153,0
89953	7 G 0,5	20	11,0	93,0	191,0
89954	9 G 0,5	20	12,4	134,0	243,0
89955	12 G 0,5	20	13,5	163,0	322,0
89956	15 G 0,5	20	14,8	174,0	350,0
89957	18 G 0,5	20	16,0	191,0	374,0
89958	25 G 0,5	20	19,0	223,0	436,0
89959	3 G 1	18	8,9	56,0	130,0
89960	4 G 1	18	9,7	81,0	155,0
89961	5 G 1	18	10,4	90,0	181,0
89962	7 G 1	18	12,0	106,0	208,0
89963	9 G 1	18	14,1	161,0	321,0
89964	12 G 1	18	15,2	175,0	341,0
89965	15 G 1	18	16,7	204,0	396,0
89966	18 G 1	18	17,6	241,0	473,0
89967	25 G 1	18	20,7	342,0	650,0
89968	34 G 1	18	24,3	434,0	781,0
89969	3 G 1,5	16	10,2	89,0	165,0
89970	4 G 1,5	16	11,0	97,0	192,0
89971	5 G 1,5	16	11,8	111,0	224,0
89972	7 G 1,5	16	14,0	147,0	274,0
89973	9 G 1,5	16	16,4	193,0	340,0
89974	12 G 1,5	16	17,1	256,0	461,0
89975	18 G 1,5	16	20,2	360,0	674,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
89976	25 G 1,5	16	25,2	544,0	950,0
89977	34 G 1,5	16	28,1	674,0	1203,0
89984	3 G 2,5	14	11,8	141,0	220,0
89978	4 G 2,5	14	13,2	170,0	270,0
89985	5 G 2,5	14	14,2	195,0	350,0
89979	7 G 2,5	14	17,4	251,0	428,0
89986	12 G 2,5	14	21,0	368,0	730,0
89980	18 G 2,5	14	25,4	639,0	1140,0
89987	3 G 4	12	14,0	180,0	296,0
89981	4 G 4	12	15,9	232,0	456,0
89988	5 G 4	12	17,7	330,0	450,0
89982	7 G 4	12	20,9	395,0	737,0
89983	4 G 6	10	18,3	316,0	572,0
89989	4 G 10	8	23,2	490,0	1012,0
89990	4 G 16	6	27,6	850,0	1400,0
89991	4 G 25	4	33,1	1450,0	2100,0
89992	4 G 35	2	37,8	1890,0	2550,0

Dimensions and specifications may be changed without prior notice. (RN05)

MULTIFLEX 600-C highly-flexible, oil-resistant, screened,

EMC-preferred type, control cable for open installation TC-ER, PLTC-ER, NFPA 79 Edition 2012



Technical data

- Highly-flexible PVC control cable acc. to UL-Std.1277
- **Temperature range**
  flexing -5°C to +90°C
  fixed installation -40°C to +90°C
- **Nominal voltage**
  TC 600 V
  TC Wind Turbine (WTTC) 1000 V
- **Test voltage** 3000 V
- **Coupling resistance**
  max. 250 Ohm/km
- **Minimum bending radius**
  flexing 10x cable Ø
- **Insulation resistance**
  min. 20 MOhm x km
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper conductor, extra-fine wire stranded, with AWG measures
- Core insulation of special PVC with transparent nylon skin
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-lengths
- Separating foil
- Braided screening of tinned copper wires, coverage approx. 85%
- Separator
- Outer sheath of special PVC
- Sheath colour black (RAL 9005)
- with length marking in feet

Properties

- Self-extinguishing and flame retardant in acc. to CSA FT4
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- UV-resistant

Tests

- **UL**:
  TC-ER, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12), MTW, NFPA 79 2012, WTTC 1000 V, DP-1, OIL RES I&II, 90°C dry / 75°C wet, Class 1 Div. 2 per NEC Art 336, 392, 501, crush impact test in accordance with UL 1277
- **CSA**:
  c(UL) CIC-TC FT4, CSA AWM I/II A/B FT4

Note

Advantages

- Highly-flexible, simple installation

Available on request

- with blue cores (DC)
- with red cores (AC)
- Grey or TPE outer sheath

Application

HELUKABEL® MULTIFLEX 600-C is a highly-flexible, oil-resistant control cable. The special combination of TC-ER, PLTC-ER and ITC-ER allows this cable to be used as a connecting cable for industrial plant and machinery in accordance with NFPA 79 edition 2012. Approved for open, unprotected installation in cable trays to the machine. Its outstanding oil resistance (OIL RES I & II) guarantees a long service life; for industrial applications in dry, damp and wet environments. Recommended applications: Production lines, bottling plants, machine construction, switch cabinets, conveyor systems, packaging machines, automotive industry. For the use in energy drag chains please note the installation guidelines.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
62556	2 x 0,5	20	7,7	30,0	80,0
62557	3 G 0,5	20	8,0	37,0	85,0
62558	4 G 0,5	20	8,7	46,0	100,0
62559	5 G 0,5	20	9,3	54,0	113,0
62560	7 G 0,5	20	10,7	70,0	152,0
62561	12 G 0,5	20	12,3	112,0	210,0
62562	18 G 0,5	20	15,1	153,0	304,0
62563	25 G 0,5	20	18,1	225,0	408,0
62564	34 G 0,5	20	19,8	267,0	530,0
62565	3 G 0,75	18	8,5	55,0	101,0
62566	4 G 0,75	18	9,3	69,0	127,0
62567	5 G 0,75	18	10,0	82,0	148,0
62568	7 G 0,75	18	11,6	119,0	186,0
62569	12 G 0,75	18	14,1	178,0	286,0
62570	15 G 0,75	18	15,2	175,0	455,0
62571	18 G 0,75	18	16,3	252,0	383,0
62572	25 G 0,75	18	19,6	362,0	514,0
62573	34 G 0,75	18	21,9	473,0	685,0
62574	3 G 1,5	16	9,3	75,0	131,0
62575	4 G 1,5	16	10,2	93,0	165,0
62576	5 G 1,5	16	11,0	113,0	195,0
62577	7 G 1,5	16	12,9	162,0	250,0
62578	9 G 1,5	16	15,2	193,0	340,0
62579	12 G 1,5	16	15,6	249,0	393,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
62580	18 G 1,5	16	18,4	376,0	559,0
62581	25 G 1,5	16	23,1	510,0	788,0
62582	34 G 1,5	16	25,8	674,0	1203,0
62583	3 G 2,5	14	10,3	141,0	218,0
62584	4 G 2,5	14	11,5	149,0	222,0
62585	5 G 2,5	14	12,4	195,0	350,0
62586	7 G 2,5	14	15,4	243,0	373,0
62587	9 G 2,5	14	16,8	312,0	479,0
62588	12 G 2,5	14	18,5	368,0	730,0
62589	18 G 2,5	14	22,4	639,0	1140,0
62590	25 G 2,5	14	25,5	796,0	1530,0
62591	3 G 4	12	11,7	180,0	296,0
62592	4 G 4	12	13,3	221,0	305,0
62593	5 G 4	12	14,7	330,0	450,0
62594	7 G 4	12	17,8	363,0	536,0
62595	4 G 6	10	16,1	314,0	469,0
62596	5 G 6	10	17,5	441,0	772,0
62597	7 G 6	10	20,6	505,0	1028,0
62598	4 G 10	8	21,9	526,0	790,0
62599	5 G 10	8	24,1	610,0	1096,0
62600	4 G 16	6	24,8	730,0	1621,0
62602	5 G 16	6	27,2	1050,0	1759,0
62603	4 G 25	4	33,1	1450,0	2100,0
62605	4 G 35	2	37,8	1840,0	2550,0

Dimensions and specifications may be changed without prior notice. (RN01)

MULTISPEED® 500-C-PVC UL/CSA oil resistant, high flexible, safety against high bending in drag chain systems, low torsion, screened, EMC-preferred type, meter marking



Technical data

- Special drag chain cables for high mechanical stress in accordance to DIN VDE 0285-525-2-51/DIN EN 50525-2-51 and UL-Std.758 AWM Style 21179
- **Temperature range** flexing -5°C to +80°C fixed installation -30°C to +80°C
- **Nominal voltage** VDE U_0/U 300/500 V UL 600 V
- **Test voltage** 3000 V
- **Insulation resistance** min. 100 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Coupling resistance** max. 250 Ohm x km
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, fine wire conductors, Unilay with short pitch length
- Core insulation of Special PP
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above
- Stranding: <7 cores: with optimal lay length, construction due to a filling element, in a stranded position ≥7 cores: cores stranded with optimal lay-length to bunch-construction with low torsion strength, optimal selected short lay-length around a filler
- Special PVC inner sheath YM2 gusset-filling extruded, grey (RAL 7001)
- Braid of tinned copper wires, minimum coverage 85% max. with optimal braiding pitch
- Outer sheath of special PVC especially fatigue resistant
- sheath colour black (RAL 9005)
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1
- Low adhesion
- Ozon and UV resistant
- High property of alternating bending strength
- longer service life due to low friction resistance
- Better chemical resistance
- Oil resistance to DIN VDE 0473-811-404/ DIN EN 60811-404
- Higher stability
- Higher economical solution
- Reduced Ø, therefore less moving masses

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **MULTISPEED® 500-PVC UL/CSA**, confer page 425

N

Application

For permanently use on long distances, and high or low speeds. These high flexible PVC control cables are suitable for shift- and bending stresses in machines and machine tool constructions. These are installed in dry, moist rooms and in open air with free movement without tensile stress or forced movements. These screened cables are particularly suitable for the interference-free transmission in instrumentation and control engineering applications. For applications which go beyond standard solutions we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

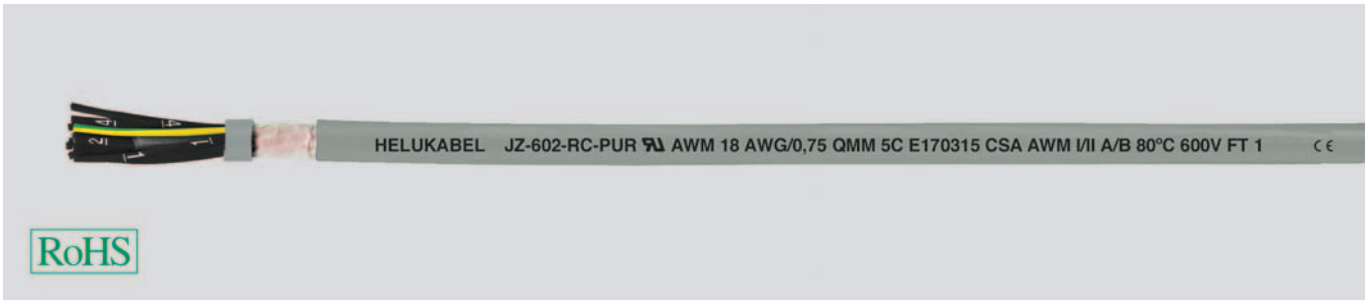
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
24335	2 x 0,5	20	6,6	30,0	88,0
24336	3 G 0,5	20	6,9	36,0	101,0
24337	4 G 0,5	20	7,3	42,0	116,0
24338	5 G 0,5	20	7,8	48,0	146,0
24339	7 G 0,5	20	11,3	64,0	181,0
24340	9 G 0,5	20	11,4	80,0	219,0
24341	12 G 0,5	20	12,6	105,0	271,0
24342	18 G 0,5	20	15,0	137,0	374,0
24343	25 G 0,5	20	17,1	210,0	542,0
24344	2 x 0,75	19	6,8	40,0	96,0
24345	3 G 0,75	19	7,4	48,0	111,0
24346	4 G 0,75	19	8,0	55,0	140,0
24347	5 G 0,75	19	8,5	66,0	161,0
24348	7 G 0,75	19	12,9	85,0	227,0
24349	12 G 0,75	19	14,4	135,0	317,0
24350	18 G 0,75	19	17,5	190,0	486,0
24351	25 G 0,75	19	19,9	275,0	651,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
24352	3 G 1	18	7,7	59,0	131,0
24353	4 G 1	18	8,3	70,0	164,0
24354	5 G 1	18	9,1	84,0	198,0
24355	7 G 1	18	14,0	106,0	252,0
24356	12 G 1	18	15,0	174,0	410,0
24357	18 G 1	18	18,7	240,0	550,0
24358	25 G 1	18	21,2	332,0	756,0
24359	3 G 1,5	16	8,6	75,0	166,0
24360	4 G 1,5	16	9,4	90,0	199,0
24361	5 G 1,5	16	10,4	108,0	229,0
24362	7 G 1,5	16	16,0	157,0	304,0
24363	12 G 1,5	16	17,6	240,0	502,0
24364	18 G 1,5	16	21,3	355,0	709,0
24365	25 G 1,5	16	24,8	448,0	939,0
24366	4 G 2,5	14	11,3	134,0	270,0
24367	5 G 2,5	14	12,3	175,0	335,0

Dimensions and specifications may be changed without prior notice. (RN05)

JZ-602 RC-PUR special cable for drag chains, 80°C, 600 V, two approval control cable, meter marking



Technical data

- Control cable of special-PUR to UL CSA AWM I/II A/B Style 20939 (sheath insulation) and CSA
- **Temperature range** flexing -5°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** UL/CSA 600 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43 to UL-Std.1581
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor in the outer layer
- Cores stranded in layers with optimal selected lay-lenght
- Core wrapping with fleece over each layer
- Outer sheath of special **full-polyurethane**
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Resistant to mineral oils, synthetic oils and coolant, UV-radiation, oxygene, ozon and hydrolysis. Conditionally resistant to microbes.
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **JZ-602 RC -C-PUR**, confer page 436

Application

These cables are used for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist, wet rooms and outdoor. These special cables for drag chains are used for permanent flexible applications in machineries, machine tools, robot technics, for movable automated machinery parts. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

RC = Robotics Cable

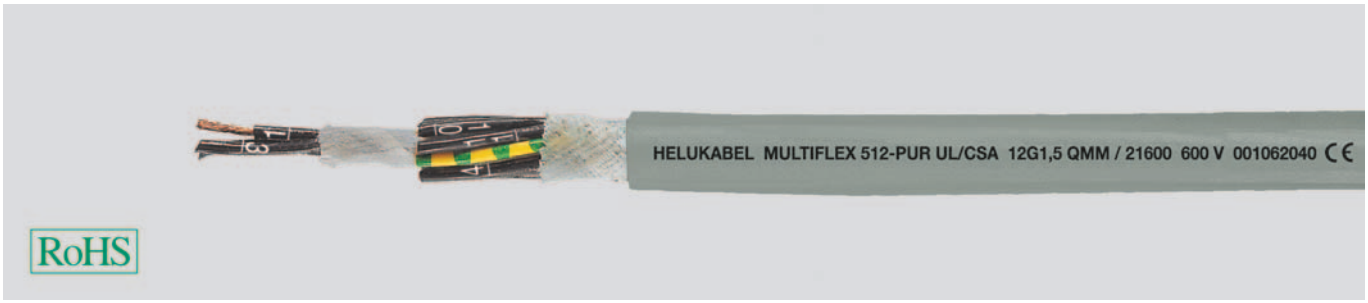
CE = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
12630	3 G 0,5	20	6,0	14,0	58,0
12631	4 G 0,5	20	6,5	19,0	69,0
12632	5 G 0,5	20	7,1	24,0	84,0
12633	7 G 0,5	20	8,2	34,0	123,0
12634	9 G 0,5	20	10,0	43,2	177,0
12635	12 G 0,5	20	10,5	58,2	192,0
12636	18 G 0,5	20	12,5	86,0	256,0
12637	25 G 0,5	20	15,2	120,0	358,0
12638	34 G 0,5	20	17,1	163,0	487,0
12639	3 G 0,75	18	6,6	23,8	88,0
12640	4 G 0,75	18	7,1	31,7	101,0
12641	5 G 0,75	18	7,8	39,6	126,0
12642	7 G 0,75	18	9,2	55,4	145,0
12643	9 G 0,75	18	11,0	86,4	168,0
12644	12 G 0,75	18	11,5	95,0	260,0
12645	15 G 0,75	18	13,2	119,0	300,0
12646	18 G 0,75	18	14,0	142,4	360,0
12647	25 G 0,75	18	17,2	197,8	640,0
12648	34 G 0,75	18	19,1	269,0	730,0
12649	3 G 1,5	16	7,4	44,0	94,0
12650	4 G 1,5	16	8,0	58,0	117,0
12651	5 G 1,5	16	8,8	72,0	140,0
12652	7 G 1,5	16	10,8	101,0	186,0
12653	9 G 1,5	16	12,8	129,7	244,0
12654	12 G 1,5	16	13,5	173,0	319,0
12655	18 G 1,5	16	16,0	260,0	451,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
12656	25 G 1,5	16	19,8	360,0	625,0
12657	34 G 1,5	16	22,4	490,0	840,0
12658	3 G 2,5	14	8,9	72,0	150,0
12659	4 G 2,5	14	10,1	96,0	185,0
12660	5 G 2,5	14	11,3	120,0	242,0
12661	7 G 2,5	14	13,6	168,0	293,0
12662	12 G 2,5	14	16,8	288,0	498,0
12663	3 G 4	12	10,9	115,0	231,0
12664	4 G 4	12	12,4	154,0	298,0
12665	5 G 4	12	13,8	192,0	370,0
12666	7 G 4	12	16,6	269,0	460,0
12667	4 G 6	10	14,6	231,0	430,0
12668	4 G 10	8	18,2	384,0	720,0
12669	4 G 16	6	22,6	615,0	1060,0
12670	4 G 25	4	26,5	960,0	1590,0
12671	4 G 35	2	30,8	1344,0	2105,0

Dimensions and specifications may be changed without prior notice. (RN05)

MULTIFLEX 512®-PUR UL/CSA special cable for drag chains, 80°C, 600 V, two approval control cable, halogen-free



Technical data

- Special drag chain cables for high mechanical stress, acc. to UL Style 20939
- **Temperature range** flexing -30°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** UL/CSA 600 V
- **Test voltage** 3000 V
- **Insulation resistance** min. 100 MOhm x km
- **Minimum bending radius** flexing 5x cable Ø fixed installation 3x cable Ø
- **Alternating bending test** tested with approx. **10 million bending cycles**
- **Radiation resistance** up to 50x10⁶ cJ/kg (up to 50 Mrad)

Cable structure

- Bare copper, extra fine wire conductors, bunch stranded to DIN VDE 0295 cl.6, col. 4, BS 6360 cl.6 and IEC 60228 cl.6
- Core insulation of special PP
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal selected lay-length
- Special core wrapping over each layer (up to 4 mm² without core wrapping over the outer layer)
- Outer sheath of special **full-polyurethane** TMPU, to DIN VDE 0207-363-10-2/ DIN EN 50363-10-2
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Very good oil resistant
- Guaranteed permanent application in multi-shift operation under extreme high bending stress
- Adhesion-low
- High resistance to mechanical strain
- High property of alternating bending strength
- Long life durabilities through low friction-resistance by using the TP insulation
- High tensile strength-, abrasion- and impact resistant at öpw temperature
- Resistant to weather, ozone and UV-radiation, solvents, acids and alkalis, and hydrolysis
- PUR outer sheath self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B) UL VW-1, CSA FT1

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- Cleanroom qualification tested with analog type. Please note "cleanroom qualified" when ordering.
- screened analogue type: **MULTIFLEX 512® -C-PUR UL/CSA**, confer page 437

N

Application

These special UL/CSA cables for drag chains are used for permanent flexible applications in machineries, machine tools, robot technics, for movable automated machinery parts and multi-shift operation. Those cables are developed according to the newest state of technology improvement. These high flexible control cables with sliding abilities guaranteed an optimum service life durabilities and also very economic by using the PP-core insulation and the PUR-outer sheath. The PUR material is adhesion-low and cut-resistant. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
21559	2 x 0,5	20	5,5	9,6	38,0
21560	3 G 0,5	20	5,8	14,4	46,0
21561	4 G 0,5	20	6,4	19,0	59,0
21562	5 G 0,5	20	7,0	24,0	68,0
21563	7 G 0,5	20	8,1	33,6	88,0
21564	12 G 0,5	20	9,9	58,0	131,0
21565	18 G 0,5	20	11,5	86,0	197,0
21566	20 G 0,5	20	12,0	96,0	260,0
21567	25 G 0,5	20	13,7	120,0	282,0
21568	30 G 0,5	20	14,3	144,0	315,0
21569	36 G 0,5	20	15,3	172,0	374,0

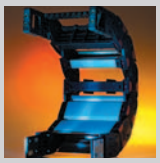
Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
21570	2 x 0,75	19	6,2	14,4	47,0
21571	3 G 0,75	19	6,5	21,6	58,0
21572	4 G 0,75	19	7,0	29,0	69,0
21573	5 G 0,75	19	7,8	36,0	85,0
21574	7 G 0,75	19	9,0	50,0	118,0
21575	12 G 0,75	19	11,0	86,0	183,0
21576	18 G 0,75	19	13,0	130,0	270,0
21577	20 G 0,75	19	13,5	144,0	290,0
21578	25 G 0,75	19	15,4	180,0	374,0
21579	30 G 0,75	19	16,2	216,0	420,0
21580	36 G 0,75	19	17,6	259,0	498,0

Continuation ▸

MULTIFLEX 512®-PUR UL/CSA special cable for drag chains, 80°C, 600 V, two approval control cable, halogen-free

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
21581	2 x 1	18	6,9	19,2	55,0
21582	3 G 1	18	7,4	29,0	70,0
21583	4 G 1	18	8,0	38,0	86,0
21584	5 G 1	18	8,7	48,0	102,0
21585	7 G 1	18	10,2	67,0	143,0
21586	12 G 1	18	12,6	115,0	225,0
21587	18 G 1	18	14,8	173,0	334,0
21588	20 G 1	18	15,8	192,0	370,0
21589	25 G 1	18	18,1	240,0	460,0
21590	30 G 1	18	18,5	288,0	530,0
21591	36 G 1	18	20,1	346,0	625,0
21592	41 G 1	18	22,0	410,0	779,0
21593	50 G 1	18	24,0	498,0	953,0
21594	65 G 1	18	27,2	650,0	1205,0
21595	2 x 1,5	16	7,6	29,0	70,0
21596	3 G 1,5	16	8,1	43,0	90,0
21597	4 G 1,5	16	8,7	58,0	106,0
21598	5 G 1,5	16	9,7	72,0	145,0
21599	7 G 1,5	16	11,3	101,0	205,0
21600	12 G 1,5	16	13,8	173,0	320,0
21601	18 G 1,5	16	16,3	259,0	465,0
21602	20 G 1,5	16	17,3	288,0	510,0
21603	25 G 1,5	16	19,8	360,0	650,0
21604	30 G 1,5	16	20,3	432,0	750,0
21605	36 G 1,5	16	22,2	518,0	880,0
21606	42 G 1,5	16	24,0	628,0	1209,0
21607	50 G 1,5	16	26,2	749,0	1449,0
21608	61 G 1,5	16	28,9	912,0	1712,0
21609	2 x 2,5	14	9,2	48,0	115,0
21610	3 G 2,5	14	9,7	72,0	162,0
21611	4 G 2,5	14	10,5	96,0	196,0
21612	5 G 2,5	14	11,6	120,0	230,0
21613	7 G 2,5	14	13,8	168,0	312,0
21614	12 G 2,5	14	16,9	288,0	532,0
21615	18 G 2,5	14	20,0	432,0	762,0
21616	20 G 2,5	14	21,2	480,0	858,0
21617	25 G 2,5	14	24,4	600,0	998,0
21618	4 G 4	12	13,2	154,0	283,0
21619	5 G 4	12	14,6	192,0	349,0
21620	7 G 4	12	17,6	79,0	498,0
21621	4 G 6	10	14,4	230,0	432,0
21622	5 G 6	10	15,9	288,0	529,0
21623	7 G 6	10	19,2	403,0	782,0
21624	4 G 10	8	18,4	384,0	685,0
21625	5 G 10	8	20,7	480,0	817,0
21626	7 G 10	8	24,7	672,0	1023,0
21627	4 G 16	6	21,3	614,0	1042,0
21628	5 G 16	6	23,8	768,0	1292,0
21629	7 G 16	6	28,6	1075,0	1709,0

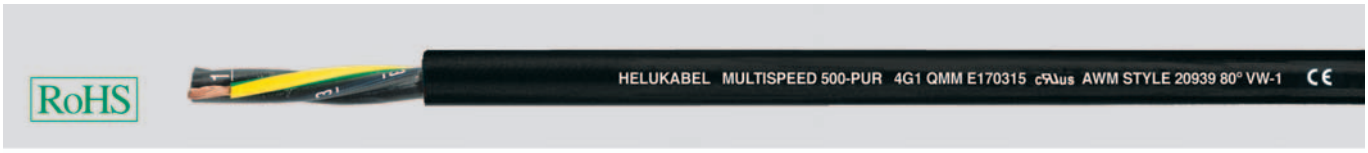
Dimensions and specifications may be changed without prior notice. (RN05)



Suitable Cable drag chains can be found in our Cable Accessories catalogue.

MULTISPEED® 500-PUR UL/CSA safety against high

bending in drag chain systems, low torsion, halogen-free, meter marking



Technical data

- Special drag chain cables for high mechanical stress in adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51, DIN VDE 0285-525-2-21/ DIN EN 50525-2-21 and UL-Std.758 AWM Style 20939
- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -40°C to +80°C
  Nominal voltage
  DIN VDE U_0/U 300/500 V
  UL 600 V
- **Test voltage** 3000 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Minimum bending radius**
  flexing 7,5x cable Ø
  fixed installation 4x cable Ø
- **Radiation resistance**
  up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper, fine wire conductors, unilay with short pitch length
- Core insulation of special PP
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above
- Stranding:
  <7 cores: cores stranded in a layer with optimal lay-length around a filler as per contruction
- ≥7 cores: cores stranded with optimal lay-length to bunch-construction with low torsion strength, optimal selected short lay-length around a filler
- Outer sheath of special-PUR
- extruded as filler with pressure
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PUR-sheath flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1
- low adhesion
- halogen-free
- Higher economical solution
- High resistant to mechanical strain
- Long life durabilitys due to low friction-resistance
- High tensile strenght, abrasion- and impact resistance at low temperature
- Tear resistance
- Hight stability
- Oil resistance
- Better chemical resistance
- UV and ozone resistance
- Increased economic efficiency
- Reduced Ø, therefore less moving masses

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type:
  MULTISPEED® 500-C-PUR UL/CSA,
  confer page 439

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Application

UL/CSA approved HELUKABEL® MULTISPEED® 500-PUR are installed there, where the extreme requirements for the cables are necessary. The selected materials and lay-up technique permit these high flexible cables for permanent application in drag chains for long distances, high an slow speed of movements. These cables are installed in dry, moist and wet rooms and in open air with free movement without tensile stress or forced movements. These robust and abrasion resistant special control cables are installed there, where the problems appear for the application in permanent stresses e. g. in energy drag chains, industry robotics, production lines, automatic control systems and permanent movable machinery parts for multi-shift operation. These cables are installed everywhere, where high requirements for the flexibility, abrasion, oxygen and chemical resistance are necessary. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
24370	2 x 0,5	20	4,8	9,6	41,0
24371	3 G 0,5	20	5,1	14,4	48,0
24372	4 G 0,5	20	5,5	19,0	62,0
24373	5 G 0,5	20	6,0	24,0	70,0
24374	7 G 0,5	20	9,1	33,6	88,0
24375	12 G 0,5	20	10,0	58,0	131,0
24376	18 G 0,5	20	12,2	86,0	204,0
24377	25 G 0,5	20	14,3	120,0	266,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
24378	3 G 0,75	19	5,2	21,6	51,0
24379	4 G 0,75	19	6,1	29,0	68,0
24380	5 G 0,75	19	6,6	36,0	73,0
24381	7 G 0,75	19	10,5	50,0	92,0
24382	12 G 0,75	19	11,4	86,0	170,0
24383	18 G 0,75	19	14,2	130,0	257,0
24384	25 G 0,75	19	16,3	180,0	280,0
24385	36 G 0,75	19	20,1	260,0	411,0
24386	42 G 0,75	19	22,2	302,0	608,0

Continuation ▸

MULTISPEED® 500-PUR UL/CSA safety against high

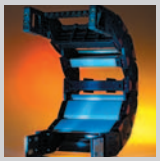
bending in drag chain systems, low torsion, halogen-free, meter marking



Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
24387	3 G 1	18	5,9	29,0	59,0
24388	4 G 1	18	6,4	38,0	71,0
24389	5 G 1	18	7,0	48,0	84,0
24390	7 G 1	18	11,2	67,0	111,0
24391	12 G 1	18	12,3	115,0	200,0
24392	18 G 1	18	15,1	173,0	286,0
24393	25 G 1	18	17,6	240,0	370,0
24331	36 G 1	18	21,6	346,0	485,0
24394	3 G 1,5	16	6,7	43,0	81,0
24395	4 G 1,5	16	7,3	58,0	102,0
24396	5 G 1,5	16	8,0	72,0	121,0
24397	7 G 1,5	16	13,2	101,0	164,0
24398	12 G 1,5	16	15,0	173,0	293,0
24399	18 G 1,5	16	17,7	259,0	450,0
24400	25 G 1,5	16	20,5	360,0	631,0
24332	36 G 1,5	16	25,6	518,0	779,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
24401	4 G 2,5	14	8,9	86,0	173,0
24402	5 G 2,5	14	9,8	120,0	220,0
24403	7 G 2,5	14	16,1	168,0	290,0
24404	12 G 2,5	14	17,8	288,0	504,0
24405	18 G 2,5	14	21,8	432,0	719,0
24406	25 G 2,5	14	24,4	600,0	940,0

Dimensions and specifications may be changed without prior notice. (RN05)



Suitable Cable drag chains can be found in our Cable Accessories catalogue.

PURö-JZ-HF-FCP high flexible, cable for drag chains, oil resistant,

EMC-preferred type, meter marking

NEW



Technical data

- Special PUR drag chain cable, extreme flexibility acc. to UL/CSA AWM I/II A/B Style 21223
- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage**
  VDE U_0/U 300/500 V
  UL/CSA 1000 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km
- **Radiation resistance**
  up to 80x10^6 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, fine wire conductors, to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of special PVC acc. to UL-Std.1581
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal selected lay-length
- Separating foil over each layer
- construction with Cu-screening, tinned, approx. 85%
- Minimum coverage 85%
- Outer sheath of special full-polyurethane to DIN VDE 0207-363-10-2/ DIN EN 50363-10-12 acc. to UL-Std.1581
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2 / IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1
- Suitable for outdoor lying
- resistant to UV-radiation,oxygen, Ozone,Hydrolyzeandmicrobes
- low adhesion
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- oil resistant to DIN VDE 0473-811-404 / DIN EN 60811-404

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- analouge type:
  JZ-602 RC-PUR

Application

UL/CSA approved, highly flexible, screened PUR drag-chain cable for laying in dry, damp, wet rooms and outside, with free movement and without tensile load or forced movements, suitable for frequent lifting and bending stresses in the sector of machine manufacture and tool making. Thanks to the high level of shielding density, a fault-free transmission of signals or impulses is ensured. The ideal control line, offering protection against interference, for the above applications. Of interest for those machinery manufacturers, who are export orientated. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

N

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
12944	2 x 0,5	20	6,0	35,0	46,0
12945	3 G 0,5	20	6,3	42,0	56,0
12946	4 G 0,5	20	6,8	47,0	64,0
12947	5 G 0,5	20	7,4	56,0	77,0
12948	7 G 0,5	20	8,5	69,0	104,0
12949	12 G 0,5	20	10,1	108,0	158,0
12950	18 G 0,5	20	11,7	145,0	229,0
12951	25 G 0,5	20	14,0	240,0	320,0
12952	2 x 0,75	19	6,4	40,0	59,0
12953	3 G 0,75	19	6,8	52,0	68,0
12954	4 G 0,75	19	7,3	60,0	82,0
12955	5 G 0,75	19	7,9	71,0	101,0
12956	7 G 0,75	19	9,2	91,0	150,0
12957	12 G 0,75	19	11,0	142,0	212,0
12958	18 G 0,75	19	13,0	212,0	305,0
12959	25 G 0,75	19	15,8	281,0	430,0
12960	2 x 1	18	6,8	50,0	71,0
12961	3 G 1	18	7,2	60,0	90,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
12962	4 G 1	18	7,8	71,0	114,0
12963	5 G 1	18	8,4	88,0	136,0
12964	7 G 1	18	9,8	111,0	169,0
12965	12 G 1	18	12,0	184,0	270,0
12966	18 G 1	18	14,2	260,0	385,0
12967	25 G 1	18	16,8	349,0	530,0
12968	2 x 1,5	16	7,3	63,0	88,0
12969	3 G 1,5	16	7,7	80,0	104,0
12970	4 G 1,5	16	8,4	97,0	136,0
12971	5 G 1,5	16	9,1	119,0	170,0
12972	7 G 1,5	16	10,7	147,0	221,0
12973	12 G 1,5	16	13,0	267,0	348,0
12974	18 G 1,5	16	15,5	374,0	489,0
12975	25 G 1,5	16	18,7	526,0	710,0
12976	3 G 2,5	14	9,1	144,0	177,0
12977	4 G 2,5	14	9,9	148,0	204,0
12978	7 G 2,5	14	13,0	255,0	340,0
12979	4 G 4	12	11,2	230,0	310,0

Dimensions and specifications may be changed without prior notice. (RN05)

JZ-602 RC-C-PUR special cable for drag chains, 80°C, 600 V, two approval control cable, EMC-preferred type, meter marking



Technical data

- Control cable of special-PUR to UL CSA AWM I/II A/B Style 20939 (sheath insulation) and CSA
- **Temperature range** flexing -5°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** UL/CSA 600 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min 20 MOhm x km
- **Minimum bending radius** flexing 10x cable Ø fixed installation 5x cable Ø
- **Coupling resistance** max. 250 Ohm/km
- **Radiation resistance** up 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper, extra fine wire conductors, to DIN VDE 0295 cl.6, BS 6360 cl.6 and IEC 60228 cl.6
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3/ DIN EN 50363-3 and class 43 acc. to UL-Std.1581
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor in the outer layer
- Cores stranded with optimal lay-length
- Wrapped of fleece over each layer
- PVC-inner sheath
- Screening: up to 17 mm Ø - layer of tinned copper wires >17 mm Ø - tinned copper wire braid coverage ca. 85%
- Outer sheath of special **Full-polyurethane**
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Resistant to mineral oils, synthetic oils and coolant, UV-radiation, oxygene, ozon and hydrolysis. Conditionally resistant to microbes.
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **JZ-602 RC PUR**, confer page 430

Application

These cable are used for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist, wet rooms and outdoor. These special cables for drag chains are used for permanent flexible applications in machineries, machine tools, robot technics, for movable automated machinery parts. The dense screening assures disturbance-free transmission of all signals and impulses. An ideal disturbance-free control cable for the above applications. For applications which go beyond standard solutions we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

RC = Robotics Cable

CE = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

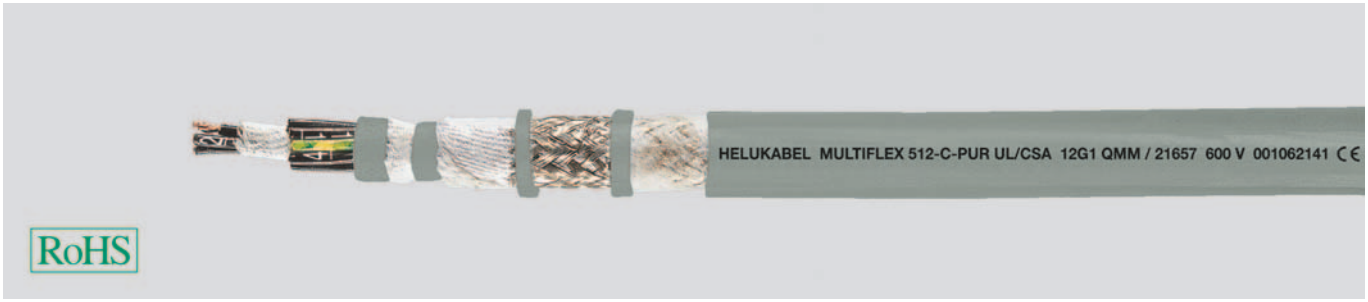
Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
12680	3 G 0,5	20	8,5	45,0	124,0
12681	4 G 0,5	20	9,0	52,0	135,0
12682	5 G 0,5	20	9,7	68,0	153,0
12683	7 G 0,5	20	11,0	93,0	191,0
12684	9 G 0,5	20	12,4	134,0	243,0
12685	12 G 0,5	20	13,5	163,0	322,0
12686	15 G 0,5	20	14,8	174,0	350,0
12687	18 G 0,5	20	16,0	191,0	374,0
12688	25 G 0,5	20	19,0	223,0	436,0
12689	3 G 0,75	18	8,9	56,0	130,0
12690	4 G 0,75	18	9,7	81,0	155,0
12691	5 G 0,75	18	10,4	90,0	181,0
12692	7 G 0,75	18	12,0	106,0	208,0
12693	9 G 0,75	18	14,1	161,0	321,0
12694	12 G 0,75	18	15,2	175,0	341,0
12695	15 G 0,75	18	16,7	204,0	396,0
12696	18 G 0,75	18	17,6	241,0	473,0
12697	25 G 0,75	18	20,7	342,0	650,0
12698	34 G 0,75	18	24,3	434,0	781,0
12699	3 G 1,5	16	10,2	89,0	165,0
12700	4 G 1,5	16	11,0	97,0	192,0
12701	5 G 1,5	16	11,8	111,0	224,0
12702	7 G 1,5	16	14,0	147,0	274,0
12703	9 G 1,5	16	16,4	193,0	340,0
12704	12 G 1,5	16	17,1	256,0	461,0
12705	18 G 1,5	16	20,2	360,0	674,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
12706	25 G 1,5	16	25,2	544,0	950,0
12707	34 G 1,5	16	28,1	674,0	1203,0
12708	3 G 2,5	14	11,8	141,0	220,0
12709	4 G 2,5	14	13,2	170,0	270,0
12710	5 G 2,5	14	14,2	195,0	350,0
12711	7 G 2,5	14	17,4	251,0	428,0
12712	12 G 2,5	14	21,0	368,0	730,0
12713	18 G 2,5	14	25,4	639,0	1140,0
12714	3 G 4	12	14,0	180,0	296,0
12715	4 G 4	12	15,9	232,0	456,0
12716	5 G 4	12	17,7	330,0	450,0
12717	7 G 4	12	20,9	395,0	737,0
12718	4 G 6	10	18,3	316,0	572,0
12719	4 G 10	8	23,2	490,0	1012,0
12720	4 G 16	6	27,6	850,0	1400,0
12721	4 G 25	4	33,1	1450,0	2100,0
12722	4 G 35	2	37,8	1890,0	2550,0

Dimensions and specifications may be changed without prior notice. (RN05)

MULTIFLEX 512®-C-PUR UL/CSA special cable for

drag chains, 80°C, 600 V, two approval control cable, EMC-preferred type, halogen-free, meter marking



Technical data

- Special drag chain cables for extreme mechanical stress to UL-Style 20939
- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage** UL/CSA 600 V
- **Test voltage** 3000 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Minimum bending radius**
  flexing 7,5x cable Ø
  fixed installation 4x cable Ø
- **Alternating bending test**
  tested with approx. **10 million bending cycles**
- **Radiation resistance**
  up to 50x10⁶ cJ/kg (up to 50 Mrad)
- **Coupling resistance**
  max. 250 Ohm/km

Cable structure

- Bare copper, extra fine wire conductors, bunch stranded to DIN VDE 0295 cl.6, col. 4, BS 6360 cl.6 and IEC 60228 cl.6
- Core insulation of special PP
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal selected lay-length
- Special core wrapping over each layers and an additional fleece over outer layer
- **TPE-inner sheath**, halogen-free
- Wrapping with special tapes
- Tinned copper braided screening, approx. 85% coverage
- Special core wrapping of fleece (up to 4 mm² without core wrapping over the outer layer)
- Outer sheath of special **full-polyurethane** TMPU, to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Very good oil resistant
- Guaranteed permanent application in multi-shift operation under extreme high bending stress
- Adhesion-low
- High resistant to mechanical strain
- High property of alternating bending strength
- Long lifedurabilities through low fiction-resistance by using the TPE insulation
- High tensile strength-, abrasion and impact resistant at low temperature
- Resistant to Weather, Ozone, UV-radiation, Solvents, Acids and Alkalis, Hydraulic liquidity and Hydrolysis
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PUR-sheath flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2 / IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- Please note the cleanroom qualification when ordering.
- unscreened analogue type: **MULTIFLEX 512® PUR UL/CSA**, confer page 431

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Application

The special screened UL/CSA cables for drag chains are mainly applied for impulse transmission to prevent external interference effects and used for permanent flexible applications in machineries, machine tools, robot technics, for movable automated machinery parts and multi-shift operation. Those cables are developed according to the newest state of technology improvement. These high flexible control cables with sliding abilities guaranteed an optimum service life durabilities and also very economic by using the PP-core insulation and the PUR-outer sheath which is adhesive-free and cut-resistant.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
21630	2 x 0,5	20	8,3	30,0	90,0
21631	3 G 0,5	20	8,5	38,0	105,0
21632	4 G 0,5	20	9,0	50,0	124,0
21633	5 G 0,5	20	9,7	65,0	132,0
21634	7 G 0,5	20	11,1	70,0	175,0
21635	12 G 0,5	20	12,7	100,0	250,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
21636	18 G 0,5	20	14,7	157,0	325,0
21637	20 G 0,5	20	15,4	167,0	350,0
21638	25 G 0,5	20	17,1	240,0	450,0
21639	30 G 0,5	20	17,9	273,0	510,0
21640	36 G 0,5	20	19,2	306,0	580,0

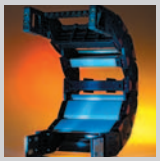
Continuation ▸

MULTIFLEX 512®-C-PUR UL/CSA special cable for

drag chains, 80°C, 600 V, two approval control cable, EMC-preferred type, halogen-free, meter marking

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
21641	2 x 0,75	19	8,8	39,0	110,0
21642	3 G 0,75	19	9,3	49,0	120,0
21643	4 G 0,75	19	9,7	60,0	148,0
21644	5 G 0,75	19	10,5	70,0	160,0
21645	7 G 0,75	19	11,9	95,0	205,0
21646	12 G 0,75	19	14,2	140,0	308,0
21647	18 G 0,75	19	16,3	220,0	420,0
21648	20 G 0,75	19	16,9	249,0	450,0
21649	25 G 0,75	19	19,2	313,0	579,0
21650	30 G 0,75	19	19,7	470,0	630,0
21651	36 G 0,75	19	21,2	500,0	745,0
21652	2 x 1	18	9,7	50,0	120,0
21653	3 G 1	18	10,0	60,0	135,0
21654	4 G 1	18	10,8	73,0	173,0
21655	5 G 1	18	11,7	81,0	187,0
21656	7 G 1	18	13,4	114,0	240,0
21657	12 G 1	18	16,0	186,0	360,0
21658	18 G 1	18	18,5	254,0	498,0
21659	20 G 1	18	19,4	322,0	568,0
21660	25 G 1	18	21,7	377,0	670,0
21661	30 G 1	18	22,5	429,0	774,0
21662	36 G 1	18	24,3	516,0	895,0
21663	41 G 1	18	26,1	610,0	1032,0
21664	50 G 1	18	28,4	690,0	1160,0
21665	65 G 1	18	32,2	852,0	1660,0
21666	2 x 1,5	16	10,2	64,0	145,0
21667	3 G 1,5	16	11,0	84,0	168,0
21668	4 G 1,5	16	11,6	99,0	217,0
21669	5 G 1,5	16	12,6	129,0	235,0
21670	7 G 1,5	16	14,5	148,0	325,0
21671	12 G 1,5	16	17,4	279,0	481,0
21672	18 G 1,5	16	19,9	393,0	675,0
21673	25 G 1,5	16	23,7	584,0	927,0
21674	30 G 1,5	16	24,6	607,0	1025,0
21675	36 G 1,5	16	26,4	702,0	1210,0
21676	42 G 1,5	16	28,4	829,0	1441,0
21677	50 G 1,5	16	31,2	1025,0	1709,0
21678	61 G 1,5	16	34,2	1190,0	2025,0
21679	2 x 2,5	14	11,9	104,0	198,0
21680	3 G 2,5	14	12,6	140,0	284,0
21681	4 G 2,5	14	13,6	164,0	378,0
21682	5 G 2,5	14	14,7	190,0	423,0
21683	7 G 2,5	14	17,4	236,0	486,0
21684	12 G 2,5	14	20,9	390,0	756,0
21685	18 G 2,5	14	24,2	607,0	1127,0
21686	20 G 2,5	14	25,6	661,0	1210,0
21687	25 G 2,5	14	29,1	796,0	1530,0
21688	4 G 4	12	16,8	222,0	448,0
21689	5 G 4	12	18,4	328,0	533,0
21690	7 G 4	12	21,6	360,0	678,0
21691	4 G 6	10	18,1	305,0	636,0
21692	5 G 6	10	19,6	441,0	772,0
21693	7 G 6	10	23,2	505,0	1028,0
21694	4 G 10	8	22,5	485,0	1052,0
21695	5 G 10	8	24,7	610,0	1096,0
21696	7 G 10	8	29,3	820,0	1530,0
21697	4 G 16	6	25,7	840,0	1386,0
21698	5 G 16	6	28,2	1050,0	1759,0
21699	7 G 16	6	33,6	1510,0	2087,0

Dimensions and specifications may be changed without prior notice. (RN05)



Suitable Cable drag chains can be found in our Cable Accessories catalogue.

MULTISPEED® 500-C-PUR UL/CSA safety against

high bending in drag chain systems, low torsion, halogen-free, EMC-preferred type, meter marking



Technical data

- Special drag chain cables for high mechanical stress in adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51, DIN VDE 0285-525-2-21/ DIN EN 50525-2-21 and UL-Std.758 AWM Style 20939
- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -40°C to +80°C
  Nominal voltage
  VDE U_0/U 300/500 V
  UL 600 V
- **Test voltage** 3000 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Minimum bending radius**
  flexing 7,5x cable Ø
  fixed installation 4x cable Ø
- **Coupling resistant**
  max. 250 Ohm/km
- **Radiation resistance**
  up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper, fine wire conductors, Unilay with short pitch length
- Core insulation of special PP
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above
- Stranding:
  <7 cores: cores stranded in a layer with optimal lay-length around a filler as pe construction
  ≥7 cores: cores stranded with optimal lay-length to bunch-construction with low torsion strength, optimal selected short lay-length around a filler
- Special-TPE-O inner sheath, extruded as filler with pressure, grey RAL 7001
- Tinned copper braided screen, coverage 85% max., with optimal pitch
- Outer sheath of special PUR
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PUR-sheath flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2 / IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1
- Low adhesion
- High property of alternating bending strength
- Longer service life due to low frictional resistance
- High tensile, abrasion and impact resistance even at low temperatures
- Higher notch toughness
- Higher stability
- Oil resistance
- Better chemical resistance
- UV and ozone resistance
- Higher economical solution
- Reduced Ø, therefore less moving masses

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type:
  MULTISPEED® 500-PUR UL/CSA,
  confer page 433

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Application

UL/CSA approved HELUKABEL® MULTISPEED® 500-C-PUR is used in applications where extreme requirements placed on the line. Designed for the export-orientated machinery manufacturer, specifically for USA and Canada. The selected materials and lay-up technique permit these high flexible cables for permanent application in drag chains for long distances, high an slow speed of movements. These cables are installed in dry, moist and wet rooms and in open air with free movement without tensile stress or forced movements. These robust and abrasion resistant special control cables are installed there, where the problems appear for the application in permanent stresses e. g. in energy drag chains, industry robotics, production lines, automatic control systems and permanent movable machinery parts for multi-shift operation. These cables are installed everywhere, where high requirements for the flexibility, abrasion, oxygen and chemical resistance are necessary. These screened cables are particularly suitable for the interference-free transmission in instrumentation and control engineering applications. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
24410	2 x 0,5	20	6,6	30,0	90,0
24411	3 G 0,5	20	6,9	36,0	104,0
24412	4 G 0,5	20	7,3	42,0	118,0
24413	5 G 0,5	20	7,8	48,0	148,0
24414	7 G 0,5	20	11,3	64,0	184,0
24415	9 G 0,5	20	11,4	80,0	219,0
24416	12 G 0,5	20	12,6	105,0	276,0
24417	18 G 0,5	20	15,0	137,0	378,0
24418	25 G 0,5	20	17,5	210,0	547,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
24419	2 x 0,75	19	6,8	40,0	100,0
24420	3 G 0,75	19	7,4	48,0	117,0
24421	4 G 0,75	19	8,0	55,0	143,0
24422	5 G 0,75	19	8,5	66,0	167,0
24423	7 G 0,75	19	12,9	85,0	229,0
24424	12 G 0,75	19	14,4	135,0	319,0
24425	18 G 0,75	19	17,5	190,0	492,0
24426	25 G 0,75	19	19,9	275,0	659,0

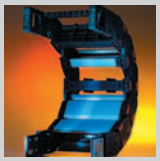
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MULTISPEED® 500-C-PUR UL/CSA safety against

high bending in drag chain systems, low torsion, halogen-free, EMC-preferred type, meter marking

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
24427	2 x 1	18	7,1	50,0	120,0
24428	3 G 1	18	7,7	59,0	140,0
24429	4 G 1	18	8,3	70,0	167,0
24430	5 G 1	18	9,1	84,0	201,0
24431	7 G 1	18	14,0	106,0	256,0
24432	12 G 1	18	15,0	174,0	417,0
24433	18 G 1	18	18,7	240,0	557,0
24434	25 G 1	18	21,4	332,0	766,0
24333	36 G 1	18	26,1	436,0	840,0
24435	3 G 1,5	16	8,6	75,0	170,0
24436	4 G 1,5	16	9,4	90,0	204,0
24437	5 G 1,5	16	10,4	108,0	236,0
24438	7 G 1,5	16	16,0	157,0	309,0
24439	12 G 1,5	16	17,6	240,0	509,0
24440	18 G 1,5	16	21,3	355,0	718,0
24441	25 G 1,5	16	24,8	448,0	944,0
24334	36 G 1,5	16	30,3	592,0	1070,0
24442	4 G 2,5	14	11,3	134,0	280,0
24443	5 G 2,5	14	12,3	175,0	346,0
24444	7 G 2,5	14	19,9	229,0	410,0

Dimensions and specifications may be changed without prior notice. (RN05)



Suitable Cable drag chains can be found in our Cable Accessories catalogue.

MULTISPEED® 500-TPE UL/CSA high flexible,

safety against high bending in drag chain systems, low torsion, halogen-free, meter marking



Technical data

- Special drag chain cables for high mechanical stress in acc. to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51 and UL-Std.758 AWM Style 20841 and 21184
- **Temperature range** flexing -30°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** VDE U_0/U 300/500 V UL 600 V
- **Test voltage** 3000 V
- **Insulation resistance** min. 100 MOhm x km
- **Minimum bending radius** flexing 5x cable Ø fixed installation 3x cable Ø
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Tinned copper, fine wire conductors Unilay with short pitch length
- Core insulation of special PP
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above
- Stranding: <7 cores: cores stranded in a layer with optimal lay-length around a filler as per construction ≥7 cores: cores stranded with optimal lay-length to bunch-construction with low torsion strength, optimal selected short lay-length around a filler
- Outer sheath of special-TPE-O, extruded as filler with pressure
- Sheath colour ocean blue (RAL 5020)
- with meter marking
- **TPE**: The selected tinned copper wire conductor permits the installation in aggressive environments as well as hydrogen sulfide, ammonia and sulfur dioxide

Properties

- Microbe-resistance - TPE
- High property of alternating bending strength
- Long life durabilitys due to low friction-resistance
- High tensile strength, abrasion and impact resistance at low temperature
- Extremely high bending loads
- Low adhesion
- Halogen-free
- Higher notch toughness
- Oil resistance
- Better chemical resistance
- UV and ozone resistance
- Higher economical solution
- Reduced Ø, therefore less moving masses
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- Cleanroom qualification tested with analog
- type. Please note "cleanroom qualified" when ordering.
- screened analogue type: **MULTISPEED® 500-C-TPE UL/CSA**, confer page 443

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Application

The selected materials and lay-up technique permit these high flexible cables for permanent application in drag chains for long distances, high an slow speed of movements. These cables are installed in dry, moist and wet rooms and in open air with free movement without tensile stress or forced movements. These robust and abrasion resistant special control cables are installed there, where the problems appear for the application in permanent stresses e. g. in energy drag chains, industry robotics, production lines, automatic control systems and permanent movable machinery parts for multi-shift operation. These cables are installed everywhere, where high requirements for the flexibility, abrasion, oxygen and chemical resistance are necessary. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
24450	2 x 0,5	20	4,7	9,6	42,0
24451	3 G 0,5	20	5,0	14,4	49,0
24452	4 G 0,5	20	5,4	19,0	63,0
24453	5 G 0,5	20	5,8	24,0	70,0
24454	7 G 0,5	20	8,9	33,6	90,0
24455	12 G 0,5	20	9,8	58,0	134,0
24456	18 G 0,5	20	11,9	86,0	209,0
24457	25 G 0,5	20	13,9	120,0	270,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
24458	2 x 0,75	19	5,0	14,4	47,0
24459	3 G 0,75	19	5,2	21,6	55,0
24460	4 G 0,75	19	6,1	29,0	70,0
24461	5 G 0,75	19	6,6	36,0	74,0
24462	7 G 0,75	19	10,5	50,0	95,0
24463	12 G 0,75	19	11,4	86,0	174,0
24464	18 G 0,75	19	14,2	130,0	261,0
24465	25 G 0,75	19	16,3	180,0	290,0
24466	36 G 0,75	19	19,5	260,0	419,0
24467	42 G 0,75	19	21,3	302,0	614,0

Continuation ▸

MULTISPEED® 500-TPE UL/CSA high flexible,

safety against high bending in drag chain systems, low torsion, halogen-free, meter marking

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
24468	2 x 1	18	5,2	19,2	50,0
24469	3 G 1	18	5,9	29,0	60,0
24470	4 G 1	18	6,4	38,0	74,0
24471	5 G 1	18	7,0	48,0	86,0
24472	7 G 1	18	11,2	67,0	114,0
24473	12 G 1	18	12,3	115,0	210,0
24474	18 G 1	18	15,1	173,0	291,0
24475	25 G 1	18	17,6	240,0	380,0
24476	3 G 1,5	16	6,7	43,0	84,0
24477	4 G 1,5	16	7,3	58,0	108,0
24478	5 G 1,5	16	8,0	72,0	126,0
24479	7 G 1,5	16	13,2	101,0	169,0
24480	12 G 1,5	16	14,4	173,0	299,0
24481	18 G 1,5	16	17,7	259,0	460,0
24482	25 G 1,5	16	19,8	360,0	640,0
24483	4 G 2,5	14	8,9	96,0	179,0
24484	5 G 2,5	14	9,8	120,0	230,0
24485	7 G 2,5	14	16,1	168,0	294,0
24486	12 G 2,5	14	17,8	288,0	510,0
24487	18 G 2,5	14	21,8	432,0	722,0
24488	25 G 2,5	14	24,4	600,0	950,0

Dimensions and specifications may be changed without prior notice. (RN05)



Suitable Cable drag chains can be found in our Cable Accessories catalogue.

MULTISPEED® 500-C-TPE UL/CSA safety against

high bending in drag chain systems, low torsion, halogen-free, EMC-preferred type, meter marking





Technical data

- Special drag chain cables for high mechanical stress in adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51 and UL-Std.758 AWM Style 21184
- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage**
  U_0/U 300/500 V
  UL 600 V
- **Test voltage** 3000 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Minimum bending radius**
  flexing 5x cable Ø
  fixed installation 3x cable Ø
- **Coupling resistance**
  max. 250 Ohm x km
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Tinned copper, fine wire conductors, Unilay with short pitch length
- Core insulation of special PP
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above
- Stranding:
  <7 cores: cores stranded in a layer with optimal lay-length around a filler as per construction
  ≥7 cores: cores stranded with optimal lay-length to bunch-construction with low torsion strength, optimal selected short lay-length around a filler
- Special-TPE-O inner sheath, extruded as filler with pressure, natural colour
- Screen of Cu braid tinned, coverage 85% max., with optimal pitch
- Outer sheath of speciall-TPE-O extruded as filler with pressure
- Sheath colour ocean blue (RAL 5020)
- with meter marking
- **TPE**: The selected tinned copper wire conductor and tinned copper wire braid permit the installation in aggressive environments as well as hydrogen sulfide, ammonia and sulfur dioxide.

Properties

- Microbe-resistance - TPE
- High property of alternating bending strength
- Longer service life due to low friction resistance
- High tensile, abrasion and impact resistance even at low temperatures
- Extremely high bending loads
- Low adhesion
- Higher notch toughness
- Oil resistance
- Better chemical resistance
- UV and ozone resistance
- Higher economical solution
- Reduced Ø, therefore less moving masses
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- Please note the cleanroom qualification when ordering.
- unscreened analogue type:
  MULTISPEED® 500-TPE UL/CSA,
  confer page 441

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Application

The selected materials and lay-up technique permit these high flexible cables for permanent application in drag chains for long distances, high and slow speed of movements. These cables are installed in dry, moist and wet rooms and in open air with free movement without tensile stress or forced movements. These robust and abrasion resistant special control cables are installed there, where the problems appear for the application in permanent stresses e. g. in energy drag chains, industry robotics, production lines, automatic control systems and permanent movable machinery parts for multi-shift operation. These cables are installed everywhere, where high requirements for the flexibility, abrasion, oxygen and chemical resistance are necessary. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
23914	2 x 0,5	20	6,4	30,0	85,0
23915	3 G 0,5	20	6,7	36,0	99,0
23916	4 G 0,5	20	7,3	42,0	107,0
23917	5 G 0,5	20	7,7	48,0	140,0
23918	7 G 0,5	20	11,3	64,0	176,0
23919	10 G 0,5	20	10,1	80,0	204,0
23920	12 G 0,5	20	12,4	105,0	261,0
23921	18 G 0,5	20	14,7	137,0	360,0
23922	25 G 0,5	20	17,1	320,0	530,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
23923	2 x 0,75	19	7,0	40,0	97,0
23924	3 G 0,75	19	7,4	48,0	110,0
23925	4 G 0,75	19	8,0	55,0	139,0
23926	5 G 0,75	19	8,5	66,0	160,0
23927	7 G 0,75	19	12,9	85,0	219,0
23928	12 G 0,75	19	14,4	135,0	307,0
23929	18 G 0,75	19	17,2	190,0	490,0
23930	25 G 0,75	19	19,9	275,0	640,0

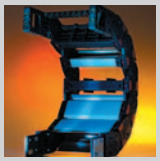
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MULTISPEED® 500-C-TPE UL/CSA safety against

high bending in drag chain systems, low torsion, halogen-free, EMC-preferred type, meter marking

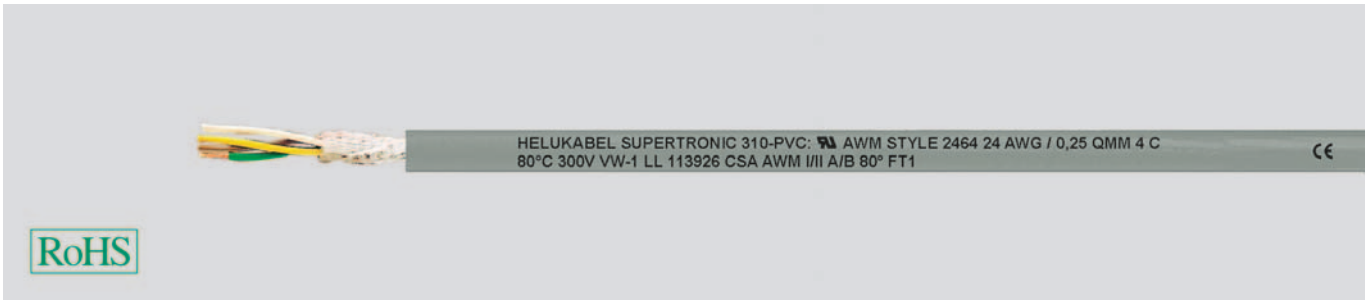
Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
23931	2 x 1	18	7,4	50,0	115,0
23932	3 G 1	18	7,7	59,0	131,0
23933	4 G 1	18	8,3	70,0	160,0
23934	5 G 1	18	9,1	84,0	195,0
23935	7 G 1	18	14,0	106,0	247,0
23936	12 G 1	18	15,0	174,0	411,0
23937	18 G 1	18	18,5	240,0	547,0
23938	25 G 1	18	21,4	332,0	754,0
23939	3 G 1,5	16	8,6	75,0	160,0
23940	4 G 1,5	16	9,4	90,0	194,0
23941	5 G 1,5	16	10,4	108,0	220,0
23942	7 G 1,5	16	16,0	157,0	294,0
23943	12 G 1,5	16	17,6	240,0	490,0
23944	18 G 1,5	16	21,3	355,0	704,0
23945	25 G 1,5	16	24,8	448,0	930,0
23946	4 G 2,5	14	11,3	134,0	260,0
23947	5 G 2,5	14	12,3	175,0	330,0
23948	7 G 2,5	14	14,8	229,0	406,0
23949	12 G 2,5	14	21,5	390,0	990,0

Dimensions and specifications may be changed without prior notice. (RN05)



Suitable Cable drag chains can be found in our Cable Accessories catalogue.

SUPERTRONIC®-310-PVC special cable for drag chains, meter marking



Technical data

- Special PVC drag chain cable acc. to UL-Style 2464
- **Temperature range** flexing -5°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** 300 V
- **Test voltage** 1500 V
- **Breakdown voltage** min. 3000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 5x cable Ø fixed installation 3x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper conductor, fine wire Unilay with short lay-lengths
- Core insulation of PVC class 43 acc. to UL-Std.1581
- Core identification to DIN 47100 coloured
- Cores stranded in layers with optimal lay-length
- Wrapping of fleece between the layers of stranding
- Outer sheath of special PVC, oil resistant compound type TM5 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1 and class 43 acc. to UL-Std.1581
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Low-adhesion

Note

- Please observe applicable installation regulations for use in energy supply chains.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

A highly-flexible PVC control cable suitable for frequent and fast lifting and bending stresses in machines and tool building, robot systems and on constantly moving machine components. Long service lives guarantee reliable function and good cost efficiency. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text. Designed for machines intended for export, specifically USA and Canada.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
49885	2 x 0,14	26	3,7	2,8	24,0
49886	3 x 0,14	26	3,9	4,1	26,0
49887	4 x 0,14	26	4,1	5,6	31,0
49888	5 x 0,14	26	4,5	7,0	36,0
49889	7 x 0,14	26	5,1	9,8	50,0
49890	10 x 0,14	26	5,8	14,0	65,0
49891	12 x 0,14	26	6,0	16,8	72,0
49892	14 x 0,14	26	6,2	19,6	78,0
49893	18 x 0,14	26	6,9	25,2	91,0
49894	24 x 0,14	26	7,8	33,6	120,0
49895	25 x 0,14	26	8,3	35,0	125,0
49896	2 x 0,25	24	4,0	5,0	29,0
49897	3 x 0,25	24	4,2	7,5	34,0
49898	4 x 0,25	24	4,5	10,0	40,0
49899	5 x 0,25	24	4,9	12,5	51,0
49900	7 x 0,25	24	5,6	17,5	65,0
49901	10 x 0,25	24	6,4	25,0	85,0
49902	12 x 0,25	24	6,6	30,1	97,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
49903	14 x 0,25	24	6,9	35,0	109,0
49904	18 x 0,25	24	7,6	45,0	132,0
49905	24 x 0,25	24	8,8	60,0	171,0
49906	25 x 0,25	24	9,4	62,5	178,0
49907	2 x 0,34	22	4,2	6,8	34,0
49908	3 x 0,34	22	4,4	10,2	43,0
49909	4 x 0,34	22	4,8	13,6	58,0
49910	5 x 0,34	22	5,1	17,0	65,0
49911	7 x 0,34	22	5,9	23,8	85,0
49912	10 x 0,34	22	6,8	34,0	117,0
49913	12 x 0,34	22	7,0	40,8	134,0
49914	14 x 0,34	22	7,4	47,6	152,0
49915	18 x 0,34	22	8,1	61,2	184,0
49916	24 x 0,34	22	9,6	81,5	242,0
49917	25 x 0,34	22	10,0	85,0	252,0

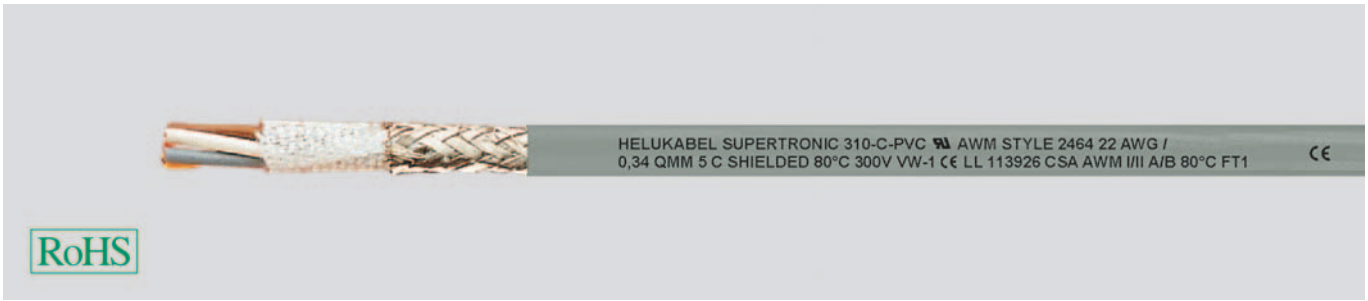
Dimensions and specifications may be changed without prior notice. (RN05)



Suitable Cable drag chains can be found in our Cable Accessories catalogue.

SUPERTRONIC®-310-C-PVC special cable for drag chains,

EMC-preferred type, meter marking



Technical data

- Special PVC drag chain cable approved to UL-Style 2464
- **Temperature range** flexing -5°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** 300 V
- **Test voltage** core/core 1500 V core/screen 1000 V
- **Breakdown voltage** min. 3000 V
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Insulation resistance** min. 20 MOhm x km
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)
- **Coupling resistance** max. 250 Ohm/km

Cable structure

- Bare copper conductor, fine wire Unilay with short lay-lengths
- Core insulation of PVC class 43 acc. to UL-Std.1581
- Core identification to DIN 47100 coloured
- Cores stranded in layers with optimal lay-length
- Wrapping of fleece between the layers of stranding
- Wrapping over the outer layer
- Braided screen of tinned Cu wires, coverage approx. 85%
- Core wrapping with fleece
- Outer sheath of oil resistant special PVC, compound type TM5 to DIN VDE 0281 Part 1 or class 43 acc. to UL-Std.1581
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Low-adhesion
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- Please observe applicable installation regulations for use in energy supply chains.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

A highly-flexible PVC control cable suitable for frequent and fast lifting and bending stresses in machines and tool building, robot systems and on constantly moving machine components. Long service lives guarantee reliable function and good cost efficiency. The copper screen effectively protects against internal and external interference. Designed for machines intended for export, specifically USA and Canada. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
49920	2 x 0,14	26	4,3	11,3	33,0
49921	3 x 0,14	26	4,5	14,2	36,0
49922	4 x 0,14	26	4,7	15,5	41,0
49923	5 x 0,14	26	5,0	18,4	46,0
49924	7 x 0,14	26	5,7	27,9	70,0
49925	10 x 0,14	26	6,4	39,1	88,0
49926	12 x 0,14	26	6,7	42,2	97,0
49927	14 x 0,14	26	6,9	45,4	105,0
49928	18 x 0,14	26	7,6	54,2	116,0
49929	24 x 0,14	26	8,6	66,5	150,0
49930	25 x 0,14	26	9,0	68,5	157,0
49931	2 x 0,25	24	4,6	14,8	39,0
49932	3 x 0,25	24	4,8	18,9	45,0
49933	4 x 0,25	24	5,1	21,4	52,0
49934	5 x 0,25	24	5,5	31,2	70,0
49935	7 x 0,25	24	6,2	39,8	80,0
49936	10 x 0,25	24	7,1	53,9	114,0
49937	12 x 0,25	24	7,3	59,2	123,0

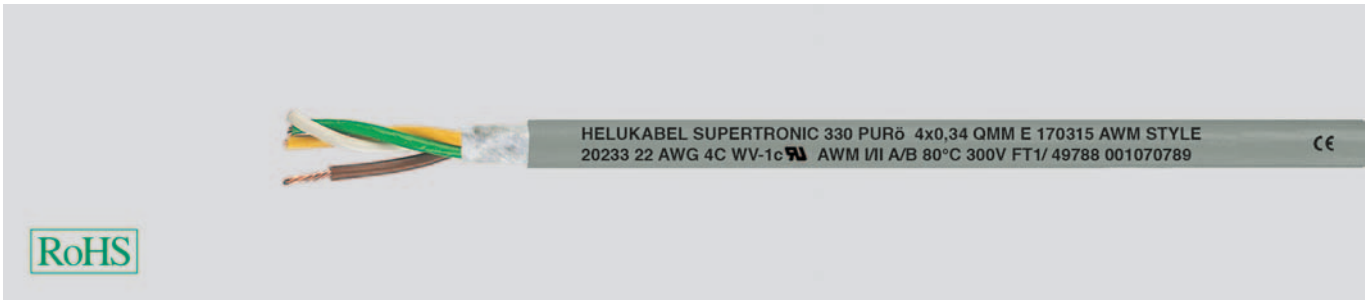
Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
49938	14 x 0,25	24	7,6	64,3	138,0
49939	18 x 0,25	24	8,3	78,6	165,0
49940	24 x 0,25	24	9,7	89,8	200,0
49941	25 x 0,25	24	10,1	101,2	204,0
49942	2 x 0,34	22	4,8	18,2	44,0
49943	3 x 0,34	22	5,0	28,8	60,0
49944	4 x 0,34	22	5,4	35,8	76,0
49945	5 x 0,34	22	5,7	39,2	80,0
49946	7 x 0,34	22	6,6	52,8	104,0
49947	10 x 0,34	22	7,5	67,5	150,0
49948	12 x 0,34	22	7,7	76,5	160,0
49949	14 x 0,34	22	8,1	85,9	180,0
49950	18 x 0,34	22	8,9	99,9	211,0
49951	24 x 0,34	22	10,3	147,0	290,0
49952	25 x 0,34	22	10,9	155,0	304,0

Dimensions and specifications may be changed without prior notice. (RN05)



Suitable Cable drag chains can be found in our Cable Accessories catalogue.

SUPERTRONIC®-330 PURö cable for drag chains, halogen-free, meter marking



Technical data

- Special PUR sheathed cable
- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage** 300 V
- **Test voltage**
  core/core 1500 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Capacitance**
  core/core 60 nF/km
- **Minimum bending radius**
  flexing 5x cable Ø
  fixed 3x cable Ø
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper, extra fine-wire to DIN VDE 0295 cl.6, col. 4, BS 6360 cl.6
- Core insulation of PP
- Cores stranded in layers with optimally lay-lengths
- Core identification to DIN 47100 coloured
- Wrapping over the outer layer
- Outer sheath of special **full-polyurethane** compound type TMPU to DIN VDE 0282 Part 10, Annex A and acc. to UL-Std.1581 Tab.50227
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PUR outer sheath, flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Low adhesion
- High flexibility at low temperatures
- High abrasion resistance
- Tear and cut-resistant
- Notch resistant
- **Resistant to**
  UV-radiation, Oxygen, Ozone, Hydrolysis, Oil
- **Partially resistant to**
  Microbial attack, Hydraulic fluids, Coolant emulsion, Alkalis

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

For installation in dry, moist and wet rooms and outdoors with free movement without tensile stress or forced movements, impressively proven in drag chain application. A highly flexible PUR control cable, suitable for frequent and quick lifting and bending stresses in machine engineering and construction, in robot technology and on permanently moving machine components. Long service life guarantees reliable function and high cost-efficiency. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text. Attractive for export-oriented mechanical engineering.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
49764	2 x 0,14	26	3,9	2,8	22,0
49765	3 x 0,14	26	4,0	4,1	24,0
49766	4 x 0,14	26	4,3	5,6	29,0
49767	5 x 0,14	26	4,7	7,0	33,0
49768	7 x 0,14	26	5,3	9,8	47,0
49769	10 x 0,14	26	6,1	14,0	57,0
49770	12 x 0,14	26	6,2	16,8	63,0
49771	14 x 0,14	26	6,5	19,6	72,0
49772	18 x 0,14	26	7,2	25,2	80,0
49773	24 x 0,14	26	8,2	33,6	110,0
49774	25 x 0,14	26	8,6	35,0	115,0
49775	2 x 0,25	24	4,3	5,0	26,0
49776	3 x 0,25	24	4,5	7,5	30,0
49777	4 x 0,25	24	4,8	10,0	39,0
49778	5 x 0,25	24	5,2	12,5	44,0
49779	7 x 0,25	24	6,0	17,5	52,0
49780	10 x 0,25	24	6,9	25,0	70,0
49781	12 x 0,25	24	7,1	30,1	84,0

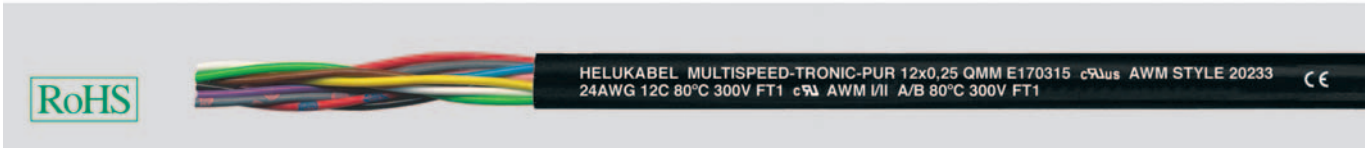
Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
49782	14 x 0,25	24	7,4	35,0	97,0
49783	18 x 0,25	24	8,2	45,0	114,0
49784	24 x 0,25	24	9,6	60,0	157,0
49785	25 x 0,25	24	10,1	62,5	160,0
49786	2 x 0,34	22	4,6	6,8	31,0
49787	3 x 0,34	22	4,8	10,2	38,0
49788	4 x 0,34	22	5,2	13,6	51,0
49789	5 x 0,34	22	5,6	17,0	54,0
49790	7 x 0,34	22	6,5	23,8	77,0
49791	10 x 0,34	22	7,5	34,0	104,0
49792	12 x 0,34	22	7,7	40,8	122,0
49793	14 x 0,34	22	8,1	47,6	140,0
49794	18 x 0,34	22	9,2	61,2	162,0
49795	24 x 0,34	22	10,7	81,5	204,0
49796	25 x 0,34	22	11,2	85,0	229,0

Dimensions and specifications may be changed without prior notice. (RN05)

MULTISPEED®-TRONIC-PUR safety against high bending

in drag chain systems, halogen-free, meter marking





Technical data

- Special drag chain cables for high mechanical stress in adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51, DIN VDE 0285-525-2-21/ DIN EN 50525-2-21 and acc. to UL-Std.758 AWM, Style 20233
- **Temperature range** flexing -30°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/300 V
- **Test voltage** 3000 V
- **Insulation resistance** min. 100 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper, fine wire conductors, Unilay with short pitch length
- Core insulation of special PP
- Core identification to DIN 47100
- <7 cores: cores stranded in a layer with optimal lay-length around a filler as per construction ≥7 cores: cores stranded with optimal lay-length to bunch-construction with low torsion strength, optimal selected short lay-length around a filler
- Outer sheath of special PUR extruded extruded as filler with pressurea
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PUR outer sheath, flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B) UL VW-1, CSA FT1
- Low-adhesion
- Halogen-free
- High property of alternating bending strength
- High tensile strength, abrasion- and impact resistance at low temperature
- Use in multi-shift operations under extremely high continuous bending loads
- Abrasion resistance
- Tear resistance
- High stability
- Oil resistance
- Better chemical resistance
- UV and ozone resistance
- Higher economical solution
- Reduced diameter, therefore lower moving masses

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **MULTISPEED®-TRONIC-C-PUR**, confer page 450

Application

Application HELUKABEL® MULTISPEED®-TRONIC-PUR installed there, where the extreme requirements for the cables are necessary. The selected materials and lay-up technique permit these high flexible cables for permanent application in drag chains for long distances, high and low speed of movements. These cables are installed in dry, moist and wet rooms and in open air with free movement without tensile stress or forced movements. These robust and abrasion resistant special control cables are installed there, where the problems appear for the application in permanent stresses e. g. in energy drag chains, industry robotics, production lines, automatic control systems and permanent movable machinery parts for multi-shift operation. These cables are installed everywhere, where high requirements for the flexibility, abrasion, oxygen and chemical resistance are necessary. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

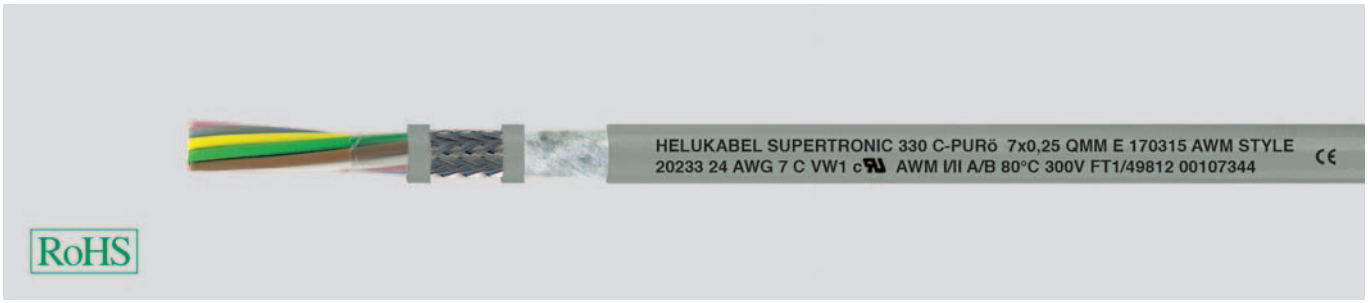
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
24567	2 x 0,25	24	3,9	5,0	27,0
24568	3 x 0,25	24	4,1	7,5	33,0
24569	4 x 0,25	24	4,4	10,0	40,0
24570	5 x 0,25	24	4,7	12,5	48,0
24571	7 x 0,25	24	6,9	17,5	60,0
24572	12 x 0,25	24	7,4	30,1	91,0
24573	18 x 0,25	24	8,9	45,0	125,0
24574	25 x 0,25	24	10,2	62,5	170,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
24575	2 x 0,34	22	4,1	6,8	32,0
24576	3 x 0,34	22	4,3	10,2	40,0
24577	4 x 0,34	22	4,6	13,6	55,0
24578	5 x 0,34	22	5,0	17,0	60,0
24579	7 x 0,34	22	7,3	23,8	80,0
24580	12 x 0,34	22	7,9	40,8	127,0
24581	18 x 0,34	22	9,7	61,2	175,0
24582	25 x 0,34	22	10,0	85,0	238,0

Dimensions and specifications may be changed without prior notice. (RN05)

SUPERTRONIC®-330 C-PURö cable for drag chains, halogen-free, EMC-preferred type, meter marking



Technical data

- Special PUR sheathed cable, screened
- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage** 300 V
- **Test voltage**
  core/core 1500 V
  core/screen 1000 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Capacitance**
  core/core 60 nF/km
- **Minimum bending radius**
  flexing 7,5x cable Ø
  fixed 4x cable Ø
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)
- **Coupling resistance**
  max. 250 Ohm/km

Cable structure

- Bare copper conductor, extra fine wire to DIN VDE 0295 cl.6, col. 4, BS 6360 cl.6
- Core insulation of PP
- Core identification to DIN 47100 coloured
- Cores stranded in layers with optimal lay-length
- Wrapping over the outer layer
- Braided screen of tinned Cu wires, coverage approx. 85%
- Core wrapping with fleece
- Outer sheath of special **full polyurethane** compound type TMPU to DIN VDE 0207-363-10-2/ DIN EN 50363-10-2 and acc. to UL-Std.1581 tab.50227
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PUR outer sheath, flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Low-adhesion
- High flexibility at low temperatures
- High abrasion resistance
- Tear and cut-resistant
- Notch resistant
- **Resistant to**
  UV-radiation, Oxygen, Ozone, Hydrolysis, Oil
- **Partially resistant to**
  Microbial attack, Hydraulic fluid, Coolant emulsion, Alkalis

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Especially suited for drag chain installation in dry, moist and wet environments and outdoors with flexible movement and without tensile stress or forced movements. A highly-flexible PVC control cable suitable for frequent and fast lifting and bending stresses in machines and tool building, robot systems and on constantly moving machine components. Long service lives guarantee reliable function and good cost efficiency. The dense screening assures interference-free transmission of all signals and impulses. An ideal interference-free control cable for the above applications. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

N

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
49797	2 x 0,14	26	4,4	11,2	32,0
49798	3 x 0,14	26	4,5	14,1	35,0
49799	4 x 0,14	26	4,8	15,5	40,0
49800	5 x 0,14	26	5,0	18,3	45,0
49801	7 x 0,14	26	5,8	27,8	66,0
49802	10 x 0,14	26	6,7	39,3	86,0
49803	12 x 0,14	26	6,8	42,1	94,0
49804	14 x 0,14	26	7,1	45,3	102,0
49805	18 x 0,14	26	7,8	54,1	118,0
49806	24 x 0,14	26	8,8	66,3	149,0
49807	25 x 0,14	26	9,2	68,4	156,0
49808	2 x 0,25	24	4,8	14,9	38,0
49809	3 x 0,25	24	5,0	18,8	44,0
49810	4 x 0,25	24	5,3	21,3	51,0
49811	5 x 0,25	24	5,7	31,0	68,0
49812	7 x 0,25	24	6,6	39,6	82,0
49813	10 x 0,25	24	7,5	53,9	110,0
49814	12 x 0,25	24	7,7	59,1	124,0
49815	14 x 0,25	24	8,0	64,2	135,0
49816	18 x 0,25	24	8,8	78,4	150,0
49817	24 x 0,25	24	10,2	89,9	194,0
49818	25 x 0,25	24	10,7	101,0	204,0
49819	2 x 0,34	22	5,1	18,1	45,0
49820	3 x 0,34	22	5,3	28,7	60,0
49821	4 x 0,34	22	5,7	35,7	76,0
49822	5 x 0,34	22	6,1	39,1	82,0
49823	7 x 0,34	22	7,1	52,7	110,0
49824	10 x 0,34	22	8,1	67,4	148,0
49825	12 x 0,34	22	8,3	76,4	166,0
49826	14 x 0,34	22	8,7	85,5	185,0
49827	18 x 0,34	22	9,8	99,7	216,0
49828	24 x 0,34	22	11,3	147,1	291,0
49829	25 x 0,34	22	11,8	155,0	305,0

Dimensions and specifications may be changed without prior notice. (RN05)

MULTISPEED®-TRONIC-C-PUR safety against high

bending in drag chain systems, high flexible, halogen-free, screened, EMC-preferred type, meter marking





Technical data

- Special drag chain cables for high mechanical stress in adapted to DIN VDE 0285-525-2-51/ DIN EN 50525-2-51, DIN VDE 0285-525-2-21/ DIN EN 50525-2-21 and acc. to UL-Std.758 AWM Style 20233
- **Temperature range** flexing -30°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** U_0/U 300/300 V
- **Test voltage** 3000 V
- **Insulation resistance** min. 100 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Coupling resistance** max. 250 Ohm/km
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper, fine wire conductors, Unilay with short pitch length
- Core insulation of special PP
- Core identification to DIN 47100
- <7 cores: cores stranded in a layer with optimal lay-length around a filler as per construction
  ≥7 cores: cores stranded with optimal lay-length to bunch-construction with low torsion strength, optimal selected short lay-length around a filler
- Special-TPE extruded as filler with pressure, grey (RAL 7001)
- Screen of Cu braid bare, coverage 85% max., with optimal pitch
- Outer sheath of special-PUR
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PUR outer sheath, flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B) UL VW-1, CSA FT1
- Low-Adhesion
- Halogen-free
- High property of alternating bending strength
- High tensile strength, abrasion- and impact resistance at low temperature
- Use in multi-shift operations under extremely high continuous bending loads
- Abrasion resistance
- Tear resistance
- High stability
- Oil resistance
- Better chemical resistance
- UV and ozone resistance
- Higher economical solution
- Reduced Ø, results low weight of moving materials

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- non screened analogue type: **MULTISPEED®-TRONIC-PUR**, confer page 448

Application

For permanent application in drag chains for long distances, high and low speed of movements. These cables are installed in dry, moist and wet rooms and in open air with free movement without tensile stress or forced movements. These robust and abrasion resistant special control cables are installed there, where the problems appear for the application in permanent stresses. These cables are installed everywhere, where high requirements for the flexibility, abrasion, oxygen and chemical resistance are necessary. These screened cables are particularly suitable for the interference-free transmission in instrumentation and control engineering applications. For applications which go beyond standard solutions we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
24614	2 x 0,25	24	5,4	74,0	39,0
24615	3 x 0,25	24	5,6	19,0	45,0
24616	4 x 0,25	24	5,9	22,0	51,0
24617	5 x 0,25	24	6,2	26,0	68,0
24618	7 x 0,25	24	8,7	35,0	83,0
24619	12 x 0,25	24	9,4	58,0	122,0
24620	18 x 0,25	24	11,5	79,0	160,0
24621	25 x 0,25	24	13,0	99,0	210,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
24622	2 x 0,34	22	5,6	18,0	45,0
24623	3 x 0,34	22	5,8	22,0	60,0
24624	4 x 0,34	22	6,1	28,0	76,0
24625	5 x 0,34	22	6,8	31,0	82,0
24626	7 x 0,34	22	9,3	51,0	110,0
24627	12 x 0,34	22	9,9	70,0	166,0
24628	18 x 0,34	22	12,3	103,0	216,0
24629	25 x 0,34	22	13,6	130,0	312,0

Dimensions and specifications may be changed without prior notice. (RN05)

SUPER-PAAR-TRONIC 340-C-PUR cable for drag chains, halogen-free, EMC-preferred type, meter marking



Technical data

- Special drag chain cable, stranded in pairs
- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage** 300 V
- **Test voltage**
  core/core 1500 V
  core/screen 1000 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Mutual capacitance**
  core/core approx. 60 nF/km
- **Minimum bending radius**
  for permanent bending at 0,25 mm²
  flexing 7,5x cable Ø
  fixed 4x cable Ø
  at 0,5-1,0 mm²
  flexing 10x cable Ø
  fixed 5x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper conductor, extra fine wire to DIN VDE 0295 cl.6, col. 4, BS 6360 cl.6 and IEC 60228 cl.6
- Core insulation of PP
- Core identification to DIN 47100
- Cores stranded in pairs, pairs stranded torsion-free in layers with optimal lay-length
- Wrapping over the outer layer
- Braided screen of tinned Cu wires, coverage approx. 85%
- Core wrapping with fleece
- Outer sheath of **full polyurethane** compound type TMPU to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 and acc. to UL-Std.1581 tab.50.227
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PUR outer sheath, flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Oil resistance acc. to DIN VDE 0473-811-404/ DIN EN 60811-404
- Halogen free
- Weather, ozone and UV-resistant
- Chemical resistance to solvents, acids, alkalis and hydraulic fluids

Advantages

- Very high resistance to mechanical stresses
- Very good alternating bending strength
- High tear, abrasion and impact resistance, even at low temperatures

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Stranded in pairs, these fully-screened special drag chain cables can also be used where external, high-frequency interference influences pulse transfer. They are used for permanently flexible stresses in machine and tool building, in robot technology, on constantly moving machine components and for extended use in multi-shift operations. Developed to state-of-the-art technology, these highly-flexible data cable, with a cut resistant and low-adhesion PUR outer sheath guaranteeing optimal service life and extremely good cost efficiency. This two-approvals single-core cable is preferred for use in export-oriented mechanical engineering, in machine tools, production lines and systems engineering. Guaranteed extended use in multi-shift operations with extremely high bending stresses. For applications which go beyond standard solutions we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

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Part no.	No.pairs x no.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
49830	1 x 2 x 0,25	24	4,8	14,0	26,0
49831	2 x 2 x 0,25	24	6,7	32,0	61,0
49832	3 x 2 x 0,25	24	7,1	38,4	70,0
49833	4 x 2 x 0,25	24	7,6	43,2	82,0
49834	5 x 2 x 0,25	24	8,3	51,5	99,0
49835	6 x 2 x 0,25	24	9,0	71,8	126,0
49836	8 x 2 x 0,25	24	10,5	74,4	147,0
49837	10 x 2 x 0,25	24	11,9	90,0	179,0
49838	14 x 2 x 0,25	24	12,7	111,2	210,0
49839	1 x 2 x 0,34	22	5,1	20,0	35,0
49840	2 x 2 x 0,34	22	7,2	41,0	80,0
49841	3 x 2 x 0,34	22	7,6	52,2	100,0
49842	4 x 2 x 0,34	22	8,3	59,1	118,0
49843	5 x 2 x 0,34	22	9,0	67,0	134,0
49844	6 x 2 x 0,34	22	9,9	86,4	162,0
49845	8 x 2 x 0,34	22	11,9	107,5	214,0
49846	10 x 2 x 0,34	22	13,9	131,0	270,0
49847	14 x 2 x 0,34	22	14,1	150,0	304,0
49848	1 x 2 x 0,5	20	5,8	22,5	47,0
49849	2 x 2 x 0,5	20	8,4	53,0	100,0
49850	3 x 2 x 0,5	20	9,0	72,8	131,0
49851	4 x 2 x 0,5	20	10,0	75,6	149,0
49852	5 x 2 x 0,5	20	11,0	85,7	169,0
49853	6 x 2 x 0,5	20	11,8	103,0	181,0
49854	8 x 2 x 0,5	20	14,2	148,4	274,0
49855	10 x 2 x 0,5	20	16,5	180,0	332,0
49856	14 x 2 x 0,5	20	16,9	218,3	390,0
49857	1 x 2 x 0,75	19	6,2	35,2	56,0
49858	2 x 2 x 0,75	19	9,2	61,4	102,0
49859	3 x 2 x 0,75	19	9,8	87,1	144,0
49860	4 x 2 x 0,75	19	11,2	95,2	160,0
49861	5 x 2 x 0,75	19	12,2	115,0	193,0
49862	6 x 2 x 0,75	19	13,2	137,1	216,0
49863	8 x 2 x 0,75	19	15,6	184,4	327,0
49864	10 x 2 x 0,75	19	18,4	259,8	451,0
49865	14 x 2 x 0,75	19	18,9	318,4	521,0
49866	1 x 2 x 1	18	6,7	42,0	64,0
49867	2 x 2 x 1	18	10,0	73,0	120,0
49868	3 x 2 x 1	18	10,8	93,6	160,0
49869	4 x 2 x 1	18	11,7	117,8	184,0
49870	5 x 2 x 1	18	13,2	139,0	217,0

Dimensions and specifications may be changed without prior notice. (RN05)

UL/CSA MOTOR, SERVO & FEEDBACK CABLES



CW&A Edition 27 (published 01.04.2015)

TOPFLEX®-EMV-UV-2YSLCYK-J UL/CSA Motorsupply

cable 1000 V, for power supply connections to frequency converters, double screened, meter marking.



Technical data

- Special motor power supply cable for frequency converters to Style 2570
- **Temperature range**
  flexing -5°C bis +80°C
  fixed installation -40°C bis +80°C
- **Nominal voltage**
  UL 1000 V
- **Test voltage** 4000 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Coupling resistance**
  acc. to different cross-section
  max. 250 Ohm/km
- **Minimum bending radius**
  fixed installation for outer Ø:
  up to 12 mm: 5x cable Ø
  > 12-20 mm: 7,5x cable Ø
  > 20 mm: 10x cable Ø
  free-movement for outer Ø:
  up to 12 mm: 10x cable Ø
  > 12-20 mm: 15x cable Ø
  > 20 mm: 20x cable Ø
- **Radiation resistance**
  up to 80x10^6 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of polyethylene (PE)
- Core indentification BN, BK, GY
- GN-YE conductor
- Cores stranded in concentric layers
- 1. Screen with special aluminium film
  2. Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- Low mutual capacitance
- Meets EMC requirements acc. to EN 55011 and DIN VDE 0875 part 11
- Low coupling resistance for high electromagnetic compatibility
- UV-resistant
- Outdoor application
- This screened motor supply cable with low mutual capacitance of the single cores because of the special PE core insulation and low screen capacitance enable a low-loss transmission of the power compared to PVC-sheathed connecting cables
- Due to the optimal screening an interference-free operation of frequency converters is obtained
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- **) The current carrying capacity for permanent operation at ambient temperature of 30°C. For deviating ambient temperatures the conversion factors should be used and for further see the indication in DIN VDE 0298 part 4.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

This TOPFLEX®-EMV-UV-2YSLCYK-J UL/CSA motor connection cable for the frequency converters secures the EMC in systems and buildings, equipment with devices and machineries, which can emit electromagnetic interference fields that can impact the environment in an illegal manner. It is used as a connection and connecting cable under average mechanical stress for fixed installations and sometimes for free movement in dry, moist and wet rooms and outside. It is used in the automotive industry, food processing industry, transfer streets, packaging industry, machine tools, handling equipment, in the industry it is used for pumps, fans, transport belts, etc. Used in explosion proof areas.

EMC = Electromagnetic compatibillity

The screen must be connected at both ends and ensure large-area contact over the entire cable circumference for compliance with the functional interference requirements of EN 55011.

CE = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Mutual capacitance Core / Core app.nF / km	Core / Screen app.nF / km	Coupling resistance at 1 MHz Ohm/km	at 30 MHz Ohm/km	Power ratings **) with 3 loaded cores in Amperes	Cop. weight kg / km	Weight app. kg / km	AWG-No.
22320	4 G 1,5	10,4					0	95,0	140,0	16
22321	4 G 2,5	12,5	80	130	18	210	26	150,0	300,0	14
22322	4 G 4	14,2	90	150	11	210	34	235,0	485,0	12
22323	4 G 6	15,2	90	150	6	150	44	320,0	630,0	10
22324	4 G 10	19,5	120	200	7	180	61	533,0	860,0	8
22325	4 G 16	22,9	140	230	9	190	82	789,0	1290,0	6
22326	4 G 25	27,1	120	210	4	95	108	1236,0	1860,0	4
22327	4 G 35	29,6	150	260	3	85	135	1662,0	2610,0	2

Continuation ▸

TOPFLEX®-EMV-UV-2YSLCYK-J UL/CSA Motorsupply

cable 1000 V, for power supply connections to frequency converters, double screened, meter marking.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Mutual capacitance Core / Core app.nF / km	Core / Screen app.nF / km	Coupling resistance at 1 MHz Ohm/km	at 30 MHz Ohm/km	Power ratings **) with 3 loaded cores in Amperes	Cop. weight kg / km	Weight app. kg / km	AWG-No.
22328	4 G 50	35,2	190	320	2	40	168	2345,0	2950,0	1
22329	4 G 70	41,4	190	320	2	45	207	3196,0	3950,0	2/0
22330	4 G 95	46,0	250	410	1	50	250	4316,0	5300,0	3/0
22331	4 G 120	50,8					292	5435,0	6600,0	4/0
22332	4 G 150	58,3					335	6394,0	7040,0	300 kcmil
22333	4 G 185	65,5					382	7639,0	8380,0	350 kcmil

Dimensions and specifications may be changed without prior notice. (RN07)

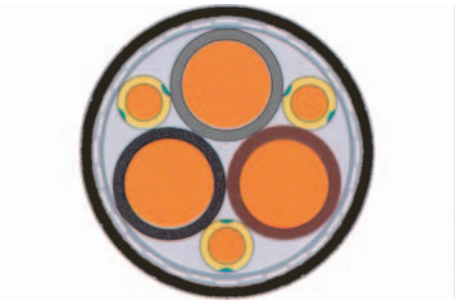


Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

TOPFLEX®-EMV-UV-3 PLUS 2YSLCYK-J UL/CSA

Motor supply cable 1000 V, for power supply connections to frequency converters, double screened, meter marking.





Technical data

- Special motor power supply cable for frequency converters to Style 2570
- **Temperature range**
  flexing -5°C bis +80°C
  fixed installation -40°C bis +80°C
- **Nominal voltage**
  UL 1000 V
- **Test voltage** 4000 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Coupling resistance**
  acc. to different cross-section
  max. 250 Ohm/km
- **Minimum bending radius**
  fixed installation for outer Ø:
  up to 12 mm: 5x cable Ø
  > 12-20 mm: 7,5x cable Ø
  > 20 mm: 10x cable Ø
  free-movement for outer Ø:
  up to 12 mm: 10x cable Ø
  > 12-20 mm: 15x cable Ø
  > 20 mm: 20x cable Ø
- **Radiation resistance**
  up to 80x10^6 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, fine wire conductor to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of polyethylene (PE)
- Core identification BK, BN, GY
- GN-YE conductor (divided into 3)
- Cores stranded in concentric layers
- 3+3 core design
- 1. Screen with special aluminium film
  2. Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- Low mutual capacitance
- Meets EMC requirements acc. to EN 55011 and DIN VDE 0875 part 11
- Low coupling resistance for high electromagnetic compatibility
- Due to the optimal screening an interference-free operation of frequency converters is obtained
- The 3 Plus-construction of motor power supply cables features a symmetrical 3-core design, improved in terms of EMC characteristics comparing favorably with a 4-core version. The protective conductor PE, divided into 3 is uniformly stranded in the interstices. This enables an extremely concentric structure
- The minimum cross-section of 0,75^2 meets the requirements of DIN EN 60204 part 1
- uv-resistant
- Outdoor application
- This screened motor supply cable with low mutual capacitance of the single cores because of the special PE core insulation and low screen capacitance enable a low-loss transmission of the power compared to PVC-sheathed connecting cables
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- **) The current carrying capacity for permanent operation at ambient temperature of 30°C. For deviating ambient temperatures the conversion factors should be used and for further see the indication in DIN VDE 0298 part 4.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

It is used as a connection and connecting cable under average mechanical stress for fixed installation and sometimes for free movement in dry, moist and wet rooms and outside. It is used in the automotive industry, food processing industry, transfer streets, packaging industry, machine tools, handling equipment, in the industry it is used for pumps, fans, transport belts and in air condition systems, etc. Used in explosion proof areas.

EMC = Electromagnetic compatibillity

The screen must be connected at both ends and ensure large-area contact over the entire cable circumference for compliance with the functional interference requirements of EN 55011.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Continuation ▸

TOPFLEX®-EMV-UV-3 PLUS 2YSLCYK-J UL/CSA

Motor supply cable 1000 V, for power supply connections to frequency converters, double screened, meter marking.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Coupling resistance at 1 MHz Ohm/km	at 30 MHz Ohm/km	Power ratings **) with 3 loaded cores in Amperes	Cop. weight kg / km	Weight app. kg / km	AWG-No.
22193	3 x 1,5 + 3 G 0,25	10,0			18	86,0	140,0	16
22194	3 x 2,5 + 3 G 0,5	11,4	18	210	26	144,0	220,0	14
22195	3 x 4 + 3 G 0,75	13,0	11	210	34	224,0	323,0	12
22196	3 x 6 + 3 G 1,0	15,0	6	150	44	298,0	420,0	10
22197	3 x 10 + 3 G 1,5	18,4	7	180	61	491,0	615,0	8
22198	3 x 16 + 3 G 2,5	21,0	9	190	82	723,0	819,0	6
22199	3 x 25 + 3 G 4,0	25,3	4	95	108	1138,0	1325,0	4
22223	3 x 35 + 3 G 6,0	27,8	3	85	135	1535,0	1718,0	2
22224	3 x 50 + 3 G 10,0	32,6	2	40	168	2208,0	2399,0	1
22225	3 x 70 + 3 G 10,0	38,1	2	45	207	2871,0	3056,0	2/0
22226	3 x 95 + 3 G 16,0	41,0	1	50	250	3953,0	4162,0	3/0
22227	3 x 120 + 3 G 16,0	46,4			292	4836,0	5075,0	4/0
22228	3 x 150 + 3 G 25,0	53,5			335	5412,0	6128,0	300 kcmil
22229	3 x 185 + 3 G 35,0	59,5			382	6969,0	7189,0	350 kcmil
22230	3 x 240 + 3 G 42,5	65,1				8540,0	9540,0	500 kcmil

Dimensions and specifications may be changed without prior notice. (RN07)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

TOPFLEX®-MOTOR-EMV 103 low capacitance power supply cable 1000 V, increased ampacity, meter marking





Technical data

- Special motor power supply cable for frequency converters acc. to UL-AWM style 21179
- **Temperature range** flexing -5°C to +70°C fixed installation -40°C to +80°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** VDE U_0/U 600/1000 V UL 1000 V
- **Test voltage** 2500 V
- **Insulation resistance** min. 200 MOhm x km
- **Coupling resistance** acc. to different cross-sections max. 250 Ohm/km
- **Mutual capacitance** acc. to different cross-sections core/core 70 to 250 nF/km core/screen 110 to 410 nF/km
- **Minimum bending radius** fixed installation for outer Ø: up to 12 mm: 5x cable Ø > 12-20 mm: 7,5x cable Ø > 20 mm: 10x cable Ø free-movement for outer Ø: up to 12 mm: 10x cable Ø > 12-20 mm: 15x cable Ø > 20 mm: 20x cable Ø
- **Radiation-resistance** up to 80x10^6 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, fine wire conductor to DIN VDE 0295 cl.5, BS 6360 cl.5 or IEC 60228 cl.5
- Core insulation of special-polymer
- Core identification to DIN VDE 0293-308 - up to 5 cores coloured - from 7 cores, black with continuous white numbering
- GN-YE conductor
- Cores stranded in concentric layers
- 1. Screen with special aluminium film 2. Tinned copper braided screen, coverage approx. 80%
- Outer sheath of special PVC
- Sheath colour orange (RAL 2003)
- with meter marking

Properties

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Features Special-Polymer-insulation secures a lower dielectric loss, double potential strength, high longevity and low screen-interference currents to include increased current carrying capacity
- Meets EMC requirements according to EN 55011 and DIN VDE 0875 part 11
- Low coupling resistance for high electromagnetic compatibility
- This screened motor supply cable with low mutual capacitance of the single cores because of the special Polymer core insulation and low screen capacitance enable a low-loss transmission of the power compared to PVC-sheathed connecting cables
- Due to the optimal screening an interference-free operation of frequency converters is obtained
- Design acc. to the requirements of VdS 3501:2006-04
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

This UL/CSA motor power supply cable for the frequency converters assures electromagnetic compatibillity in plants and buildings, facilities with units and operating equipment where the fields of electromagnetic interference might cause adverse effects on the surroundings. As a supply and connecting cable for medium mechanical stresses in fixed installations and forced movements in dry, moist and wet environments. Used in the automotive and food industries, environmental technology, packaging industry, machine tools. Handling equipment, for SIMOVERT drives, they are particularly suitable for use with industrial pumps, ventilators, conveyor belts and air-conditioning installations and similar applications. Installation in hazardous areas.

EMC = Electromagnetic compatibillity

The screen must be connected at both ends and ensure large-area contact over the entire cable circumference for compliance with the functional interference requirements of EN 55011.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
22689	3 G 1,5	9,4	72,0	200,0	16
22690	4 G 1,5	10,4	95,0	230,0	16
22691	5 G 1,5	11,2	117,0	258,0	16
22692	7 G 1,5	13,2	148,0	281,0	16
22693	3 G 2,5	11,2	137,0	270,0	14
22694	4 G 2,5	12,5	150,0	300,0	14
22695	5 G 2,5	13,5	200,0	352,0	14
22696	7 G 2,5	16,0	230,0	473,0	14
22697	4 G 4	14,2	235,0	485,0	12

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
22698	5 G 4	15,4	321,0	567,0	12
22699	7 G 4	18,2	352,0	603,0	12
22700	4 G 6	15,2	320,0	633,0	10
22701	5 G 6	16,8	439,0	679,0	10
22702	7 G 6	20,0	501,0	771,0	10
22703	4 G 10	19,5	533,0	860,0	8
22704	5 G 10	21,6	711,0	1029,0	8
22705	4 G 16	23,1	789,0	1290,0	6
22706	4 G 25	27,1	1236,0	1862,0	4

Dimensions and specifications may be changed without prior notice. (RN07)

TOPFLEX® 600 VFD EMC-preferred type, flexible motor power supply cable, oil-resistant, NFPA 79 Edition 2012



Technical data

- PVC motor supply cable acc. to UL-Std.1277 and UL-Std.2277
- **Temperature range** -25°C to +90°C
- **Nominal voltage** TC 600 V WTTC 1000 V
- **Test voltage** 4000 V
- **Minimum bending radius** flexing 6x cable Ø
- **Coupling resistance** max. 250 Ohm/km

Cable structure

- Tinned copper conductor, fine wire with AWG dimensions
- Core insualtion of special PVC with transparent nylon skin
- Black cores with continuous white numbering
- GN-YE conductor in the outer layer
- Cores stranded in layers with optimal lay-length
- Fleece
- 1. Screening with special aluminium foil 2. Screening with braid of tinned copper wires, optimal coverage approx. 85%
- Separator
- Outer sheath of special PVC
- Sheath colour black (RAL 9005) or orange (RAL 2003)
- with length marking in feet

Properties

- self-extinguishing and flame retardant acc. to CSA FT4
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- UV-resistant

Tests

- **UL:** TC-ER, WTTC 1000 V, MTW, NFPA 79 2012, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12) OIL RES I & II, 90°C dry / 75°C wet, Cold Bend Test -40°C Class 1 Div. 2 per NEC Art. 336, 392, 501
  CSA: c (UL) CIC-TC FT4 AWM I/II A/B FT4

Note

- VFD = Variable Frequency Drive

Application

Flexible, extremly oil-resistant motor supply cable for modern servomotors; the double-screening with special aluminium foil (100% coverage) and tinned copper braid (approx. 85% coverage) provides effective protection against electrical disturbance and the resultant failures. Approved to NFPA 79 edition 2012 for open, unprotected installation on cable trays and from cable trays to the machine. The special PVC sheath is extremly resistant to oil, coolants and solvents and hence the perfect solution for industrial applications with open installation, installation in pipes and in the earth.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Sheath colour black

Part no.	No.cores x AWG-No.	Cross-section mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
63139	4 x 18	0,963	9,9	52,0	164,0
63140	4 x 16	1,31	11,4	72,0	183,0
63137	4 x 14	2,08	12,5	118,0	197,0
63141	4 x 12	3,31	14,0	182,0	267,0
63142	4 x 10	5,26	17,1	256,0	402,0
63143	4 x 8	8,37	22,3	417,0	668,0
63144	4 x 6	13,31	25,4	651,0	918,0
63145	4 x 4	21,21	30,1	910,0	1363,0
63146	4 x 2	33,6	35,3	1411,0	1994,0

Sheath colour orange

Part no.	No.cores x AWG-No.	Cross-section mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
63147	4 x 18	0,963	9,9	52,0	164,0
63148	4 x 16	1,31	11,4	72,0	183,0
63149	4 x 14	2,08	12,5	118,0	197,0
63150	4 x 12	3,31	14,0	182,0	267,0
63151	4 x 10	5,26	17,1	182,0	267,0
63152	4 x 8	8,37	22,3	417,0	668,0
63153	4 x 6	13,31	25,4	651,0	918,0
63154	4 x 4	21,21	30,1	910,0	1363,0
63155	4 x 2	33,6	35,3	1411,0	1994,0

Dimensions and specifications may be changed without prior notice. (RN07)



Suitable accessories can be found in Chapter X.

• Cable Gland - HELUTOP® HT-MS-EP4

TOPFLEX® 650 VFD EMC-preferred type, flexible motor power supply cable with control cores, oil-resistant, NFPA 79 Edition 2012



Technical data

- TPE motor supply cable acc. to UL-Std.1277 and UL-Std.2277
- **Temperature range**
  flexing -25°C to +105°C
- **Nominal voltage**
  TC 600 V
  WTTC 1000 V
- **Test voltage**
  power supply cores 4000 V
  control cores 2000 V
- **Minimum bending radius**
  flexing 6x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km

Cable structure

- Tinned copper conductor, fine wire with AWG measures
- Core insualtion of special PVC with transparent nylon skin
- Black supply cores with continuous white numbering
- 2 black control cores withnumber 5+6
- GN-YE conductor in the outer layer
- Control cores screened in pairs with plastic-coated aluminium foil, tinned drain wire
- Control cores stranded in pairs and laid up in layers with optimal lay-length with the power supply cores
- 1. Screening with plastic-coated aluminium foil
  2. Screening from tinned Cu-braid, optimal coverage approx. 85%
- Separator
- Outer sheath of special TPE
- Sheath colour black (RAL 9005) or orange (RAL 2003)
- with length marking in feet

Properties

- self-extinguishing and flame retardant acc. to CSA FT4
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- UV-resistant

Tests

- **UL:**
  TC-ER, WTTC 1000 V, MTW, NFPA 79 2012, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12) OIL RES I & II, 90°C dry / 75°C wet, Cold Bend Test -40°C Class 1 Div. 2 per NEC Art. 336, 392, 501
  CSA:
  c (UL) CIC-TC FT4
  AWM I/II A/B FT4

Note

- VFD = Variable Frequency Drive

Application

Flexible, extremly oil-resistant motor supply cable for modern servomotors; the double-screening with special aluminium foil (100% coverage) and tinned copper braid (approx. 85% coverage) provides effective protection against electrical disturbance and the resultant failures. Approved to NFPA 79 edition 2012 for open, unprotected installation on cable trays and from cable trays to the machine. The special TPE sheath is extremly resistant to oil, coolants and solvents and hence the perfect solution for industrial applications with open installation, installation in pipes and in the earth.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

N

Sheath colour black

Part no.	No. cores x AWG-No.	Cross-section mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
63156	4x AWG 16 +2x AWG 18	1,31/ 0,963	13,0	88,0	259,0
63157	4x AWG 14 +2x AWG 18	2,08/ 0,963	14,0	133,0	370,0
63138	4x AWG 14 +2x AWG 14	2,08/ 2,08	14,0	159,0	399,0
63158	4x AWG 12 +2x AWG 18	3,31/ 0,963	15,3	197,0	435,0
63159	4x AWG 12 +2x AWG 14	3,31/ 2,08	15,7	224,0	466,0
63160	4x AWG 10 +2x AWG 14	5,26/ 2,08	18,2	301,0	703,0
63161	4x AWG 8 +2x AWG 14	8,37/ 2,08	24,1	457,0	901,0
63162	4x AWG 6 +2x AWG 14	13,31/ 2,08	27,4	615,0	1275,0
63163	4x AWG 4 +2x AWG 14	21,21/ 2,08	33,4	1450,0	1861,0

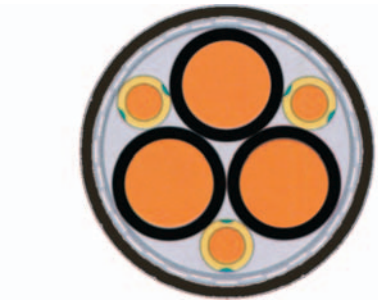
Sheath colour orange

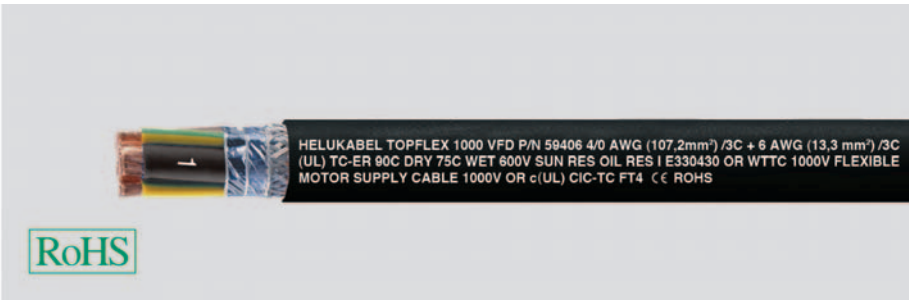
Part no.	No. cores x AWG-No.	Cross-section mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
62876	4x AWG 16 +2x AWG 18	1,31/ 0,963	13,0	88,0	259,0
62877	4x AWG 14 +2x AWG 18	2,08/ 0,963	14,0	133,0	370,0
62878	4x AWG 14 +2x AWG 14	2,08/ 2,08	14,0	159,0	399,0
62879	4x AWG 12 +2x AWG 18	3,31/ 0,963	15,3	197,0	435,0
62880	4x AWG 12 +2x AWG 14	3,31/ 2,08	15,7	224,0	466,0
62881	4x AWG 10 +2x AWG 14	5,26/ 2,08	18,2	301,0	703,0
62882	4x AWG 8 +2x AWG 14	8,37/ 2,08	24,1	457,0	901,0
62883	4x AWG 6 +2x AWG 14	13,31/ 2,08	27,4	615,0	1275,0
62884	4x AWG 4 +2x AWG 14	21,21/ 2,08	33,4	1450,0	1861,0

Dimensions and specifications may be changed without prior notice. (RN07)

TOPFLEX® 1000 VFD EMC-preferred type, flexible motor power supply cable with control cores, oil-resistant, NFPA79 Edition 2012

NEW





Technical data

- Motor power supply cable for VFDs acc. to UL-Std. 83, 1277 and 2277
- **Temperature range** flexing -25°C to +90°C
- **Nominal voltage** UL 1277 - TC 600 V UL 2277 - WTTC 1000 V
- **Test voltage** 2500 V
- **Minimum bending radius** flexing 15x cable Ø fixed installation 7,5x cable Ø
- **Coupling resistance** max. 250 Ohm/km

Cable structure

- Bare copper-conductor, fine-wire with AWG dimensions
- Core insualtion of special PVC with clear nylon coating
- Core identification black cores with continuous white numbering
- GN-YE conductor (divided into 3)
- Cores stranded in concentric layers
- 3 power + 3 ground conductor design
- 1. Screen with special aluminium film 2. Tinned copper braided screen, coverage approx. 80%
- Outer sheath of special TPE
- Sheath colour black (RAL 9005)
- with length marking in feet

Properties

- Resistant to oil and sunlight
- Due the optimal screening an interference-free operation of frequency container is obtained
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Behavior in fire acc. to CIC FT4
- **UL** UL Type TC-ER, UL 83, 1277, 2277, WTTC, Oil Res I, NFPA 2012
- **CSA** c(UL) Type CIC FT4, CSA C22.2 No. 230, CSA C22.2 No. 239

Note

- VFD = Variable Frequency Drive

Application

It is used as a power supply cable under average mechanical stress for fixed installation and sometimes for free movement in dry, moist wet rooms and outside. It is used in the automotive industry, food processing industry, transfer streets, packaging industry, machine tools, handling equipment, other industrial uses include pumps, fans, transport belts and in air conditioning systems, etc. Used in explosion proof areas.

EMC = Electromagnetic compatibillity

The screen must be connected at both ends and ensure large-area contact over the entire cable circumference for compliance with the functional interference requirements of EN 55011.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. power cores x AWG-No.	No. ground cores x AWG-No.	No. cores x cross-section mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
59398	3x AWG 8 +	3x AWG 16	(3x 8,37 + 3x 1,31)	17,1	372,0	573,0
59399	3x AWG 6 +	3x AWG 14	(3x 13,3 + 3x 2,08)	19,3	554,0	735,0
59400	3x AWG 4 +	3x AWG 12	(3x 21,2 + 3x 3,3)	24,5	831,0	1225,0
59401	3x AWG 2 +	3x AWG 10	(3x 33,6 + 3x 5,26)	27,8	1258,0	1737,0
59402	3x AWG 1 +	3x AWG 8	(3x 42,4 + 3x 8,37)	31,1	1615,0	2225,0
59403	3x AWG 1/0 +	3x AWG 8	(3x 53,4 + 3x 8,37)	33,1	1938,0	2604,0
59404	3x AWG 2/0 +	3x AWG 8	(3x 67,5 + 3x 8,37)	35,8	2344,0	3089,0
59405	3x AWG 3/0 +	3x AWG 6	(3x 85 + 3x 13,3)	38,6	2994,0	3823,0
59406	3x AWG 4/0 +	3x AWG 6	(3x 107,2 + 3x 13,3)	44,5	3590,0	4700,0
59407	3x AWG 250 kcmil +	3x AWG 6	(3x 127 + 3x 13,3)	48,4	4177,0	5487,0
59408	3x AWG 300 kcmil +	3x AWG 4	(3x 152 + 3x 21,2)	50,9	5104,0	6530,0
59409	3x AWG 350 kcmil +	3x AWG 2	(3x 178 + 3x 33,6)	54,0	6218,0	7768,0
59410	3x AWG 400 kcmil +	3x AWG 2	(3x 203 + 3x 33,6)	55,5	6875,0	8492,0
59411	3x AWG 500 kcmil +	3x AWG 2	(3x 254 + 3x 33,6)	60,5	8303,0	10130,0

Dimensions and specifications may be changed without prior notice. (RN07)

TOPFLEX®-EMV-UV 2YSLC11Y-J UL/CSA Motor

supply cable 1000 V, for power supply connections to frequency converters, double screened, meter marking.



Technical data

- Special PUR motor power supply cable for frequency converters to UL AWM style 20234 and CSA AWM adapted to DIN VDE 0250
- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage**
  UL 1000 V
- **Test voltage** 4000 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Minimum bending radius**
  fixed installation for outer Ø:
  up to 12 mm: 5x cable Ø
  > 12-20 mm: 7,5x cable Ø
  > 20 mm: 10x cable Ø
  free-movement for outer Ø:
  up to 12 mm: 10x cable Ø
  > 12-20 mm: 15x cable Ø
  > 20 mm: 20x cable Ø
- **Coupling resistance**
  acc. to different cross-section
  max. 250 Ohm/km
- **Radiation-resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, fine wire conductor to DIN VDE 0295 cl.5, BS 6360 cl.5 or IEC 60228 cl.5
- Core insulation of polyethylen (PE)
- Core indentification BK, BN, GY
- GN-YE conductor
- Cores stranded in concentric layers
- 1. Screen with special aluminium film
  2. Tinned copper braided screen, approx. 85% coverage
- Outer sheath of PUR
- Sheath colour black (RAL 9005)
- with meter marking

Note

- **) The current carrying capacity for permanent operation at ambient temperature of 30°C. For deviating ambient temperatures the conversion factors should be used and for further see the indication in DIN VDE 0298 part 4.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Properties

- Meets EMC requirements acc. to EN 55011 and DIN VDE 0875 part 11
- PUR outer sheath: low adhesion, flame retardant, extremely abradion resistant, halogen-free, resistant to UV, oil, hydrolysis and microbial attack
- Low mutual capacitance
- Low coupling resistance for high electromagnetic compatibility
- UV-resitant
- Outdoor application
- This screened motor supply cable with low mutual capacitance of the single cores because of the special PE core insulation and low screen capacitance enable a low-loss transmission of the power compared to PVC-sheathed connecting cables
- Due to the optimal screening an interference-free operation of frequency converters is obtained
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PUR outer sheath self-extinguishing and flame retardant to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

N

Application

This TOPFLEX®-EMV-UV-2YSLC11Y-J UL/CSA motor power supply cable with PUR outher sheath for the frequency converters assures electromagnetic compatibillity in plants and buildings, facilities with units and operating equipment where the fields of electromagnetic interference might cause adverse effects on the surroundings. As a supply and connecting cable for medium mechanical stresses in fixed installations and forced movements in dry, moist and wet environments and for outdoor applications. Used in the automotive and food industries, environmental technology, packaging industry, machine tools. Handling equipment, for SIMOVERT drives, they are particularly suitable for use with industrial pumps, ventilators, conveyor belts and air-conditioning installations and similar applications. Installation in hazardous areas.

EMC = Electromagnetic compatibillity

The screen must be connected at both ends and ensure large-area contact over the entire cable circumference for compliance with the functional interference requirements of EN 55011.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Mutual capacitance Core / Core app.nF / km	Core / Screen app.nF / km	Coupling resistance at 1 MHz Ohm/km	at 30 MHz Ohm/km	Power ratings **) with 3 loaded cores in Amperes	Cop. weight kg / km	Weight app. kg / km	AWG-No.
22389	4 G 1,5	10,3					18	95,0	230,0	16
22390	4 G 2,5	12,3	80	130	18	210	26	150,0	300,0	14
22391	4 G 4	13,9	90	150	11	210	34	235,0	485,0	12
22392	4 G 6	15,3	90	150	6	150	44	320,0	630,0	10
22393	4 G 10	19,5	120	200	7	180	61	533,0	860,0	8
22394	4 G 16	23,3	140	230	9	190	82	789,0	1290,0	6
22395	4 G 25	27,4	120	211	4	95	108	1180,0	1800,0	4
22396	4 G 35	30,3	150	260	3	85	135	1662,0	2610,0	2
22397	4 G 50	35,5	190	320	2	40	168	2345,0	2950,0	1
22398	4 G 70	40,2	190	320	2	45	207	3196,0	3950,0	2/0
22399	4 G 95	44,5	250	410	1	50	250	4316,0	5300,0	3/0
22566	4 G 120	50,3					292	5435,0	6600,0	4/0
22567	4 G 150	56,1					335	6394,0	7040,0	300 kcmil
22568	4 G 185	58,0					382	7639,0	8380,0	350 kcmil

Dimensions and specifications may be changed without prior notice. (RN07)

TOPFLEX® MOTOR EMV 1/1 triple-screened, low capacitance, 80°C, 1000 V, high flexible motor supply cable, meter marking



Technical data

- Special PUR motor power supply cable for frequency converter to UL AWM Style 20234 and CSA AWM adapted to DIN VDE 0250
- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -40°C to +80°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage**
  VDE U_0/U 600/1000 V
  UL 1000 V
- **Test voltage** 3000 V
- **Mutual capacitance** at 4 kHz
  acc. to different cross-section
  core/core 70-250 nF/km
  core/screen 110-410 nF/km
- **Insulation resistance**
  min. 200 MOhm x km
- **Minimum bending radius**
  fixed installation, for outside Ø:
  up to 12 mm: 5x cable Ø
  > 12-20 mm: 7,5x cable Ø
  > 20 mm: 10x cable Ø
  free-movement, for outside Ø:
  up to 12 mm: 10x cable Ø
  > 12-20 mm: 15x cable Ø
  > 20 mm: 20x cable Ø
- **Coupling resistance**
  acc. to different cross-section
  max. 250 Ohm/km
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, IEC 60228 cl.5
- Core insulation of special polyethylene (PE)
- Core identification BK, BN, GY
- GN-YE conductor
- Cores stranded in layers
- 1. Screen of semi-conductive fleece
  2. Aluminium-coated polyester film
  3. Tinned copper braided screen, coverage approx. 85%
- Outer sheath of PUR
- Sheath colour orange (RAL 2003) acc. to DESINA®
- with meter marking

Properties

- PUR outer sheath: low adhesion, flame retardant, extremely abrasion resistant, halogen-free, resistant to UV, oil, hydrolysis and microbial attack
- This screened motor power supply cable, with low mutual capacitance because of the special PE core insulation, enable low-loss transmission of power compared to PVC-sheathed power supply cables
- The optimal triple screening enables interference-free operation of frequency converters
- Optimum compliance with requirements for electromagnetic compatibility (EMC) due to the triple screening
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PUR outer sheath self-extinguishing and flame retardant to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- **) The current carrying capacity for permanent operation at ambient temperature of 30°C. For deviating ambient temperatures the conversion factors should be used and for further see the indication in DIN VDE 0298 part 4.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

This TOPFLEX® MOTOR EMV 1/1 two-approvals, triple-screened motor power supply cable for frequency converters provides outstanding EMC in machines and systems. Suitable as a supply and connecting cable for high mechanical stresses, in fixed installations and occasional free movements in dry, moist and wet environments, as well as outdoors. Areas of application include machine tools, processing and manufacturing machinery, machining centres, industrial robots, transfer lines, handling equipment, etc.

EMC = Electromagnetic compatibillity

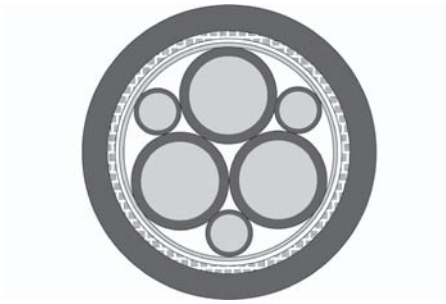
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

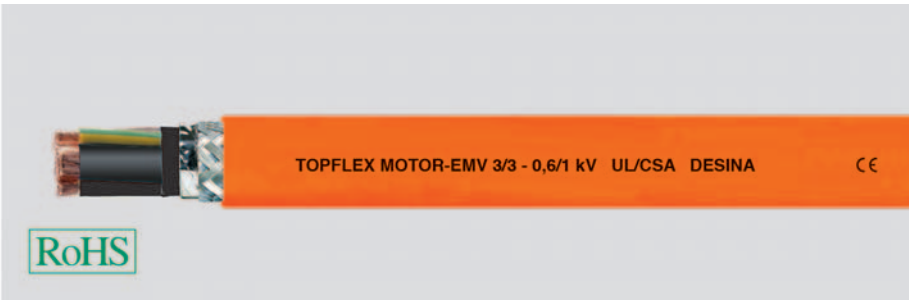
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Mutual capacitance Core / Core app.nF / km	Core / Screen app.nF / km	Coupling resistance at 1 MHz Ohm/km	at 30 MHz Ohm/km	Power ratings **) with 3 loaded cores in Amperes	Cop. weight kg / km	Weight app. kg / km	AWG-No.
78377	4 G 1,5	11,5	70	110			18	95,0	230,0	16
78378	4 G 2,5	13,5	80	130	18	210	26	150,0	300,0	14
78379	4 G 4	15,8	90	150	11	210	34	235,0	485,0	12
78380	4 G 6	17,8	90	150	6	150	44	320,0	630,0	10
708609	4 G 10	21,6	120	200	7	180	61	533,0	860,0	8
708610	4 G 16	25,4	120	210	9	190	82	789,0	1290,0	6
708611	4 G 25	31,0	140	230	4	95	108	1180,0	1800,0	4
708612	4 G 35	33,0	150	260	3	85	135	1662,0	2610,0	2
78384	4 G 50	39,0	190	320	2	40	168	2345,0	2950,0	1
78385	4 G 70	45,0	190	320	2	45	207	3196,0	3950,0	2/0
78386	4 G 95	50,1	250	410	1	50	250	4316,0	5300,0	3/0
78387	4 G 120	54,2					292	5435,0	6600,0	4/0
78388	4 G 150	61,3					335	6394,0	7040,0	300 kcmil
78479	4 G 185	64,2					382	7639,0	8380,0	350 kcmil

Dimensions and specifications may be changed without prior notice.

TOPFLEX®-MOTOR-EMV 3/3 triple-screened, low capacitance, 80°C, 1000 V, PUR flexible motor supply cable, meter marking





Technical data

- Special PUR motor power supply cable for frequency converter to UL AWM Style 20234 and CSA AWM adapted to DIN VDE 0250
- **Temperature range** flexing -30°C to +80°C fixed installation -40°C to +80°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** VDE U_0/U 600/1000 V UL 1000 V
- **Test voltage** 3000 V
- **Mutual capacitance** at 4 kHz acc. to different cross-section core/core 70-250 nF/km core/screen 110-410 nF/km
- **Insulation resistance** min. 200 MOhm x km
- **Minimum bending radius** fixed installation for outside Ø: up to 12 mm: 5x cable Ø > 12-20 mm: 7,5x cable Ø > 20 mm: 10x cable Ø free-movement for outside Ø: up to 12 mm: 10x cable Ø > 12-20 mm: 15x cable Ø > 20 mm: 20x cable Ø
- **Coupling resistance** acc. to different cross-section max. 250 Ohm/km
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special polyethylene (PE)
- Core identification black cores with imprint U1, V1, W3
- GN-YE conductor (divided into 3)
- Cores stranded in layers
- 1. Screen of semi-conductive fleece 2. Aluminium-coated polyester film 3. Tinned copper braided screen, coverage approx. 80%
- Outer sheath of PUR
- Sheath colour orange (RAL 2003) acc. to DESINA®
- with meter marking

Properties

- PUR outer sheath: low adhesion, flame retardant, extremely abrasion resistant, halogen-free, resistant to UV, oil, hydrolysis and microbial attack
- This screened motor power supply cable, with low mutual capacitance because of the special PE core insulation, enables low-loss transmission of power compared to PVC-sheathed power supply cables
- The optimal triple screening enables interference-free operation of frequency converters
- Optimum compliance with requirements for electromagnetic compatibility (EMC) due to the triple screening
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Special features

Here the earth core cross-section is divided into thirds, which lie in the interstices between the power supply cores. Due to this symmetrical construction, the PE insulation and the triple screening, very low capacitance and inductance are achieved. EMC compatibility is considerably enhanced.

Tests

- PUR outer sheath self-extinguishing and flame retardant to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- All cables are also available in JB with coloured cores acc. to DIN VDE 0295
- **) The current carrying capacity for permanent operation at ambient temperature of 30°C. For deviating ambient temperatures the conversion factors should be used and for further see the indication in DIN VDE 0298 part 4.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

This TOPFLEX® MOTOR EMV 3/3 two-approvals, triple-screened motor power supply cable for frequency converters provides outstanding EMC in machines and systems. Suitable as a supply and connecting cable for high mechanical stresses, in fixed installations and occasional free movements in dry, moist and wet environments, as well as outdoors. Areas of application include machine tools, processing and manufacturing machinery, machining centres, industrial robots, transfer lines, handling equipment, etc. By dividing the earth core into thirds and dividing it evenly in the interstices between the power supply cores, a symmetrical structure has been achieved. This results in improved EMC, capacitance and inductance compared to the 4-core version.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Continuation ▸

TOPFLEX®-MOTOR-EMV 3/3 triple-screened, low capacitance, 80°C, 1000 V, PUR flexible motor supply cable, meter marking

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Coupling resistance at 1 MHz Ohm/km	Coupling resistance at 30 MHz Ohm/km	Power ratings **) with 3 loaded cores in Amperes	Cop. weight kg / km	Weight app. kg / km	AWG-No.
78614	3 x 1,5 + 3 G 0,25	10,4			18	86,0	150,0	16
78615	3 x 2,5 + 3 G 0,5	12,1	18	210	26	144,0	240,0	14
78616	3 x 4 + 3 G 0,75	13,9	11	210	34	224,0	345,0	12
78617	3 x 6 + 3 G 1,0	15,5	6	150	44	298,0	460,0	10
78618	3 x 10 + 3 G 1,5	19,5	7	180	61	491,0	840,0	8
78619	3 x 16 + 3 G 2,5	22,5	9	190	82	723,0	930,0	6
78620	3 x 25 + 3 G 4,0	28,6	4	95	108	1138,0	1425,0	4
78621	3 x 35 + 3 G 6,0	29,6	3	85	135	1535,0	1900,0	2
708613	3 x 50 + 3 G 10,0	35,7	2	40	168	2208,0	2812,0	1
708371	3 x 70 + 3 G 10,0	43,0	2	45	207	2871,0	3370,0	2/0
708372	3 x 95 + 3 G 16,0	47,0	1	50	250	3953,0	4320,0	3/0
708373	3 x 120 + 3 G 25,0	52,0			292	4836,0	6160,0	4/0
78626	3 x 150 + 3 G 25,0	58,0			335	5412,0	7200,0	300 kcmil

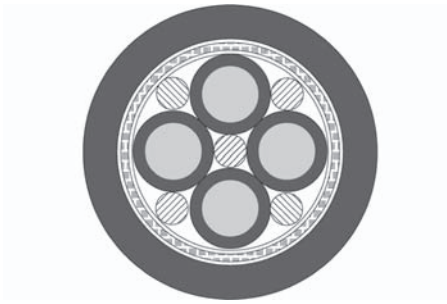
Dimensions and specifications may be changed without prior notice.



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUTOP® HT-MS-EP4

TOPSERV® PVC Motor and servo cables for fixed or not constantly movements 0,6/1 kV, according to Siemens 6FX5008, Lenze, Bosch Rexroth





Technical data

- Special PVC Motorcable acc. to UL AWM Style 2570 CSA AWM VDE-recognized
- **Temperature range**
  flexing -0°C to +60°C
  fixed installation -20°C to +80°C
- **Nominal voltage**
  VDE U_0/U 600/1000 V
  UL/CSA 1000 V
- **A.c. test voltage**, 50 Hz
  4000 V
- **Minimum bending radius**
  flexing 15x cable Ø
  fixed installation 5x cable Ø
  min. 100.000 cycles

Cable structure

- Bare copper-conductor, acc. to DIN EN 60228
  class 5: fine-wire
  class 6: extra fine-wire
- Core insulation
  to 6 mm² of halogen-free PP
  from 10 mm² of PVC
- Core identification
  power supply cores
  core 1: black with imprint U/L1/C/L+
  core 2: black with imprint V/L2
  core 3: black with imprint W/L3/D/L-
  control cores
  TOPSERV® 108 PVC without control cores
  TOPSERV® 112 PVC with **1** control cores
  acc. to Siemens
  core 1: black with imprint BR1
  core 2: white with imprint BR2
  acc. to Lenze
  core 1: brown with imprint BR1
  core 2: white with imprint BR2
  TOPSERV®119 PVC with **2** control cores
  pair 1: black with number no. 5+6
  pair 2: black with number no. 7+8
- GN-YE conductor
- Screening of the control cores in pairs wrapped with tinned copper braid
- Power supply cores laid up with optimal lay length and stabilising filler
- Fleece wrapping facilitates sliding
- Overall screening from tinned copper braid, optimal coverage approx. 85%
- Outer sheath of PVC
- Sheath colour orange (RAL 2003)

Properties

- low capacitance until 6mm² (included)
- oilresistant PVC outer sheath
- Optimum compliance with requirements for electromagnetic compatibility (EMC) by approx. 85% coverage from the braided screen
- These cables are produced to high quality specifications and conform to the DESINA®-standard
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC sheath flame retardant acc. to DIN EN 60332-1-1 to -1-3 (VDE 0482-332-1-1 to -1-3)

Note

- For a corresponding encoder cables please check chapter **TOPGEBER 511 PVC**
- For highly flexible, drag chain capable servo cables please check chapter **TOPSERV® PUR**
- Brackets ( ) indicate screen
- DESINA® explanation see introduction
- SIEMENS product designations 6FX 5008-plus are registered trademarks of Siemens AG and are to be used only for purposes of comparison
- Lenze product designations are registered trademarks of Lenze AG and are to be used only for purposes of comparison
- Bosch Rexroth product designations INK are registered trademarks of Bosch Rexroth AG and are to be used only for purposes of comparison

Application

The combination of supply cores with the control cores for the braking function and the thermal protection in these cables is ideal. Precision servomotors, as used today in many areas of highly-automated manufacturing processes, call for high-quality, reliable and long-lasting cables. These requirements are met to a high degree by these cables. The cables have an additional overall screen to ensure EMC compatibility, i.e. for protection against electromagnetic interference. Production is based on the specifications of established manufacturers of servo-drives and controls, as well as on various VDE, UL and CSA standards.
Applications include machine, plant and robot construction, automation, drive, control and production engineering.
Attractive for export-oriented mechanical and system engineering.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Continuation ▸

TOPSERV® PVC Motor and servo cables for fixed or not constantly movements 0,6/1 kV, according to Siemens 6FX5008, Lenze, Bosch Rexroth

TOPSERV® 108 PVC, acc.to Siemens 6FX5008

Part no.	No.cores x cross-sec. mm²	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
707250	(4 G 1,5)	Siemens	6FX5008-1BB11	Orange RAL 2003	8,0	78,0	118,0	16
707251	(4 G 2,5)	Siemens	6FX5008-1BB21	Orange RAL 2003	9,6	130,0	180,0	14
707252	(4 G 4)	Siemens	6FX5008-1BB31	Orange RAL 2003	11,0	198,0	264,0	12
707253	(4 G 6)	Siemens	6FX5008-1BB41	Orange RAL 2003	13,1	288,0	382,0	10
707254	(4 G 10)	Siemens	6FX5008-1BB51	Orange RAL 2003	19,3	463,0	764,0	8
707255	(4 G 16)	Siemens	6FX5008-1BB61	Orange RAL 2003	23,3	701,0	1218,0	6
707256	(4 G 25)	Siemens	6FX5008-1BB25	Orange RAL 2003	26,9	1068,0	1670,0	4
707257	(4 G 35)	Siemens	6FX5008-1BB35	Orange RAL 2003	30,3	1449,0	2139,0	2
707258	(4 G 50)	Siemens	6FX5008-1BB50	Orange RAL 2003	34,5	2096,0	2991,0	1

TOPSERV® 112 PVC, acc.to Siemens 6FX5008

Part no.	No.cores x cross-sec. mm²	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
707280	(4 G 1,5 + (2 x 1,5))	Siemens	6FX5008-1BA11	Orange RAL 2003	10,4	140,0	206,0	16
707281	(4 G 2,5 + (2 x 1,5))	Siemens	6FX5008-1BA21	Orange RAL 2003	12,0	185,0	269,0	14
707282	(4 G 4 + (2 x 1,5))	Siemens	6FX5008-1BA31	Orange RAL 2003	13,6	257,0	377,0	12
707283	(4 G 6 + (2 x 1,5))	Siemens	6FX5008-1BA41	Orange RAL 2003	15,6	348,0	485,0	10
707284	(4 G 10 + (2 x 1,5))	Siemens	6FX5008-1BA51	Orange RAL 2003	21,0	502,0	887,0	8
707285	(4 G 16 + (2 x 1,5))	Siemens	6FX5008-1BA61	Orange RAL 2003	24,1	741,0	1276,0	6
707286	(4 G 25 + (2 x 1,5))	Siemens	6FX5008-1BA25	Orange RAL 2003	28,3	1100,0	1716,0	4
707287	(4 G 35 + (2 x 1,5))	Siemens	6FX5008-1BA35	Orange RAL 2003	31,4	1498,0	2290,0	2
707288	(4 G 50 + (2 x 1,5))	Siemens	6FX5008-1BA50	Orange RAL 2003	34,5	2500,0	2934,0	1

TOPSERV® 112 PVC, acc.to Lenze

Part no.	No.cores x cross-sec. mm²	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
707221	(4 G 1 + (2 x 0,5))	Lenze	-	Orange RAL 2003	9,5	88,0	143,0	17
707222	(4 G 1,5 + (2 x 0,5))	Lenze	-	Orange RAL 2003	11,0	106,0	187,0	16
707223	(4 G 2,5 + (2 x 0,5))	Lenze	-	Orange RAL 2003	12,3	152,0	233,0	14
707224	(4 G 4 + (2 x 1,0))	Lenze	-	Orange RAL 2003	14,6	229,0	382,0	12
707225	(4 G 6 + (2 x 1,0))	Lenze	-	Orange RAL 2003	16,7	312,0	491,0	10
710054	(4 G 10 + (2 x 1,0))	Lenze	-	Orange RAL 2003	19,8	484,0	731,0	8
710055	(4 G 16 + (2 x 1,0))	Lenze	-	Orange RAL 2003	23,3	729,0	1033,0	6

TOPSERV® 119 PVC, acc.to Bosch Rexroth

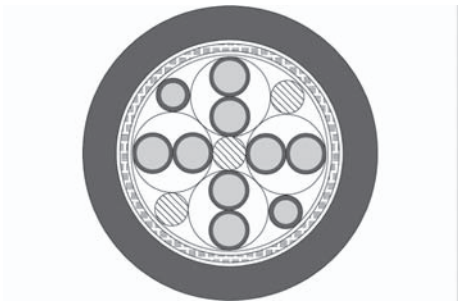
Part no.	No.cores x cross-sec. mm²	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
707290	(4 G 1 + 2 x (2 x 0,75))	Bosch Rexroth	INK-0653	Orange RAL 2003	11,2	130,0	208,0	-
707291	(4 G 1,5 + 2 x (2 x 0,75))	Bosch Rexroth	INK-0650	Orange RAL 2003	11,5	155,0	229,0	-
707292	(4 G 2,5 + 2 x (2 x 1,0))	Bosch Rexroth	INK-0602	Orange RAL 2003	13,5	216,0	321,0	-
707293	(4 G 4 + (2 x 1,0) + (2 x 1,5))	Bosch Rexroth	INK-0603	Orange RAL 2003	15,5	297,0	432,0	-
707294	(4 G 6 + (2 x 1,0) + (2 x 1,5))	Bosch Rexroth	INK-0604	Orange RAL 2003	17,3	374,0	587,0	-
707295	(4 G 10 + (2 x 1,0) + (2 x 1,5))	Bosch Rexroth	INK-0605	Orange RAL 2003	21,2	545,0	910,0	-
707296	(4 G 16 + 2 x (2 x 1,5))	Bosch Rexroth	INK-0606	Orange RAL 2003	25,0	804,0	1334,0	-

Dimensions and specifications may be changed without prior notice. (RN07)



Suitable HELUTEC® Signal and power connectors can be found in our Cable Accessories catalogue.

TOPGEBER 511 PVC Feedback cables according to Siemens-, Lenze- or Bosch Rexroth Standard with PVC-sheath for fixed or not constantly movements





Technical data

- Special PVC feedback cable acc. to UL AWM style 20233 and CSA
- **Temperature range**
  flexing -0°C to +60°C
  fixed installation -20°C to +80°C
- **Nominal voltage**
  acc. to Siemens 30 V
  acc. to Bosch Rexroth and Lenze 300 V
- **A.c. test voltage**, 50 Hz
  core/core 1500 V
  core/screen 1000 V
- **Minimum bending radius**
  flexing 15x cable Ø
  fixed installation 6x cable Ø
  min. 100.000 cycles

Cable structure

- Copper-conductor bare or tinned to DIN VDE 0295 cl.6, extra fine-wire, IEC 60228 cl.6
- Core insulation of special polypropylene
- Core colours on request
- Overall screening of tinned copper wire braid with tinned drain wire, coverage approx. 85%
- Polyester foil
- Outer sheath of PVC
- Sheath colour green (RAL 6018) acc. to DESINA® or orange

Properties

- Outer sheath of PVC, oilresistant
- Optimum compliance with requirements for elect romagnetic compatibility (EMC) by approx. 85% coverage from the braided screen
- These cables are produced to high quality specifications and conform to the DESINA®-standard
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC sheath flame retardant acc. to DIN EN 60332-1-1 bis -1-3 (VDE 0482-332-1-1 bis -1-3)

Note

- For a corresponding motor- and servocables please check chapter **TOPSERV® PVC**
- For drag chain capable encoder cables please check chapter **TOPGEBER 512 PUR**
- Brackets ( ) indicate screen.
- SIEMENS product designations 6FX 5008-... are registered trademarks of Siemens AG and are to be used only for purposes of comparison.
- INDRAMAT product designations INK- are registered trademarks of Bosch-Rexroth AG and are to be used only for purposes of comparison.
- LENZE product designations are registered trademarks of LENZE AG, and are to be used only for purposes of comparison.
- DESINA®: Explanation: see introduction.

Application

Low cost alternativ to Motorcables with PUR Sheath for fix instalation or occasional moving applications. These low-capacitance incremental encoder cables or position feedback cables transmit the control pulses for positioning and operating characteristics of servomotors. These cables are used as connecting cables for tachos, brakes and pulse generators in industrial equipment, machine tools, control and automation equipment.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
707417	(4 x 2 x 0,34 + 4 x 0,5)	Siemens	6FX 5008-1BD21	Green	8,9	70,3	117,8	-
707389	(3 x (2 x 0,14) + 4 x 0,14 + 2 x 0,5)	Siemens	6FX 5008-1BD41	Green	8,8	58,0	118,9	-
707390	(3 x (2 x 0,14) + 4 x 0,14 + 4 x 0,25 + 2 x 0,5)	Siemens	6FX 5008-1BD51	Green	9,6	70,7	137,7	-
803672	(2 x 2 x 0,22 + 1 x 2 x 0,34)	Siemens	6FX 5008-2DC00	Green	6,9	38,0	61,0	-
802471	(2 x 2 x 0,22)	Siemens	6FX 5008-1DC00	Green	6,9	35,0	71,0	-
705461	(4 x 2 x 0,25 + 2 x 0,5)	Bosch Rexroth	INK-0448	Orange	8,4	50,0	99,0	-
707392	(4 x 2 x 0,25 + 2 x 1,0)	Bosch Rexroth	INK-0209	Orange	8,8	64,0	119,0	-
707394	(4 x 2 x 0,14 + 4 x 1,0 + (4 x 0,14))	Bosch Rexroth	INK-0532	Orange	9,7	86,0	149,0	-
707077	3 x (2 x 0,14) + (2 x 0,5)	Lenze	-	Green	9,3	54,0	95,0	-
707397	4 x (2 x 0,14) + (2 x 1,0)	Lenze	-	Green	11,0	70,0	145,0	-
707398	3 x (2 x 0,14) + (3 x 0,14)	Lenze	-	Green	9,2	41,0	102,0	-

Dimensions and specifications may be changed without prior notice. (RN07)



Suitable HELUTEC® Signal and power connectors can be found in our Cable Accessories catalogue.

TOPSERV® PUR high flexible motor and servo cable for drag chain 0,6/1 kV, for example according to Siemens 6FX8008PLUS, Lenze, Bosch Rexroth





Technical data

- Special PUR drag chain cable acc. to UL AWM Style 21223 or 20234 CSA AWM VDE-recognized
- **Temperature range** flexing -30°C to +80°C fixed installation -40°C to +90°C
- **Nominal voltage** VDE U_0/U 600/1000 V UL/CSA 1000 V
- **A.c. test voltage**, 50 Hz 4000 V
- **Insulation resistance** min. 20 MOhm x km
- **Coupling resistance** max. 250 Ohm/km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, IEC 60228 cl.6
- Core insulation halogen-free PP
- Core identification
  power supply cores
  core 1: black with imprint U/L1/C/L+
  core 2: black with imprint V/L2
  core 3: black with imprint W/L3/D/L-
  control cores
  TOPSERV® 109 PUR without control cores
  TOPSERV® 113 PUR with **1** control cores
  acc. to Siemens
  core 1: black with imprint BR1
  core 2: white with imprint BR2
  acc. to Lenze
  core 1: brown with imprint BR1
  core 2: white with imprint BR2
  TOPSERV®121 PUR with **2** control cores
  pair 1: black with number no. 5+6
  pair 2: black with number no. 7+8
- GN-YE conductor
- Screening of the control cores in pairs wrapped with tinned copper braid
- Power supply cores laid up with optimal lay length and stabilising filler
- Fleece wrapping facilitates sliding
- Overall screening from tinned copper braid, optimal coverage approx. 85%
- Outer sheath of PUR
- Sheath colour orange (RAL 2003)

Properties

- Low adhesion, flame retardant, extremely abrasion resistant, halogen-free, resistant to UV, oil, hydrolysis and microbial attack PUR sheath
- Optimized insulation materials ensure resistance to oils (including mineral oils), greases, coolants, hydraulic fluids as well as many alkalis and solvents.
- Optimum compliance with requirements for electromagnetic compatibility (EMC) by approx. 85% coverage from the braided screen
- These cables are produced to high quality specifications and conform to the DESINA® standard.
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- Resistant to cleaning and disinfecting agents acc. to ECOLAB

Tests

- PUR outer sheath self-extinguishing and flame retardant to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- For a corresponding encoder cables please check chapter **TOPGEBER 512 PUR**
- For servo cables with non or only slight drag chain application please check chapter **TOPSERV® PVC**
- Brackets ( ) indicate screen
- DESINA® explanation see introduction
- SIEMENS product designations 6FX 5008-plus are registered trademarks of Siemens AG and are to be used only for purposes of comparison
- Lenze product designations are registered trademarks of Lenze AG and are to be used only for purposes of comparison
- Bosch Rexroth product designations INK are registered trademarks of Bosch Rexroth AG and are to be used only for purposes of comparison

Application

The combination of supply cores with the control cores for the braking function and the thermal protection in these cables is ideal. Precision servomotors, as used today in many areas of highly-automated manufacturing processes, call for high-quality, reliable and long-lasting cables. These requirements are met to a high degree by these cables. The cables have an additional overall screen to ensure EMC compatibillity, i. e. for protection against electromagnetic interference. Production is based on the specifications of established manufacturers of servo-drives and controls, as well as on various VDE, UL and CSA standards. Applications include machine, plant and robot construction, automation, drive, control and production engineering. Attractive for export-oriented mechanical and system engineering. Please observe applicable installation regulations for use in energy supply chains.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Continuation ▸

TOPSERV® PUR high flexible motor and servo cable for drag chain 0,6/1 kV, for example according to Siemens 6FX8008PLUS, Lenze, Bosch Rexroth

TOPSERV® 109 PUR, acc.to Siemens 6FX8008PLUS

Part no.	No.cores x cross-sec. mm²	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
75943	(4 G 1,5)	Siemens	6FX8008-1BB11	Orange RAL 2003	8,9	90,0	142,0	16
75944	(4 G 2,5)	Siemens	6FX8008-1BB21	Orange RAL 2003	10,7	132,0	206,0	14
75945	(4 G 4)	Siemens	6FX8008-1BB31	Orange RAL 2003	12,2	204,0	290,0	12
75946	(4 G 6)	Siemens	6FX8008-1BB41	Orange RAL 2003	14,5	315,0	423,0	10
75947	(4 G 10)	Siemens	6FX8008-1BB51	Orange RAL 2003	17,5	488,0	672,0	8
75948	(4 G 16)	Siemens	6FX8008-1BB61	Orange RAL 2003	21,6	769,0	1038,0	6
75949	(4 G 25)	Siemens	6FX8008-1BB25	Orange RAL 2003	25,2	1100,0	1495,0	4
75950	(4 G 35)	Siemens	6FX8008-1BB35	Orange RAL 2003	28,6	1510,0	1936,0	2
75951	(4 G 50)	Siemens	6FX8008-1BB50	Orange RAL 2003	33,4	2133,0	2774,0	1
700437	(4 G 70)	Siemens	6FX8008-1BB70	Orange RAL 2003	39,9	3029,0	3803,0	2/0
700897	(4 G 95)	Siemens	-	Orange RAL 2003	49,5	4606,0	5102,0	3/0

TOPSERV® 113 PUR, acc.to Siemens 6FX8008PLUS

Part no.	No.cores x cross-sec. mm²	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
78948	(4 G 1,5 + (2 x 1,5))	Siemens	6FX8008-1BA11	Orange RAL 2003	11,6	148,0	233,0	16
78949	(4 G 2,5 + (2 x 1,5))	Siemens	6FX8008-1BA21	Orange RAL 2003	13,2	187,0	315,0	14
78950	(4 G 4 + (2 x 1,5))	Siemens	6FX8008-1BA31	Orange RAL 2003	14,8	268,0	403,0	12
78951	(4 G 6 + (2 x 1,5))	Siemens	6FX8008-1BA41	Orange RAL 2003	16,3	358,0	555,0	10
78952	(4 G 10 + (2 x 1,5))	Siemens	6FX8008-1BA51	Orange RAL 2003	19,5	584,0	769,0	8
75956	(4 G 16 + (2 x 1,5))	Siemens	6FX8008-1BA61	Orange RAL 2003	23,1	825,0	1207,0	6
75957	(4 G 25 + (2 x 1,5))	Siemens	6FX8008-1BA25	Orange RAL 2003	26,8	1283,0	1642,0	4
75958	(4 G 35 + (2 x 1,5))	Siemens	6FX8008-1BA35	Orange RAL 2003	30,9	1850,0	2120,0	2
75959	(4 G 50 + (2 x 1,5))	Siemens	6FX8008-1BA50	Orange RAL 2003	34,2	2540,0	2918,0	1

TOPSERV® 113 PUR, acc.to Lenze

Part no.	No.cores x cross-sec. mm²	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
707228	(4 G 1 + (2 x 0,5))	Lenze	-	Orange RAL 2003	10,5	88,0	166,0	16
707229	(4 G 1,5 + (2 x 0,5))	Lenze	-	Orange RAL 2003	11,5	106,0	206,0	16
707230	(4 G 2,5 + (2 x 0,5))	Lenze	-	Orange RAL 2003	13,2	152,0	268,0	14
707231	(4 G 4 + (2 x 1,0))	Lenze	-	Orange RAL 2003	14,6	229,0	387,0	12
707232	(4 G 6 + (2 x 1,0))	Lenze	-	Orange RAL 2003	17,6	333,0	523,0	10
707746	(4 G 10 + (2 x 1,0))	Lenze	-	Orange RAL 2003	20,1	508,0	766,0	8
707747	(4 G 16 + (2 x 1,0))	Lenze	-	Orange RAL 2003	23,8	751,0	1174,0	6

TOPSERV® 113 PUR

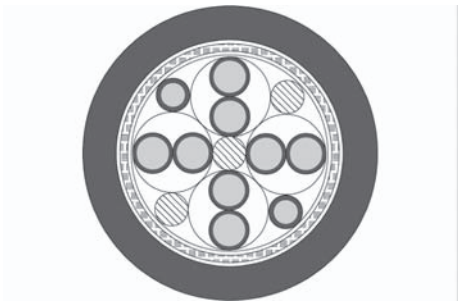
Part no.	No.cores x cross-sec. mm²	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
77376	(4 G 1 + (2 x 0,75))	-	-	Orange RAL 2003	11,5	134,0	250,0	17
700199	(4 G 1,5 + (2 x 0,5))	-	-	Orange RAL 2003	11,5	127,0	240,0	16
74506	(4 G 1,5 + (2 x 1,0))	-	-	Orange RAL 2003	11,1	138,0	212,0	16
74507	(4 G 2,5 + (2 x 1,0))	-	-	Orange RAL 2003	12,5	177,0	274,0	14
74508	(4 G 4 + (2 x 1,0))	-	-	Orange RAL 2003	14,3	258,0	378,0	12
74514	(4 G 6 + (2 x 1,0))	-	-	Orange RAL 2003	16,2	348,0	493,0	10
74509	(4 G 10 + (2 x 1,0))	-	-	Orange RAL 2003	19,0	574,0	736,0	8
74510	(4 G 16 + (2 x 1,0))	-	-	Orange RAL 2003	22,2	815,0	1071,0	6
74511	(4 G 25 + (2 x 1,0))	-	-	Orange RAL 2003	26,2	1273,0	1616,0	4
74512	(4 G 35 + (2 x 1,0))	-	-	Orange RAL 2003	29,8	1840,0	2080,0	2
74513	(4 G 50 + (2 x 1,0))	-	-	Orange RAL 2003	33,7	2530,0	2854,0	1

TOPSERV® 121 PUR, acc.to Bosch Rexroth

Part no.	No.cores x cross-sec. mm²	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
706003	(4 G 0,75 + (2 x 0,5))	Bosch Rexroth	INK-0670	Orange RAL 2003	9,2	77,0	138,0	17
73774	(4 G 1 + 2 x (2 x 0,75))	Bosch Rexroth	INK-0653	Orange RAL 2003	11,5	148,0	254,0	17
76103	(4 G 1,5 + 2 x (2 x 0,5))	-	-	Orange RAL 2003	12,4	145,0	250,0	17
73579	(4 G 1,5 + 2 x (2 x 1,0))	-	-	Orange RAL 2003	12,6	182,0	262,0	16
700561	(4 G 1,5 + 2 x (2 x 0,75))	Bosch Rexroth	INK-0650	Orange RAL 2003	12,2	170,0	290,0	16
73580	(4 G 2,5 + 2 x (2 x 1,0))	Bosch Rexroth	INK-0602	Orange RAL 2003	14,6	229,0	336,0	14
78955	(4 G 2,5 + 2 x (2 x 1,5))	-	-	Orange RAL 2003	15,6	241,0	350,0	14
74094	(4 G 4 + 2 x (2 x 1,0))	-	-	Orange RAL 2003	16,2	312,0	475,0	12
700562	(4 G 4 + (2 x 1,0) + (2 x 1,5))	Bosch Rexroth	INK-0603	Orange RAL 2003	16,0	318,0	485,0	12
78956	(4 G 4 + 2 x (2 x 1,5))	-	-	Orange RAL 2003	16,7	324,0	490,0	12
74095	(4 G 6 + 2 x (2 x 1,0))	-	-	Orange RAL 2003	18,2	376,0	606,0	10
700563	(4 G 6 + (2 x 1,0) + (2 x 1,5))	Bosch Rexroth	INK-0604	Orange RAL 2003	18,8	398,0	615,0	10
78957	(4 G 6 + 2 x (2 x 1,5))	-	-	Orange RAL 2003	19,0	450,0	621,0	10
74096	(4 G 10 + 2 x (2 x 1,0))	-	-	Orange RAL 2003	21,5	609,0	905,0	8
700564	(4 G 10 + (2 x 1,0) + (2 x 1,5))	Bosch Rexroth	INK-0605	Orange RAL 2003	22,4	610,0	915,0	8
78958	(4 G 10 + 2 x (2 x 1,5))	-	-	Orange RAL 2003	22,4	625,0	925,0	8
75978	(4 G 16 + 2 x (2 x 1,5))	Bosch Rexroth	INK-0606	Orange RAL 2003	26,9	904,0	1226,0	6
75979	(4 G 25 + 2 x (2 x 1,5))	Bosch Rexroth	INK-0607	Orange RAL 2003	28,0	1323,0	1595,0	4
75980	(4 G 35 + 2 x (2 x 1,5))	Bosch Rexroth	INK-0667	Orange RAL 2003	32,5	1621,0	2196,0	2
700565	(4 G 50 + 2 x (2 x 2,5))	Bosch Rexroth	INK-0668	Orange RAL 2003	37,0	2600,0	3000,0	1

Dimensions and specifications may be changed without prior notice. (RN07)

TOPGEBER 512 PUR high flexible Feedback cable for drag chain according to Siemens, Bosch Rexroth, Lenze and other Standards





Technical data

- Special PUR drag chain feedback cable acc. to UL AWM style 20233 and 20236 and CSA
- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage**
  acc. to Siemens 30 V
  acc. to Bosch Rexroth and Lenze 300 V
  further details on request
- **A.c. test voltage**, 50 Hz
  core/core 2000 V
  core/screen 1000 V
- **Mutual capacitance** at 800 Hz
  core/core approx. 70 nF/km
  core/screen approx. 110 nF/km
- **Insulation resistance**
  min. 20 MOhm x km
- **Coupling resistance**
  max. 250 Ohm
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 6x cable Ø

Cable structure

- tinned copper, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insulation of special polypropylene
- Core colours on demand
- Fleece wrapping facilitates sliding
- Overall screening of tinned copper wire braid with tinned drain wire, coverage approx. 85%
- Polyester foil
- Outer sheath of PUR
- Sheath colour green (RAL 6018) acc. to DESINA® or orange

Properties

- PUR outer sheath, low adhesion, extremely abrasion resistant, halogen-free, resistant to UV-, oil-, hydrolysis and microbial attack
- Special feature: These cables are produced to high quality specifications and conform to the DESINA®-standard
- Due to the high grade special core insulation, the PUR sheath and the highly flexible conductor, these cables are ideally suitable for use in drag chains and provide high functional reliability
- Optimum compliance with requirements for electromagnetic compatibility (EMC) by approx. 85% coverage from the braided screen
- Particularly attractive for export-oriented markets due to UL/CSA approval
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- Resistant to cleaning and disinfecting agents acc. to ECOLAB

Note

- For a corresponding motor- and servocables please check chapter **TOPSERV® PUR**
- Encoder cables for static application please check chapter **TOPGEBER 511 PVC**
- Brackets ( ) indicate screen.
- SIEMENS product designations 6FX 8008-... are registered trademarks of Siemens AG and are to be used only for purposes of comparison.
- Bosch Rexroth product designations INK- are registered trademarks of Bosch-Rexroth AG and are to be used only for purposes of comparison.
- DESINA®: Explanation: see introduction.

Application

These low-capacitance incremental encoder cables or position feedback cables transmit the control pulses for positioning and operating characteristics of servomotors. These cables are used as connecting cables for tachos, brakes and pulse generators in applications subjected to heavy mechanical stresses in industrial equipment, machine tools, control and automation equipment. Please observe applicable installation regulations for use in energy supply chains.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Continuation ▸

TOPGEBER 512 PUR high flexible Feedback cable for drag chain according to Siemens, Bosch Rexroth, Lenze and other Standards

Part no.	No.cores x cross-sec. mm²	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
700655	(8 x 2 x 0,18)	Siemens	6FX 8008-1BD11	Green	7,8	54,0	79,0	24
78081	(4 x 2 x 0,34 + 4 x 0,5)	Siemens	6FX 8008-1BD21	Green	9,8	83,0	135,0	21
707400	(3 x (2 x 0,14) + 2 x 0,5)	Siemens	6FX 8008-1BD31	Green	9,0	74,0	119,0	21
700657	(3 x (2 x 0,14) + 4 x 0,14 + 2 x 0,5)	Siemens	6FX 8008-1BD41	Green	8,9	66,0	120,0	26
700540	(3 x (2 x 0,14) + 4 x 0,14 + 4 x 0,25 + 2 x 0,5)	Siemens	6FX 8008-1BD51	Green	9,6	75,0	138,0	-
700654	(4 x 2 x 0,18)	Siemens	6FX 8008-1BD61	Green	6,4	35,0	57,0	-
700653	(2 x 2 x 0,18)	Siemens	6FX 8008-1BD71	Green	5,0	24,0	42,0	-
78079	(12 x 0,22)	Siemens	6FX 8008-1BD81	Green	7,5	65,0	74,0	24
804767	(2 x 2 x 0,2 + 2 x 0,38)	Siemens	6FX 8008-2DC00	Green	7,0	40,0	74,0	-
706333	(5 x 2 x 0,25 + 2 x 0,5)	Berger Lahr	-	Green	8,8	69,0	127,0	24
705413	(3 x 2 x 0,25 + 2 x 0,5)	Elau	-	Green	7,4	43,0	82,0	24
707403	(3 x 2 x 0,25)	B+R	-	Green	6,5	31,0	60,0	24
707404	(5 x 2 x 0,14 + 2 x 0,5)	B+R	-	Green	8,7	48,0	98,0	24
707405	3 x (2 x 0,14) + (2 x 0,5)	Lenze	-	Green	9,8	42,0	98,0	24
707406	4 x (2 x 0,14) + (2 x 1,0)	Lenze	-	Green	11,3	66,0	144,0	24
707407	3 x (2 x 0,14) + (3 x 0,14)	Lenze	-	Green	10,3	41,0	127,0	24
702050	(4 x 2 x 0,25 + 2 x 1,0)	Bosch Rexroth	INK-0209 grün	Green	8,8	64,0	99,0	24
78080	(4 x 2 x 0,25 + 2 x 0,5)	Bosch Rexroth	INK-0448 grün	Green	8,5	51,0	106,0	24
77741	(9 x 0,5)	Bosch Rexroth	INK-0208 grün	Green	8,8	69,0	124,0	20
707738	(4 x 2 x 0,25 + 2 x 1,0)	Bosch Rexroth	INK-0209	Orange	8,8	64,0	99,0	20
707739	(4 x 2 x 0,25 + 2 x 0,5)	Bosch Rexroth	INK-0448	Orange	8,5	51,0	106,0	20
707740	(9 x 0,5)	Bosch Rexroth	INK-0208	Orange	8,8	69,0	124,0	20
707408	(4 x 2 x 0,14 + 4 x 1,0 + (4 x 0,14))	Bosch Rexroth	INK-0532	Orange	9,7	81,0	142,0	20
707418	(3 x (2 x 0,25) + 3 x 0,25 + 2 x 1,0)	Bosch Rexroth	INK-0280	Orange	9,0	84,0	134,7	20
707409	(2 x 2 x 0,25 + 2 x 0,5)	Bosch Rexroth	INK-0750	Orange	7,2	38,0	79,0	20
77743	(3 x (2 x 0,14) + 2 x (1 x 0,5))	Heidenhain	-	Green	8,4	81,0	109,0	-
79513	(4 x 2 x 0,14 + 4 x 0,5)	Heidenhain	-	Green	8,5	52,0	100,0	26
707410	(3 x 2 x 0,14 + 2 x 1,0)	Heidenhain	-	Green	9,1	72,0	132,0	26
700560	(4 x 2 x 0,14 + (4 x 0,14) + 4 x 0,5)	Heidenhain	-	Green	8,3	67,0	104,0	-
77753	(10 x 0,14 + 2 x 0,5)	Heidenhain	-	Green	7,2	43,0	83,0	26
78963	(5 x 2 x 0,14 + 2 x 0,5)	Baumüller	-	Green	9,0	72,0	98,0	26
78828	(3 x 2 x 0,25)	-	-	Green	7,2	55,0	83,0	24
79613	(5 x 2 x 0,38 + 2 x 0,5)	-	-	Green	8,6	69,0	130,0	21
77744	(3 x (2 x 0,14) + 2 x 1,0)	-	-	Green	8,2	71,0	107,0	26
78372	(3 x 2 x 0,14 + 2 x 0,5)	-	-	Green	7,2	35,0	67,0	26
77750	(4 x (2 x 0,25) + 2 x 1,0)	-	-	Green	10,5	93,0	175,0	24
705221	(4 x 2 x 0,25)	-	-	Green	7,5	39,0	88,0	24

Dimensions and specifications may be changed without prior notice. (RN07)



Suitable HELUTEC® Signal and power connectors can be found in our Cable Accessories catalogue.

N

TOPSERV® 600 VFD EMC-preferred type, high flexible motor power supply cable, oil-resistant, NFPA 79 Edition 2012



Technical data

- TPE motor supply cable acc. to UL-Std.1277 and UL-Std.2277
- **Temperature range** -25°C to +90°C
- **Nominal voltage** TC 600 V WTTC 1000 V
- **Test voltage** 4000 V
- **Minimum bending radius** flexing 5x cable Ø permanently flexing 7,5 cable Ø
- **Coupling resistance** max. 250 Ohm/km

Cable structure

- Tinned copper conductor, extra fine wire with AWG dimensions
- Core insualtion of special PVC with transparent nylon skin
- Black cores with continuous white numbering
- GN-YE conductor in the outer layer
- Cores stranded in layers with optimal lay-length
- Fleece
- 1. Screening with special aluminium foil 2. Screening with braid of tinned copper wires, optimal coverage approx. 85%
- Separator
- Outer sheath of special TPE
- Sheath colour black (RAL 9005) or orange (RAL 2003)
- with length marking in feet

Properties

- self-extinguishing and flame retardant acc. to CSA FT4
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- UV-resistant

Tests

- **UL:** TC-ER, WTTC 1000 V, MTW, NFPA 79 2012, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12) OIL RES I & II, 90°C dry / 75°C wet, Cold Bend Test -40°C Class 1 Div. 2 per NEC Art. 336, 392, 501
  CSA: c (UL) CIC-TC FT4 AWM I/II A/B FT4

Note

- VFD = Variable Frequency Drive

Application

Highly-flexible, extremly oil-resistant motor supply cable for modern servomotors; the double-screening with special aluminium foil (100% coverage) and tinned copper braid (approx. 85% coverage) provides effective protection against electrical disturbance and the resultant failures. Approved to NFPA 79 edition 2012 for open, unprotected installation on cable trays and from cable trays to the machine. The special TPE sheath is extremly resistant to oil, coolants and solvents and hence the perfect solution for industrial applications with open installation, installation in pipes and in the earth.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Sheath colour black

Part no.	No.cores x AWG-No.	Cross-section mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
62607	4 x 18	0,963	9,9	38,0	163,0
62608	4 x 16	1,31	11,4	51,0	184,0
62609	4 x 14	2,08	12,5	80,0	197,0
62610	4 x 12	3,31	14,0	127,0	266,0
62611	4 x 10	5,26	17,1	230,0	401,0
62612	4 x 8	8,37	22,3	384,0	669,0
62613	4 x 6	13,31	25,4	614,0	917,0
62614	4 x 4	21,21	30,1	960,0	1364,0
62615	4 x 2	33,6	35,3	1344,0	1990,0

Sheath colour orange

Part no.	No.cores x AWG-No.	Cross-section mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
62616	4 x 18	0,963	9,9	38,0	163,0
62617	4 x 16	1,31	11,4	51,0	184,0
62618	4 x 14	2,08	12,5	80,0	197,0
62619	4 x 12	3,31	14,0	127,0	266,0
62620	4 x 10	5,26	17,1	230,0	401,0
62621	4 x 8	8,37	22,3	384,0	669,0
62622	4 x 6	13,31	25,4	614,0	917,0
62623	4 x 4	21,21	30,1	960,0	1364,0
62624	4 x 2	33,6	35,3	1344,0	1990,0

Dimensions and specifications may be changed without prior notice. (RN01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HELUTOP® HT-MS-EP4

TOPSERV® 650 VFD EMC-preferred type, high flexible motor power supply cable with control cores, oil-resistant, NFPA 79 Edition 2012



Technical data

- TPE motor supply cable acc. to UL-Std.1277 and UL-Std.2277
- **Temperature range**
  flexing -25°C to +105°C
- **Nominal voltage**
  TC 600 V
  WTTC 1000 V
- **Test voltage**
  power supply cores 4000 V
  control cores 2000 V
- **Minimum bending radius**
  flexing 5x cable Ø
  permanently flexing 7,5x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km

Cable structure

- Tinned copper-conductor, extra fine-wire with AWG dimensions
- Core insualtion of special PVC with transparent nylon skin
- Core identification black cores with continuous white numbering
  - power supply cores no. 1-4
  - control cores no. 5+6
- GN-YE conductor in the outer layer
- Control cores screened in pairs with plastic-coated aluminium foil, tinned drain wire
- Control cores stranded in pairs and laid up in layers with optimal lay-length with the power supply cores
- 1. Screen with plastic-coated aluminium foil
  2. Tinned copper braided screen, approx. 85% coverage
- Separator
- Outer sheath of special TPE
- Sheath colour black (RAL 9005) or orange (RAL 2003)
- with length marking in feet

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- UV-resistant

Tests

- self-extinguishing and flame retardant acc. to CSA FT4
- **UL:**
  TC-ER, WTTC 1000 V, MTW, NFPA 79 2012, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12) OIL RES I & II, 90°C dry / 75°C wet, Cold Bend Test -40°C Class 1 Div. 2 per NEC Art. 336, 392, 501
  CSA:
  c (UL) CIC-TC FT4
  AWM I/II A/B FT4

Note

- VFD = Variable Frequency Drive

Application

Highly flexible, extremly oil-resistant motor supply cable for modern servomotors; the double-screening with special aluminium foil (100% coverage) and tinned copper braid (approx. 85% coverage) provides effective protection against electrical disturbance and the resultant failures. Approved to NFPA 79 edition 2012 for open, unprotected installation on cable trays and from cable trays to the machine. The special TPE sheath is extremly resistant to oil, coolants and solvents and hence the perfect solution for industrial applications with open installation, installation in pipes and in the earth.
EMC = Electromagnetic compatibillity
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

N

Sheath colour black

Part no.	No. cores x AWG-No.	Cross-section mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
59837	4x AWG 16 +2x AWG 18	1,31/ 0,824	13,0	88,0	259,0
59838	4x AWG 14 +2x AWG 18	2,08/ 0,824	14,0	133,0	370,0
59839	4x AWG 14 +2x AWG 14	2,08/ 2,08	14,6	159,0	399,0
59840	4x AWG 12 +2x AWG 18	3,31/ 0,824	15,3	197,0	435,0
59841	4x AWG 12 +2x AWG 14	3,31/ 2,08	15,7	224,0	466,0
59842	4x AWG 10 +2x AWG 14	5,26/ 2,08	18,2	301,0	703,0
59843	4x AWG 8 +2x AWG 14	8,37/ 2,08	24,1	457,0	901,0
59844	4x AWG 6 +2x AWG 14	13,31/ 2,08	27,4	615,0	1275,0
59845	4x AWG 4 +2x AWG 14	21,21/ 2,08	33,4	1450,0	1861,0

Sheath colour orange

Part no.	No. cores x AWG-No.	Cross-section mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
59846	4x AWG 16 +2x AWG 18	1,31/ 0,824	13,0	88,0	259,0
59847	4x AWG 14 +2x AWG 18	2,08/ 0,824	14,0	133,0	370,0
59848	4x AWG 14 +2x AWG 14	2,08/ 2,08	14,6	159,0	399,0
59849	4x AWG 12 +2x AWG 18	3,31/ 0,824	15,3	197,0	435,0
59850	4x AWG 12 +2x AWG 14	3,31/ 2,08	15,7	224,0	466,0
59851	4x AWG 10 +2x AWG 14	5,26/ 2,08	18,2	301,0	703,0
59852	4x AWG 8 +2x AWG 14	8,37/ 2,08	24,1	457,0	901,0
59853	4x AWG 6 +2x AWG 14	13,31/ 2,08	27,4	615,0	1275,0
59854	4x AWG 4 +2x AWG 14	21,21/ 2,08	33,4	1450,0	1861,0

Dimensions and specifications may be changed without prior notice. (RN01)

TOPSERV® Hybrid hybrid cable for SICK Hiperface DSL® motor feedback systems

NEW



Technical data

- **TOPSERV ® PUR**
- Special PUR drag chain cable acc. to UL AWM Style 21223 CSA AWM
- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -40°C to +90°C
- **Nominal voltage**
  VDE
  power supply cores U_0/U 600/1000 V
  control cores U_0/U 300/500 V
  UL/CSA 1000 V
- **A.c. test voltage**, 50 Hz
  power supply cores 4000 V
  control cores 1000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Coupling resistance**
  max. 250 Ohm/km
- **Minimum bending radius**
  flexing 7,5x cable Ø
  fixed installation 4x cable Ø
  min. 5 mio. cycles

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, IEC 60228 cl.6
- Core insulation halogen-free PP
- Core identification
  power supply cores
  core 1: black with imprint U/L1/C/L+
  core 2: black with imprint V/L2
  core 3: black with imprint W/L3/D/L-
  control cores
  pair 1: black with number no. 5+6
  pair 2: white and blue
- GN-YE conductor
- Screening of the control cores in pairs wrapped with tinned copper braid
- Power supply cores laid up with optimal lay length and stabilising filler
- Overall screening from tinned copper braid, optimal coverage approx. 85%
- Outer sheath of PVC or PUR
- Sheath colour orange (RAL 2003) acc. to DESINA®

Properties

- low capacitance
- PUR outer sheath: low adhesion, extremely abrasion resistant, halogen-free, resistant to UV-, oil-, hydrolysis and microbial attack
- Optimum compliance with requirements for electromagnetic compatibility (EMC) by approx. 85% coverage from the braided screen
- These cables are produced to high quality specifications and conform to the DESINA® standard.
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PUR outer sheath self-extinguishing and flame retardant to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- The technical data for **TOPSERV® Hybrid PVC** cables are available on request.

Application

The supply conductors for these cables are ideally combined with the control conductors for the brake function and the transmission of the Sick Hiperface DSL protocols. Applications include machine, plant and robot construction. Please observe applicable installation regulations for use in energy supply chains.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

TOPSERV® Hybrid PVC for fixed or not constantly movements

Part no.	No.cores x cross-sec. mm²	Sheath colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
709930	(4G0,5 + (2x0,34) C + (2x26 AWG)) C	Orange RAL 2003	9,3	72,0	123,0	26
709932	(4G1 + (2x0,75) C + (2x22 AWG)) C	Orange RAL 2003	11,6	130,0	208,0	22
709933	(4G1,5 + (2x0,75) C + (2x22 AWG)) C	Orange RAL 2003	12,2	152,0	248,0	22
709934	(4G2,5 + (2x1) C + (2x22 AWG)) C	Orange RAL 2003	13,8	207,0	326,0	22
709935	(4G4 + (2x1) C + (2x22 AWG)) C	Orange RAL 2003	15,3	273,0	415,0	22
709936	(4G6 + (2x1) C + (2x22 AWG)) C	Orange RAL 2003	17,2	357,0	538,0	22
709937	(4G10 + (2x1,5) C + (2x22 AWG)) C	Orange RAL 2003	20,3	530,0	752,0	22
709938	(4G16 + (2x1,5) C + (2x22 AWG)) C	Orange RAL 2003	22,6	768,0	1005,0	22

TOPSERV® Hybrid PUR, high flexible for drag chain

Part no.	No.cores x cross-sec. mm²	Sheath colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
709703	(4G0,5 + (2x0,34) C + (2x26 AWG)) C	Orange RAL 2003	9,3	76,0	127,0	26
708543	(4G1 + (2x0,75) C + (2x22 AWG)) C	Orange RAL 2003	11,6	133,0	212,0	22
710081	(4G1,5 + (2x0,75) C + (2x24 AWG)) C	Orange RAL 2003	11,7	146,0	229,0	24
708544	(4G1,5 + (2x0,75) C + (2x22 AWG)) C	Orange RAL 2003	12,7	155,0	269,0	22
708545	(4G2,5 + (2x1) C + (2x22 AWG)) C	Orange RAL 2003	13,9	205,0	310,0	22
708546	(4G4 + (2x1) C + (2x22 AWG)) C	Orange RAL 2003	15,7	280,0	420,0	22
708547	(4G6 + (2x1) C + (2x22 AWG)) C	Orange RAL 2003	18,0	363,0	540,0	22
708548	(4G10 + (2x1,5) C + (2x22 AWG)) C	Orange RAL 2003	21,0	538,0	760,0	22
709705	(4G16 + (2x1,5) C + (2x22 AWG)) C	Orange RAL 2003	23,4	775,0	1020,0	22

Dimensions and specifications may be changed without prior notice.

UL/CSA HEAT-RESISTANT CABLES



SiHF UL/CSA halogen-free, 150°C/ 600 V, two-approvals silicon multicore cable



Technical data

- Special silicone multicore cable with higher heat-resistance range to UL Style 4476 and CSA AWM II A/B
- **Temperature range**
  VDE -60°C to +180°C
  (up to +220°C for short time)
  UL/CSA -50°C to +150°C
- **Nominal voltage**
  VDE U_0/U 300/500 V
  UL/CSA 600 V
- **Test voltage** 2000 V
- **Breakdown voltage** min. 5000 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Minimum bending radius**
  flexing 7,5x cable Ø
  fixed installation 4x cable Ø
- **Radiation resistance**
  up to 20x10⁶ cJ/kg (up to 20 Mrad)

Cable structure

- Tinned copper conductors to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of silicone
- Core identification to DIN VDE 0293-308 colour coded or black cores with continuous white numbering
- For 2-cores brown, blue
- Cores stranded in layers with optimal lay-length
- GN-YE conductor, 3 cores and above
- Outer sheath of silicone
- Sheath colour black

Properties

- **Advantages**
  Hardly changes of dielectric strength and the insulation resistance also at high temperatures, high ignition or flash point, in case of fire, forms an insulating layer of SiO_2
- **Resistant to**
  High molecular oils, fats from vegetables and animals, alcohols, plasticizers and clophenes, diluted acids, lyes and salt dissolution, oxidation substances, tropical influences and weather, lake water, oxygen and UV
- Halogen-free
  acc. to DIN VDE 0482 part 267/ DIN EN 50267-2-1/IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Behaviour in fire no flame propagation
  acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2,IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B), CSA FT1
- For laying as a fixed installation only in open or ventilated pipe systems as well as in ducts. Otherwise the mechanical properties of the silicon are reduced by the enclosed air at temperatures exceeding 90°C.

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- screened analogue type:
  SiHF-C-Si UL/CSA , confer page 478

Application

UL-CSA approved Silicone cables were evolved for use wherever insulation is subjected to extreme temperature changes. They are heat-resistant for permanent temperature up to +180°C, for short time operation up to +220°C. The good performance of the environmental resistant properties means that silicone cables can be used at temperatures down to -60°C. Silicone cables are halogen-free cables and are especially suited for installation in power stations. They have also found their uses in the steel producing industries, aviation industry, ship building as well as in ceramic, glass and cement factories. Due to elastical characteristic of core insulations, these are used as flexible connection cable.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
23214	2 x 0,5	20	7,7	9,6	73,0
23215	3 G 0,5	20	8,1	14,4	82,0
23216	4 G 0,5	20	8,8	19,2	98,0
23217	5 G 0,5	20	9,4	24,0	120,0
23218	6 G 0,5	20	10,4	28,8	131,0
23219	7 G 0,5	20	10,4	33,6	140,0
23220	8 G 0,5	20	10,8	38,4	183,0
23221	10 G 0,5	20	12,8	48,0	201,0
23222	12 G 0,5	20	13,4	57,6	241,0
23223	16 G 0,5	20	13,9	76,8	269,0
23224	18 G 0,5	20	14,4	86,4	311,0
23225	25 G 0,5	20	16,8	120,0	401,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
23226	2 x 1	18	8,2	19,2	88,0
23227	3 G 1	18	9,0	28,2	111,0
23228	4 G 1	18	10,0	38,4	130,0
23229	5 G 1	18	10,6	48,0	161,0
23230	6 G 1	18	11,4	57,6	182,0
23231	7 G 1	18	11,4	67,2	198,0
23232	8 G 1	18	12,4	76,8	251,0
24010	9 G 1	18	13,2	86,0	277,0
23233	10 G 1	18	13,2	96,0	304,0
23234	12 G 1	18	14,4	115,2	343,0
23235	16 G 1	18	15,7	153,6	441,0
23236	18 G 1	18	16,6	172,8	492,0
23237	25 G 1	18	19,1	240,0	617,0

Continuation ▸

SiHF UL/CSA halogen-free, 150°C/ 600 V, two-approvals silicon multicore cable

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
23238	2 x 1,5	16	9,1	28,8	117,0
23239	3 G 1,5	16	9,6	43,2	131,0
23240	4 G 1,5	16	10,6	57,6	166,0
23241	5 G 1,5	16	11,4	72,0	198,0
23242	6 G 1,5	16	12,4	86,4	240,0
23243	7 G 1,5	16	12,4	100,8	261,0
23244	8 G 1,5	16	13,9	115,2	298,0
23245	10 G 1,5	16	16,1	144,0	359,0
23246	12 G 1,5	16	16,6	172,6	431,0
23247	14 G 1,5	16	18,0	201,6	520,0
23248	16 G 1,5	16	20,0	230,4	569,0
23249	18 G 1,5	16	20,9	259,2	652,0
23250	20 G 1,5	16	21,8	288,0	724,0
23251	25 G 1,5	16	24,0	345,6	925,0
23252	41 G 1,5	16	29,2	590,4	1440,0
23253	2 x 2,5	14	9,8	48,0	141,0
23254	3 G 2,5	14	10,4	72,0	174,0
23255	4 G 2,5	14	11,6	96,0	217,0
23256	5 G 2,5	14	12,4	120,0	271,0
23257	6 G 2,5	14	13,6	144,0	314,0
23258	7 G 2,5	14	13,6	168,0	331,0
23259	8 G 2,5	14	14,9	192,0	404,0
23260	10 G 2,5	14	17,2	240,0	495,0
23261	12 G 2,5	14	21,0	288,0	554,0
23262	16 G 2,5	14	22,6	384,0	725,0
23263	18 G 2,5	14	24,0	432,0	838,0
23264	25 G 2,5	14	28,8	600,0	1108,0
23265	2 x 4	12	10,9	76,8	190,0
23266	3 G 4	12	11,8	115,2	241,0
23267	4 G 4	12	12,9	153,6	304,0
23268	5 G 4	12	14,5	192,0	384,0
23269	7 G 4	12	17,8	268,8	527,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
23270	2 x 6	10	14,4	115,2	284,0
23271	3 G 6	10	15,1	172,8	392,0
23272	4 G 6	10	16,4	230,4	492,0
23273	5 G 6	10	18,2	288,0	610,0
23274	7 G 6	10	21,1	403,2	681,0
23275	2 x 10	8	18,0	192,0	405,0
23276	3 G 10	8	18,9	288,0	620,0
23277	4 G 10	8	20,0	384,0	741,0
23278	5 G 10	8	22,1	480,0	914,0
23279	7 G 10	8	24,9	672,0	1164,0
23280	2 x 16	6	20,9	307,2	441,0
23281	3 G 16	6	22,8	460,8	501,0
23282	4 G 16	6	24,9	614,4	623,0
23283	5 G 16	6	26,9	768,0	971,0
23284	7 G 16	6	28,1	1075,3	1690,0
23285	2 x 25	4	25,1	480,0	711,0
23286	3 G 25	4	27,0	720,0	1210,0
23287	4 G 25	4	32,1	960,0	1524,0
23288	2 x 35	2	28,7	672,0	1140,0
23289	3 G 35	2	30,6	1008,0	1523,0
23290	4 G 35	2	32,9	1344,0	2217,0

Dimensions and specifications may be changed without prior notice. (RN03)

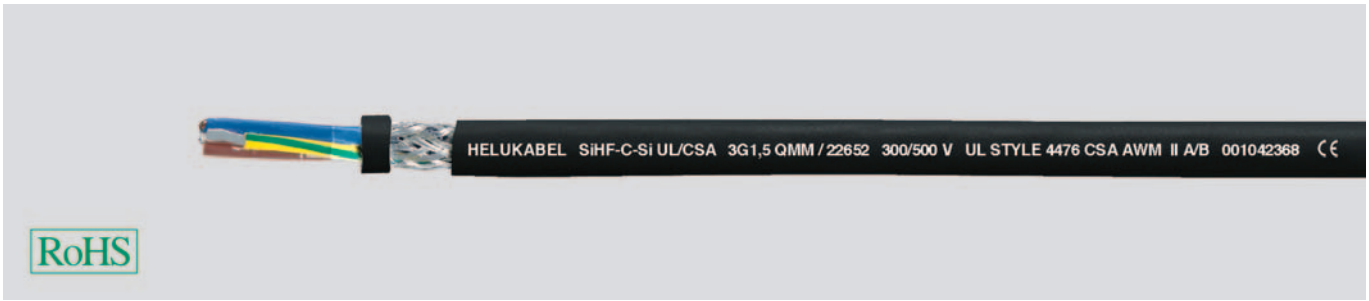


Suitable accessories can be found in Chapter X.

- Cable protection tube - HTP

N

SiHF-C-Si UL/CSA halogen-free, 150°C/ 600 V, two-approvals silicon multicore cable, Cu-screened, EMC-preferred type



Technical data

- Special silicone multicore cable with higher heat-resistance range to UL Style 4476 and CSA AWM II A/B
- **Temperature range**
  VDE -60°C to +180°C
  (up to +220°C for short time)
  UL/CSA -50°C to +150°C
- **Nominal voltage**
  VDE U_0/U 300/500 V
  UL/CSA 600 V
- **Test voltage** 2000 V
- **Breakdown voltage** min. 5000 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km
- **Radiation resistance**
  up to 20x10⁶ cJ/kg (up to 20 Mrad)

Cable structure

- Tinned copper conductors to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of silicone
- Core identification to DIN VDE 0293-308 colour coded or black cores with continuous white numbers
- For 2-cores brown, blue
- Cores stranded in layers with optimal lay-length
- GN-YE conductor, 3 cores and above
- Foil separator
- Tinned copper braided screening, approx. 85% coverage
- Outer sheath of silicone
- Sheath colour black

Tests

- Halogen-free
  acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Behaviour in fire
  no flame propagation acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B), CSA FT1.

Properties

Advantages

- Hardly changes of dielectric strength and the insulation resistance, also at high temperatures high ignition or flash point, in case of fire, forms an insulating layer of SiO_2

Resistant to

- High molecular oils, fats from vegetables and animals, alcohols, plasticizers and clophenes, diluted acids, lyes and salt dissolution, oxidation substances, tropical influences and weather, lake water, oxygen and UV
- For laying as a fixed installation only in open or ventilated pipe systems as well as in ducts. Otherwise the mechanical properties of the silicon are reduced by the enclosed air at temperatures exceeding 90°C.

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- non-screened analogue type:
  SiHF UL/CSA, confer page 476

Application

UL-CSA approved Silicone cables were evolved for use wherever insulation is subjected to extreme temperature changes. The good performance of the environmental resistant properties means that silicone cables can be used at temperatures down to -60°C. Silicone cables are halogen-free cables and are especially suited for installation in power stations. They have also found their uses in the steel producing industries, aviation industry, ship building as well as in ceramic, glass and cement factories. Due to elastical characteristic of core insulations, these are used as flexible connection cable. An interference-free transmission of signals and pulse is assured by the high screening density. The ideal interference-protected silicone multicore flexible cable for such applications as given above.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
22637	2 x 0,5	20	9,0	55,5	94,0
22638	3 G 0,5	20	9,3	60,8	104,0
22639	4 G 0,5	20	9,7	66,5	125,0
22640	5 G 0,5	18	10,1	81,6	149,0
22641	7 G 0,5	20	10,5	92,2	168,0
22642	10 G 0,5	20	13,2	124,0	237,0
22643	12 G 0,5	20	13,4	134,4	260,0
22644	2 x 1	18	9,5	66,7	130,0
22645	3 G 1	18	9,6	86,2	151,0
22646	4 G 1	18	10,6	96,8	169,0
22647	5 G 1	18	11,6	108,3	198,0
22648	7 G 1	18	12,1	141,2	236,0
22649	10 G 1	18	14,7	190,0	248,0
22650	12 G 1	18	15,1	209,8	364,0
22651	2 x 1,5	16	10,6	87,7	169,0
22652	3 G 1,5	16	11,0	103,5	191,0
22653	4 G 1,5	16	11,6	131,7	230,0
22654	5 G 1,5	16	13,1	148,5	272,0
22655	7 G 1,5	16	14,1	193,4	341,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
22656	10 G 1,5	16	17,3	268,5	478,0
22657	12 G 1,5	16	17,9	298,4	521,0
22658	2 x 2,5	14	12,0	122,3	226,0
22659	3 G 2,5	14	12,7	147,7	271,0
22660	4 G 2,5	14	14,0	188,6	332,0
22661	5 G 2,5	14	15,1	214,9	384,0
22662	7 G 2,5	14	16,9	265,7	478,0
22663	4 G 4	12	17,0	294,0	516,0
22664	5 G 4	12	19,1	374,0	641,0
22665	4 G 6	10	18,6	449,0	773,0
22666	5 G 6	10	21,3	563,0	980,0
22667	4 G 10	8	25,5	759,0	1284,0

Dimensions and specifications may be changed without prior notice. (RN03)

UL/CSA ALLWEATHER CABLES & RUBBER CABLES



Rubber / Neoprene Control Cable type SJO and SO



Technical data

- UL+CSA approved rubber/neoprene flexible cables
- **Temperature range**
  -40°C to +90°C
- **Nominal voltage**
  SJO 300 V
  SO 600 V
- **Approvals**
  UL-Std.62
  CSA C22.2-49

Cable structure

- Bare copper conductor to ASTM B-174
- Core insulation of synthetic rubber, EPDM
- Core identification coloured
- **Colour code**
  2 cores black, white
  3 cores black, white, green
  4 cores black, white, green, red
- Cores stranded in layers with optimal lay-length
- Hemp or cotton filler
- Outer sheath of neoprene (oil resistant)
- Sheath colour black

Properties

- **Resistant**
  Oil
  Wetness
  UV-radiation

Note

- **Note**: SJO-**18/2**
  18 = AWG 18
  2 = No. of cores
- Supply lengths are on original reels of 76 m or 152 m or on drums of 305 m lengths.
- Further Types also available: PVC control cables SJT, SJTO, ST, STO.

Application

As a flexible cord for mobile equipment for use in rougher conditions in the engines and mechanical engineering, dockyards, in agriculture, in cabins and steel rolling mills and for export overseas.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Nominal voltage 300 Volt, type SJO (90°C)

Part no.	No.cores x AWG-No.	Current carrying capacity in Amp.	Cond. make-up n x wire Ø	Outer Ø app. mm	Weight app. kg / km
63010	2 x 18	7	16 x 0,3	7,8	65,0
63011	3 x 18	7	16 x 0,3	8,4	80,0
63012	4 x 18	7	16 x 0,3	9,2	95,0
63013	2 x 16	10	26 x 0,3	8,3	130,0
63014	3 x 16	10	26 x 0,3	9,0	148,0
63015	4 x 16	10	26 x 0,3	10,0	180,0
63016	2 x 14	15	41 x 0,3	9,4	195,0
63017	3 x 14	15	41 x 0,3	10,0	225,0
63018	4 x 14	15	41 x 0,3	10,7	288,0

Nominal voltage 600 Volt, type SO (90°C)

Part no.	No.cores x AWG-No.	Current carrying capacity in Amp.	Cond. make-up n x wire Ø	Outer Ø app. mm	Weight app. kg / km
63034	2 x 18	7	16 x 0,3	10,0	70,0
63035	3 x 18	7	16 x 0,3	10,4	86,0
63036	4 x 18	7	16 x 0,3	11,0	110,0
63037	2 x 16	10	26 x 0,3	10,4	140,0
63038	3 x 16	10	26 x 0,3	11,0	155,0
63039	4 x 16	10	26 x 0,3	12,3	200,0
63040	2 x 14	15	41 x 0,3	13,5	200,0
63041	3 x 14	15	41 x 0,3	14,3	235,0
63042	4 x 14	15	41 x 0,3	15,3	300,0
63043	2 x 12	20	65 x 0,3	15,3	280,0
63044	3 x 12	20	65 x 0,3	16,2	310,0
63045	4 x 12	20	65 x 0,3	18,9	330,0
63046	2 x 10	25	105 x 0,3	16,4	305,0
63047	3 x 10	25	105 x 0,3	17,5	325,0
63048	4 x 10	25	105 x 0,3	19,0	365,0

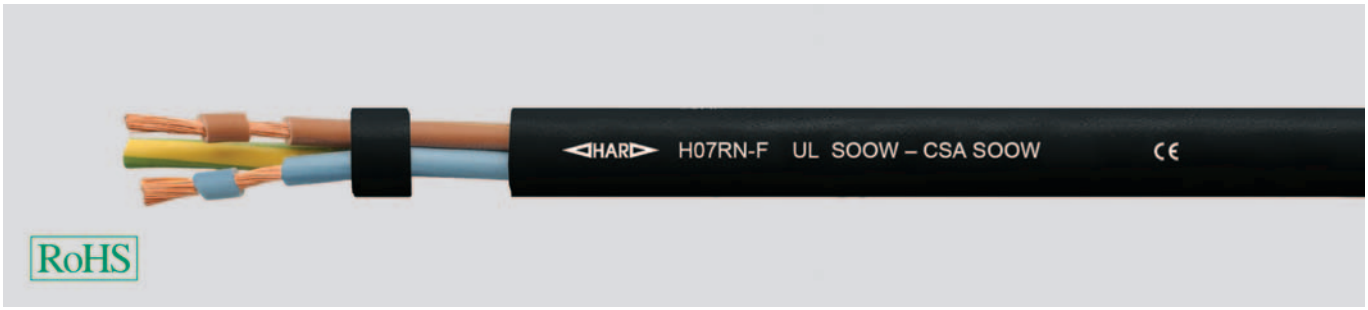
Dimensions and specifications may be changed without prior notice. (RN04)



Suitable accessories can be found in Chapter X.

• Cable tie - T-WS

H07RN-F/SOOW rubber-sheathed cable, harmonizised type



Technical data

- Rubber-sheated cable H07RN-F acc. to DIN VDE 0285-525-2-21 / DIN EN 50525-2-21 and UL-Std.62
- UL - SOOW
  CSA - SOOW
- **Temperature rang**
  HAR -25°C to +60°C
  UL/CSA -40°C to +90°C
- Permissible **operating temperature** at the conductor +60°C
- **Nominal voltage**
  HAR U_0/U 450/750 V
  UL/CSA 600 V
- **Test voltage** 2500 V
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 7,5x cable Ø

Cable structure

- Bare copper conductor, fine wire with AWG dimensions
- Core insulation of rubber (EPR)
- Core identification
  3 cores: BU, BN
  4 cores: BN, BK, GY
  5 cores: BU, BN, BK, GY
- Cores stranded in layers with optimal lay-length
- GN-YE conductor
- Outer sheath of rubber (CPE)
- Sheath colour black

Properties

- Ozone-resistant
- Weather and UV-resistant
- Resistant to oils and greases

Application

Highly-standardised, heavy-duty rubber-sheated cable for use in practically all machines destined for export markets, in dry, damp, wet environments and outdoors. As a feeder to transportable motors or machines, cranes, hoists, hand lamps and drilling machines.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	Cross-section mm²	No.cores x AWG-No.	Current carrying capacity in ampere at 30°C ambient temperature	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
39025	1	3 x 17	10	9,6	29,0	130,0
39026	1,5	3 x 15	13	10,2	43,0	165,0
39027	1,5	4 x 15	10	11,4	58,0	200,0
39028	1,5	5 x 15	8	13,1	72,0	240,0
39029	2,5	3 x 13	18	14,0	72,0	235,0
39030	2,5	4 x 13	15	15,1	96,0	290,0
39031	2,5	5 x 13	12	16,9	120,0	345,0
39032	4	3 x 11	25	16,0	115,0	320,0
39033	4	4 x 11	20	17,3	154,0	395,0
39034	4	5 x 11	16	18,7	192,0	485,0
39035	6	3 x 9	30	17,1	173,0	420,0
39036	6	4 x 9	25	18,4	230,0	540,0
39037	6	5 x 9	24	20,1	288,0	650,0
39038	10	3 x 7	40	22,9	288,0	810,0
39039	10	4 x 7	35	25,0	384,0	950,0

Dimensions and specifications may be changed without prior notice. (RF01)



Suitable accessories can be found in Chapter X.

• Cable tie - T-WS

UL/CSA REELING CABLES



TROMMPUR®-H trailing, halogen-free



Technical data

- Trailing cable acc. to UL AWM Style 20235 CSA/AWM
- **Temperature range**
  flexing -40°C to +80°C
  fixed installation -50°C to +80°C
- **Nominal voltage**
  DIN VDE 600/1000 V
  UL 1000 V
- **A.c. test voltage**, 50 Hz
  core/core 4000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Speed of motion**
  up to 250 m/min
- **Minimum bending radius**
  6x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insulation of TPE
- Core identification to DIN VDE 0293
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering
- GN-YE conductor
- Cores stranded around support element
- Polyester fleece wrapping
- Outer sheath of PUR with integrated support braiding
- Sheath colour yellow

Properties

- PUR outer sheath, low adhesion, abrasion resistant, halogen-free, resistant to UV, oil, hydrolysis and microbial attack
- Due to the PUR outer sheath, the cable is resistant against ozone and radiation, as well as oils, greases and petrol

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Significantly smaller external diameters, smaller bending radii and reduced weights compared to NSHTÖU cables enable the use of smaller drive motors and drums, thus providing significant cost savings. Trailing cables are used for high mechanical stress, especially for applications with frequent winding and unwinding with simultaneous tensile and torsional stress, for building machinery, conveyors and lifting systems, and cranes. They are used as robust and all-weather resistant cables in the harshest operating environments in mining and in flexible handling equipment and railway motors. The cables are suitable for installation in dry, damp and wet environments, as well as outdoors.

Notes

- During installation and operation the tensile stress on the cable must not exceed 25 N/mm²
- Acceleration must not exceed 0,4 m/s²
- 1 to 2 turns should remain on the drum during operation

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
77144	4 G 1,5	10,2	58,0	157,0	16
77145	5 G 1,5	10,8	72,0	176,0	16
77146	7 G 1,5	12,9	101,0	245,0	16
77147	12 G 1,5	18,4	173,0	337,0	16
77148	18 G 1,5	18,6	259,0	526,0	16
77149	24 G 1,5	21,3	345,6	662,0	16
77150	30 G 1,5	24,6	432,0	901,0	16
77151	42 G 1,5	26,5	604,8	1056,0	16
77152	4 G 2,5	11,7	96,0	208,0	14
77153	5 G 2,5	12,7	120,0	263,0	14
77154	7 G 2,5	14,8	168,0	327,0	14
77155	12 G 2,5	20,4	288,0	533,0	14
77156	18 G 2,5	21,1	432,0	725,0	14
77157	24 G 2,5	24,8	576,0	988,0	14
77158	30 G 2,5	27,6	720,0	1242,0	14
77159	40 G 2,5	30,0	960,0	1500,0	14
77160	50 G 2,5	34,3	1200,0	1800,0	14

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
77161	4 G 4	12,5	154,0	270,0	12
77172	5 G 4	14,3	192,0	362,0	12
77162	4 G 6	16,9	230,0	409,0	10
77173	5 G 6	17,8	288,0	511,0	10
77163	4 G 10	19,6	384,0	633,0	8
77174	5 G 10	20,9	480,0	766,0	8
77164	4 G 16	23,8	614,0	936,0	6
77175	5 G 16	25,3	768,0	1170,0	6
77165	4 G 25	27,7	960,0	1485,0	4
77166	4 G 35	30,1	1344,0	2115,0	2
77167	4 G 50	35,2	1920,0	2600,0	1
77168	4 G 70	40,3	2688,0	3700,0	2/0
77169	4 G 95	50,6	3648,0	4800,0	3/0
77170	4 G 120	53,0	4608,0	5900,0	4/0
77171	4 G 150	56,0	5760,0	7100,0	300 kcmil

Dimensions and specifications may be changed without prior notice.

UL/CSA SINGLE CORES



UL-Style 1007, CSA TR 64 PVC single cores, 80°C, 300 V



Technical data

- PVC-single core to UL-Style and CSA-AWM UL-Style 1007
  CSA-AWM I A/B or TR 64
- **Temperature range**
  flexible -5°C bis +80°C
  fixed installation -30°C bis +80°C
  CSA-AWM I A/B or TR 64 +90°C
- **Nominal voltage** 300 V
- **Test voltage** 2000 V
- **Test voltage** (Spark test)
  AWG 26-20 = 4 kV
  AWG 10-18 = 5 kV
- **Minimum bending radius**
  fixed installation 5x core Ø
  flexible 10x core Ø

Cable structure

- Stranded copper conductor, tinned to UL-Std.758 with AWG dimensions
- Core insulation of PVC
  heat and damp resistant acc. to class 43 tab.50.182 acc. to UL-Std.1581

Properties

- **Conditionally resistant to**
  Oils
  Solvents
  Acids
  Lyes
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant, test method to UL VW-1, CSA FT1

Note

- Please complete the part number for these cables by adding the suffix for the colour required as per the list:
  00 = green
  01 = black
  02 = blue
  03 = brown
  04 = red
  05 = white
  06 = grey
  07 = violet
  08 = yellow
  09 = orange
  10 = transparent
  11 = pink
  12 = beige
  13 = green-yellow
- Due to design the constructional alternations may the possible.
- AWG 14 - AWG 10 to UL-Style 1569

N

Application

For the internal wiring of switchbords, electrical equipment, e. g. households, radio or televisions and control desks. Connecting wires in machines laid in protective tubes and flexible pipes and also for motors and transformators.
AWM = **A**ppliance **W**iring **M**aterial
For internal wirings for electrical equipment and control apparatus e. g. electronic assembly components.
UL = Underwriters Laboratories Inc. (USA)
CSA = **C**anadian **S**tandards **A**ssociation (Canada)
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
635xx	1 x 0,13	26	1,4	1,6	3,2
620xx	1 x 0,21	24	1,5	2,3	4,3
621xx	1 x 0,33	22	1,6	3,4	6,0
622xx	1 x 0,52	20	1,8	5,3	8,5
623xx	1 x 0,82	18	2,1	8,2	12,5

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
624xx	1 x 1,32	16	2,4	13,0	18,5
636xx	1 x 2,08	14	3,0	20,0	29,0
637xx	1 x 3,31	12	3,9	33,0	40,0
638xx	1 x 5,26	10	4,1	51,6	61,0

Dimensions and specifications may be changed without prior notice. (RN06)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUcond PA6-L
- Cable Gland - HELUcond PA6-UL

UL-Style 1569, CSA TR 64 PVC single cores, 105°C, 300 V



Technical data

- PVC-single core to UL-Style and CSA-AWM UL-Style 1569
  CSA-AWM I A/B or TR 64
- **Temperature range**
  flexible -5°C bis +105°C
  fixed installation -30°C bis +105°C
  CSA-AWM I A/B or TR 64 +90°C
- **Nominal voltage** 300 V
- **Test voltage** 2000 V
- **Test voltage** (Spark test)
  AWG 26-20 = 4 kV
  AWG 10-18 = 5 kV
- **Minimum bending radius**
  fixed installation 5x core Ø
  flexing 10x core Ø

Cable structure

- Stranded copper conductor, tinned to UL-Std.758 with AWG dimensions
- Core insulation of special PVC heat and damp resistant class 43 tab.50.182 acc. to UL-Std.1581

Properties

- **Conditionally resistant to**
  Oils
  Solvents
  Acids
  Lyes
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant, test method to UL VW-1, CSA FT1

Note

- Please complete the part number for these cables by adding the suffix for the colour required as per the list:
  00 = green
  01 = black
  02 = blue
  03 = brown
  04 = red
  05 = white
  06 = grey
  07 = violet
  08 = yellow
  09 = orange
  10 = transparent
  11 = pink
  12 = beige
  13 = green-yellow
- Due to design the constructional alternations may the possible.

Application

For the internal wiring of switchbords, electrical equipment, e. g. households, radio or televisions and control desks. Connecting wires in machines laid in protective tubes and flexible pipes and also for motors and transformators.
AWM = **A**ppliance **W**iring **M**aterial
For internal wirings for electrical equipment and control apparatus e. g. electronic assembly components.
UL = Underwriters Laboratories Inc. (USA)
CSA = **C**anadian **S**tandards **A**ssociation (Canada)
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
660xx	1 x 0,13	26	1,4	1,6	3,2
661xx	1 x 0,21	24	1,5	2,3	4,3
662xx	1 x 0,33	22	1,6	3,4	6,0
663xx	1 x 0,52	20	1,8	5,3	8,5
664xx	1 x 0,82	18	2,1	8,2	12,5

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
665xx	1 x 1,32	16	2,4	13,0	18,5
666xx	1 x 2,08	14	2,9	20,0	29,0
667xx	1 x 3,31	12	3,6	33,0	40,0
668xx	1 x 5,26	10	4,3	51,6	61,0

Dimensions and specifications may be changed without prior notice. (RN06)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUcond PA6-L
- Cable Gland - HELUcond PA6-UL

UL-Style 1015 PVC single core, 600 V



Technical data

- PVC-single core as per UL AWM Style 1015/ MTW and CSA-AWM/TEW
- **Temperature range**
  flexible -5°C to +105°C
  fixed installation -30°C to +105°C
- **Temperature at conductor**
  UL/CSA max. +105°C
- **Nominal voltage** 600 V
- **Test voltage** (Spark test)
  AWG 24 = 4 kV
  AWG 22 and 20 = 5 kV
  AWG 18 and 10 = 6 kV
  AWG 8 = 7,5 kV
- UL-type **AWM+MTW** 105°C 600 V
- CSA-type **AWM+TEW** 105°C 600 V
- **Minimum bending radius**
  fixed installation 5x core Ø
  flexible 10x core Ø

Cable structure

- Stranded copper conductor, tinned to UL-Std.758 with AWG dimensions
- AWG-sizes as per table below
- Core insulation of PVC
  heat and damp resistant to class 43 and CSA-C22.2 No. 210 UL VW-1 and CSA FT1, acc. to UL-Std.1581
- For structural reasons, constructive changes are possible

Properties

- **Conditionally resistant to**
  Oils
  Solvents
  Acids
  Lyes
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant, test method to UL VW-1, CSA FT1

Note

- Please complete the part number for these cables by adding the suffix for the colour required as per the list:
  00 = green, 01 = black, 02 = blue,
  03 = brown, 04 = red, 05 = white,
  06 = grey, 07 = violet, 08 = yellow,
  09 = orange, 10 = transparent, 11 = pink,
  12 = beige, 13 = green-yellow,
  14 = blue/white, 15 = dark blue,
  27 = white/blue
  (supply up to AWG 8)

Application

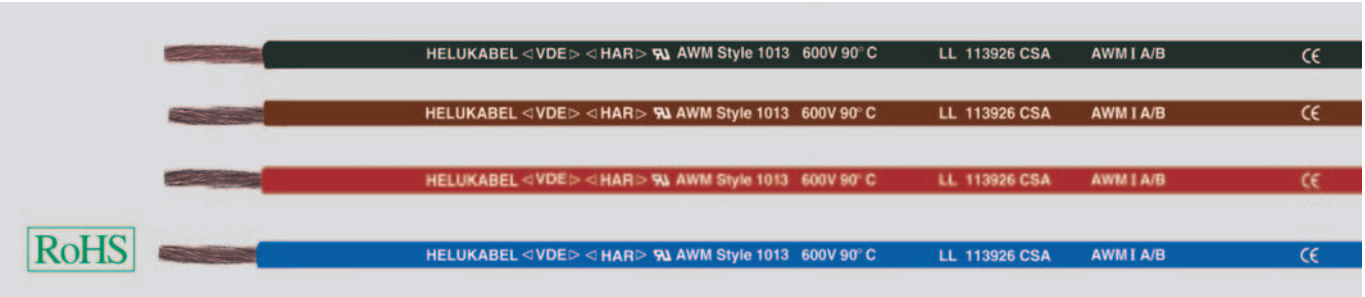
For the internal wiring of switchbords, electrical equipment, e. g. households, radio or televisions and control desks. Connecting wires in machines laid in predective tubes and flexible pipes and also for motors and transformators. UL bzw. CSA:
AWM = **A**ppliance **W**iring **M**aterial
For internal wirings for electrical equipment and control apparatus e. g. electronic assembly components.
UL-MTW: Machine Tool Wires
CSA-TEW: Equipment Lead Wires
MTW = **M**achine **T**ool **W**ire
For the electronical installation of machine tools and the relative control.
UL = **U**nderwriters **L**aboratories Inc. (USA)
CSA = **C**anadian **S**tandards **A**ssociation (Canada)
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
601xx	1 x 0,21	24	2,2	2,3	8,0
602xx	1 x 0,33	22	2,4	3,2	10,0
603xx	1 x 0,52	20	2,5	5,0	12,0
604xx	1 x 0,81	18	2,8	7,9	16,0
605xx	1 x 1,31	16	3,1	12,6	22,0
606xx	1 x 2,08	14	3,5	20,7	31,0
607xx	1 x 3,32	12	4,0	33,0	45,0
608xx	1 x 5,26	10	4,6	51,6	65,0
609xx	1 x 8,35	8	6,5	80,6	110,0
610xx	1 x 13,29	6	8,0	125,0	175,0
611xx	1 x 21,14	4	9,5	201,0	260,0
612xx	1 x 26,65	3	10,4	253,0	340,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
613xx	1 x 33,61	2	11,3	317,0	380,0
614xx	1 x 42,38	1	13,3	399,0	500,0
615xx	1 x 53,47	1/0	13,6	500,0	615,0
616xx	1 x 67,4	2/0	15,5	631,0	750,0
617xx	1 x 84,97	3/0	17,5	792,0	900,0
618xx	1 x 107,17	4/0	19,0	996,0	1070,0
62501	1 x 127	250 kcmil	21,2	1178,0	1280,0
62601	1 x 152	300 kcmil	22,4	1410,0	1518,0
62701	1 x 178	350 kcmil	25,3	1645,0	1756,0
62801	1 x 203	400 kcmil	26,0	1902,0	2002,0
62901	1 x 254	500 kcmil	28,0	2345,0	2475,0

Dimensions and specifications may be changed without prior notice. (RN06)

THREENORM PVC single core, UL-Style 1013 and CSA 600 V



Technical data

- PVC-single cores acc. to DIN VDE 0285-525-2-31, DIN EN 50525-2-31, UL-Style 1013 and CSA, CSA-AWM I/A/B
- **Temperature range**
  H05V-K/H07V-K
  flexing +5°C to +70°C
  fixed installation -10°C to +70°C
  UL/CSA +90°C
- **Nominal voltage**
  up to 1 mm² H05V-K: U_0/U 300/500 V
  from 1,5 mm² H07V-K: U_0/U 450/750 V
  UL/CSA 600 V AC
- **Test voltage**
  H05V-K/H07V-K 2000 V
- **Test voltage** (Spark Test)
  AWG 20 = 5 kV
  > AWG 20 = 6 kV
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  fixed installation for core Ø:
  ⩽ 8 mm: 4x core Ø
  > 8-12 mm: 5x core Ø
  > 12 mm: 6x core Ø

Cable structure

- Bare copper fine wire stranded to DIN VDE 0295 cl.5, BS 6360 cl.5, IEC 60228 cl.5, acc. to UL-Std.758 resp. ASTM B 174
- Core insulation of PVC compound type TI1 to DIN VDE 0207-363-3/ DIN EN 50363-3 acc. to UL-Std.1581, class 43, CSA-C 22.2 No. 210 tab.12 class H
- Core identification to DIN VDE 0293 coloured

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B) UL-VW-1, CSA FT1

Note

- Tinned conductor on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- The cross-sections 0,5 mm², 0,75 mm² and 1,0 mm² are acc. to H05 V-K, the cross-sections 1,5 up to 120 mm² acc. to H07 V-K.
- **Type H05 V:**
  approved one-colour mark:
  black, blue, brown, grey, orange, pink, red, turquoise, violet, white, green and yellow.
  Two-coloured mark in any combination of the above individual colours.
- **Type H07 V:**
  approved mark: black, blue, brown, grey, orange, pink, red, turquoise, violet, white and green-yellow.
  Other marks are available as (H).

Application

Three norms approved connecting jumper wire primarily designed for exportes, used in machine tools. This wire is used for internal wiring of switchboards and electrical equipment. The approbation of HAR-UL-CSA AWM make possible an economical storekeeping and simplification of parts list.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

H05V-K

Cross-sec. mm² / AWG-no.	Outer Ø app. mm	Cop. weight kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	PK	GN	TRANS	D-BU	OG	o.col.	2-col.
app. RAL			9005	-	5015	8003	3000	1013	7000	4005	1021	3015	6018	-	5010	2003	-	-
Part no. 0,5 / 20	2,5	4,8	63815	63816	63817	63818	63819	63820	63821	63822	63823	63824	63825	63826	63827	63828	63829	63830
Part no. 0,75 / 19	2,65	7,2	63831	63832	63833	63834	63835	63836	63837	63838	63839	63840	63841	63842	63843	63844	63845	63846
Part no. 1 / 18	2,8	9,6	63847	63848	63849	63850	63851	63852	63853	63854	63855	63856	63857	63858	63859	63860	63861	63862

Continuation ▸

THREENORM PVC single core, UL-Style 1013 and CSA 600 V

H07V-K

Cross-sec. mm² / AWG-no.	Outer Ø app. mm	Cop. weight kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	PK	GN	TRANS	D-BU	OG	o.col.	2-col.
app. RAL			9005	-	5015	8003	3000	1013	7000	4005	1021	3015	6018	-	5010	2003	-	-
Part no. 1,5 / 16	3,05	14,4	63863	63864	63865	63866	63867	63868	63869	63870	63871	63872	63873	63874	63875	63876	63877	63878
Part no. 2,5 / 14	3,6	24,0	63879	63880	63881	63882	63883	63884	63885	63886	63887	63888	63889	63890	63891	63892	63893	63894
Part no. 4 / 12	4,1	38,0	63895	63896	63897	63898	63899	63900	63901	63902	63903	63904	63905	63906	63907	63908	63909	63910
Part no. 6 / 10	4,8	58,0	63911	63912	63913	63914	63915	63916	63917	63918	63919	63920	63921	63922	63923	63924	63925	63926
Part no. 10 / 8	6,4	96,0	63927	63928	63929	63930	63931	63932	63933	63934	63935	63936	63937	63938	63939	63940	63941	63942
Part no. 16 / 6	8,1	154,0	63943	63944	63945	63946	63947	63948	63949	63950	63951	63952	63953	63954	63955	63956	63957	63958
Part no. 25 / 4	9,6	240,0	63959	63960	63961	63962	63963	63964	63965	63966	63967	63968	63969	63970	63971	63972	63973	63974
Part no. 35 / 2	10,8	336,0	63975	63976	63977	63978	63979	63980	63981	63982	63983	63984	63985	63986	63987	63988	63989	63990
Part no. 50 / 1	13,6	480,0	63991	63992	63993	63994	63995	63996	63997	63998	63999	64000	64001	64002	64003	64004	64005	64006
Part no. 70 / 2/0	15,2	672,0	64007	64008	64009	64010	64011	64012	64013	64014	64015	64016	64017	64018	64019	64020	64021	64022
Part no. 95 / 3/0	16,8	912,0	64023	64024	64025	64026	64027	64028	64029	64030	64031	64032	64033	64034	64035	64036	64037	64038
Part no. 120 / 4/0	19,5	1152,0	64039	64040	64041	64042	64043	64044	64045	64046	64047	64048	64049	64050	64051	64052	64053	64054
Part no. 150 / 300 kcmil	22,2	1440,0	64055	64056	64057	64058	64059	64060	64061	64062	64063	64064	64065	64066	64067	64068	64069	64070

Dimensions and specifications may be changed without prior notice. (RN06)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUcond PA6-L
- Cable Gland - HELUcond PA6-UL

N

FIVENORM HAR-UL-CSA-AWM-MTW, PVC single core, UL-Style 10269/UL-Standard 1063, 600 V, 105°C



Technical data

- PVC-single cores acc. to DIN VDE 0285-525-2-31/ DIN EN 50525-2-31, UL-Std.1063, UL-Style 10269 and CSA-AWM I/A/B
- **Temperature range**
  H05V2-K / H07V2-K
  flexing +5°C to +90°C
  fixed installation -40°C to +90°C
  UL (AWM) -40°C to +105°C
  UL (MTW) -40°C to +90°C
  CSA (TEW) -40°C to +105°C
- **Nominal voltage**
  up to 1 mm² H05V2-K: U_0/U 300/500 V
  from 1,5 mm² H07V2-K: U_0/U 450/750 V
  UL (AWM) 1000 V (ac)
  UL (AWM) 1250 V (dc)
  UL (MTW) 600 V
  CSA (TEW) 600 V
- **Test voltage**
  H05V2-K / H07V2-K 2000 V
- **Test voltage** (Spark Test)
  AWG 22 = 5 kV
  > AWG 20 = 6 kV
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  fixed installation for core Ø:
  ⩽ 8 mm: 4x core Ø
  > 8-12 mm: 5x core Ø
  > 12 mm: 6x core Ø

Cable structure

- Bare copper fine wire stranded to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5, acc. to UL-Std.758
- Core insulation of PVC compound type TI3 to DIN VDE 0207-363-3/DIN EN 50363-3 CSA-C 22.2 No. 210 tab.12 class H and class 43 acc. to UL-Std.1581
- Core identification to DIN VDE 0293

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1

Note

- Tinned conductor on request.
- up to = 1,0 mm² = H05V2-K, from 1,5 mm² up to 35 mm² = H07V2-K. Cross-sections up to 35 mm² is acc. to DIN VDE 0285-525-2-31. Due to this cross-section >35 mm² is the type H07V-K but with an increased heat-resistant PVC-compound TI3.
- **Type H05V:**
  approved one-colour mark: black, blue, brown, grey, orange, pink, red, turquoise, violet, white, green and yellow.
  Two-coloured mark in any combination of the above individual colours.
- **Type H07V:**
  approved mark: black, blue, brown, grey, orange, pink, red, turquoise, violet, white and green-yellow.
  Other marks are available as (H).

Application

Five norms approved connecting jumper wire primarily designed for exportes, used in machine tools. The approbation of HAR, UL-AWM, UL-MTW, CSA-AWM, CSA-Equipment-wire make possible an economical storekeeping and simplification of parts list.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

H05V2-K

Cross-sec. mm² / AWG-no.	Outer Ø app. mm	Cop. weight kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	PK	GN	TRANS	D-BU	OG	o.col.	2-col.
app. RAL			9005	-	5015	8003	3000	1013	7000	4005	1021	3015	6018	-	5010	2003	-	-
Part no. 0,5 / 22	2,65	5,2	64075	64076	64077	64078	64079	64080	64081	64082	64083	64084	64085	64086	64087	64088	64089	64090
Part no. 0,75 / 20	2,6	7,2	64091	64092	64093	64094	64095	64096	64097	64098	64099	64100	64101	64102	64103	64104	64105	64106
Part no. 1 / 18	2,8	9,6	64107	64108	64109	64110	64111	64112	64113	64114	64115	64116	64117	64118	64119	64120	64121	64122

Continuation ▸

FIVENORM HAR-UL-CSA-AWM-MTW, PVC single core, UL-Style

10269/UL-Standard 1063, 600 V, 105°C

H07V2-K

Cross-sec. mm² / AWG-no.	Outer Ø app. mm	Cop. weight kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	PK	GN	TRANS	D-BU	OG	o.col.	2-col.
app. RAL			9005	-	5015	8003	3000	1013	7000	4005	1021	3015	6018	-	5010	2003	-	-
Part no. 1,5 / 16	3,0	14,4	64123	64124	64125	64126	64127	64128	64129	64130	64131	64132	64133	64134	64135	64136	64137	64138
Part no. 2,5 / 14	3,6	24,0	64139	64140	64141	64142	64143	64144	64145	64146	64147	64148	64149	64150	64151	64152	64153	64154
Part no. 4 / 12	4,1	38,0	64155	64156	64157	64158	64159	64160	64161	64162	64163	64164	64165	64166	64167	64168	64169	64170
Part no. 6 / 10	4,8	58,0	64171	64172	64173	64174	64175	64176	64177	64178	64179	64180	64181	64182	64183	64184	64185	64186
Part no. 10 / 8	6,4	96,0	64187	64188	64189	64190	64191	64192	64193	64194	64195	64196	64197	64198	64199	64200	64201	64202
Part no. 16 / 6	8,1	154,0	64203	64204	64205	64206	64207	64208	64209	64210	64211	64212	64213	64214	64215	64216	64217	64218
Part no. 25 / 4	9,6	240,0	64219	64220	64221	64222	64223	64224	64225	64226	64227	64228	64229	64230	64231	64232	64233	64234
Part no. 35 / 2	10,8	336,0	64235	64236	64237	64238	64239	64240	64241	64242	64243	64244	64245	64246	64247	64248	64249	64250
Part no. 50 / 1	13,6	480,0	64251	64252	64253	64254	64255	64256	64257	64258	64259	64260	64261	64262	64263	64264	64265	64266
Part no. 70 / 2/0	15,2	672,0	64267	64268	64269	64270	64271	64272	64273	64274	64275	64276	64277	64278	64279	64280	64281	64282
Part no. 95 / 3/0	16,8	912,0	64283	64284	64285	64286	64287	64288	64289	64290	64291	64292	64293	64294	64295	64296	64297	64298
Part no. 120 / 4/0	19,5	1152,0	64299	64300	64301	64302	64303	64304	64305	64306	64307	64308	64309	64310	64311	64312	64313	64314
Part no. 150 / 300 kcmil	22,2	1440,0	64315	64316	64317	64318	64319	64320	64321	64322	64323	64324	64325	64326	64327	64328	64329	64330

H05V2-K, barrel (with various capacity)

Cross-sec. mm² / AWG-no.	Outer Ø app. mm	Cop. weight kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	PK	GN	TRANS	D-BU	OG	o.col.	2-col.
app. RAL			9005	-	5015	8003	3000	1013	7000	4005	1021	3015	6018	-	5010	2003	-	-
Part no. 0,5 / 22	2,5	5,2	65402	65403	65404	65405	65406	65407	65408	65409	65413	65410	65412		65414	65411		
Part no. 0,75 / 20	2,65	7,2	65415	65416	65417	65418	65419	65420	65421	65422	65426	65423	65425		65427	65424		
Part no. 1 / 18	2,8	9,6	65428	65429	65430	65431	65432	65433	65434	65435	65439	65436	65438		65440	65437		

H07V2-K, barrel (with various capacity)

Cross-sec. mm² / AWG-no.	Outer Ø app. mm	Cop. weight kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	PK	GN	TRANS	D-BU	OG	o.col.	2-col.
app. RAL			9005	-	5015	8003	3000	1013	7000	4005	1021	3015	6018	-	5010	2003	-	-
Part no. 1,5 / 16	3,05	14,4	65441	65442	65443	65444	65445	65446	65447	65448	65452	65449	65451		65453	65450		
Part no. 2,5 / 14	3,6	24,0	65454	65455	65456	65457	65458	65459	65460	65461	65465	65462	65464		65466	65463		
Part no. 4 / 12	4,1	38,0	65467	65468	65469	65470	65471	65472	65473	65474	65478	65475	65477		65549	65476		

H05V2-K two colour

Cross-sec. mm² / AWG-no.	Outer Ø app. mm	Cop. weight kg / km	BU/WH	WH/BU	D-BU/WH	WH/OG	WH/RD	BK/OG	D-BU/OG	RD/WH	WH/D-BU	YE/BN	OG/BU
app. RAL			-	-	-	-	-	-	-	-	-	-	-
Part no. 0,5 / 22	2,5	5,2	63402	63403	63404	63405	63406	63482	63332	63352	63372	65386	69625
Part no. 0,75 / 20	2,65	7,2	63407	63408	63409	63410	63411	63483	63333	63353	63373	65387	69626
Part no. 1 / 18	2,8	9,6	63412	63413	63414	63415	63416	63484	63334	63354	63374	65388	69627

H05V2-K two colour

Cross-sec. mm² / AWG-no.	Outer Ø app. mm	Cop. weight kg / km	WH/YE	OG/D-BU	YE/BU	BU/OG	OG/RD	OG/BK	OG/WH	YE/RD	BK/YE
app. RAL			-	-	-	-	-	-	-	-	-
Part no. 0,5 / 22	2,5	5,2	69827	69828	69829	69830	69831	69832	69833	69834	69835
Part no. 0,75 / 20	2,65	7,2	69836	69837	69838	69839	69840	69841	69842	69843	69844
Part no. 1 / 18	2,8	9,6	69845	69846	69847	69848	69849	69850	69851	69852	69853

Continuation ▸

N

FIVENORM HAR-UL-CSA-AWM-MTW, PVC single core, UL-Style

10269/UL-Standard 1063, 600 V, 105°C

(H)07V2-K two colour

Cross-sec. mm² / AWG-no.	Outer Ø app. mm	Cop. weight kg / km	BU/WH	WH/BU	D-BU/WH	WH/OG	WH/RD	BK/OG	D-BU/OG	RD/WH	WH/D-BU	YE/BN	OG/BU
app. RAL			-	-	-	-	-	-	-	-	-	-	-
Part no. 1,5 / 16	3,05	14,4	63417	63418	63419	63420	63421	63485	63335	63355	63375	65389	69628
Part no. 2,5 / 14	3,6	24,0	63422	63423	63424	63425	63426	63486	63336	63356	63376	65390	69629
Part no. 4 / 12	4,1	38,0	63427	63428	63429	63430	63431	63487	63337	63357	63377	65391	69630
Part no. 6 / 10	4,8	58,0	63432	63433	63434	63435	63436	63488	63338	63358	63378	65392	69655
Part no. 10 / 8	6,4	96,0	63437	63438	63439	63440	63441	63489	63339	63359	63379	65393	69656
Part no. 16 / 6	8,1	154,0	63442	63443	63444	63445	63446	63490	63340	63360	63380	65394	69657
Part no. 25 / 4	9,6	240,0	63447	63448	63449	63450	63451	63491	63342	63362	63382	65395	69658
Part no. 35 / 2	10,8	336,0	63452	63453	63454	63455	63456	63492	63343	63363	63383	65396	69659
Part no. 50 / 1	13,6	480,0	63457	63458	63459	63460	63461	63493	63344	63364	63384	65397	69660
Part no. 70 / 2/0	15,2	627,0	63462	63463	63464	63465	63466	63494	63345	63365	63385	65398	69738
Part no. 95 / 3/0	16,8	912,0	63467	63468	63469	63470	63471	63495	63346	63366	63386	65499	69739
Part no. 120 / 4/0	19,5	1152,0	63472	63473	63474	63475	63476	63496	63347	63367	63387	65400	69740
Part no. 150 / 300 kcmil	22,2	1440,0	63477	63478	63479	63480	63481	63497	63348	63368	63388	65401	69741

(H)07V2-K two colour

Cross-sec. mm² / AWG-no.	Outer Ø app. mm	Cop. weight kg / km	WH/YE	OG/D-BU	YE/BU	BU/OG	OG/RD	OG/BK	OG/WH	YE/RD	BK/YE
app. RAL			-	-	-	-	-	-	-	-	-
Part no. 1,5 / 16	3,05	14,4	69854	69855	69856	69857	69858	69859	69860	69861	69862
Part no. 2,5 / 14	3,6	24,0	69863	69864	69865	69866	69867	69868	69869	69870	69871
Part no. 4 / 12	4,1	38,0	69872	69873	69874	69875	69876	69877	69878	69879	69880
Part no. 6 / 10	4,8	58,0	69881	69882	69883	69884	69885	69886	69887	69888	69889
Part no. 10 / 8	6,4	96,0	69890	69891	69892	69893	69894	69895	69896	69897	69898
Part no. 16 / 6	8,1	154,0	69899	69900	69901	69902	69903	69904	69905	69906	69907

H05V2-K two colour, barrel (with various capacity)

Cross-sec. mm² / AWG-no.	Outer Ø app. mm	Cop. weight kg / km	BU/WH	WH/BU	D-BU/WH	WH/OG	WH/RD	BK/OG	D-BU/OG	RD/WH	WH/D-BU	YE/BN	OG/BU
app. RAL			-	-	-	-	-	-	-	-	-	-	-
Part no. 0,5 / 22	2,5	5,2	65479	65480	65481	65482	65483	65484	65485	65486	65487	65488	65489
Part no. 0,75 / 20	2,65	7,2	65490	65491	65492	65493	65494	65495	65496	65497	65498	65502	65503
Part no. 1 / 18	2,8	9,6	65504	65505	65506	65507	65508	65509	65510	65511	65512	65514	65515

(H)07V2-K two colour, barrel (with various capacity)

Cross-sec. mm² / AWG-no.	Outer Ø app. mm	Cop. weight kg / km	BU/WH	WH/BU	D-BU/WH	WH/OG	WH/RD	BK/OG	D-BU/OG	RD/WH	WH/D-BU	YE/BN	OG/BU
app. RAL			-	-	-	-	-	-	-	-	-	-	-
Part no. 1,5 / 16	3,05	14,4	65516	65517	65518	65519	65520	65521	65522	65523	65524	65525	65526
Part no. 2,5 / 14	3,6	24,0	65527	65528	65529	65530	65531	65532	65533	65534	65535	65536	65537
Part no. 4 / 12	4,1	38,0	65538	65539	65540	65541	65542	65543	65544	65545	65546	65547	65548

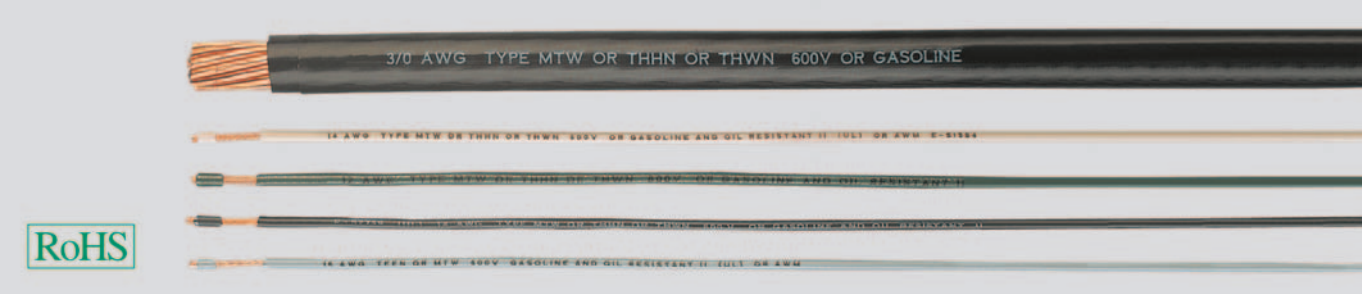
Dimensions and specifications may be changed without prior notice. (RN06)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUcond PA6-L
- Cable Gland - HELUcond PA6-UL

THHN/THWN 90°C, 600 V, UL listed, PVC + nylon single core



Technical data

- PVC + Nylon insulated single cores as per UL-Styles and NEC standard
- **Temperature range** as per Styles
  THHN: 90°C dry - NEC standard
  THWN: 75°C wet - NEC standard
  AWM: UL-Styles 1316 to 1321
  105°C dry
  80°C in oil
  AWM: UL-Styles 1452, 1453
  90°C dry
  80°C in oil 1000 V
  MTW: UL-Styles 1408 to 1414
  90°C dry
  80°C in oil 600 V
- **Nominal voltage** 600 V
- **Minimum bending radius**
  8x core Ø
- **Test voltage** (Spark test)
  AWG 14 to AWG 10 = 7,5 kV
  AWG 8 to AWG 2/0 = 10 kV
  AWG 3/0 to AWG 4/0 = 12,5 kV
  kcmil 250 to kcmil 500 = 15 kV
  kcmil 600 to kcmil 1000 = 17,5 kV

Cable structure

- Bare copper conductor, AWG-sizes as per given table below and ASTM B-3 and ASTM B-8
- Core insulation of PVC and Nylon-outer-sheath
- Cores colour coded, colour identification see below
- Surface of sheath printed with markings:
  14 to 1000 MCM THHN (stranded) - (size) AWG Type MTW OR THHN OR THWN 600 V OR GASOLINE AND OIL RESTSTANT II (UL) OR AWM W-51554
  14 to 10 AWG THHN (solid) - (size) AWG TYPE THHN OR THWN 600 V OR GASOLINE AND OIL RESISTANT II (UL) OR AWM

Properties

Resistant against

- Oils
- Gasoline
- Water
- Acids
- Ozone
- Lyes
- Sunlight
- Abrasion

Note

- 1 kcmil = 1000 circ mils = 0,5067 mm².
- Please complete the part number for these cables by adding the suffix for the colour required as per the list:
  0 = green
  1 = black
  2 = blue
  3 = brown
  4 = red
  5 = white
  6 = grey
  7 = yellow
  8 = orange
  9 = pink

Application

As flexible connecting cable in machines, switch and distribution cabinets, cable assemblies and for fixed indoor installation, in tubes and in cable conduits.
AWM = **A**ppliance **W**iring **M**aterial
For internal wrings for electrical equipment and control apparatus e. g. radio and televisions, electronic assembly component.
MTW = **M**achine **T**ool **W**ire
For the electronical installation of machine tools and the relative control. THW = Thermoplastic PVC-insulated building wire, Heat resistant 75°C, for Wet and dry locations, flame retardant. THHN = Thermoplastic PVC-insulated building wire, Nylon sheathed, 90°C 600 V, for dry and damp locations.
CE = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

N

Part no.	Cross-section mm²	AWG-No.	Cond. make-up n x wire Ø	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
6320x	2,08	14	19 x 0,38	3,0	20,7	25,0
6321x	3,32	12	19 x 0,48	3,4	33,0	37,0
6322x	5,26	10	19 x 0,6	4,3	51,6	60,0
6323x	8,35	8	19 x 0,75	5,5	80,6	95,0
6324x	13,39	6	19 x 0,96	6,6	125,0	143,0
6325x	21,14	4	19 x 1,19	8,4	201,0	229,0
6326x	26,65	3	19 x 1,336	9,1	253,0	282,0
6327x	33,61	2	19 x 1,5	10,0	317,0	349,0
6328x	42,38	1	19 x 1,686	11,4	399,0	449,0
6329x	53,47	1/0	19 x 1,89	12,4	500,0	557,0
6330x	67,4	2/0	19 x 2,126	13,7	631,0	691,0
6331x	84,97	3/0	19 x 2,387	15,0	792,0	861,0
6332x	107,17	4/0	19 x 2,68	16,5	996,0	1069,0

Part no.	Cross-section mm²	AWG-No.	Cond. make-up n x wire Ø	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
63331	127	250 kcmil	37 x 2,088	18,29	1178,0	1277,0
63341	152	300 kcmil	37 x 2,286	19,56	1410,0	1515,0
63351	178	350 kcmil	37 x 2,47	21,08	1645,0	1753,0
63361	203	400 kcmil	37 x 2,7	22,35	1902,0	1998,0
63371	254	500 kcmil	37 x 2,95	24,13	2345,0	2466,0
63381	304	600 kcmil	61 x 2,52	26,75	2920,0	3000,0
63391	380	750 kcmil	61 x 2,82	29,36	3658,0	3713,0
63401	507	1000 kcmil	61 x 3,25	33,27	4858,0	4796,0

Dimensions and specifications may be changed without prior notice. (RN06)

PVC single cores according to CEI-20-22 II



Technical data

- PVC-Single Cores as per Italian standard CEI 20-22 II
- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -30°C to +80°C
- **Nominal voltage**
  up to 0,35 mm² U_0/U 300/300 V
  0,5 and 0,75 mm² U_0/U 300/500 V
  from 1 mm² U_0/U 450/750 V
- **Test voltage** 2500 V
- **Minimum bending radius**
  fixed installation for core Ø:
  ⩽ 8 mm: 4x core Ø
  > 8-12 mm: 5x core Ø
  > 12 mm: 6x core Ø

Cable structure

- Bare fine wire stranded copper conductor to CEI 20-29 cl.5
- Core insulation of PVC
  R 2 up to CEI 20 II, cap. VI cl. 3

Properties

- Low smoke
- **Resistant to**
  Oil
  Solvents
  Acids
  Lyes
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

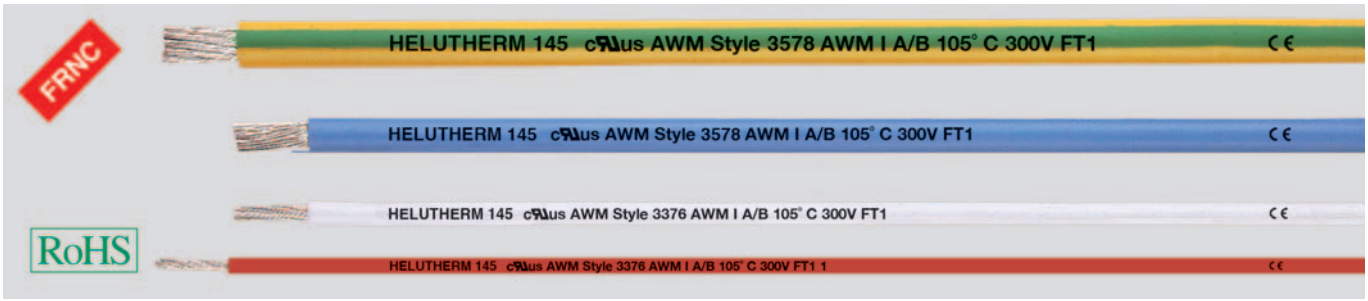
Application

As hook up wire, control cabinet building, in cable assembly manufacturing as well as in electronic applications.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Cross-section mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	BK	GN-YE	BU	BN	RD	WH	D-BU	o.col.
app. RAL				9005	-	5015	8003	3000	1013	5010	-
Part no.				29600	29601	29602	29603	29604	29605	29606	29607
0,35	1,5	2,5	3,6	-	-	-	-	-	-	-	-
Part no.				29608	29609	29610	29611	29612	29613	29614	29615
0,5	2,6	4,8	6,0	20	20	20	20	20	20	20	20
Part no.				29616	29617	29618	29619	29620	29621	29622	29623
0,75	2,8	7,2	10,0	18	18	18	18	18	18	18	18
Part no.				29624	29625	29626	29627	29628	29629	29630	29631
1	3,2	9,6	16,0	17	17	17	17	17	17	17	17
Part no.				29632	29633	29634	29635	29636	29637	29638	29639
1,5	3,5	14,4	21,0	16	16	16	16	16	16	16	16
Part no.				29640	29641	29642	29643	29644	29645	29646	29647
2,5	4,2	24,0	32,0	14	14	14	14	14	14	14	14
Part no.				29648	29649	29650	29651	29652	29653	29654	29655
4	4,6	38,0	48,0	12	12	12	12	12	12	12	12
Part no.				29656	29657	29658	29659	29660	29661	29662	29663
6	6,3	58,0	69,0	10	10	10	10	10	10	10	10
Part no.				29664	29665	29666	29667	29668	29669	29670	29671
10	7,6	96,0	117,0	8	8	8	8	8	8	8	8
Part no.				29672	29673	29674	29675	29676	29677	29678	29679
16	8,8	154,0	180,0	6	6	6	6	6	6	6	6
Part no.				29680	29681	29682	29683	29684	29685	29686	29687
25	11,0	240,0	266,0	4	4	4	4	4	4	4	4
Part no.				29688	29689	29690	29691	29692	29693	29694	29695
35	12,5	336,0	366,0	2	2	2	2	2	2	2	2
Part no.				29696	29697	29698	29699	29700	29701	29702	29703
50	14,5	480,0	515,0	1	1	1	1	1	1	1	1
Part no.				29704	29705	29706	29707	29708	29709	29710	29711
70	16,5	672,0	741,0	2/0	2/0	2/0	2/0	2/0	2/0	2/0	2/0
Part no.				29712	29713	29714	29715	29716	29717	29718	29719
95	18,5	912,0	950,0	3/0	3/0	3/0	3/0	3/0	3/0	3/0	3/0
Part no.				29720	29721	29722	29723	29724	29725	29726	29727
120	21,0	1152,0	1230,0	4/0	4/0	4/0	4/0	4/0	4/0	4/0	4/0
Part no.				29728	29729	29730	29731	29732	29733	29734	29735
150	23,0	1440,0	1500,0	300 kcmil	300 kcmil	300 kcmil	300 kcmil	300 kcmil	300 kcmil	300 kcmil	300 kcmil

Dimensions and specifications may be changed without prior notice. (RN06)

HELUTHERM® 145 300 V, flexible single core, cross-linked, halogen-free



Technical data

- Halogen-free single cores with increased heat resistance acc. to
  UL-Style 3376 (AWG 24 - AWG 16)
  UL-Style 3578 (AWG 14 - AWG 10)
  CSA C22.2 No. 210
- **Temperature range**
  flexing -35°C to +120°C
  fixed installation -55°C to +145°C
  UL/CSA
  flexing -35°C to +105°C
  fixed installation - 55°C to +105°C
- **Nominal voltage** 300 V
- **Test voltage** 2000 V
- **Minimum bending radius**
  flexing 12,5x core Ø
  fixed installation 4x core Ø
- **Caloric load values**
  see Technical Informations
- **Power ratings table**
  see Technical Informations
- **Approval**
  Germanischer Lloyd

Cable structure

- Tinned Cu wires, acc. to AWG-sizes
  Conductor make-up:
  AWG 24 to AWG 14 = 19-wires
  AWG 12 = 65-wires
  AWG 10 = 105-wires
- Core insulation of polyolefin-copolymer, cross-linked
- Core colours see table below

Tests

- Flame test acc. to
  DIN VDE 0482-332-3, BS 4066 part 3,
  DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267,
  DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to
  DIN VDE 0482 part 267,
  DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Properties

- Halogen-free
- Lower propagation of fire
- Low development of smoke and fumes
- Good abrasion and notch resistance
- Good resistance to oils and weathering
- Resistant to UV radiation and ozone
- Resistant to soldering temperatures
- Thermal class B
- These single-core cables are resistant to melting, even when in contact with a soldering iron at temperatures of between 300°C and 380°C, because of the electron-beam cross-linking for the insulation material
- Due to the high temperature profile the cross-section of conductor can under certain circumstances be reduced, hereby enabling a saving in space requirement and weight
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Application

These temperature resistant single-core cables are used for the internal wiring of lighting fixtures, heaters, electrical machinery, switching systems and distributors in equipment and plant and machinery, suitable for installation on, in and beneath plaster, in closed installation ducts, as well as for traffic systems and outdoor applications. These cables are not approved for direct routing on racks, gutters or tanks. These halogen-free single core cables are characterised by their amazingly hight long-time resistance to temperature and feature among the leading halogen-free. Flame resistant products in the world.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

N

AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	PK	GN	OG	BEIGE	2-col.
Part no. 24	1,5	2,3	4,0	61817	61816	61818	61819	61820	61821	61822	61823	61824	59339	61826	61825	61828	61829
Part no. 22	1,6	3,2	6,0	61831	61830	61832	61833	61834	61835	61836	61837	61838	61841	61840	61839	61842	61843
Part no. 20	1,9	5,0	9,0	61845	61844	61846	61847	61848	61849	61850	61851	61852	61855	61854	61853	61856	61857
Part no. 18	2,1	7,9	12,0	61859	61858	61860	61861	61862	61863	61864	61865	61866	61869	61868	61867	61870	61871
Part no. 16	2,4	12,6	16,0	61873	61872	61874	61875	61876	61877	61878	61879	61880	61883	61882	61881	61884	61885
Part no. 14	3,5	20,7	27,0	61887	61886	61888	61889	61890	61891	61892	61893	61894	61897	61896	61895	61898	61899
Part no. 12	4,2	33,0	36,0	61901	61900	61902	61903	61904	61905	61906	61907	61908	61911	61910	61909	61912	61913
Part no. 10	4,8	51,6	58,0	61915	61914	61916	61917	61918	61919	61920	61921	61922	61925	61924	61923	61926	61927

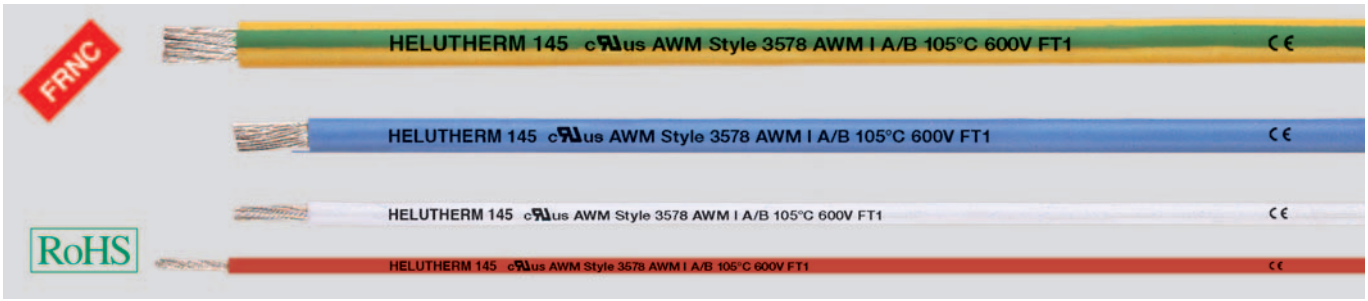
Dimensions and specifications may be changed without prior notice. (RN06)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUcond PA6-L
- Cable Gland - HELUcond PA6-UL

HELUTHERM® 145 600 V, flexible single core, cross-linked, halogen-free



Technical data

- Halogen-free single cores with increased heat resistance acc. to **UL Style 3578 CSA C22.2 No. 210**
- **Temperature range**
  flexing -35°C to +120°C
  fixed installation -55°C to +145°C
  UL/CSA
  flexing -35°C to +105°C
  fixed installation -55°C to +105°C
- **Nominal voltage** 600 V
- **Test voltage** 3000 V
- **Minimum bending radius**
  flexing 12,5x core Ø
  fixed installation 4x core Ø
- **Caloric load values**
  see Technical Informations
- **Power ratings table**
  see Technical Informations
- **Approval**
  Germanischer Lloyd

Cable structure

- Tinned Cu wires, acc. to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of cross-linked polyolefin-copolymer
- Core colours see table below

Tests

- Flame test acc. to DIN VDE 0482-332-3-22, BS 4066 part 3, DIN EN 60332-3-22, IEC 60332-3-22 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Properties

- Halogen-free
- Lower propagation of fire
- Low development of smoke and fumes
- Good abrasion and notch resistance
- Good resistance to oils and weathering
- Resistant to UV radiation and ozone
- Resistant to soldering temperatures
- Resistant to melting, even when in contact with a soldering iron at temperatures of between 300°C and 380°C, because of the cross-linking for the insulation material
- Due to the high temperature profile the cross-section of conductor can under certain circumstances be reduced, hereby enabling a saving in space requirement and weight
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Application

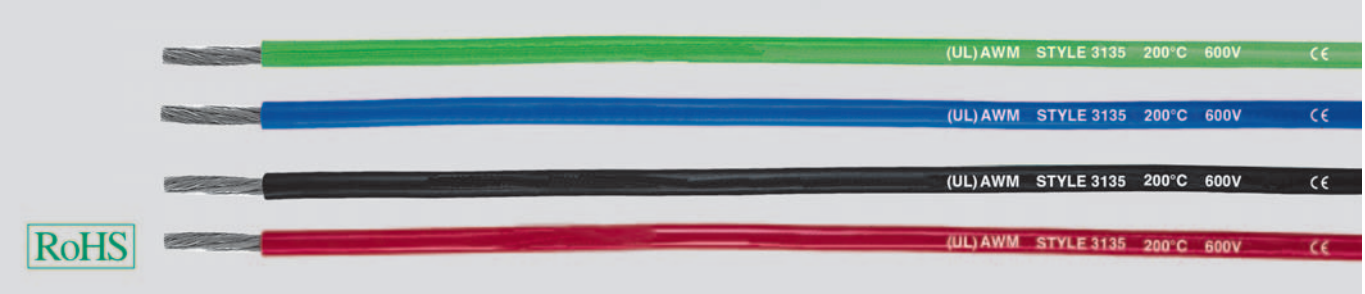
These temperature resistant single-core cables are used for the internal wiring of lighting fixtures, heaters, electrical machinery, switching systems and distributors in equipment and plant and machinery, suitable for installation on, in and beneath plaster, in closed installation ducts, as well as for traffic systems and outdoor applications. These cables are not approved for direct routing on racks, gutters or tanks. These halogen-free single core cables are characterised by their amazingly high long-time resistance to temperature and feature among the leading halogen-free, flame resistant products in the world.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	PK	GN	OG	BEIGE	2-col.
Part no. 0,25	2,3	2,4	7,0	59473	59472	59474	59475	59476	59477	59478	59479	59480	59483	59482	59481	59484	59485
Part no. 0,5	2,6	4,8	11,0	59487	59486	59488	59489	59490	59491	59492	59493	59494	59497	59496	59495	59498	59499
Part no. 0,75	2,8	7,2	14,0	59501	59500	59502	59503	59504	59505	59506	59507	59508	59511	59510	59509	59512	59513
Part no. 1	2,9	9,6	17,0	59515	59514	59516	59517	59518	59519	59520	59521	59522	59525	59524	59523	59526	59527
Part no. 1,5	3,2	14,4	22,0	59529	59528	59530	59531	59532	59533	59534	59535	59536	59539	59538	59537	59540	59541
Part no. 2,5	3,7	24,0	33,0	59543	59542	59544	59545	59546	59547	59548	59549	59550	59553	59552	59551	59554	59555
Part no. 4	4,2	38,4	53,0	59557	59556	59558	59559	59560	59561	59562	59563	59564	59567	59566	59565	59568	59569
Part no. 6	5,0	57,6	78,0	59571	59570	59572	59573	59574	59575	59576	59577	59578	59581	59580	59579	59582	59583
Part no. 10	6,4	96,0	136,0	59585	59584	59586	59587	59588	59589	59590	59591	59592	59595	59594	59593	59596	59597
Part no. 16	8,5	154,0	203,0	59599	59598	59600	59601	59602	59603	59604	59605	59606	59609	59608	59607	59610	59611
Part no. 25	10,4	240,0	300,0	59613	59612	59614	59615	59616	59617	59618	59619	59620	59623	59622	59621	59624	59625
Part no. 35	11,5	336,0	405,0	59627	59626	59628	59629	59630	59631	59632	59633	59634	59637	59636	59635	59638	59639
Part no. 50	14,4	480,0	580,0	59641	59640	59642	59643	59644	59645	59646	59647	59648	59651	59650	59649	59652	59653

Dimensions and specifications may be changed without prior notice. (RN06)

UL-Style 3135 silicone single core, 600 V / 200°C, halogen-free



Technical data

- Silicon single cores acc. to UL-Std.758 Style 3135
- **Temperature range** -60°C to +200°C
- **Nominal voltage** 600 V
- **Test voltage** 2000 V
- **Breakdown voltage** min. 5000 V
- **Minimum bending radius** 15x core Ø

Cable structure

- Tinned copper conductors
- Stranded see table below
- Core insulation of Silicon
- Core colours see below

Properties

- Halogen-free acc. to VDE 0482 part 267/ DIN EN 50267-2-1/IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- **Resistant to**
  High molecular oils
  fats from vegetables and animals
  alcohols
  plasticizers and clophenes
  diluted acids
  lyes and salt dissolution
  oxidation substances
  tropical influences and weather
  lake water
  oxygen
  ozone

Note

- Additional sizes on request.

Application

UL-approved single cores for use in high, temperature areas. They are used mainly in the steel producing industries, in aviation industries as well as in ship building, cement, glas and ceramic factories
AWM = **A**ppliance **W**iring **M**aterial
For internal wirings for electrical equipment and control apparatus e. g. electronic assembly components
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

AWG-No.	Conductor construction	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	BK	BU	BN	RD	WH	GY	VT	GN
Part no. 24	1 x 0,5	2,1	1,9	6,3	47021 o. r.	47022 o. r.	47023 o. r.	47024 o. r.	47025 o. r.	47026 o. r.	47027 o. r.	47076 o. r.
Part no. 22	3 x 0,4	2,4	3,6	9,2	47028 o. r.	47029 o. r.	47030 o. r.	47031 o. r.	47032 o. r.	47033 o. r.	47034 o. r.	47071 o. r.
Part no. 20	5 x 0,4	2,6	6,0	12,3	47035 o. r.	47036 o. r.	47037 o. r.	47038 o. r.	47039 o. r.	47040 o. r.	47041 o. r.	47072 o. r.
Part no. 18	7 x 0,4	2,8	8,6	15,5	47042 o. r.	47043 o. r.	47044 o. r.	47045 o. r.	47046 o. r.	47047 o. r.	47048 o. r.	47073 o. r.
Part no. 16	11 x 0,4	3,0	13,3	21,0	47049 o. r.	47050 o. r.	47051 o. r.	47052 o. r.	47053 o. r.	47054 o. r.	47055 o. r.	47074 o. r.
Part no. 14	17 x 0,4	3,4	20,5	29,7	47056 o. r.	47057 o. r.	47058 o. r.	47059 o. r.	47060 o. r.	47061 o. r.	47062 o. r.	47075 o. r.
Part no. 12	27 x 0,4	3,8	32,6	43,2	47063 o. r.	47064 o. r.	47065 o. r.	47066 o. r.	47067 o. r.	47068 o. r.	47069 o. r.	47070 o. r.

Dimensions and specifications may be changed without prior notice. (RN06)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUcond PA6-L
- Cable Gland - HELUcond PA6-UL

Single 600-J/-O special single core cable, 600 V, meter marking





Technical data

- Special PVC single core acc. to UL-Style 10107 and CSA AWM I/II A/B, adapted to DIN VDE 0285-525-2-31/ DIN EN 50525-2-31, DIN VDE 0285-525-2-51/ DIN EN 50525-2-51, acc. to UL-Std.758
- **Temperature range** flexing -5°C bis +90°C fixed installation -40°C bis +90°C
- **Permissible operating temperature** max. +90°C at conductor
- **Nominal voltage** VDE U_0/U 600/1000 V UL/CSA 600 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, fine wire conductors to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of special PVC compound type TM2 to DIN VDE 0207-363-3/ DIN EN 50363-3 and class 43 acc. to UL-Std.1581 colour black or green-yellow
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/ DIN EN 50363-4-1 and class 43 acc. to UL-Std.1581
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- Chemical Resistance - see table Technical informations

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1
- UV-resistant

Note

- G = with green-yellow conductor x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **Single 600-CY -J/-O**, confer page 499
- also as 1000 V Style 10678 deliverable

Application

PVC Single cores suitable for installation for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms as well as outside (fixed installation). Is not suitable to be used as direct burrial- or as underwater cable. These two norms approved single cores designed for exportorientated machinery manufacturer for machine tools, conveyor belts and production lines.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Core colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
10881	1 G 6	10	green-yellow	7,8	58,0	118,0
10882	1 x 6	10	black	7,8	58,0	118,0
10883	1 G 10	8	green-yellow	9,0	96,0	180,0
10884	1 x 10	8	black	9,0	96,0	180,0
10885	1 G 16	6	green-yellow	10,0	154,0	250,0
10886	1 x 16	6	black	10,0	154,0	250,0
10887	1 G 25	4	green-yellow	11,5	240,0	370,0
10888	1 x 25	4	black	11,5	240,0	370,0
10889	1 G 35	2	green-yellow	13,0	336,0	490,0
10890	1 x 35	2	black	13,0	336,0	490,0
10891	1 G 50	1	green-yellow	15,6	480,0	665,0
10892	1 x 50	1	black	15,6	480,0	665,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Core colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
10893	1 G 70	2/0	green-yellow	17,9	672,0	910,0
10894	1 x 70	2/0	black	17,9	672,0	910,0
10895	1 G 95	3/0	green-yellow	19,5	912,0	1195,0
10896	1 x 95	3/0	black	19,5	912,0	1195,0
10897	1 G 120	4/0	green-yellow	22,3	1152,0	1545,0
10898	1 x 120	4/0	black	22,3	1152,0	1545,0
10899	1 G 150	250 kcmil	green-yellow	25,0	1440,0	1750,0
10900	1 x 150	250 kcmil	black	25,0	1440,0	1750,0
10901	1 G 185	350 kcmil	green-yellow	28,6	1776,0	2320,0
10902	1 x 185	350 kcmil	black	28,6	1776,0	2320,0
10903	1 G 240	450 kcmil	green-yellow	31,4	2304,0	2960,0
10904	1 x 240	450 kcmil	black	31,4	2304,0	2960,0

Dimensions and specifications may be changed without prior notice. (RN06)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUcond PA6-L
- Cable Gland - HELUcond PA6-UL

Single 600-CY -J/-O special single core cable, 600 V, Cu-screened, EMC-preferred type, meter marking





Technical data

- Special PVC single cores acc. to UL-Style 10107 and CSA AWM I/II A/B, adapted to DIN VDE 0285-525-2-31/ DIN EN 50525-2-31, DIN VDE 0285-525-2-51/ DIN EN 50525-2-51, acc. to UL-Std.758
- **Temperature range** flexing -5°C bis +90°C fixed installation -40°C bis +90°C
- **Permissible operating temperature** max. +90°C at conductor
- **Nominal voltage** VDE U_0/U 600/1000 V UL/CSA 600 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Coupling resistance** max. 250 Ohm/km
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, fine wire conductors, to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core isulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43 acc. to UL-Std.1581 colour black or green-yellow
- Tinned copper braided screening, coverage approx. 85%
- Outer sheath special PVC compound type TM2 to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 and class 43 acc. to UL-Std.1581
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- Chemical Resistance - see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1
- UV-resistant

Note

- G = with green-yellow conductor x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **Single 600-J/-O**, confer page 498
- also as 1000 V Style 10678 deliverable

Application

PVC single cores suitable for installation for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms as well as outside (fixed installation). Is not suitable to be used as direct burrial-or as underwater cable. These two norms approved single cores designed for exportorientated machinery manufacturer for machine tools, conveyor belts and production lines. These screened cables are particulary suitable for the interference-free transmission in instrumentation and control engineering applications (electromagnetic compatibillity).

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Core colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
10910	1 G 6	10	green-yellow	7,6	72,0	140,0
10911	1 x 6	10	black	7,6	72,0	140,0
10912	1 G 10	8	green-yellow	9,4	130,0	230,0
10913	1 x 10	8	black	9,4	130,0	230,0
10914	1 G 16	6	green-yellow	10,4	190,0	300,0
10915	1 x 16	6	black	10,4	190,0	300,0
10916	1 G 25	4	green-yellow	12,0	260,0	420,0
10917	1 x 25	4	black	12,0	260,0	420,0
10918	1 G 35	2	green-yellow	14,4	405,0	615,0
10919	1 x 35	2	black	14,4	405,0	615,0
10920	1 G 50	1	green-yellow	16,4	560,0	825,0
10921	1 x 50	1	black	16,4	560,0	825,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Core colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
10922	1 G 70	2/0	green-yellow	17,4	780,0	1090,0
10923	1 x 70	2/0	black	17,4	780,0	1090,0
10924	1 G 95	3/0	green-yellow	20,1	1030,0	1395,0
10925	1 x 95	3/0	black	20,1	1030,0	1395,0
10926	1 G 120	4/0	green-yellow	23,0	1285,0	1770,0
10927	1 x 120	4/0	black	23,0	1285,0	1770,0
10928	1 G 150	250 kcmil	green-yellow	26,1	1570,0	1930,0
10929	1 x 150	250 kcmil	black	26,1	1570,0	1930,0
10930	1 G 185	350 kcmil	green-yellow	29,3	1940,0	2635,0
10931	1 x 185	350 kcmil	black	29,3	1940,0	2635,0
10932	1 G 240	450 kcmil	green-yellow	32,2	2530,0	3380,0
10933	1 x 240	450 kcmil	black	32,2	2530,0	3380,0

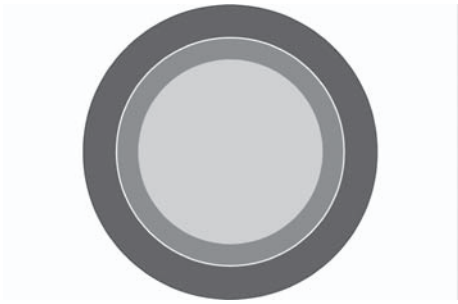
Dimensions and specifications may be changed without prior notice. (RN06)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUcond PA6-L
- Cable Gland - HELUcond PA6-UL

TOPFLEX® 302 / 302-UL very high flexible PVC single core double insulated 0,6/1kV





Technical data

TOPFLEX® 302

- Special PVC single-core cable with double insulation flexible at low temperatures
- **Temperature range**
  flexing -15°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage**
  U_0/U 600/1000 V
- **A.C. test voltage**, 50 Hz
  3000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  for flexible installation
  5x cable Ø

TOPFLEX® 302-UL

- Technical data as above, but
- with additional UL Approval Style 10107
- **Nominal voltage**
  UL 600 V

Cable structure

- Bare copper, extra fine wire conductor to DIN VDE 0295 cl.6 and IEC 60228 cl.6
- PVC insulation flexible at low temperatures, natural colour
- PVC sheath compound TM2 flexible at low temperatures
- Sheath colour black

Properties

- Sheath UV-resistant
- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Chemical resistance see table Technical Information
- The cable is permissible for overvoltage category II

Application

These cables are specially designed for use as connecting cables on sliding contacts for current collectors, and also for use in energy supply chains, automatic handling devices, robots, machine tools, machining and processing equipment, and nearly any area requiring flexible used and free motion.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

TOPFLEX® 302 without UL-approval

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
72946	1 x 1,5	16	4,0	14,4	25,0
73924	1 x 2,5	14	4,5	24,0	42,0
72950	1 x 4	12	5,6	38,4	58,0
72945	1 x 6	10	6,1	57,6	85,0
75450	1 x 10	8	8,0	96,0	130,0
72947	1 x 16	6	9,8	153,6	190,0
75451	1 x 25	4	11,8	240,0	280,0
75452	1 x 35	2	12,9	336,0	400,0
75453	1 x 50	1	14,6	480,0	520,0
72944	1 x 70	2/0	17,5	672,0	720,0
75454	1 x 95	3/0	20,2	912,0	1050,0
75455	1 x 120	4/0	21,6	1152,0	1220,0
75456	1 x 150	300 kcmil	23,5	1440,0	1500,0
75457	1 x 185	350 kcmil	25,7	1776,0	1940,0
75458	1 x 240	500 kcmil	29,5	2304,0	2675,0

TOPFLEX® 302 with UL-approval

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
700231	1 x 1,5	16	5,2	14,4	25,0
700232	1 x 2,5	14	6,4	24,0	42,0
700233	1 x 4	12	7,0	38,4	58,0
700234	1 x 6	10	7,5	57,6	85,0
701351	1 x 10	8	9,1	96,0	130,0
700114	1 x 16	6	10,8	153,6	190,0
701352	1 x 25	4	13,1	240,0	280,0
701353	1 x 35	2	14,1	336,0	400,0
701354	1 x 50	1	15,8	480,0	520,0
700235	1 x 70	2/0	19,0	672,0	720,0
701355	1 x 95	3/0	21,5	912,0	1050,0
701356	1 x 120	4/0	23,2	1152,0	1220,0
701357	1 x 150	300 kcmil	25,2	1440,0	1500,0
701358	1 x 185	350 kcmil	27,0	1776,0	1940,0
701359	1 x 240	500 kcmil	31,5	2304,0	2675,0

Dimensions and specifications may be changed without prior notice.

Single 602-RC -J/O special single core cable for drag chains, 90°C, 600 V, meter marking





Technical data

- Special PVC single core acc. to UL-Style 10107 and CSA AWM I/II AB, core acc. to DIN VDE 0285-525-2-31/ DIN EN 50525-2-31 (except 300 mm²)
- **Temperature range** flexing -5°C to +90°C fixed installation -40°C to +90°C
- **Permissible operating temperature** max. +90°C at conductor
- **Nominal voltage** VDE U_0/U 600/1000 V UL/CSA 600 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 3x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, extra fine wire conductors, to DIN VDE 0295 cl.6, col. 4, BS 6360 cl.6 and IEC 60228 cl.6, however by 185 mm² up to 300 mm² with reduced single wire-Ø, max. 0,30 mm
- Core insulation of special PVC compound type TI3 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43, 90°C acc. to UL-Std.1581 colour black or green-yellow
- Outer sheath special PVC compound type YM5 to DIN VDE 0207 part 5 and class 43, 90°C acc. to UL-Std.1581
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- Chemical Resistance - see table Technical Informations
- Resistant to mineral oils, synthetic oils and lubricating coolants.
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B) UL VW-1, CSA FT1
- Acc.to UL-Style 10107/ UL-Std.1581, CSA C22.2 No 210

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- 300 mm² in adaption
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type: **Single 602-RC-CY-J/O**, confer page 502

Application

High flexible special single core cable for drag chains are used for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms. These two-norm cables primarily designed for exportorientated machinery manufacturer for flexible applications in machineries, machine tools, robot technics, for movable automated machinery parts. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

RC = Robotics Cable

CE = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Core colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
69601	1 G 10	8	green-yellow	9,4	96,0	180,0
69602	1 x 10	8	black	9,4	96,0	180,0
69603	1 G 16	6	green-yellow	10,5	154,0	250,0
69604	1 x 16	6	black	10,5	154,0	250,0
69605	1 G 25	4	green-yellow	11,6	240,0	370,0
69606	1 x 25	4	black	11,6	240,0	370,0
69607	1 G 35	2	green-yellow	14,5	336,0	490,0
69608	1 x 35	2	black	14,5	336,0	490,0
69609	1 G 50	1	green-yellow	16,6	480,0	665,0
69610	1 x 50	1	black	16,6	480,0	665,0
69611	1 G 70	2/0	green-yellow	18,4	672,0	910,0
69612	1 x 70	2/0	black	18,4	672,0	910,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Core colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
69613	1 G 95	3/0	green-yellow	20,5	912,0	1195,0
69614	1 x 95	3/0	black	20,5	912,0	1195,0
69615	1 G 120	4/0	green-yellow	23,0	1152,0	1545,0
69616	1 x 120	4/0	black	23,0	1152,0	1545,0
69617	1 G 150	250 kcmil	green-yellow	25,2	1440,0	1750,0
69618	1 x 150	250 kcmil	black	25,2	1440,0	1750,0
69619	1 G 185	350 kcmil	green-yellow	29,0	1776,0	2320,0
69620	1 x 185	350 kcmil	black	29,0	1776,0	2320,0
69621	1 G 240	450 kcmil	green-yellow	32,5	2304,0	2960,0
69622	1 x 240	450 kcmil	black	32,5	2304,0	2960,0
69623	1 G 300	550 kcmil	green-yellow	35,4	2880,0	3550,0
69624	1 x 300	550 kcmil	black	35,4	2880,0	3550,0

Dimensions and specifications may be changed without prior notice. (RN06)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUcond PA6-L
- Cable Gland - HELUcond PA6-UL

Single 602-RC -CY -J/O special single core cable

for drag chains, 90°C, 600 V, EMC-preferred type, meter marking





Technical data

- Special PVC single core cable acc. to UL-Style 10107 and CSA AWM I/II A/B, core acc. to DIN VDE 0285-525-2-31/ DIN EN 50525-2-31 (except 300 mm²)
- **Temperature range**
  flexing -5°C to +90°C
  fixed installation -40°C to +90°C
- **Permissible operating temperature**
  max. +90°C at conductor
- **Nominal voltage**
  VDE U_0/U 600/1000 V
  UL/CSA 600 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing 7,5x cable Ø
  fixed installation 3x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km
- **Radiation resistance**
  up to 80x10^6 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper, extra fine wire conductors, to DIN VDE 0295 cl.6, col. 4, BS 6360 cl.6 and IEC 60228 cl.6, however by 185 mm² up to 300 mm² with reduced single wire-Ø, max. 0,30 mm
- Core insulation of special PVC compound type TI3 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43, 90°C acc. to UL-Std.1581 colour black or green-yellow
- Tinned copper braided screening, coverage approx. 80%
- Outer sheath special PVC compound type YM5 to DIN VDE 0207 part 5 and class 43, 90°C acc. to UL-Std.1581
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- Chemical Resistance - see table Technical Informations
- Resistant to mineral oils, synthetic oils and lubricating coolants.
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1
- Acc.to UL-Style 10107/ UL-Std.1581, CSA C22.2 No 210

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- 300 mm² in adaption
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- non screened analogue type:
  Single 602-RC-J/O, confer page 501

Application

High flexible special single core screened cables for drag chains are used for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms. These two-norm cables primarily designed for exportorientated machinery manufacturer for flexible applications in machineries, machine tools, robot technics, for movable automated machinery parts. These screened cables are particulary suitable for the interference-free transmission in instrumentation and control engineering applications (electromagnetic compatibillity). For applications which go beyond standard solutions we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

RC = Robotics Cable

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
69631	1 G 10	8	10,0	130,0	230,0
69632	1 x 10	8	10,0	130,0	230,0
69633	1 G 16	6	11,1	190,0	300,0
69634	1 x 16	6	11,1	190,0	300,0
69635	1 G 25	4	12,3	260,0	420,0
69636	1 x 25	4	12,3	260,0	420,0
69637	1 G 35	2	15,1	405,0	615,0
69638	1 x 35	2	15,1	405,0	615,0
69639	1 G 50	1	17,2	560,0	825,0
69640	1 x 50	1	17,2	560,0	825,0
69641	1 G 70	2/0	19,0	780,0	1090,0
69642	1 x 70	2/0	19,0	780,0	1090,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
69643	1 G 95	3/0	22,0	1030,0	1395,0
69644	1 x 95	3/0	22,0	1030,0	1395,0
69645	1 G 120	4/0	23,6	1285,0	1770,0
69646	1 x 120	4/0	23,6	1285,0	1770,0
69647	1 G 150	250 kcmil	25,8	1570,0	1930,0
69648	1 x 150	250 kcmil	25,8	1570,0	1930,0
69649	1 G 185	350 kcmil	29,8	1940,0	2635,0
69650	1 x 185	350 kcmil	29,8	1940,0	2635,0
69651	1 G 240	450 kcmil	33,5	2530,0	3380,0
69652	1 x 240	450 kcmil	33,5	2530,0	3380,0
69653	1 G 300	550 kcmil	36,2	3140,0	4120,0
69654	1 x 300	550 kcmil	36,2	3140,0	4120,0

Dimensions and specifications may be changed without prior notice. (RN06)

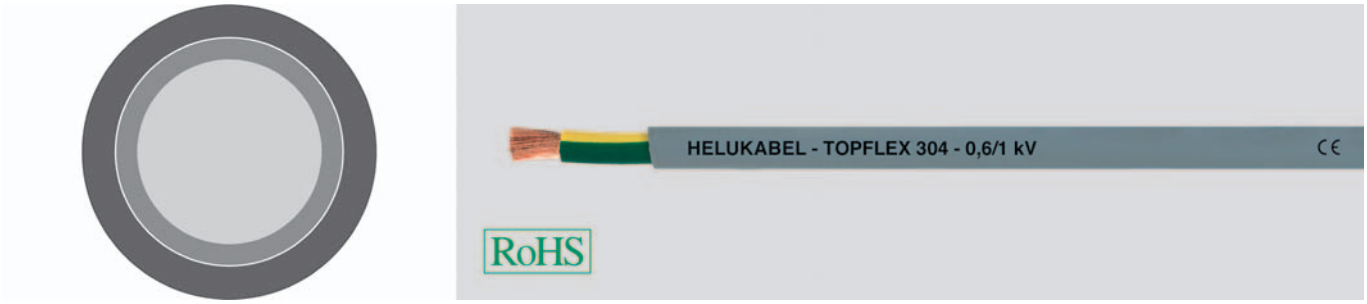


Suitable accessories can be found in Chapter X.

- Cable Gland - HELUcond PA6-L
- Cable Gland - HELUcond PA6-UL

TOPFLEX® 304 / 304-C unscreened (double insulated)/ screened

high flexible PVC single core 0,6/1kV for drag chain application



Technical data

- Special PVC single-core cable
- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage**
  U_0/U 600/1000 V
- **A.c. test voltage**, 50 Hz
  3000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  for flexible installation
  5x cable Ø

Cable structure

TOPFLEX® 304

- Bare copper, extra fine wire conductor to DIN VDE 0295 cl.6 and IEC 60228 cl.6
- PVC insulation, green-yellow
- PVC sheath compound TM2
- Sheath colour grey

TOPFLEX® 304-C

- Construction as above, but
- Tinned copper braid, coverage approx. 85%

Properties

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Chemical resistance see table Technical Information

Application

Thanks to their outstanding alternating bending stress characteristics, these cables are ideally suited for use in drag chains, and also for use in handling devices, robots, and nearly any area requiring flexible used and free motion.

TOPFLEX® 304-C Optimum compliance with requirements for electromagnetic compatibillity (EMC) by approx. 85% coverage from the braided screen.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

TOPFLEX® 304

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
79639	1 G 2,5	14	4,5	24,0	42,0
79640	1 G 4	12	5,6	38,4	58,0
79641	1 G 6	10	6,1	57,6	85,0
71544	1 G 10	8	8,0	96,0	130,0
79642	1 G 16	6	9,8	154,0	190,0
79643	1 G 25	4	11,8	240,0	280,0
79644	1 G 35	2	12,9	336,0	400,0
79645	1 G 50	1	14,6	480,0	520,0
79646	1 G 70	2/0	17,5	672,0	720,0
79647	1 G 95	3/0	20,0	912,0	1050,0
79648	1 G 120	4/0	21,6	1152,0	1220,0
79649	1 G 150	300 kcmil	23,5	1440,0	1500,0
79650	1 G 185	350 kcmil	25,7	1776,0	1940,0
79651	1 G 240	500 kcmil	29,5	2304,0	2675,0
79652	1 G 300	600 kcmil	32,5	2880,0	3300,0

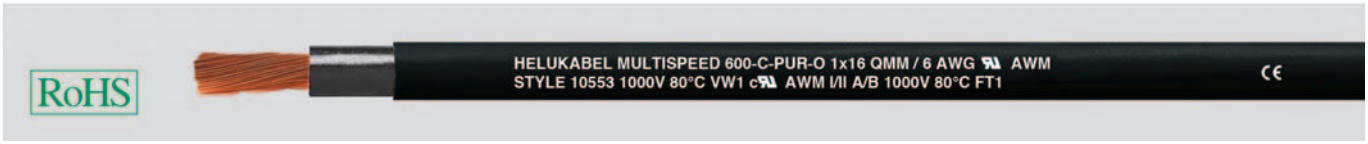
TOPFLEX® 304C

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
79653	1 G 2,5	14	5,9	40,0	55,0
79654	1 G 4	12	6,5	50,0	75,0
79655	1 G 6	10	8,3	88,0	125,0
79656	1 G 10	8	8,7	124,0	170,0
79657	1 G 16	6	10,3	190,0	300,0
79658	1 G 25	4	12,4	260,0	420,0
79659	1 G 35	2	13,7	405,0	620,0
79660	1 G 50	1	15,4	560,0	825,0
79661	1 G 70	2/0	17,5	780,0	1090,0
79662	1 G 95	3/0	21,0	1030,0	1395,0
79685	1 G 120	4/0	22,4	1311,0	1770,0
79663	1 G 150	300 kcmil	24,3	1527,0	1930,0
79664	1 G 185	350 kcmil	26,5	1940,0	2635,0
79665	1 G 240	500 kcmil	30,3	2530,0	3380,0
79666	1 G 300	600 kcmil	35,0	3050,0	3500,0

Dimensions and specifications may be changed without prior notice.

MULTISPEED® 600-PUR -J/-O special single cores for drag chains, 1000 V, halogen-free, meter marking





Technical data

- Special drag chain core line for extreme mechanical stresses adapted to DIN VDE 0285-525-2-31/ DIN EN 50525-2-31 and UL style 10553
- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage**
  VDE U_0/U 600/1000 V
  UL/CSA 1000 V
  Test voltage 3000 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Minimum bending radius**
  flexing 5x core Ø
  fixed installation 3x core Ø

Cable structure

- Bare copper conductor, ultra-fine wire to DIN VDE 0295 cl.6, column 4, BS 6360 cl.6 and/or IEC 60228 cl.6
- Core insulation of thermoplastic polymer in either black or green/yellow
- Outer sheath of special polyurethane, TMPU adapted to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- Flame retardant, UL VW-1, CSA FT1
- Halogen-free
- Abrasion resistant
- Very good oil resistance
- Very good alternating bending strength
- Very high resistance to mechanical stresses
- Higher notch resistance
- Ozone and UV-resistant
- Coolant resistant
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- screened analogue type:
  MULTISPEED® 600-C-PUR-J/O,
  confer page 505

Application

These special drag chain core cables permit extended use with extreme requirements, with free movement, without tensile stresses or forced movements. Suitable for installation in long traverse paths and high speeds in dry, high temperature influence in dry, moist and wet environments and in the open air. These cables can be used for all applications demanding the highest requirements in flexibility, abrasion resistance, ozone and chemical resistance. For applications extending beyond standard solutions (e. g. composting plants or high-lift conveyor systems working at extremely low speeds), we recommend that you request our questionnaire, which has been especially designed for energy supply systems. Before installation in cable trays please read the instructions.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
25888	1 G 6	10	7,2	58,0	80,0
25269	1 x 6	10	7,2	58,0	80,0
25889	1 G 10	8	8,4	96,0	130,0
25270	1 x 10	8	8,4	96,0	130,0
25890	1 G 16	6	9,5	154,0	181,0
25271	1 x 16	6	9,5	154,0	181,0
25891	1 G 25	4	11,0	240,0	274,0
25272	1 x 25	4	11,0	240,0	274,0
25892	1 G 35	2	13,0	336,0	398,0
25273	1 x 35	2	13,0	336,0	398,0
25893	1 G 50	1	15,4	480,0	529,0
25274	1 x 50	1	15,4	480,0	529,0
25894	1 G 70	2/0	17,2	672,0	717,0
25275	1 x 70	2/0	17,2	672,0	717,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
25895	1 G 95	3/0	20,0	912,0	1050,0
25276	1 x 95	3/0	20,0	912,0	1050,0
25896	1 G 120	4/0	21,0	1152,0	1240,0
25277	1 x 120	4/0	21,0	1152,0	1240,0
25897	1 G 150	250 kcmil	23,8	1440,0	1524,0
25278	1 x 150	250 kcmil	23,8	1440,0	1524,0
25898	1 G 185	350 kcmil	26,2	1776,0	1932,0
25279	1 x 185	350 kcmil	26,2	1776,0	1932,0
25899	1 G 240	450 kcmil	29,8	2304,0	2467,0
25280	1 x 240	450 kcmil	29,8	2304,0	2467,0
25900	1 G 300	550 kcmil	33,1	2880,0	3140,0
25281	1 x 300	550 kcmil	33,1	2880,0	3140,0

Dimensions and specifications may be changed without prior notice. (RN06)



Suitable accessories can be found in Chapter X.

- Cable Gland - HELUcond PA6-L
- Cable Gland - HELUcond PA6-UL

MULTISPEED® 600-C-PUR -J/-O special cable for drag chains, 1000 V, screened, halogen-free, EMC-preferred type, meter marking



Technical data

- Special drag chain core cable for mechanical stresses adapted to DIN VDE 0285-525-2-31/ DIN EN 50525-2-31 and UL-Style 10553
- **Temperature range** flexing -30°C to +80°C fixed installation -40°C to +80°C
- **Nominal voltage** VDE U_0/U 600/1000 V UL/CSA 1000 V
- **Test voltage** 3000 V
- **Insulation resistance** min. 100 MOhm x km
- **Minimum bending radius** flexing 5x core Ø fixed installation 3x core Ø

Cable structure

- Bare copper conductor, ultra-fine wire to DIN VDE 0295 cl.6, column 4, BS 6360 cl.6 and/or IEC 60228 cl.6
- Core insulation of thermoplastic polymer in either black or green/yellow
- Braided screen of tinned Cu wires, coverage approx. 85%
- Core wrapping with fleece
- Outer sheath of special polyurethane TMPU adapted to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2
- Sheath colour black (RAL 9005)
- with meter marking

Properties

- Flame retardant, UL VW-1, CSA FT1
- Halogen-free
- Abrasion resistant
- Very good oil resistance
- Very good alternating bending strength
- Very high resistance to mechanical stresses
- Improved notch resistance
- Ozone and UV-resistant
- Coolant-resistant
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- G = with green-yellow conductor x = without green-yellow conductor (OZ)
- Please observe applicable installation regulations for use in energy supply chains.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- unscreened analogue type: **MULTISPEED® 600-PUR -J/-0**, confer page 504

Application

These special drag chain core cables permit extended use with extreme requirements, with free movement, without tensile stresses or forced movements. Suitable for installation in long traverse paths and high speeds in dry, high temperature influence in dry, moist and wet environments and in the open air. These cables can be used for all applications demanding the highest requirements in flexibility, abrasion resistance, ozone and chemical resistance. The copper screening assures a disturbance-free data and signal transmission for measuring and control systems. For applications extending beyond standard solutions (e. g. composting plants or high-lift conveyor systems working at extremely low speeds), we recommend that you request our questionnaire, which has been especially designed for energy supply systems. Before installation in cable trays please read the instructions.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

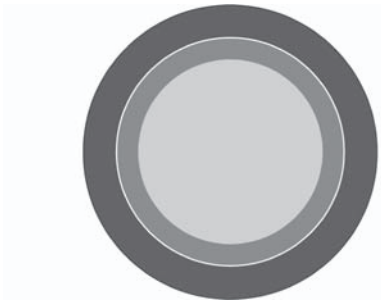
Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
25901	1 G 6	10	7,8	71,0	101,0
25282	1 x 6	10	7,8	71,0	101,0
25902	1 G 10	8	9,7	122,0	168,0
25283	1 x 10	8	9,7	122,0	168,0
25903	1 G 16	6	11,7	180,0	217,0
25284	1 x 16	6	11,7	180,0	217,0
25904	1 G 25	4	13,2	282,0	342,0
25285	1 x 25	4	13,2	282,0	342,0
25905	1 G 35	2	15,2	386,0	468,0
25286	1 x 35	2	15,2	386,0	468,0
25906	1 G 50	1	18,7	535,0	584,0
25287	1 x 50	1	18,7	535,0	584,0
25907	1 G 70	2/0	21,2	750,0	822,0
25288	1 x 70	2/0	21,2	750,0	822,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
25908	1 G 95	3/0	23,4	1004,0	1190,0
25289	1 x 95	3/0	23,4	1004,0	1190,0
25909	1 G 120	4/0	24,5	1260,0	1400,0
25290	1 x 120	4/0	24,5	1260,0	1400,0
25910	1 G 150	250 kcmil	27,8	1570,0	1710,0
25291	1 x 150	250 kcmil	27,8	1570,0	1710,0
25911	1 G 185	350 kcmil	29,4	1911,0	2021,0
25292	1 x 185	350 kcmil	29,4	1911,0	2021,0
25912	1 G 240	450 kcmil	34,2	2451,0	2601,0
25293	1 x 240	450 kcmil	34,2	2451,0	2601,0
25913	1 G 300	550 kcmil	37,4	2997,0	3257,0
25294	1 x 300	550 kcmil	37,4	2997,0	3257,0

Dimensions and specifications may be changed without prior notice. (RN06)

TOPFLEX® 301 / 301-C unscreened (double insulated)/ screened

high flexible PUR single core 0,6/1kV for drag chain application





Technical data

TOPFLEX® 301 (unscreened)

- Special PUR single-core cable acc. to UL AWM Style 10553
- **Temperature range** flexing -15°C to +80°C
- **Nominal voltage** acc. to VDE U_0/U 600/1000 V acc. to UL 1000 V
- **A.C. test voltage** 3000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** 7,5 cable Ø

TOPFLEX® 301-C (screened)

- Tech. data as per TOPFLEX® 301
- **Coupling resistance** max. 250 Ohm/km

Cable structure

TOPFLEX® 301 (unscreened)

- Bare copper, extra fine wire conductor to DIN VDE 0295 cl.6 and IEC 60228 cl.6
- Cold resistant PVC core insulation, grey
- PUR outer sheath
- Sheath colour black or green yellow

TOPFLEX® 301-C (screened)

- Structure as per TOPFLEX 301, but additionally
- Fleece wrapping between screen and sheath
- Tinned copper braided screening, approx. 85% coverage
- Sheath colour black

Properties

- PUR outer sheath: low adhesion, flame retardant, extremely abrasion resistant, resistant to UV, oil, hydrolysis and microbial attack
- Optimised insulation materials ensure resistance to oils (including mineral oils), greases, coolants, hydraulic fluids as well as many alkalis and solvents
- The optimised external diameter and the reduced weight facilitate use in multi-shift operation with extreme alternating bending stress cycles
- Thanks to its excellent mechanical characteristics, the wear-resistant, notch-resistant, flame-retardant PUR sheath provides high functional reliability over long periods

Application

TOPFLEX® 301 (unscreened) These cables are specially designed for use in energy supply chains, automated handling equipment, robots, machine tools, processing and manufacturing machinery.

TOPFLEX® 301-C (screened) Applications as described above, additionally optimal compliance with electromagnetic compatibillity (EMC) requirements on account of the approx. 85% coverage by the braided screening.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

TOPFLEX® 301 double insulated, black unscreened

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
75375	1 x 6	10	7,1	58,0	85,0
75376	1 x 10	8	8,8	96,0	130,0
75377	1 x 16	6	10,5	154,0	190,0
75378	1 x 25	4	11,2	240,0	280,0
75379	1 x 35	2	13,5	336,0	400,0
75380	1 x 50	1	15,8	480,0	520,0
75381	1 x 70	2/0	18,0	672,0	720,0
75382	1 x 95	3/0	20,4	912,0	1050,0
75383	1 x 120	4/0	22,2	1152,0	1220,0
75384	1 x 150	300 kcmil	25,0	1440,0	1500,0
75385	1 x 185	350 kcmil	28,0	1776,0	1940,0
75386	1 x 240	500 kcmil	32,5	2304,0	2645,0

TOPFLEX® 301 double insulated, green-yellow unscreened

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
75387	1 G 6	10	7,1	58,0	85,0
75388	1 G 10	8	8,8	96,0	130,0
75389	1 G 16	6	10,5	154,0	190,0
75390	1 G 25	4	11,2	240,0	280,0
75391	1 G 35	2	13,5	336,0	400,0
75392	1 G 50	1	15,8	480,0	520,0
75393	1 G 70	2/0	18,0	672,0	720,0
75394	1 G 95	3/0	20,4	912,0	1050,0
75395	1 G 120	4/0	22,2	1152,0	1220,0
75396	1 G 150	300 kcmil	25,0	1440,0	1500,0
75397	1 G 185	350 kcmil	28,0	1776,0	1940,0
75398	1 G 240	500 kcmil	32,5	2304,0	2645,0

TOPFLEX® 301-C black screened EMC

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km
75399	1 x 6	10	7,8	95,0	144,0
75400	1 x 10	8	9,5	124,0	170,0
75401	1 x 16	6	10,8	186,0	220,0
75402	1 x 25	4	12,2	278,0	340,0
75403	1 x 35	2	13,7	384,0	460,0
75404	1 x 50	1	15,4	530,0	580,0
75405	1 x 70	2/0	17,6	753,0	820,0
75406	1 x 95	3/0	21,7	1006,0	1200,0
75407	1 x 120	4/0	22,4	1257,0	1350,0
75408	1 x 150	300 kcmil	24,3	1562,0	1680,0
75409	1 x 185	350 kcmil	26,5	1895,0	2100,0
75410	1 x 240	500 kcmil	30,3	2704,0	3100,0

Dimensions and specifications may be changed without prior notice.

BRITISH STANDARD CABLES



CW&A Edition 27 (published 01.04.2015)

HELUKABEL® BS 5308 Part 1 Instruments cable, core insulation PE or XLPE



Technical data

- Instrument cable acc. to British Standard 5308 Part 1
- **Temperature range**
  fixed installation -20°C to +65°C
- **Nominal voltage**
  U_0/U 300/500 V
- **Minimum bending radius**
  fixed installation
  5x outer Ø (type 1)
  6x outer Ø (type 2+3)

Cable structure

- Copper conductor, single-, multiple-, or fine-wire acc. to BS 6360
  Conductor cross-sections from 0,5 mm² to 1,5 mm²
- Core insulation
  - Polyethylene acc. to BS 6234 Type 03 or
  - XLPE (cross-linked polyethylene for LSZH cable)
- Cores stranded in pairs with optimal lay-length,
  Lay-length smaller than 100 mm
  Number of pairs: 1,2,5,10,15,20,30,50
- Pairs individually not screened or screened
- Pairs stranded in layers
- Wrapping with aluminium/polyester foil, on request
- **Type 1**
  Flame retardant PVC outer sheath or LSZH
- **Type 2**
  Extruded polyethylene inner sheath,
  steel wire armouring,
  Flame retardant PVC outer sheath or LSZH
- **Type 3**
  PVC inner sheath,
  steel wire armouring,
  PVC outer sheath
- Sheath colour black or blue

Note

As a result of a wide range of cables and wires acc. to British Standard, you can find following only a small selection of types.
For request about British Standard cables please contact us under
Ph. 0049 7150 9209-786
E-Mail: spezialkabel@helukabel.de

Application

As measurement and control cables in power plants and industrial plants, and in the petrochemical industry. **Example** BS 5308 P1 T1 CU / PE / CAM / PVC = Overall screening, sheath PVC BS 5308 P1 T2 CU / XLPE / IAM / CAM / LSZH / SWA / LSZH = Pair screened, Overall screening, galvanic round steel wire, halogen free

Dimensions and specifications may be changed without prior notice.

HELUKABEL® BS 5308 Part 2 Instruments cable, core insulation PVC



Technical data

- Instrument cable acc. to British Standard 5308 Part 2
- **Temperature range**
  fixed installation -20°C to +65°C
- **Nominal voltage**
  U_0/U 300/500 V
- **Minimum bending radius**
  fixed installation
  5x outer Ø (type 1)
  6x outer Ø (type 2)

Cable structure

- Copper conductor, single-, multiple-, or fine-wire acc. to BS 6360
- Conductor cross-sections from 0,5 mm² to 1,5 mm²
- Core insulation PVC acc. to BS 6746
- Cores stranded in pairs with optimal lay-length
  Lay-length smaller than 100 mm
- Number of pairs: 1,2,5,10,20,30,50
- Pairs individually screened with aluminium-foil or unscreened
- Pairs stranded in layers
- Wrapping with aluminium/polyester foil, on request
- **Type 1**
  Flame retardant PVC outer sheath
- **Type 2**
  Extruded PVC inner sheath,
  steel wire armouring,
  Flame retardant PVC outer sheath
- Sheath colour black or blue

Note

As a result of a wide range of cables and wires acc. to British Standard, you can find following only a small selection of types.
For request about British Standard cables please contact us under
Ph. 0049 7150 9209-786
E-Mail: spezialkabel@helukabel.de

Application

As measurement and control cables in power plants and industrial plants, and in the petrochemical industry. **Example** BS 5308 P2 T2 CU / PVC / CAM / PVC / SWA / PVC = Overall screening, steel wire armouring

Dimensions and specifications may be changed without prior notice.

N

HELUKABEL® BS 5467 High voltage cable 0,6/1kV, armoured, sheath PVC



Technical data

- Special power cable acc. to British Standard 5467
- **Temperature range**
  flexing 0°C to +90°C
  fixed installation -15°C to +90°C
- **Nominal voltage**
  U_0/U 600/1000 V
- **Minimum bending radius**
  fixed installation
  up to 16 mm² 6x outer Ø
  > 25 mm² 8x outer Ø

Cable structure

- Bare copper conductor acc. to BS 6360 cl.2
- Core insulation of cross-linked polyethylene
- Core identification
  1-core - brown
  2-core - brown, blue
  3-core - brown, blue, grey
  4-core - brown, black, grey, blue
  5-core and up with numbering
- Cores stranded layers
- PVC-Inner sheath
- Amouring of galvanized steel wire
- PVC-Outer sheath
- Sheath colour black

Properties

- Reaction to fire tested acc. to IEC 60332-1, BS 4066-1

Note

As a result of a wide range of cables and wires acc. to British Standard, you can find following only a small selection of types.
For request about British Standard cables please contact us under
Ph. 0049 7150 9209-786
E-Mail: spezialkabel@helukabel.de

Application

As a control and power cable in industrial enviroments. Thanks to the amouring of galvanized steel wire, can be used anywhere that a high level of mechanical protection is required. Suitable for use outdoors and in the earth.

Example
BS 5467 CU / XLPE / PVC / AWA / PVC = Singlecore
BS 5467 CU / XLPE / PVC / SWA / PVC = Multicore

Dimensions and specifications may be changed without prior notice.

HELUKABEL® BS 6724 High voltage cable 0,6/1kV, armoured, halogen-free



Technical data

- Special power cable acc. to British Standard 6724
- **Temperature range**
  flexing 0°C to +90°C
  fixed installation -20°C to +90°C
- Permissible **operating temperature**
  at conductor +90°C
- **Nominal voltage**
  U_0/U 600/1000 V
- **Minimum bending radius**
  fixed installation
  up to 16 mm² 6x outer Ø
  > 25 mm² 8x outer Ø

Cable structure

- Bare copper conductor acc. to BS 6360 cl.2
- Core insulation of cross-linked polyethylene
- Core identification
  1-core - brown
  2-core - brown, blue
  3-core - brown, black, grey
  4-core - brown, black, grey, blue
  5-core and up with numbering
- Cores stranded layers
- Inner sheath LSHF mix
- Amouring of galvanized steel wire
- Outer sheath LSHF mix
- Sheath colour black

Properties

- Reaction to fire tested acc. to IEC 60332-3, BS 4066-1

Note

As a result of a wide range of cables and wires acc. to British Standard, you can find following only a small selection of types.
For request about British Standard cables please contact us under
Ph. 0049 7150 9209-786
E-Mail: spezialkabel@helukabel.de

Application

Unlike power cables acc. to BS 5467, these are LSHF (Low Smoke Halogen Free). Used anywhere where in case of fire damage to human life and material assets must be prevented, e.g. in industrial plants, airports, underground railways and tunnels.

Example

BS 6724 CU / XLPE / LSZH / AWA / LSZH = Singelcore
BS 6724 CU / XLPE / LSZH / SWA / LSZH = Multicore

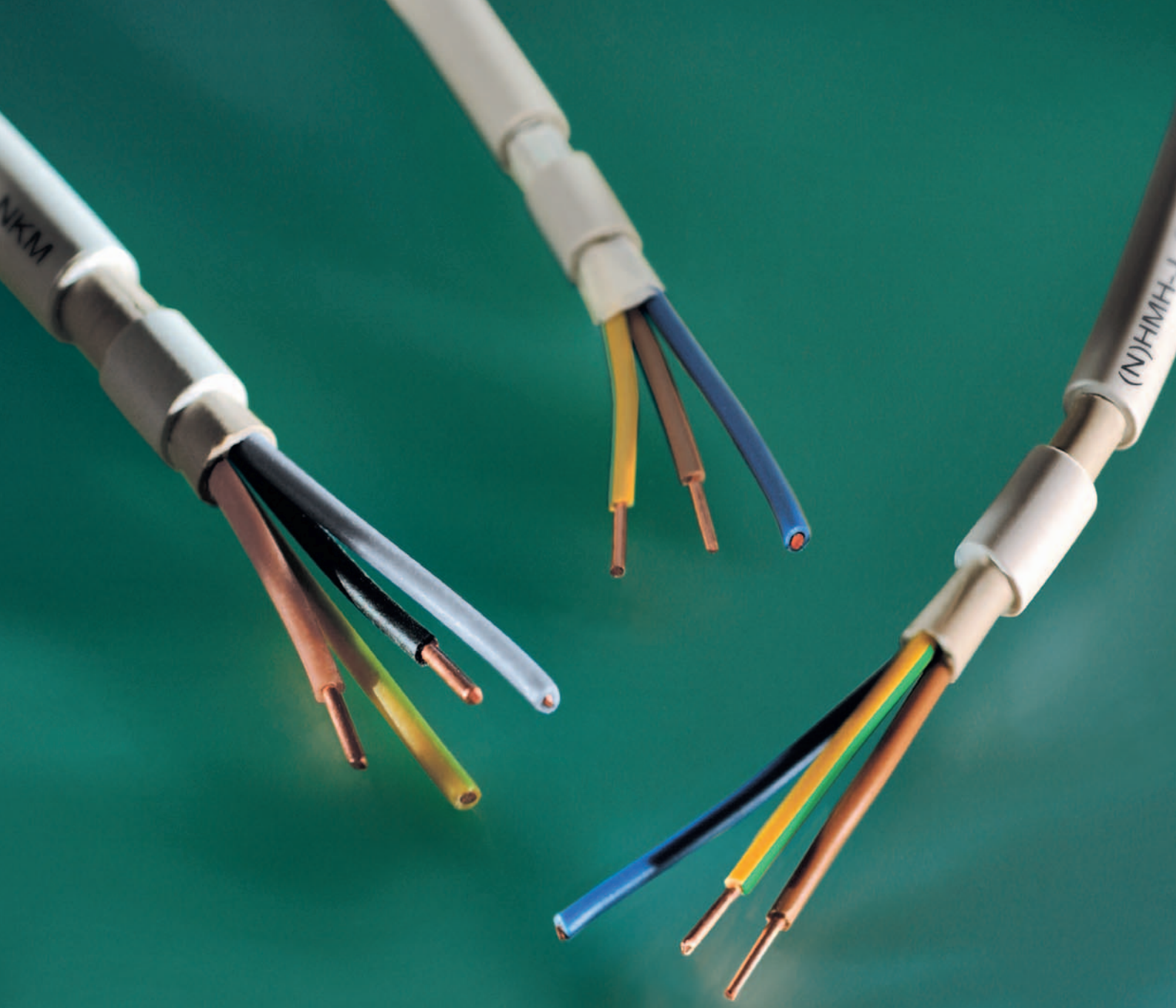
Dimensions and specifications may be changed without prior notice.



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O



(N)YM(St)-J PVC-sheathed cable

NYM-J/-O PVC-Sheathed Cable

NHXHM-O/-J **NHMH-O**

YV-Equipment Wires / YR-Bell Sheathed Cables

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INSTALLATION CABLES

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NHMH-O	halogen-free, i.e. free of harmful substances, sheathed cable 300/500V		519
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NHXHM-O/-J	halogen-free sheathed cable 300/500 V, VDE approved		521

O

YV-Equipment Wires / YR-Bell Sheathed Cables

according to VDE 0812



Technical data

YV-Equipment Wires

- Equipment wires with PVC core insulation to DIN VDE 0812
- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -30°C to +70°C
- **Electrical characteristics**
  Operating voltage (peak voltage) to DIN VDE 0812

YR-Bell Sheathed Cables

- adapted to DIN VDE 0812
- **Minimum bending radius**
  15x cable Ø

Cable structure

YV-Equipment Wires

- Tinned copper-conductor, solid 0,3 to 1,8 mm Ø
- Core insulation of PVC compound type YI3 to DIN VDE 0207 part 4
- Mono or twin colour wires, twin colour wires have a base colour with the second colour superimposed in ring form
- Core identification to DIN 47002

YR-Bell Sheathed Cables

- Bare copper conductor, solid 0,8 mm
- Cores stranded in layer
- Core identification
  see Technical Informations
- Outer sheath of PVC
- Sheath colour white

Properties

YV-Equipment Wires

Tests

- PVC self-extinguishing and flame retardant acc. to IEC 60332-2 (equivalent DIN VDE 0472 part 804 test method A)

Installation notes

- The equipment wires are to be so uncoiled from drums or coils so that no kinks or twisting torsional stress can be occured
  Those are allowed to install as self-supporting shaped wires independently ensuring the free-movements so as to gain a compensating bending
  These are used without any mechanical stress, pull, pressure, abrasion and notch
  Several equipment wires are used together in form of a bunch.
  The insulating coverings are not be cut through the binding materials.
  The binding materials must be nonconductive and not allowed to swell or shrink in humidity.
  During the soldering process without jointing clamp, the soldering period is to be shortened so that the insulating covering should not be shrinked or injured.

Application

YV-Equipment Wires Single core cables for use in small apparatus, switching and intercom system and for data transmission. These cables are not allowed for the installation of heavy current operation. Equipment wire are used for wiring to the switchbords, amplifiers and dial intercommunicating systems, measuring instruments, telephone exchange, clock centrals and data processing apparatus etc. These wires are not permitted to apply outside of equipment for high power ratings.

YR-Bell Sheathed Cables For different applications up to max. 100 V operating voltage, for fixed installation above and beneath plaster.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

YV-Equipment Wires

Part no.	No.cores x cond. Ø / core Ø mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
28900	1 x 0,3 / 0,7	0,7	0,7	1,2	-
28901	2 x 0,3 / 0,7	1,4	1,4	2,4	-
28902	3 x 0,3 / 0,7	1,6	2,1	3,6	-
28903	1 x 0,4 / 0,8	0,8	1,3	1,8	-
28904	2 x 0,4 / 0,8	1,6	2,5	3,6	-
28905	3 x 0,4 / 0,8	1,8	3,8	5,4	-
28906	1 x 0,5 / 0,9	0,9	2,0	2,5	-
28907	2 x 0,5 / 0,9	1,8	3,9	5,0	-
28908	3 x 0,5 / 0,9	2,0	5,9	7,5	-
28909	4 x 0,5 / 0,9	2,2	7,9	10,0	-
28910	1 x 0,8 / 1,4	1,4	5,0	6,0	-
28911	2 x 0,8 / 1,4	2,8	10,0	12,0	-
28912	3 x 0,8 / 1,4	3,0	15,0	18,0	-
28913	4 x 0,8 / 1,4	3,4	20,0	24,0	-
28914	1 x 1 / 1,8	1,8	7,9	10,0	-
28915	2 x 1 / 1,8	3,6	16,0	20,0	-
28916	3 x 1 / 1,8	4,0	24,0	30,0	-
28917	1 x 1,4 / 2,2	2,2	15,0	17,0	-
28918	1 x 1,8 / 2,8	2,8	25,0	27,5	-

YR-Bell Sheathed Cables

Part no.	No.cores x cond. Ø / core Ø mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
28919	2 x 0,8 / 1,4	4,0	9,6	27,0	-
28920	3 x 0,8 / 1,4	4,4	14,4	33,0	-
28921	4 x 0,8 / 1,4	4,9	19,2	41,0	-
28922	5 x 0,8 / 1,4	5,3	24,0	48,0	-
28923	6 x 0,8 / 1,4	5,8	28,8	56,0	-
28924	8 x 0,8 / 1,4	6,5	38,0	70,0	-
28925	10 x 0,8 / 1,4	7,6	48,0	84,0	-
28926	12 x 0,8 / 1,4	7,7	58,0	98,0	-
28927	16 x 0,8 / 1,4	8,6	77,0	124,0	-
28928	24 x 0,8 / 1,4	10,5	115,0	188,0	-

Dimensions and specifications may be changed without prior notice. (RO01)

NYM-J/-O PVC-Sheathed Cable VDE approved



Technical data

- PVC-sheathed cable to DIN VDE 0250 part 204
- **Temperature range** flexing +5°C to +70°C fixed installation -40°C to +70°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 2000 V
- **Minimum bending radius** fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)
- **Caloric load values** see Technical Informations

Cable structure

- Solid or stranded, plain copper conductor to DIN VDE 0295 cl.1 or cl.2, BS 6360 cl.1 or cl.2 and IEC 60228 cl.1 or cl.2
- Core insulation of PVC compound type TI1 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293-308
- Cores stranded in layers with optimal lay-length
- Filler
- Outer sheath of PVC compound type TM1 to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1
- Sheath colour grey (RAL 7035)

Properties

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- re = round conductor, single-wire
  rm = round conductor, multi-wire
- G = with green-yellow conductor
  x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

For industrial- and wiring purposes. Usable in the open, in dry, damp and wet environments in the open and concealed, as well as in masonry and in beton, not suitable for imbedding in solidified- or compressed-concrete. Outdoor usage is only possible, as long as the cable is protected against direct sunlight.

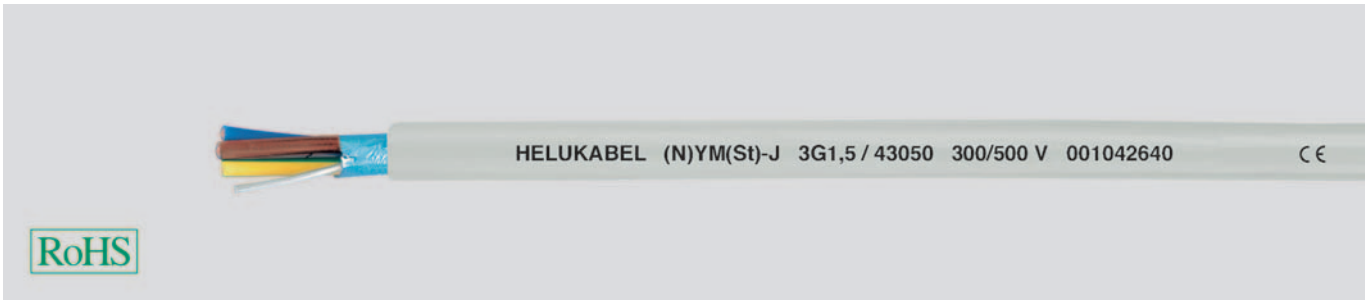
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²		Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
39050	1 G 1,5	re	5,4	14,4	40,0	16
39001	1 x 1,5	re	5,4	14,4	40,0	16
39006	2 x 1,5	re	8,7	29,0	170,0	16
39056	3 G 1,5	re	9,1	43,0	135,0	16
39007	3 x 1,5	re	9,1	43,0	135,0	16
39058	4 G 1,5	re	9,8	58,0	160,0	16
39009	4 x 1,5	re	9,8	58,0	160,0	16
39066	5 G 1,5	re	10,3	72,0	190,0	16
39017	5 x 1,5	re	10,3	72,0	190,0	16
39072	7 G 1,5	re	11,5	101,0	235,0	16
39023	7 x 1,5	re	11,5	101,0	235,0	16
39076	10 G 1,5	re	13,8	144,0	330,0	16
39077	12 G 1,5	re	14,4	173,0	405,0	16
39055	1 G 2,5	re	6,0	24,0	70,0	14
39024	1 x 2,5	re	6,0	24,0	70,0	14
39057	3 G 2,5	re	10,4	72,0	190,0	14
39008	3 x 2,5	re	10,4	72,0	190,0	14
39059	4 G 2,5	re	11,3	96,0	230,0	14
39010	4 x 2,5	re	11,3	96,0	230,0	14
39067	5 G 2,5	re	12,0	120,0	270,0	14
39018	5 x 2,5	re	12,0	120,0	270,0	14
39075	7 G 2,5	re	13,2	168,0	342,0	14
39051	1 G 4	re	6,6	38,0	80,0	12
39002	1 x 4	re	6,6	38,0	80,0	12
39074	3 G 4	re	12,0	115,0	258,0	12
39060	4 G 4	re	13,0	154,0	330,0	12
39011	4 x 4	re	13,0	154,0	330,0	12
39068	5 G 4	re	14,5	192,0	410,0	12
39019	5 x 4	re	14,5	192,0	410,0	12
39052	1 G 6	re	7,2	58,0	105,0	10
39003	1 x 6	re	7,2	58,0	105,0	10
39078	3 G 6	re	13,0	173,0	320,0	10

Part no.	No.cores x cross-sec. mm²		Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
39061	4 G 6	re	15,1	230,0	460,0	10
39012	4 x 6	re	15,1	230,0	460,0	10
39069	5 G 6	re	16,1	288,0	540,0	10
39020	5 x 6	re	16,1	288,0	540,0	10
39053	1 G 10	re	8,4	96,0	155,0	8
39004	1 x 10	re	8,4	96,0	155,0	8
39062	4 G 10	re	17,6	384,0	680,0	8
39013	4 x 10	re	17,6	384,0	680,0	8
39070	5 G 10	re	19,2	480,0	850,0	8
39021	5 x 10	re	19,2	480,0	850,0	8
39054	1 G 16	rm	9,9	154,0	230,0	6
39005	1 x 16	rm	9,9	154,0	230,0	6
39063	4 G 16	rm	21,3	614,0	1048,0	6
39014	4 x 16	rm	21,3	614,0	1048,0	6
39071	5 G 16	rm	23,4	768,0	1280,0	6
39022	5 x 16	rm	23,4	768,0	1280,0	6
39079	1 G 25	rm	12,0	240,0	325,0	4
39064	4 G 25	rm	25,8	960,0	1649,0	4
39015	4 x 25	rm	25,8	960,0	1649,0	4
39073	5 G 25	rm	28,7	1200,0	1970,0	4
39065	4 G 35	rm	28,5	1344,0	2000,0	2
39016	4 x 35	rm	28,5	1344,0	2000,0	2

Dimensions and specifications may be changed without prior notice. (RO01)

(N)YM(St)-J PVC-sheathed cable screened



Technical data

- screened PVC-sheathed cable adapted to DIN VDE 0250 part 204
- **Temperature range** flexing +5°C to +70°C fixed installation -40°C to +70°C
- Permissible **working temperature** at the conductor +70°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 2000 V
- **Minimum bending radius** fixed installation 4x cable Ø
- **Radiation resistance** up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insualtion of PVC compound type TI1 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Core identification to DIN VDE 0293-308
- Cores stranded in layers with optimal lay-length
- Solid copper drain-wire, tinned
- Coated aluminium foil screening
- Outer sheath of PVC compound type TM1 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7035)

Properties

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- re = round conductor, single-wire
  rm = round conductor, multi-wire
- Also availabel in an halogen-free version
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

These installation cables are made for an effective range of electromagnetic interference alternating fields by a static screen. This screening is specially used for the installation in computer sector, hospitals or industry measuring observation points with measuring instruments which are sensitive to interferences. These cables are also ideal for installations in the living rooms of those peoples who are extreme sensitive to radiation. The cable is suitable for laying on, in and under plaster in dry and damp places as well as in concrete and masonry (a direct laying in shaked or stamped concrete is excluded). Outdoor laying only is possible if the cable is not exposed to direct sunlight or if the cable is layed in cable conduits. Use in dangerous areas is not allowed.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²		Drain-wire mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
43050	3 G 1,5	re	1,5	10,5	51,0	154,0	16
43051	4 G 1,5	re	1,5	11,5	63,0	184,0	16
43052	5 G 1,5	re	1,5	12,0	80,0	208,0	16
43053	7 G 1,5	re	1,5	13,0	106,0	250,0	16
43054	3 G 2,5	re	1,5	12,0	80,0	217,0	14
43055	4 G 2,5	re	1,5	13,0	104,0	256,0	14
43056	5 G 2,5	re	1,5	13,5	128,0	280,0	14
43057	3 G 4	re	1,5	13,5	123,0	228,0	12
43058	4 G 4	re	1,5	14,5	159,0	359,0	12
43059	5 G 4	re	1,5	16,5	200,0	440,0	12
43060	3 G 6	re	1,5	15,0	187,0	378,0	10
43061	4 G 6	re	1,5	16,5	235,0	477,0	10
43062	5 G 6	re	1,5	17,5	293,0	565,0	10

Part no.	No.cores x cross-sec. mm²		Drain-wire mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
43063	5 G 10	re	1,5	21,5	485,0	840,0	8
43064	5 G 16	rm	2,5	26,0	773,0	1353,0	6
43065	5 G 25	rm	2,5	31,5	1205,0	2017,0	4

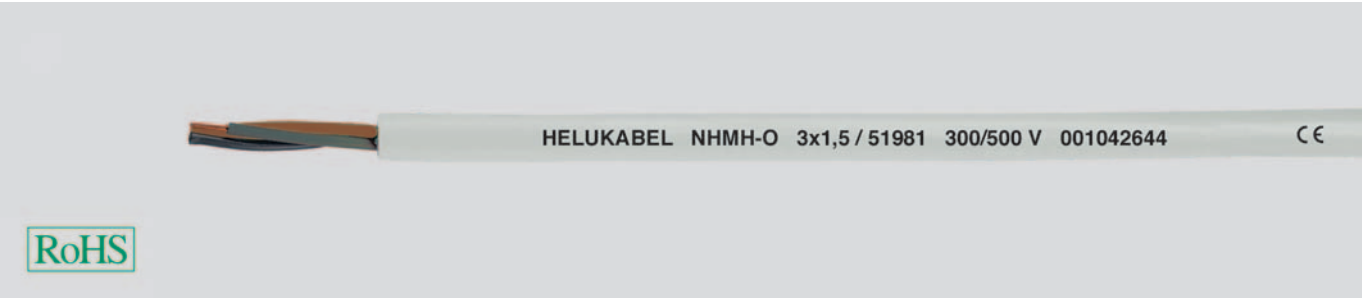
Dimensions and specifications may be changed without prior notice. (RO01)



Suitable accessories can be found in Chapter X.

• Tool - DUO Stripper 200

NHMH-O halogen-free for fixed installation, emission-free, 300/500 V



Technical data

- Plastic-sheathed cable, halogen-free, for fixed installation to DIN VDE 0250 part 215
- Permissible **working temperature** at the conductor +70°C
- **Nominal voltage** U_0/U 300/500 V
- **Minimum bending radius** fixed installation 4x cable Ø
- **Caloric load values** see Technical Informations

Cable structure

- Bare copper-conductor, single-wire or multi-wire
- Core insulation of halogen-free thermoplastic polymer compound with optimum wall thickness
- Core identification to DIN VDE 0293-308 1-core version - core colour BK
- Cores stranded in layer
- Outer sheath of non-cross-linked, halogen-free thermoplastic polymer compound
- Sheath colour grey (RAL 7035)

Properties

Tests

- **Corrosive nature of combustion gases (halogen-free verification)** testing acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2, HD 602 (equivalent DIN VDE 0472 part 813)
- **Behaviour in fire** self-extinguishing and flame retardant to DIN VDE 0482-332-1-2, DIN EN 60332-1-2,IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- **Low smoke** testing acc. to DIN VDE 0472 part 818

Note

- re = round conductor, single-wire
  rm = round conductor, multi-wire
- x = without green-yellow conductor
- O-version: single-core conductor with black core insulation. Cables between two and seven cores are without gn-ye core.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

This plastic-sheathed cable of defined behaviour in case of fire is used for installations in residential dwellings, public buildings as well as in industrial constructions. Suitable for applications in dry, damp or wet environments for installation above, on, in and beneath plaster, as well as in masonry and concrete walls, not however for embedding in vibration, compacted or tamped concrete. The cable is also approved for outdoor applications provided these are not exposed to direct sunlight radiation. Installation of this cable in earth or in water is not permitted.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²		Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
51970	1 x 1,5	re	8,3	14,4	39,0	16
51976	2 x 1,5	re	8,9	29,0	82,0	16
51981	3 x 1,5	re	9,2	43,0	92,0	16
51983	4 x 1,5	re	9,9	58,0	115,0	16
51991	7 x 1,5	re	11,5	101,0	167,0	16
51971	1 x 2,5	re	9,0	24,0	47,0	14
51977	2 x 2,5	re	10,0	48,0	110,0	14
51982	3 x 2,5	re	10,6	72,0	128,0	14
51984	4 x 2,5	re	11,0	96,0	152,0	14
51972	1 x 4	re	9,5	38,0	62,0	12
51978	2 x 4	re	11,5	77,0	160,0	12
51985	4 x 4	re	13,4	154,0	244,0	12
51973	1 x 6	re	10,0	58,0	83,0	10
51979	2 x 6	re	12,4	115,0	208,0	10
51986	4 x 6	re	15,9	230,0	345,0	10

Part no.	No.cores x cross-sec. mm²		Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
51974	1 x 10	re	11,5	96,0	125,0	8
51980	2 x 10	re	14,9	192,0	340,0	8
51987	4 x 10	re	17,5	384,0	522,0	8
51975	1 x 16	rm	12,9	154,0	188,0	6
51988	4 x 16	rm	19,9	614,0	815,0	6
51989	4 x 25	rm	27,4	960,0	1305,0	4
51990	4 x 35	rm	30,4	1344,0	1750,0	2

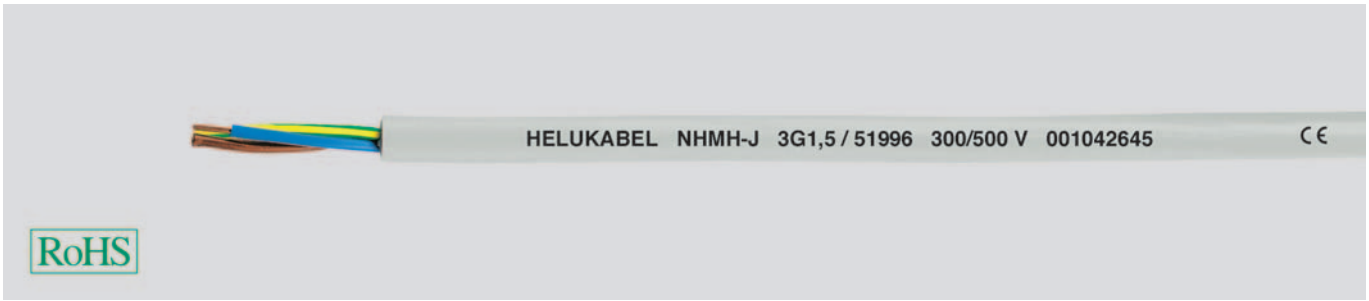
Dimensions and specifications may be changed without prior notice. (RO01)



Suitable accessories can be found in Chapter X.

• Tool - DUO Stripper 200

NHMH-J halogen-free for fixed installation, emission-free, 300/500 V



Technical data

- Plastic-sheathed cable, halogen-free, for fixed installation to DIN VDE 0250 part 215
- Permissible **working temperature** at the conductor +70°C
- **Nominal voltage** U_0/U 300/500 V
- **Minimum bending radius** fixed installation 4x cable Ø
- **Caloric load values** see Technical Informations

Cable structure

- Bare copper-conductor, single-wire or multi-wire
- Core insulation of halogen-free thermoplastic polymer compound with optimum wall thickness
- Core identification to DIN VDE 0293-308 1-core version - core colour GN-YE
- GN-YE conductor, 3 cores and above
- Cores stranded in layer
- Outer sheath of non-cross-linked, halogen-free thermoplastic polymer compound
- Sheath colour grey (RAL 7035)

Properties

- **Corrosive nature of combustion gases (halogen-free verification)** testing acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2, HD 602 (equivalent DIN VDE 0472 part 813)
- **Behaviour in fire** self-extinguishing and flame retardant to DIN VDE 0482-332-1-2, DIN EN 60332-1-2,IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- **Low smoke** testing acc. to DIN VDE 0472 part 818

Note

- re = round conductor, single-wire rm = round conductor, multi-wire
- G = with green-yellow conductor
- J-version: with green-yellow core insulation.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

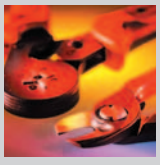
This plastic-sheathed cable of defined behaviour in case of fire is used for installations in residential dwellings, public buildings as well as in industrial constructions. Suitable for applications in dry, damp or wet environments for installation above, on, in and beneath plaster, as well as in masonry and concrete walls, not however for embedding in vibration, compacted or tamped concrete. The cable is also approved for outdoor applications provided these are not exposed to direct sunlight radiation. Installation of this cable in earth or in water is not permitted.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²		Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
51996	3 G 1,5	re	9,4	43,0	92,0	16
52001	4 G 1,5	re	10,2	58,0	115,0	16
52009	5 G 1,5	re	10,8	72,0	133,0	16
52016	7 G 1,5	re	11,4	101,0	168,0	16
51997	3 G 2,5	re	10,4	72,0	128,0	14
52002	4 G 2,5	re	11,3	96,0	152,0	14
52010	5 G 2,5	re	11,9	120,0	182,0	14
52017	7 G 2,5	re	13,5	158,0	250,0	14
51992	1 G 4	re	8,6	38,0	62,0	12
51998	3 G 4	re	11,8	115,0	192,0	12
52003	4 G 4	re	13,3	154,0	244,0	12
52011	5 G 4	re	14,8	192,0	300,0	12
51993	1 G 6	re	9,9	58,0	83,0	10
51999	3 G 6	re	13,4	173,0	267,0	10
52004	4 G 6	re	14,8	230,0	345,0	10
52012	5 G 6	re	16,0	288,0	400,0	10
51994	1 G 10	re	11,2	96,0	125,0	8
52000	3 G 10	re	16,0	288,0	628,0	8
52005	4 G 10	re	17,4	384,0	522,0	8
52013	5 G 10	re	18,9	480,0	620,0	8
51995	1 G 16	rm	11,9	154,0	188,0	6
52006	4 G 16	rm	21,6	614,0	815,0	6

Part no.	No.cores x cross-sec. mm²		Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
52014	5 G 16	rm	23,8	768,0	995,0	6
52007	4 G 25	rm	27,0	960,0	1305,0	4
52015	5 G 25	rm	29,0	1200,0	1580,0	4
52008	4 G 35	rm	29,9	1344,0	1750,0	2

Dimensions and specifications may be changed without prior notice. (RO01)



Suitable accessories can be found in Chapter X.

• Tool - DUO Stripper 200

NHXMH-O/-J halogen-free plastic sheathed cable 300/500 V, VDE approved



Technical data

- Halogen-free plastic-sheathed cable with enhanced characteristics in case of fire, acc. to DIN VDE 0250 part 214
- **Conductor resistance** (at 20°C) acc. to DIN VDE 0295 and IEC 60228
- Max. **temperature at the conductor** during operation +70°C in case of short circuit +250°C
- **Temperature range** during installation -5°C to +50°C fixed installation -30°C to +70°C
- **Nominal voltage** U_0/U 300/500 V
- **Test voltage** 2000 V
- **Minimum bending radius** fixed installation 4x cable Ø
- **Caloric load values** see Technical Informations

Cable structure

- Bare copper-conductor to DIN VDE 0295, BS 6360, IEC 60228 up to 10 mm² cl.1: single-wire 16-35 mm² cl.2: multi-wire
- Core insulation of cross-linked **polymer**, compound type 2XI1 to DIN VDE 0207 part 22
- Core identification to DIN VDE 0293-308 1-core version - core colour BK or GN-YE
- Cores stranded in layers with optimal lay-length
- Overall core sheath of halogen-free filling compound (may be omitted for single-core cables)
- Outer sheath of flame-retardant, halogen-free polymer compound type HM2 to DIN VDE 0207 part 24
- Sheath colour grey (RAL 7035)

Properties

- Flame-retardant
- Halogen-free, no liberation of corrosive or toxic gases
- Limited propagation of fire
- Low smoke development
- Ozone resistant

Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 268, HD 606, EN 50268-1+2, IEC 61034-1+2, BS 7622 part 1+2 (equivalent DIN VDE 0472 part 816)
- Ozone resistance acc. to DIN VDE 0472 part 805
- Also deliverable in screened (St) version

Note

- re = round conductor, single-wire
  rm = round conductor, multi-wire
- **LS0H** = Low Smoke Zero Halogen
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Halogen-free plastic-sheathed cables with enhanced characteristics in case of fire are used for applications where harm to human life and damage to property must be prevented in the event of fire, e. g. in industrial installations, communal establishments, hotels, airports, underground stations, railway stations, hospitals, departmental stores, banks, schools, theatres, multi-storey buildings, process control centres etc. Suitable for installation in dry, damp or wet environments, for installation above, on, in and beneath plaster as well as in masonry walls and in concrete, not however for direct embedding in vibration, compacted or tamped concrete. These cables are also suitable for outdoor applications.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

NHXMH-O

Part no.	No.cores x cross-sec. mm²		Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
53300	1 x 1,5	re	5,0 - 8,4	15,0	49,0	16
53306	2 x 1,5	re	7,6 - 9,2	29,0	110,0	16
53301	1 x 2,5	re	5,4 - 8,8	24,0	60,0	14
53307	2 x 2,5	re	8,4 - 10,1	48,0	136,0	14
53302	1 x 4	re	6,0 - 9,5	39,0	80,0	12
53308	2 x 4	re	9,6 - 11,6	77,0	202,0	12
53303	1 x 6	re	6,4 - 10,0	58,0	111,0	10
53304	1 x 10	re	7,4 - 11,3	96,0	160,0	8
53305	1 x 16	rm	8,5 - 12,4	154,0	232,0	6

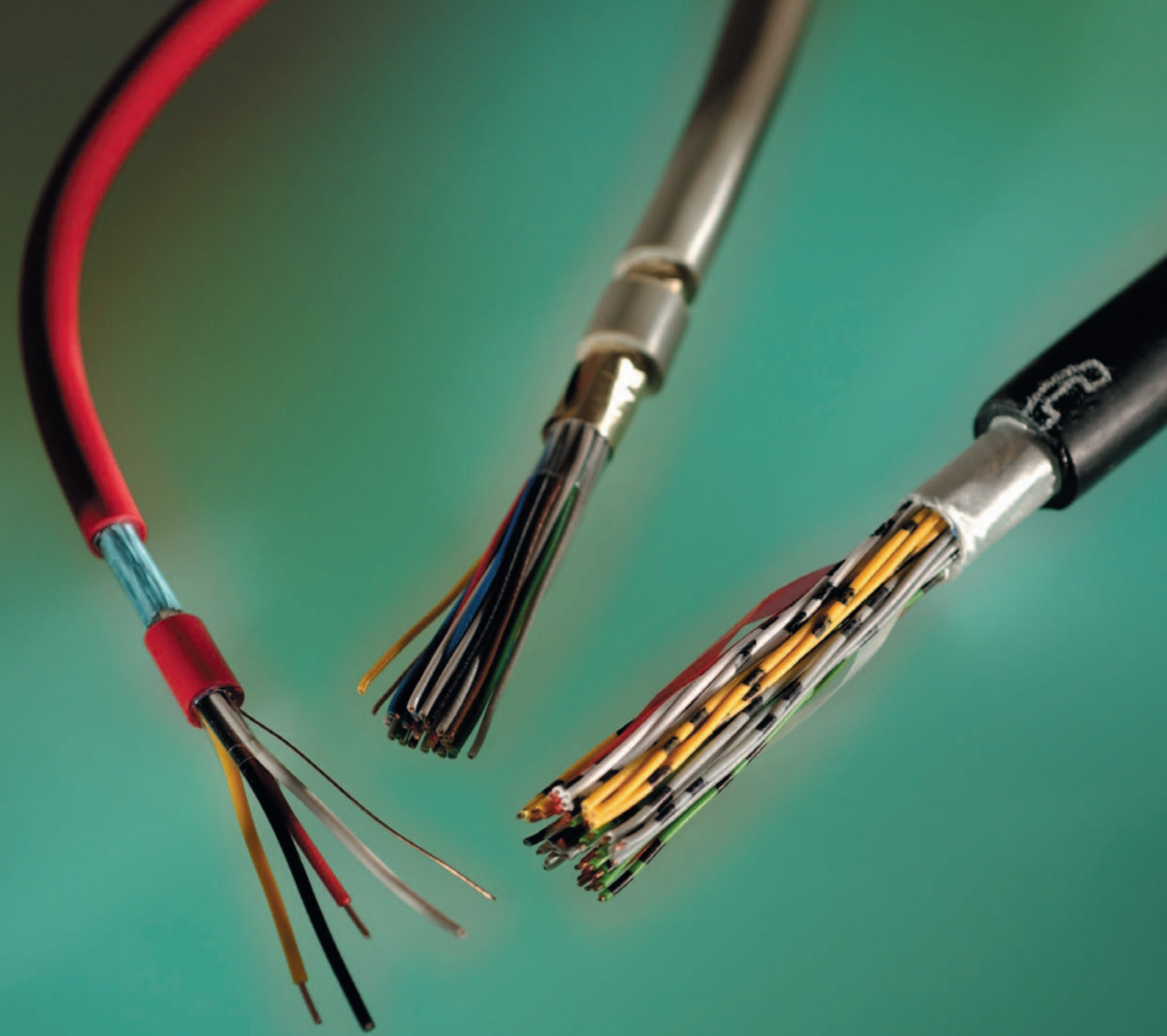
NHXMH-J

Part no.	No.cores x cross-sec. mm²		Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
53350	3 G 1,5	re	8,0 - 9,6	43,0	130,0	16
53358	4 G 1,5	re	8,5 - 10,3	58,0	151,0	16
53366	5 G 1,5	re	9,1 - 11,0	72,0	177,0	16
53374	7 G 1,5	re	9,9 - 11,9	101,0	209,0	16
53351	3 G 2,5	re	8,7 - 10,6	72,0	163,0	14
53359	4 G 2,5	re	9,5 - 11,5	96,0	200,0	14
53367	5 G 2,5	re	10,4 - 12,3	120,0	238,0	14
53375	7 G 2,5	re	11,4 - 13,8	168,0	300,0	14

NHXMH-J

Part no.	No.cores x cross-sec. mm²		Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
53192	1 G 4	re	6,0 - 9,5	39,0	80,0	12
53352	3 G 4	re	10,1 - 12,2	115,0	235,0	12
53360	4 G 4	re	11,3 - 13,7	154,0	300,0	12
53368	5 G 4	re	12,5 - 15,1	192,0	345,0	12
53193	1 G 6	re	6,4 - 10,0	58,0	111,0	10
53353	3 G 6	re	11,5 - 13,9	173,0	323,0	10
53361	4 G 6	re	12,7 - 15,3	230,0	400,0	10
53369	5 G 6	re	13,7 - 16,6	288,0	475,0	10
53194	1 G 10	re	7,4 - 11,3	96,0	160,0	8
53354	3 G 10	re	13,8 - 16,7	288,0	485,0	8
53362	4 G 10	re	15,1 - 18,2	384,0	603,0	8
53370	5 G 10	re	16,3 - 19,7	480,0	720,0	8
53195	1 G 16	rm	8,5 - 12,4	154,0	232,0	6
53355	3 G 16	rm	16,5 - 20,0	461,0	850,0	6
53363	4 G 16	rm	18,0 - 21,8	615,0	940,0	6
53371	5 G 16	rm	19,7 - 23,8	768,0	1142,0	6
53356	3 G 25	rm	20,4 - 24,6	720,0	1152,0	4
53364	4 G 25	rm	22,6 - 27,3	960,0	1432,0	4
53372	5 G 25	rm	24,7 - 29,8	1200,0	1800,0	4
53357	3 G 35	rm	22,7 - 27,4	1008,0	1503,0	2
53365	4 G 35	rm	24,9 - 30,0	1344,0	1930,0	2
53373	5 G 35	rm	27,5 - 33,2	1680,0	2490,0	2

Dimensions and specifications may be changed without prior notice. (RO01)



A-2Y(L)2Y

J-YY Bd

J-Y(St)Y Lg

S-YY Lg

J-H(St)H

A-2YF(L)2Y

TELEPHONE & FIRE WARNING CABLES

Designation	Properties	Approvals	Page
A-2Y(L)2Y	Bd telephone outdoor cable, in accordance with VDE 0816, laminated sheath, unfilled		524
A-2YF(L)2Y	Bd telephone outdoor cable, in accordance with VDE 0816, laminated sheath filled, longitudinally water-tight		525
J-YY Bd	Telephone indoor cable, in accordance with VDE 0815		526
J-Y(St)Y Lg	Telephone indoor cable, in accordance with VDE 0815		527
J-Y(St)Y Lg	Fire warning indoor cable		528
J-2Y(St)Y	St III Bd 16 Mbits/s (Cat. 3) ISDN/EDV (Z=100 ohm), meter marking		529
S-YY Lg	Patch cable in accordance with VDE 0813		530
J-H(St)H	Bd installation cable, halogen-free, in accordance with VDE 0815		531
J-H(St)H	Bd fire warning indoor cable, halogen-free		532
J-2Y(St)H	St III Bd 16 Mbits/s (Cat.3) ISDN/EDV (Z = 100 ohm), halogen-free		533

P

A-2Y(L)2Y Bd telephone-outdoor cable, according to DIN VDE 0816, laminated sheath, unfilled



Technical data

- acc. to DIN VDE 0816
- **Temperature range**
  flexible -20°C to +50°C
  fixed installation to +70°C
- **Loop resistance** at 20°C
  0,6 mm = max. 130 Ohm/km
  0,8 mm = max. 73,2 Ohm/km
- **Operating peak voltage** max. 225 V
  (not for purposes of high current and power installation)
- **Test voltage**
  core/core U eff. 500[2)] V
  core/screen U eff. 2000 V
- **Insulation resistance**
  min. 5 GOhm x km
- **Line attenuation**
  of side circuits at 800 Hz
  0,6 mm = 1,04 dB/km
  0,8 mm = 0,78 dB/km
- **Impedance**
  of side circuites at 800 Hz
  0,6 mm = 720 Ohm
  0,8 mm = 520 Ohm
- **Minimum bending radius**
  10x cable Ø
- **Radiation resistance**
  up to $80x10^6$ cJ/kg (up to 80 Mrad)
- **Caloric load values**
  see Technical Informations

Cable structure

- Bare copper-conductor, single-wire
- Core insulation of PE (2Y)
- Core identification of quads marked with black rings
- 4 cores twisted to a star quad
- 5 star quads stranded to sub units, each 5 or 10 sub units stranded to main units and the sub or main units stranded to cable core
- Core wrapping with several plastic tapes
- Outer sheath, as laminated sheath (L)2Y, PE-coated aluminium tape spliced with PE (2Y) sheath
- Sheath colour black
- Sheath marking continuously with telephone-receiver, meter marking in white colour

Properties

- These cables are not allowed for power installation or applications requiring high current levels. Due to their PE outer sheath, these cables are also not permitted for fire and hazardous areas without any protective measures.
- **Mutual capacitance** at 800 Hz
  of all values100%
  0,6 mm - max. 52 nF/km
  0,8 mm - max. 55 nF/km
  of all values 95%
  0,6 mm - max. 50[3)] nF/km
  0,8 mm - max. 53[3)] nF/km
  of all values 80%
  0,6 mm - max. 48 nF/km
  0,8 mm - max. 50 nF/km
- **Capacitance unbalances** at 800 Hz
  of all values k_1 100% -max. 800[1)] pF/300 m
  of all values k_1 98% -max. 400 pF/300 m
  of all values $k_{9\text{-}12}$ 100%-max.300[1)]pF/300 m
  of all values $k_{9\text{-}12}$ 98% -max. 100 pF/300 m

Note

- [1)] But at least for 2 quads.
- [2)] Local cables with more than 100 pairs the test conductor/conductor is emitted.
- [3)] For cables up to 10 double cores is the 100 % value valid
- Conductor Ø 0,4 mm on request.

Application

These external subscriber telephone cables are installed as telecommunication connection cable for connecting the telephone extension to the telephone exchange or central offices and as well as for industrial plants. These subscriber connecting cables are suitable for laying in under ground, in cable ducts and cable conduits - and also for indoor-laying. Both sides of PE-copolymere coated aluminium type (L), which is spliced with the outer PE-sheath ensures a **barrier against water vapour** and diagonally water-proof. Black coloured PE-sheath is **UV-resistant**. The Polyethelene material (PE 2Y) is **halogen-free**.

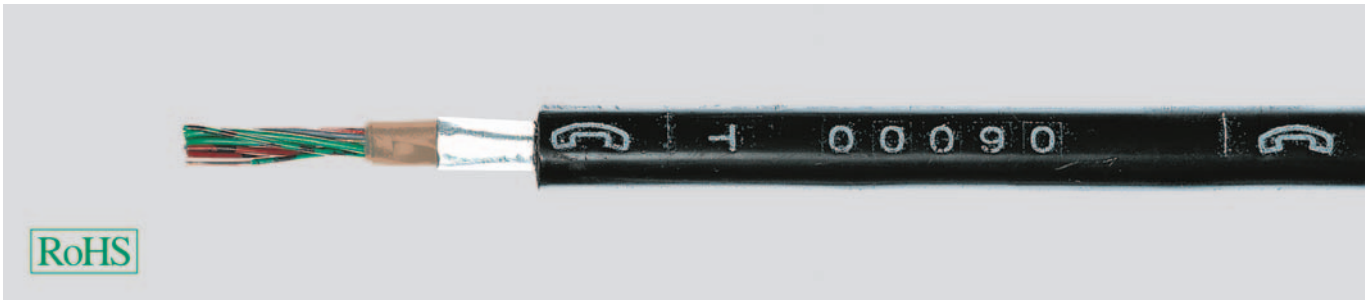
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
34100	2 x 2 x 0,6	8,0	11,0	82,0	-
34101	4 x 2 x 0,6	10,0	23,0	127,0	-
34102	6 x 2 x 0,6	11,5	34,0	132,0	-
34103	10 x 2 x 0,6	12,5	57,0	171,0	-
34104	20 x 2 x 0,6	15,5	113,0	268,0	-
34105	30 x 2 x 0,6	17,5	170,0	358,0	-
34106	40 x 2 x 0,6	19,5	226,0	438,0	-
34107	50 x 2 x 0,6	21,0	283,0	531,0	-
34108	70 x 2 x 0,6	24,5	396,0	712,0	-
34109	100 x 2 x 0,6	28,0	565,0	950,0	-
34110	150 x 2 x 0,6	33,0	848,0	1348,0	-
34111	200 x 2 x 0,6	37,0	1131,0	1758,0	-
34112	250 x 2 x 0,6	40,5	1414,0	2137,0	-
34113	300 x 2 x 0,6	44,0	1696,0	2533,0	-
34114	350 x 2 x 0,6	47,5	1979,0	2954,0	-
34115	400 x 2 x 0,6	50,0	2262,0	3342,0	-

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
34130	2 x 2 x 0,8	11,0	20,0	102,0	-
34131	4 x 2 x 0,8	12,0	40,0	158,0	-
34132	6 x 2 x 0,8	13,0	60,0	179,0	-
34133	10 x 2 x 0,8	14,5	101,0	241,0	-
34134	20 x 2 x 0,8	18,0	201,0	393,0	-
34135	30 x 2 x 0,8	21,0	302,0	540,0	-
34136	40 x 2 x 0,8	23,0	402,0	675,0	-
34137	50 x 2 x 0,8	25,5	503,0	842,0	-
34138	70 x 2 x 0,8	29,0	704,0	1105,0	-
34139	100 x 2 x 0,8	34,0	1005,0	1524,0	-
34140	150 x 2 x 0,8	40,0	1508,0	2208,0	-
34141	200 x 2 x 0,8	46,5	2011,0	2915,0	-
34142	250 x 2 x 0,8	51,0	2514,0	3575,0	-
34143	300 x 2 x 0,8	53,0	3016,0	4232,0	-
34144	350 x 2 x 0,8	56,5	3519,0	4940,0	-
34145	400 x 2 x 0,8	60,0	4022,0	5565,0	-
34146	500 x 2 x 0,8	68,0	5027,0	6955,0	-
34147	600 x 2 x 0,8	73,0	6032,0	8240,0	-

Dimensions and specifications may be changed without prior notice. (RP01)

A-2YF(L)2Y Bd telephone-outdoor cable, according to DIN VDE 0816, laminated sheath, filled cable core, longitudinally water-proof



Technical data

- acc. to DIN VDE 0816
- **Temperature range**
  flexible -20°C to +50°C
  fixed installation to +70°C
- **Loop resistance** at 20°C
  0,6 mm = max. 130 Ohm/km
  0,8 mm = max. 73,2 Ohm/km
- **Operating peak voltage** max. 225 V
  (not for purposes of high current and power installation)
- **Test voltage**
  core/core U eff. 500[2] V
  core/screen U eff. 2000 V
- **Insulation resistance**
  min. 1,5 GOhm x km
- **Line attenuation**
  of side circuits at 800 Hz
  0,6 mm = 1,04 dB/km
  0,8 mm = 0,78 dB/km
- **Impedance** of side circuites
  at 800 Hz
  0,6 mm = 720 Ohm
  0,8 mm = 520 Ohm
- **Minimum bending radius**
  10x cable Ø
- **Radiation resistance**
  up to 80x10^6 cJ/kg (up to 80 Mrad)
- **Caloric load values**
  see Technical Informations

Cable structure

- Bare copper-conductor, single-wire
- Core insulation of PE (2Y)
- Core identification of quads marked with black rings
- 4 cores twisted to a star quad
- 5 star quads stranded to sub units, each 5 or 10 sub units stranded to main units and the sub or main units stranded to cable core
- Core cavities continuously filled with petrol-jelly
- Core wrapping with paper tape
- Outer sheath, as laminated sheath (L)2Y, PE-coated aluminium tape spliced with PE (2Y) sheath
- Sheath colour black
- Sheath marking continuously with telephone-receiver, meter marking in white colour

Properties

- These cables are not allowed for power installation or applications requiring high current levels. Due to their PE outer sheath, these cables are also not permitted for fire and hazardous areas without any protective measures.
- **Mutual capacitance** at 800 Hz
  of all values100%
  0,6 mm - max. 52 nF/km
  0,8 mm - max. 55 nF/km
  of all values 95%
  0,6 mm - max. 50[3] nF/km
  0,8 mm - max. 53[3] nF/km
  of all values 80%
  0,6 mm - max. 48 nF/km
  0,8 mm - max. 50 nF/km
- **Capacitance unbalances** at 800 Hz
  of all values k_1 100% -max. 800[1] pF/300 m
  of all values k_1 98% -max. 400 pF/300 m
  of all values $k_{9\text{-}12}$ 100%-max.300[1] pF/300 m
  of all values $k_{9\text{-}12}$ 98% -max. 100 pF/300 m

Note

- [1] But at least for 2 quads.
- [2] Local cables with more than 100 pairs the test conductor/conductor is emitted.
- [3] For cables up to 10 double cores is the 100 % value valid
- Conductor Ø 0,4 mm on request.

Application

These external subscriber telephone cables are installed as telecommunication connection cable for connecting the telephone extension to the telephone exchange for transmitting signals. These subscriber connecting cables are suitable for laying in under ground, in cable ducts and cable conduits. According to DIN VDE 0800 part 1, these cables are allowed in all types of installation plants. The cavities of the cable core, filled continuously with viscous compound (F). Both sides of PE-copolymere coated aluminium type (L), which is spliced with the outer PE-sheath, ensures a barrier against water vapour and **crosswise and longitudinal water tightness**. Black coloured PE-sheath is **UV-resistant**. The Polyethelene material (PE 2Y) is **halogen-free**.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

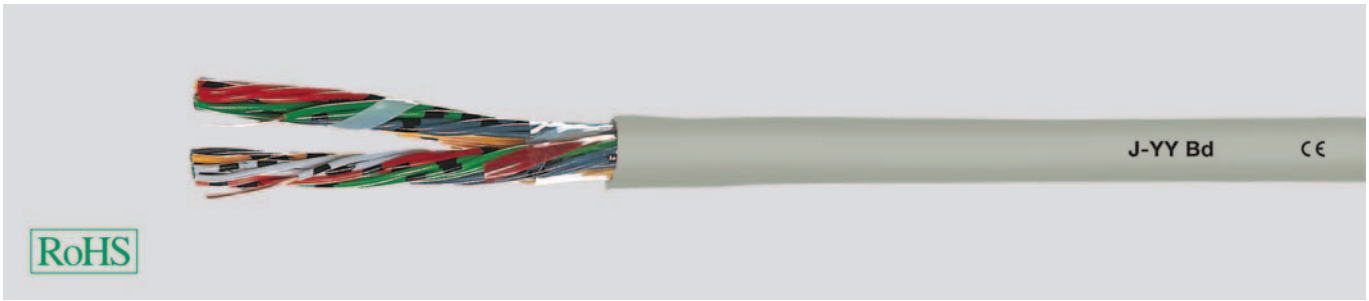
P

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
34007	2 x 2 x 0,6	7,5	11,0	80,0	-
34008	4 x 2 x 0,6	9,0	23,0	140,0	-
34009	6 x 2 x 0,6	12,0	34,0	150,0	-
34010	10 x 2 x 0,6	13,5	57,0	190,0	-
34011	20 x 2 x 0,6	16,0	113,0	310,0	-
34012	30 x 2 x 0,6	19,0	170,0	430,0	-
34013	40 x 2 x 0,6	20,5	226,0	545,0	-
34014	50 x 2 x 0,6	23,0	283,0	660,0	-
34015	70 x 2 x 0,6	26,0	396,0	895,0	-
34016	100 x 2 x 0,6	31,5	565,0	1230,0	-
34017	150 x 2 x 0,6	37,5	848,0	1780,0	-
34018	200 x 2 x 0,6	42,5	1131,0	2320,0	-
34036	250 x 2 x 0,6	47,5	1414,0	2910,0	-
34037	300 x 2 x 0,6	51,5	1696,0	3490,0	-
34038	350 x 2 x 0,6	55,0	1979,0	3970,0	-
34039	400 x 2 x 0,6	60,5	2262,0	4480,0	-
34040	500 x 2 x 0,6	66,0	2827,0	5460,0	-

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
34029	2 x 2 x 0,8	8,5	20,0	100,0	-
34030	4 x 2 x 0,8	10,0	40,0	180,0	-
34019	6 x 2 x 0,8	8,5	60,0	190,0	-
34020	10 x 2 x 0,8	15,0	101,0	280,0	-
34021	20 x 2 x 0,8	19,0	201,0	480,0	-
34022	30 x 2 x 0,8	23,0	302,0	670,0	-
34023	40 x 2 x 0,8	26,0	402,0	860,0	-
34024	50 x 2 x 0,8	29,0	503,0	1060,0	-
34025	70 x 2 x 0,8	33,0	704,0	1420,0	-
34026	100 x 2 x 0,8	39,0	1005,0	1980,0	-
34027	150 x 2 x 0,8	47,0	1508,0	2940,0	-
34028	200 x 2 x 0,8	51,0	2011,0	3780,0	-
34031	250 x 2 x 0,8	58,0	2514,0	4660,0	-
34032	300 x 2 x 0,8	62,5	3016,0	5570,0	-
34033	350 x 2 x 0,8	68,0	3519,0	6750,0	-
34034	400 x 2 x 0,8	73,0	4022,0	7630,0	-
34035	500 x 2 x 0,8	81,5	5027,0	9540,0	-

Dimensions and specifications may be changed without prior notice. (RP01)

J-YY Bd telephone installation cable, according to DIN VDE 0815



Technical data

- Installation cable acc. to DIN VDE 0815
- **Temperature range**
  during operation -5°C to +50°C
  fixed installation -30°C to +70°C
- **Loop resistance**
  at 20°C max. 130 Ohm/km
- **Operating peak voltage** max. 300 V
  (not for purposes of high current and power installation)
- **Test voltage** (50 Hz)
  core/core U eff. 800 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Mutual capacitance**
  at 800 Hz max. 100[1)] nF/km
- **Capacitance unbalances** at 800 Hz
  k_1 - max. 300[2)] pF/100 m
  $k_{9\text{-}12}$ - 100[3)] pF/100 m
- **Line attenuation**
  at 800 Hz 1,48 dB/km
- **Minimum bending radius**
  to DIN VDE 0891 part 5
  during delivery 7,5x cable Ø
  single bending without tension
  2,5x cable Ø
  repeated bending under tension
  7,5x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)
- **Caloric load values**
  see Technical Informations

Cable structure

- Bare copper-conductor, single-wire
- Core insulation of PVC,
  compound type YI1
  to DIN VDE 0207 part 4
- Core and star quad identification to DIN VDE 0815
- The cores to a quad and each 5 quads to a unit and several units are stranded in layer
- Foil wrapping
- Outer sheath of PVC, flame retardant,
  compound type YM1 to
  DIN VDE 0207 part 5
- Sheath colour grey

Properties

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- [1)] This value may be extended by 20% with a make-up to 4 pairs.
- [2)] 20% of the values, but one value up to 500 pF is allowed.
- [3)] 10% of the values, but four values (relationship) up to 300 pF are allowed.

Application

J-YY installation cables are preferably used as telephone cables in telephone stations and sub-extensions,in dry and damp premises, and in or under plaster, in the open air for fixed installation. Telephone-Installation cables are not allowed for purposes of high current and power installation.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
33100	2 x 2 x 0,6	4,5	11,0	34,0	-
33101	4 x 2 x 0,6	6,5	23,0	59,0	-
33102	6 x 2 x 0,6	7,0	34,0	74,0	-
33103	10 x 2 x 0,6	8,5	57,0	111,0	-
33104	16 x 2 x 0,6	10,0	90,0	160,0	-
33105	20 x 2 x 0,6	11,0	113,0	200,0	-
33106	24 x 2 x 0,6	11,5	136,0	224,0	-

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
33107	30 x 2 x 0,6	13,0	170,0	284,0	-
33108	40 x 2 x 0,6	15,0	226,0	364,0	-
33109	50 x 2 x 0,6	16,5	283,0	451,0	-
33110	60 x 2 x 0,6	17,5	339,0	529,0	-
33111	80 x 2 x 0,6	20,3	452,0	700,0	-
33112	100 x 2 x 0,6	22,3	565,0	850,0	-

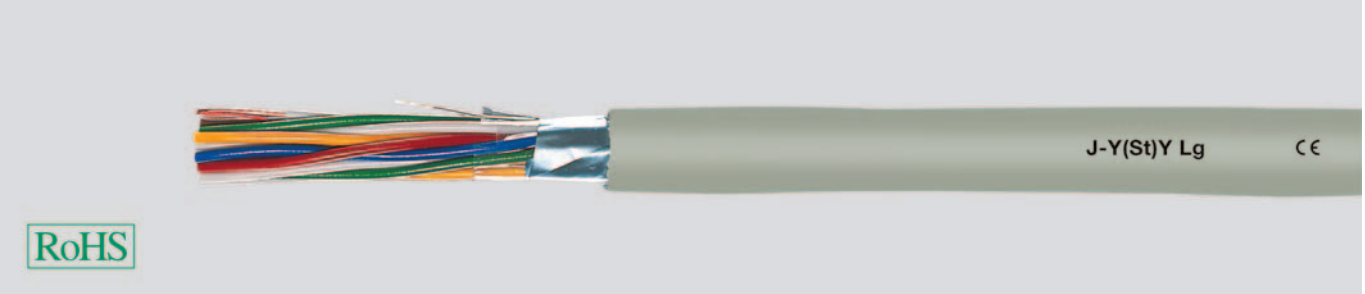
Dimensions and specifications may be changed without prior notice. (RP01)



Suitable accessories can be found in Chapter X.

• Core end sleeve - AV

J-Y(St)Y Lg telephone installation cable, according to DIN VDE 0815



Technical data

- Installation cable acc. to DIN VDE 0815
- **Temperature range**
  during operation -5°C to +50°C
  fixed installation -30°C to +70°C
- **Loop resistance** at 20°C
  0,6 mm - max. 130 Ohm/km
  0,8 mm - max. 73,2 Ohm/km
- **Operating peak voltage**
  (not for purposes of high current and power installation)
  0,6 mm - 300 V
  0,8 mm - 300[3)] V
- **Test voltage**
  core/core U eff. 800 V
  core/screen 800 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Mutual capacitance** at 800 Hz
  max. 100[1)] nF/km
- **Capacitance unbalances** at 800 Hz
  k- max. 300[2)] pF/100 m
- **Line attenuation** at 800 Hz
  0,6 mm - 1,7 dB/km
  0,8 mm - 1,1 dB/km
- **Minimum bending radius**
  to DIN VDE 0891 part 5
  during delivery 7,5x cable Ø
  single bending without tension
  5x cable Ø
  repeated bending under tension
  7,5x cable Ø
- **Radiation resistance**
  up to 80x10^6 cJ/kg (up to 80 Mrad)
- **Caloric load values**
  see Technical Informations

Cable structure

- Bare copper-conductor, single-wire
- Core insulation of PVC,
  compound type YI1
  to DIN VDE 0207 part 4
- Core and pair identification
  to DIN VDE 0815
- Cores twisted to pairs and the pairs are stranded in layers
- Foil wrapping
- Electrostatic screen (St) of plastic coated aluminium foil and drain wire
- Outer sheath of PVC, flame retardant,
  compound type YM1 to
  DIN VDE 0207 part 5
- Sheath colour grey

Properties

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- [1)] This value may be extended by 20% with a make-up to 4 pairs.
- [2)] 20% of the values, but one value up to 500 pF is allowed.
- [3)] Short time operation (6 s/min) up to 600 V permitted.
- 2-paired cables:
  cores are stranded to a star quad.

Application

This cable type with electrostatic screening (St) protects the transmission circuits against extern electrical interferences. Installation cables laid up in pairs are preferably used for telecommunications installations, in dry and damp premises, and in or under plaster, in the open air for fixed installation. These cables are suitable for telephone stations and sub-extensions, for signal and data transmission. Telephone-Installation cables are not allowed for purposes of high current and power installation.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
33001	2 x 2 x 0,6	5,0	13,0	40,0	-
33002	3 x 2 x 0,6	6,3	18,0	50,0	-
33003	4 x 2 x 0,6	6,5	24,0	60,0	-
33004	5 x 2 x 0,6	7,2	30,0	70,0	-
33005	6 x 2 x 0,6	7,5	35,0	80,0	-
33006	8 x 2 x 0,6	8,0	46,0	90,0	-
33007	10 x 2 x 0,6	10,0	58,0	110,0	-
33008	12 x 2 x 0,6	10,2	71,0	130,0	-
33009	16 x 2 x 0,6	11,0	93,0	160,0	-
33010	20 x 2 x 0,6	12,0	116,0	190,0	-
33011	24 x 2 x 0,6	13,0	139,0	220,0	-
33012	30 x 2 x 0,6	14,0	172,0	280,0	-
33013	40 x 2 x 0,6	15,0	220,0	350,0	-
33014	50 x 2 x 0,6	17,0	286,0	430,0	-
33015	60 x 2 x 0,6	19,0	342,0	500,0	-
33016	80 x 2 x 0,6	21,0	455,0	640,0	-
33017	100 x 2 x 0,6	24,0	568,0	850,0	-

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
33018	2 x 2 x 0,8	7,0	21,0	60,0	-
33019	3 x 2 x 0,8	8,5	31,0	80,0	-
33020	4 x 2 x 0,8	9,0	41,0	100,0	-
33021	5 x 2 x 0,8	9,5	52,0	120,0	-
33022	6 x 2 x 0,8	11,0	62,0	140,0	-
33023	8 x 2 x 0,8	11,5	82,0	170,0	-
33024	10 x 2 x 0,8	13,2	102,0	220,0	-
33025	12 x 2 x 0,8	14,2	123,0	250,0	-
33026	16 x 2 x 0,8	16,0	164,0	320,0	-
33027	20 x 2 x 0,8	17,0	204,0	380,0	-
33028	24 x 2 x 0,8	19,0	244,0	460,0	-
33029	30 x 2 x 0,8	20,8	304,0	560,0	-
33030	40 x 2 x 0,8	23,0	405,0	710,0	-
33031	50 x 2 x 0,8	26,0	505,0	900,0	-
33032	60 x 2 x 0,8	28,0	606,0	1050,0	-
33033	80 x 2 x 0,8	31,5	807,0	1400,0	-
33034	100 x 2 x 0,8	33,0	1008,0	1750,0	-

Dimensions and specifications may be changed without prior notice. (RP01)

J-Y(St)Y Lg fire warning installation cable



Technical data

- Installation cable adapted to DIN VDE 0815
- **Temperature range**
  during operation -5°C to +50°C
  fixed installation -30°C to +70°C
- **Loop resistance**
  at 20°C max. 73,2 Ohm/km
- **Operating peak voltage** 300[3)] V
  (not for purposes of high current and power installation)
- **Test voltage** (50 Hz)
  core/core U eff. 800 V
  core/screen 800 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Mutual capacitance**
  at 800 Hz max. 100[1)] nF/km
- **Capacitance unbalances**
  at 800 Hz k - max. 300[2)] pF/100 m
- **Line attenuation**
  at 800 Hz 1,1 dB/km
- **Minimum bending radius**
  to DIN VDE 0891 part 5
  during delivery 7,5x cable Ø
  single bending without tension
  5x cable Ø
  repeated bending under tension
  7,5x cable Ø
- **Radiation resistance**
  up to 80x10^6 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, single-wire
- Core insulation of PVC,
  compound type YI1
  to DIN VDE 0207 part 4
- Core and pair identification to DIN VDE 0815
- Cores twisted in pairs Pairs stranded in layer
- Foil wrapping
- Plastic coated aluminium foil static screening (St)
- Outer sheath of PVC, flame retardant,
  compound type YM1 to
  DIN VDE 0207 part 5
- Sheath colour red, with imprint
  "Brandmelde-Kabel"

Properties

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- [1)] This value may be extended by 20% with a make-up to 4 pairs.
- [2)] 20% of the values, but one value up to 500 pF is allowed.
- [3)] Short time operation (6 s/min) up to 600 V permitted.
- 2-paired cables:
  cores are stranded to a star quad.

Application

This cable type with electrostatic screening (St) protects the transmission circuits against extern electrical interferences. Installation cables laid up in pairs are preferably used for telecommunication installation in dry and damp premises, and in or under plaster, in the open air for fixed installation. These cables are suitable for telephone stations and sub-extensions, for signal and data transmission. Telephone-Installation cables are not allowed for purposes of high current and power installation.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
33035	1 x 2 x 0,8	4,5	11,0	38,0	-
33036	2 x 2 x 0,8	7,0	21,0	60,0	-
33037	3 x 2 x 0,8	8,5	31,0	80,0	-
33038	4 x 2 x 0,8	9,0	41,0	100,0	-
33039	5 x 2 x 0,8	9,5	52,0	120,0	-
33040	6 x 2 x 0,8	11,0	62,0	140,0	-
33041	8 x 2 x 0,8	11,5	82,0	170,0	-
33042	10 x 2 x 0,8	13,2	102,0	220,0	-
33043	12 x 2 x 0,8	14,2	123,0	250,0	-
33044	14 x 2 x 0,8	14,6	145,0	280,0	-

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
33045	16 x 2 x 0,8	16,0	164,0	320,0	-
33046	20 x 2 x 0,8	17,0	204,0	380,0	-
33047	24 x 2 x 0,8	19,0	244,0	460,0	-
33048	30 x 2 x 0,8	20,8	304,0	560,0	-
33049	40 x 2 x 0,8	23,0	405,0	710,0	-
33050	50 x 2 x 0,8	26,0	505,0	900,0	-
33051	60 x 2 x 0,8	28,0	606,0	1050,0	-
33052	80 x 2 x 0,8	31,5	807,0	1400,0	-
33053	100 x 2 x 0,8	33,0	1008,0	1750,0	-

Dimensions and specifications may be changed without prior notice. (RP01)



Suitable accessories can be found in Chapter X.

• Core end sleeve - AV

J-2Y(St)Y St III Bd 16 Mbits/s (Kat. 3) ISDN/EDV (Z = 100 Ohm), meter marking



Technical data

- Special core insulation of PE adapted to DIN VDE 0815 and 0816
- **Conductor loop-resistance** max. 130 Ohm/km
- **Temperature range** flexing -5°C to +70°C fixed installation -40°C to +70°C
- **Operating peak voltage** 300 V (not for heavy current installation purposes)
- **Test voltage** 800 V
- **Insulation resistance** min. 5 GOhm x km
- **Mutual capacitance** 48 nF/km
- **Characteristic impedance** (Z) at 4-16 MHz: 100 Ohm 15%
- **Capacitance unbalance** K_1 max. 400 pF/300 m K_9-K_{12} max. 100 pF/300 m
- **Rel. velocity ratio** approx. 0,66
- **Attenuation** at 1 MHz: 28 dB/km 4 MHz: 47 dB/km 5 MHz: 51 dB/km 10 MHz: 65 dB/km 15 MHz: 76 dB/km 16 MHz: 78 dB/km 20 MHz: 89 dB/km
- **Cross-talk attenuation** from 4 MHz up to 16 MHz for 2 pairs: min. 40 dB 4 pairs and above: min. 25 dB
- **Minimum bending radius** stationary 10x cable Ø

Cable structure

- Bare copper-conductor, single-wire
- Core insulation of PE
- Colour coding to DIN VDE 0815
- Conductors twisted to quads
- 5 quads twisted to units
- Static screen of plastics coated alu foil with drain wire 0,6 mm Ø
- Outer sheath of PVC, flame retardant, compound type YM1 to DIN VDE 0207 part 5
- Sheath colour grey (RAL 7032)
- with meter marking

Properties

- PVC outer sheath: self-extinguishing and flame retardant to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Application

Used as data transmission and connection cable suitable for fixed installation in and under plaster, for data transmission applications, for periphery instrument data processing computers. Suitable for transmission of analog- and digital signals up to 16 Mbit/s. High cross-talk attentuation values. Suitable as connecting cable for periphery equipment, data processing systems, monitors, printers and cash register systems. The static screen (St) screen assures a disturbance-free data and signal transmission for measuring and control systems. These cables are not allowed for purposes of high curren and power installation.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

P

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
33200	2 x 2 x 0,6	6,1	13,0	44,0	-
33201	4 x 2 x 0,6	7,5	24,0	80,0	-
33202	6 x 2 x 0,6	7,6	35,0	86,0	-
33203	8 x 2 x 0,6	8,8	46,0	105,0	-
33204	10 x 2 x 0,6	8,8	58,0	112,0	-
33205	20 x 2 x 0,6	12,9	116,0	218,0	-

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
33206	30 x 2 x 0,6	14,0	172,0	302,0	-
33207	40 x 2 x 0,6	15,5	229,0	376,0	-
33208	50 x 2 x 0,6	17,3	266,0	480,0	-
33209	60 x 2 x 0,6	18,1	342,0	560,0	-
33210	80 x 2 x 0,6	22,0	455,0	748,0	-
33211	100 x 2 x 0,6	25,2	588,0	940,0	-

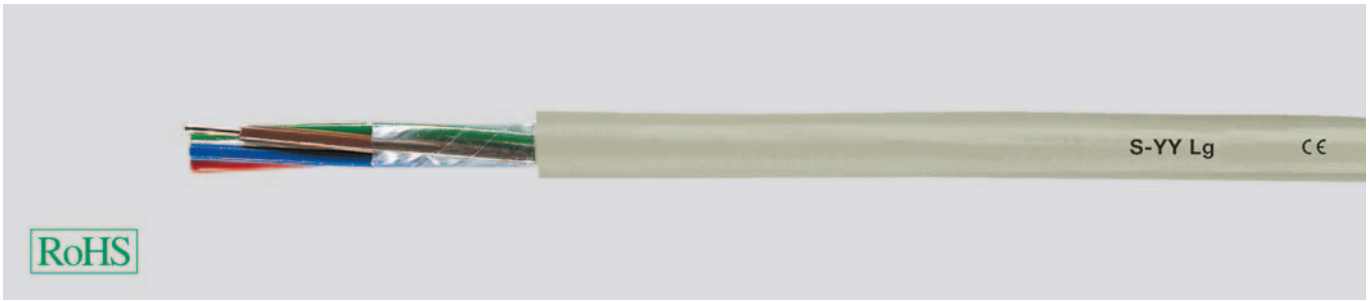
Dimensions and specifications may be changed without prior notice. (RB01)



Suitable accessories can be found in Chapter X.

• Core end sleeve - AV

S-YY Lg switchboard cable according to DIN VDE 0813



Technical data

- Switchboard cable acc. to DIN VDE 0813
- **Temperature range**
  during operation -5°C to +50°C
  fixed installation -30°C to +70°C
- **Electrical characteristics**
  acc. to VDE 0813 at 20°C
- **Conductor resistance**
  0,5 mm - max. 96 Ohm/km
  0,6 mm - max. 65 Ohm/km
  1,0 mm - max. 23,4 Ohm/km
- **Operating peak voltage**
  (not for purposes of high current and power installation)
  0,5 mm - max. 375 V
  0,6 mm - max. 375 V
  1,0 mm - max. 600 V
- **Test voltage** core/core
  0,5 mm - 2000 V
  0,6 mm - 2500 V
  1,0 mm - 2500 V
- **Insulation resistance**
  min. 100 MOhm x km
- Min. permissible **bending radius**
  acc. to DIN VDE 0891 part 3
  during operation max. 7,5x cable Ø

Cable structure

- Bare copper-conductor, single-wire
- Core insulation of PVC,
  compound type YI1
  to DIN VDE 0207 part 4
- Core identification to DIN VDE 0813
- Cores stranded in layers
- Foil wrapping
- Outer sheath of PVC, flame retardant,
  compound type YM1 to
  DIN VDE 0207 part 5
- Sheath colour grey (RAL 7032)

Properties

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Application

In DIN VDE 0800 the operational areas are defined, where the application of switchboard cables permit. These are preferred for the transmission of data signals of telecommunication and control processings i. e. in interlocking installations, to connect the outdoor cables with relay groups as well as for fixed installation to interconnect the racks and distributor frames. This type is not allowed for the installation of heavy current operation.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cond. Ø mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
34300	30 x 1 x 0,5	9,6	59,0	128,0	-
34301	60 x 1 x 0,5	11,9	118,0	233,0	-
34302	10 x 1 x 0,6	7,9	28,0	98,0	-
34303	20 x 1 x 0,6	9,6	57,0	132,0	-
34304	30 x 1 x 0,6	11,1	85,0	183,0	-
34305	60 x 1 x 0,6	15,4	170,0	344,0	-
34306	80 x 1 x 0,6	18,3	226,0	445,0	-
34307	20 x 1 x 1	14,5	157,0	292,0	-
34308	24 x 1 x 1	15,2	188,0	328,0	-
34309	32 x 1 x 1	16,3	251,0	430,0	-
34310	40 x 1 x 1	17,8	314,0	515,0	-
34311	60 x 1 x 1	22,2	471,0	710,0	-

Dimensions and specifications may be changed without prior notice. (RP01)



Suitable accessories can be found in Chapter X.

• Core end sleeve - AV

J-H(St)H Bd installation cable, halogen-free, according to DIN VDE 0816



Technical data

- Flame retardant, halogen-free installation cable acc. to DIN VDE 0815
- **Temperature range**
  flexing -5°C to +50°C
  fixed installation -30°C to +70°C
- **Loop resistance** at 20°C
  max. 130 Ohm/km at 0,6 mm
  max. 73,2 Ohm/km at 0,8 mm
- **Operating peak voltage** 300 V
  (not for purposes of high current and power installation)
- **Test voltage**
  core/core U eff. 800 V
  core/screen 800 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Mutual capacitance** at 800 Hz
  max. 120[1] nF/km
- **Capacitance unbalances** at 800 Hz
  K_1 max. 300[2] pF/100 m
  K_9-K_{12} max. 100[3] pF/100 m
- **Line attenuation** at 800 Hz
  approx. 1,5 dB/km
- **Minimum bending radius**
  during delivery 7,5x cable Ø
  single bending without tension
  2,5x cable Ø
  repeated bending under tension
  7,5x cable Ø
- **Radiation resistance**
  up to 100x10^6 cJ/kg (up to 100 Mrad)
- **Caloric load values**
  see technical informations

Cable structure

- Bare copper-conductor, single-wire
- Core insulation, halogen-free, compound type HI2 to DIN VDE 0207 part 23
- Core and star-quad identification to DIN VDE 0815
- Cores twisted in quads
- The cores to quads and the quads are stranded to units
- Foil wrapping
- Drain wire solid
- Electrostatic screen (St) of plastic coated aluminium foil
- Outer sheath, halogen-free, flame retardant, compound type HM2 to DIN VDE 0207 part 24
- Sheath colour grey

Properties

- Not for purposes of high current and power installation as well as underground laying.
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Note

- [1] This value may be extended by 20% with make-up up to 4 pairs.
- [2] 20% of the values, but one value up to 500 pF is allowed.
- [3] 10% of the values, but four values (relationship) up to 300 pF are allowed.
- **LS0H** = Low Smoke Zero Halogen

Application

The halogen-free installation cables with improved characteristics in the case of fire are used for the telephone transmission, measurement and control technology. The static screen protects the transmission circuits against outer electrical interferences. A fire propagation is prevented through high oxygen index of the insulation material and produce no corrosive gases in case of fire. Those cables are preferably used for telecommunication installations in dry and damp premises, and in or under plaster.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

P

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
34050	2 x 2 x 0,6	5,4	14,0	50,0	-
34051	4 x 2 x 0,6	7,3	25,0	91,0	-
34052	6 x 2 x 0,6	7,7	37,0	100,0	-
34053	10 x 2 x 0,6	9,1	59,0	147,0	-
34054	20 x 2 x 0,6	13,5	116,0	308,0	-
34055	30 x 2 x 0,6	15,1	172,0	350,0	-
34056	40 x 2 x 0,6	16,5	229,0	465,0	-
34057	50 x 2 x 0,6	18,6	286,0	571,0	-
34058	60 x 2 x 0,6	19,3	342,0	662,0	-
34059	80 x 2 x 0,6	24,6	455,0	877,0	-
34060	100 x 2 x 0,6	27,2	568,0	1055,0	-

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
34061	2 x 2 x 0,8	6,5	25,0	70,0	-
34062	4 x 2 x 0,8	9,0	45,0	135,0	-
34063	6 x 2 x 0,8	10,0	65,0	151,0	-
34064	10 x 2 x 0,8	11,5	106,0	230,0	-
34065	20 x 2 x 0,8	20,4	206,0	507,0	-
34066	30 x 2 x 0,8	21,5	307,0	600,0	-
34067	40 x 2 x 0,8	23,0	407,0	788,0	-
34068	50 x 2 x 0,8	25,0	508,0	972,0	-
34069	60 x 2 x 0,8	28,0	608,0	1120,0	-
34070	80 x 2 x 0,8	31,5	809,0	1475,0	-
34071	100 x 2 x 0,8	32,3	1010,0	1804,0	-

Dimensions and specifications may be changed without prior notice. (RP01)



Suitable accessories can be found in Chapter X.

• Core end sleeve - AV

J-H(St)H Bd fire warning installation cable, halogen-free



Technical data

- Flame retardant, halogen-free installation cable adapted to DIN VDE 0815
- **Temperature range**
  flexing -5°C to +50°C
  fixed installation -30°C to +70°C
- **Loop resistance** at 20°C
  max. 73,2 Ohm/km
- **Operating peak voltage** 300 V
  (not for purposes of high current and power installation)
- **Test voltage**
  core/core U eff. 800 V
  core/screen 800 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Mutual capacitance** at 800 Hz
  max. 120[1] nF/km
- **Capacitance unbalances** at 800 Hz
  K_1 max. 300[2] pF/100 m
  K_9-K_{12} max. 100[3] pF/100 m
- **Line attenuation** at 800 Hz
  approx. 1,5 dB/km
- **Minimum bending radius**
  during delivery 7,5x cable Ø
  single bending without tension
  2,5x cable Ø
  repeated bending under tension
  7,5x cable Ø
- **Radiation resistance**
  up to 100x10^6 cJ/kg (up to 100 Mrad)
- **Caloric load values**
  see Technical Informations

Cable structure

- Bare copper-conductor, single-wire
- Core insulation, halogen-free, compound type HI2 to DIN VDE 0207 part 23
- Core and star-quad identification to DIN VDE 0815
- Cores twisted in quads
- The cores to quads and the quads are stranded to units
- Foil wrapping
- Drain wire solid
- Electrostatic screen (St) of plastic coated aluminium foil
- Outer sheath, halogen-free, flame retardant, compound type HM2 to DIN VDE 0207 part 24
- Sheath colour red with imprint "BRANDMELDEKABEL"

Properties

- Not for purposes of high current and power installation as well as underground laying
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Note

- [1] This value may be extended by 20% with make-up up to 4 pairs.
- [2] 20% of the values, but one value up to 500 pF is allowed.
- [3] 10% of the values, but four values (relationship) up to 300 pF are allowed.
- **LS0H** = Low Smoke Zero Halogen

Application

The halogen-free installation cables with improved characteristics in the case of fire are used for the telephone transmission, measurement and control technology. The static screen protects the transmission circuits against outer electrical interferences. A fire propagation is prevented through high oxygen index of the insulation material and produce no corrosive gases in case of fire. Those cables are preferably used for telecommunication installations in dry and damp premises, and in or under plaster.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
34116	2 x 2 x 0,8	6,8	25,0	70,0	-
34117	4 x 2 x 0,8	10,5	45,0	135,0	-
34118	6 x 2 x 0,8	10,9	65,0	151,0	-
34119	10 x 2 x 0,8	13,1	106,0	230,0	-
34120	20 x 2 x 0,8	20,4	206,0	507,0	-
34121	30 x 2 x 0,8	21,5	307,0	600,0	-

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
34122	40 x 2 x 0,8	24,5	407,0	788,0	-
34123	50 x 2 x 0,8	27,1	508,0	972,0	-
34124	60 x 2 x 0,8	29,4	608,0	1120,0	-
34125	80 x 2 x 0,8	33,2	809,0	1475,0	-
34126	100 x 2 x 0,8	37,2	1010,0	1804,0	-

Dimensions and specifications may be changed without prior notice. (RP01)



Suitable accessories can be found in Chapter X.

• Core end sleeve - AV

J-2Y(St)H St III Bd 16 Mbits/s (Kat.3) ISDN/EDV (Z = 100 Ohm), halogen-free



Technical data

- Special core insulation of PE adapted to DIN VDE 0815 and 0816
- **Conductor loop-resistance** max. 130 Ohm/km
- **Temperature range** flexing -5°C to +70°C fixed installation -30°C to +70°C
- **Operating peak voltage** 300 V (not for purposes of high current and power installation)
- **Test voltage** 800 V
- **Insulation resistance** min. 5 GOhm x km
- **Mutual capacitance** 48 nF/km
- **Characteristic impedance (Z)** at 4-16 MHz: 100 Ohm ±15%
- **Capacitance unbalance** K_1 max. 400 pF/300 m K_9-K_{12} max. 100 pF/300 m
- **Rel. velocity ratio** approx. 0,66
- **Attenuation** at 1 MHz: 28 dB/km 4 MHz: 47 dB/km 5 MHz: 51 dB/km 10 MHz: 65 dB/km 15 MHz: 76 dB/km 16 MHz: 78 dB/km 20 MHz: 89 dB/km
- **Cross-talk attenuation** from 4 MHz up to 16 MHz for 2 pairs: min. 40 dB 4 pairs and above: min. 25 dB
- **Minimum bending radius** stationary 10x cable Ø

Cable structure

- Bare copper-conductor, single-wire
- Core insulation of PE (2Y)
- Colour coding to DIN VDE 0815
- Conductors twisted to quads
- 5 quads twisted to units
- Static screen of plastics coated alu foil with drain wire 0,6 mm Ø
- Outer sheath, halogen-free, flame retardant, polymer-compound
- Sheath colour grey

Properties

- Outer sheath Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- These cables are not allowed for purposes of high current and power installation
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Application

Used as data transmission and connection cable suitable for fixed installation in and under plaster, for data transmission applications, for periphery instrument data processing computers. Suitable for transmission of analog- and digital signals up to 16 Mbit/s. High cross-talk attenuation values. Suitable as connecting cable for periphery equipment, data processing systems, monitors, Printers and cash register systems. The static screen (St) screen assures a disturbance-free data and signal transmission for measuring and control systems.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

P

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
34166	2 x 2 x 0,6	5,8	13,0	44,0	-
34167	4 x 2 x 0,6	9,2	24,0	80,0	-
34168	6 x 2 x 0,6	9,3	35,0	86,0	-
34169	8 x 2 x 0,6	9,5	46,0	105,0	-
34170	10 x 2 x 0,6	9,8	58,0	112,0	-
34171	20 x 2 x 0,6	12,7	116,0	218,0	-

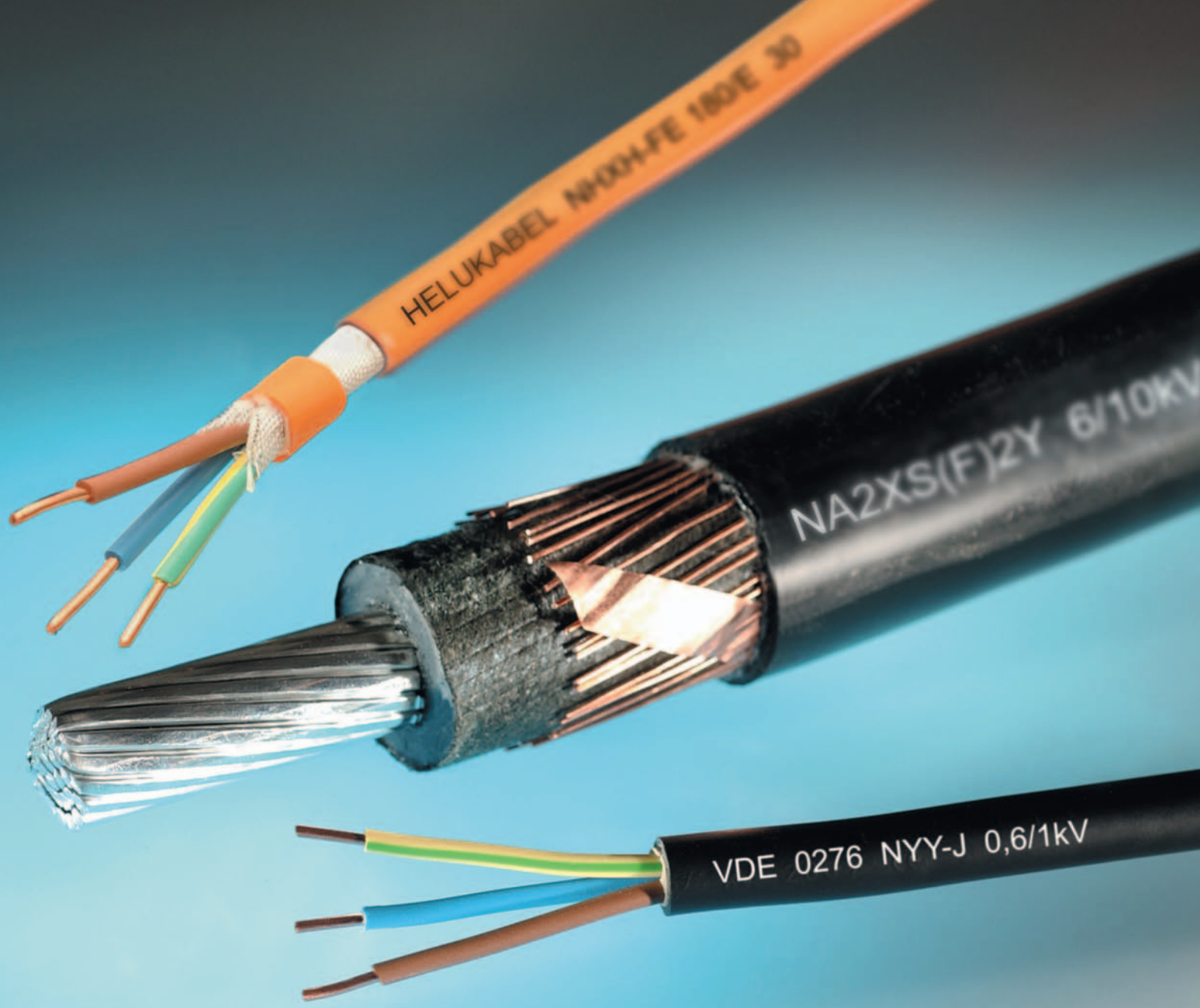
Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	
34172	30 x 2 x 0,6	15,0	172,0	302,0	-
34173	40 x 2 x 0,6	16,8	229,0	376,0	-
34174	50 x 2 x 0,6	18,5	266,0	480,0	-
34175	60 x 2 x 0,6	20,2	342,0	560,0	-
34176	80 x 2 x 0,6	23,0	455,0	748,0	-
34177	100 x 2 x 0,6	25,2	588,0	940,0	-

Dimensions and specifications may be changed without prior notice. (RP01)



Suitable accessories can be found in Chapter X.

• Core end sleeve - AV



NYY

(N)A2XH

NA2XY

JE-H(St)H

N2XCH-FE 180/E 30

N2XS(FL)2Y 6/10KV

NYFGY 3X

POWER, SECURITY & MEDIUM VOLTAGE CABLES

Designation	Properties	Approvals	Page
Underground cables & power distribution cables			
NYY	Underground cable 0.6/1 kV, VDE approved	EAC VDE	538
NYCY	Underground cable 0.6/1 kV, with concentric conductor VDE approved	EAC VDE	540
NYCWY	Underground cable 0.6/1 kV, with concentric conductor VDE approved	EAC VDE	542
NAYY	Underground cable 0.6/1 kV, VDE approved	EAC VDE	544
NAY2Y	Power cable 0.6/1 kV, with PE outer sheath	VDE	546
NAYCWY	Underground cable 0.6/1 kV, with concentric conductor VDE approved	EAC VDE	547
N2XY	Underground cable 0.6/1 kV, VDE approved, increased current load	VDE	548
N2XCY	Underground cable 0.6/1 kV, with concentric conductor, VDE approved, increased current load	VDE	549
NA2XY	Underground cable 0.6/1 kV, VDE approved, increased current load	EAC VDE	551
A-LiY(StE)YÖ	Data transmission cable for gas stations and refineries with BAM certificate		552
Petrol station cable	(N)YYÖ-J 0.6/1 kV		553
NYKY-J 0.6/1 kV	with lead sheath, VDE approval	VDE	554
Low-voltage & safety cables			
N2HX	Power cable 0.6/1 kV, halogen-free without functionality	EAC VDE	557
N2XCH	Power cable 0.6/1 kV, halogen-free, with concentric conductor, without functionality	EAC VDE	559
(N)A2XH	Power cable 0.6/1 kV, halogen-free without functionality	EAC	561
N2XH-FE 180/E 30	Security cable, halogen-free, 0.6/1 kV, with improved fire behavior	EAC	563
N2XCH-FE 180/E 30	Security cable, halogen-free, 0.6/1 kV, with improved fire behavior	EAC	565
(N)HXH-FE 180/E 30	Security cable, halogen-free, 0.6/1 kV, with improved fire behavior	EAC	567
(N)HXCH-FE 180/E 30	Security cable, halogen-free, 0.6/1 kV, with improved fire behavior	EAC	569
N2XH-FE 180/E 90	Security cable, halogen-free, 0.6/1 kV, with improved fire behavior		571
N2XCH-FE 180/E 90	Security cable, halogen-free, 0.6/1 kV, with improved fire behavior		573
(N)HXH-FE 180/E 90	Security cable, halogen-free, 0.6/1 kV, with improved fire behavior	EAC	575
(N)HXCH-FE 180/E 90	Security cable, halogen-free, 0.6/1 kV, with improved fire behavior	EAC	577
JE-H(St)H	Bd FE 180/E 30 to E 90 (orange), halogen-free		579
JE-H(St)H	Bd fire alarm cable, FE 180/E 30 to E 90 (red), halogen-free		580
JE-H(St)HRH	Bd fire alarm cable, FE 180/E 30 to E 90, halogen-free		581
Medium-voltage cables			
N2XSY 6/10kV, 12/20kV, 18/30kV	VPE-insulated Cu-conductor, single core, screened, PVC jacket	VDE	585
N2XS2Y 6/10kV, 12/20kV, 18/30kV	VPE-insulated Cu-conductor, single core, screened, PE jacket	VDE	587
N2XS(F)2Y 6/10kV, 12/20kV, 18/30kV	VPE-insulated Cu-conductor, single core, screened, longitudinally water-tight, PE jacket	VDE	589
N2XS(FL)2Y 6/10kV	VPE-insulated Cu-conductor, single core, screened, longitudinally and transversely water-tight PE jacket	VDE	591
NA2XSY 6/10kV, 12/20kV, 18/30kV	VPE-insulated alu-conductor, single core, screened, PVC jacket	VDE	593
NA2XS2Y 6/10kV, 12/20kV, 18/30kV	VPE-insulated Al-conductor, single core, screened, PE jacket	VDE	595
NA2XS(F)2Y 6/10kV, 12/20kV, 18/30kV	VPE-insulated Al-conductor, single core, screened, longitudinally water-tight, PE jacket	VDE	597
NA2XS(FL)2Y 6/10kV, 12/20kV, 18/30kV	VPE-insulated Al-conductor, single core, screened, longitudinally and transversely water-tight PE jacket	VDE	599
NYFGY 3 x ... 3.6/6kV	Ribbon cable armor, PVC jacket	VDE	601
N2XSEY 3 x ... 6/10kV	VPE-insulated, screened, Cu-conductor, PVC jacket	VDE	602
N2XSEH 3x ... 6/10kV	Power cable 0.6/1 kV, with PE outer sheath	VDE	603

Q

CODE-DESIGNATION FOR POWER CABLES WITH PVC OR XLPE INSULATION

Design	Identification of design	Explanations
Core	**N**	According to VDE standard (no abbreviation for copper conductor)
	A	Aluminium conductors
	Y	Insulation of thermoplastic Polyvinylchloride (PVC)
	2X	Insulation cross-linked Polyethylene (XLPE)
Concentric conductor, screen	**C**	Concentric conductors of copper wires and copper tape, helically wounded
	CW	Concentric conductor of copper wires in waveconal formation and copper tape, helically wounded
	CE	Concentric conductor of copper wires and copper tape over each individual core, helically wounded
Screen	**S**	Screen of copper wires and copper tape, helically wounded
	SE	Screen of copper wires and copper tape over each individual core, helically wounded
	(F)	Longitudinally water-proof screen
Armour	**B**	Armour of steel tape
	F	Armour of galvanized flat steel wires
	G	Counter helix of galvanized steel tape
Sheath	**K**	Lead sheath
Outer sheath	**Y**	PVC sheath
	2Y	PE sheath

Cable for U_0/U 0,6/1 kV are additionally designated with

–J	Cables with green-yellow (green-natural) core are marked with protective conductor
–O	able without green-yellow (green-natural) core are marked without protective conductor

UNDERGROUND CABLES & POWER DISTRIBUTION CABLES



NYY power cable, 0,6/1kV, VDE approved



Technical data

- Power and control cable to DIN VDE 0276 part 603, HD 603 S1 and IEC 60502, 7 core and above to DIN VDE 0276 part 627, HD 627 S1 and IEC 60502
- **Temperature range** flexing -5°C to +50°C fixed installation -40°C to +70°C
- Permissible **operating temperature** at conductor +70°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s) ≤ 300 mm² +160°C > 300 mm² +140°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4 kV
- Max. permissible **tensile stress** with cable grip at conductor 50 N/mm²
- **Minimum bending radius** single-core 15x cable Ø multi-core 12x cable Ø
- **Caloric load values** see Technical Informations

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of PVC compound type DIV4 to HD 603 S1
- Core identification to DIN VDE 0293-308, 0276 part 603
- Core colour for 3+½ conductor J-version: GN-YE (½), BN, BK, GY O-version: BU (½), BN, BK, GY
- Cores stranded in concentric layers
- Outer sheath of PVC compound type DMV5 to HD 603 S1
- Sheath colour black

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Highest permissible voltage

- Direct current systems 1,8 kV
- Alternating current systems
  - Single-phase systems both outer conductors insulated 1,4 kV
  - Single-phase systems one outer conductor earthed 0,7 kV
- Three-phase systems 1,2 kV

Note

- re = round conductor, single-wire rm = round conductor, multi-wire sm = sectional conductor, mutli-wire
- J-version = with GN-YE conductor O-version = without GN-YE conductor
- In respect to 3+½ conductors Whereby only one conductor is allowed to contain a smaller cross-section (as per DIN VDE 0276 part 603 table 5) and permitted to place as insulated core (gree-yellow and blue as ½-conductor), stranded in layer.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Power cables for energy supply are installed in open air, in underground, in water, in concrete, indoors, in cable ducts, power stations, for industry and distribution boards as well as in subscriber networks, where mechanical damages are not to be expected.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

No.cores x cross-sec. mm²		Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	J type Part no.	AWG-No.		O type Part no.	AWG-No.	
1 x 4	re	9,0	38,0	115,0	32001	12	-	32089	12	-
1 x 6	re	9,5	58,0	135,0	32002	10	-	32090	10	-
1 x 10	re	10,0	96,0	179,0	32003	8	-	32091	8	-
1 x 16	re	11,0	154,0	245,0	32004	6	-	32092	6	-
1 x 25	rm	12,0	240,0	360,0	32005	4	-	32093	4	-
1 x 35	rm	13,0	336,0	470,0	32006	2	-	32094	2	-
1 x 50	rm	15,0	480,0	620,0	32007	1	-	32095	1	-
1 x 70	rm	16,5	672,0	810,0	32008	2/0	-	32096	2/0	-
1 x 95	rm	19,0	912,0	1110,0	32009	3/0	-	32097	3/0	-
1 x 120	rm	20,5	1152,0	1360,0	32010	4/0	-	32098	4/0	-
1 x 150	rm	22,5	1440,0	1670,0	32011	300 kcmil	-	32099	300 kcmil	-
1 x 185	rm	25,0	1776,0	2050,0	32012	350 kcmil	-	32100	350 kcmil	-
1 x 240	rm	28,0	2304,0	2630,0	32013	500 kcmil	-	32101	500 kcmil	-
1 x 300	rm	30,0	2880,0	3200,0	32014	600 kcmil	-	32102	600 kcmil	-
1 x 400	rm	34,0	3840,0	4150,0	32015	750 kcmil	-	32103	750 kcmil	-
1 x 500	rm	38,0	4800,0	5200,0	32556	1000 kcmil	-	32558	1000 kcmil	-
1 x 630	rm	43,0	6048,0	6650,0	32557	1250 kcmil	-	32559	1250 kcmil	-

Continuation ▸

NYY power cable, 0,6/1kV, VDE approved

No.cores x cross-sec. mm²		Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	J type Part no.	AWG-No.		O type Part no.	AWG-No.	
2 x 1,5	re	11,0	29,0	175,0	32016	16	-	32104	16	-
2 x 2,5	re	12,0	48,0	215,0	32017	14	-	32105	14	-
2 x 4	re	14,0	77,0	295,0	32018	12	-	32106	12	-
2 x 6	re	15,0	115,0	370,0	32019	10	-	32107	10	-
2 x 10	re	16,5	192,0	495,0	32020	8	-	32108	8	-
2 x 16	re	18,5	307,0	670,0	32021	6	-	32109	6	-
2 x 25	rm	23,5	480,0	960,0	32022	4	-	32110	4	-
3 x 1,5	re	11,5	43,0	195,0	32023	16	-	32111	16	-
3 x 2,5	re	12,5	72,0	250,0	32024	14	-	32112	14	-
3 x 4	re	14,0	115,0	340,0	32025	12	-	32113	12	-
3 x 6	re	15,0	173,0	430,0	32026	10	-	32114	10	-
3 x 10	re	17,0	288,0	590,0	32027	8	-	32115	8	-
3 x 16	re	19,0	461,0	820,0	32028	6	-	32116	6	-
3 x 25	rm	24,0	720,0	1320,0	32029	4	-	32117	4	-
3 x 35	sm	25,0	1008,0	1450,0	32030	2	-	32118	2	-
3 x 50	sm	26,5	1440,0	1850,0	32031	1	-	32119	1	-
3 x 70	sm	30,0	2016,0	2450,0	32032	2/0	-	32120	2/0	-
3 x 95	sm	34,5	2736,0	3300,0	32033	3/0	-	32121	3/0	-
3 x 120	sm	37,0	3456,0	4100,0	32034	4/0	-	32122	4/0	-
3 x 150	sm	40,0	4320,0	4900,0	32293	300 kcmil	-	32296	300 kcmil	-
3 x 185	sm	46,0	5328,0	6500,0	32294	350 kcmil	-	32297	350 kcmil	-
3 x 240	sm	51,0	6912,0	8300,0	32295	500 kcmil	-	32298	500 kcmil	-
4 x 1,5	re	12,0	58,0	230,0	32044	16	-	32132	16	-
4 x 2,5	re	13,5	96,0	300,0	32045	14	-	32133	14	-
4 x 4	re	15,0	154,0	410,0	32046	12	-	32134	12	-
4 x 6	re	16,5	230,0	520,0	32047	10	-	32135	10	-
4 x 10	re	18,5	384,0	730,0	32048	8	-	32136	8	-
4 x 16	re	21,5	614,0	1045,0	32049	6	-	32137	6	-
4 x 25	rm	26,0	960,0	1640,0	32050	4	-	32138	4	-
4 x 35	sm	27,5	1344,0	1760,0	32051	2	-	32139	2	-
4 x 50	sm	30,0	1920,0	2350,0	32052	1	-	32140	1	-
4 x 70	sm	34,0	2688,0	3100,0	32053	2/0	-	32141	2/0	-
4 x 95	sm	39,0	3648,0	4250,0	32054	3/0	-	32142	3/0	-
4 x 120	sm	42,5	4608,0	5300,0	32055	4/0	-	32143	4/0	-
4 x 150	sm	47,5	5760,0	6400,0	32056	300 kcmil	-	32144	300 kcmil	-
4 x 185	sm	52,0	7104,0	8500,0	32057	350 kcmil	-	32145	350 kcmil	-
4 x 240	sm	58,0	9216,0	11000,0	32058	500 kcmil	-	32146	500 kcmil	-
5 x 1,5	re	13,0	72,0	270,0	32059	16	-	32147	16	-
5 x 2,5	re	14,5	120,0	360,0	32060	14	-	32148	14	-
5 x 4	re	16,5	192,0	490,0	32061	12	-	32149	12	-
5 x 6	re	18,0	288,0	600,0	32062	10	-	32150	10	-
5 x 10	re	20,0	480,0	890,0	32063	8	-	32151	8	-
5 x 16	re	22,5	768,0	1255,0	32064	6	-	32152	6	-
5 x 25	rm	28,0	1200,0	1960,0	32065	4	-			
5 x 35	rm	34,0	1680,0	2400,0	32300	2	-			
5 x 50	rm	40,0	2400,0	3500,0	32257	1	-			
5 x 70	rm	42,7	3360,0	4470,0	79608	2/0	-			
5 x 95	rm	50,3	4560,0	6149,0	700939	3/0	-			
7 x 1,5	re	15,5	101,0	310,0	32066	16	-	32153	16	-
7 x 2,5	re	16,5	168,0	450,0	32076	14	-	32163	10	-
7 x 4	re	18,5	269,0	640,0	32086	12	-	32173	12	-
7 x 6	re	20,0	403,0	850,0	32087	10	-	32174	10	-
7 x 10	re	23,5	672,0	1200,0	32088	8	-	32175	8	-
10 x 1,5	re	18,0	144,0	380,0	32067	16	-	32154	16	-
10 x 2,5	re	19,5	240,0	520,0	32077	14	-	32164	10	-
12 x 1,5	re	19,0	173,0	420,0	32068	16	-	32155	16	-
12 x 2,5	re	20,5	288,0	600,0	32078	14	-	32165	14	-
14 x 1,5	re	20,0	202,0	470,0	32069	16	-	32156	16	-
14 x 2,5	re	21,0	336,0	680,0	32079	14	-	32166	14	-
16 x 1,5	re	21,0	230,0	520,0	32070	16	-	32157	16	-
16 x 2,5	re	22,0	384,0	750,0	32080	14	-	32167	14	-
19 x 1,5	re	22,0	274,0	570,0	32071	16	-	32158	16	-
19 x 2,5	re	23,0	456,0	850,0	32081	14	-	32168	14	-
21 x 1,5	re	23,0	302,0	650,0	32072	16	-	32159	16	-
21 x 2,5	re	24,5	504,0	980,0	32082	14	-			
24 x 1,5	re	25,0	346,0	750,0	32073	16	-	32160	16	-
24 x 2,5	re	27,0	576,0	1100,0	32083	14	-	32170	14	-
30 x 1,5	re	26,0	432,0	860,0	32074	16	-	32161	16	-
30 x 2,5	re	28,0	720,0	1280,0	32084	14	-	32171	14	-
40 x 1,5	re	29,0	576,0	1070,0	32075	16	-	32162	16	-
40 x 2,5	re	31,5	960,0	1700,0	32085	14	-	32172	14	-
52 x 2,5	re	35,0	1248,0	2150,0	32169	14	-			
61 x 1,5	re	34,0	878,0	1680,0	32176	16	-			

3+1/2-conductors

No.cores x cross-sec. mm²		Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	J type Part no.	AWG-No.		O type Part no.	AWG-No.	
3 x 25 / 16	rm/re	24,5	874,0	1530,0	32035	4	-	32123	4	-
3 x 35 / 16	sm/re	26,0	1162,0	1750,0	32036	2	-	32124	2	-
3 x 50 / 25	sm	29,0	1680,0	2350,0	32037	1	-	32125	1	-
3 x 70 / 35	sm/rm	32,0	2352,0	2850,0	32038	2/0	-	32126	2/0	-
3 x 95 / 50	sm	38,0	3216,0	3850,0	32039	3/0	-	32127	3/0	-
3 x 120 / 70	sm	41,0	4128,0	4780,0	32040	4/0	-	32128	4/0	-
3 x 150 / 70	sm	46,0	4992,0	5800,0	32041	300 kcmil	-	32129	300 kcmil	-
3 x 185 / 95	sm	51,0	6240,0	7600,0	32042	350 kcmil	-	32130	350 kcmil	-
3 x 240 / 120	sm	58,0	8064,0	9800,0	32043	500 kcmil	-	32131	500 kcmil	-
3 x 300 / 150	sm	64,0	10080,0	11500,0	32256	600 kcmil	-			

Dimensions and specifications may be changed without prior notice. (RQ01)

NYCY power cable, 0,6/1kV, VDE approved, with concentric copper conductor



Technical data

- Power and control cable to DIN VDE 0276 part 603, HD 603 S1 and IEC 60502 7 cores and above to DIN VDE 0276 part 627, HD 627 S1 and IEC 60502
- **Temperature range** flexing -5°C to +50°C fixed installation -40°C to +70°C
- Permissible **operating temperature** at conductor +70°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s) +160°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4 kV
- Max. permissible **tensile stress** with cable grip at conductor 50 N/mm²
- **Minimum bending radius** single-core 15x cable Ø multi-core 12x cable Ø
- **Caloric load values** see Technical Informations

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.1, single-wire, BS 6360 cl.1, IEC 60228 cl.1
- Core insulation of PVC compound type DIV4 to HD 603 S1
- Core identification to DIN VDE 0293-308
- Cores stranded in concentric layers
- Filling compound
- Concentric conductor in inner layer of round copper wires, outer layer with copper tape
- Outer sheath of PVC compound type DMV5 to HD 603 S1
- Sheath colour black

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Highest permissible voltage

- Direct current systems 1,8 kV
- Alternating current systems
  - Single-phase systems 1,4 kV both outer conductors insulated
  - Single-phase systems 0,7 kV one outer conductor earthed
- Three-phase systems 1,2 kV with concentric conductor and a cross-section of 240 mm² and above 3,6 kV

Note

- re = round conductor, single-wire
- Available with outer sheath in alternative colours on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Power cables for energy supply are used for industry and distribution boards, power stations, house connecting boxes and street lighting as well as control cable for the transmission of control impulses and test datas. Overall, where increased electrical and also mechanical protection are required. Those cables are installed in open air, in underground, in water, in concrete, indoors and in cable ducts. The concentric conductor (C) is allowed to use as PE-, PEN-conductor or as screen.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
32200	1 x 10 re / 10	11,0	216,0	280,0	8
32201	1 x 16 re / 16	12,0	336,0	440,0	6
32202	2 x 1,5 re / 1,5	13,0	52,0	205,0	16
32203	2 x 2,5 re / 2,5	13,5	80,0	270,0	14
32204	2 x 4 re / 4	15,5	123,0	360,0	12
32205	2 x 6 re / 6	17,0	182,0	435,0	10
32206	2 x 10 re / 10	19,5	312,0	590,0	8
32207	2 x 16 re / 16	20,5	489,0	820,0	6
32208	3 x 1,5 re / 1,5	13,5	66,0	225,0	16
32209	3 x 2,5 re / 2,5	14,5	104,0	290,0	14
32210	3 x 4 re / 4	16,5	161,0	400,0	12
32211	3 x 6 re / 6	17,5	240,0	510,0	10
32212	3 x 10 re / 10	20,0	408,0	850,0	8
32213	3 x 16 re / 16	23,0	643,0	1080,0	6
32214	4 x 1,5 re / 1,5	14,5	81,0	260,0	16
32215	4 x 2,5 re / 2,5	15,5	128,0	350,0	14
32216	4 x 4 re / 4	17,0	200,0	470,0	12
32217	4 x 6 re / 6	18,5	297,0	590,0	10
32218	4 x 10 re / 10	21,0	504,0	900,0	8
32219	4 x 16 re / 16	23,0	796,0	1250,0	6
32220	5 x 1,5 re / 1,5	15,0	95,0	330,0	16
32221	5 x 2,5 re / 2,5	16,0	152,0	400,0	14
32222	5 x 4 re / 4	19,0	238,0	560,0	12
32223	5 x 6 re / 6	21,0	355,0	710,0	10

Continuation ▸

NYCY power cable, 0,6/1kV, VDE approved, with concentric copper conductor

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
32224	5 x 10 re / 10	23,0	600,0	1000,0	8
32226	7 x 1,5 re / 1,5	16,0	124,0	320,0	16
32227	7 x 1,5 re / 2,5	16,0	133,0	350,0	16
32241	7 x 2,5 re / 2,5	17,5	200,0	450,0	14
32225	7 x 4 re / 4	21,0	315,0	670,0	12
32255	7 x 6 re / 6	24,0	470,0	790,0	10
32228	8 x 1,5 re / 1,5	17,0	138,0	380,0	16
32229	8 x 1,5 re / 2,5	17,0	147,0	400,0	16
32242	8 x 2,5 re / 2,5	18,0	224,0	510,0	14
32230	10 x 1,5 re / 2,5	19,0	176,0	440,0	16
32243	10 x 2,5 re / 4	20,5	286,0	600,0	14
32231	12 x 1,5 re / 2,5	20,0	205,0	500,0	16
32244	12 x 2,5 re / 4	21,0	334,0	660,0	14
32232	14 x 1,5 re / 2,5	20,5	234,0	540,0	16
32245	14 x 2,5 re / 4	22,0	382,0	760,0	14
32246	14 x 2,5 re / 6	22,5	403,0	800,0	14
32233	16 x 1,5 re / 4	22,0	276,0	600,0	16
32247	16 x 2,5 re / 6	23,0	451,0	910,0	14
32234	19 x 1,5 re / 4	23,0	320,0	690,0	16
32248	19 x 2,5 re / 6	23,5	523,0	950,0	14
32235	21 x 1,5 re / 6	24,0	369,0	810,0	16
32249	21 x 2,5 re / 10	26,0	571,0	1100,0	14
32236	24 x 1,5 re / 6	26,0	413,0	860,0	16
32250	24 x 2,5 re / 10	28,0	696,0	1300,0	14
32237	30 x 1,5 re / 6	27,0	499,0	1230,0	16
32251	30 x 2,5 re / 10	30,0	840,0	1610,0	14
32238	40 x 1,5 re / 10	30,0	696,0	1590,0	16
32252	40 x 2,5 re / 10	35,0	1080,0	2100,0	14
32239	52 x 1,5 re / 10	32,0	869,0	1820,0	16
32253	52 x 2,5 re / 10	38,0	1368,0	2500,0	14
32240	61 x 1,5 re / 10	33,0	998,0	2000,0	16
32254	61 x 2,5 re / 10	40,0	1584,0	2850,0	14

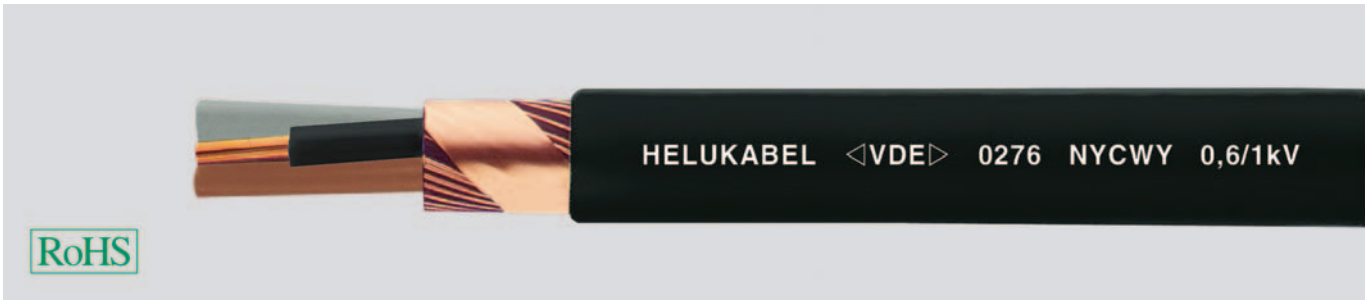
Dimensions and specifications may be changed without prior notice. (RQ01)



Suitable accessories can be found in Chapter X.

- Cable lug - copper
- Cable lug - aluminium

NYCWY power cable, 0,6/1kV, with concentric copper conductor, VDE approved



Technical data

- Power and control cable to DIN VDE 0276 part 603, HD 603 S1 and IEC 60502
- **Temperature range** flexing -5°C to +50°C fixed installation -40°C to +70°C
- Permissible **operating temperature** at conductor +70°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s) +160°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4 kV
- Max. permissible **tensile stress** with cable grip at conductor 50 N/mm²
- **Minimum bending radius** 12x cable Ø
- **Power ratings table** see Technical Informations
- **Caloric load values** see Technical Informations

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of PVC compound type DIV4 to HD 603 S1
- Core identification to DIN VDE 0293-308
- Cores concentrically stranded
- Filling compound
- Concentric conductor (Ceander), inner layer of corrugated copper wires, outer layer with copper tape
- Outer sheath of PVC compound type DMV5 to HD 603 S1
- Sheath colour black

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Highest permissible voltage

- Direct current systems 1,8 kV
- Alternating current systems
  - Single-phase systems both outer conductors insulated 1,4 kV
  - Single-phase systems one outer conductor earthed 0,7 kV
- Three-phase systems 1,2 kV with concentric conductor and a cross-section of 240 mm² and above 3,6 kV

Note

- re = round conductor, single-wire
  rm = round conductor, multi-wire
  sm = sectional conductor, multi-wire
- Available with outer sheath in alternative colours on request
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Power cables for energy supply are used for industry and distribution boards, power stations, house connecting boxes and street lighting as well as control cable for the transmission of control impulses and test datas. Overall, where increased electrical and also mechanical protection are required. Those cables are installed in open air, in underground, in water, in concrete, indoors and in cable ducts. The concentric conductor (C) is allowed to use as PE-, PEN-conductor or as screen. The corrugated design (Ceander) of the concentric conductor permits any number of cable junctions during assembly, without any conductors having to be cut. This ensures a optimal reliability.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
32260	2 x 10 re / 10	19,0	312,0	650,0	8
32261	2 x 16 re / 16	21,0	489,0	850,0	6
32262	2 x 25 rm / 25	24,0	763,0	1210,0	4
32263	3 x 10 re / 10	19,5	408,0	730,0	8
32264	3 x 16 re / 16	22,0	643,0	1000,0	6
32265	3 x 25 rm / 16	26,0	902,0	1550,0	4
32274	3 x 25 rm / 25	26,0	1003,0	1600,0	4
32266	3 x 35 sm / 16	27,0	1190,0	1750,0	2
32275	3 x 35 sm / 25	27,5	1402,0	1850,0	2
32267	3 x 50 sm / 25	29,5	1723,0	2250,0	1
32276	3 x 50 sm / 50	29,5	2000,0	2450,0	1
32268	3 x 70 sm / 35	33,0	2410,0	2950,0	2/0
32277	3 x 70 sm / 70	34,0	2796,0	3350,0	2/0
32269	3 x 95 sm / 50	38,0	3296,0	4100,0	3/0
32278	3 x 95 sm / 95	38,5	3791,0	4550,0	3/0
32270	3 x 120 sm / 70	41,0	4236,0	5050,0	4/0
32279	3 x 120 sm / 120	42,0	4786,0	5550,0	4/0
32271	3 x 150 sm / 70	45,0	5100,0	6000,0	300 kcmil
32280	3 x 150 sm / 150	46,0	5970,0	6900,0	300 kcmil
32272	3 x 185 sm / 95	50,0	6383,0	7550,0	350 kcmil
32281	3 x 185 sm / 185	51,0	7363,0	8500,0	350 kcmil
32273	3 x 240 sm / 120	57,0	8242,0	9950,0	500 kcmil
32282	4 x 10 re / 10	20,5	504,0	890,0	8
32283	4 x 16 re / 16	23,5	796,0	1250,0	6

Continuation ▸

NYCWY power cable, 0,6/1kV, with concentric copper conductor, VDE approved

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
32284	4 x 25 rm / 16	28,0	1142,0	1800,0	4
32285	4 x 35 sm / 16	29,0	1526,0	2050,0	2
32286	4 x 50 sm / 25	33,0	2203,0	2700,0	1
32287	4 x 70 sm / 35	37,0	3082,0	3750,0	2/0
32288	4 x 95 sm / 50	43,5	4208,0	5000,0	3/0
32289	4 x 120 sm / 70	47,0	5388,0	6350,0	4/0
32290	4 x 150 sm / 70	51,0	6540,0	7650,0	300 kcmil
32291	4 x 185 sm / 95	56,0	8159,0	9350,0	350 kcmil
32292	4 x 240 sm / 120	62,5	10546,0	11600,0	500 kcmil

Dimensions and specifications may be changed without prior notice. (RQ01)



Passendes Kabelzubehör finden Sie in Kapitel X.

- Kabelschuhe - Kupfer
- Kabelschuhe - Aluminium

Q

NAYY power cable, 0,6/1 kV, VDE approved



Technical data

- Power and control cable to DIN VDE 0276 part 603, HD 603 S1 and IEC 60502
- Insulation and sheath-compound of thermoplastic PVC
- **Temperature range** flexing -5°C to +50°C fixed installation -40°C to +70°C
- Permissible **operating temperature** at conductor +70°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s) ≤ 300 mm² +160°C > 300 mm² +140°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4 kV
- Max. permissible **tensile stress** with cable grip at conductor 30 N/mm²
- **Current carrying capacity** to DIN VDE 0276 part 603, in normal operation table 14 and 15, under short circuit conditions table 17
- **Minimum bending radius** single-core 15x cable Ø multi-core 12x cable Ø
- **Caloric load values** see Technical Informations

Cable structure

- Aluminium-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of PVC compound type DIV4 to HD 603 S1
- Core identification to DIN VDE 0293-308, 0276 part 603
- Cores stranded in concentric layers
- Common core sheath
- Outer sheath of PVC compound type DMV5 to HD 603 S1
- Sheath colour black

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Highest permissible voltage

- Direct current systems 1,8 kV
- Alternating current systems
  - Single-phase systems both outer conductors insulated 1,4 kV
  - Single-phase systems one outer conductor earthed 0,7 kV
- Three-phase systems 1,2 kV

Note

- re = round conductor, single-wire
  rm = round conductor, multi-wire
  se = sectional conductor, single-wire
  sm = sectional conductor, mutli-wire
- J-version = with GN-YE conductor
  O-version = without GN-YE conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Power cables for energy supply are installed in open air, in underground, in water, in concrete, indoors, in cable ducts, power stations, for industry and distribution boards as well as in subscriber networks, where mechanical damages are not be expected.

CE = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

No.cores x cross-sec. mm²		Outer Ø app. mm	Alu weight kg / km	Weight app. kg / km	J type Part no.	AWG-No.		O type Part no.	AWG-No.	
4 x 16	re	23,0	186,0	750,0	32301	6	-	32184	6	-
4 x 25	re	26,0	290,0	950,0	32302	4	-	32185	4	-
4 x 35	re	28,5	406,0	1120,0	32303	2	-	32186	2	-
4 x 50	se	30,0	580,0	1151,0	32304	1	-	32187	1	-
4 x 70	se	35,0	812,0	1549,0	32305	2/0	-	32188	2/0	-
4 x 95	se	39,5	1102,0	2030,0	32306	3/0	-	32189	3/0	-
4 x 95	sm	39,5	1102,0	2030,0	32177	3/0	-	32190	3/0	-
4 x 120	se	44,0	1392,0	2400,0	32307	4/0	-	32191	4/0	-
4 x 120	sm	44,0	1392,0	2400,0	32178	4/0	-	32192	4/0	-
4 x 150	se	46,0	1740,0	3030,0	32308	300 kcmil	-	32193	300 kcmil	-
4 x 150	sm	46,0	1740,0	3030,0	32179	300 kcmil	-	32194	300 kcmil	-
4 x 185	se	51,0	2146,0	3650,0	32309	350 kcmil	-	32195	350 kcmil	-
4 x 185	sm	51,0	2146,0	3650,0	32180	350 kcmil	-	32196	350 kcmil	-
4 x 240	se	56,0	2784,0	4800,0	32310	500 kcmil	-	32197	500 kcmil	-
4 x 240	sm	56,0	2784,0	4800,0	32181	500 kcmil	-	32198	500 kcmil	-
4 x 300	se	64,0	3480,0	5596,0	32182	600 kcmil	-	32199	600 kcmil	-
4 x 300	sm	64,0	3480,0	5596,0	32183	600 kcmil	-	32258	600 kcmil	-

Continuation ▸

NAYY power cable, 0,6/1 kV, VDE approved

No.cores x cross-sec. mm²		Outer Ø app. mm	Alu weight kg / km	Weight app. kg / km	J type Part no.	AWG-No.		O type Part no.	AWG-No.	
5 x 10	re	22,0	145,0	637,0	33275	8	-	33283	8	-
5 x 16	re	25,0	232,0	832,0	33276	6	-	33284	6	-
5 x 25	re	28,0	363,0	1175,0	33277	4	-	33285	4	-
5 x 35	re	31,0	508,0	1399,0	33278	2	-	33286	2	-
5 x 50	rm	35,0	725,0	1855,0	33279	1	-	33287	1	-
5 x 70	rm	40,0	1015,0	2351,0	33280	2/0	-	33288	2/0	-
5 x 95	rm	45,0	1378,0	3071,0	33281	3/0	-	33289	3/0	-
5 x 120	rm	49,0	1740,0	3631,0	33282	4/0	-	33290	4/0	-
5 x 150	rm	57,8	2175,0	4405,0	34041	300 kcmil	-	34042	300 kcmil	-
5 x 185	rm	61,5	2683,0	5420,0	34043	350 kcmil	-	34044	350 kcmil	-
5 x 240	rm	70,0	3480,0	6860,0	34045	500 kcmil	-	34046	500 kcmil	-

No.cores x cross-sec. mm²		Outer Ø app. mm	Alu weight kg / km	Weight app. kg / km	J type Part no.	AWG-No.		O type Part no.	AWG-No.	
1 x 35	re	13,0	102,0	240,0	32328	2	-	32311	2	-
1 x 50	re	15,0	145,0	360,0	32329	1	-	32312	1	-
1 x 70	rm	16,5	203,0	410,0	32390	2/0	-	32313	2/0	-
1 x 95	rm	19,0	276,0	570,0	32391	3/0	-	32314	3/0	-
1 x 120	rm	20,5	348,0	691,0	32392	4/0	-	32315	4/0	-
1 x 150	rm	22,5	435,0	804,0	32393	300 kcmil	-	32321	300 kcmil	-
1 x 185	rm	25,0	537,0	979,0	32394	350 kcmil	-	32322	350 kcmil	-
1 x 240	rm	28,0	696,0	1253,0	32395	500 kcmil	-	32323	500 kcmil	-
1 x 300	rm	30,0	870,0	1395,0	32396	600 kcmil	-	32324	600 kcmil	-
1 x 400	rm	34,0	1160,0	1890,0	32397	750 kcmil	-	32325	750 kcmil	-
1 x 500	rm	38,0	1450,0	2600,0	32398	1000 kcmil	-	32326	1000 kcmil	-
1 x 630	rm	43,0	1827,0	2780,0	32399	1250 kcmil	-	32327	1250 kcmil	-

Dimensions and specifications may be changed without prior notice. (RQ01)



Passendes Kabelzubehör finden Sie in Kapitel X.

- Kabelschuhe - Kupfer
- Kabelschuhe - Aluminium

Q

NAY2Y power cable, 0,6/1kV, with PE-outer sheath

NEW



Technical data

- Power and control cable to DIN VDE 0276 part 603, HD 603 S1 and IEC 60502
- **Temperature range** flexing -5°C to +50°C fixed installation -40°C to +70°C
- Permissible **operating temperature** at conductor +70°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s) +160°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4 kV
- Max. permissible **tensile stress** with cable grip at conductor 30 N/mm²
- **Minimum bending radius** 12x cable Ø

Cable structure

- Aluminium-conductor, to DIN VDE 0295 cl.1, single-wire, BS 6360 cl.1, IEC 60228 cl.1
- Core insulation of PVC
- Core identification GN-YE, BN, BK, GY
- Cores stranded in concentric layers
- Common core sheath
- Outer sheath of PE
- Sheath colour black

Properties

- outer sheath PE of not self-extinguishing and flame retardant
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Highest permissible voltage

- Direct current systems 1,8 kV
- Alternating current systems
  - Single-phase systems both outer conductors insulated 1,4 kV
  - Single-phase systems one outer conductor earthed 0,7 kV
- Three-phase systems 1,2 kV

Note

- re = round conductor, single-wire
  se = sectional conductor, single-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Power cables for energy supply are installed in open air, in underground, in water, in concrete, indoors, in cable ducts, power stations, for industry and distribution boards as well as in subscriber networks. Usable in extreme working conditions due to the robust PE outer sheath.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Alu weight kg / km	Weight app. kg / km	AWG-No.
31129	4 x 25 re	26,0	290,0	970,0	4
31139	4 x 35 re	28,0	406,0	1145,0	2
31149	4 x 50 se	30,0	580,0	1184,0	1
31159	4 x 70 se	33,0	812,0	1578,0	2/0
31169	4 x 95 se	38,0	1102,0	2186,0	3/0
31179	4 x 120 se	42,0	1382,0	2501,0	4/0
31189	4 x 150 se	45,0	1740,0	3180,0	300 kcmil
31199	4 x 185 se	51,0	2146,0	3807,0	350 kcmil
31209	4 x 240 se	55,0	2784,0	4996,0	500 kcmil

Dimensions and specifications may be changed without prior notice. (RQ01)

NAYCWY power cable, 0,6/1kV, with concentric copper conductor, VDE approved



Technical data

- Power and control cable to DIN VDE 0276 part 603, HD 603 S1 and IEC 60502
- **Temperature range** flexing -5°C to +50°C fixed installation -40°C to +70°C
- Permissible **operating temperature** at conductor +70°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s) +160°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4 kV
- Max. permissible **tensile stress** with cable grip at conductor 30 N/mm²
- **Minimum bending radius** 12x cable Ø

Cable structure

- Aluminium-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of PVC compound type DIV4 to HD 603 S1
- Core identification DIN VDE 0293-308
- Cores stranded concentrically
- Filling compound
- Concentric conductor (Ceander), inner layer of corrugated copper wires, outer layerwith copper tape
- Outer sheath of PVC compound type DMV5 to HD 603 S1
- Sheath colour black

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Highest permissible voltage

- Direct current systems 1,8 kV
- Alternating current systems
  - Single-phase systems both outer conductors insulated 1,4 kV
  - Single-phase systems one outer conductor earthed 0,7 kV
- Three-phase systems 1,2 kV with concentric conductor and a cross-section from 240 mm² 3,6 kV

Note

- re = round conductor, single-wire
  rm = round conductor, multi-wire
  sm = sectional conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

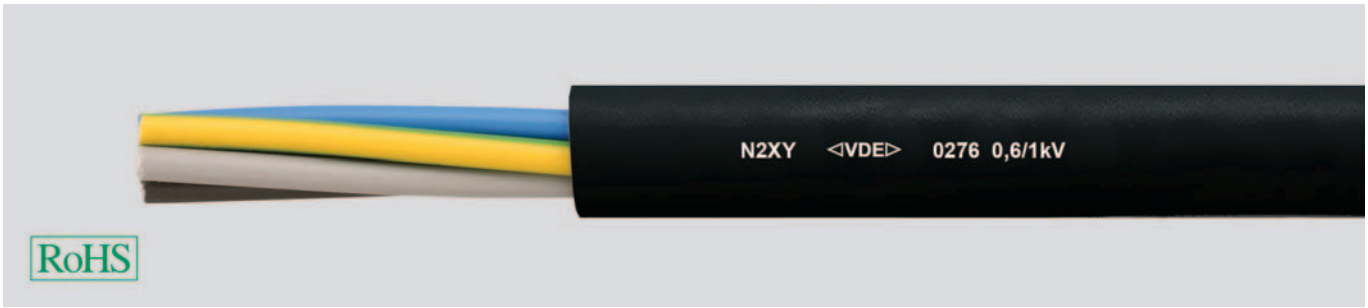
Power distribution cables, preferably used for underground installation, primarily in local networks, for industrial applications and switching systems, power stations. Wherever increased electrical and mechanical protection are required. Installation in water, outdoors, in concrete, indoors and in cable ducts. The concentric conductor (C) can be used as a PE or PEN conductor or as a screen. The corrugated design (Ceander) of the conc entric conductor permits any number of cable junctions during assembly, without any conductors having to be cut. This ensures a optimal reliability.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Alu weight kg / km	Weight app. kg / km	AWG-No.
36009	3 x 10 re / 10	20,2	88,0	87,0	603,0	8
36010	3 x 16 re / 16	22,3	125,0	139,0	754,0	6
36011	3 x 25 re / 25	25,5	170,0	218,0	1043,0	4
36012	3 x 25 rm / 16	26,6	125,0	218,0	1046,0	4
36013	3 x 25 rm / 25	26,6	170,0	218,0	1101,0	4
36014	3 x 35 re / 35	27,6	240,0	305,0	1243,0	2
36015	3 x 35 sm / 16	26,4	125,0	305,0	1002,0	2
36016	3 x 35 sm / 35	26,4	240,0	305,0	1107,0	2
36017	3 x 50 sm / 25	29,4	170,0	435,0	1283,0	1
36018	3 x 70 sm / 35	32,6	240,0	609,0	1633,0	2/0
36019	3 x 70 sm / 70	33,4	475,0	609,0	1838,0	2/0
36020	3 x 95 sm / 50	38,1	340,0	827,0	2136,0	3/0
36021	3 x 95 sm / 95	38,1	640,0	827,0	2449,0	3/0
36022	3 x 120 sm / 50	40,8	340,0	1044,0	2517,0	4/0
36023	3 x 120 sm / 70	40,8	475,0	1044,0	2612,0	4/0
36024	3 x 150 sm / 70	44,9	475,0	1305,0	3019,0	300 kcmil
36025	3 x 150 sm / 150	45,5	1000,0	1305,0	3517,0	300 kcmil
36026	3 x 185 sm / 70	49,8	475,0	1610,0	3741,0	350 kcmil
36027	3 x 185 sm / 95	49,8	640,0	1610,0	3895,0	350 kcmil
36028	3 x 240 sm / 70	55,4	475,0	2088,0	4539,0	500 kcmil
36029	3 x 240 sm / 120	55,8	800,0	2088,0	4838,0	500 kcmil
36030	3 x 240 sm / 240	56,0	1665,0	2088,0	5611,0	500 kcmil
32840	4 x 16 re / 16	23,9	125,0	186,0	801,0	6
32841	4 x 25 re / 16	28,9	125,0	290,0	1243,0	4
32842	4 x 35 re / 16	30,3	125,0	406,0	1282,0	2
32843	4 x 50 sm / 25	34,8	170,0	580,0	1689,0	1
32844	4 x 70 sm / 35	38,6	240,0	814,0	2074,0	2/0
32845	4 x 95 sm / 50	44,4	340,0	1102,0	2779,0	3/0
32846	4 x 120 sm / 70	48,7	475,0	1392,0	3365,0	4/0
32847	4 x 150 sm / 70	53,3	475,0	1740,0	3813,0	300 kcmil
32848	4 x 185 sm / 95	59,1	640,0	2146,0	4877,0	350 kcmil
32849	4 x 240 sm / 120	66,0	800,0	2784,0	6017,0	500 kcmil

Dimensions and specifications may be changed without prior notice.

N2XY power cable, 0,6/1kV, VDE approved, higher current carrying capacity



Technical data

- Power and control cable to DIN VDE 0276 part 603, HD 603 S1 and IEC 60502
- **Temperature range** flexing -5°C to +50°C fixed installation -40°C to +70°C
- Permissible **operating temperature** at conductor +90°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s) +250°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4 kV Max. permissible **tensile stress** with cable grip at comductor 50 N/mm²
- **Minimum bending radius** single-core 15x cable Ø multi-core 12x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of cross-linked polyethylene (XLPE) compound type DIX3 to HD 603 S1
- Core identification to DIN VDE 0293-308, 0276 part 603
- Cores stranded in concentric layers
- Outer sheath of PVC compound type DMV6/DMP2 to HD 603 S1
- Sheath colour black

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 Test method B)

Highest permissible voltage

- Direct current systems 1,8 kV
- Alternating current systems
  - Single-phase systems both outer conductors insulated 1,4 kV
  - Single-phase systems one outer conductor earthed 0,7 kV
- Three-phase systems 1,2 kV

Note

- re = round conductor, single-wire
  rm = round conductor, multi-wire
  sm = sectional conductor, multi-wire
- J-version = with GN-YE conductor
  O-version = without GN-YE conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

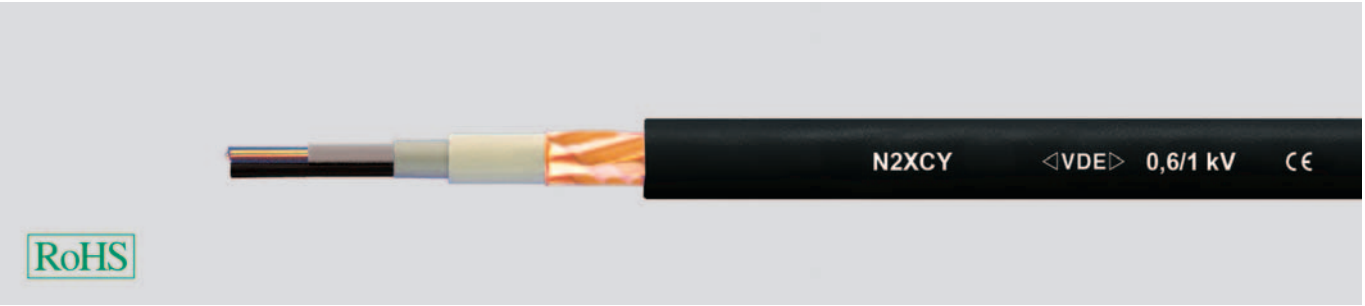
Power distribution cables for use in underground, in water, outdoors, in concrete, indoors, in cable ducts, for power stations, industrial applications and switching systems, as well as in local networks if no mechanical damage is expected. Respecting the permissible operating temperature at the conductor of +90°C permits a higher current carrying capacity than PVC insulated power distribution cables.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

No.cores x cross-sec. mm²		Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	J type Part no.	AWG-No.		O type Part no.	AWG-No.	
1 x 16	re	11,5	154,0	242,0	32850	6	-	32862	6	-
1 x 25	rm	12,5	240,0	362,0	32851	4	-	32863	4	-
1 x 35	rm	13,5	336,0	470,0	32852	2	-	32864	2	-
1 x 50	rm	15,5	480,0	620,0	32853	1	-	32865	1	-
1 x 70	rm	17,0	672,0	805,0	32854	2/0	-	32866	2/0	-
1 x 95	rm	19,0	912,0	1108,0	32855	3/0	-	32867	3/0	-
1 x 120	rm	20,5	1152,0	1360,0	32856	4/0	-	32868	4/0	-
1 x 150	rm	23,0	1440,0	1670,0	32857	300 kcmil	-	32869	300 kcmil	-
1 x 185	rm	25,5	1776,0	2050,0	32858	350 kcmil	-	32870	350 kcmil	-
1 x 240	rm	28,5	2304,0	2635,0	32859	500 kcmil	-	32871	500 kcmil	-
1 x 300	rm	30,0	2880,0	3200,0	32860	600 kcmil	-	32872	600 kcmil	-
1 x 400	rm	34,0	3840,0	4150,0	32861	750 kcmil	-	32873	750 kcmil	-
4 x 16	rm	21,5	614,0	1042,0	32874	6	-	32884	6	-
4 x 25	rm	26,0	960,0	1640,0	32875	4	-	32885	4	-
4 x 35	rm	27,5	1344,0	1760,0	32876	2	-	32886	2	-
4 x 50	sm	30,0	1920,0	2350,0	32877	1	-	32887	1	-
4 x 70	sm	34,0	2688,0	3100,0	32878	2/0	-	32888	2/0	-
4 x 95	sm	39,0	3648,0	4250,0	32879	3/0	-	32889	3/0	-
4 x 120	sm	42,5	4608,0	5300,0	32880	4/0	-	32890	4/0	-
4 x 150	sm	47,5	5760,0	6400,0	32881	300 kcmil	-	32891	300 kcmil	-
4 x 185	sm	52,0	7104,0	8500,0	32882	350 kcmil	-	32892	350 kcmil	-
4 x 240	sm	58,0	9216,0	11000,0	32883	500 kcmil	-	32893	500 kcmil	-

Dimensions and specifications may be changed without prior notice. (RQ02)

N2XCY power cable, 0,6/1kV, VDE approved, higher current carrying capacity



Technical data

- Power and control cable to DIN VDE 0276 part 603, HD 603 S1 and IEC 60502, 7 cores and above to DIN VDE 0276 part 627, HD 627 S1 and IEC 60502
- **Temperature range** flexing -5°C to +50°C fixed installation -40°C to +70°C
- Permissible **operating temperature** at conductor +90°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s) +250°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4 kV
- Max. permissible **tensile stress** with cable grip at conductor 50 N/mm²
- **Minimum bending radius** 12x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of cross-linked polyethylene (XLPE) compound type DIX3 to HD 603 S1
- Core identification to DIN VDE 0293-308
- Cores stranded in concentric layers
- Filling compound
- Concentric conductor, inner layer of round bare copper wires, outer layer of copper tape as counter helix
- Outer sheath of PVC compound type DMV6 to HD 603 S1
- Sheath colour black

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Highest permissible voltage

- Direct current systems 1,8 kV
- Alternating current systems
  - Single-phase systems both outer conductors insulated 1,4 kV
  - Single-phase systems one outer conductor earthed 0,7 kV
- Three-phase systems 1,2 kV

Note

- re = round conductor, single-wire
  rm = round conductor, multi-wire
  sm = sectional conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Power distribution cables for industrial applications and switching systems, power stations, residental connections and street lighting, as well as control cables for transmitting control pulses and measurements. Wherever increased electrical and mechanical protection are required. For installation in underground, in water, outdoors, in concrete and cable ducts. Respecting the permissible operating temperature at the conductor of +90°C permits a higher current carrying capacity than PVC insulated power distribution cables. The concentric conductor (C) can be used as a PE or PEN-conductor or as a screen.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
33212	2 x 1,5 re / 1,5	13,0	53,0	205,0	16
33213	2 x 2,5 re / 2,5	13,5	80,0	270,0	14
33214	2 x 4 re / 4	15,5	123,0	360,0	12
33215	2 x 6 re / 6	17,0	182,0	435,0	10
33216	2 x 10 re / 10	19,5	312,0	590,0	8
33217	2 x 16 re / 16	20,5	489,0	820,0	6
33218	3 x 1,5 re / 1,5	13,5	66,0	225,0	16
33219	3 x 2,5 re / 2,5	14,5	104,0	290,0	14
33220	3 x 4 re / 4	16,5	161,0	400,0	12
33221	3 x 6 re / 6	17,5	240,0	510,0	10
33222	3 x 10 re / 10	20,0	408,0	850,0	8
33223	3 x 16 re / 16	23,0	643,0	1080,0	6
33224	3 x 25 rm / 16	25,1	902,0	1295,0	4
33225	3 x 25 rm / 25	25,0	1003,0	1375,0	4
33226	3 x 35 sm / 16	25,1	1190,0	1441,0	2
33227	3 x 35 sm / 35	25,4	1402,0	1619,0	2
33228	3 x 50 sm / 25	27,3	1723,0	1902,0	1
33229	3 x 50 sm / 50	27,7	2000,0	2107,0	1
33230	3 x 70 sm / 35	32,2	2410,0	2700,0	2/0
33231	3 x 70 sm / 70	32,7	2796,0	3005,0	2/0
33232	3 x 95 sm / 50	35,3	3296,0	3588,0	3/0
33233	3 x 95 sm / 95	35,8	3791,0	4017,0	3/0
33234	3 x 120 sm / 120	38,9	4786,0	4998,0	4/0
33235	3 x 120 sm / 70	38,9	4236,0	4534,0	4/0
33236	3 x 150 sm / 120	43,4	5970,0	5937,0	300 kcmil
33237	3 x 150 sm / 70	43,4	5100,0	5473,0	300 kcmil
33238	3 x 185 sm / 95	47,4	6383,0	6831,0	350 kcmil
33239	3 x 240 sm / 120	52,5	8242,0	8809,0	500 kcmil

Continuation ▸

N2XCY power cable, 0,6/1kV, VDE approved, higher current carrying capacity

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
33240	4 x 1,5 re / 1,5	14,5	81,0	260,0	16
33241	4 x 2,5 re / 2,5	15,5	128,0	350,0	14
33242	4 x 4 re / 4	17,0	200,0	470,0	12
33243	4 x 6 re / 6	18,5	297,0	590,0	10
33244	4 x 10 re / 10	21,0	504,0	900,0	8
33245	4 x 16 re / 16	23,0	796,0	1250,0	6
33246	4 x 25 re / 16	27,2	1142,0	1559,0	4
33247	4 x 35 sm / 16	27,2	1526,0	1812,0	2
33248	4 x 50 sm / 25	30,6	2203,0	2413,0	1
33249	4 x 70 sm / 35	35,9	3082,0	3420,0	2/0
33250	4 x 95 sm / 50	39,5	4208,0	4561,0	3/0
33251	4 x 120 sm / 16	44,5	5388,0	5819,0	4/0
33252	4 x 150 sm / 70	48,6	6540,0	6972,0	300 kcmil
33253	5 x 1,5 re / 1,5	15,0	95,0	330,0	16
33254	5 x 2,5 re / 2,5	16,0	152,0	400,0	14
33255	5 x 4 re / 4	19,0	238,0	560,0	12
33256	5 x 6 re / 6	21,0	355,0	710,0	10
33257	5 x 10 re / 10	23,0	600,0	1000,0	8
33258	5 x 16 re / 16	24,3	931,0	1233,0	6
33259	7 x 1,5 re / 1,5	16,0	133,0	350,0	16
33260	7 x 2,5 re / 2,5	17,5	200,0	450,0	14
33261	7 x 4 re / 4	21,0	315,0	670,0	12
33262	7 x 6 re / 6	24,0	470,0	790,0	10
33263	10 x 1,5 re / 2,5	19,0	176,0	440,0	16
33264	10 x 2,5 re / 4	20,5	286,0	600,0	14
33265	12 x 1,5 re / 2,5	20,0	205,0	500,0	16
33266	12 x 2,5 re / 4	21,0	334,0	660,0	14
33267	14 x 1,5 re / 2,5	20,5	234,0	540,0	16
33268	14 x 2,5 re / 6	22,5	403,0	800,0	14
33269	19 x 1,5 re / 2,5	23,0	320,0	690,0	16
33270	19 x 2,5 re / 6	23,5	523,0	950,0	14
33271	30 x 1,5 re / 2,5	27,0	499,0	1230,0	16
33272	30 x 2,5 re / 10	30,0	840,0	1610,0	14
33273	40 x 1,5 re / 2,5	30,0	696,0	1590,0	16
33274	40 x 2,5 re / 10	35,0	1080,0	2100,0	14

Dimensions and specifications may be changed without prior notice. (RQ01)



Passendes Kabelzubehör finden Sie in Kapitel X.

- Kabelschuhe - Kupfer
- Kabelschuhe - Aluminium

NA2XY power cable, 0,6/1kV, VDE approved, higher current carrying capacity



Technical data

- Power and control cable to DIN VDE 0276 Part 603, HD 603 S1 and IEC 60502
- **Temperature range** flexing -5°C to +50°C fixed installation -40°C to +70°C
- Permissible **operating temperature** at conductor +90°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s) +250°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4 kV
- Max. permissible **tensile stress** with cable grip at conductor 30 N/mm²
- **Minimum bending radius** single-core 15x cable Ø multi-core 12x cable Ø

Cable structure

- Aluminium-conductor to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of cross-linked polyethylene (XLPE) compound type DIX3 to HD 603 S1
- Core identification to DIN VDE 0293-308, 0276 part 603
- Cores stranded in concentric layers
- Outer sheath of PVC compound type DMV6/DMP2 to HD 603 S1
- Sheath colour black

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Highest permissible voltage

- Direct current systems 1,8 kV
- Alternating current systems
  - Single-phase systems both outer conductors insulated 1,4 kV
  - Single-phase systems one outer conductor earthed 0,7 kV
- Three-phase systems 1,2 kV

Note

- re = round conductor, single-wire
  rm = round conductor, multi-wire
  se = sectional conductor, single-wire
- J-version = with GN-YE conductor
  O-version = without GN-YE conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

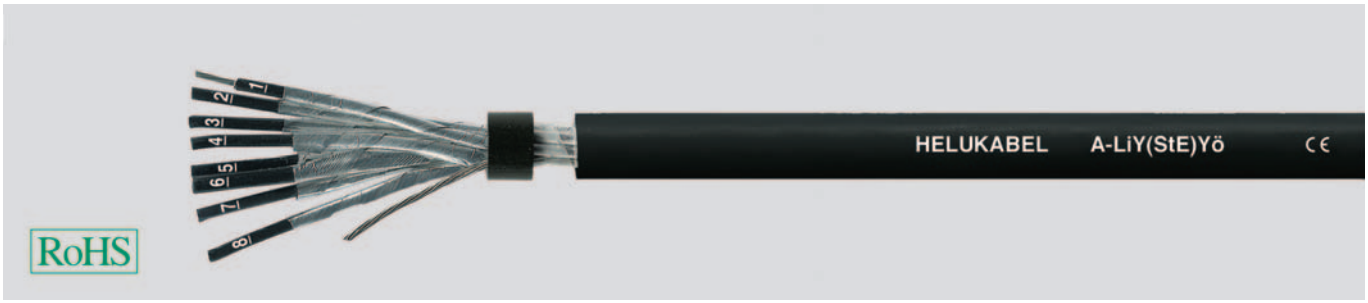
Power distribution cables for use in underground, in water, outdoors, in concrete, indoors, in cable ducts, for power stations, industrial applications and switching systems, as well as in local networks if no mechanical damage is expected. Respecting the permissible operating temperature at the conductor of +90°C permits a higher current carrying capacity than PVC insulated power distribution cables.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

No.cores x cross-sec. mm²		Outer Ø app. mm	Alu weight kg / km	Weight app. kg / km	J type Part no.	AWG-No.		O type Part no.	AWG-No.	
1 x 16	re	11,5	47,0	98,0	33113	6	-	33125	6	-
1 x 25	re	12,5	73,0	150,0	33114	4	-	33126	4	-
1 x 35	re	13,5	102,0	241,0	33115	2	-	33127	2	-
1 x 50	rm	15,5	145,0	357,0	33116	1	-	33128	1	-
1 x 70	rm	17,0	203,0	409,0	33117	2/0	-	33129	2/0	-
1 x 95	rm	19,0	276,0	570,0	33118	3/0	-	33130	3/0	-
1 x 120	rm	20,5	348,0	590,0	33119	4/0	-	33131	4/0	-
1 x 150	rm	23,0	435,0	804,0	33120	300 kcmil	-	33132	300 kcmil	-
1 x 185	rm	25,5	537,0	978,0	33121	350 kcmil	-	33133	350 kcmil	-
1 x 240	rm	28,5	696,0	1253,0	33122	500 kcmil	-	33134	500 kcmil	-
1 x 300	rm	30,0	870,0	1394,0	33123	600 kcmil	-	33135	600 kcmil	-
1 x 400	rm	34,0	1160,0	1890,0	33124	750 kcmil	-	33136	750 kcmil	-
4 x 16	re	21,5	186,0	750,0	33137	6	-	33147	6	-
4 x 25	re	26,0	290,0	950,0	33138	4	-	33148	4	-
4 x 35	re	27,5	406,0	1120,0	33139	2	-	33149	2	-
4 x 50	se	30,0	580,0	1251,0	33140	1	-	33150	1	-
4 x 70	se	34,0	812,0	1548,0	33141	2/0	-	33151	2/0	-
4 x 95	se	39,0	1102,0	2030,0	33142	3/0	-	33152	3/0	-
4 x 120	se	42,5	1392,0	2400,0	33143	4/0	-	33153	4/0	-
4 x 150	se	47,5	1740,0	3030,0	33144	300 kcmil	-	33154	300 kcmil	-
4 x 185	se	52,0	2146,0	3650,0	33145	350 kcmil	-	33155	350 kcmil	-
4 x 240	se	58,0	2784,0	4800,0	33146	500 kcmil	-	33156	500 kcmil	-

Dimensions and specifications may be changed without prior notice. (RQ02)

A-LiY(StE)YÖ Data transmission cables for petrol stations and refineries with BAM*-test report



Technical data

- Oil- and fuel-resistant data transmission cables
- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -40°C to +70°C
- **Nominal voltage** 200 V
- **Insulation resitance**
  min. 100 MOhm x km
- **Minimum bending radius**
  20x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper-conductor, fine-wire
  Part.-No. 32597, 32599
  Tinned copper-conductor, single-wire
  Part.-No. 32633
- Core insulation of special PVC
  to DIN VDE 0207
- Core identification black cores with continuous white numbering
- Each single core screened with aluminium/ polyester foil, metal layer at outside
- Screened cores in layers with optimal lay-lenght screenings of each core make contact mutually
- Solid copper drain-wire Part.-No. 32633
  copper drain-wire Part.-No. 32597, 32599
- Common core sheath
- Outer sheath of special PVC
- Sheath colour black

Properties

Tests

- Compound characteristic acc. to DIN VDE 0207
- Oil- and fuel resistance of sheath:
  acc. to BAM-Specification
- Oil-resistance of sheath:
  DIN ISO 6722 part 1, 4.11,
  DIN EN 60811-404
- Fuel-resistance of sheath:
  DIN ISO 6722 part 1, 4.12
- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2,
  DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- **BAM** = Federal Institute for Materials Research and Testing
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

These data transmission cables, oil- and fuel-resistant, are used for internal and external wiring applications at petrol pumps, for data transmission from the pumps to the cash desk and in the installation of video surveillance systems. These cables are also installed directly in the ground and are resistant to UV radiation. Special screens over individual cores guarantee good overall screening and ensure an interference-free transmission of control pulses.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
32597	4 x 0,75	9,0	38,0	105,0	18
32633	7 x 0,75	10,3	60,0	150,0	18

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
32599	8 x 0,75	11,0	68,0	169,0	18

Dimensions and specifications may be changed without prior notice. (RQ01)



Passendes Kabelzubehör finden Sie in Kapitel X.

- Kabelschuhe - Kupfer
- Kabelschuhe - Aluminium

Petrol Station Cables (N)YYÖ-J 0,6/1 kV



Technical data

- Power and data transmission cable adapted to DIN VDE 0271
- **Temperature range** flexing -5°C to +50°C fixed installation -30°C to +70°C
- Permissible **operating temperature** at conductor +70°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4 kV
- Max. permissible **tensile stress** with cable grip at conductor 50 N/mm²
- **Minimum bending radius** 12x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.1, single-wire, BS 6360 cl.1, IEC 60228 cl.1
- Core insulation of PVC
- Core identification to DIN VDE 0293-308
- Concentric lay-up of cores
- Outer sheath of PVC
- Sheath colour black [1)]

Properties

Tests

- Oil and fuel-resistant acc. to DIN ISO 6722
- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- DIN VDE 0298 part 1 is shall be observed.

Note

- [1)] Version with blue outer sheath on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Energy and data transmission cables for outdoor use, in the soil, water and concrete, where mechanical damage is excluded . For installations in applications such as gas stations and refineries, where resistance to oils and fuels is required .

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
32592	2 x 1,5	11,0	29,0	180,0	16
32593	3 x 1,5	11,5	43,0	225,0	16
32594	4 x 1,5	12,0	58,0	260,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
32595	5 x 1,5	13,0	72,0	280,0	16
32596	7 x 1,5	15,5	101,0	370,0	16

Dimensions and specifications may be changed without prior notice. (RQ01)



Passendes Kabelzubehör finden Sie in Kapitel X.
• Kabelschuhe - Kupfer
• Kabelschuhe - Aluminium

NYKY-J 0,6/1kV with lead sheath, VDE approved



Technical data

- Power and control cable, PVC insulation and lead inner-sheath to DIN VDE 0265
- **Temperature range**
  flexing -5°C to +50°C
  fixed installation -30°C to +70°C
- Permissible **operating temperature** at conductor +70°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s) +160°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 6 kV
- **Minimum bending radius** 12x cable Ø
- **Power ratings table** see Technical Informations

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of PVC compound type DIV4 to DIN VDE 0276 part 603
- Core identification to DIN VDE 0293-308
  - up to 5 cores coloured
  - from 7 cores, black with continuous white numbering
- GN-YE conductor
- Cores stranded concentrically
- Overall sheath of soft plastics material, if exists, ermits also as extrusion or taping or a combination of both
- Lead inner sheath, jointless and enclosed
- Outer sheath of PVC compound type DMV5 to DIN VDE 0276 part 603
- Sheath colour black

Properties

- **Advantage**
  Good coupling resistance due to enclosed lead sheath is suitable for special **EMC-requirements** (Electromagnetic Compatibility)
- **Resistant to**
  Turpentine substitute
  Xylol
  Fuels
  Trichlor
  Oils
  Petroleum
  Toluene
  Hydrocarbon
- The lead sheath is **not** permitted to use as neutral-conductor (N)
- If drain-wire exists, only for use as earthing of lead sheath in a grounding system e.g. in hazardous areas to DIN VDE 0165. This drain-wire is **not** allowed to install as protective, neutral or earth conductor

Note

- re = round conductor, single-wire
  sm = sectional conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

These cables of PVC insulation and lead inner-sheath are installed everywhere, where the danger of chemical reaction of solvents, energy fuels, oils, gasolines or of that kind in filling stations particularly in petrol pump areas for carburetor propellants, in refining plants and in chemical industries are to be caused. Suitable for installation under ground, in water, indoor areas and cable conduits.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Lead weight kg / km	Weight app. kg / km	AWG-No.
32640	3 x 1,5 re	13,5	43,0	427,0	598,0	16
32686	3 x 1,5 re / 1,5	14,5	57,0	427,0	610,0	16
32641	3 x 2,5 re	14,8	72,0	487,0	690,0	14
32642	3 x 4 re	16,2	115,0	555,0	840,0	12
32643	3 x 6 re	17,3	173,0	610,0	990,0	10
32644	3 x 25 rm / 16	27,8	874,0	1290,0	2550,0	4
32645	3 x 35 sm / 16	29,2	1162,0	1340,0	3080,0	2
32646	3 x 50 sm / 25	32,7	1680,0	1670,0	3850,0	1
32647	3 x 70 sm / 35	35,8	2352,0	2020,0	5360,0	2/0
32648	3 x 95 sm / 50	40,3	3216,0	2440,0	6950,0	3/0
32649	3 x 120 sm / 70	43,2	4128,0	2770,0	8235,0	4/0
32650	3 x 150 sm / 70	48,8	4992,0	3530,0	9620,0	300 kcmil
32651	3 x 185 sm / 95	53,4	6240,0	4230,0	11940,0	350 kcmil
32652	3 x 240 sm / 120	59,8	8064,0	5230,0	15380,0	500 kcmil

Continuation ▸

NYKY-J 0,6/1kV with lead sheath, VDE approved

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Lead weight kg / km	Weight app. kg / km	AWG-No.
32653	4 x 1,5 re	14,5	58,0	464,0	650,0	16
32687	4 x 1,5 re / 1,5	15,3	72,0	464,0	650,0	16
32654	4 x 2,5 re	15,5	96,0	530,0	760,0	14
32655	4 x 4 re	17,5	154,0	605,0	960,0	12
32656	4 x 6 re	18,5	230,0	665,0	1100,0	10
32657	4 x 10 re	21,3	384,0	750,0	1400,0	8
32658	4 x 16 re	24,2	614,0	975,0	1910,0	6
32659	4 x 25 rm	28,5	960,0	1290,0	2750,0	4
32660	4 x 35 rm	30,5	1344,0	1340,0	3630,0	2
32661	4 x 50 sm	33,3	1920,0	1680,0	4580,0	1
32662	4 x 70 sm	37,5	2688,0	2020,0	5340,0	2/0
32663	4 x 95 sm	42,3	3648,0	2440,0	7120,0	3/0
32664	5 x 1,5 re	15,3	72,0	505,0	710,0	16
32688	5 x 1,5 re / 1,5	16,4	86,0	505,0	780,0	16
32665	5 x 2,5 re	17,2	120,0	580,0	910,0	14
32666	5 x 4 re	19,4	192,0	665,0	1090,0	12
32667	5 x 6 re	20,2	288,0	730,0	1270,0	10
32668	5 x 10 re	22,8	480,0	930,0	1700,0	8
32669	5 x 16 re	26,4	768,0	1070,0	2231,0	6
32670	7 x 1,5 re	17,2	101,0	545,0	810,0	16
32689	7 x 1,5 re / 1,5	17,2	115,0	545,0	970,0	16
32678	7 x 2,5 re	18,0	168,0	625,0	1070,0	14
32671	10 x 1,5 re	21,3	144,0	680,0	918,0	16
32679	10 x 2,5 re	22,4	240,0	865,0	1330,0	14
32672	12 x 1,5 re	21,3	173,0	710,0	988,0	16
32680	12 x 2,5 re	23,2	288,0	940,0	1440,0	14
32673	14 x 1,5 re	21,3	202,0	735,0	1100,0	16
32681	14 x 2,5 re	24,5	336,0	980,0	1530,0	14
32674	19 x 1,5 re	23,0	274,0	900,0	1440,0	16
32682	19 x 2,5 re	26,0	456,0	1170,0	1680,0	14
32675	24 x 1,5 re	27,3	346,0	1170,0	1610,0	16
32683	24 x 2,5 re	31,0	576,0	1370,0	2160,0	14
32676	30 x 1,5 re	28,2	432,0	1240,0	1830,0	16
32684	30 x 2,5 re	32,3	720,0	1550,0	2530,0	14
32677	40 x 1,5 re	31,4	576,0	1390,0	2300,0	16
32685	40 x 2,5 re	36,4	960,0	1770,0	3310,0	14

Dimensions and specifications may be changed without prior notice. (RQ01)



Passendes Kabelzubehör finden Sie in Kapitel X.

- Kabelschuhe - Kupfer
- Kabelschuhe - Aluminium

LOW-VOLTAGE & SAFETY CABLES



N2XH power cable, 0,6/1 kV, halogen-free, without functionality



Technical data

- Power and control cable acc. to DIN VDE 0276 part 604, HD 604 S1 part 1 and part 5G
- **Temperature range** during installation -5°C to +50°C fixed installation -30°C to +90°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4 kV
- **Minimum bending radius** single-core 15x cable Ø multi-core 12x cable Ø
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)
- **Caloric load values** see Technical Informations

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of cross-linked polyethylene (XLPE) compound type 2XI1 to HD 604 S1
- Core identification to DIN VDE 0293-308
- Core identification for 3+½ conductor J-type: GN-YE (½), BN, BK, GY O-type: BU (½), BN, BK, GY
- Cores stranded in layers (for multi-core cables)
- Overall filled inner sheath
- Covered by filling compound or taping
- Outer sheath of thermoplastic polyolefine, compound type HM4 to HD 604 S1
- Sheath colour black

Properties

- Halogen-free, no separation of corrosive or toxic gases
- Limited propagation of fire
- Low smoke development
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Note

- re = round conductor, single-wire rm = round conductor, multi-wire sm = sectional conductor, mutli-wire
- J-version = with GN-YE conductor O-version = without GN-YE conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- **LS0H** = Low Smoke Zero Halogen

Application

Halogen-free power cables with enhanced characteristics in case of fire are used for applications where harm to human life and damage to property must be prevented in the event of fire, e. g. in power stations, industrial installations, communal establishments, hotels, airports, underground stations, railway stations, hospitals department stores, banks, schools theaters, multi-storey buildings, process control centres etc. Suitable for fixed installation in dry, damp or wet environments, in, above, on and beneath plaster as well as in masonary walls and in concrete. These cables are suitable for outdoor applications and in underground by using in conduits or tubes. For the installation in conduit all precautions must be taken that no accumulation of water can occur in the pipes.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no. J type	O type	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
	53558	1 x 1,5 rm	6,0	14,4	41,0	16
	53559	1 x 2,5 rm	6,5	24,0	53,0	14
53100	53248	1 x 4 re	8,0	39,0	68,0	12
53101	53249	1 x 6 re	9,0	58,0	90,0	10
53102	53250	1 x 10 re	9,0	96,0	140,0	8
53103	53251	1 x 16 re	10,0	154,0	190,0	6
53104	53252	1 x 25 rm	11,0	240,0	290,0	4
53105	53253	1 x 35 rm	12,0	336,0	390,0	2
53106	53254	1 x 50 rm	15,0	480,0	510,0	1
53107	53255	1 x 70 rm	17,0	672,0	710,0	2/0
53108	53256	1 x 95 rm	19,0	912,0	960,0	3/0
53109	53257	1 x 120 rm	21,0	1152,0	1200,0	4/0
53110	53258	1 x 150 rm	23,0	1440,0	1480,0	300 kcmil
53111	53259	1 x 185 rm	25,0	1776,0	1910,0	350 kcmil
53112	53260	1 x 240 rm	28,0	2304,0	2370,0	500 kcmil
53113	53261	1 x 300 rm	30,0	2880,0	2970,0	600 kcmil
52485	52486	1 x 400 rm	32,9	3840,0	3957,0	750 kcmil

Part no. J type	O type	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
53114	53262	2 x 1,5 re	12,0	29,0	185,0	16
53115	53263	2 x 2,5 re	12,2	48,0	220,0	14
53116	53264	2 x 4 re	13,2	77,0	275,0	12
53117	53265	2 x 6 re	14,1	115,0	335,0	10
53118	53266	2 x 10 re	16,2	192,0	450,0	8
53119	53267	2 x 16 re	17,8	307,0	620,0	6
53120	53268	2 x 25 rm	21,0	480,0	930,0	4

Continuation ▸

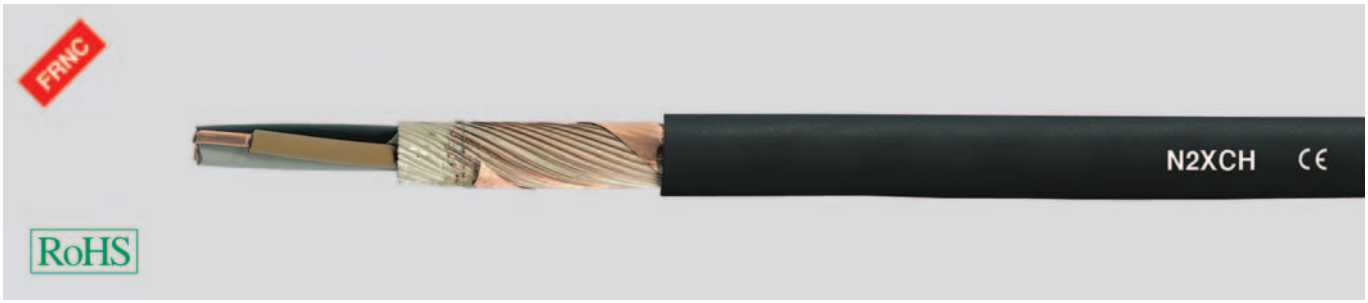
N2XH power cable, 0,6/1 kV, halogen-free, without functionality

Part no. J type	O type	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
53121	53269	3 x 1,5 re	13,0	43,0	220,0	16
53122	53270	3 x 2,5 re	14,0	72,0	280,0	14
53123	53271	3 x 4 re	15,0	115,0	350,0	12
53124	53272	3 x 6 re	16,0	173,0	420,0	10
53125	53273	3 x 10 re	18,0	288,0	600,0	8
53126	53274	3 x 16 re	20,0	461,0	770,0	6
53127	53275	3 x 25 rm	21,8	720,0	1120,0	4
53128	53276	3 x 35 sm	24,9	1008,0	1550,0	2
53129	53277	3 x 50 sm	25,2	1440,0	1750,0	1
53130	53278	3 x 70 sm	29,2	2016,0	2450,0	2/0
53131	53279	3 x 95 sm	32,0	2736,0	3250,0	3/0
53132	53280	3 x 120 sm	34,9	3456,0	4000,0	4/0
53133	53281	3 x 150 sm	39,2	4320,0	5000,0	300 kcmil
53134	53282	3 x 185 sm	44,1	5328,0	6150,0	350 kcmil
53135	53283	3 x 240 sm	49,2	6912,0	8000,0	500 kcmil
53143	53284	4 x 1,5 re	13,0	58,0	235,0	16
53144	53285	4 x 2,5 re	14,0	96,0	290,0	14
53145	53286	4 x 4 re	15,0	154,0	370,0	12
53146	53287	4 x 6 re	16,0	230,0	470,0	10
53147	53288	4 x 10 re	18,0	384,0	670,0	8
53148	53289	4 x 16 re	20,0	614,0	930,0	6
53149	53290	4 x 25 rm	25,0	960,0	1440,0	4
53150	53291	4 x 35 sm	27,0	1344,0	1890,0	2
53151	53292	4 x 50 sm	28,0	1920,0	2300,0	1
53152	53293	4 x 70 sm	32,0	2688,0	3200,0	2/0
53153	53294	4 x 95 sm	36,0	3648,0	4250,0	3/0
53154	53295	4 x 120 sm	40,2	4608,0	5350,0	4/0
53155	53296	4 x 150 sm	45,8	5760,0	6550,0	300 kcmil
53156	53297	4 x 185 sm	49,5	7104,0	8100,0	350 kcmil
53157	53298	4 x 240 sm	56,0	9216,0	10550,0	500 kcmil
53158	53299	5 x 1,5 re	14,5	72,0	280,0	16
53159	53309	5 x 2,5 re	16,0	120,0	350,0	14
53160	53310	5 x 4 re	17,0	192,0	450,0	12
53161	53311	5 x 6 re	18,5	288,0	600,0	10
53162	53312	5 x 10 re	21,0	480,0	850,0	8
53163	53313	5 x 16 re	24,0	768,0	1200,0	6
53557		5 x 25 rm	28,0	1200,0	1539,0	4
53164	53314	7 x 1,5 re	15,5	101,0	350,0	16
53171	53315	7 x 2,5 re	17,0	168,0	370,0	14
53178	53316	7 x 4 re	17,2	269,0	530,0	12
53165	53317	10 x 1,5 re	18,5	144,0	480,0	16
53172	53318	10 x 2,5 re	20,0	240,0	500,0	14
53166	53319	12 x 1,5 re	19,0	173,0	520,0	16
53173	53320	12 x 2,5 re	21,0	288,0	560,0	14
53179	53321	12 x 4 re	21,2	461,0	800,0	12
53167	53322	14 x 1,5 re	20,0	202,0	550,0	16
53174	53323	14 x 2,5 re	22,0	336,0	630,0	14
53168	53324	19 x 1,5 re	22,0	274,0	700,0	16
53175	53325	19 x 2,5 re	24,0	456,0	800,0	14
53169	53326	24 x 1,5 re	25,0	346,0	850,0	16
53176	53327	24 x 2,5 re	27,0	576,0	990,0	14
53170	53328	30 x 1,5 re	26,0	432,0	950,0	16
53177	53329	30 x 2,5 re	28,0	720,0	1180,0	14

Part no. J type	O type	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
53136	53330	3 x 50 / 25 sm	28,5	1680,0	2100,0	1
53137	53331	3 x 70 / 35 sm	31,4	2352,0	2800,0	2/0
53138	53332	3 x 95 / 50 sm	34,9	3216,0	3750,0	3/0
53139	53333	3 x 120 / 70 sm	38,0	4128,0	4750,0	4/0
53140	53334	3 x 150 / 70 sm	43,3	4992,0	5750,0	300 kcmil
53141	53335	3 x 185 / 95 sm	47,2	6240,0	7200,0	350 kcmil
53142	53336	3 x 240 / 120 sm	53,4	8064,0	9300,0	500 kcmil

Dimensions and specifications may be changed without prior notice. (RQ02)

N2XCH power cable, 0,6/1kV, halogen-free, with concentric conductor, without functionality



Technical data

- Power and control cable acc. to DIN VDE 0276 part 604, HD 604 S1 part 1 and part 5G
- **Temperature range** during installation -5°C to +50°C fixed installation -30°C to +90°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4 kV
- **Minimum bending radius** 12x cable Ø
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)
- **Caloric load values** see Technical Informations

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of cross-linked polyethylene (XLPE) compound type 2XI1 to HD 604 S1
- Core identification to DIN VDE 0293-308
- Cores stranded in layers (for multi-core cables)
- Overall filled inner sheat
- Covered by filling compound or taping
- Concentric conductor of bare Cu-wires
- Outer sheath of thermoplastic polyolefine, compound type HM4 to HD 604 S1
- Sheath colour black

Properties

- Halogen-free, no liberation of corrosive or toxic gases
- Limited propagation of fire
- Low smoke development
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Note

- re = round conductor, single-wire
  rm = round conductor, multi-wire
  sm = sectional conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- **LS0H** = Low Smoke Zero Halogen

Application

The power cables with enhanced characteristics in case of fire are used in power stations.
The concentric conductor can be used as a PE or PEN conductor or as screen. Suitable for fixed installation in dry, damp or wet environments, in, above, on and beneath plaster as well as in masonary walls and in concrete. These cables are suitable for outdoor applications and in underground by using in conduits or tubes. For the installation in conduit all precautions must be taken that no accumulation of water can occur in the pipes
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

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Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
53200	2 x 1,5 / 1,5 re	12,0	53,0	250,0	16
53201	2 x 2,5 / 2,5 re	13,0	81,0	280,0	14
53202	2 x 4 / 4 re	14,0	122,0	320,0	12
53203	2 x 6 / 6 re	15,0	183,0	400,0	10
53204	2 x 10 / 10 re	16,0	311,0	560,0	8
53205	2 x 16 / 16 re	19,1	490,0	780,0	6
53206	3 x 1,5 / 1,5 re	13,0	67,0	250,0	16
53207	3 x 2,5 / 2,5 re	14,0	104,0	320,0	14
53208	3 x 4 / 4 re	16,5	161,0	400,0	12
53209	3 x 6 / 6 re	18,0	242,0	500,0	10
53210	3 x 10 / 10 re	20,0	408,0	750,0	8
53211	3 x 16 / 16 re	22,5	643,0	1000,0	6
53212	3 x 25 / 16 rm	27,0	902,0	1600,0	4
53213	3 x 35 / 16 rm	27,5	1190,0	1900,0	2
53214	3 x 50 / 25 rm	32,3	1723,0	2400,0	1
53215	3 x 70 / 35 sm	35,6	2410,0	3060,0	2/0
53216	3 x 95 / 50 sm	39,0	3296,0	4200,0	3/0
53217	3 x 120 / 70 sm	42,0	4236,0	5207,0	4/0
53218	3 x 150 / 70 sm	43,5	5100,0	5700,0	300 kcmil
53219	3 x 185 / 95 sm	47,4	6383,0	7150,0	350 kcmil
53220	3 x 240 / 120 sm	53,5	8240,0	9250,0	500 kcmil
53221	4 x 1,5 / 1,5 re	13,5	81,0	300,0	16
53222	4 x 2,5 / 2,5 re	14,5	129,0	380,0	14

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
53223	4 x 4 / 4 re	17,5	202,0	480,0	12
53224	4 x 6 / 6 re	19,0	297,0	600,0	10
53225	4 x 10 / 10 re	21,5	504,0	850,0	8
53226	4 x 16 / 16 re	24,5	797,0	1200,0	6
53227	4 x 25 / 16 rm	29,0	1142,0	1800,0	4
53228	4 x 35 / 16 rm	29,5	1528,0	2100,0	2
53229	4 x 50 / 25 sm	32,5	2203,0	2800,0	1
53230	4 x 70 / 35 sm	38,0	3082,0	3800,0	2/0
53231	4 x 95 / 50 sm	43,5	4208,0	5100,0	3/0
53758	4 x 120 / 70 sm	50,5	5388,0	6556,0	4/0
53759	4 x 150 / 70 sm	52,1	6540,0	7600,0	300 kcmil
53760	4 x 185 / 95 sm	57,2	8159,0	9370,0	350 kcmil
53761	4 x 240 / 120 sm	62,6	10546,0	11611,0	500 kcmil
53232	7 x 1,5 / 2,5 re	15,0	132,0	320,0	16
53239	7 x 2,5 / 2,5 re	15,5	200,0	400,0	14
53246	7 x 4 / 4 re	18,1	316,0	580,0	12
53233	10 x 1,5 / 2,5 re	17,2	177,0	420,0	16
53240	10 x 2,5 / 4 re	18,9	287,0	550,0	14
53234	12 x 1,5 / 2,5 re	18,4	204,0	460,0	16
53241	12 x 2,5 / 4 re	19,2	335,0	610,0	14
53247	12 x 4 / 6 re	22,6	528,0	910,0	12
53235	16 x 1,5 / 4 re	20,0	275,0	686,0	16
53242	16 x 2,5 / 6 re	20,9	450,0	805,0	14

Continuation ▸

N2XCH power cable, 0,6/1kV, halogen-free, with concentric conductor, without functionality

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
53236	21 x 1,5 / 6 re	22,6	370,0	766,0	16
53243	21 x 2,5 / 6 re	25,2	572,0	1015,0	14
53237	24 x 1,5 / 6 re	23,2	412,0	800,0	16
53244	24 x 2,5 / 10 re	26,1	695,0	1100,0	14
53238	30 x 1,5 / 6 re	24,3	500,0	930,0	16
53245	30 x 2,5 / 10 re	28,0	842,0	1290,0	14

Dimensions and specifications may be changed without prior notice. (RQ02)

(N)A2XH power cable, 0,6/1 kV, halogen-free, without functionality



NEW

Technical data

- Power and control cable adapted to DIN VDE 0276 part 604, HD 604 S1 part 1 and part 5G
- **Temperature range** during installation -5°C to +50°C fixed installation -30°C to +90°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4 kV
- **Minimum bending radius** single-core 15x cable Ø multi-core 12x cable Ø
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Aluminium-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of cross-linked polyethylene (XLPE) compound type 2XI1 to HD 604 S1
- Core identification to DIN VDE 0293-308
- Core identification for 3+½ conductor J-type: GN-YE (½), BN, BK, GY O-type: BU (½), BN, BK, GY
- Cores stranded in layers (for multi-core cables)
- Overall filled inner sheath
- Covered by filling compound or taping
- Outer sheath of thermoplastic polyolefine, ompound type HM4 to HD 604 S1
- Sheath colour black

Properties

- Halogen-free, no separation of corrosive or toxic gases
- Limited propagation of fire
- Low smoke development
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Note

- rm = round conductor, multi-wire; se = sector-shaped conductor, single-wire; sm = sector-shaped conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- **LS0H** = Low Smoke Zero Halogen

Application

Halogen-free power cables for energy with enhanced characteristics in case of fire are used for applications where harm to human life and damage to property must be prevented in the event of fire, e. g. in power stations, industrial installations, communal establishments, hotels, airports, underground stations, railway stations, hospitals department stores, banks, schools theaters, multi-storey buildings, process control centres etc. Suitable for fixed installation in dry, damp or wet environments, in, above, on and beneath plaster as well as in masonary walls and in concrete. These cables are suitable for outdoor applications and in underground by using in conduits or tubes. For the installation in conduit all precautions must be taken that no accumulation of water can occur in the pipes.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Q

Part no. J type	O type	No.cores x cross-sec. mm²	Outer Ø app. mm	Alu weight kg / km	Weight app. kg / km	AWG-No.
50073	50128	1 x 25 rm	9,9	73,0	132,0	4
50074	50129	1 x 35 rm	11,0	102,0	166,0	2
50075	50130	1 x 50 rm	12,5	145,0	211,0	1
50076	50131	1 x 70 rm	14,1	203,0	283,0	2/0
50077	50132	1 x 95 rm	16,1	276,0	376,0	3/0
50078	50133	1 x 120 rm	17,5	348,0	456,0	4/0
53562	53553	1 x 150 rm	19,6	435,0	560,0	300 kcmil
50079	50134	1 x 185 rm	21,8	537,0	697,0	350 kcmil
53561	50135	1 x 240 rm	24,0	696,0	878,0	500 kcmil
50080	53554	1 x 300 rm	26,7	870,0	1073,0	600 kcmil
50081	50136	1 x 400 rm	29,7	1160,0	1347,0	750 kcmil
50082	53555	1 x 500 rm	33,1	1450,0	1705,0	1000 kcmil

Part no. J type	O type	No.cores x cross-sec. mm²	Outer Ø app. mm	Alu weight kg / km	Weight app. kg / km	AWG-No.
50083	50137	3 x 16 rm	16,3	139,0	364,0	6
50084	50138	3 x 25 rm	19,6	218,0	530,0	4
50085	50139	3 x 35 rm	22,1	305,0	684,0	2
50086	50140	3 x 35 se	19,0	305,0	486,0	2
50087	50141	3 x 50 sm	22,4	435,0	655,0	1
50088	50142	3 x 50 se	21,2	435,0	622,0	1
50089	50143	3 x 70 sm	26,1	609,0	903,0	2/0
50090	50144	3 x 70 se	25,2	609,0	859,0	2/0
50091	50145	3 x 95 sm	29,1	827,0	1174,0	3/0
50092	50146	3 x 95 se	27,8	827,0	1115,0	3/0
50093	50147	3 x 120 sm	32,2	1044,0	1446,0	4/0
50094	50148	3 x 120 se	30,8	1044,0	1379,0	4/0

Continuation ▸

(N)A2XH power cable, 0,6/1 kV, halogen-free, without functionality

Part no. J type	O type	No.cores x cross-sec. mm²	Outer Ø app. mm	Alu weight kg / km	Weight app. kg / km	AWG-No.
50095	50149	3 x 150 sm	36,2	1305,0	1780,0	300 kcmil
50096	50150	3 x 150 se	33,9	1305,0	1685,0	300 kcmil
50097	50154	3 x 185 sm	40,1	1610,0	2197,0	350 kcmil
50098	50155	3 x 185 se	37,6	1610,0	2089,0	350 kcmil
50099	50156	3 x 240 sm	44,9	2088,0	2782,0	500 kcmil
50100	50157	3 x 240 se	41,8	2088,0	2634,0	500 kcmil
50101	50158	3 x 70 / 35 sm	28,3	711,0	1044,0	2/0
50102	50159	3 x 120 / 70 sm	35,1	1247,0	1704,0	4/0
53550	50160	3 x 150 / 70 sm	39,7	1508,0	2065,0	300 kcmil
50103	50161	3 x 185 / 95 sm	43,7	1885,0	2563,0	350 kcmil
53551	50162	3 x 240 / 120 sm	49,1	2436,0	3237,0	500 kcmil
53560	50163	4 x 16 rm	19,0	186,0	460,0	6
50104	50164	4 x 25 rm	21,7	290,0	636,0	4
50105	50165	4 x 35 sm	22,4	406,0	649,0	2
50106	50166	4 x 35 se	21,6	406,0	623,0	2
50107	50167	4 x 50 sm	25,4	580,0	845,0	1
53556	50168	4 x 50 se	24,6	580,0	810,0	1
50108	50169	4 x 70 sm	29,7	812,0	1178,0	2/0
53552	50170	4 x 70 se	28,8	812,0	1126,0	2/0

Part no. J type	O type	No.cores x cross-sec. mm²	Outer Ø app. mm	Alu weight kg / km	Weight app. kg / km	AWG-No.
50109	50171	4 x 95 sm	33,3	1102,0	1538,0	3/0
50110	50172	4 x 95 se	32,1	1102,0	1467,0	3/0
50111	50173	4 x 120 sm	37,2	1392,0	1903,0	4/0
50112	50174	4 x 120 se	35,5	1392,0	1817,0	4/0
50113	50175	4 x 150 sm	41,3	1740,0	2328,0	300 kcmil
50114	50176	4 x 150 se	39,4	1740,0	2223,0	300 kcmil
50115	50177	4 x 185 sm	45,7	2146,0	2874,0	350 kcmil
50116	50178	4 x 185 se	43,4	2146,0	2750,0	350 kcmil
50117	50179	4 x 240 sm	51,2	2784,0	3646,0	500 kcmil
50118	50180	4 x 240 se	48,0	2784,0	3465,0	500 kcmil
50119	50181	5 x 25 rm	23,9	362,0	763,0	4
50120	50182	5 x 35 rm	27,0	508,0	986,0	2
50121	50183	5 x 50 rm	31,3	725,0	1309,0	1
50122	50184	5 x 70 rm	35,8	1015,0	1771,0	2/0
50123	50185	5 x 95 sm	36,5	1378,0	1891,0	3/0
50124	50186	5 x 120 sm	39,2	1740,0	2306,0	4/0
50125	50187	5 x 150 sm	45,4	2175,0	2865,0	300 kcmil
50126	50188	5 x 185 sm	50,1	2683,0	3534,0	350 kcmil
50127	50189	5 x 240 sm	55,2	3480,0	4482,0	500 kcmil

Dimensions and specifications may be changed without prior notice. (RQ02)

N2XH-FE 180/E 30 security cable, halogen-free, 0,6/1 kV, with improved fire characteristics



Technical data

- Halogen-free security cable with improved characteristics in the case of fire to DIN VDE 0266
- **Temperature range** -30°C to +70°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4000 V
- **Minimum bending radius** 15x cable Ø
- **Radiation resistance** up to 200x10⁶ cJ/kg (up to 200 Mrad)
- **Caloric load values** see Technical Informations

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of cross-linked polyethylene, compound type 2XI1 to DIN VDE 0276 part 604
- Core identification to DIN VDE 0293-308 and 0276 part 604
- GN-YE conductor, 3 cores and above
- Cores stranded in layers
- Overall core covering, halogen-free filling compound, pressed
- Outer sheath of thermoplastic halogen-free polyolefine, flame retardant
- Sheath colour orange

Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Properties

- Halogen free, no separation of corrosive and toxic gases
- Flame retardant and hardly flammable
- Self-extinguished and fire resistant
- No flame propagation, therefore security from fire
- low smoke density, low impairment of escape routes and fire extinguishing activities
- Toxicological harmless
- No self-ignition
- Maintenance of functionality during the increased current load
- **FE 180: Insulation integrity** for 180 minutes. Tests acc.to DIN VDE 0472 part 814 ≙ IEC 60331. **Insulation integrity** under direct flame propagation for the test period of 180 minutes.
- **E 30: Functionality** of electrical cable systems for minimum 30 minutes. Test to DIN 4102 part 12. This fulfils the demands of technical guide lines for fire protection (supplement 1 to DIN VDE 0108 part 1). The **functionality** for 30 minutes assures when persons and animals are to be saved from a burning building. 30 minutes secures the functional performance of the fire warning and alarm systems, safety and spare lighting, passenger lifts with evacuation circuits, except the cables which are installed within the ladder shafts and engine rooms.

Note

- re = round conductor, single-wire
  rm = round conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- **LS0H** = Low Smoke Zero Halogen

Q

Application

Security cables are ideal for use everywhere, where in case of fire human life and material assets are to be protected and safety conciousness take a special significance, e. g. in industrial complexes, power stations, communal establishment, hotels, airports, underground railway networks, hospitals and outpatients clinic (DIN VDE 0107), department stores, data processing centres, theaters, cinemas, in multi-storey buildings, public gatherings, schools etc. (DIN VDE 0108), mining works, offshore plants, leading centres, traffic communication, emergency power supply and alarm systems. The cables are suitable for fixed installation in dry and moist rooms, in, above, on and beneath plaster as well as in masonary walls and in concrete. For the installation in conduit all precautions must be taken that no accumulation of water can occur in the pipes.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
52058	1 x 4 re	8,0	38,0	155,0	12
52059	1 x 6 re	9,0	58,0	190,0	10
52060	1 x 10 re	10,0	96,0	215,0	8
52061	1 x 16 re	10,5	154,0	240,0	6
52062	1 x 25 rm	13,0	240,0	380,0	4

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
52063	1 x 35 rm	14,0	336,0	460,0	2
52064	1 x 50 rm	15,5	480,0	590,0	1
52065	1 x 70 rm	17,5	672,0	820,0	2/0
52066	1 x 95 rm	19,5	912,0	1090,0	3/0
52067	1 x 120 rm	21,0	1152,0	1350,0	4/0

Continuation ▸

N2XH-FE 180/E 30 security cable, halogen-free, 0,6/1 kV, with improved fire characteristics

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
52068	1 x 150 rm	23,0	1440,0	1650,0	300 kcmil
52069	1 x 185 rm	25,0	1776,0	2030,0	350 kcmil
52070	1 x 240 rm	29,0	2304,0	2590,0	500 kcmil
52071	2 x 1,5 re	11,5	29,0	170,0	16
52072	2 x 2,5 re	12,0	48,0	190,0	14
52073	2 x 4 re	13,0	77,0	260,0	12
52074	2 x 6 re	14,0	115,0	310,0	10
52075	2 x 10 re	15,5	192,0	430,0	8
52076	2 x 16 re	17,5	307,0	600,0	6
52077	2 x 25 rm	22,0	480,0	930,0	4
52078	3 x 1,5 re	12,0	43,0	170,0	16
52079	3 x 2,5 re	12,5	72,0	220,0	14
52080	3 x 4 re	13,5	115,0	290,0	12
52081	3 x 6 re	14,5	173,0	370,0	10
52082	3 x 10 re	16,5	288,0	530,0	8
52083	3 x 16 re	18,5	461,0	760,0	6
52084	3 x 25 rm	23,5	720,0	1160,0	4
52088	3 x 25 / 16 rm	22,5	874,0	1430,0	4
52085	3 x 35 rm	26,0	1080,0	1560,0	2
52089	3 x 35 / 16 rm	28,0	1162,0	1810,0	2
52086	3 x 50 rm	29,0	1440,0	2030,0	1
52090	3 x 50 / 25 rm	32,0	1680,0	2340,0	1
52087	3 x 70 rm	34,0	2016,0	2890,0	2/0
52091	3 x 70 / 35 rm	35,0	2352,0	3190,0	2/0
52092	3 x 95 / 50 rm	40,0	3216,0	4350,0	3/0
52093	3 x 120 / 70 rm	45,0	4128,0	5550,0	4/0
52094	3 x 150 / 70 rm	48,5	4992,0	6560,0	300 kcmil
52095	3 x 185 / 95 rm	54,0	6240,0	8240,0	350 kcmil
52096	4 x 1,5 re	12,5	58,0	210,0	16
52097	4 x 2,5 re	13,0	96,0	260,0	14
52614	4 x 4 re	13,0	154,0	310,0	12
52615	4 x 6 re	14,5	230,0	410,0	10
52616	4 x 10 re	16,0	384,0	620,0	8
52617	4 x 16 re	18,0	614,0	900,0	6
52628	4 x 25 rm	23,6	960,0	1600,0	4
52629	4 x 35 rm	26,4	1344,0	2050,0	2
52383	4 x 50 rm	29,5	1920,0	2761,0	1
52432	4 x 70 rm	34,6	2688,0	3785,0	2/0
52433	4 x 95 rm	39,0	3648,0	5010,0	3/0
52434	4 x 120 rm	43,5	4608,0	6135,0	4/0
52618	5 x 1,5 re	12,0	72,0	210,0	16
52619	5 x 2,5 re	13,0	120,0	280,0	14
52620	5 x 4 re	14,5	192,0	380,0	12
52621	5 x 6 re	15,5	288,0	510,0	10
52622	5 x 10 re	18,0	480,0	760,0	8
52623	5 x 16 re	20,0	768,0	1120,0	6
52626	5 x 25 rm	24,5	1200,0	1840,0	4
52627	5 x 35 rm	33,5	1680,0	2510,0	2
52624	7 x 1,5 re	13,0	101,0	250,0	16
52625	12 x 1,5 re	16,5	173,0	390,0	16

Dimensions and specifications may be changed without prior notice. (RQ02)

N2XCH-FE 180/E 30 security cable, halogen-free, 0,6/1 kV, with improved fire characteristics



Technical data

- Halogen-free security cable with improved characteristics in the case of fire to DIN VDE 0266
- **Temperature range** -30°C to +70°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4000 V
- **Minimum bending radius** 15x cable Ø
- **Radiation resistance** up to 200x106 cJ/kg (up to 200 Mrad)
- **Caloric load values** see Technical Informations

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of cross-linked polyethylene, compound type 2XI1 to DIN VDE 0276 part 604
- Core identification to DIN VDE 0293-308 and 0276 part 604
- Cores stranded in layers
- Overall core covering, halogen-free filling compound, pressed
- Concentric conductor of Cu-bare wires with helix of copper tape
- Outer sheath of thermoplastic halogen-free polyolefine, flame retardant
- Sheath colour orange

Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Properties

- Halogen-free; no evolution of corrosive and toxic gases
- Flame retardant and hardly flammable
- Self-extinguished and fire resistant
- No flame propagation, therefore security from fire
- Low smoke density, no darkening of emergency exits without hindering the fire extinguishing works
- Toxicological harmless
- No self-ignition
- Maintenance of functionality during the increased current load
- **FE 180: Insulation integrity** for 180 minutes. Tests acc.to DIN VDE 0472 part 814 ≙ IEC 60331. **Insulation integrity** under direct flame propagation for the test period of 180 minutes.
- **E 30: Functionality** of electrical cable systems for minimum 30 minutes. Test method to DIN 4102 part 12. This fulfils the demands of technical guide lines for fire protection (supplement 1 to DIN VDE 0108 part 1). The **functionality** for 30 minutes assures when persons and animals are to be saved from a burning building. 30 minutes secures the functional performance of the fire warning and alarm systems, safety and spare lighting, passenger lifts with evacuation circuits, except the cables which are installed within the ladder shafts and engine rooms.

Note

- re = round conductor, single-wire
  rm = round conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- **LS0H** = Low Smoke Zero Halogen

Q

Application

Everywhere, where in case of fire human life and material assets are to be protected and safety conciousness take a special significance, e. g. in industrial complexes, power stations, communal establishment, hotels, airports, underground railway networks, hospitals and outpatients clinic (DIN VDE 0107), department stores, data processing centres, theaters, cinemas, in multi-storey buildings, public gatherings, schools etc. (DIN VDE 0108), mining works, offshore plants, leading centres, traffic communication, emergency power supply and alarm systems. Suitable for fixed installation in dry and moist rooms, in, above, on and beneath plaster as well as in masonary walls and in concrete. These cables are suitable for outdoor applications and in underground by using in conduits or tubes. For the installation in conduit all precautions must be taken that no accumulation of water can occur in the pipes.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
52098	2 x 1,5 / 1,5 re	13,0	52,0	200,0	16
52099	2 x 2,5 / 2,5 re	14,0	80,0	250,0	14
52100	2 x 4 / 4 re	15,0	123,0	310,0	12

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
52101	2 x 6 / 6 re	16,0	182,0	400,0	10
52102	2 x 10 / 10 re	17,5	312,0	570,0	8
52103	3 x 1,5 / 1,5 re	13,0	66,0	220,0	16

Continuation ▸

N2XCH-FE 180/E 30 security cable, halogen-free, 0,6/1 kV, with improved fire characteristics

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
52104	3 x 2,5 / 2,5 re	14,0	104,0	270,0	14
52105	3 x 4 / 4 re	15,5	161,0	360,0	12
52106	3 x 6 / 6 re	16,5	240,0	470,0	10
52107	3 x 10 / 10 re	18,5	408,0	680,0	8
52108	3 x 16 / 16 re	21,0	643,0	960,0	6
52109	3 x 25 / 16 rm	25,5	902,0	1390,0	4
52110	3 x 35 / 16 rm	29,0	1190,0	1720,0	2
52111	3 x 50 / 25 rm	31,5	1723,0	2320,0	1
52112	3 x 70 / 35 rm	36,5	2410,0	3260,0	2/0
52113	3 x 95 / 50 rm	40,0	3296,0	4310,0	3/0
52114	3 x 120 / 70 rm	46,0	4236,0	5520,0	4/0
52115	3 x 150 / 70 rm	50,5	5100,0	6620,0	300 kcmil
52116	3 x 185 / 95 rm	55,0	6383,0	8180,0	350 kcmil
52117	3 x 240 / 120 rm	61,5	8242,0	10620,0	500 kcmil
52118	4 x 1,5 / 1,5 re	15,0	81,0	260,0	16
52119	4 x 2,5 / 2,5 re	16,0	128,0	310,0	14

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
52120	4 x 4 / 4 re	17,0	200,0	420,0	12
52121	4 x 6 / 6 re	18,0	297,0	540,0	10
52122	4 x 10 / 10 re	20,0	504,0	800,0	8
52123	4 x 16 / 16 re	22,5	796,0	1150,0	6
52124	4 x 25 / 16 rm	28,0	1142,0	1670,0	4
52125	4 x 35 / 16 rm	30,5	1526,0	2160,0	2
52126	4 x 50 / 25 rm	32,0	2203,0	2860,0	1
52127	4 x 70 / 35 rm	39,5	3082,0	3980,0	2/0
52128	4 x 95 / 50 rm	43,5	4208,0	5300,0	3/0
52129	4 x 120 / 70 rm	49,5	5388,0	6740,0	4/0
52130	4 x 150 / 70 rm	55,5	6558,0	8210,0	300 kcmil
52131	4 x 185 / 95 rm	60,0	8159,0	10200,0	350 kcmil
52132	4 x 240 / 120 rm	68,0	10546,0	12900,0	500 kcmil
52133	7 x 1,5 / 2,5 re	16,5	133,0	360,0	16
52134	30 x 1,5 / 6 re	29,0	499,0	1070,0	16

Dimensions and specifications may be changed without prior notice. (RQ02)

(N)HXH-FE 180/E 30 security cable, halogen-free, 0,6/1 kV, with improved fire characteristics



Technical data

- Halogen-free security cable with improved characteristics in the case of fire adapted to DIN VDE 0266
- **Temperature range** -30°C to +70°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4000 V
- **Minimum bending radius** 15x cable Ø
- **Radiation resistance** up to 200x10⁶ cJ/kg (up to 200 Mrad)
- **Caloric load values** see Technical Informations

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of polymer
- Core identification to DIN VDE 0293-308
- GN-YE conductor, 3 cores and above
- Cores stranded in layer
- Overall core covering
- Outer sheath of polyolefin-compound, flame retardant
- Sheath colour orange

Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Properties

- Halogen-free; no evolution of corrosive and toxic gases
- Flame retardant and hardly flammable
- Self-extinguished and fire resistant
- No flame propagation, therefore security from fire
- Low smoke density, no darkening of emergency exits without hindering the fire extinguishing works
- Toxicological harmless
- No self-ignition
- Maintenance of functionality during the increased current load
- **FE 180: Insulation integrity** for 180 minutes. Tests acc.to DIN VDE 0472 part 814 ≙ IEC 60331. **Insulation integrity** under direct flame propagation for the test period of 180 minutes.
- **E 30: Functionality** of electrical cable systems for minimum 30 minutes. Test to DIN 4102 part 12. This fulfils the demands of technical guide lines for fire protection (supplement 1 to DIN VDE 0108 part 1). The **functionality** for 30 minutes assures when persons and animals are to be saved from a burning building. 30 minutes secures the functional performance of the fire warning and alarm systems, safety and spare lighting, passenger lifts with evacuation circuits, except the cables which are installed within the ladder shafts and engine rooms.

Note

- re = round conductor, single-wire
  rm = round conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- **LS0H** = Low Smoke Zero Halogen

Q

Application

Security cables are ideal for use everywhere, where in case of fire human life and material assets are to be protected and safety conciousness take a special significance, e. g. in industrial complexes, power stations, communal establishment, hotels, airports, underground railway networks, hospitals and outpatients clinic (DIN VDE 0107), department stores, data processing centres, theaters, cinemas, in multi-storey buildings, public gatherings, schools etc. (DIN VDE 0108), mining works, offshore plants, leading centres, traffic communication, emergency power supply and alarm systems. The cables are suitable for fixed installation in dry and moist rooms, in, above, on and beneath plaster as well as in masonary walls and in concrete. These cables are suitable for outdoor applications and in underground by using in conduits or tubes. For the installation in conduit all precautions must be taken that no accumulation of water can occur in the pipes.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
52700	1 x 4 re	7,0	38,0	98,0	12
52701	1 x 6 re	7,5	58,0	125,0	10
52702	1 x 10 re	8,0	96,0	165,0	8
52703	1 x 16 rm	9,0	154,0	230,0	6
52704	1 x 25 rm	10,5	240,0	345,0	4
52705	1 x 35 rm	11,5	336,0	450,0	2
52706	1 x 50 rm	12,0	480,0	590,0	1

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
52707	1 x 70 rm	15,0	672,0	800,0	2/0
52708	1 x 95 rm	16,5	912,0	1100,0	3/0
52709	1 x 120 rm	18,5	1152,0	1350,0	4/0
52710	1 x 150 rm	20,5	1440,0	1650,0	300 kcmil
52711	1 x 185 rm	23,0	1776,0	2000,0	350 kcmil
52712	1 x 240 rm	25,5	2304,0	2650,0	500 kcmil
52713	1 x 300 rm	31,8	2880,0	3200,0	600 kcmil

Continuation ▸

(N)HXH-FE 180/E 30 security cable, halogen-free, 0,6/1 kV, with improved fire characteristics

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
52714	2 x 2,5 re	12,5	48,0	290,0	14
52715	2 x 4 re	13,5	77,0	345,0	12
52716	2 x 6 re	14,5	115,0	410,0	10
52717	2 x 10 re	16,0	192,0	540,0	8
52718	2 x 16 rm	18,0	307,0	720,0	6
52719	2 x 25 rm	21,0	480,0	1100,0	4
52720	2 x 35 rm	24,0	672,0	1120,0	2
52721	3 x 1,5 re	12,5	43,0	280,0	16
52722	3 x 2,5 re	13,5	72,0	330,0	14
52723	3 x 4 re	14,5	115,0	400,0	12
52724	3 x 6 re	15,5	173,0	480,0	10
52725	3 x 10 re	17,0	288,0	650,0	8
52726	3 x 16 rm	19,0	461,0	850,0	6
52727	3 x 25 rm	22,5	720,0	1300,0	4
52728	3 x 35 rm	24,5	1080,0	1700,0	2
52729	3 x 50 rm	27,5	1440,0	2200,0	1
52730	3 x 70 rm	32,0	2016,0	3000,0	2/0
52731	3 x 95 rm	35,5	2736,0	4000,0	3/0
52732	3 x 120 rm	39,5	3456,0	4850,0	4/0
52733	3 x 150 rm	44,0	4320,0	5950,0	300 kcmil
52734	3 x 185 rm	49,5	5328,0	7450,0	350 kcmil
52735	3 x 240 rm	60,0	6910,0	8600,0	500 kcmil
52736	4 x 1,5 re	13,5	58,0	325,0	16
52737	4 x 2,5 re	14,0	96,0	385,0	14
52738	4 x 4 re	15,5	154,0	470,0	12
52739	4 x 6 re	16,5	230,0	580,0	10
52740	4 x 10 re	18,5	384,0	790,0	8
52741	4 x 16 rm	20,5	614,0	1100,0	6
52742	4 x 25 rm	24,5	960,0	1650,0	4
52743	4 x 35 rm	27,0	1344,0	2150,0	2
52744	4 x 50 rm	30,0	1920,0	2800,0	1
52745	4 x 70 rm	35,0	2688,0	3800,0	2/0
52746	4 x 95 rm	39,5	3648,0	5050,0	3/0
52747	4 x 120 rm	43,5	4608,0	6150,0	4/0
52748	4 x 150 rm	49,0	5760,0	7650,0	300 kcmil
52749	5 x 1,5 re	14,0	72,0	375,0	16
52750	5 x 2,5 re	15,0	120,0	445,0	14
52751	5 x 4 re	16,5	192,0	560,0	12
52752	5 x 6 re	18,0	288,0	690,0	10
52753	5 x 10 re	20,0	480,0	950,0	8
52754	5 x 16 rm	22,5	768,0	1300,0	6
52755	5 x 25 rm	26,5	1200,0	1980,0	4
52756	5 x 35 rm	36,0	1680,0	2600,0	2
52757	7 x 1,5 re	15,0	101,0	365,0	16
52758	7 x 2,5 re	16,5	168,0	540,0	14
52759	10 x 1,5 re	18,0	144,0	580,0	16
52760	10 x 2,5 re	20,0	240,0	710,0	14
52761	12 x 1,5 re	19,0	173,0	640,0	16
52762	12 x 2,5 re	20,5	288,0	790,0	14
52763	14 x 1,5 re	20,0	202,0	740,0	16
52764	14 x 2,5 re	21,5	336,0	880,0	14
52765	19 x 1,5 re	21,5	274,0	880,0	16
52766	19 x 2,5 re	23,5	456,0	1150,0	14
52767	24 x 1,5 re	25,0	346,0	1100,0	16
52768	24 x 2,5 re	27,0	576,0	1400,0	14
52769	30 x 1,5 re	26,0	432,0	1300,0	16
52770	30 x 2,5 re	28,5	720,0	1650,0	14

Dimensions and specifications may be changed without prior notice. (RQ02)

(N)HXCH-FE 180/E 30 security cable, halogen-free, 0,6/1 kV, with improved fire characteristics



Technical data

- Halogen-free security cable with improved characteristics in the case of fire adapted to DIN VDE 0266
- **Temperature range** -30°C to +70°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4000 V
- **Minimum bending radius** 15xcable Ø
- **Radiation resistance** up to 200x10⁶ cJ/kg (up to 200 Mrad)
- **Caloric load values** see Technical Informations

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of polymer
- Core identification to DIN VDE 0293-308
- Core stranded in layer
- Overall core covering
- Copper wire screening with helix of copper tape
- Separator of special tape
- Outer sheath of polyolefin-compound, flame retardant
- Sheath colour orange

Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Properties

- Halogen-free; no evolution of corrosive and toxic gases
- Flame retardant and hardly flammable
- Self-extinguished and fire resistant
- No flame propagation, therefore security from fire
- Low smoke density, no darkening
- Toxicological harmless
- No self-ignition
- Maintenance of functionality during the increased current load
- **FE 180: Insulation integrity** for 180 minutes. Tests acc.to DIN VDE 0472 part 814 ≙ IEC 60331.
  Insulation integrity under direct flame propagation for the test period of 180 minutes.
- **E 30: Functionality** of electrical cable systems for minimum 30 minutes. Test method to DIN 4102 part 12. This fulfils the demands of technical guide lines for fire protection (supplement 1 to DIN VDE 0108 part 1).
  The **functionality** for 30 minutes assures when persons and animals are to be saved from a burning building. 30 minutes secures the functional performance of the fire warning and alarm systems, safety and spare lighting, passenger lifts with evacuation circuits, except the cables which are installed within the ladder shafts and engine rooms.

Note

- re = round conductor, single-wire
- rm = round conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- **LS0H** = Low Smoke Zero Halogen

Q

Application

Everywhere, where in case of fire human life and material assets are to be protected and safety conciousness take a special significance, e. g. in industrial complexes, power stations, communal establishment, hotels, airports, underground railway networks, hospitals and outpatients clinic (DIN VDE 0107), department stores, data processing centres, theaters, cinemas, in multi-storey buildings, public gatherings, schools etc. (DIN VDE 0108), mining works, offshore plants, leading centres, traffic communication, emergency power supply and alarm systems. Suitable for fixed installation in dry and moist rooms, in, above, on and beneath plaster as well as in masonary walls and in concrete. These cables are suitable for outdoor applications and in underground by using in conduits or tubes. For the installation in conduit all precautions must be taken that no accumulation of water can occur in the pipes.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
52900	2 x 1,5 / 1,5 re	13,0	52,0	220,0	16
52901	2 x 2,5 / 2,5 re	13,5	80,0	385,0	14
52902	2 x 4 / 4 re	14,5	123,0	470,0	10
52903	2 x 6 / 6 re	16,0	182,0	550,0	10
52904	2 x 10 / 10 re	18,0	312,0	730,0	8
52905	3 x 1,5 / 1,5 re	13,5	66,0	380,0	16
52906	3 x 2,5 / 2,5 re	14,5	104,0	430,0	14

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
52907	3 x 4 / 4 re	15,5	161,0	530,0	12
52908	3 x 6 / 6 re	16,5	240,0	630,0	10
52909	3 x 10 / 10 re	18,5	408,0	850,0	8
52910	3 x 16 / 16 rm	20,5	643,0	1150,0	6
52911	3 x 25 / 16 rm	24,0	902,0	1700,0	4
52912	3 x 35 / 16 rm	26,5	1190,0	2150,0	2
52913	3 x 50 / 25 rm	29,5	1723,0	2800,0	1

Continuation ▸

(N)HXCH-FE 180/E 30 security cable, halogen-free, 0,6/1 kV, with improved fire characteristics

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
52914	3 x 70 / 35 rm	33,0	2410,0	3800,0	2/0
52915	3 x 95 / 50 rm	37,5	3296,0	5100,0	3/0
52916	3 x 120 / 70 rm	42,5	4236,0	6250,0	4/0
52917	3 x 150 / 70 rm	47,0	5100,0	6900,0	300 kcmil
52918	3 x 185 / 95 rm	52,5	6383,0	8550,0	350 kcmil
52919	3 x 240 / 120 rm	58,5	8242,0	11150,0	500 kcmil
52920	4 x 1,5 / 1,5 re	14,5	81,0	435,0	16
52921	4 x 2,5 / 2,5 re	15,5	128,0	500,0	14
52922	4 x 4 / 4 re	16,5	200,0	610,0	12
52923	4 x 6 / 6 re	17,5	297,0	740,0	10
52924	4 x 10 / 10 re	20,0	504,0	1050,0	8
52925	4 x 16 / 16 re	22,0	796,0	1350,0	6
52926	4 x 25 / 16 rm	26,0	1142,0	1950,0	4
52927	4 x 35 / 16 rm	28,5	1526,0	2400,0	2
52928	4 x 50 / 25 rm	32,0	2203,0	3200,0	1
52929	4 x 70 / 35 rm	37,0	3082,0	4300,0	2/0
52930	4 x 95 / 50 rm	41,5	4208,0	5750,0	3/0
52931	4 x 120 / 70 rm	47,0	5388,0	7100,0	4/0
52932	4 x 150 / 70 rm	52,0	6558,0	8550,0	300 kcmil
52933	4 x 185 / 95 rm	58,0	8159,0	10700,0	350 kcmil
52934	4 x 240 / 120 rm	64,0	10546,0	13930,0	500 kcmil
52935	7 x 1,5 / 2,5 re	16,5	133,0	635,0	16
52936	7 x 2,5 / 2,5 re	17,5	200,0	680,0	14
52937	10 x 1,5 / 2,5 re	19,5	176,0	870,0	16
52938	10 x 2,5 / 4 re	21,0	286,0	980,0	14
52939	12 x 1,5 / 2,5 re	20,0	205,0	1050,0	16
52940	12 x 2,5 / 4 re	21,5	334,0	1050,0	14
52941	24 x 1,5 / 6 re	26,0	413,0	1900,0	16
52942	24 x 2,5 / 10 re	28,5	696,0	1900,0	14
52943	30 x 1,5 / 6 re	27,0	499,0	2200,0	16
52944	30 x 2,5 / 10 re	30,0	840,0	2200,0	14

Dimensions and specifications may be changed without prior notice. (RQ02)

N2XH-FE 180/E 90 security cable, halogen-free, 0,6/1 kV, with improved fire characteristics



Technical data

- Halogen-free security cable with improved characteristics in the case of fire to DIN VDE 0266
- **Temperature range** -30°C to +70°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4000 V
- **Minimum bending radius** 12x cable Ø
- **Radiation resistance** up to 200x10⁶ cJ/kg (up to 200 Mrad)
- **Caloric load values** see Technical Informations

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation with cross-linked polyethylene, compound type 2XI1 to DIN VDE 0276 part 604
- Core identification to DIN VDE 0293-308 and 0276 part 604
- GN-YE conductor, 3 cores and above
- Cores stranded in layers
- Overall core covering, halogen-free filling compound, pressed
- Outer sheath of thermoplastic halogen-free polyolefine, flame retardant
- Sheath colour orange

Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Properties

- Halogen-free; no evolution of corrosive and toxic gases
- Flame retardant and hardly flammable
- Self-extinguished and fire resistant
- No flame propagation, therefore security from fire
- Low smoke density, no darkening of emergency exits without hindering the fire extinguishing works
- Toxicological harmless
- No self-ignition
- Maintenance of functionality during the increased current load
- **FE 180: Insulation integrity** for 180 minutes. Tests acc.to DIN VDE 0472 part 814 ≙ IEC 60331. **Insulation integrity** under direct flame propagation for the test period of 180 minutes.
- **E 90: Functionality** of electrical cable systems for minimum 90 minutes. Test method to DIN 4102 part 12. This fulfils the demands of technical guide lines for fire protection (supplement 1 to DIN VDE 0108 part 1). The **functionality** for 90 minutes assures the functional performance of water-pressure-rising stations for the supply to avoid smoke and heat in safety-stairs and inner rooms, ladder shafts and engine rooms for fire brigade lifts, emergency lifts for sickbeds in hospitals and the fire brigade lifts.

Note

- re = round conductor, single-wire
  rm = round conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- **LSOH** = Low Smoke Zero Halogen

Q

Application

Everywhere, where in case of fire human life and material assets are to be protected and safety conciousness take a special significance, e. g. in industrial complexes, power stations, communal establishment, hotels, airports, underground railway networks, hospitals and outpatients clinic (DIN VDE 0107), department stores, data processing centres, theaters, cinemas, in multi-storey buildings, public gatherings, schools etc. (DIN VDE 0108), mining works, offshore plants, leading centres, traffic communication, emergency power supply and alarm systems. Suitable for fixed installation in dry and moist rooms, in, above, on and beneath plaster as well as in masonary walls and in concrete. These cables are suitable for outdoor applications and in underground by using in conduits or tubes. For the installation in conduit all precautions must be taken that no accumulation of water can occur in the pipes.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
52534	1 x 16 rm	11,5	154,0	250,0	6
52535	1 x 25 rm	13,0	240,0	360,0	4
52536	1 x 35 rm	14,0	336,0	460,0	2
52537	1 x 50 rm	15,5	480,0	610,0	1

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
52538	1 x 70 rm	17,5	672,0	840,0	2/0
52539	1 x 95 rm	19,5	912,0	1120,0	3/0
52540	1 x 120 rm	21,5	1152,0	1390,0	4/0
52541	1 x 150 rm	23,5	1440,0	1690,0	300 kcmil

Continuation ▸

N2XH-FE 180/E 90 security cable, halogen-free, 0,6/1 kV, with improved fire characteristics

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
52542	1 x 185 rm	25,5	1776,0	2090,0	350 kcmil
52899	1 x 240 rm	28,5	2304,0	2660,0	500 kcmil
52543	1 x 300 rm	31,0	2880,0	3350,0	600 kcmil
52544	1 x 400 rm	34,5	3840,0	4230,0	750 kcmil
52545	2 x 1,5 re	14,5	29,0	270,0	16
52546	2 x 2,5 re	15,5	48,0	310,0	14
52547	2 x 4 re	16,5	77,0	370,0	12
52548	2 x 6 re	17,5	115,0	440,0	10
52549	2 x 10 rm	19,5	192,0	600,0	8
52550	2 x 16 rm	21,0	307,0	780,0	6
52551	2 x 25 rm	23,5	480,0	1100,0	4
52552	2 x 35 rm	26,5	672,0	1400,0	2
52553	2 x 50 rm	30,0	960,0	1830,0	1
52554	2 x 70 rm	33,0	1344,0	2420,0	2/0
52555	2 x 95 rm	37,5	1824,0	3240,0	3/0
52556	2 x 120 rm	41,0	2304,0	3940,0	4/0
52557	3 x 1,5 re	15,0	43,0	260,0	16
52558	3 x 2,5 re	16,0	72,0	350,0	14
52559	3 x 4 re	17,0	115,0	420,0	12
52560	3 x 6 re	18,0	173,0	520,0	10
52561	3 x 10 rm	20,5	288,0	710,0	8
52562	3 x 16 rm	22,5	461,0	950,0	6
52563	3 x 25 rm	26,0	720,0	1370,0	4
52564	3 x 35 rm	28,0	1008,0	1750,0	2
52572	3 x 35 / 16 rm	29,5	1162,0	1950,0	2
52565	3 x 50 rm	32,0	1440,0	2310,0	1
52573	3 x 50 / 25 rm	33,5	1680,0	2640,0	1
52566	3 x 70 rm	35,5	2016,0	3100,0	2/0
52574	3 x 70 / 35 rm	37,0	2352,0	3520,0	2/0
52567	3 x 95 rm	40,5	2736,0	4180,0	3/0
52575	3 x 95 / 50 rm	42,0	3216,0	4710,0	3/0
52568	3 x 120 rm	44,0	3456,0	5130,0	4/0
52576	3 x 120 / 70 rm	46,5	4128,0	5910,0	4/0
52569	3 x 150 rm	48,5	4320,0	6260,0	300 kcmil
52577	3 x 150 / 70 rm	50,0	4992,0	6970,0	300 kcmil
52570	3 x 185 rm	53,0	5328,0	7720,0	350 kcmil
52578	3 x 185 / 95 rm	55,5	6240,0	8750,0	350 kcmil
52571	3 x 240 rm	59,5	6912,0	9990,0	500 kcmil
52579	3 x 240 / 120 rm	61,5	8064,0	11180,0	500 kcmil
52580	4 x 1,5 re	16,5	58,0	350,0	16
52581	4 x 2,5 re	17,5	96,0	420,0	14
52582	4 x 4 re	18,5	154,0	510,0	12
52583	4 x 6 re	19,5	230,0	630,0	10
52584	4 x 10 rm	22,5	384,0	880,0	8
52585	4 x 16 rm	24,5	614,0	1180,0	6
52586	4 x 25 rm	28,5	960,0	1730,0	4
52587	4 x 35 rm	31,0	1344,0	2220,0	2
52588	4 x 50 rm	35,0	1920,0	2940,0	1
52589	4 x 70 rm	39,0	2688,0	3960,0	2/0
52590	4 x 95 rm	45,0	3648,0	5360,0	3/0
52591	4 x 120 rm	48,5	4608,0	6550,0	4/0
52592	4 x 150 rm	54,0	5760,0	8070,0	300 kcmil
52593	4 x 185 rm	59,0	7104,0	9970,0	350 kcmil
52594	4 x 240 rm	66,0	9216,0	12830,0	500 kcmil
52595	5 x 1,5 re	18,0	72,0	420,0	16
52596	5 x 2,5 re	19,0	120,0	500,0	14
52597	5 x 4 re	20,0	192,0	610,0	12
52598	5 x 6 re	21,5	288,0	760,0	10
52599	5 x 10 rm	24,5	480,0	1070,0	8
52600	5 x 16 rm	27,0	768,0	1450,0	6
52601	5 x 25 rm	31,0	1200,0	2120,0	4
52602	5 x 35 rm	34,0	1680,0	2730,0	2
52603	5 x 50 rm	38,5	2400,0	3620,0	1
52604	5 x 70 rm	43,5	3360,0	4940,0	2/0
52605	7 x 1,5 re	19,5	101,0	480,0	16
52606	7 x 2,5 re	20,5	168,0	580,0	14
52607	7 x 4 re	22,0	269,0	730,0	12
52608	10 x 1,5 re	24,0	144,0	650,0	16
52609	10 x 2,5 re	25,5	240,0	790,0	14
52610	12 x 1,5 re	24,5	173,0	720,0	16
52611	12 x 2,5 re	26,0	288,0	890,0	14
52612	24 x 1,5 re	33,0	346,0	1270,0	16

Dimensions and specifications may be changed without prior notice. (RQ02)

N2XCH-FE 180/E 90 security cable, halogen-free, 0,6/1 kV, with improved fire characteristics



Technical data

- Halogen-free security cable with improved characteristics in the case of fire to DIN VDE 0266
- **Temperature range** -30°C to +70°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4000 V
- **Minimum bending radius** 12x cable Ø
- **Radiation resistance** up to 200x10^6 cJ/kg (up to 200 Mrad)
- **Caloric load values** see Technical Informations

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation with cross-linked polyethylene, compound type 2XI1 to DIN VDE 0276 part 604
- Core identification to DIN VDE 0293-308 and 0276 part 604
- Cores stranded in layers
- Overall core covering, halogen-free filling compound, pressed
- Concentric conductor of Cu-bare wires with helix of copper tape
- Outer sheath of thermoplastic halogen-free polyolefine, flame retardant
- Sheath colour orange

Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Properties

- Halogen-free; no evolution of corrosive and toxic gases
- Flame retardant and hardly flammable
- Self-extinguished and fire resistant
- No flame propagation, therefore security from fire
- Low smoke density, no darkening of emergency exits without hindering the fire extinguishing works
- Toxicological harmless
- No self-ignition
- Maintenance of functionallity during the increased current load
- **FE 180: Insulation integrity** for 180 minutes. Tests acc.to DIN VDE 0472 part 814 ≙ IEC 60331. **Insulation integrity** under direct flame propagation for the test period of 180 minutes.
- **E 90: Functionality** of electrical cable systems for minimum 90 minutes. Test method to DIN 4102 part 12. This fulfils the demands of technical guide lines for fire protection (supplement 1 to DIN VDE 0108 part 1). The **functionality** for 90 minutes assures the functional performance of water-pressure-rising stations for the supply to avoid smoke and heat in safety-stairs and inner rooms, ladder shafts and engine rooms for fire brigade lifts, emergency lifts for sickbeds in hospitals and the fire brigade lifts.

Note

- re = round conductor, single-wire
  rm = round conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- **LSOH** = Low Smoke Zero Halogen

Q

Application

Everywhere, where in case of fire human life and material assets are to be protected and safety conciousness take a special significance, e. g. in industrial complexes, power stations, communal establishment, hotels, airports, underground railway networks, hospitals and outpatients clinic (DIN VDE 0107), department stores, data processing centres, theaters, cinemas, in multi-storey buildings, public gatherings, schools etc. (DIN VDE 0108), mining works, offshore plants, leading centres, traffic communication, emergency power supply and alarm systems. Suitable for fixed installation in dry and moist rooms, in, above, on and beneath plaster as well as in masonary walls and in concrete. These cables are suitable for outdoor applications and in underground by using in conduits or tubes. For the installation in conduit all precautions must be taken that no accumulation of water can occur in the pipes.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
52771	3 x 1,5 / 1,5 re	16,5	66,0	330,0	16
52772	3 x 2,5 / 2,5 re	17,5	104,0	400,0	14
52773	3 x 4 / 4 re	18,5	161,0	480,0	12
52774	3 x 6 / 6 re	20,0	240,0	600,0	10
52775	3 x 10 / 10 rm	22,0	408,0	840,0	8

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
52776	3 x 16 / 16 rm	24,5	643,0	1130,0	6
52777	3 x 25 / 16 rm	28,0	902,0	1560,0	4
52778	3 x 35 / 16 rm	30,5	1190,0	1960,0	2
52779	3 x 50 / 25 rm	34,0	1723,0	2610,0	1
52780	3 x 70 / 35 rm	37,5	2410,0	3500,0	2/0

Continuation ▸

N2XCH-FE 180/E 90 security cable, halogen-free, 0,6/1 kV, with improved fire characteristics

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
52781	3 x 95 / 50 rm	43,0	3296,0	4700,0	3/0
52782	3 x 120 / 70 rm	48,0	4236,0	5880,0	4/0
52783	3 x 150 / 70 rm	52,0	4992,0	7300,0	300 kcmil
52784	3 x 185 / 95 rm	57,5	6383,0	8760,0	350 kcmil
52785	3 x 240 / 120 rm	63,5	8242,0	11280,0	500 kcmil
52786	4 x 1,5 / 1,5 re	17,5	81,0	390,0	16
52787	4 x 2,5 / 2,5 re	19,0	128,0	470,0	14
52788	4 x 4 / 4 re	20,0	200,0	570,0	12
52789	4 x 6 / 6 re	21,5	297,0	720,0	10
52790	4 x 10 / 10 rm	24,0	504,0	1010,0	8
52791	4 x 16 / 16 rm	26,5	796,0	1370,0	6
52792	4 x 25 / 16 rm	30,5	1142,0	1940,0	4
52793	4 x 35 / 16 rm	33,0	1526,0	2420,0	2
52794	4 x 50 / 25 rm	37,5	2203,0	3240,0	1

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
52795	4 x 70 / 35 rm	41,5	3082,0	4360,0	2/0
52796	4 x 95 / 50 rm	47,5	4208,0	5900,0	3/0
52797	4 x 120 / 70 rm	52,5	5388,0	7340,0	4/0
52798	4 x 150 / 70 rm	57,5	6540,0	8840,0	300 kcmil
52799	4 x 185 / 95 rm	63,5	8159,0	11020,0	350 kcmil
52800	4 x 240 / 120 rm	70,0	10546,0	14140,0	500 kcmil
52801	7 x 1,5 / 2,5 re	20,5	133,0	520,0	16
52805	7 x 2,5 / 2,5 re	22,0	200,0	630,0	14
52802	12 x 1,5 / 2,5 re	26,0	205,0	770,0	16
52806	12 x 2,5 / 4 re	28,0	334,0	950,0	14
52803	24 x 1,5 / 6 re	35,0	413,0	1380,0	16
52807	24 x 2,5 / 10 re	37,5	696,0	1750,0	14
52804	30 x 1,5 / 6 re	37,0	499,0	1630,0	16
52808	30 x 2,5 / 10 re	39,5	840,0	2080,0	14

Dimensions and specifications may be changed without prior notice. (RQ02)

(N)HXH-FE 180/E 90 security cable, halogen-free, 0,6/1 kV, with improved fire characteristics



Technical data

- Halogen-free security cable with improved characteristics in the case of fire adapted to DIN VDE 0266
- **Temperature range** -30°C to +70°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4000 V
- **Minimum bending radius** 12x cable Ø
- **Radiation resistance** up to 200x10⁶ cJ/kg (up to 200 Mrad)
- **Caloric load values** see Technical Informations

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of polymer
- Core identification to DIN VDE 0293-308
- GN-YE conductor, 3 cores and above
- Cores stranded in layer
- Core wrapping with glass-fibre tape as flame-protection
- Outer sheath of polyolefin-compound, flame retardant
- Sheath colour orange

Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Properties

- Halogen-free; no evolution of corrosive and toxic gases
- Flame retardant and hardly flammable
- Self-extinguished and fire resistant
- No flame propagation, therefore security from fire
- Low smoke density, no darkening of emergency exits without hindering the fire extinguishing works
- Toxicological harmless
- No self-ignition
- Maintenance of functionallity during the increased current load
- **FE 180: Insulation integrity** for 180 minutes. Tests acc.to DIN VDE 0472 part 814 ≙ IEC 60331. **Insulation integrity** under direct flame propagation for the test period of 180 minutes.
- **E 90: Functionality** of electrical cable systems for minimum 90 minutes. Test method to DIN 4102 part 12. This fulfils the demands of technical guide lines for fire protection (supplement 1 to DIN VDE 0108 part 1). The **functionality** for 90 minutes assures the functional performance of water-pressure-rising stations for the supply to avoid smoke and heat in safety-stairs and inner rooms, ladder shafts and engine rooms for fire brigade lifts, emergency lifts for sickbeds in hospitals and the fire brigade lifts.

Note

- re = round conductor, single-wire
  rm = round conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- **LSOH** = Low Smoke Zero Halogen

Q

Application

Everywhere, where in case of fire human life and material assets are to be protected and safety conciousness take a special significance, e. g. in industrial complexes, power stations, communal establishment, hotels, airports, underground railway networks, hospitals and outpatients clinic (DIN VDE 0107), department stores, data processing centres, theaters, cinemas, in multi-storey buildings, public gatherings, schools etc. (DIN VDE 0108), mining works, offshore plants, leading centres, traffic communication, emergency power supply and alarm systems. Suitable for fixed installation in dry and moist rooms, in, above, on and beneath plaster as well as in masonary walls and in concrete. These cables are suitable for outdoor applications and in underground by using in conduits or tubes. For the installation in conduit all precautions must be taken that no accumulation of water can occur in the pipes.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
53180	1 x 16 rm	11,0	154,0	255,0	6
53181	1 x 25 rm	12,5	240,0	375,0	4
53182	1 x 35 rm	13,5	336,0	475,0	2
53183	1 x 50 rm	15,0	480,0	625,0	1
53184	1 x 70 rm	16,5	672,0	855,0	2/0
53185	1 x 95 rm	18,0	912,0	1140,0	3/0
53186	1 x 120 rm	20,5	1152,0	1410,0	4/0
53187	1 x 150 rm	22,5	1440,0	1730,0	300 kcmil

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
53188	1 x 185 rm	24,5	1776,0	2140,0	350 kcmil
53189	1 x 240 rm	27,0	2304,0	2700,0	500 kcmil
53190	1 x 300 rm	30,0	2880,0	3420,0	600 kcmil
53191	1 x 400 rm	33,5	3840,0	4310,0	750 kcmil
53000	3 x 1,5 re	14,0	43,0	280,0	16
53001	3 x 2,5 re	15,0	72,0	330,0	14
53002	3 x 4 re	16,0	115,0	400,0	12
53003	3 x 6 re	17,0	173,0	480,0	10

Continuation ▸

(N)HXH-FE 180/E 90 security cable, halogen-free, 0,6/1 kV, with improved fire characteristics

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
53004	3 x 10 re	19,0	288,0	650,0	8
53005	3 x 16 re	21,0	461,0	850,0	6
52990	3 x 25 rm	25,0	720,0	1300,0	4
52991	3 x 35 rm	28,0	1008,0	1700,0	2
52992	3 x 35 / 16 rm	28,0	1162,0	1850,0	2
52993	3 x 50 / 25 rm	32,0	1680,0	2500,0	1
52994	3 x 70 / 35 rm	36,0	2352,0	3350,0	2/0
52995	3 x 95 / 50 rm	42,0	3216,0	4500,0	3/0
52996	3 x 120 / 70 rm	45,0	4128,0	5600,0	4/0
52997	3 x 150 / 70 rm	49,0	4992,0	6700,0	300 kcmil
52998	3 x 185 / 95 rm	55,0	6240,0	8350,0	350 kcmil
52999	3 x 240 / 120 rm	63,0	8064,0	10000,0	500 kcmil
53006	4 x 1,5 re	15,0	58,0	325,0	16
53007	4 x 2,5 re	16,0	96,0	385,0	14
53008	4 x 4 re	17,0	154,0	470,0	12
53009	4 x 6 re	18,0	230,0	580,0	10
53010	4 x 10 re	20,0	384,0	790,0	8
53011	4 x 16 re	22,0	614,0	1100,0	6
53012	4 x 25 rm	27,0	960,0	1650,0	4
53013	4 x 35 rm	30,0	1344,0	2150,0	2
53014	4 x 50 rm	34,0	1920,0	2800,0	1
53030	4 x 70 rm	39,0	2688,0	3800,0	2/0
53031	4 x 95 rm	44,0	3648,0	5050,0	3/0
53070	4 x 120 rm	47,0	4608,0	6150,0	4/0
53390	4 x 150 rm	51,2	5760,0	7662,0	4/0
53015	5 x 1,5 re	16,0	72,0	375,0	16
53016	5 x 2,5 re	17,0	120,0	445,0	14
53017	5 x 4 re	18,0	192,0	560,0	12
53018	5 x 6 re	20,0	288,0	690,0	10
53019	5 x 10 re	22,0	480,0	950,0	8
53020	5 x 16 rm	24,0	768,0	1300,0	6
53021	5 x 25 rm	29,0	1200,0	1980,0	4
53028	5 x 35 rm	33,0	1680,0	2350,0	2
53029	5 x 50 rm	38,0	2500,0	3100,0	1
53022	7 x 1,5 re	19,0	101,0	560,0	16
53027	7 x 2,5 re	21,0	168,0	650,0	14
53025	10 x 1,5 re	23,0	144,0	750,0	16
53026	10 x 2,5 re	25,0	240,0	910,0	14
53023	12 x 1,5 re	25,0	173,0	850,0	16
53024	12 x 2,5 re	26,0	288,0	1000,0	14

Dimensions and specifications may be changed without prior notice. (RQ02)

(N)HXCH-FE 180/E 90 security cable, halogen-free, 0,6/1 kV, with improved fire characteristics



Technical data

- Halogen-free security cable with improved characteristics in the case of fire adapted to DIN VDE 0266
- **Temperature range** -30°C to +70°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4000 V
- **Minimum bending radius** 12x cable Ø
- **Radiation resistance** up to 200x10⁶ cJ/kg (up to 200 Mrad)
- **Caloric load values** see Technical Informations

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of polymer
- Each single core covering with flame resistant glass-fibre tape
- Core identification to DIN VDE 0293-308
- Cores stranded in layer
- Core wire screening with helix of copper tape
- Bare copper wire screening with helix of copper tape
- Outer sheath of polyolefin-compound, flame ratardant
- Sheath colour orange

Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Properties

- Halogen-free; no evolution of corrosive and toxic gases
- Flame retardant and hardly flammable
- Self-extinguished and fire resistant
- No flame propagation, therefore security from fire
- Low smoke density, no darkening of emergency exits without hindering the fire extinguishing works
- Toxicological harmless
- No self-ignition
- Maintenance of functionallity during the increased current load
- **FE 180: Insulation integrity** for 180 minutes. Tests acc.to DIN VDE 0472 part 814 ≙ IEC 60331. **Insulation integrity** under direct flame propagation for the test period of 180 minutes.
- **E 90: Functionality** of electrical cable systems for minimum 90 minutes. Test method to DIN 4102 part 12. This fulfils the demands of technical guide lines for fire protection (supplement 1 to DIN VDE 0108 part 1). The **functionality** for 90 minutes assures the functional performance of water-pressure-rising stations for the supply to avoid smoke and heat in safety-stairs and inner rooms, ladder shafts and engine rooms for fire brigade lifts, emergency lifts for sickbeds in hospitals and the fire brigade lifts.

Note

- re = round conductor, single-wire
  rm = round conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- **LSOH** = Low Smoke Zero Halogen

Q

Application

Everywhere, where in case of fire human life and material assets are to be protected and safety conciousness take a special significance, e. g. in industrial complexes, power stations, communal establishment, hotels, airports, underground railway networks, hospitals and outpatients clinic (DIN VDE 0107), department stores, data processing centres, theaters, cinemas, in multi-storey buildings, public gatherings, schools etc. (DIN VDE 0108), mining works, offshore plants, leading centres, traffic communication, emergency power supply and alarm systems. Suitable for fixed installation in dry and moist rooms, in, above, on and beneath plaster as well as in masonary walls and in concrete. For the installation in conduit all precautions must be taken that no accumulation of water can occur in the pipes.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
59028	2 x 2,5 / 2,5 re	16,0	80,0	390,0	14
53032	3 x 1,5 / 1,5 re	16,9	66,0	380,0	16
53033	3 x 2,5 / 2,5 re	18,0	104,0	430,0	14
53034	3 x 4 / 4 re	19,0	161,0	530,0	12
53035	3 x 6 / 6 re	20,1	240,0	640,0	10
53036	3 x 10 / 10 re	22,0	408,0	850,0	8
53037	3 x 16 / 16 rm	24,0	643,0	1150,0	6
53038	3 x 25 / 16 rm	28,0	902,0	1700,0	4
53039	3 x 35 / 16 rm	30,0	1190,0	2150,0	2
53040	3 x 50 / 25 rm	34,0	1723,0	2800,0	1

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
53041	3 x 70 / 35 rm	38,0	2410,0	3800,0	2/0
53042	3 x 95 / 50 rm	44,0	3296,0	5100,0	3/0
53043	3 x 120 / 70 rm	47,0	4236,0	6250,0	4/0
53044	3 x 150 / 70 rm	51,0	4992,0	6900,0	300 kcmil
53045	3 x 185 / 95 rm	56,0	6383,0	8550,0	350 kcmil
53046	3 x 240 / 120 rm	65,0	8242,0	11150,0	500 kcmil

Continuation ▸

(N)HXCH-FE 180/E 90 security cable, halogen-free, 0,6/1 kV, with improved fire characteristics

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
53047	4 x 1,5 / 1,5 re	18,0	81,0	435,0	16
53048	4 x 2,5 / 2,5 re	18,9	128,0	500,0	14
53049	4 x 4 / 4 re	20,0	200,0	610,0	12
53050	4 x 6 / 6 re	21,0	297,0	740,0	10
53051	4 x 10 / 10 re	23,0	504,0	1050,0	8
53052	4 x 16 / 16 rm	25,0	796,0	1350,0	6
53053	4 x 25 / 16 rm	30,0	1142,0	1950,0	4
53054	4 x 35 / 16 rm	33,0	1526,0	2400,0	2
53055	4 x 50 / 25 rm	37,0	2203,0	3200,0	1
53056	4 x 70 / 35 rm	42,0	3082,0	4300,0	2/0
53057	4 x 95 / 50 rm	47,0	4208,0	5750,0	3/0
53058	4 x 120 / 70 rm	51,0	5388,0	7100,0	4/0
53059	4 x 150 / 70 rm	56,0	6540,0	8550,0	300 kcmil
53060	4 x 185 / 95 rm	68,0	8159,0	10700,0	350 kcmil
53061	4 x 240 / 120 rm	70,0	10546,0	13930,0	500 kcmil
53062	7 x 1,5 / 2,5 re	21,0	133,0	680,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
53066	7 x 2,5 / 2,5 re	21,0	200,0	680,0	14
53063	12 x 1,5 / 2,5 re	27,0	205,0	1050,0	16
53067	12 x 2,5 / 4 re	28,0	334,0	1050,0	14
53064	24 x 1,5 / 6 re	37,0	413,0	1900,0	16
53068	24 x 2,5 / 10 re	37,5	696,0	1900,0	14
53065	30 x 1,5 / 6 re	39,0	499,0	2200,0	16
53069	30 x 2,5 / 10 re	39,5	840,0	2200,0	14

Dimensions and specifications may be changed without prior notice. (RQ02)

JE-H(St)H Bd FE 180/E 30 up to E 90 (orange), halogen-free



Technical data

- Flame retardant, halogen-free installation cable adapted to DIN VDE 0815
- **Loop resistance** max. 73,2 Ohm/km
- **Temperature range** flexing -5°C to +50°C fixed installation -30°C to +70°C
- **Operating peak voltage** 225 V (not for purposes of high current and power installation)
- **Test voltage** core/core 500 V core/screen 2000 V
- **Insulation resistance** min. 100 MOhm x km
- **Mutual capacitance** max. 120 nF/km at 800 Hz (this values may be extended at 20% with a make-up up to 4 pairs)
- **Capacitance unbalance** max. 200 pF/100 m (20% of the values, but one value up to 400 pF is allowed)
- **Minimum bending radius** 6x cable Ø
- **Radiation resistance** up to $100x10^6$ cJ/kg (up to 100 Mrad)
- **Caloric load values** see Technical Informations

Cable structure

- Bare copper-conductor, single-wire
- Core insulation halogen-free, cross-linked polymer, compound type HI1 flame retardant (E90 with special foil wrapping over conductor)
- Core identification with colour rings and ring-groups to DIN VDE 0815
- Cores twisted to pairs, 4 pairs consist to unit, several units stranded to layers
- Units identified by numbered tape
- Core wrapping with special polyester and glass-fibre tape
- Screening with alu-laminated polyester tape and solid tinned copper drain wire 0,8 mm Ø
- Outer sheath halogen-free, flame retardant to DIN VDE 0207 part 24 HM2
- Sheath colour orange

Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Note

- **E 30 to E 90** Functionality (burning behaviour) is dependant on corresponding installation technique.
- **LS0H** = Low Smoke Zero Halogen

Properties

- No fire propagation
- Low smoke density
- Not for purposes of high current and power installation as well as underground laying.
- **FE 180: Insulation integrity** for 180 minutes. Tests acc.to DIN VDE 0472 part 814 ≙ IEC 60331. **Insulation integrity** under direct flame propagation for the test period of 180 minutes.
- **E 30: Functionality** of electrical cable systems for minimum 30 minutes. Test to DIN 4102 part 12. The **functionality** for 30 minutes assures when persons and animals are to be saved from a burning building. 30 minutes secures the functional performance of the fire warning and alarm systems, safety and spare lighting, passenger lifts with evacuation circuits, except the cables which are installed within the ladder shafts and engine rooms.
- **E 90: Functionality** of electrical cable systems for minimum 90 minutes. Test method to DIN 4102 part 12. The **functionality** for 90 minutes assures the functional performance of water-pressure-rising stations for the supply to avoid smoke and heat in safety-stairs and inner rooms, ladder shafts and engine rooms for fire brigade lifts, emergency lifts for sickbeds in hospitals and the fire brigade lifts.

Application

Flame resistant, halogen-free, static screened installation cables for telecommunication purpose. The static screen prevents strong interference impulse. Suitable for fixed installation everywhere, where in case of fire human life and material assets are to be protected and a safety conciousness take a special significance, e. g. in industrial complexes, public buildings, hotels, airports, under ground railway networks, hospitals.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Functionality E 30 to E 90

Part no.	No.pairs x cross-sec. mm	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	
34081	2 x 2 x 0,8	7,4	25,0	74,0	-
34082	4 x 2 x 0,8	10,8	45,0	127,0	-
34083	8 x 2 x 0,8	16,9	85,0	300,0	-
34084	12 x 2 x 0,8	18,5	126,0	336,0	-
34085	16 x 2 x 0,8	20,1	166,0	426,0	-
34086	20 x 2 x 0,8	22,2	206,0	529,0	-
34087	32 x 2 x 0,8	29,1	326,0	859,0	-
34088	40 x 2 x 0,8	34,2	407,0	1094,0	-
34089	52 x 2 x 0,8	37,3	529,0	1280,0	-

Functionality E 30

Part no.	No.pairs x cross-sec. mm	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	
34148	2 x 2 x 0,8	7,5	25,0	74,0	-
34149	4 x 2 x 0,8	9,3	45,0	127,0	-
34150	8 x 2 x 0,8	11,4	85,0	300,0	-
34151	12 x 2 x 0,8	13,0	126,0	336,0	-
34152	16 x 2 x 0,8	15,7	166,0	426,0	-
34153	20 x 2 x 0,8	16,5	206,0	529,0	-
34154	32 x 2 x 0,8	20,3	326,0	859,0	-
34155	40 x 2 x 0,8	23,4	407,0	1094,0	-
34156	52 x 2 x 0,8	25,2	529,0	1280,0	-

Dimensions and specifications may be changed without prior notice. (RQ02)

JE-H(St)H Bd fire warning cable, FE 180/E 30 to E 90 (red), halogen-free



Technical data

- Flame retardant, halogen-free installation cable, adapted to DIN VDE 0815
- **Loop resistance** max. 73,2 Ohm/km
- **Temperature range** flexing -5°C to +50°C fixed installation -30°C to +70°C
- **Operating peak voltage** 225 V (not for purposes of high current and power installation)
- **Test voltage** core/core 500 V core/screen 2000 V
- **Insulation resistance** min. 100 MOhm x km
- **Mutual capacitance** max. 120 nF/km at 800 Hz (this values may be extended at 20% with a make-up up to 4 pairs)
- **Capacitance unbalance** max. 200 pF/100 m (20% of the values, but one value up to 400 pF is allowed)
- **Minimum bending radius** 6x cable Ø
- **Radiation resistance** up to 100x10^6 cJ/kg (up to 100 Mrad)
- **Caloric load values** see Technical Informations

Cable structure

- Bare copper-conductor, single-wire
- Core insulation halogen-free, cross-linked polymer HI1, flame retardant (E90 with special foil wrapping over conductor)
- Core identification with colour rings and ring-groups to DIN VDE 0815
- Cores twisted to pairs, each 4 pairs consist to unit, several units stranded to layers
- Units identified with numbered tape
- Core wrapping with special polyester and glass-fibre tape
- Screening with alu-laminated polyester tape and solid copper drain wire 0,8 mm Ø
- Outer sheath halogen-free, flame retardant to DIN VDE 0207 part 24, HM2
- Sheath colour red, RAL 3000 with imprint "BRANDMELDEKABEL"

Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Note

- **E 30 to E 90** Functionality (burning behaviour) is dependant on corresponding installation technique.
- **LS0H** = Low Smoke Zero Halogen

Properties

- No fire propagation
- Low smoke density
- Not for purposes of high current and power installation as well as underground laying
- **FE 180: Insulation integrity** for 180 minutes. Tests acc.to DIN VDE 0472 part 814 ≙ IEC 60331. **Insulation integrity** under direct flame propagation for the test period of 180 minutes.
- **E 30: Functionality** of electrical cable systems for minimum 30 minutes. Test to DIN 4102 part 12. The **functionality** for 30 minutes assures when persons and animals are to be saved from a burning building. 30 minutes secures the functional performance of the fire warning and alarm systems, safety and spare lighting, passenger lifts with evacuation circuits, except the cables which are installed within the ladder shafts and engine rooms.
- **E 90: Functionality** of electrical cable systems for minimum 90 minutes. Test method to DIN 4102 part 12. The **functionality** for 90 minutes assures the functional performance of water-pressure-rising stations for the supply to avoid smoke and heat in safety-stairs and inner rooms, ladder shafts and engine rooms for fire brigade lifts, emergency lifts for sickbeds in hospitals and the fire brigade lifts.

Application

Static screened installation cables for telecommunication purposes. The static screen prevents strong interference impulse. Suitable for fixed installation everywhere, where in case of fire human life and material assets are to be protected and a safety conciousness take a special significance, e. g. in industrial complexes, public buildings, hotels, airports, under ground railway networks, hospitals.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Functionality E 30 to E 90

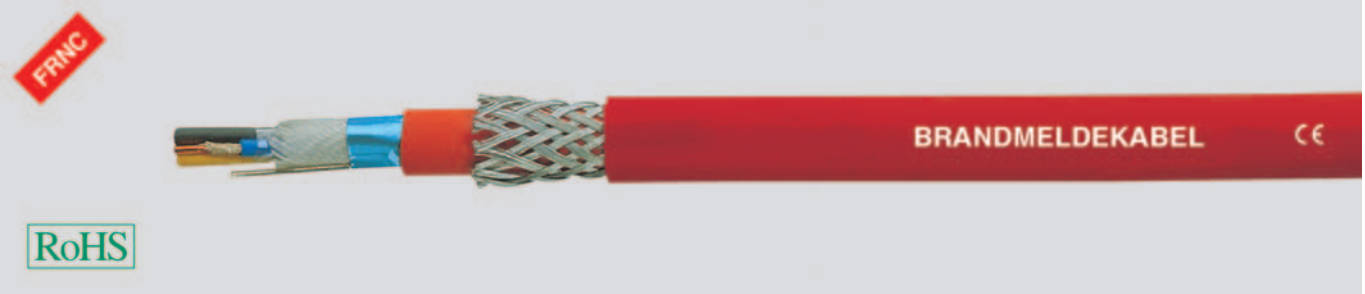
Part no.	No.pairs x cross-sec. mm	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	
34091	2 x 2 x 0,8	7,4	25,0	74,0	-
34092	4 x 2 x 0,8	10,8	45,0	127,0	-
34093	8 x 2 x 0,8	16,9	85,0	300,0	-
34094	12 x 2 x 0,8	18,5	126,0	336,0	-
34095	16 x 2 x 0,8	20,1	166,0	426,0	-
34096	20 x 2 x 0,8	22,2	206,0	529,0	-
34097	32 x 2 x 0,8	29,1	326,0	859,0	-
34098	40 x 2 x 0,8	34,2	407,0	1094,0	-
34099	52 x 2 x 0,8	37,3	529,0	1280,0	-

Functionality E 30

Part no.	No.pairs x cross-sec. mm	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	
34157	2 x 2 x 0,8	7,5	25,0	67,0	-
34158	4 x 2 x 0,8	9,3	45,0	103,0	-
34159	8 x 2 x 0,8	11,4	85,0	168,0	-
34160	12 x 2 x 0,8	13,0	126,0	237,0	-
34161	16 x 2 x 0,8	15,7	166,0	303,0	-
34162	20 x 2 x 0,8	16,5	206,0	361,0	-
34163	32 x 2 x 0,8	20,3	326,0	553,0	-
34164	40 x 2 x 0,8	23,4	407,0	699,0	-
34165	52 x 2 x 0,8	25,2	529,0	865,0	-

Dimensions and specifications may be changed without prior notice. (RQ02)

JE-H(St)HRH Bd fire warning cable, FE 180/E 30 to E 90, halogen-free



Technical data

- Special insulation for cores and outer sheath adapted to DIN VDE 0815.
- **Loop resistance**
  max. 73,2 Ohm/km
- **Temperature range**
  flexing -5°C to +50°C
  fixed installation -30°C to +70°C
- **Operating peakvoltage**
  max. 225 V (not for purposes of high current and power installation)
- **Test voltage**
  core/core 500 V
  core/screen 2000 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Mutual capacitance**
  max. 120 nF/km at 800 Hz
- **Minimum bending radius**
  6x cable Ø
- **Caloric load values**
  see Technical Informations

Cable structure

- Bare copper-conductor, single-wire
- Core insulation of cross-linked polymer, compound type HI1 with mica tape, flame retardant
- Core identification with colour rings and ring-groups to DIN VDE 0815
- Cores twisted to pairs, each 4 pairs consist to unit, several units stranded to layers
- Units identified with numbered tape
- Glass-fibre taped
- Screening with alu-laminated polyester tape
- solid copper drain wire 0,8 mm Ø
- Inner sheath, flame retardant polyolefin compound to DIN VDE 0207 part 24 HM3
- Galvanized steel wire braided screen
- Outer sheath of polyolefin compound type HM2 to DIN VDE 0207 part 24
- Outer sheath red (RAL 3000) with imprint "BRANDMELDEKABEL"

Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Properties

- No fire propagation
- Low smoke density
- Not for purposes of high current and power installation as well as underground laying
- **FE 180: Insulation integrity** for 180 minutes. Tests acc.to DIN VDE 0472 part 814 ≙ IEC 60331.
  Insulation integrity under direct flame propagation for the test period of 180 minutes.
- **E 30: Functionality** of electrical cable systems for minimum 30 minutes. Test to DIN 4102 part 12.
  The **functionality** for 30 minutes assures when persons and animals are to be saved from a burning building. 30 minutes secures the functional performance of the fire warning and alarm systems, safety and spare lighting, passenger lifts with evacuation circuits, except the cables which are installed within the ladder shafts and engine rooms.
- **E 90: Functionality** of electrical cable systems for minimum 90 minutes. Test method to DIN 4102 part 12.
  The **functionality** for 90 minutes assures the functional performance of water-pressure-rising stations for the supply to avoid smoke and heat in safety-stairs and inner rooms, ladder shafts and engine rooms for fire brigade lifts, emergency lifts for sickbeds in hospitals and the fire brigade lifts.

Note

- **E 30 to E 90**
  Functionality is dependant on installation technique.
- **LS0H** = Low Smoke Zero Halogen

Application

Wherever necessary to prevent high property value in case of fire damage to human and material. The static screen prevents strong interference impulse. Suitable for fixed installation everywhere, where in case of fire human life and material assets are to be protected and a safety conciousness take a special significance, e. g. in industrial complexes, public buildings, hotels, airports, under ground railway networks, hospitals.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	
34075	2 x 2 x 0,8	11,7	25,0	150,0	-
34076	4 x 2 x 0,8	15,7	45,0	275,0	-
34077	8 x 2 x 0,8	21,6	85,0	545,0	-
34078	12 x 2 x 0,8	23,8	126,0	602,0	-
34079	16 x 2 x 0,8	27,7	166,0	734,0	-

Part no.	No.pairs x cross-sec. mm	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	
34080	20 x 2 x 0,8	28,9	206,0	870,0	-
34072	32 x 2 x 0,8	41,1	326,0	1360,0	-
34073	40 x 2 x 0,8	42,3	407,0	1800,0	-
34074	52 x 2 x 0,8	45,2	529,0	2038,0	-

Dimensions and specifications may be changed without prior notice. (RQ02)

MEDIUM-VOLTAGE CABLES



MEDIUM VOLTAGE POWER CABLES

XLPE-insulated 6/10 kV, 12/20 kV, 18/30 kV

Since about 1970 the cross-linked polyethylene (XLPE)-insulated power cables have been used in Germany. The XLPE-insulation possesses very good electrical, mechanical and thermal characteristics in medium voltage networks. This type of insulation is very chemically resistant and also resistant to cold. Due to various advantages, the XLPE-insulated type has vastly displaced the traditional classical paper-insulated types in many sectors.

In order to prevent the penetration of moisture and also to extend the duration of life, the XLPE-insulated medium voltage cables are designed with longitudinally water-proof screen including an additional swell tape and a PE outer sheath.

The manufacture of this sheath is based on high density polyethylene (HDPE), in which an additive organic peroxide is mixed. Due to the heating and pressure the molecule chains are joined to each other, assuring the transition from thermoplastic to elastic condition.

In comparison to PVC and paper-insulated cables, the advantage of XLPE-insulated medium voltage power cables is that they possess a low dielectric factor, such as it is 100 times smaller than of PVC-insulated cables.

Moreover, a better dielectric constant value has an effect on the low mutual capacitance, the short-circuit to ground and the charging current of XLPE-insulated cables.

The good properties of XLPE-insulated cables remain constant through a wide temperature range.

Characteristics of XLPE

• permissible operating temperature	
– For permanent (normal) operation	+ 90°C
– In short circuit	+250°C
– In overload operation and damage by sea	up to +130°C
• Specific heat resistance	3,5 K · m/W
• Dielectric constant	2,4
• Specific resistance (20°C)	min. 10^{16} Ohm · cm
• Loss factor (tan δ) (20°C)	max. 0,5 · 10^{-3}
• Density	0,92 g/cm³
• Breaking strength	min. 200%
• Tensile strength	min. 12,5 N/mm²

Conductor

– Copper or aluminium, round, multiwire stranded and compact, according to VDE 0295.

Inner semi-conducting layer

– Semi-conducting compound, cross-linked, mini-mum wall-thickness 0,3 mm.

Insulation

– Cross-linked polyethylene (XLPE), compound type DIX8 according to HD 620 S2.
– Insulation nominal wall-thickness
for 6/10 kV = 3,4 mm
12/20 kV = 5,5 mm
18/30 kV = 8,0 mm

Outer semi-conducting layer

– Outer semi-conducting layer is extruded together with the inner semi-conducting layer and the insulation in one working process and are spliced with each other.
– Semi-conducting compound, cross-linked, wall-thickness 0,3 to 0,6 mm.

Concentricity of conductor

– The difference between the maximum and mini-mum value of 0,5 mm should not be exceeded.

Semi-conducting type

– Over the outer semi-conducting layer, a semi-conducting tape must be used.

Screen

– Screening of copper wires must have a minimum diameter of 0,5 mm and over that a copper tape applied helically with a minimum thickness of 0,1 mm.
– Copper cross-section according to HD 620 S2.

Separator

– Over the screen as well as under outer sheath, a separating layer must be used (e. g. taping).

Outer sheath

– PE compound DMP2 according to HD 620 S2 black or
– PVC compound DMV6 according to HD 620 S2 red
– Wall-thickness = 2,5 mm,
for 1x 500 mm² /30 kV = 2,6 mm

Continuation ▶

MEDIUM VOLTAGE POWER CABLES

XLPE-insulated 6/10 kV, 12/20 kV, 18/30 kV

Laying of Cable

In order to avoid any damage, the XLPE-insulated medium voltage cables should carefully laid and installed. It must be ensured that the cables should not be pulled over the hard or sharp edges.
The cable ends must be water-tight-sealed.
After cutting the length both ends must be sealed immediately.
A laying depth of 60 to 80 cm is recommended. Single conductor cables are normally arranged in a trefoil touching or triangular shape.
For laying in conduits, the influence of thermal insulation of air space between the cable and the inner wall of conduit should be specially considered. The inner diameter of the conduit should be at least 1,5 times that of the diameter of the cable.

Bending radius

During the laying of XLPE cables, the bending radius should not be below of the following values:

- Cable without metal sheath = 15 x cable Ø
- Cable with Alu-laminated sheath = 30 x cable Ø

Temperature range

During the installation, the temperature should not be below the following values:

- for XLPE-insulation + PVC sheath = – 5°C
- for XLPE-insulation + PE sheath = –20°C

Max. permissible tensile strength

By pulling the conductors with a pulling head (not for armoured cables)

P = No. of cores x conductor cross-section x δ
δ = permissible pulling tension N/mm²
– For Cu-conductor: 50 N/mm²
– For Alu-conductor: 30 N/mm²

Current carrying capacity

according to VDE 0276 part 620 or HD 620 S2

Laying in earth (ground)

- Laying depth 0,7 – 0,8 m
- Earth temperature in the laying depth 20°C
- Specific heat resistance 1,0 K · m/W
- Load factor 0,7 (EVU-Load)

Laying in air

- Air temperature 30°C
- Load factor (permanent load) 1,0

Laying in conduits

Cables for conduit systems laying in earth, a reduction of the current carrying capacity with a factor of 0,85 is recommended.

Test voltages

Kind of voltage test	Voltage test in kV		
	U_0/U = 6/10 kV	U_0/U = 12/20 kV	U_0/U = 18/30 kV
Voltage test a. c. in kV	15	30	45
Voltage test d. c. in kV	48	96	144
Voltage test a. c. (voltage test = 1000 h)	18	36	54

Voltage test to cable system

During the operation or after laying the medium voltage power cables, the dielectric can be tested with alternating or direct current. The test duration continues 30 minutes.

Kind of voltage test	U_0/U = 6/10 kV	U_0/U = 12/20 kV	U_0/U = 18/30 kV
Voltage test a. c. in kV	12	24	36
Voltage test d. c. in kV	34 up to 48	67 up to 96	76 up to 108

N2XSY 6/10kV, 12/20kV, 18/30kV XLPE-insulated,

Cu-conductor, single core, screened, PVC-sheath



Technical data

- XLPE-insulated power cables to DIN VDE 0276 part 620, HD 620 S2 and IEC 60502
- **Temperature range** during installation up to -5°C
- **Operating temperature** max. +90°C
- **Short circuit temperature** +250°C (short circuit duration max. 5 s)
- **Nominal voltages** U_0/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltages** for 6/10 kV = max. 12 kV for 12/20 kV = max. 24 kV for 18/30 kV = max. 36 kV
- **Test voltages** for 6/10 kV = 15 kV for 12/20 kV = 30 kV for 18/30 kV = 45 kV
- **Minimum bending radius** 15x cable Ø
- **Power ratings table** see Technical Informations

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Inner semi-conducting coating
- Core insulation of cross-linked polyethylene (XLPE), compound type DIX8 to HD 620 S2
- Outer conductive layer extruded and welded with core insulation
- Conductive taping
- Screen: Braiding of copper wires with one or two tape(s) applied helically
- Wrapping
- Outer sheath of PVC compound type DMV6 to HD 620 S2
- Sheath colour red

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Installation notes

- To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation.

Note

- rm = round conductor, multi-wire
- Further dimensions available on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Suitable for installation mostly for power supply stations, in indoors and in cable ducts,outdoor with protected laying, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. Due to the good laying characteristic, this can also be laid easily in difficult line guideways. The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

Part no.	No.cores x cross-sec. mm²	Operation voltage max.	Nominal voltage kV	Insulation thickness mm	Sheath thickness Nominal value mm	Outer Ø min. - max. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
32400	1 x 35 rm / 16	12	6 / 10	3,4	2,5	23,0 - 28,0	518,0	905,0	2
32401	1 x 50 rm / 16	12	6 / 10	3,4	2,5	24,0 - 29,0	662,0	1080,0	1
32402	1 x 70 rm / 16	12	6 / 10	3,4	2,5	26,0 - 31,0	854,0	1310,0	2/0
32403	1 x 95 rm / 16	12	6 / 10	3,4	2,5	26,0 - 32,0	1094,0	1580,0	3/0
32404	1 x 120 rm / 16	12	6 / 10	3,4	2,5	28,0 - 34,0	1334,0	1860,0	4/0
32405	1 x 150 rm / 16	12	6 / 10	3,4	2,5	29,0 - 35,0	1622,0	2040,0	300 kcmil
32406	1 x 150 rm / 25	12	6 / 10	3,4	2,5	29,0 - 35,0	1723,0	2210,0	300 kcmil
32407	1 x 185 rm / 16	12	6 / 10	3,4	2,5	31,0 - 37,0	1958,0	2450,0	350 kcmil
32408	1 x 185 rm / 25	12	6 / 10	3,4	2,5	31,0 - 37,0	2059,0	2580,0	350 kcmil
32409	1 x 240 rm / 16	12	6 / 10	3,4	2,5	33,0 - 39,0	2486,0	3000,0	500 kcmil
32410	1 x 240 rm / 25	12	6 / 10	3,4	2,5	33,0 - 39,0	2587,0	3130,0	500 kcmil
32411	1 x 300 rm / 25	12	6 / 10	3,4	2,5	36,0 - 41,0	3163,0	3780,0	600 kcmil
32412	1 x 400 rm / 35	12	6 / 10	3,4	2,5	40,0 - 45,0	4234,0	4670,0	750 kcmil
32413	1 x 500 rm / 35	12	6 / 10	3,4	2,5	43,0 - 48,0	5194,0	5750,0	1000 kcmil
33099	1 x 630 rm / 35	12	6 / 10	3,4	2,5	44,0 - 49,0	6442,0	7180,0	1250 kcmil
32414	1 x 35 rm / 16	24	12 / 20	5,5	2,5	27,0 - 32,0	518,0	1110,0	2
32415	1 x 50 rm / 16	24	12 / 20	5,5	2,5	28,0 - 33,0	662,0	1250,0	1
32416	1 x 70 rm / 16	24	12 / 20	5,5	2,5	30,0 - 35,0	854,0	1510,0	2/0
32417	1 x 95 rm / 16	24	12 / 20	5,5	2,5	31,0 - 36,0	1094,0	1780,0	3/0
32418	1 x 120 rm / 16	24	12 / 20	5,5	2,5	32,0 - 38,0	1334,0	2070,0	4/0
32419	1 x 150 rm / 16	24	12 / 20	5,5	2,5	33,0 - 39,0	1622,0	2310,0	300 kcmil
32420	1 x 150 rm / 25	24	12 / 20	5,5	2,5	33,0 - 39,0	1723,0	2420,0	300 kcmil
32421	1 x 185 rm / 16	24	12 / 20	5,5	2,5	35,0 - 41,0	1958,0	2650,0	350 kcmil
32422	1 x 185 rm / 25	24	12 / 20	5,5	2,5	35,0 - 41,0	2059,0	2810,0	350 kcmil
32423	1 x 240 rm / 16	24	12 / 20	5,5	2,5	38,0 - 44,0	2486,0	3260,0	500 kcmil
32424	1 x 240 rm / 25	24	12 / 20	5,5	2,5	38,0 - 44,0	2587,0	3360,0	500 kcmil
32425	1 x 300 rm / 25	24	12 / 20	5,5	2,5	40,0 - 46,0	3163,0	4020,0	600 kcmil
32426	1 x 400 rm / 35	24	12 / 20	5,5	2,5	43,0 - 49,0	4234,0	4930,0	750 kcmil
32427	1 x 500 rm / 35	24	12 / 20	5,5	2,5	46,0 - 52,0	5194,0	6050,0	1000 kcmil
33096	1 x 630 rm / 35	24	12 / 20	5,5	2,5	47,0 - 53,0	6442,0	7510,0	1250 kcmil

Continuation ▸

N2XSY 6/10kV, 12/20kV, 18/30kV XLPE-insulated,

Cu-conductor, single core, screened, PVC-sheath

Part no.	No.cores x cross-sec. mm²	Operation voltage max.	Nominal voltage kV	Insulation thickness mm	Sheath thickness Nominal value mm	Outer Ø min. - max. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
32428	1 x 50 rm / 16	36	18 / 30	8	2,5	32,0 - 38,0	662,0	1480,0	1
32429	1 x 70 rm / 16	36	18 / 30	8	2,5	34,0 - 40,0	854,0	1730,0	2/0
32430	1 x 95 rm / 16	36	18 / 30	8	2,5	35,0 - 41,0	1094,0	2060,0	3/0
32431	1 x 120 rm / 16	36	18 / 30	8	2,5	37,0 - 43,0	1334,0	2330,0	4/0
32432	1 x 150 rm / 25	36	18 / 30	8	2,5	38,0 - 44,0	1723,0	2720,0	300 kcmil
32433	1 x 185 rm / 25	36	18 / 30	8	2,5	40,0 - 46,0	2059,0	3100,0	350 kcmil
32434	1 x 240 rm / 25	36	18 / 30	8	2,5	42,0 - 48,0	2587,0	3730,0	500 kcmil
32435	1 x 300 rm / 25	36	18 / 30	8	2,5	45,0 - 51,0	3163,0	4000,0	600 kcmil
32436	1 x 400 rm / 35	36	18 / 30	8	2,5	48,0 - 54,0	4234,0	5330,0	750 kcmil
32437	1 x 500 rm / 35	36	18 / 30	8	2,5	51,0 - 57,0	5194,0	6480,0	1000 kcmil
33098	1 x 630 rm / 35	36	18 / 30	8	2,5	52,0 - 59,0	6442,0	7970,0	1250 kcmil

Dimensions and specifications may be changed without prior notice. (RQ03)



Suitable medium voltage connection sleeves can be found in our Cable Accessories catalogue.

N2XS2Y 6/10kV, 12/20kV, 18/30kV XLPE-insulated,

Cu-conductor, single core, screened, PE-sheath



Technical data

- XLPE-insulated power cables to IEC 60502, DIN VDE 0276 part 620, HD 620 S2
- **Temperature range**
  during installation up to -20°C
- **Operating temperature**
  max. +90°C
- **Short circuit temperature**
  +250°C (short circuit duration max. 5 s)
- **Nominal voltages**
  U_0/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltages**
  for 6/10 kV = max. 12 kV
  for 12/20 kV = max. 24 kV
  for 18/30 kV = max. 36 kV
- **Test voltages**
  for 6/10 kV = 15 kV
  for 12/20 kV = 30 kV
  for 18/30 kV = 45 kV
- **Minimum bending radius**
  15x cable Ø
- **Power ratings**
  see Technical Informations

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Inner semi-conducting coating
- Core insulation of cross-linked polyethylene (XLPE), compound type DIX8 to HD 620 S2
- Outer extrusion of semi-conducting coating spliced with the insulation
- Wrapping of conductive material
- Screen: Braiding of copper wires with one or two tapes applied helically
- Wrapping
- Outer sheath of PE compound type DMP2 to HD 620 S2
- Sheath colour black

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- **Installation notes**
  To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation.

Note

- rm = round conductor, multi-wire
- Further dimensions available on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Suitable for indoor installation and in cable ducts, outdoors, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. The PE-outer sheath is resistant to high mechanical stress for laying the cables. This PE-sheath is not flame retardant acc. to DIN EN 60332-1-2.
The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

Part no.	No.cores x cross-sec. mm²	Operation voltage max.	Nominal voltage kV	Insulation thickness mm	Sheath thickness Nominal value mm	Outer Ø min. - max. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
32480	1 x 35 rm / 16	12	6 / 10	3,4	2,5	23,0 - 28,0	518,0	910,0	2
32481	1 x 50 rm / 16	12	6 / 10	3,4	2,5	24,0 - 29,0	662,0	990,0	1
32482	1 x 70 rm / 16	12	6 / 10	3,4	2,5	26,0 - 31,0	854,0	1205,0	2/0
32483	1 x 95 rm / 16	12	6 / 10	3,4	2,5	26,0 - 32,0	1098,0	1520,0	3/0
32484	1 x 120 rm / 16	12	6 / 10	3,4	2,5	28,0 - 34,0	1334,0	1760,0	4/0
32485	1 x 150 rm / 16	12	6 / 10	3,4	2,5	29,0 - 35,0	1622,0	2020,0	300 kcmil
32486	1 x 150 rm / 25	12	6 / 10	3,4	2,5	29,0 - 35,0	1725,0	2130,0	300 kcmil
32487	1 x 185 rm / 16	12	6 / 10	3,4	2,5	31,0 - 37,0	1958,0	2360,0	350 kcmil
32488	1 x 185 rm / 25	12	6 / 10	3,4	2,5	31,0 - 37,0	2059,0	2470,0	350 kcmil
32489	1 x 240 rm / 16	12	6 / 10	3,4	2,5	33,0 - 39,0	2486,0	2960,0	500 kcmil
32490	1 x 240 rm / 25	12	6 / 10	3,4	2,5	33,0 - 39,0	2587,0	3020,0	500 kcmil
32491	1 x 300 rm / 25	12	6 / 10	3,4	2,5	36,0 - 41,0	3163,0	3630,0	600 kcmil
32492	1 x 400 rm / 35	12	6 / 10	3,4	2,5	40,0 - 45,0	4234,0	4560,0	750 kcmil
32493	1 x 500 rm / 35	12	6 / 10	3,4	2,5	43,0 - 48,0	5194,0	5580,0	1000 kcmil
32494	1 x 35 rm / 16	24	12 / 20	5,5	2,5	27,0 - 32,0	518,0	960,0	2
32495	1 x 50 rm / 16	24	12 / 20	5,5	2,5	28,0 - 33,0	662,0	1160,0	1
32496	1 x 70 rm / 16	24	12 / 20	5,5	2,5	30,0 - 35,0	854,0	1410,0	2/0
32497	1 x 95 rm / 16	24	12 / 20	5,5	2,5	31,0 - 36,0	1094,0	1670,0	3/0
32498	1 x 120 rm / 16	24	12 / 20	5,5	2,5	33,0 - 38,0	1334,0	1960,0	4/0
32499	1 x 150 rm / 16	24	12 / 20	5,5	2,5	34,0 - 39,0	1622,0	2220,0	300 kcmil
32500	1 x 150 rm / 25	24	12 / 20	5,5	2,5	34,0 - 39,0	1723,0	2310,0	300 kcmil
32501	1 x 185 rm / 16	24	12 / 20	5,5	2,5	36,0 - 41,0	1958,0	2620,0	350 kcmil
32502	1 x 185 rm / 25	24	12 / 20	5,5	2,5	36,0 - 41,0	2059,0	2670,0	350 kcmil
32503	1 x 240 rm / 16	24	12 / 20	5,5	2,5	39,0 - 44,0	2486,0	3160,0	500 kcmil
32504	1 x 240 rm / 25	24	12 / 20	5,5	2,5	39,0 - 44,0	2587,0	3270,0	500 kcmil
32505	1 x 300 rm / 25	24	12 / 20	5,5	2,5	41,0 - 46,0	3163,0	3880,0	600 kcmil
32506	1 x 400 rm / 35	24	12 / 20	5,5	2,5	44,0 - 49,0	4234,0	4820,0	750 kcmil
32507	1 x 500 rm / 35	24	12 / 20	5,5	2,5	47,0 - 52,0	5194,0	5860,0	1000 kcmil
32508	1 x 50 rm / 16	36	18 / 30	8	2,5	32,0 - 38,0	662,0	1410,0	1
32509	1 x 70 rm / 16	36	18 / 30	8	2,5	34,0 - 40,0	854,0	1660,0	2/0

Continuation ▸

N2XS2Y 6/10kV, 12/20kV, 18/30kV XLPE-insulated,

Cu-conductor, single core, screened, PE-sheath

Part no.	No.cores x cross-sec. mm²	Operation voltage max.	Nominal voltage kV	Insulation thickness mm	Sheath thickness Nominal value mm	Outer Ø min. - max. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
32510	1 x 95 rm / 16	36	18 / 30	8	2,5	35,0 - 41,0	1094,0	1970,0	3/0
32511	1 x 120 rm / 16	36	18 / 30	8	2,5	37,0 - 43,0	1334,0	2220,0	4/0
32512	1 x 150 rm / 25	36	18 / 30	8	2,5	38,0 - 44,0	1723,0	2650,0	300 kcmil
32513	1 x 185 rm / 25	36	18 / 30	8	2,5	40,0 - 46,0	2059,0	2980,0	350 kcmil
32514	1 x 240 rm / 25	36	18 / 30	8	2,5	42,0 - 48,0	2587,0	3570,0	500 kcmil
32515	1 x 300 rm / 25	36	18 / 30	8	2,5	45,0 - 51,0	3163,0	4220,0	600 kcmil
32516	1 x 400 rm / 35	36	18 / 30	8	2,5	48,0 - 54,0	4234,0	5170,0	750 kcmil
32517	1 x 500 rm / 35	36	18 / 30	8	2,5	51,0 - 57,0	5194,0	6260,0	1000 kcmil

Dimensions and specifications may be changed without prior notice. (RQ03)



Suitable medium voltage connection sleeves can be found in our Cable Accessories catalogue.

N2XS(F)2Y 6/10kV, 12/20kV, 18/30kV XLPE-insulated,

Cu-conductor, single core, longitudinally water-tight, screened, PE-sheath



Technical data

- XLPE-insulated power cables to DIN VDE 0276 part 620, HD 620 S2 and IEC 60502
- **Temperature range** during installation up to -20°C
- **Operating temperature** max. +90°C
- **Short circuit temperature** +250°C (short circuit duration max. 5 s)
- **Nominal voltages** U_0/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltages** for 6/10 kV = max. 12 kV for 12/20 kV = max. 24 kV for 18/30 kV = max. 36 kV
- **Test voltages** for 6/10 kV = 15 kV for 12/20 kV = 30 kV for 18/30 kV = 45 kV
- **Minimum bending radius** 15x cable Ø
- **Power ratings** see Technical Informations

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Inner semi-conducting coating
- Core insulation of cross-linked polyethylene (XLPE), compound type DIX8 to HD 620 S2
- Outer extrusion of semi-conducting coating spliced with the XLPE-insulation
- Longitudinally water-tight, conductive wrapping
- Screen: Braiding of copper wires with one or two tapes applied helically
- Longitudinally water-tight wrapping
- Outer sheath of PE compound type DMP2 to HD 620 S2
- Sheath colour black

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- **Installation notes** To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation

Note

- rm = round conductor, multi-wire
- Further types and dimensions on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Suitable for indoor installation and in cable ducts, outdoors, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. The PE-outer sheath is resistant to high mechanical stress for laying the cables. This PE sheath is not flame retardant acc. to DIN EN 60332-1-2.
The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

Part no.	No.cores x cross-sec. mm²	Operation voltage max.	Nominal voltage kV	Insulation thickness mm	Screen cross-sec. mm²	Sheath thickness Nominal value mm	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
32560	1 x 35 rm / 16	12	6 / 10	3,4	16	2,5	26,0	518,0	1050,0	2
32561	1 x 50 rm / 16	12	6 / 10	3,4	16	2,5	28,0	662,0	1150,0	1
32562	1 x 70 rm / 16	12	6 / 10	3,4	16	2,5	30,0	854,0	1460,0	2/0
32563	1 x 95 rm / 16	12	6 / 10	3,4	16	2,5	31,0	1094,0	1700,0	3/0
32564	1 x 120 rm / 16	12	6 / 10	3,4	16	2,5	32,0	1334,0	2030,0	4/0
32565	1 x 150 rm / 25	12	6 / 10	3,4	25	2,5	34,0	1723,0	2350,0	300 kcmil
32566	1 x 185 rm / 25	12	6 / 10	3,4	25	2,5	36,0	2059,0	2700,0	350 kcmil
32567	1 x 240 rm / 25	12	6 / 10	3,4	25	2,5	38,0	2587,0	3300,0	500 kcmil
32568	1 x 300 rm / 25	12	6 / 10	3,4	25	2,5	40,0	3163,0	3900,0	600 kcmil
32569	1 x 400 rm / 35	12	6 / 10	3,4	35	2,5	44,0	4234,0	4850,0	750 kcmil
32570	1 x 500 rm / 35	12	6 / 10	3,4	35	2,5	47,0	5194,0	6000,0	1000 kcmil
79954	1 x 630 rm / 35	12	6 / 10	3,4	35	2,5	49,0	6442,0	7020,0	1250 kcmil
32571	1 x 35 rm / 16	24	12 / 20	5,5	16	2,5	31,0	518,0	1210,0	2
32572	1 x 50 rm / 16	24	12 / 20	5,5	16	2,5	33,0	662,0	1400,0	1
32573	1 x 70 rm / 16	24	12 / 20	5,5	16	2,5	34,0	854,0	1550,0	2/0
32574	1 x 95 rm / 16	24	12 / 20	5,5	16	2,5	36,0	1094,0	1800,0	3/0
32575	1 x 120 rm / 16	24	12 / 20	5,5	16	2,5	37,0	1334,0	2150,0	4/0
32576	1 x 150 rm / 25	24	12 / 20	5,5	25	2,5	39,0	1723,0	2400,0	300 kcmil
32577	1 x 185 rm / 25	24	12 / 20	5,5	25	2,5	41,0	2059,0	2850,0	350 kcmil
32578	1 x 240 rm / 25	24	12 / 20	5,5	25	2,5	43,0	2587,0	3250,0	500 kcmil
32579	1 x 300 rm / 25	24	12 / 20	5,5	25	2,5	45,0	3163,0	3850,0	600 kcmil
32580	1 x 400 rm / 35	24	12 / 20	5,5	35	2,5	48,0	4234,0	4900,0	750 kcmil
32581	1 x 500 rm / 35	24	12 / 20	5,5	35	2,5	52,0	5194,0	6100,0	1000 kcmil
33092	1 x 630 rm / 35	24	12 / 20	5,5	35	2,5	54,0	6442,0	7340,0	1250 kcmil

Continuation ▸

N2XS(F)2Y 6/10kV, 12/20kV, 18/30kV XLPE-insulated,

Cu-conductor, single core, longitudinally water-tight, screened, PE-sheath

Part no.	No.cores x cross-sec. mm²	Operation voltage max.	Nominal voltage kV	Insulation thickness mm	Screen cross-sec. mm²	Sheath thickness Nominal value mm	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
32582	1 x 50 rm / 16	36	18 / 30	8	16	2,5	37,0	662,0	1700,0	1
32583	1 x 70 rm / 16	36	18 / 30	8	16	2,5	38,0	854,0	1950,0	2/0
32584	1 x 95 rm / 16	36	18 / 30	8	16	2,5	40,0	1094,0	2300,0	3/0
32585	1 x 120 rm / 16	36	18 / 30	8	16	2,5	42,0	1334,0	2600,0	4/0
32586	1 x 150 rm / 25	36	18 / 30	8	25	2,5	43,0	1723,0	3000,0	300 kcmil
32587	1 x 185 rm / 25	36	18 / 30	8	25	2,5	45,0	2059,0	3350,0	350 kcmil
32588	1 x 240 rm / 25	36	18 / 30	8	25	2,5	47,0	2587,0	4100,0	500 kcmil
32589	1 x 300 rm / 25	36	18 / 30	8	25	2,5	50,0	3163,0	4800,0	600 kcmil
32590	1 x 400 rm / 35	36	18 / 30	8	35	2,5	53,0	4234,0	5750,0	750 kcmil
32591	1 x 500 rm / 35	36	18 / 30	8	35	2,5	56,0	5194,0	6700,0	1000 kcmil
708487	1 x 630 rm / 35	36	18 / 30	8	35	2,5	59,0	6442,0	7760,0	1250 kcmil

Dimensions and specifications may be changed without prior notice. (RQ03)

N2XS(FL)2Y 6/10kV, 12/20kV, 18/30kV XLPE-insulated,

Cu-conductor, single core, longitudinally and crosswise water-tight, screened, PE-sheath



NEW

Technical data

- XLPE-insulated power cables to DIN VDE 0276 part 620, HD 620 S2 and IEC 60502
- **Temperature range** during installation up to -20°C
- **Operating temperature** max. +90°C
- **Short circuit temperature** +250°C (short circuit duration max. 5 s)
- **Nominal voltages** U_0/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltages** for 6/10 kV = max. 12 kV for 12/20 kV = max. 24 kV for 18/30 kV = max. 36 kV
- **Test voltages** for 6/10 kV = 15 kV for 12/20 kV = 30 kV for 18/30 kV = 45 kV
- **Minimum bending radius** 15x cable Ø
- **Power ratings** see Technical Informations

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Inner semi-conducting coating
- Core insulation of cross-linked polyethylene (XLPE), compound type DIX8 to HD 620 S2
- Outer extrusion of semi-conducting coating spliced with the XLPE-insulation
- Longitudinally water-tight, conductive wrapping
- Screen: Braiding of copper wires with one or two tapes applied helically
- Longitudinally water-tight wrapping
- Aluminium tape spliced with PE sheath
- Outer sheath of PE compound type DMP2 to HD 620 S2
- Sheath colour black

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- **Installation notes** To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation

Note

- rm = round conductor, multi-wire
- Further types and dimensions on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Installation primarily for power utility grids and in cable ducts, outdoors, underground and in water, and also on pallets for manufacturing plants, switchgear and power stations. The resistant Al/PE-laminated sheathing acts as a cross water barrier. It inhibits the diffusion of water. In case of sheathing damage, water impact is contained at the flaw. The cable can be severely mechanically stressed during installation and operation. The PE sheathing is not flame-retardant to DIN EN 60332-1-2. The internal conductive layer between conductor and VPE insulation and the adherent external conductive layer on the VPE insulation guarantees a design with high operational safety and no partial discharge.

Part no.	No.cores x cross-sec. mm²	Operation voltage max.	Nominal voltage kV	Insulation thickness mm	Screen cross-sec. mm²	Sheath thickness Nominal value mm	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
33054	1 x 35 rm / 16	12	6 / 10	3,4	16	2,5	28,0	518,0	860,0	2
33055	1 x 50 rm / 16	12	6 / 10	3,4	16	2,5	30,0	662,0	1000,0	1
33056	1 x 70 rm / 16	12	6 / 10	3,4	16	2,5	32,0	854,0	1350,0	2/0
33057	1 x 95 rm / 16	12	6 / 10	3,4	16	2,5	33,0	1094,0	1680,0	3/0
33058	1 x 120 rm / 16	12	6 / 10	3,4	16	2,5	34,0	1334,0	2070,0	4/0
33059	1 x 150 rm / 25	12	6 / 10	3,4	25	2,5	36,0	1723,0	2350,0	300 kcmil
33060	1 x 185 rm / 25	12	6 / 10	3,4	25	2,5	38,0	2059,0	2710,0	350 kcmil
33061	1 x 240 rm / 25	12	6 / 10	3,4	25	2,5	40,0	2587,0	3260,0	500 kcmil
38049	1 x 300 rm / 25	12	6 / 10	3,4	25	2,5	42,0	3163,0	3850,0	600 kcmil
38050	1 x 400 rm / 35	12	6 / 10	3,4	35	2,5	46,0	4234,0	4740,0	750 kcmil
38051	1 x 500 rm / 35	12	6 / 10	3,4	35	2,5	49,0	5194,0	5800,0	1000 kcmil
38052	1 x 630 rm / 35	12	6 / 10	3,4	35	2,5	51,0	6442,0	7120,0	1250 kcmil
38053	1 x 35 rm / 16	24	12 / 20	5,5	16	2,5	33,0	518,0	1020,0	2
33066	1 x 50 rm / 16	24	12 / 20	5,5	16	2,5	35,0	662,0	1170,0	1
33067	1 x 70 rm / 16	24	12 / 20	5,5	16	2,5	36,0	854,0	1470,0	2/0
33083	1 x 95 rm / 16	24	12 / 20	5,5	16	2,5	38,0	1094,0	1860,0	3/0
33069	1 x 120 rm / 16	24	12 / 20	5,5	16	2,5	39,0	1334,0	2260,0	4/0
33070	1 x 150 rm / 25	24	12 / 20	5,5	25	2,5	41,0	1723,0	2550,0	300 kcmil
33071	1 x 185 rm / 25	24	12 / 20	5,5	25	2,5	43,0	2059,0	2920,0	350 kcmil
33072	1 x 240 rm / 25	24	12 / 20	5,5	25	2,5	45,0	2587,0	3490,0	500 kcmil
33073	1 x 300 rm / 25	24	12 / 20	5,5	25	2,5	47,0	3163,0	4090,0	600 kcmil
33074	1 x 400 rm / 35	24	12 / 20	5,5	35	2,5	50,0	4234,0	5010,0	750 kcmil
33075	1 x 500 rm / 35	24	12 / 20	5,5	35	2,5	54,0	5194,0	6090,0	1000 kcmil
38054	1 x 630 rm / 35	24	12 / 20	5,5	35	2,5	55,0	6442,0	7440,0	1250 kcmil

Continuation ▸

Q

N2XS(FL)2Y 6/10kV, 12/20kV, 18/30kV XLPE-insulated,

Cu-conductor, single core, longitudinally and crosswise water-tight, screened, PE-sheath

Part no.	No.cores x cross-sec. mm²	Operation voltage max.	Nominal voltage kV	Insulation thickness mm	Screen cross-sec. mm²	Sheath thickness Nominal value mm	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
34312	1 x 50 rm / 16	36	18 / 30	8	16	2,5	36,0	662,0	1400,0	1
38055	1 x 70 rm / 16	36	18 / 30	8	16	2,5	40,0	854,0	1710,0	2/0
38056	1 x 95 rm / 16	36	18 / 30	8	16	2,5	42,0	1094,0	2110,0	3/0
38057	1 x 120 rm / 16	36	18 / 30	8	16	2,5	44,0	1334,0	2520,0	4/0
38058	1 x 150 rm / 25	36	18 / 30	8	25	2,5	45,0	1723,0	2830,0	300 kcmil
34313	1 x 185 rm / 25	36	18 / 30	8	25	2,5	47,0	2059,0	3210,0	350 kcmil
38059	1 x 240 rm / 25	36	18 / 30	8	25	2,5	49,0	2587,0	3790,0	500 kcmil
34314	1 x 300 rm / 25	36	18 / 30	8	25	2,5	52,0	3163,0	4430,0	600 kcmil
34315	1 x 400 rm / 35	36	18 / 30	8	35	2,5	55,0	4234,0	5390,0	750 kcmil
38060	1 x 500 rm / 35	36	18 / 30	8	35	2,5	58,0	5194,0	6500,0	1000 kcmil
38061	1 x 630 rm / 35	36	18 / 30	8	35	2,5	60,0	6442,0	7870,0	1250 kcmil

Dimensions and specifications may be changed without prior notice. (RQ03)

NA2XSY 6/10kV, 12/20kV, 18/30kV XLPE-insulated,

alu-conductor, single core, screened, PVC-sheath



Technical data

- XLPE-insulated power cables to DIN VDE 0276 part 620, HD 620 S2 and IEC 60502
- **Temperature range** during installation up to -5°C
- **Operating temperature** max. +90°C
- **Short circuit temperature** +250°C (short circuit duration max. 5 s)
- **Nominal voltages** U_0/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltages** for 6/10 kV = max. 12 kV for 12/20 kV = max. 24 kV for 18/30 kV = max. 36 kV
- **Test voltages** for 6/10 kV = 15 kV for 12/20 kV = 30 kV for 18/30 kV = 45 kV
- **Minimum bending radius** 15x cable Ø
- **Power ratings** see Technical Informations

Cable structure

- Aluminium-conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Inner semi-conducting coating
- Core insulation of cross-linked polyethylene (XLPE), compound type DIX8 to HD 620 S2
- Outer extrusion of semi-conducting coating spliced with the insulation
- Wrapping of conductive material
- Screen: Braiding of copper wires with one or two tapes applied helically
- Wrapping
- Outer sheath of PVC compound type DMV6 to HD 620 S2
- Sheath colour red

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- **Installation notes** To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation

Note

- rm = round conductor, multi-wire
- Further dimensions available on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Suitable for installation mostly for power supply stations, in indoors and in cable ducts, outdoor with protected laying, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. Due to the good laying characteristic, this can also be laid easily in difficult line guideways.
The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

Part no.	No.cores x cross-sec. mm²	Operation voltage max.	Nominal voltage kV	Insulation thickness mm	Sheath thickness Nominal value mm	Outer Ø min. - max. mm	Cop. weight kg / km	Alu weight kg / km	Weight app. kg / km	AWG-No.
32440	1 x 50 rm / 16	12	6 / 10	3,4	2,5	24,0 - 29,0	182,0	145,0	780,0	1
32441	1 x 70 rm / 16	12	6 / 10	3,4	2,5	26,0 - 31,0	182,0	203,0	875,0	2/0
32442	1 x 95 rm / 16	12	6 / 10	3,4	2,5	26,0 - 32,0	182,0	276,0	990,0	3/0
32443	1 x 120 rm / 16	12	6 / 10	3,4	2,5	28,0 - 34,0	182,0	348,0	1110,0	4/0
32444	1 x 150 rm / 16	12	6 / 10	3,4	2,5	29,0 - 35,0	182,0	435,0	1240,0	300 kcmil
32445	1 x 150 rm / 25	12	6 / 10	3,4	2,5	29,0 - 35,0	283,0	435,0	1310,0	300 kcmil
32446	1 x 185 rm / 16	12	6 / 10	3,4	2,5	31,0 - 37,0	182,0	537,0	1405,0	350 kcmil
32447	1 x 185 rm / 25	12	6 / 10	3,4	2,5	31,0 - 37,0	283,0	537,0	1460,0	350 kcmil
32448	1 x 240 rm / 16	12	6 / 10	3,4	2,5	33,0 - 39,0	182,0	696,0	1615,0	500 kcmil
32449	1 x 240 rm / 25	12	6 / 10	3,4	2,5	33,0 - 39,0	283,0	696,0	1660,0	500 kcmil
32450	1 x 300 rm / 25	12	6 / 10	3,4	2,5	36,0 - 41,0	283,0	870,0	1910,0	600 kcmil
32451	1 x 400 rm / 35	12	6 / 10	3,4	2,5	40,0 - 45,0	394,0	1160,0	2315,0	750 kcmil
32452	1 x 500 rm / 35	12	6 / 10	3,4	2,5	43,0 - 48,0	394,0	1450,0	2750,0	1000 kcmil
32453	1 x 50 rm / 16	24	12 / 20	5,5	2,5	28,0 - 33,0	182,0	145,0	950,0	1
32454	1 x 70 rm / 16	24	12 / 20	5,5	2,5	30,0 - 35,0	182,0	203,0	1110,0	2/0
32455	1 x 95 rm / 16	24	12 / 20	5,5	2,5	31,0 - 36,0	182,0	276,0	1220,0	3/0
32456	1 x 120 rm / 16	24	12 / 20	5,5	2,5	32,0 - 38,0	182,0	348,0	1310,0	4/0
32457	1 x 150 rm / 16	24	12 / 20	5,5	2,5	33,0 - 39,0	182,0	435,0	1460,0	300 kcmil
32458	1 x 150 rm / 25	24	12 / 20	5,5	2,5	33,0 - 39,0	283,0	435,0	1520,0	300 kcmil
32459	1 x 185 rm / 16	24	12 / 20	5,5	2,5	35,0 - 41,0	182,0	537,0	1660,0	350 kcmil
32460	1 x 185 rm / 25	24	12 / 20	5,5	2,5	35,0 - 41,0	283,0	537,0	1720,0	350 kcmil
32461	1 x 240 rm / 16	24	12 / 20	5,5	2,5	38,0 - 44,0	182,0	696,0	1860,0	500 kcmil
32462	1 x 240 rm / 25	24	12 / 20	5,5	2,5	38,0 - 44,0	283,0	696,0	1910,0	500 kcmil
32463	1 x 300 rm / 25	24	12 / 20	5,5	2,5	40,0 - 46,0	283,0	870,0	2220,0	600 kcmil
32464	1 x 400 rm / 35	24	12 / 20	5,5	2,5	43,0 - 49,0	394,0	1160,0	2620,0	750 kcmil
32465	1 x 500 rm / 35	24	12 / 20	5,5	2,5	46,0 - 52,0	394,0	1450,0	3030,0	1000 kcmil
32466	1 x 50 rm / 16	36	18 / 30	8	2,5	32,0 - 38,0	182,0	145,0	1260,0	1
32467	1 x 70 rm / 16	36	18 / 30	8	2,5	34,0 - 40,0	182,0	203,0	1360,0	2/0

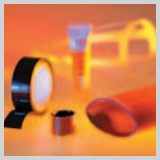
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NA2XSY 6/10kV, 12/20kV, 18/30kV XLPE-insulated,

alu-conductor, single core, screened, PVC-sheath

Part no.	No.cores x cross-sec. mm²	Operation voltage max.	Nominal voltage kV	Insulation thickness mm	Sheath thickness Nominal value mm	Outer Ø min. - max. mm	Cop. weight kg / km	Alu weight kg / km	Weight app. kg / km	AWG-No.
32468	1 x 95 rm / 16	36	18 / 30	8	2,5	35,0 - 41,0	182,0	276,0	1510,0	3/0
32469	1 x 120 rm / 16	36	18 / 30	8	2,5	37,0 - 43,0	182,0	348,0	1610,0	4/0
32470	1 x 150 rm / 16	36	18 / 30	8	2,5	38,0 - 44,0	182,0	435,0	1760,0	300 kcmil
32471	1 x 150 rm / 25	36	18 / 30	8	2,5	38,0 - 44,0	283,0	435,0	1810,0	300 kcmil
32472	1 x 185 rm / 16	36	18 / 30	8	2,5	40,0 - 46,0	182,0	537,0	1960,0	350 kcmil
32473	1 x 185 rm / 25	36	18 / 30	8	2,5	40,0 - 46,0	283,0	537,0	2020,0	350 kcmil
32474	1 x 240 rm / 16	36	18 / 30	8	2,5	42,0 - 48,0	182,0	696,0	2210,0	500 kcmil
32475	1 x 240 rm / 25	36	18 / 30	8	2,5	42,0 - 48,0	283,0	696,0	2260,0	500 kcmil
32476	1 x 300 rm / 25	36	18 / 30	8	2,5	45,0 - 51,0	283,0	870,0	2560,0	600 kcmil
32477	1 x 400 rm / 35	36	18 / 30	8	2,5	48,0 - 54,0	394,0	1160,0	2960,0	750 kcmil
32478	1 x 500 rm / 35	36	18 / 30	8	2,5	51,0 - 57,0	394,0	1450,0	3460,0	1000 kcmil

Dimensions and specifications may be changed without prior notice. (RQ03)



Suitable medium voltage connection sleeves can be found in our Cable Accessories catalogue.

NA2XS2Y 6/10kV, 12/20kV, 18/30kV XLPE-insulated,

Alu-conductor, single core, screened, PE-sheath



Technical data

- XLPE-insulated power cables to DIN VDE 0276 part 620, HD 620 S2 and IEC 60502
- **Temperature range** during installation up to -20°C
- **Operating temperature** max. +90°C
- **Short circuit temperature** +250°C (short circuit duration max. 5 s)
- **Nominal voltages** U_0/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltages** for 6/10 kV = max. 12 kV for 12/20 kV = max. 24 kV for 18/30 kV = max. 36 kV
- **Test voltages** for 6/10 kV = 15 kV for 12/20 kV = 30 kV for 18/30 kV = 45 kV
- **Minimum bending radius** 15x cable Ø
- **Power ratings** see Technical Informations

Cable structure

- Aluminium-conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Inner semi-conducting coating
- Core insulation of cross-linked polyethylene (XLPE), compound type DIX8 to HD 620 S2
- Outer extrusion of semi-conducting coating spliced with the insulation
- Wrapping of conductive material
- Screen: Braiding of copper wires with one or two tapes applied helically
- Wrapping
- Outer sheath of PE compound type DMP2 to HD 620 S2
- Sheath colour black

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- **Installation notes** To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation.

Note

- rm = round conductor, multi-wire
- Further dimensions available on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Suitable for indoor installation and in cable ducts, outdoors, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. The PE-outer sheath is resistant to high mechanical stress for laying the cables. This PE sheath is not flame retardant acc. to DIN EN 60332-1-2.
The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

Part no.	No.cores x cross-sec. mm²	Operation voltage max.	Nominal voltage kV	Insulation thickness mm	Sheath thickness Nominal value mm	Outer Ø min. - max. mm	Cop. weight kg / km	Alu weight kg / km	Weight app. kg / km	AWG-No.
32520	1 x 50 rm / 16	12	6 / 10	3,4	2,5	24,0 - 29,0	182,0	145,0	710,0	1
32521	1 x 70 rm / 16	12	6 / 10	3,4	2,5	26,0 - 31,0	182,0	203,0	790,0	2/0
32522	1 x 95 rm / 16	12	6 / 10	3,4	2,5	26,0 - 32,0	182,0	276,0	920,0	3/0
32523	1 x 120 rm / 16	12	6 / 10	3,4	2,5	28,0 - 34,0	182,0	348,0	990,0	4/0
32524	1 x 150 rm / 16	12	6 / 10	3,4	2,5	29,0 - 35,0	182,0	435,0	1110,0	300 kcmil
32525	1 x 150 rm / 25	12	6 / 10	3,4	2,5	29,0 - 35,0	283,0	435,0	1220,0	300 kcmil
32526	1 x 185 rm / 16	12	6 / 10	3,4	2,5	31,0 - 37,0	182,0	537,0	1260,0	350 kcmil
32527	1 x 185 rm / 25	12	6 / 10	3,4	2,5	33,0 - 39,0	283,0	537,0	1370,0	350 kcmil
32528	1 x 240 rm / 16	12	6 / 10	3,4	2,5	33,0 - 39,0	182,0	696,0	1480,0	500 kcmil
32529	1 x 240 rm / 25	12	6 / 10	3,4	2,5	33,0 - 39,0	283,0	696,0	1530,0	500 kcmil
32530	1 x 300 rm / 25	12	6 / 10	3,4	2,5	36,0 - 41,0	283,0	870,0	1820,0	600 kcmil
32531	1 x 400 rm / 35	12	6 / 10	3,4	2,5	40,0 - 45,0	394,0	1160,0	2220,0	750 kcmil
32532	1 x 500 rm / 35	12	6 / 10	3,4	2,5	43,0 - 48,0	394,0	1450,0	2570,0	1000 kcmil
32533	1 x 50 rm / 16	24	12 / 20	5,5	2,5	28,0 - 33,0	182,0	145,0	890,0	1
32534	1 x 70 rm / 16	24	12 / 20	5,5	2,5	30,0 - 35,0	182,0	203,0	970,0	2/0
32535	1 x 95 rm / 16	24	12 / 20	5,5	2,5	31,0 - 36,0	182,0	276,0	1120,0	3/0
32536	1 x 120 rm / 16	24	12 / 20	5,5	2,5	32,0 - 38,0	182,0	348,0	1210,0	4/0
32537	1 x 150 rm / 16	24	12 / 20	5,5	2,5	33,0 - 39,0	182,0	435,0	1370,0	300 kcmil
32538	1 x 150 rm / 25	24	12 / 20	5,5	2,5	33,0 - 39,0	283,0	435,0	1420,0	300 kcmil
32539	1 x 185 rm / 16	24	12 / 20	5,5	2,5	35,0 - 41,0	182,0	537,0	1530,0	350 kcmil
32540	1 x 185 rm / 25	24	12 / 20	5,5	2,5	35,0 - 41,0	283,0	537,0	1570,0	350 kcmil
32541	1 x 240 rm / 16	24	12 / 20	5,5	2,5	38,0 - 44,0	182,0	696,0	1720,0	500 kcmil
32542	1 x 240 rm / 25	24	12 / 20	5,5	2,5	38,0 - 44,0	283,0	696,0	1830,0	500 kcmil
32543	1 x 300 rm / 25	24	12 / 20	5,5	2,5	40,0 - 46,0	283,0	870,0	2070,0	600 kcmil
32544	1 x 400 rm / 35	24	12 / 20	5,5	2,5	43,0 - 49,0	394,0	1160,0	2460,0	750 kcmil
32545	1 x 500 rm / 35	24	12 / 20	5,5	2,5	46,0 - 52,0	394,0	1450,0	2890,0	1000 kcmil
33078	1 x 630 rm / 35	24	12 / 20	5,5	2,5	47,0 - 53,0	394,0	1827,0	3370,0	1250 kcmil
32546	1 x 50 rm / 16	36	18 / 30	8	2,5	32,0 - 38,0	182,0	145,0	1120,0	1

Continuation ▸

NA2XS2Y 6/10kV, 12/20kV, 18/30kV XLPE-insulated,

Alu-conductor, single core, screened, PE-sheath

Part no.	No.cores x cross-sec. mm²	Operation voltage max.	Nominal voltage kV	Insulation thickness mm	Sheath thickness Nominal value mm	Outer Ø min. - max. mm	Cop. weight kg / km	Alu weight kg / km	Weight app. kg / km	AWG-No.
32547	1 x 70 rm / 16	36	18 / 30	8	2,5	34,0 - 40,0	182,0	203,0	1270,0	2/0
32548	1 x 95 rm / 16	36	18 / 30	8	2,5	35,0 - 41,0	182,0	276,0	1380,0	3/0
32549	1 x 120 rm / 16	36	18 / 30	8	2,5	37,0 - 43,0	182,0	348,0	1530,0	4/0
32550	1 x 150 rm / 25	36	18 / 30	8	2,5	38,0 - 44,0	283,0	435,0	1720,0	300 kcmil
32551	1 x 185 rm / 25	36	18 / 30	8	2,5	40,0 - 46,0	283,0	537,0	1860,0	350 kcmil
32552	1 x 240 rm / 25	36	18 / 30	8	2,5	42,0 - 48,0	283,0	696,0	2110,0	500 kcmil
32553	1 x 300 rm / 25	36	18 / 30	8	2,5	45,0 - 51,0	283,0	870,0	2370,0	600 kcmil
32554	1 x 400 rm / 35	36	18 / 30	8	2,5	48,0 - 54,0	394,0	1160,0	2820,0	750 kcmil
32555	1 x 500 rm / 35	36	18 / 30	8	2,5	51,0 - 57,0	394,0	1450,0	3280,0	1000 kcmil
32999	1 x 630 rm / 35	36	18 / 30	8	2,5	52,0 - 59,0	394,0	1827,0	3770,0	1250 kcmil

Dimensions and specifications may be changed without prior notice. (RQ03)



Suitable medium voltage connection sleeves can be found in our Cable Accessories catalogue.

NA2XS(F)2Y 6/10kV, 12/20kV, 18/30kV XLPE-insulated,

alu-conductor, single core, longitudinally water-tight, screened, PE-sheath



Technical data

- XLPE-insulated power cables to DIN VDE 0276 part 620, HD 620 S2 and IEC 60502
- **Temperature range** during installation up to -20°C
- **Operating temperature** max. +90°C
- **Short circuit temperature** +250°C (short circuit duration max. 5 s)
- **Nominal voltages** U_0/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltages** for 6/10 kV = max. 12 kV for 12/20 kV = max. 24 kV for 18/30 kV = max. 36 kV
- **Test voltages** for 6/10 kV = 15 kV for 12/20 kV = 30 kV for 18/30 kV = 45 kV
- **Minimum bending radius** 15x cable Ø
- **Power ratings** see Technical Informations

Cable structure

- Aluminium-conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Inner semi-conducting coating
- Core insulation of cross-linked polyethylene (XLPE), compound type DIX8 to HD 620 S2
- Outer extrusion of semi-conducting coating spliced with the XLPE-insulation
- Longitudinally water-tight, conductive wrapping
- Screen: Braiding of copper wires with one or two tapes applied helically
- Longitudinally water-tight wrapping
- Outer sheath of PE compound typeDMP2 to HD 620 S2
- Sheath colour black
- Sheath thickness voltage 2,5 mm

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- **Installation notes** To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation.

Note

- rm = round conductor, multi-wire
- Further types and dimensions on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Suitable for indoor installation and in cable ducts, outdoors, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. The PE-outer sheath is resistant to high mechanical stress for laying the cables. This PE sheath is not flame retardant acc. to DIN EN 60332-1-2.
The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

Part no.	No.cores x cross-sec. mm²	Operation voltage max.	Nominal voltage kV	Insulation thickness mm	Screen cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Alu weight kg / km	Weight app. kg / km	AWG-No.
32600	1 x 35 rm / 16	12	6 / 10	3,4	16	26,0	182,0	102,0	780,0	2
32601	1 x 50 rm / 16	12	6 / 10	3,4	16	28,0	182,0	145,0	850,0	1
32602	1 x 70 rm / 16	12	6 / 10	3,4	16	30,0	182,0	203,0	980,0	2/0
32603	1 x 95 rm / 16	12	6 / 10	3,4	16	31,0	182,0	276,0	1080,0	3/0
32604	1 x 120 rm / 16	12	6 / 10	3,4	16	32,0	182,0	348,0	1150,0	4/0
32605	1 x 150 rm / 25	12	6 / 10	3,4	25	34,0	283,0	435,0	1280,0	300 kcmil
32606	1 x 185 rm / 25	12	6 / 10	3,4	25	36,0	283,0	537,0	1420,0	350 kcmil
32607	1 x 240 rm / 25	12	6 / 10	3,4	25	38,0	283,0	696,0	1630,0	500 kcmil
32608	1 x 300 rm / 25	12	6 / 10	3,4	25	40,0	283,0	870,0	1950,0	600 kcmil
32609	1 x 400 rm / 35	12	6 / 10	3,4	35	44,0	394,0	1160,0	2350,0	750 kcmil
32610	1 x 500 rm / 35	12	6 / 10	3,4	35	47,0	394,0	1450,0	2780,0	1000 kcmil
32611	1 x 50 rm / 16	24	12 / 20	5,5	16	33,0	182,0	145,0	920,0	1
32612	1 x 70 rm / 16	24	12 / 20	5,5	16	34,0	182,0	203,0	1030,0	2/0
32613	1 x 95 rm / 16	24	12 / 20	5,5	16	36,0	182,0	276,0	1140,0	3/0
32614	1 x 120 rm / 16	24	12 / 20	5,5	16	37,0	182,0	348,0	1250,0	4/0
32615	1 x 150 rm / 25	24	12 / 20	5,5	25	39,0	283,0	435,0	1320,0	300 kcmil
32616	1 x 185 rm / 25	24	12 / 20	5,5	25	41,0	283,0	537,0	1570,0	350 kcmil
32617	1 x 240 rm / 25	24	12 / 20	5,5	25	43,0	283,0	696,0	1780,0	500 kcmil
32618	1 x 300 rm / 25	24	12 / 20	5,5	25	45,0	283,0	870,0	2100,0	600 kcmil
32619	1 x 400 rm / 35	24	12 / 20	5,5	35	48,0	394,0	1160,0	2480,0	750 kcmil
32620	1 x 500 rm / 35	24	12 / 20	5,5	35	50,0	394,0	1450,0	2900,0	1000 kcmil
33090	1 x 630 rm / 35	24	12 / 20	5,5	35	52,0	394,0	1827,0	3380,0	1250 kcmil
33091	1 x 800 rm / 35	24	12 / 20	5,5	35	57,0	394,0	2320,0	4400,0	1500 kcmil
33097	1 x 1000 rm / 35	24	12 / 20	5,5	35	62,0	394,0	2900,0	4780,0	2000 kcmil

Continuation ▸

NA2XS(F)2Y 6/10kV, 12/20kV, 18/30kV XLPE-insulated,

alu-conductor, single core, longitudinally water-tight, screened, PE-sheath

Part no.	No.cores x cross-sec. mm²	Operation voltage max.	Nominal voltage kV	Insulation thickness mm	Screen cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Alu weight kg / km	Weight app. kg / km	AWG-No.
32621	1 x 50 rm / 16	36	18 / 30	8	16	37,0	182,0	145,0	1250,0	1
32622	1 x 70 rm / 16	36	18 / 30	8	16	38,0	182,0	203,0	1500,0	2/0
32623	1 x 95 rm / 16	36	18 / 30	8	16	40,0	182,0	276,0	1700,0	3/0
32624	1 x 120 rm / 16	36	18 / 30	8	16	42,0	182,0	348,0	1800,0	4/0
32625	1 x 150 rm / 25	36	18 / 30	8	25	43,0	283,0	435,0	2050,0	300 kcmil
32626	1 x 185 rm / 25	36	18 / 30	8	25	45,0	283,0	537,0	2150,0	350 kcmil
32627	1 x 240 rm / 25	36	18 / 30	8	25	47,0	283,0	696,0	2400,0	500 kcmil
32628	1 x 300 rm / 25	36	18 / 30	8	25	50,0	283,0	870,0	2700,0	600 kcmil
32629	1 x 400 rm / 35	36	18 / 30	8	35	53,0	394,0	1160,0	3200,0	750 kcmil
32630	1 x 500 rm / 35	36	18 / 30	8	35	56,0	394,0	1450,0	3555,0	1000 kcmil
31219	1 x 630 rm / 35	36	18 / 30	8	35	58,0	394,0	1827,0	3790,0	1250 kcmil

Dimensions and specifications may be changed without prior notice. (RQ03)



Suitable medium voltage connection sleeves can be found in our Cable Accessories catalogue.

NA2XS(FL)2Y 6/10kV, 12/20kV, 18/30kV XLPE-insulated,

alu-conductor, single core, longitudinally and crosswise water-tight, screened, PE-sheath



NEW

Technical data

- XLPE-insulated power cables to DIN VDE 0276 part 620, HD 620 S2 and IEC 60502
- **Temperature range** during installation up to -20°C
- **Operating temperature** max. + 90°C
- **Short circuit temperature** 250°C (short circuit duration max. 5 s)
- **Nominal voltages** U_0/U 6/10 kV, 12/20 kV, 18/30 kV
- **Operating voltages** for 6/10 kV = max. 12 kV for 12/20 kV = max. 24 kV for 18/30 kV = max. 36 kV
- **Test voltages** for 6/10 kV = 15 kV for 12/20 kV = 30 kV for 18/30 kV = 45 kV
- **Minimum bending radius** 15x cable Ø
- **Power ratings** see Technical Informations

Cable structure

- Aluminium-conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Inner semi-conducting coating
- Core insulation of cross-linked polyethylene (XLPE), compound type DIX8 to HD 620 S2
- Outer extrusion of semi-conducting coating spliced with the XLPE-insulation
- Longitudinally water-tight, conductive wrapping
- Screen: Braiding of copper wires with one or two tapes applied helically
- Longitudinally water-tight wrapping
- Aluminium tape spliced with PE sheath
- Outer sheath of PE compound type DMP2 to HD 620 S2
- Sheath colour black
- Sheath wall thickness nominal value 2,5 mm

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- **Installation notes** To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation.

Note

- rm = round conductor, multi-wire
- Further types and dimensions on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Installation primarily for power utility grids and in cable ducts, outdoors, underground and in water, and also on pallets for manufacturing plants, switchgear and power stations. The resistant Al/PE-laminated sheathing acts as a cross water barrier. It inhibits the diffusion of water. In case of sheathing damage, water impact is contained at the flaw. The cable can be severely mechanically stressed during installation and operation. The PE sheathing is not flame-retardant to DIN EN 60332-1-2. The internal conductive layer between conductor and VPE insulation and the adherent external conductive layer on the VPE insulation guarantees a design with high operational safety and no partial discharge.

Part no.	No.cores x cross-sec. mm²	Operation voltage max.	Nominal voltage kV	Insulation thickness mm	Screen cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Alu weight kg / km	Weight app. kg / km	AWG-No.
38062	1 x 50 rm / 16	12	6 / 10	3,4	16	30,0	182,0	145,0	710,0	1
38063	1 x 70 rm / 16	12	6 / 10	3,4	16	32,0	182,0	203,0	890,0	2/0
38064	1 x 95 rm / 16	12	6 / 10	3,4	16	33,0	182,0	276,0	1100,0	3/0
38065	1 x 120 rm / 16	12	6 / 10	3,4	16	34,0	182,0	348,0	1330,0	4/0
38066	1 x 150 rm / 25	12	6 / 10	3,4	25	36,0	283,0	435,0	1450,0	300 kcmil
38067	1 x 185 rm / 25	12	6 / 10	3,4	25	38,0	283,0	537,0	1580,0	350 kcmil
38068	1 x 240 rm / 25	12	6 / 10	3,4	25	40,0	283,0	696,0	1780,0	500 kcmil
38069	1 x 300 rm / 25	12	6 / 10	3,4	25	42,0	283,0	870,0	1990,0	600 kcmil
38070	1 x 400 rm / 35	12	6 / 10	3,4	35	46,0	394,0	1160,0	2320,0	750 kcmil
38071	1 x 500 rm / 35	12	6 / 10	3,4	35	49,0	394,0	1450,0	2690,0	1000 kcmil
38072	1 x 630 rm / 35	12	6 / 10	3,4	35	51,0	394,0	1827,0	3160,0	1250 kcmil
38073	1 x 50 rm / 16	24	12 / 20	5,5	16	35,0	182,0	145,0	870,0	1
38074	1 x 70 rm / 16	12	12 / 20	5,5	16	36,0	182,0	203,0	1060,0	2/0
38075	1 x 95 rm / 16	24	12 / 20	5,5	16	38,0	182,0	276,0	1280,0	3/0
38076	1 x 120 rm / 16	24	12 / 20	5,5	16	39,0	182,0	348,0	1520,0	4/0
38089	1 x 150 rm / 25	24	12 / 20	5,5	25	41,0	283,0	435,0	1650,0	300 kcmil
38077	1 x 185 rm / 25	24	12 / 20	5,5	25	43,0	283,0	537,0	1800,0	350 kcmil
38078	1 x 240 rm / 25	24	12 / 20	5,5	25	45,0	283,0	696,0	2000,0	500 kcmil
38079	1 x 300 rm / 25	24	12 / 20	5,5	25	47,0	283,0	870,0	2230,0	600 kcmil
38080	1 x 400 rm / 35	24	12 / 20	5,5	35	50,0	394,0	1160,0	2580,0	750 kcmil
38081	1 x 500 rm / 35	24	12 / 20	5,5	35	54,0	394,0	1450,0	2980,0	1000 kcmil
38082	1 x 630 rm / 35	24	6 / 10	5,5	35	55,0	394,0	1827,0	3480,0	1250 kcmil

Continuation ▸

Q

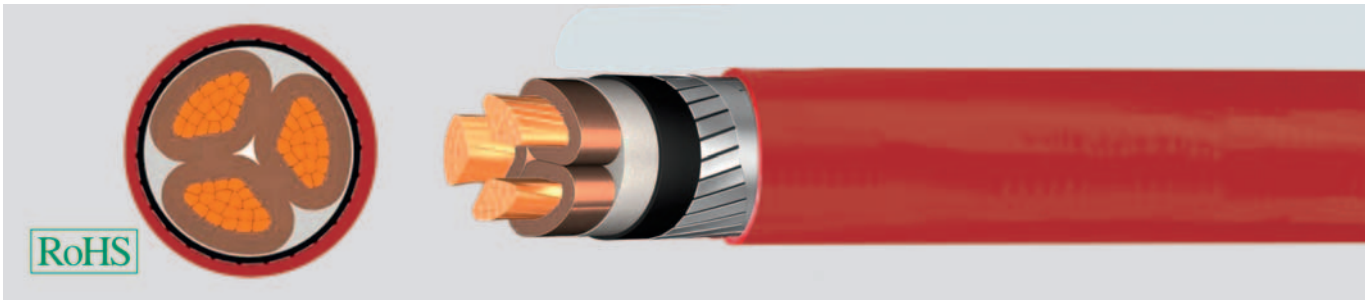
NA2XS(FL)2Y 6/10kV, 12/20kV, 18/30kV XLPE-insulated,

alu-conductor, single core, longitudinally and crosswise water-tight, screened, PE-sheath

Part no.	No.cores x cross-sec. mm²	Operation voltage max.	Nominal voltage kV	Insulation thickness mm	Screen cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Alu weight kg / km	Weight app. kg / km	AWG-No.
33084	1 x 50 rm / 16	36	18 / 30	8	16	39,0	182,0	145,0	1100,0	1
33085	1 x 70 rm / 16	36	18 / 30	8	16	40,0	182,0	203,0	1300,0	2/0
38083	1 x 95 rm / 16	36	18 / 30	8	16	42,0	182,0	276,0	1530,0	3/0
38084	1 x 120 rm / 16	36	18 / 30	8	16	44,0	182,0	348,0	1780,0	4/0
38085	1 x 150 rm / 25	36	18 / 30	8	25	45,0	283,0	435,0	1920,0	300 kcmil
38086	1 x 185 rm / 25	36	18 / 30	8	25	47,0	283,0	537,0	2080,0	350 kcmil
38087	1 x 240 rm / 25	36	10 / 30	8	25	49,0	283,0	696,0	2300,0	500 kcmil
38088	1 x 300 rm / 25	36	18 / 30	8	25	52,0	283,0	870,0	2550,0	600 kcmil
38089	1 x 400 rm / 35	36	18 / 30	8	35	55,0	394,0	1160,0	2960,0	750 kcmil
38090	1 x 500 rm / 35	36	18 / 30	8	35	30,0	394,0	1450,0	3380,0	1000 kcmil
38091	1 x 630 rm / 35	36	18 / 30	8	35	60,0	394,0	1827,0	3900,0	1250 kcmil

Dimensions and specifications may be changed without prior notice. (RQ03)

NYFGY 3 x ... 3,6/6kV Flat wire sheating, PVC-sheath



NEW

Technical data

- Three core PVC-insulated cables to DIN VDE 0271 and IEC 60502
- **Temperature range** during installation up to -5°C
- **Operating temperature** max. +70°C
- **Short circuit temperature** (short circuit duration max. 5 s) +160°C
- **Nominal voltages** U_0/U 3,6/6 kV
- **Operating voltages** max. 7,2 kV
- **Test voltages** 11 kV
- **Minimum bending radius** 15x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Core insulation of PVC
- 3 cores stranded
- Wrapping
- Inner sheath of PVC
- Armour of galvanized steel wires with counter helix
- Outer sheath of PVC
- Sheath colour red

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- sm = sectional conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

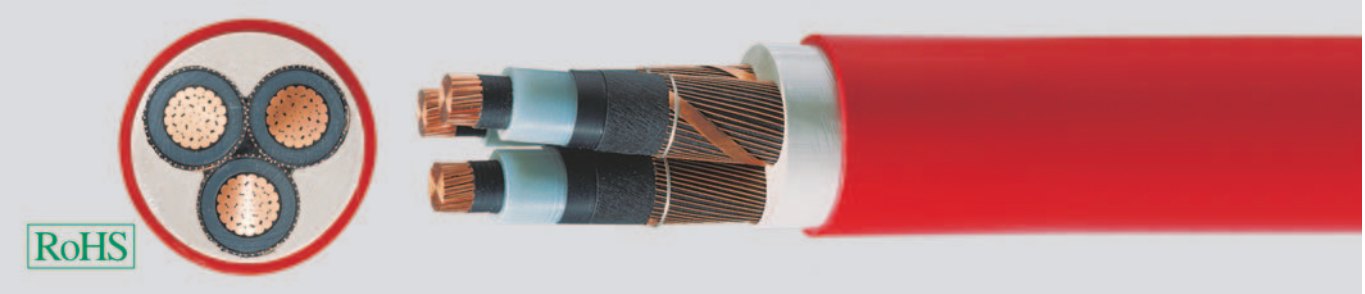
Indoors and in cable ducts, outdoors with protected laying, underground for power stations, industrial systems and switchgear, whenever increased mechanical protection is required or whenever higher drag forces are expected during assembly and operation.

Part no.	No.cores x cross-sec. mm²	Insulation thickness mm	Sheath thickness Nominal value mm	Outer Ø min. - max.	Cop. weight kg / km	Weight app. kg / km	AWG-No.
34187	3 x 25 sm	3,4	2,0	34,0 - 42,0	720,0	2640,0	4
34188	3 x 35 sm	3,4	2,1	36,0 - 43,0	1008,0	2680,0	2
34189	3 x 50 sm	3,4	2,2	38,0 - 46,0	1440,0	3205,0	1
34190	3 x 70 sm	3,4	2,3	41,0 - 49,0	2016,0	4085,0	2/0
34191	3 x 95 sm	3,4	2,4	45,0 - 53,0	2736,0	5060,0	3/0
34192	3 x 120 sm	3,4	2,6	48,0 - 56,0	3456,0	5950,0	4/0
34193	3 x 150 sm	3,4	2,7	51,0 - 59,0	4320,0	6930,0	300 kcmil
34194	3 x 185 sm	3,4	2,8	55,0 - 64,0	5328,0	8240,0	350 kcmil
34195	3 x 240 sm	3,4	2,9	59,0 - 68,0	6912,0	10100,0	500 kcmil

Dimensions and specifications may be changed without prior notice. (RQ03)

Q

N2XSEY 3 x ... 6/10kV XLPE-insulated, Cu-conductor, PVC-sheath



Technical data

- Three core XLPE-insulated power cables to DIN VDE 0276 and IEC 60502
- **Temperature range** during installation up to -5°C
- **Operating temperature** max. +90°C
- **Short circuit temperature** core +250°C screen +350°C (duration) (short circuit duration max. 5 s)
- **Nominal voltages** U_0/U 6/10 kV
- **Operating voltages** max. 12 kV
- **Test voltages** 15 kV
- **Test voltages d.c.** 48 kV
- **Minimum bending radius** 15x cable Ø
- **Tests** acc. to DIN VDE 0276 and IEC 60502

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Inner semi-conducting coating
- Core insulation of cross-linked polyethylene (XLPE)
- Outer extrusion of semi-conducting coating spliced with the XLPE-insulation
- Conductive wrapping
- Screen: Braiding of copper wires with one or two tapes applied helically
- 3 cores stranded
- Extruded sheath over three cores
- Outer sheath of PVC compound type DMV6 to HD 620 S2
- Sheath colour red

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- **Installation notes** To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation.

Note

- rm = round conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- For laying in earth: For ground thermal resistivity of 1 Kxm/W, laying depth 0,7 m, ground temperature 20°C, EVU load grade 0,7.
- For laying in air: Air temperature 30°C, EVU load grade 1,0.
- Conversion factors for laying in earth especially for laying in bundle form and other requirements are noted in DIN VDE 0298 part 2 and 0276 part 1000.
- Conversion factors for laying in air
- Air temperature/Conversion factor 15°C/1,12; 20°C/1,08; 25°C/1,04; 30°C/1,0; 35°C/0,96; 35°C/0,96; 40°C/0,91; 45°C/0,87; 50°C/0,82;

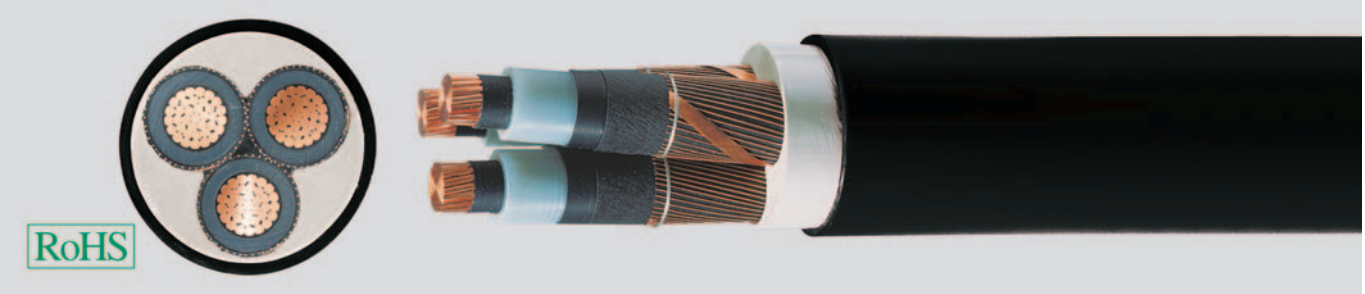
Application

Suitable for installation in indoors and in cable ducts, outdoors with protected laying, as well as for laying on racks for industrial and switching systems and power plants. Limited use when buried in the earth if the PVC outer sheath could be damaged by high mechanical stress.
The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

Part no.	No.cores x cross-sec. mm²	Insulation thickness mm	Screen cross-sec. mm²	Sheath thickness Nominal value mm	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
34339	3 x 25 rm / 16	3,4	16	2,5	43,0	1046,0	2850,0	4
34340	3 x 35 rm / 16	3,4	16	2,5	48,0	1210,0	3300,0	2
34341	3 x 50 rm / 16	3,4	16	2,5	50,0	1671,0	3750,0	1
34342	3 x 70 rm / 16	3,4	16	2,6	54,0	2250,0	4650,0	2/0
34343	3 x 95 rm / 16	3,4	16	2,8	58,0	2995,0	5700,0	3/0
34344	3 x 120 rm / 16	3,4	16	2,9	61,0	3715,0	6700,0	4/0
34345	3 x 150 rm / 25	3,4	25	3,0	65,0	4638,0	7900,0	300 kcmil
34346	3 x 185 rm / 25	3,4	25	3,1	68,0	5645,0	9200,0	350 kcmil
34347	3 x 240 rm / 25	3,4	25	3,3	74,0	7274,0	11450,0	500 kcmil
34348	3 x 300 rm / 25	3,4	25	3,3	79,0	9160,0	14450,0	600 kcmil

Dimensions and specifications may be changed without prior notice. (RQ03)

N2XSEH 3 x ... 6/10kV XLPE-insulated, halogen-free



NEW

Technical data

- Three core XLPE-insulated power cables to DIN VDE 0276 and IEC 60502
- **Temperature range** during installation up to -20°C
- **Operating temperature** max. +90°C
- **Short circuit temperature** core +250°C screen + 350°C (short circuit duration max. 5 s)
- **Nominal voltages** U_0/U 6/10 kV
- **Operating voltages** max. 12 kV
- **Test voltages** 15 kV
- **Test voltages d.c.** 48 kV
- **Minimum bending radius** 15x cable Ø
- **Tests** acc. to DIN VDE 0276 and IEC 60502

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Inner semi-conducting coating
- Core insulation of cross-linked Polyethylene (XLPE)
- Outer extrusion of semi-conducting coating spliced with the XLPE-insulation
- Conductive wrapping
- Screen: Braiding of copper wires with one or two tapes applied helically
- 3 cores stranded
- Extruded sheath over three cores
- outer sheath halogen-free
- Sheath colour black
- LS0H = Low Smoke Zero Halogen

Properties

- Halogen-free, no liberation of corrosive or toxic gases
- Limited propagation of fire
- Low smoke development, Ozone resistant
- **Installation notes** To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation.

Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

Note

- rm = round conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Suitable for installation in indoors and in cable ducts, outdoors as well as for laying on racks for industrial and switching systems and power plants. Limited use when buried in the earth if the outer sheath could be damaged by high mechanical stress.
The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

Part no.	No.cores x cross-sec. mm²	Insulation thickness mm	Screen cross-sec. mm²	Sheath thickness Nominal value mm	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
38041	3 x 50 rm / 16	3,4	16	2,5	50,0	1670,0	3800,0	1
38042	3 x 70 rm / 16	3,4	16	2,5	54,0	2250,0	4650,0	2/0
38043	3 x 95 rm / 16	3,4	16	2,5	58,0	2995,0	5700,0	3/0
38044	3 x 120 rm / 16	3,4	16	2,5	61,0	3715,0	6800,0	4/0
38045	3 x 150 rm / 25	3,4	25	2,5	65,0	4635,0	7900,0	300 kcmil
38046	3 x 185 rm / 25	3,4	25	2,5	68,0	5645,0	9350,0	350 kcmil
38047	3 x 240 rm / 25	3,4	25	2,5	74,0	7274,0	11450,0	500 kcmil

Dimensions and specifications may be changed without prior notice. (RQ03)

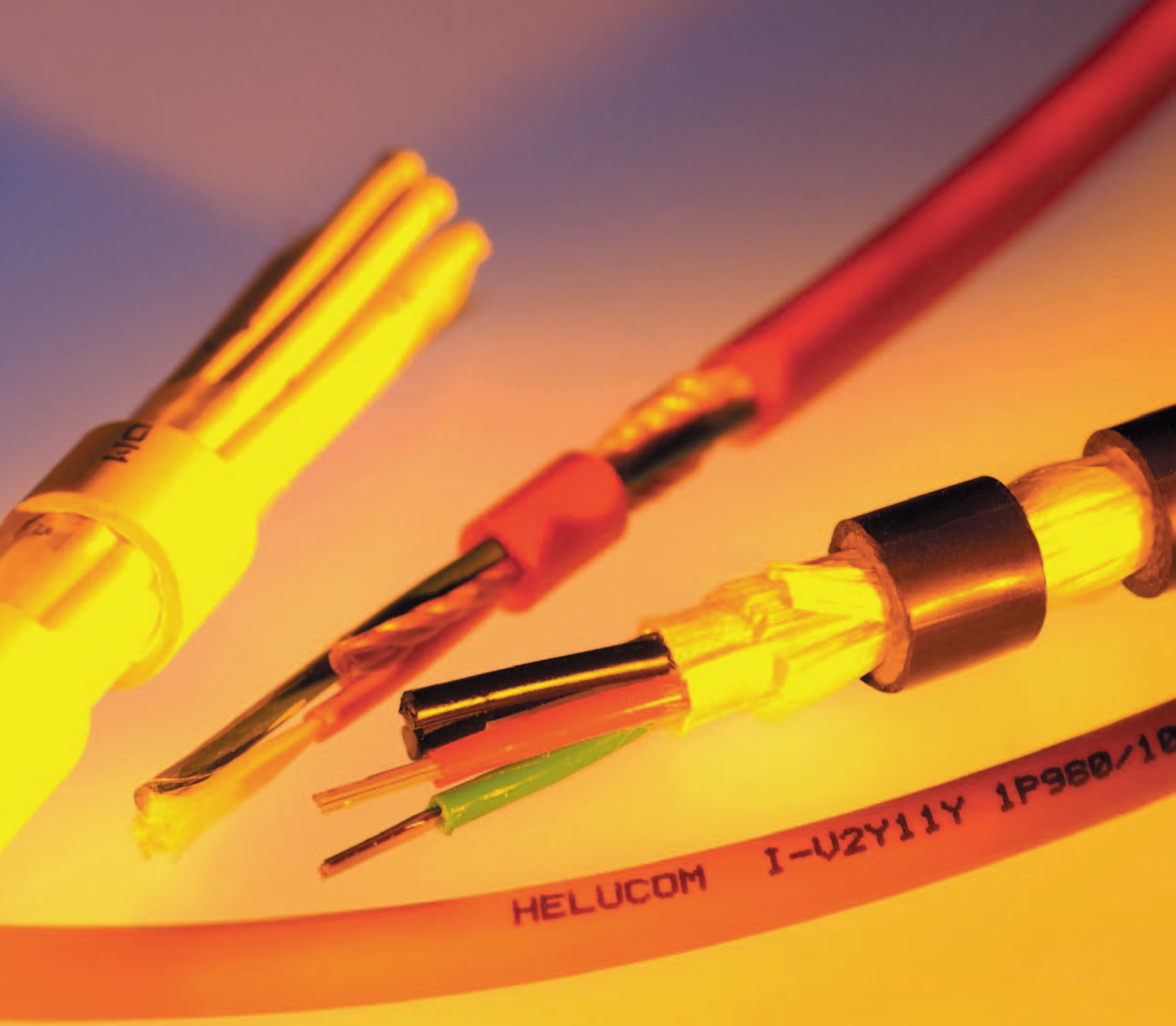
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DATA, NETWORK & BUS TECHNOLOGY

Fiber optic cables	606
Copper data cables	652
BUS cables	684

R



Fibre Optic Cable flexible

Plastic-fibre cable industry

Fibre Optic Indoor Cable I-VH

Fibre Optic Cable with Functionality A-DQ(ZN)BH E30

Fibre Optic Breakout-Cable I-V(ZN)HH

Fibre Optic Indoor/Outdoor Cable A/I-VQ(ZN)BH

Aerial Fibre Optic Cable metall free ADSS

Fibre Optic Outdoor Cable A-DQ(ZN)2Y, stranded

FIBER OPTIC CABLES HELUCOM®

Designation	Drag chain capability	Page
Fiber optic installation cable I-VH, I-V11Y, I-VHH,I-V11Y11Y		608
Fiber optic breakout cable I-V(ZN)HH		609
Fiber optic mini-breakout cable I-V(ZN)H		610
LWK indoor cable loose tube I-D(ZN)H		611
Fiber optic universal mini-breakout cable A/I-VQ(ZN)BH		612
HELUCOM® pact fiber optic universal cable A/IDQ(ZN)BH		613
HELUCOM® pact fiber optic universal cable A/IDQ(ZN)BH OM3 + OM4		614
Fiber optic universal cable A/I-DQ(ZN)BH central		615
Fiber optic universal cable A/I-DQ(ZN)BH stranded		616
Fiber optic with functionality A-DQ(ZN)BH E30		617
Fiber optic cable with functionality A/I-D(ZN)BH(SR)H FS90		618
Fiber optic outdoor cable A-DQ(ZN)2Y, central		619
Fiber optic outdoor cable A-DQ(ZN)2Y, stranded		620
HELUCOM® pact fiber optic outdoor cable A-DQ(ZN)B2Y, central		621
Fiber optic outdoor cable A-DQ(ZN)B2Y, central		622
Fiber optic outdoor A-DQ(ZN)B2Y; stranded		623
Fiber optic outdoor cable HELUCOM® pact A-DQ(ZN)B2Y fiber combination		624
Fiber optic outdoor cable HELUCOM® A-DQ(ZN)B2Y, fibre combination, stranded		625
Fiber optic outdoor cable A-DF(ZN)2Y		626
Fiber optic outdoor cable A-DF(ZN)B2Y		627
Fiber optic outdoor cable A-DF(ZN)2Y4Y		628
Fiber optic outdoor cable Micro A-DQ2Y, central		629
Fiber optic outdoor cable Micro A-DQ2Y, stranded		630
Fiber optic outdoor cable A-DQ(ZN)SR2Y		631
Fiber optic outdoor cable A-DF(ZN)2Y(SR)2Y		632
Fiber optic outdoor cable hybrid A-DSQ(ZN)B2Y		633
Fiber optic outdoor cable hybrid A-DSF(L)(ZN)2Y		634
Fiber optic overhead cable metal-free ADSS		635
Fiber optic cable mobile, easy-to-wind A-V(ZN)11Y		636
Fiber optic cable mobile, flexible A-V(ZN)YY		637
Fiber optic cable flexible AT-V(ZN)H(ZN)11Y, AT-V(ZN)Y(ZN)Y		638
Fiber optic cable flexible AT-V(ZN)YY		639
Fiber optic cable outdoor apportionable AT-V(ZN)HH(BN)2Y		640
Fiber optic cable industry AT-VYY		641
Fiber optic cable industry HCS I-VH, I-VHH		642
Fiber optic breakout cable industry HCS AT-V(ZN)HH		643
Fiber optic breakout cable industry HCS I-V(ZN)YY		644
Fiber optic breakout cable industry HCS I-V(ZN)Y11Y		645
Fiber optic breakout cable industry HCS AT-VQH(ZN)B2Y		646
Fiber optic universal cable industry HCS A/IDQ(ZN)BH		647
Plastic fiber cable industry I-V2Y, I-V2Y(ZN)11Y		648
Plastic fiber cable industry I-V4Y(ZN)11Y		649

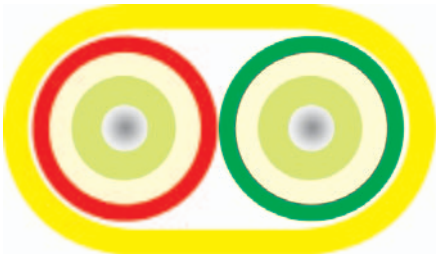
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Fibre Optic Indoor Cable

acc. DIN VDE 0888

HELUCOM®

I-VH, I-V11Y, I-VHH, I-V11Y11Y





Cable structure

Core type: Composite buffered
Strain relief elements: Aramide
Outer sheath material: FRNC
Outer sheath colour: Yellow

Temperature range

Laying, min.: 0°C
Laying, max.: +50°C
Operating, min.: 0°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Flame-resistance acc. to IEC 60332-1
Smoke density acc. to IEC 61034

Designation	No. of fibres	Fibre type	Fibre category	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
I-VH	1	Multimode G50/125	OM2	2,6	300	40	0,17	10	8,7	**80783**
I-VH	1	Multimode G62.5/125	OM1	2,6	300	40	0,17	10	8,7	**80782**
I-VH	1	Single-mode E9/125	ITU-T G.652	2,6	300	40	0,17	10	8,7	**80784**
I-VH	2	Multimode G50/125	OM2	2,6 x 5,6	400	40	0,24	10	17,5	**80316**
I-VH	2	Multimode G50/125	OM3	2,6 x 5,6	400	40	0,24	10	17,5	**804256**
I-VH	2	Multimode G62.5/125	OM1	2,6 x 5,6	400	40	0,24	10	17,5	**80699**
I-VH	2	Single-mode E9/125	ITU-T G.652	2,6 x 5,6	400	40	0,24	10	17,5	**80785**
I-V11Y	2	Multimode G50/125	OM2	2,6 x 5,6	400	40	2,80	20	14,0	**82408**
I-V11Y	2	Multimode G62.5/125	OM1	2,6 x 5,6	400	40	2,80	20	14,0	**82410**
I-V11Y	2	Single-mode E9/125	ITU-T G.652	2,6 x 5,6	400	40	2,80	20	14,0	**82411**
I-VHH	2	Multimode G50/125	OM2	3,6 x 6,2	600	50	0,57	20	20,0	**80789**
I-VHH	2	Multimode G50/125	OM3	3,6 x 6,2	600	50	0,57	20	20,0	**804254**
I-VHH	2	Multimode G62.5/125	OM1	3,6 x 6,2	600	50	0,57	20	20,0	**80790**
I-VHH	2	Single-mode E9/125	ITU-T G.652	3,6 x 6,2	600	50	0,57	20	20,0	**80791**
I-V11Y11Y	2	Multimode G50/125	OM2	3,6 x 6,2	600	60	4,20	20	16,0	**82409**
I-V11Y11Y	2	Multimode G62.5/125	OM1	3,6 x 6,2	600	60	4,20	20	16,0	**81900**
I-V11Y11Y	2	Single-mode E9/125	ITU-T G.652	3,6 x 6,2	600	60	4,20	20	16,0	**82412**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® one-fibre and two-fibre (duplex) cables are used for fixed indoor installation, such as in cable ducts. These cables are also used as ready-made cables (pigtails) that are spliced to fixed cables or as connection cables (jumper cable) as well as for switch frames. The small diameter and the high flexibility make these cables ideal for the application in switch frames as well as for the connection of terminals.

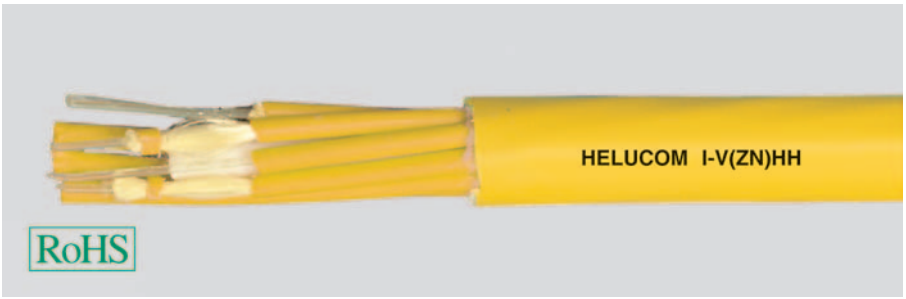
Fibre Optic Breakout-Cable

acc. DIN VDE 0888

HELUCOM®

I-V(ZN)HH





Cable structure

Core type: Composite buffered
Strain relief elements: Aramide
Outer sheath material: FRNC
Outer sheath colour: Yellow

Temperature range

Laying, min.: 0°C
Laying, max.: +50°C
Operating, min.: 0°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Flame-resistance acc. to IEC 60332-1 and IEC 60332-3
Smoke density acc. to IEC 61034

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
I-V(ZN)HH	2	Multimode G50/125	OM2	1	7,1	1000	270,0	1,00	150	40,0	**80743**
I-V(ZN)HH	2	Multimode G62.5/125	OM1	1	7,1	1000	270,0	1,00	150	40,0	**80799**
I-V(ZN)HH	2	Single-mode E9/125	ITU-T G.652	1	7,1	1000	270,0	1,00	150	40,0	**80813**
I-V(ZN)HH	4	Multimode G50/125	OM2	1	7,1	1000	270,0	1,00	150	45,0	**80753**
I-V(ZN)HH	4	Multimode G62.5/125	OM1	1	7,1	1000	270,0	1,00	150	45,0	**80800**
I-V(ZN)HH	4	Single-mode E9/125	ITU-T G.652	1	7,1	1000	270,0	1,00	150	45,0	**80814**
I-V(ZN)HH	6	Multimode G50/125	OM2	1	8,4	1350	270,0	1,25	150	70,0	**80754**
I-V(ZN)HH	6	Multimode G62.5/125	OM1	1	8,4	1350	270,0	1,25	150	70,0	**80769**
I-V(ZN)HH	6	Single-mode E9/125	ITU-T G.652	1	8,4	1350	270,0	1,25	150	70,0	**80815**
I-V(ZN)HH	8	Multimode G50/125	OM2	1	9,3	1500	270,0	1,50	150	100,0	**80688**
I-V(ZN)HH	8	Multimode G62.5/125	OM1	1	9,3	1500	270,0	1,50	150	100,0	**80801**
I-V(ZN)HH	8	Single-mode E9/125	ITU-T G.652	1	9,3	1500	270,0	1,50	150	100,0	**80816**
I-V(ZN)HH	12	Multimode G50/125	OM2	1	9,6	2350	270,0	1,85	150	165,0	**80795**
I-V(ZN)HH	12	Multimode G62.5/125	OM1	1	9,6	2350	270,0	1,85	150	165,0	**80803**
I-V(ZN)HH	12	Single-mode E9/125	ITU-T G.652	1	9,6	2350	270,0	1,85	150	165,0	**80818**
I-V(ZN)HH	16	Multimode G50/125	OM2	1	15,0	2400	270,0	2,40	150	170,0	**80796**
I-V(ZN)HH	16	Multimode G62.5/125	OM1	1	15,0	2400	270,0	2,40	150	170,0	**80804**
I-V(ZN)HH	16	Single-mode E9/125	ITU-T G.652	1	15,0	2400	270,0	2,40	150	170,0	**80819**
I-V(ZN)HH	24	Multimode G50/125	OM2	1	17,5	2400	330,0	3,20	150	220,0	**80798**
I-V(ZN)HH	24	Multimode G62.5/125	OM1	1	17,5	2400	330,0	3,20	150	220,0	**80806**
I-V(ZN)HH	24	Single-mode E9/125	ITU-T G.652	1	17,5	2400	320,0	3,20	150	220,0	**80821**

Dimensions and specifications may be changed without prior notice.

Application

HELUCOM® breakout cables are designed to replace splicing on-site. They are mainly used in indoor applications for small and medium transmission lines. The fibre-optic connectors are be mounted directly to the individual cables. Therefore no splicing and no splice boxes are necessary. Pre-assembled cables only need to be laid on site and are immediately functional.

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Fibre Optic Minibreakout Cable

acc. DIN VDE 0888

HELUCOM®

I-V(ZN)H





Cable structure

Core type: Tight buffer
Strain relief elements: Aramide
Outer sheath material: FRNC
Outer sheath colour: Orange

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -10°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Flame-resistance acc. to IEC 60332-1
Smoke density acc. to IEC 61034

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
I-V(ZN)H	2	Multimode G50/125	OM2	1	4,0	400	60,0	0,24	40	15,0	**80435**
I-V(ZN)H	2	Multimode G62.5/125	OM1	1	4,0	400	60,0	0,24	40	15,0	**80434**
I-V(ZN)H	2	Single-mode E9/125	ITU-T G.652	1	4,0	400	60,0	0,24	40	15,0	**80433**
I-V(ZN)H	4	Multimode G50/125	OM2	1	4,8	400	70,0	0,31	40	19,0	**80432**
I-V(ZN)H	4	Multimode G62.5/125	OM1	1	4,8	400	70,0	0,31	40	19,0	**80431**
I-V(ZN)H	4	Single-mode E9/125	ITU-T G.652	1	4,8	400	70,0	0,31	40	19,0	**80430**
I-V(ZN)H	6	Multimode G50/125	OM2	1	5,3	400	80,0	0,35	40	23,0	**80429**
I-V(ZN)H	6	Multimode G62.5/125	OM1	1	5,3	400	80,0	0,35	40	23,0	**80428**
I-V(ZN)H	6	Single-mode E9/125	ITU-T G.652	1	5,3	400	80,0	0,35	40	23,0	**80427**
I-V(ZN)H	8	Multimode G50/125	OM2	1	5,3	500	80,0	0,40	40	25,0	**80426**
I-V(ZN)H	8	Multimode G62.5/125	OM1	1	5,3	500	80,0	0,40	40	25,0	**80425**
I-V(ZN)H	8	Single-mode E9/125	ITU-T G.652	1	5,3	500	80,0	0,40	40	25,0	**80424**
I-V(ZN)H	10	Multimode G50/125	OM2	1	6,0	600	90,0	0,53	40	32,0	**80423**
I-V(ZN)H	10	Multimode G62.5/125	OM1	1	6,0	600	90,0	0,53	40	32,0	**80422**
I-V(ZN)H	10	Single-mode E9/125	ITU-T G.652	1	6,0	600	90,0	0,53	40	32,0	**80421**
I-V(ZN)H	12	Multimode G50/125	OM2	1	7,0	800	110,0	0,61	40	40,0	**80420**
I-V(ZN)H	12	Multimode G62.5/125	OM1	1	7,0	800	110,0	0,61	40	40,0	**80419**
I-V(ZN)H	12	Single-mode E9/125	ITU-T G.652	1	7,0	800	110,0	0,61	40	40,0	**80418**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® fibre-optic cables are used for the data network cabling in indoor applications. A big advantage of this cable type is its space-saving construction. Similar to the breakout cable, the connector is directly mounted at the tight buffer.

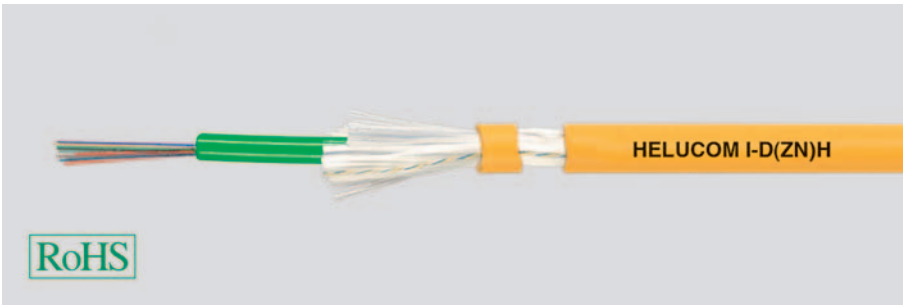
Fibre Optic Indoor Cable

acc. DIN VDE 0888

HELUCOM®

I-D(ZN)H





Cable structure

Core type: Loose tube
Strain relief elements: Aramide
Outer sheath material: FRNC
Outer sheath colour: Yellow

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Flame-resistance acc. to IEC 60332-1
Smoke density acc. to IEC 61034

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
I-D(ZN)H	4	Multimode G50/125	OM2	4	8,0	1200	120,0	1,50	150	65,0	**80631**
I-D(ZN)H	4	Multimode G62.5/125	OM1	4	8,0	1200	120,0	1,50	150	65,0	**80882**
I-D(ZN)H	4	Single-mode E9/125	ITU-T G.652	4	8,0	1200	120,0	1,50	150	65,0	**80896**
I-D(ZN)H	6	Multimode G50/125	OM2	6	8,0	1200	120,0	1,50	150	65,0	**80868**
I-D(ZN)H	6	Multimode G62.5/125	OM1	6	8,0	1200	120,0	1,50	150	65,0	**80883**
I-D(ZN)H	6	Single-mode E9/125	ITU-T G.652	6	8,0	1200	120,0	1,50	150	65,0	**80897**
I-D(ZN)H	8	Multimode G50/125	OM2	8	8,0	1200	120,0	1,50	150	65,0	**80869**
I-D(ZN)H	8	Multimode G62.5/125	OM1	8	8,0	1200	120,0	1,50	150	65,0	**80884**
I-D(ZN)H	8	Single-mode E9/125	ITU-T G.652	8	8,0	1200	120,0	1,50	150	65,0	**80898**
I-D(ZN)H	10	Multimode G50/125	OM2	10	8,0	1200	120,0	1,50	150	65,0	**80793**
I-D(ZN)H	10	Multimode G62.5/125	OM1	10	8,0	1200	120,0	1,50	150	65,0	**80885**
I-D(ZN)H	10	Single-mode E9/125	ITU-T G.652	10	8,0	1200	120,0	1,50	150	65,0	**80899**
I-D(ZN)H	12	Multimode G50/125	OM2	12	8,0	1200	120,0	1,50	150	65,0	**80045**
I-D(ZN)H	12	Multimode G62.5/125	OM1	12	8,0	1200	120,0	1,50	150	65,0	**80879**
I-D(ZN)H	12	Single-mode E9/125	ITU-T G.652	12	8,0	1200	120,0	1,50	150	65,0	**80880**
I-D(ZN)H	16	Multimode G50/125	OM2	16	8,0	1200	120,0	1,50	150	135,0	**80870**
I-D(ZN)H	16	Multimode G62.5/125	OM1	16	8,0	1200	120,0	1,50	150	135,0	**80886**
I-D(ZN)H	16	Single-mode E9/125	ITU-T G.652	16	8,0	1200	120,0	1,50	150	135,0	**80900**
I-D(ZN)H	24	Multimode G50/125	OM2	12	12,5	3000	190,0	2,20	200	150,0	**80872**
I-D(ZN)H	24	Multimode G50/125	OM2	24	9,0	1600	140,0	1,50	150	135,0	**80871**
I-D(ZN)H	24	Multimode G62.5/125	OM1	12	12,5	3000	190,0	2,20	200	150,0	**80888**
I-D(ZN)H	24	Multimode G62.5/125	OM1	24	9,0	1600	140,0	1,50	150	135,0	**81246**
I-D(ZN)H	24	Single-mode E9/125	ITU-T G.652	12	12,5	3000	190,0	2,20	200	150,0	**80902**
I-D(ZN)H	24	Single-mode E9/125	ITU-T G.652	24	9,0	1600	140,0	1,50	150	135,0	**80901**
I-D(ZN)H	36	Multimode G50/125	OM2	12	13,5	3000	200,0	2,20	200	160,0	**80875**
I-D(ZN)H	36	Multimode G62.5/125	OM1	12	13,5	3000	200,0	2,20	200	160,0	**80891**
I-D(ZN)H	36	Single-mode E9/125	ITU-T G.652	12	13,5	3000	200,0	2,20	200	160,0	**80905**
I-D(ZN)H	48	Multimode G50/125	OM2	12	13,5	3000	200,0	2,20	200	160,0	**80877**
I-D(ZN)H	48	Multimode G62.5/125	OM1	12	13,5	3000	200,0	2,20	200	160,0	**80893**
I-D(ZN)H	48	Single-mode E9/125	ITU-T G.652	12	13,5	3000	200,0	2,20	200	160,0	**80907**
I-D(ZN)H	60	Multimode G50/125	OM2	12	13,5	3000	200,0	2,20	200	170,0	**80878**
I-D(ZN)H	60	Multimode G62.5/125	OM1	12	13,5	3000	200,0	2,20	200	170,0	**80894**
I-D(ZN)H	60	Single-mode E9/125	ITU-T G.652	12	13,5	3000	200,0	2,20	200	170,0	**80908**

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Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® fibre-optic cables are available either as central bundle core cable or as stranded versions. They are suitable for indoor cabling of buildings and facilities. The halogen-free version is especially suitable for the application in skyscrapers, hospitals and stores as well as in facilities with high concentration of capital goods, such as power plants, computing centers, and at locations with high security requirements, such as underground and control stations.

Fibre Optic Indoor/Outdoor Minibreakout Cable

acc. DIN VDE 0888

HELUCOM®

A/I-VQ(ZN)BH





Cable structure

Core type: Tight buffer
Strain relief elements: Aramide
Type of armouring: Glass yarns
Outer sheath material: FRNC
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +55°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Flame-resistance acc. to IEC 60332-1
Smoke density acc. to IEC 61034
UV-resistant

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
A/I-VQ(ZN)BH	4	Multimode G50/125	OM2	1	6,1	2000	90,0	0,35	40	40,0	**82804**
A/I-VQ(ZN)BH	4	Multimode G62.5/125	OM1	1	6,1	2000	90,0	0,35	40	40,0	**82809**
A/I-VQ(ZN)BH	4	Single-mode E9/125	ITU-T G.652	1	6,1	2000	90,0	0,35	40	40,0	**82814**
A/I-VQ(ZN)BH	6	Multimode G50/125	OM2	1	6,6	2000	100,0	0,41	40	47,0	**82805**
A/I-VQ(ZN)BH	6	Multimode G62.5/125	OM1	1	6,6	2000	100,0	0,41	40	47,0	**82810**
A/I-VQ(ZN)BH	6	Single-mode E9/125	ITU-T G.652	1	6,6	2000	100,0	0,41	40	47,0	**82815**
A/I-VQ(ZN)BH	8	Multimode G50/125	OM2	1	6,6	2000	100,0	0,43	40	51,0	**82806**
A/I-VQ(ZN)BH	8	Multimode G62.5/125	OM1	1	6,6	2000	100,0	0,43	40	51,0	**82811**
A/I-VQ(ZN)BH	8	Single-mode E9/125	ITU-T G.652	1	6,6	2000	100,0	0,43	40	51,0	**82816**
A/I-VQ(ZN)BH	10	Multimode G50/125	OM2	1	8,0	2000	120,0	0,61	40	65,0	**82807**
A/I-VQ(ZN)BH	10	Multimode G62.5/125	OM1	1	8,0	2000	120,0	0,61	40	65,0	**82812**
A/I-VQ(ZN)BH	10	Single-mode E9/125	ITU-T G.652	1	8,0	2000	120,0	0,61	40	65,0	**82817**
A/I-VQ(ZN)BH	12	Multimode G50/125	OM2	1	8,3	3000	125,0	0,71	40	70,0	**82808**
A/I-VQ(ZN)BH	12	Multimode G62.5/125	OM1	1	8,3	3000	125,0	0,71	40	70,0	**82813**
A/I-VQ(ZN)BH	12	Single-mode E9/125	ITU-T G.652	1	8,3	3000	125,0	0,71	40	70,0	**82818**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® fibre-optic cables are used for the data network cabling in indoor and outdoor applications. With their black UV-resistant outer sheath and the non-metallic rodent protection, they are perfectly suited for outdoor use. A big advantage of this cable type is its space-saving construction. Similar to the breakout cable, the connector is directly mounted at the tight buffer.

Fibre Optic Indoor/Outdoor Cable

acc. DIN VDE 0888

HELUCOM® pact

A/I-DQ(ZN)BH





Cable structure

Core type: Loose tube
Strain relief elements: Glass yarns
Type of armouring: Glass yarns
Outer sheath material: FRNC
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Flame-resistance acc. to IEC 60332-1
Smoke density acc. to IEC 61034
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
A/I-DQ(ZN)BH	4	Multimode G50/125	OM2	4	7,5	1500	150,0	1,10	200	55,0	**82792**
A/I-DQ(ZN)BH	4	Multimode G62.5/125	OM1	4	7,5	1500	150,0	1,10	200	55,0	**82796**
A/I-DQ(ZN)BH	4	Single-mode E9/125	ITU-T G.652	4	7,5	1500	150,0	1,10	200	55,0	**82800**
A/I-DQ(ZN)BH	6	Multimode G50/125	OM2	6	7,5	1500	150,0	1,10	200	55,0	**82793**
A/I-DQ(ZN)BH	6	Multimode G62.5/125	OM1	6	7,5	1500	150,0	1,10	200	55,0	**82797**
A/I-DQ(ZN)BH	6	Single-mode E9/125	ITU-T G.652	6	7,5	1500	150,0	1,10	200	55,0	**82801**
A/I-DQ(ZN)BH	8	Multimode G50/125	OM2	8	7,5	1500	150,0	1,10	200	55,0	**82794**
A/I-DQ(ZN)BH	8	Multimode G62.5/125	OM1	8	7,5	1500	150,0	1,10	200	55,0	**82798**
A/I-DQ(ZN)BH	8	Single-mode E9/125	ITU-T G.652	8	7,5	1500	150,0	1,10	200	55,0	**82802**
A/I-DQ(ZN)BH	12	Multimode G50/125	OM2	12	7,5	1500	150,0	1,10	200	55,0	**82795**
A/I-DQ(ZN)BH	12	Multimode G62.5/125	OM1	12	7,5	1500	150,0	1,10	200	55,0	**82799**
A/I-DQ(ZN)BH	12	Single-mode E9/125	ITU-T G.652	12	7,5	1500	150,0	1,10	200	55,0	**82803**
A/I-DQ(ZN)BH	24	Multimode G50/125	OM2	24	8,5	1500	170,0	1,40	200	75,0	**802143**
A/I-DQ(ZN)BH	24	Multimode G62.5/125	OM1	24	8,5	1500	170,0	1,40	200	75,0	**802144**
A/I-DQ(ZN)BH	24	Single-mode E9/125	ITU-T G.652	24	8,5	1500	170,0	1,40	200	75,0	**802145**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® pact fibre-optic cables have a small but robust construction. They are suitable for indoor and outdoor cabling of buildings and facilities when space is an important argument. They are used in particular if the installation is to be done in one piece from the inside to the outside without additional use of couplings. With their black UV-resistant outer sheath and the non-metallic rodent protection, they are perfectly suited for outdoor use. The halogen-free outer sheath makes installation inhouse possible without any problems.

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Fibre Optic Indoor/Outdoor Cable

acc. DIN VDE 0888

HELUCOM® pact

A/I-DQ(ZN)BH OM3+OM4





Cable structure

Core type: Loose tube
Strain relief elements: Glass yarns
Type of armouring: Glass yarns
Outer sheath material: FRNC
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Flame-resistance acc. to IEC 60332-1
Smoke density acc. to IEC 61034
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
A/I-DQ(ZN)BH	4	Multimode G50/125	OM3	4	7,5	1500	150,0	1,10	200	55,0	**802247**
A/I-DQ(ZN)BH	6	Multimode G50/125	OM3	6	7,5	1500	150,0	1,10	200	55,0	**802277**
A/I-DQ(ZN)BH	8	Multimode G50/125	OM3	8	7,5	1500	150,0	1,10	200	55,0	**802278**
A/I-DQ(ZN)BH	12	Multimode G50/125	OM3	12	7,5	1500	150,0	1,10	200	55,0	**802248**
A/I-DQ(ZN)BH	24	Multimode G50/125	OM3	24	8,5	1500	170,0	1,40	200	75,0	**802249**
A/I-DQ(ZN)BH	12	Multimode G50/125	OM4	12	7,5	1500	150,0	1,10	200	55,0	**804705**
A/I-DQ(ZN)BH	24	Multimode G50/125	OM4	24	8,5	1500	170,0	1,40	200	75,0	**804706**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® pact fibre-optic cables have a small but robust construction. They are suitable for indoor and outdoor cabling of buildings and facilities when space is an important argument. They are used in particular if the installation is to be done in one piece from the inside to the outside without additional use of couplings. With their black UV-resistant outer sheath and the non-metallic rodent protection, they are perfectly suited for outdoor use. The halogen-free outer sheath makes installation inhouse possible without any problems.

Fibre Optic Indoor/Outdoor Cable

acc. DIN VDE 0888

HELUCOM®

A/I-DQ(ZN)BH, central





Cable structure

Core type: Loose tube
Strain relief elements: Glass yarns
Type of armouring: Glass yarns
Outer sheath material: FRNC
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Flame-resistance acc. to IEC 60332-1
Smoke density acc. to IEC 61034
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
A/I-DQ(ZN)BH	4	Multimode G50/125	OM2	4	10,0	2500	150,0	1,50	300	75,0	**80270**
A/I-DQ(ZN)BH	4	Multimode G62.5/125	OM1	4	10,0	2500	150,0	1,50	300	75,0	**80276**
A/I-DQ(ZN)BH	4	Single-mode E9/125	ITU-T G.652	4	10,0	2500	150,0	1,50	300	75,0	**80264**
A/I-DQ(ZN)BH	6	Multimode G50/125	OM2	6	10,0	2500	150,0	1,50	300	75,0	**80271**
A/I-DQ(ZN)BH	6	Multimode G62.5/125	OM1	6	10,0	2500	150,0	1,50	300	75,0	**80265**
A/I-DQ(ZN)BH	6	Single-mode E9/125	ITU-T G.652	6	10,0	2500	150,0	1,50	300	75,0	**80272**
A/I-DQ(ZN)BH	8	Multimode G50/125	OM2	8	10,0	2500	150,0	1,50	300	75,0	**80273**
A/I-DQ(ZN)BH	8	Multimode G62.5/125	OM1	8	10,0	2500	150,0	1,50	300	75,0	**80274**
A/I-DQ(ZN)BH	8	Single-mode E9/125	ITU-T G.652	8	10,0	2500	150,0	1,50	300	75,0	**80275**
A/I-DQ(ZN)BH	12	Multimode G50/125	OM2	12	10,0	2500	150,0	1,50	300	75,0	**80681**
A/I-DQ(ZN)BH	12	Multimode G62.5/125	OM1	12	10,0	2500	150,0	1,50	300	75,0	**80278**
A/I-DQ(ZN)BH	12	Single-mode E9/125	ITU-T G.652	12	10,0	2500	150,0	1,50	300	75,0	**80279**
A/I-DQ(ZN)BH	16	Multimode G50/125	OM2	16	10,0	2500	150,0	1,50	300	85,0	**80280**
A/I-DQ(ZN)BH	16	Multimode G62.5/125	OM1	16	10,0	2500	150,0	1,50	300	85,0	**80281**
A/I-DQ(ZN)BH	16	Single-mode E9/125	ITU-T G.652	16	10,0	2500	150,0	1,50	300	85,0	**80851**
A/I-DQ(ZN)BH	24	Multimode G50/125	OM2	24	10,0	2500	150,0	1,50	300	85,0	**80725**
A/I-DQ(ZN)BH	24	Multimode G62.5/125	OM1	24	10,0	2500	150,0	1,50	300	85,0	**82431**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® fibre-optic cables are available either as central bundle core cable or as stranded versions. They are suitable for indoor and outdoor cabling of buildings and facilities. They are used in particular if the installation is to be done in one piece from the inside to the outside without additional use of couplings. With their black UV-resistant outer sheath and the non-metallic rodent protection, they are perfectly suited for outdoor use. The halogen-free outer sheath makes installation inhouse possible without any problems.

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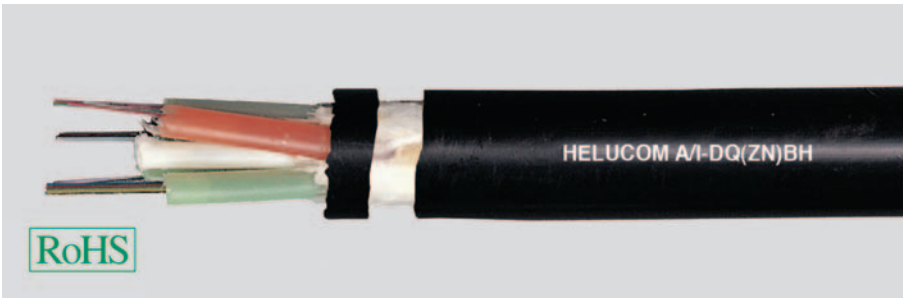
Fibre Optic Indoor/Outdoor Cable

acc. DIN VDE 0888

HELUCOM®

A/I-DQ(ZN)BH, stranded





Cable structure

Core type: Loose tube
GRP support element
Strain relief elements: Glass yarns
Type of armouring: Glass yarns
Outer sheath material: FRNC
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Flame-resistance acc. to IEC 60332-1
Smoke density acc. to IEC 61034
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
A/I-DQ(ZN)BH	24	Multimode G50/125	OM2	12	11,0	2700	165,0	2,00	600	90,0	**81495**
A/I-DQ(ZN)BH	24	Multimode G62.5/125	OM1	12	11,0	2700	165,0	2,00	600	90,0	**802263**
A/I-DQ(ZN)BH	24	Single-mode E9/125	ITU-T G.652	12	11,0	2700	165,0	2,00	600	90,0	**80846**
A/I-DQ(ZN)BH	48	Multimode G50/125	OM2	12	11,0	2700	165,0	2,00	600	90,0	**802261**
A/I-DQ(ZN)BH	48	Multimode G62.5/125	OM1	12	11,0	2700	165,0	2,00	600	90,0	**802264**
A/I-DQ(ZN)BH	48	Single-mode E9/125	ITU-T G.652	12	11,0	2700	165,0	2,00	600	90,0	**802266**
A/I-DQ(ZN)BH	48	Single-mode E9/125	ITU-T G.652	12	11,0	2700	165,0	2,00	600	90,0	**802281**
A/I-DQ(ZN)BH	60	Multimode G50/125	OM2	12	11,0	2700	165,0	2,00	600	90,0	**802262**
A/I-DQ(ZN)BH	60	Multimode G62.5/125	OM1	12	11,0	2700	165,0	2,00	600	90,0	**802265**
A/I-DQ(ZN)BH	60	Single-mode E9/125	ITU-T G.652	12	11,0	2700	165,0	2,00	600	90,0	**802267**
A/I-DQ(ZN)BH	72	Multimode G50/125	OM2	12	11,5	2700	175,0	2,10	600	100,0	**802268**
A/I-DQ(ZN)BH	72	Multimode G62.5/125	OM1	12	11,5	2700	175,0	2,10	600	100,0	**802271**
A/I-DQ(ZN)BH	72	Single-mode E9/125	ITU-T G.652	12	11,5	2700	175,0	2,10	600	100,0	**802274**
A/I-DQ(ZN)BH	84	Multimode G50/125	OM2	12	12,5	3000	190,0	2,40	600	130,0	**802269**
A/I-DQ(ZN)BH	84	Multimode G62.5/125	OM1	12	12,5	3000	190,0	2,40	600	130,0	**802272**
A/I-DQ(ZN)BH	84	Single-mode E9/125	ITU-T G.652	12	12,5	3000	190,0	2,40	600	130,0	**802275**
A/I-DQ(ZN)BH	96	Multimode G50/125	OM2	12	12,5	3000	190,0	2,80	600	130,0	**802270**
A/I-DQ(ZN)BH	96	Multimode G62.5/125	OM1	12	12,5	3000	190,0	2,80	600	130,0	**802273**
A/I-DQ(ZN)BH	96	Single-mode E9/125	ITU-T G.652	12	12,5	3000	190,0	2,80	600	130,0	**802276**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® fibre-optic cables are available either as central bundle core cable or as stranded versions. They are suitable for indoor and outdoor cabling of buildings and facilities. They are used in particular if the installation is to be done in one piece from the inside to the outside without additional use of couplings. With their black UV-resistant outer sheath and the non-metallic rodent protection, they are perfectly suited for outdoor use. The halogen-free outer sheath makes installation inhouse possible without any problems.

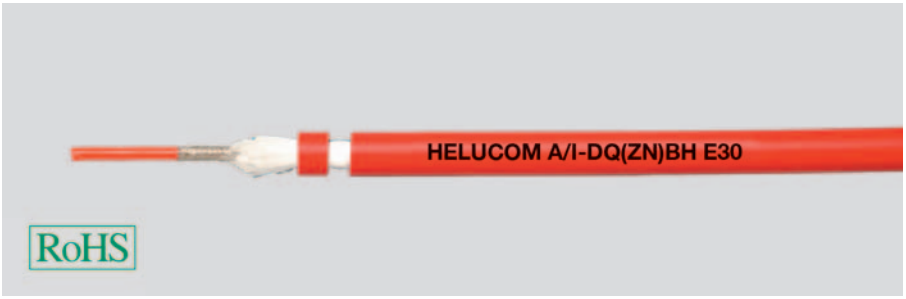
Fibre Optic Cable with Functionality

with reference to DIN 4102-12

HELUCOM® FS30

A/I-DQ(ZN)BH





Cable structure

Core type: Loose tube
Strain relief elements: Aramide
Type of armouring: Glass yarns
Outer sheath material: FR/LSOH
Outer sheath colour: Red

Temperature range

Laying, min.: -10°C
Laying, max.: +50°C
Operating, min.: -25°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Flame-resistance acc. to IEC 60332-1
Smoke density acc. to IEC 61034
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant
Functional integrity: E30

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
A/I-DQ(ZN)BH	4	Multimode G50/125	OM2	4	7,8	1000	80,0	1,08	200	102,0	**801217**
A/I-DQ(ZN)BH	4	Multimode G62.5/125	OM1	4	7,8	1000	80,0	1,08	200	102,0	**801218**
A/I-DQ(ZN)BH	4	Single-mode E9/125	ITU-T G.652	4	7,8	1000	80,0	1,08	200	102,0	**801219**
A/I-DQ(ZN)BH	12	Multimode G50/125	OM2	12	7,8	1000	80,0	1,08	200	102,0	**801220**
A/I-DQ(ZN)BH	12	Multimode G62.5/125	OM1	12	7,8	1000	80,0	1,08	200	102,0	**801221**
A/I-DQ(ZN)BH	12	Single-mode E9/125	ITU-T G.652	12	7,8	1000	80,0	1,08	200	102,0	**801190**

Dimensions and specifications may be changed without prior notice.

Application

With the serie HELUCOM® E30 we have realized, based on a special construction and high quality raw materials, a functional integrity according to DIN 4102-12 E30 (30 minutes). Together with the planed accessories the cables realize the full function of the communication in areas like tunnels or buildings for the defined period of time. On request we also can deliver cables with more than 12 fibres as stranded construction.

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Fibre Optic Cable with Functionality

with reference to IEC 60331-25

HELUCOM® FS90

A/I-D(ZN)BH(SR)H





Cable structure

Core type: Loose tube
Strain relief elements: Glass yarns
Inner sheath material: FRNC
Type of armouring: steel tape
Outer sheath material: FR/LSOH
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +70°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Flame-resistance acc. to IEC 60332-1 and -3
Smoke density acc. to IEC 61034
Longitudinally water-tight acc. to IEC 60794-1-2-F5
Cable, laterally water-tight
UV-resistant
Functional integrity: IEC 60794/ IEC 60331-25

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
A/I-D(ZN)BH(SR)H	4	Multimode G50/125	OM2	4	12,7	1500	180,0	6,20	300	216,0	**803917**
A/I-D(ZN)BH(SR)H	4	Single-mode E9/125	ITU-T G.652	4	12,7	1500	180,0	6,20	300	216,0	**803919**
A/I-D(ZN)BH(SR)H	12	Multimode G50/125	OM2	12	12,7	1500	180,0	6,20	300	216,0	**803918**
A/I-D(ZN)BH(SR)H	12	Single-mode E9/125	ITU-T G.652	12	12,7	1500	180,0	6,20	300	216,0	**803920**

Dimensions and specifications may be changed without prior notice.

Application

With the serie HELUCOM® FS90 we have realized, based on a special construction and high quality raw materials, a functional integrity according to IEC 60331-25 within 90, minutes (up to 750°C). Together with the planed accessories the cables realize the full function of the communication in areas like tunnels or buildings for the defined period of time.

Fibre Optic Outdoor Cable

acc. DIN VDE 0888

HELUCOM®

A-DQ(ZN)2Y, central





Cable structure

Core type: Loose tube
Strain relief elements: Glass yarns
Outer sheath material: PE
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
A-DQ(ZN)2Y	2	Multimode G50/125	OM2	2	8,8	1500	130,0	1,60	250	40,0	**80148**
A-DQ(ZN)2Y	2	Multimode G62.5/125	OM1	2	8,8	1500	130,0	1,60	250	40,0	**80164**
A-DQ(ZN)2Y	2	Single-mode E9/125	ITU-T G.652	2	8,8	1500	130,0	1,60	250	40,0	**80131**
A-DQ(ZN)2Y	4	Multimode G50/125	OM2	4	8,8	1500	130,0	1,60	250	40,0	**80149**
A-DQ(ZN)2Y	4	Multimode G62.5/125	OM1	4	8,8	1500	130,0	1,60	250	40,0	**80165**
A-DQ(ZN)2Y	4	Single-mode E9/125	ITU-T G.652	4	8,8	1500	130,0	1,60	250	40,0	**80132**
A-DQ(ZN)2Y	6	Multimode G50/125	OM2	6	8,8	1500	130,0	1,60	250	40,0	**80150**
A-DQ(ZN)2Y	6	Multimode G62.5/125	OM1	6	8,8	1500	130,0	1,60	250	40,0	**80166**
A-DQ(ZN)2Y	6	Single-mode E9/125	ITU-T G.652	6	8,8	1500	130,0	1,60	250	40,0	**80133**
A-DQ(ZN)2Y	8	Multimode G50/125	OM2	8	8,8	1500	130,0	1,60	250	40,0	**80151**
A-DQ(ZN)2Y	8	Multimode G62.5/125	OM1	8	8,8	1500	130,0	1,60	250	40,0	**80167**
A-DQ(ZN)2Y	8	Single-mode E9/125	ITU-T G.652	8	8,8	1500	130,0	1,60	250	40,0	**80134**
A-DQ(ZN)2Y	12	Multimode G50/125	OM2	12	8,8	1500	130,0	1,60	250	40,0	**80153**
A-DQ(ZN)2Y	12	Multimode G62.5/125	OM1	12	8,8	1500	130,0	1,60	250	40,0	**80169**
A-DQ(ZN)2Y	12	Single-mode E9/125	ITU-T G.652	12	8,8	1500	130,0	1,60	250	40,0	**80136**
A-DQ(ZN)2Y	16	Multimode G50/125	OM2	16	8,8	1500	130,0	1,80	250	70,0	**80154**
A-DQ(ZN)2Y	16	Multimode G62.5/125	OM1	16	8,8	1500	130,0	1,80	250	70,0	**80170**
A-DQ(ZN)2Y	16	Single-mode E9/125	ITU-T G.652	16	8,8	1500	130,0	1,80	250	70,0	**80137**
A-DQ(ZN)2Y	24	Multimode G50/125	OM2	24	8,8	1500	130,0	1,80	250	70,0	**80155**
A-DQ(ZN)2Y	24	Multimode G62.5/125	OM1	24	8,8	1500	130,0	1,80	250	70,0	**80171**
A-DQ(ZN)2Y	24	Single-mode E9/125	ITU-T G.652	24	8,8	1500	130,0	1,80	250	70,0	**80138**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® fibre-optic cables are characterized by a design that is particularly easy to mount. Around a central grooved cable, there is a composite of glass yarns and swelling fleece with characteristics that ensure the actual strain relief and waterproofing in longitudinal direction of the cable. In addition, these cables are designed grease-free. Wiping the jelly off is therefore unnecessary. This construction is particularly used in underground, tubes and channel areas, where rodent infestation is not to be expected.

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Fibre Optic Outdoor Cable

acc. DIN VDE 0888

HELUCOM®

A-DQ(ZN)2Y, stranded





Cable structure

Core type: Loose tube
GRP support element
Strain relief elements: Glass yarns
Outer sheath material: PE
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
A-DQ(ZN)2Y	24	Multimode G50/125	OM2	12	10,0	2500	200,0	2,50	400	70,0	**80156**
A-DQ(ZN)2Y	24	Multimode G62.5/125	OM1	12	10,0	2500	200,0	2,50	400	70,0	**80172**
A-DQ(ZN)2Y	24	Single-mode E9/125	ITU-T G.652	12	10,0	2500	200,0	2,50	400	70,0	**80139**
A-DQ(ZN)2Y	36	Multimode G50/125	OM2	12	10,0	2500	200,0	2,50	400	70,0	**80448**
A-DQ(ZN)2Y	36	Multimode G62.5/125	OM1	12	10,0	2500	200,0	2,50	400	70,0	**80449**
A-DQ(ZN)2Y	36	Single-mode E9/125	ITU-T G.652	12	10,0	2500	200,0	2,50	400	70,0	**80450**
A-DQ(ZN)2Y	48	Multimode G50/125	OM2	12	10,0	2500	200,0	2,50	400	70,0	**80447**
A-DQ(ZN)2Y	48	Multimode G62.5/125	OM1	12	10,0	2500	200,0	2,50	400	70,0	**80446**
A-DQ(ZN)2Y	48	Single-mode E9/125	ITU-T G.652	12	10,0	2500	200,0	2,50	400	70,0	**80445**
A-DQ(ZN)2Y	60	Multimode G50/125	OM2	12	10,0	2500	200,0	2,50	400	70,0	**80159**
A-DQ(ZN)2Y	60	Multimode G62.5/125	OM1	12	10,0	2500	200,0	2,50	400	70,0	**80175**
A-DQ(ZN)2Y	60	Single-mode E9/125	ITU-T G.652	12	10,0	2500	200,0	2,50	400	70,0	**80142**
A-DQ(ZN)2Y	72	Multimode G50/125	OM2	12	10,5	2500	210,0	2,60	400	75,0	**80444**
A-DQ(ZN)2Y	72	Multimode G62.5/125	OM1	12	10,5	2500	210,0	2,60	400	75,0	**80443**
A-DQ(ZN)2Y	72	Single-mode E9/125	ITU-T G.652	12	10,5	2500	210,0	2,60	400	75,0	**80442**
A-DQ(ZN)2Y	84	Multimode G50/125	OM2	12	11,5	2700	230,0	3,30	400	110,0	**80160**
A-DQ(ZN)2Y	84	Multimode G62.5/125	OM1	12	11,5	2700	230,0	3,30	400	110,0	**80176**
A-DQ(ZN)2Y	84	Single-mode E9/125	ITU-T G.652	12	11,5	2700	230,0	3,30	400	110,0	**80143**
A-DQ(ZN)2Y	96	Multimode G50/125	OM2	12	11,5	2700	230,0	3,30	400	110,0	**80441**
A-DQ(ZN)2Y	96	Multimode G62.5/125	OM1	12	11,5	2700	230,0	3,30	400	110,0	**80440**
A-DQ(ZN)2Y	96	Single-mode E9/125	ITU-T G.652	12	11,5	2700	230,0	3,30	400	110,0	**80439**
A-DQ(ZN)2Y	108	Multimode G50/125	OM2	12	13,0	2700	260,0	4,00	400	130,0	**80161**
A-DQ(ZN)2Y	108	Multimode G62.5/125	OM1	12	13,0	2700	260,0	4,00	400	130,0	**80177**
A-DQ(ZN)2Y	108	Single-mode E9/125	ITU-T G.652	12	13,0	2700	260,0	4,00	400	130,0	**80144**
A-DQ(ZN)2Y	120	Multimode G50/125	OM2	12	13,0	2700	260,0	4,00	400	130,0	**80162**
A-DQ(ZN)2Y	120	Multimode G62.5/125	OM1	12	13,0	2700	260,0	4,00	400	130,0	**80178**
A-DQ(ZN)2Y	120	Single-mode E9/125	ITU-T G.652	12	13,0	2700	260,0	4,00	400	130,0	**80146**
A-DQ(ZN)2Y	144	Multimode G50/125	OM2	12	14,0	2700	280,0	5,00	400	150,0	**80438**
A-DQ(ZN)2Y	144	Multimode G62.5/125	OM1	12	14,0	2700	280,0	5,00	400	150,0	**80437**
A-DQ(ZN)2Y	144	Single-mode E9/125	ITU-T G.652	12	14,0	2700	280,0	5,00	400	150,0	**80436**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® fibre-optic cables are characterized by a design that is particularly easy to mount and extremely tension-resistant. Around a stranded grooved cable and filler elements, there is a swelling fleece with characteristics that ensure strain relief and waterproofing in longitudinal direction of the cable. In addition, these cables are designed grease-free. Wiping the jelly off is therefore unnecessary. This construction is particularly used in underground, tubes and channel areas, where above-average tensile stresses and/or transverse compressions occur, but rodent infestation is not to be expected.

Fibre Optic Outdoor Cable

acc. DIN VDE 0888

HELUCOM® pact

A-DQ(ZN)B2Y, central





Cable structure

Core type: Loose tube
Strain relief elements: Glass yarns
Type of armouring: Glass yarns
Outer sheath material: PE
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
A-DQ(ZN)B2Y	2	Multimode G50/125	OM2	2	7,5	1500	150,0	1,60	300	40,0	**800754**
A-DQ(ZN)B2Y	2	Multimode G62.5/125	OM1	2	7,5	1500	150,0	1,60	300	40,0	**802131**
A-DQ(ZN)B2Y	2	Single-mode E9/125	ITU-T G.652	2	7,5	1500	150,0	1,60	300	40,0	**802137**
A-DQ(ZN)B2Y	4	Multimode G50/125	OM2	4	7,5	1500	150,0	1,60	300	40,0	**800755**
A-DQ(ZN)B2Y	4	Multimode G62.5/125	OM1	4	7,5	1500	150,0	1,60	300	40,0	**802132**
A-DQ(ZN)B2Y	4	Single-mode E9/125	ITU-T G.652	4	7,5	1500	150,0	1,60	300	40,0	**802138**
A-DQ(ZN)B2Y	6	Multimode G50/125	OM2	6	7,5	1500	150,0	1,60	300	40,0	**800756**
A-DQ(ZN)B2Y	6	Multimode G62.5/125	OM1	6	7,5	1500	150,0	1,60	300	40,0	**802133**
A-DQ(ZN)B2Y	6	Single-mode E9/125	ITU-T G.652	6	7,5	1500	150,0	1,60	300	40,0	**802139**
A-DQ(ZN)B2Y	8	Multimode G50/125	OM2	8	7,5	1500	150,0	1,60	300	40,0	**800757**
A-DQ(ZN)B2Y	8	Multimode G62.5/125	OM1	8	7,5	1500	150,0	1,60	300	40,0	**802134**
A-DQ(ZN)B2Y	8	Single-mode E9/125	ITU-T G.652	8	7,5	1500	150,0	1,60	300	40,0	**802140**
A-DQ(ZN)B2Y	12	Multimode G50/125	OM2	12	7,5	1500	150,0	1,60	300	40,0	**800759**
A-DQ(ZN)B2Y	12	Multimode G62.5/125	OM1	12	7,5	1500	150,0	1,60	300	40,0	**802135**
A-DQ(ZN)B2Y	12	Single-mode E9/125	ITU-T G.652	12	7,5	1500	150,0	1,60	300	40,0	**802141**
A-DQ(ZN)B2Y	24	Multimode G50/125	OM2	24	8,5	1500	170,0	1,90	300	60,0	**800762**
A-DQ(ZN)B2Y	24	Multimode G62.5/125	OM1	24	8,5	1500	170,0	1,90	300	60,0	**802136**
A-DQ(ZN)B2Y	24	Single-mode E9/125	ITU-T G.652	24	8,5	1500	170,0	1,90	300	60,0	**802142**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® pact fibre-optic cables are characterized by a design that is particularly easy to mount and is rodent-protected. Around a central grooved cable, there is a composite of glass yarns and swelling fleece with characteristics that ensure rodent protection, strain relief, and waterproofing in longitudinal direction of the cable. In addition, these cables are designed grease-free. Wiping the jelly off is therefore unnecessary. This construction is particularly used in underground, tubes and channel areas, where normal tensile stresses and/or transverse compressions occur and rodent infestation is to be expected.

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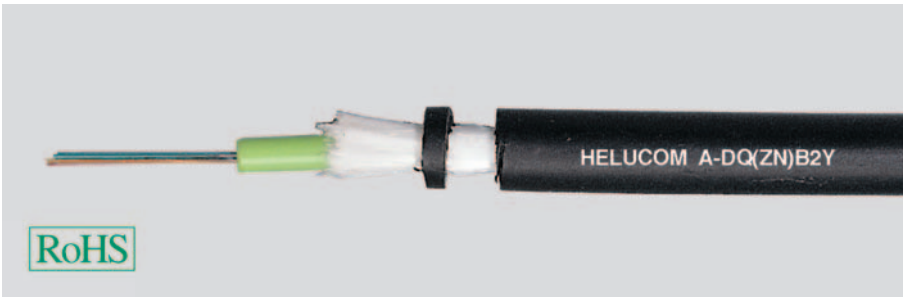
Fibre Optic Outdoor Cable

acc. DIN VDE 0888

HELUCOM®

A-DQ(ZN)B2Y, central





Cable structure

Core type: Loose tube
Strain relief elements: Glass yarns
Type of armouring: Glass yarns
Outer sheath material: PE
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
A-DQ(ZN)B2Y	2	Multimode G50/125	OM2	2	10,0	2500	160,0	1,60	300	85,0	**80196**
A-DQ(ZN)B2Y	2	Multimode G62.5/125	OM1	2	10,0	2500	160,0	1,60	300	85,0	**80212**
A-DQ(ZN)B2Y	2	Single-mode E9/125	ITU-T G.652	2	10,0	2500	160,0	1,60	300	85,0	**80180**
A-DQ(ZN)B2Y	4	Multimode G50/125	OM2	4	10,0	2500	160,0	1,60	300	85,0	**80197**
A-DQ(ZN)B2Y	4	Multimode G62.5/125	OM1	4	10,0	2500	160,0	1,60	300	85,0	**80213**
A-DQ(ZN)B2Y	4	Single-mode E9/125	ITU-T G.652	4	10,0	2500	160,0	1,60	300	85,0	**80181**
A-DQ(ZN)B2Y	6	Multimode G50/125	OM2	6	10,0	2500	160,0	1,60	300	85,0	**80198**
A-DQ(ZN)B2Y	6	Multimode G62.5/125	OM1	6	10,0	2500	160,0	1,60	300	85,0	**80214**
A-DQ(ZN)B2Y	6	Single-mode E9/125	ITU-T G.652	6	10,0	2500	160,0	1,60	300	85,0	**80182**
A-DQ(ZN)B2Y	8	Multimode G50/125	OM2	8	10,0	2500	160,0	1,60	300	85,0	**80199**
A-DQ(ZN)B2Y	8	Multimode G62.5/125	OM1	8	10,0	2500	160,0	1,60	300	85,0	**80215**
A-DQ(ZN)B2Y	8	Single-mode E9/125	ITU-T G.652	8	10,0	2500	160,0	1,60	300	85,0	**80183**
A-DQ(ZN)B2Y	12	Multimode G50/125	OM2	12	10,0	2500	160,0	1,60	300	85,0	**80201**
A-DQ(ZN)B2Y	12	Multimode G62.5/125	OM1	12	10,0	2500	160,0	1,60	300	85,0	**80217**
A-DQ(ZN)B2Y	12	Single-mode E9/125	ITU-T G.652	12	10,0	2500	160,0	1,60	300	85,0	**80185**
A-DQ(ZN)B2Y	16	Multimode G50/125	OM2	16	10,0	2500	180,0	1,80	300	95,0	**80202**
A-DQ(ZN)B2Y	16	Multimode G62.5/125	OM1	16	10,0	2500	180,0	1,80	300	95,0	**80218**
A-DQ(ZN)B2Y	16	Single-mode E9/125	ITU-T G.652	16	10,0	2500	180,0	1,80	300	95,0	**80186**
A-DQ(ZN)B2Y	24	Multimode G50/125	OM2	24	10,0	2500	180,0	1,80	300	95,0	**80204**
A-DQ(ZN)B2Y	24	Multimode G62.5/125	OM1	24	10,0	2500	180,0	1,80	300	95,0	**80220**
A-DQ(ZN)B2Y	24	Single-mode E9/125	ITU-T G.652	24	10,0	2500	180,0	1,80	300	95,0	**80187**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® fibre-optic cables are characterized by a design that is particularly easy to mount and is rodent-protected. Around a central grooved cable, there is a composite of glass yarns and swelling fleece with characteristics that ensure rodent protection, strain relief, and waterproofing in longitudinal direction of the cable. In addition, these cables are designed grease-free. Wiping the jelly off is therefore unnecessary. This construction is particularly used in underground, tubes and channel areas, where normal tensile stresses and/or transverse compressions occur and rodent infestation is to be expected.

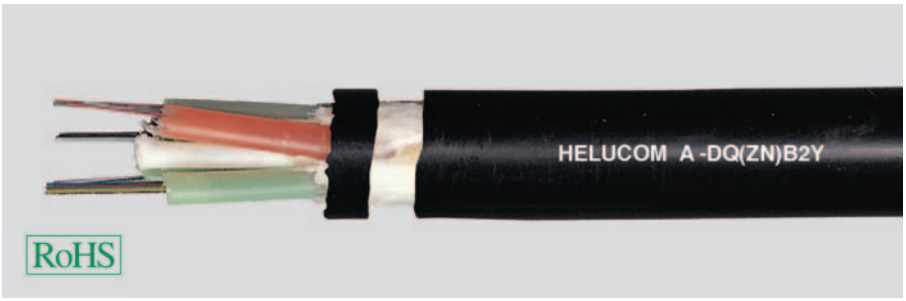
Fibre Optic Outdoor Cable

acc. DIN VDE 0888

HELUCOM®

A-DQ(ZN)B2Y, stranded





Cable structure

Core type: Loose tube
GRP support element
Strain relief elements: Glass yarns
Type of armouring: Glass yarns
Outer sheath material: PE
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
A-DQ(ZN)B2Y	24	Multimode G50/125	OM2	12	10,5	2700	210,0	2,70	600	95,0	**81382**
A-DQ(ZN)B2Y	24	Multimode G62.5/125	OM1	12	10,5	2700	210,0	2,70	600	95,0	**80219**
A-DQ(ZN)B2Y	24	Single-mode E9/125	ITU-T G.652	12	10,5	2700	210,0	2,70	600	95,0	**80188**
A-DQ(ZN)B2Y	36	Multimode G50/125	OM2	12	10,5	2700	210,0	2,70	600	95,0	**81108**
A-DQ(ZN)B2Y	36	Multimode G62.5/125	OM1	12	10,5	2700	210,0	2,70	600	95,0	**81109**
A-DQ(ZN)B2Y	36	Single-mode E9/125	ITU-T G.652	12	10,5	2700	210,0	2,70	600	95,0	**81110**
A-DQ(ZN)B2Y	48	Multimode G50/125	OM2	12	10,5	2700	210,0	2,70	600	95,0	**82648**
A-DQ(ZN)B2Y	48	Multimode G62.5/125	OM1	12	10,5	2700	210,0	2,70	600	95,0	**81112**
A-DQ(ZN)B2Y	48	Single-mode E9/125	ITU-T G.652	12	10,5	2700	210,0	2,70	600	95,0	**81113**
A-DQ(ZN)B2Y	60	Multimode G50/125	OM2	12	10,5	2700	210,0	2,70	600	95,0	**80207**
A-DQ(ZN)B2Y	60	Multimode G62.5/125	OM1	12	10,5	2700	210,0	2,70	600	95,0	**80223**
A-DQ(ZN)B2Y	60	Single-mode E9/125	ITU-T G.652	12	10,5	2700	210,0	2,70	600	95,0	**80191**
A-DQ(ZN)B2Y	72	Multimode G50/125	OM2	12	11,0	2700	220,0	2,90	600	100,0	**81133**
A-DQ(ZN)B2Y	72	Multimode G62.5/125	OM1	12	11,0	2700	220,0	2,90	600	100,0	**81134**
A-DQ(ZN)B2Y	72	Single-mode E9/125	ITU-T G.652	12	11,0	2700	220,0	2,90	600	100,0	**81120**
A-DQ(ZN)B2Y	84	Multimode G50/125	OM2	12	12,0	3000	240,0	3,60	600	140,0	**80208**
A-DQ(ZN)B2Y	84	Multimode G62.5/125	OM1	12	12,0	3000	240,0	3,60	600	140,0	**80224**
A-DQ(ZN)B2Y	84	Single-mode E9/125	ITU-T G.652	12	12,0	3000	240,0	3,60	600	140,0	**80192**
A-DQ(ZN)B2Y	96	Multimode G50/125	OM2	12	12,0	3000	240,0	3,60	600	140,0	**81135**
A-DQ(ZN)B2Y	96	Multimode G62.5/125	OM1	12	12,0	3000	240,0	3,60	600	140,0	**81136**
A-DQ(ZN)B2Y	96	Single-mode E9/125	ITU-T G.652	12	12,0	3000	240,0	3,60	600	140,0	**81121**
A-DQ(ZN)B2Y	108	Multimode G50/125	OM2	12	13,5	3000	270,0	4,30	600	155,0	**80209**
A-DQ(ZN)B2Y	108	Multimode G62.5/125	OM1	12	13,5	3000	270,0	4,30	600	155,0	**80225**
A-DQ(ZN)B2Y	108	Single-mode E9/125	ITU-T G.652	12	13,5	3000	270,0	4,30	600	155,0	**80193**
A-DQ(ZN)B2Y	120	Multimode G50/125	OM2	12	13,5	3000	270,0	4,30	600	155,0	**80210**
A-DQ(ZN)B2Y	120	Multimode G62.5/125	OM1	12	13,5	3000	270,0	4,30	600	155,0	**80226**
A-DQ(ZN)B2Y	120	Single-mode E9/125	ITU-T G.652	12	13,5	3000	270,0	4,30	600	155,0	**80194**
A-DQ(ZN)B2Y	144	Multimode G50/125	OM2	12	14,5	3000	290,0	5,40	600	200,0	**80211**
A-DQ(ZN)B2Y	144	Multimode G62.5/125	OM1	12	14,5	3000	290,0	5,40	600	200,0	**80227**
A-DQ(ZN)B2Y	144	Single-mode E9/125	ITU-T G.652	12	14,5	3000	290,0	5,40	600	200,0	**80195**

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Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® fibre-optic cables are characterized by a design that is particularly easy to mount, extremely tension-resistant and rodent-proof. Around a stranded grooved cable and filler elements, there is a composite of glass yarns and swelling fleece with characteristics that ensure rodent protection, strain relief, and waterproofing in longitudinal direction of the cable. In addition, these cables are designed grease-free. Wiping the jelly off is therefore unnecessary. This construction is particularly used in underground, tubes and channel areas, where above-average tensile stresses and/or transverse compressions occur and rodent infestation is to be expected.

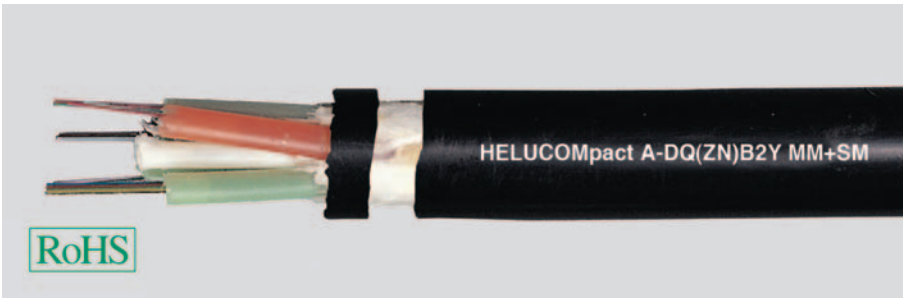
Fibre Optic Outdoor Cable

acc. DIN VDE 0888

HELUCOM® pact

A-DQ(ZN)B2Y fibre combi, stranded





Cable structure

Core type: Loose tube
GRP support element
Strain relief elements: Glass yarns
Type of armouring: Glass yarns
Outer sheath material: PE
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
A-DQ(ZN)B2Y	24	Single- and multimode G50/125	OM2 + ITU-T G.652	12	9,5	2500	200,0	2,50	400	90,0	**803037**
A-DQ(ZN)B2Y	24	Single- und Multimode G50/125 OM3	OM3 + ITU-T G.652	12	9,5	2500	200,0	2,50	400	90,0	**803923**
A-DQ(ZN)B2Y	48	Single- and multimode G50/125	OM2 + ITU-T G.652	12	9,5	2500	200,0	2,50	400	90,0	**803038**
A-DQ(ZN)B2Y	48	Single- und Multimode G50/125 OM3	OM3 + ITU-T G.652	12	9,5	2500	200,0	2,50	400	90,0	**803924**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® pact fibre-optic cables are characterized by a design that is particularly easy to mount, tension-resistant and rodent-proof. Around a stranded grooved cable and filler elements, there is a composite of glass yarns and swelling fleece with characteristics that ensure rodent protection, strain relief and waterproofing in longitudinal direction of the cable. In addition, these cables are designed grease-free. Wiping the jelly off is therefore unnecessary. This construction is particularly used in underground, tubes and channel areas, where packing density also plays a role.

Fibre Optic Outdoor Cable

acc. DIN VDE 0888

HELUCOM®

A-DQ(ZN)B2Y fibre combi, stranded





Cable structure

Core type: Loose tube
GRP support element
Strain relief elements: Glass yarns
Type of armouring: Glass yarns
Outer sheath material: PE
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
A-DQ(ZN)B2Y	24	Single- and multimode G50/125	OM2 + ITU-T G.652	12	10,5	2700	200,0	2,70	600	95,0	**81478**
A-DQ(ZN)B2Y	48	Single- and multimode G50/125	OM2 + ITU-T G.652	12	10,5	2700	200,0	2,70	600	95,0	**801183**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® fibre-optic cables are characterized by a design that is particularly easy to mount, extremely tension-resistant and rodent-proof. Around a stranded grooved cable and filler elements, there is a composite of glass yarns and swelling fleece with characteristics that ensure rodent protection, strain relief and waterproofing in longitudinal direction of the cable. In addition, these cables are designed grease-free. Wiping the jelly off is therefore unnecessary. This construction is particularly used in underground, tubes and channel areas, where above-average tensile stresses and/or transverse compressions occur and rodent infestation is to be expected.

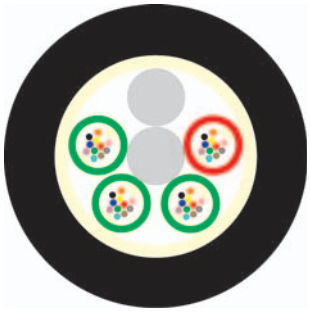
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Fibre Optic Outdoor Cable

acc. DIN VDE 0888

HELUCOM®

A-DF(ZN)2Y





Cable structure

Core type: Loose tube
GRP support element
Strain relief elements: Aramide
Outer sheath material: PE
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
A-DF(ZN)2Y	2	Multimode G50/125	OM2	2	9,5	2500	95,0	4,20	400	85,0	**80016**
A-DF(ZN)2Y	2	Multimode G62.5/125	OM1	2	9,5	2500	95,0	4,20	400	85,0	**80033**
A-DF(ZN)2Y	2	Single-mode E9/125	ITU-T G.652	2	9,5	2500	95,0	4,20	400	85,0	**80000**
A-DF(ZN)2Y	4	Multimode G50/125	OM2	4	9,5	2500	95,0	4,20	400	85,0	**80017**
A-DF(ZN)2Y	4	Multimode G62.5/125	OM1	4	9,5	2500	95,0	4,20	400	85,0	**80034**
A-DF(ZN)2Y	4	Single-mode E9/125	ITU-T G.652	4	9,5	2500	95,0	4,20	400	85,0	**80001**
A-DF(ZN)2Y	8	Multimode G50/125	OM2	8	9,5	2500	95,0	4,20	400	85,0	**80019**
A-DF(ZN)2Y	8	Multimode G62.5/125	OM1	8	9,5	2500	95,0	4,20	400	85,0	**80036**
A-DF(ZN)2Y	8	Single-mode E9/125	ITU-T G.652	8	9,5	2500	95,0	4,20	400	85,0	**80003**
A-DF(ZN)2Y	12	Multimode G50/125	OM2	12	9,5	2500	95,0	4,20	400	85,0	**80021**
A-DF(ZN)2Y	12	Multimode G62.5/125	OM1	12	9,5	2500	95,0	4,20	400	85,0	**80038**
A-DF(ZN)2Y	12	Single-mode E9/125	ITU-T G.652	12	9,5	2500	95,0	4,20	400	85,0	**80005**
A-DF(ZN)2Y	24	Multimode G50/125	OM2	12	9,5	2700	95,0	4,00	400	85,0	**80024**
A-DF(ZN)2Y	24	Multimode G62.5/125	OM1	12	9,5	2700	95,0	4,00	400	85,0	**80041**
A-DF(ZN)2Y	24	Single-mode E9/125	ITU-T G.652	12	9,5	2700	95,0	4,00	400	85,0	**80008**
A-DF(ZN)2Y	36	Multimode G50/125	OM2	12	9,5	2700	95,0	4,00	400	85,0	**80912**
A-DF(ZN)2Y	36	Multimode G62.5/125	OM1	12	9,5	2700	95,0	4,00	400	85,0	**80913**
A-DF(ZN)2Y	36	Single-mode E9/125	ITU-T G.652	12	9,5	2700	95,0	4,00	400	85,0	**80914**
A-DF(ZN)2Y	48	Multimode G50/125	OM2	12	9,5	2700	95,0	4,00	400	85,0	**80026**
A-DF(ZN)2Y	48	Multimode G62.5/125	OM1	12	9,5	2700	95,0	4,00	400	85,0	**80046**
A-DF(ZN)2Y	48	Single-mode E9/125	ITU-T G.652	12	9,5	2700	95,0	4,00	400	85,0	**80010**
A-DF(ZN)2Y	60	Multimode G50/125	OM2	12	9,5	2700	95,0	4,00	400	85,0	**80027**
A-DF(ZN)2Y	60	Multimode G62.5/125	OM1	12	9,5	2700	95,0	4,00	400	85,0	**80047**
A-DF(ZN)2Y	60	Single-mode E9/125	ITU-T G.652	12	9,5	2700	95,0	4,00	400	85,0	**80011**
A-DF(ZN)2Y	72	Multimode G50/125	OM2	12	10,0	2700	100,0	3,80	400	90,0	**80473**
A-DF(ZN)2Y	72	Multimode G62.5/125	OM1	12	10,0	2700	100,0	3,80	400	90,0	**80474**
A-DF(ZN)2Y	72	Single-mode E9/125	ITU-T G.652	12	10,0	2700	100,0	3,80	400	90,0	**80475**
A-DF(ZN)2Y	84	Multimode G50/125	OM2	12	10,7	3000	107,0	4,30	400	120,0	**80028**
A-DF(ZN)2Y	84	Multimode G62.5/125	OM1	12	10,7	3000	107,0	4,30	400	120,0	**80048**
A-DF(ZN)2Y	84	Single-mode E9/125	ITU-T G.652	12	10,7	3000	107,0	4,30	400	120,0	**80012**
A-DF(ZN)2Y	96	Multimode G50/125	OM2	12	11,5	3000	115,0	5,00	400	135,0	**80777**
A-DF(ZN)2Y	96	Multimode G62.5/125	OM1	12	11,5	3000	115,0	5,00	400	135,0	**80774**
A-DF(ZN)2Y	96	Single-mode E9/125	ITU-T G.652	12	11,5	3000	115,0	5,00	400	135,0	**80764**
A-DF(ZN)2Y	144	Multimode G50/125	OM2	12	14,5	3000	145,0	7,70	400	175,0	**80032**
A-DF(ZN)2Y	144	Multimode G62.5/125	OM1	12	14,5	3000	145,0	7,70	400	175,0	**80051**
A-DF(ZN)2Y	144	Single-mode E9/125	ITU-T G.652	12	14,5	3000	145,0	7,70	400	175,0	**80015**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® fibre-optic cables are characterized by a stranded construction with jelly filling. They are made waterproof in longitudinal direction by filling a jelly mass into the stranding cavities. Non-metallic tension elements ensure above average strain relief. This construction is particularly used in the area of telecommunication and long distance, but also in regular channels and tubes.

Fibre Optic Outdoor Cable

acc. DIN VDE 0888

HELUCOM®

A-DF(ZN)B2Y





Cable structure

Core type: Loose tube
GRP support element
Strain relief elements: Aramide
Type of armouring: Glass yarns
Outer sheath material: PE
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
A-DF(ZN)B2Y	2	Multimode G50/125	OM2	2	10,5	2700	105,0	4,40	400	90,0	**80100**
A-DF(ZN)B2Y	2	Multimode G62.5/125	OM1	2	10,5	2700	105,0	4,40	400	90,0	**80115**
A-DF(ZN)B2Y	2	Single-mode E9/125	ITU-T G.652	2	10,5	2700	105,0	4,40	400	90,0	**80084**
A-DF(ZN)B2Y	4	Multimode G50/125	OM2	4	10,5	2700	105,0	4,40	400	90,0	**80101**
A-DF(ZN)B2Y	4	Multimode G62.5/125	OM1	4	10,5	2700	105,0	4,40	400	90,0	**80116**
A-DF(ZN)B2Y	4	Single-mode E9/125	ITU-T G.652	4	10,5	2700	105,0	4,40	400	90,0	**80085**
A-DF(ZN)B2Y	8	Multimode G50/125	OM2	8	10,5	2700	105,0	4,40	400	90,0	**80031**
A-DF(ZN)B2Y	8	Multimode G62.5/125	OM1	8	10,5	2700	105,0	4,40	400	90,0	**80771**
A-DF(ZN)B2Y	8	Single-mode E9/125	ITU-T G.652	8	10,5	2700	105,0	4,40	400	90,0	**80087**
A-DF(ZN)B2Y	12	Multimode G50/125	OM2	12	10,5	2700	105,0	4,40	400	90,0	**80104**
A-DF(ZN)B2Y	12	Multimode G62.5/125	OM1	12	10,5	2700	105,0	4,40	400	90,0	**80120**
A-DF(ZN)B2Y	12	Single-mode E9/125	ITU-T G.652	12	10,5	2700	105,0	4,40	400	90,0	**80089**
A-DF(ZN)B2Y	24	Multimode G50/125	OM2	12	10,5	2700	105,0	4,40	400	90,0	**80759**
A-DF(ZN)B2Y	24	Multimode G62.5/125	OM1	12	10,5	2700	105,0	4,40	400	90,0	**80123**
A-DF(ZN)B2Y	24	Single-mode E9/125	ITU-T G.652	12	10,5	2700	105,0	4,40	400	90,0	**80092**
A-DF(ZN)B2Y	36	Multimode G50/125	OM2	12	10,5	2700	105,0	4,30	400	90,0	**81137**
A-DF(ZN)B2Y	36	Multimode G62.5/125	OM1	12	10,5	2700	105,0	4,30	400	90,0	**81138**
A-DF(ZN)B2Y	36	Single-mode E9/125	ITU-T G.652	12	10,5	2700	105,0	4,30	400	90,0	**81139**
A-DF(ZN)B2Y	48	Multimode G50/125	OM2	12	10,5	2700	105,0	4,20	400	90,0	**80109**
A-DF(ZN)B2Y	48	Multimode G62.5/125	OM1	12	10,5	2700	105,0	4,20	400	90,0	**80125**
A-DF(ZN)B2Y	48	Single-mode E9/125	ITU-T G.652	12	10,5	2700	105,0	4,20	400	90,0	**80094**
A-DF(ZN)B2Y	60	Multimode G50/125	OM2	12	10,5	2700	105,0	4,20	400	90,0	**80110**
A-DF(ZN)B2Y	60	Multimode G62.5/125	OM1	12	10,5	2700	105,0	4,20	400	90,0	**80126**
A-DF(ZN)B2Y	60	Single-mode E9/125	ITU-T G.652	12	10,5	2700	105,0	4,20	400	90,0	**80095**
A-DF(ZN)B2Y	72	Multimode G50/125	OM2	12	11,0	2700	110,0	4,10	400	95,0	**81143**
A-DF(ZN)B2Y	72	Multimode G62.5/125	OM1	12	11,0	2700	110,0	4,10	400	95,0	**81144**
A-DF(ZN)B2Y	72	Single-mode E9/125	ITU-T G.652	12	11,0	2700	110,0	4,10	400	95,0	**81145**
A-DF(ZN)B2Y	84	Multimode G50/125	OM2	12	11,5	3000	115,0	4,60	400	136,0	**80111**
A-DF(ZN)B2Y	84	Multimode G62.5/125	OM1	12	11,5	3000	115,0	4,60	400	136,0	**80127**
A-DF(ZN)B2Y	84	Single-mode E9/125	ITU-T G.652	12	11,5	3000	115,0	4,60	400	136,0	**80096**
A-DF(ZN)B2Y	96	Multimode G50/125	OM2	12	12,0	3000	120,0	5,30	400	155,0	**81147**
A-DF(ZN)B2Y	96	Multimode G62.5/125	OM1	12	12,0	3000	120,0	5,30	400	155,0	**81148**
A-DF(ZN)B2Y	96	Single-mode E9/125	ITU-T G.652	12	12,0	3000	120,0	5,30	400	155,0	**81149**
A-DF(ZN)B2Y	144	Multimode G50/125	OM2	12	14,5	3000	145,0	8,00	400	228,0	**80114**
A-DF(ZN)B2Y	144	Multimode G62.5/125	OM1	12	14,5	3000	145,0	8,00	400	228,0	**80130**
A-DF(ZN)B2Y	144	Single-mode E9/125	ITU-T G.652	12	14,5	3000	145,0	8,00	400	228,0	**80099**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® fibre-optic cables are characterized by a stranded construction with jelly filling. They are made waterproof in longitudinal direction by filling a jelly mass into the stranding cavities. Non-metallic tension elements and glass yarns ensure above average strain relief and rodent protection. This construction is particularly used in the area of telecommunication and long distance, but also in regular channels and tubes where rodent infestation is possible.

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Fibre Optic Outdoor Cable

acc. DIN VDE 0888

HELUCOM®

A-DF(ZN)2Y4Y





Cable structure

Core type: Loose tube
GRP support element
Strain relief elements: Aramide
Inner sheath material: PE
Type of armouring: PA sheath
Outer sheath material: PA
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Longitudinally water-tight acc. to IEC 60794-1-2-F5
Cable, laterally water-tight
UV-resistant

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	Part no.
A-DF(ZN)2Y4Y	2	Multimode G50/125	OM2	2	10,0	2700	100,0	6,10	400	90,0	**80915**
A-DF(ZN)2Y4Y	2	Multimode G62.5/125	OM1	2	10,0	2700	100,0	6,10	400	90,0	**80927**
A-DF(ZN)2Y4Y	2	Single-mode E9/125	ITU-T G.652	2	10,0	2700	100,0	6,10	400	90,0	**80945**
A-DF(ZN)2Y4Y	4	Multimode G50/125	OM2	4	10,0	2700	100,0	6,10	400	90,0	**80735**
A-DF(ZN)2Y4Y	4	Multimode G62.5/125	OM1	4	10,0	2700	100,0	6,10	400	90,0	**80928**
A-DF(ZN)2Y4Y	4	Single-mode E9/125	ITU-T G.652	4	10,0	2700	100,0	6,10	400	90,0	**80895**
A-DF(ZN)2Y4Y	8	Multimode G50/125	OM2	8	10,0	2700	100,0	6,10	400	90,0	**80691**
A-DF(ZN)2Y4Y	8	Multimode G62.5/125	OM1	8	10,0	2700	100,0	6,10	400	90,0	**80809**
A-DF(ZN)2Y4Y	8	Single-mode E9/125	ITU-T G.652	8	10,0	2700	100,0	6,10	400	90,0	**80118**
A-DF(ZN)2Y4Y	12	Multimode G50/125	OM2	12	10,0	2700	100,0	6,10	400	90,0	**80627**
A-DF(ZN)2Y4Y	12	Multimode G62.5/125	OM1	12	10,0	2700	100,0	6,10	400	90,0	**80931**
A-DF(ZN)2Y4Y	12	Single-mode E9/125	ITU-T G.652	12	10,0	2700	100,0	6,10	400	90,0	**80947**
A-DF(ZN)2Y4Y	24	Multimode G50/125	OM2	12	10,0	2700	100,0	6,10	400	90,0	**80578**
A-DF(ZN)2Y4Y	24	Multimode G62.5/125	OM1	12	10,0	2700	100,0	6,10	400	90,0	**80576**
A-DF(ZN)2Y4Y	24	Single-mode E9/125	ITU-T G.652	12	10,0	2700	100,0	6,10	400	90,0	**80577**
A-DF(ZN)2Y4Y	36	Multimode G50/125	OM2	12	10,0	2700	100,0	6,00	400	90,0	**80672**
A-DF(ZN)2Y4Y	36	Multimode G62.5/125	OM1	12	10,0	2700	100,0	6,00	400	90,0	**80935**
A-DF(ZN)2Y4Y	36	Single-mode E9/125	ITU-T G.652	12	10,0	2700	100,0	6,00	400	90,0	**80950**
A-DF(ZN)2Y4Y	48	Multimode G50/125	OM2	12	10,0	2700	100,0	6,00	400	90,0	**80732**
A-DF(ZN)2Y4Y	48	Multimode G62.5/125	OM1	12	10,0	2700	100,0	6,00	400	90,0	**80936**
A-DF(ZN)2Y4Y	48	Single-mode E9/125	ITU-T G.652	12	10,0	2700	100,0	6,00	400	90,0	**80951**
A-DF(ZN)2Y4Y	60	Multimode G50/125	OM2	12	10,0	2700	100,0	5,80	400	90,0	**80920**
A-DF(ZN)2Y4Y	60	Multimode G62.5/125	OM1	12	10,0	2700	100,0	5,80	400	90,0	**80938**
A-DF(ZN)2Y4Y	72	Multimode G50/125	OM2	12	10,5	2700	105,0	5,80	400	95,0	**80921**
A-DF(ZN)2Y4Y	72	Multimode G62.5/125	OM1	12	10,5	2700	105,0	5,80	400	95,0	**80939**
A-DF(ZN)2Y4Y	72	Single-mode E9/125	ITU-T G.652	12	10,5	2700	105,0	5,80	400	95,0	**80954**
A-DF(ZN)2Y4Y	84	Multimode G50/125	OM2	12	11,0	3000	110,0	8,40	400	110,0	**80922**
A-DF(ZN)2Y4Y	84	Multimode G62.5/125	OM1	12	11,0	3000	110,0	8,40	400	110,0	**80940**
A-DF(ZN)2Y4Y	84	Single-mode E9/125	ITU-T G.652	12	11,0	3000	110,0	8,40	400	110,0	**80955**
A-DF(ZN)2Y4Y	96	Multimode G50/125	OM2	12	11,5	3000	115,0	7,20	400	120,0	**80923**
A-DF(ZN)2Y4Y	96	Multimode G62.5/125	OM1	12	11,5	3000	115,0	7,20	400	120,0	**80941**
A-DF(ZN)2Y4Y	96	Single-mode E9/125	ITU-T G.652	12	11,5	3000	115,0	7,20	400	120,0	**80956**
A-DF(ZN)2Y4Y	144	Multimode G50/125	OM2	12	14,5	3000	145,0	10,40	400	180,0	**80926**
A-DF(ZN)2Y4Y	144	Multimode G62.5/125	OM1	12	14,5	3000	145,0	10,40	400	180,0	**80944**
A-DF(ZN)2Y4Y	144	Single-mode E9/125	ITU-T G.652	12	14,5	3000	145,0	10,40	400	180,0	**80959**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® fibre-optic cables are characterized by a stranded construction with jelly filling. They are made waterproof in longitudinal direction by filling a jelly mass into the stranding cavities. Non-metallic tension elements and a second outer sheath made of polyamide (PA) ensure above average strain relief and rodent protection. This construction is particularly used in the area of telecommunication and long distance, but also in regular channels and tubes where rodent infestation is possible.

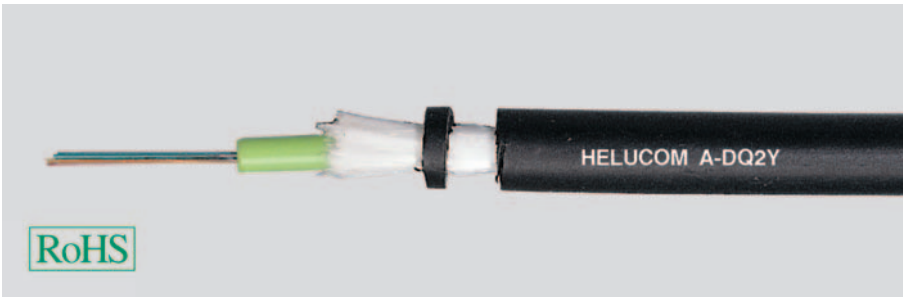
Fibre Optic Outdoor Cable

Microduct

HELUCOM®

A-DQ2Y, central





Cable structure

Core type: Loose tube
Strain relief elements: Aramide
Outer sheath material: PE
Outer sheath colour: Black

Temperature range

Laying, min.: -20°C
Laying, max.: +60°C
Operating, min.: -20°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
A-DQ2Y central	4	Single-mode E9/125	ITU-T G.652	4	2,5	180	40,0	1,40	100	6,0	**803664**
A-DQ2Y central	12	Single-mode E9/125	ITU-T G.652	12	2,5	180	40,0	1,40	100	6,0	**803929**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® micro fibre-optic cables are characterized by a design that is slim but robust. Around a central tube, there is a composite of swelling fleece with characteristics that ensure the strain relief, and waterproofing in longitudinal direction of the cable. This construction is particularly used in tubes and channels. These cables can be blowing into microducts.

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Fibre Optic Outdoor Cable

Microduct

HELUCOM®

A-DQ2Y, stranded





Cable structure

Core type: Loose tube
Strain relief elements: Aramide
Outer sheath material: PE
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -25°C
Operating, max.: +70°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
A-DQ2Y stranded	4	Single-mode E9/125	ITU-T G.652	4	5,8	850	70,0	0,89	150	27,0	**803931**
A-DQ2Y stranded	12	Single-mode E9/125	ITU-T G.652	12	5,8	850	70,0	0,87	150	27,0	**803932**
A-DQ2Y stranded	24	Single-mode E9/125	ITU-T G.652	12	5,8	850	70,0	0,87	150	27,0	**803930**
A-DQ2Y stranded	48	Single-mode E9/125	ITU-T G.652	12	5,8	850	70,0	0,87	150	27,0	**803658**
A-DQ2Y stranded	72	Single-mode E9/125	ITU-T G.652	12	5,8	850	60,0	0,87	150	27,0	**803659**
A-DQ2Y stranded	96	Single-mode E9/125	ITU-T G.652	12	6,8	1000	70,0	1,25	150	40,0	**803660**
A-DQ2Y stranded	144	Single-mode E9/125	ITU-T G.652	12	9,4	1800	140,0	2,19	150	79,0	**803661**
A-DQ2Y stranded	288	Single-mode E9/125	ITU-T G.652	12	11,2	1500	115,0	2,97	100	90,0	**803668**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® micro fibre-optic cables are characterized by a design that is slim but robust. Around stranded tubes, there is a composite of swelling fleece with characteristics that ensure the strain relief, and waterproofing in longitudinal direction of the cable. This construction is particularly used in tubes and channels. These cables can be blowing into microducts.

Fibre Optic Outdoor Cable

steel armoured

HELUCOM®

A-DQ(ZN)(SR)2Y





Cable structure

Core type: Loose tube
Strain relief elements: Glass yarns
Type of armouring: Steel rib
Outer sheath material: PE
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +70°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Longitudinally water-tight acc. to IEC 60794-1-2-F5
Cable, laterally water-tight
UV-resistant

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
A-DQ(ZN)(SR)2Y	4	Multimode G50/125	OM2	4	9,5	1500	95,0	2,00	500	115,0	**802917**
A-DQ(ZN)(SR)2Y	4	Multimode G62.5/125	OM1	4	9,5	1500	95,0	2,00	500	115,0	**803925**
A-DQ(ZN)(SR)2Y	4	Single-mode E9/125	ITU-T G.652	4	9,5	1500	95,0	2,00	500	105,0	**803927**
A-DQ(ZN)(SR)2Y	12	Multimode G50/125	OM2	12	9,5	1500	95,0	2,00	500	115,0	**802918**
A-DQ(ZN)(SR)2Y	12	Multimode G62.5/125	OM1	12	9,5	1500	95,0	2,00	500	115,0	**803926**
A-DQ(ZN)(SR)2Y	12	Single-mode E9/125	ITU-T G.652	12	9,5	1500	95,0	2,00	500	115,0	**803928**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® fibre-optic cables are characterized by a compact construction with a swelling fleece. Above-average rodent protection is achieved with the metallic rodent protection (steel groove) and an outer sheath made of PE. This construction is particularly used in the area of telecommunication and long distance, but also in regular channels and tubes where rodent infestation is possible.

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Fibre Optic Outdoor Cable

acc. ARCOR Standard

HELUCOM®

A-DF(ZN)2Y(SR)2Y





Cable structure

Core type: Loose tube
GRP support element
Strain relief elements: Aramide
Inner sheath material: PE
Type of armouring: Steel rib
Outer sheath material: PE
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -25°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Longitudinally water-tight acc. to IEC 60794-1-2-F5
Cable, laterally water-tight
UV-resistant

Designation	No. of fibres	Fibre type	Fibre category	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	Part no.
A-DF(ZN)2Y(SR)2Y	12	Single-mode E9/125	ITU-T G.652	2	13,0	2700	130,0	0,00	800	180,0	**82190**
A-DF(ZN)2Y(SR)2Y	24	Single-mode E9/125	ITU-T G.652	4	13,0	2700	130,0	0,00	800	180,0	**800708**
A-DF(ZN)2Y(SR)2Y	48	Single-mode E9/125	ITU-T G.652	12	13,0	2700	130,0	0,00	800	180,0	**800709**
A-DF(ZN)2Y(SR)2Y	60	Single-mode E9/125	ITU-T G.652	12	13,0	2700	130,0	0,00	800	180,0	**800710**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® fibre-optic cables are characterized by a stranded construction with jelly filling. They are made waterproof in longitudinal direction by filling a jelly mass into the stranding cavities. Above-average rodent protection is achieved with the metallic rodent protection (steel groove) and the second outer sheath made of PE. This construction is particularly used in the area of telecommunication and long distance where ARCOR standards must be followed, but also in regular channels and tubes where rodent infestation is possible.

Fibre Optic Outdoor Cable Hybrid

acc. DIN VDE 0888

HELUCOM®

A-DSQ(ZN)B2Y





Cable structure

Core type: Loose tube
GRP support element
Number of fibres per core: 4
Strain relief elements: Glass yarns
Type of armouring: Glass yarns
Outer sheath material: PE
Outer sheath colour: Black

Temperature range

Laying, min.: -10°C
Laying, max.: +60°C
Operating, min.: -25°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant

Designation	No. of fibres	Fibre type	No. of copper cores	Dimensions of copper cores mm	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
A-DSQ(ZN)B2Y	4	Multimode G50/125	2	1,2	12,0	2100	300	4,80	200	140,0	**81209**
A-DSQ(ZN)B2Y	4	Multimode G62.5/125	2	1,2	12,0	2100	300	4,80	200	140,0	**81255**
A-DSQ(ZN)B2Y	4	Single-mode E9/125	2	1,2	12,0	2100	300	4,80	200	140,0	**81256**
A-DSQ(ZN)B2Y	4	Multimode G50/125	2	1,5	12,5	2300	320	4,80	200	160,0	**82561**
A-DSQ(ZN)B2Y	4	Multimode G62.5/125	2	1,5	12,5	2300	320	4,80	200	160,0	**81257**
A-DSQ(ZN)B2Y	4	Single-mode E9/125	2	1,5	12,5	2300	320	4,80	200	160,0	**81258**
A-DSQ(ZN)B2Y	4	Multimode G50/125	4	1,5	17,0	2600	430	5,80	200	250,0	**82786**
A-DSQ(ZN)B2Y	4	Multimode G62.5/125	4	1,5	17,0	2600	430	5,80	200	250,0	**81259**
A-DSQ(ZN)B2Y	4	Single-mode E9/125	4	1,5	17,0	2600	430	5,80	200	250,0	**81260**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® fibre-optic cables are designed especially for use in fibre-optical temperature measurements, such as monitoring of dams. The extreme mechanical requirements in these areas are fulfilled by the specially designed cable construction. These lines are hybrid glass fibre lines with copper cores and a special PE outer sheath.

R

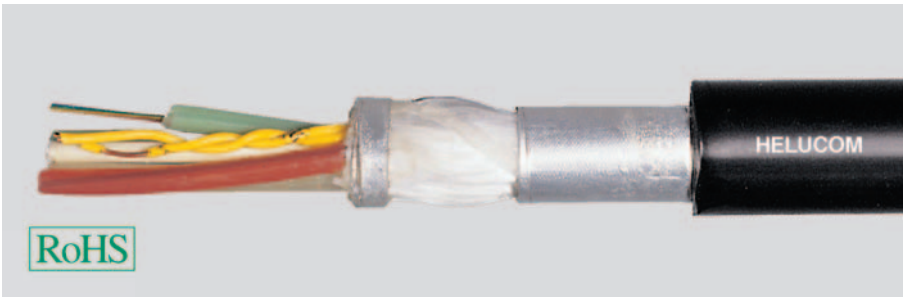
Fibre Optic Outdoor Cable Hybrid

acc. DIN VDE 0888

HELUCOM®

A-DSF(L)(ZN)2Y





Cable structure

Core type: Loose tube
GRP support element
Number of fibres per core: 12
Strain relief elements: Aramide
Aluminium laminated sheath
Outer sheath material: PE
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -25°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Longitudinally water-tight acc. to IEC 60794-1-2-F5
Cable, laterally water-tight
UV-resistant

Designation	No. of fibres	Fibre type	No. of copper cores	Dimensions of copper cores mm	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Caloric load app. MJ / m	Max. transverse pressure N / cm	Weight kg / km	**Part no.**
A-DSF(L)(ZN)2Y	12	Single-mode E9/125	2	0,6	12,0	2500	200	4,80	250	135,0	**80495**
A-DSF(L)(ZN)2Y	12	Single-mode E9/125	4	0,6	12,0	2500	200	4,80	250	140,0	**80497**
A-DSF(L)(ZN)2Y	24	Single-mode E9/125	2	0,6	13,1	2500	200	4,80	250	139,0	**800753**
A-DSF(L)(ZN)2Y	24	Single-mode E9/125	4	0,6	13,1	2500	200	4,80	250	144,0	**801182**
A-DSF(L)(ZN)2Y	48	Single-mode E9/125	2	0,6	13,1	2500	200	4,80	250	141,0	**80501**
A-DSF(L)(ZN)2Y	48	Single-mode E9/125	4	0,6	13,1	2500	200	4,80	250	146,0	**80503**
A-DSF(L)(ZN)2Y	60	Single-mode E9/125	2	0,6	14,1	2500	230	4,80	250	166,0	**80504**
A-DSF(L)(ZN)2Y	60	Single-mode E9/125	4	0,6	14,1	2500	230	4,80	250	171,0	**80506**
A-DSF(L)(ZN)2Y	72	Single-mode E9/125	2	0,6	14,8	2500	240	5,10	250	179,0	**80507**
A-DSF(L)(ZN)2Y	72	Single-mode E9/125	4	0,6	14,8	2500	240	5,10	250	184,0	**80509**
A-DSF(L)(ZN)2Y	96	Single-mode E9/125	2	0,6	16,6	3000	280	6,30	250	276,0	**80510**
A-DSF(L)(ZN)2Y	96	Single-mode E9/125	4	0,6	16,6	3000	280	6,30	250	281,0	**80512**
A-DSF(L)(ZN)2Y	120	Single-mode E9/125	2	0,6	18,4	3000	290	8,50	250	280,0	**80513**
A-DSF(L)(ZN)2Y	120	Single-mode E9/125	4	0,6	18,4	3000	290	8,50	250	285,0	**80515**
A-DSF(L)(ZN)2Y	144	Single-mode E9/125	2	0,6	20,3	3500	310	10,00	250	331,0	**80516**
A-DSF(L)(ZN)2Y	144	Single-mode E9/125	4	0,6	20,3	3500	310	10,00	250	336,0	**80518**

Dimensions and specifications may be changed without prior notice.

Application

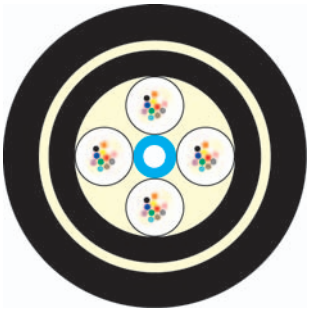
These HELUCOM® outdoor cables are designed for use under extreme environmental conditions. With the double jelly filling and the Al/PE laminated sheath, they are water proof in longitudinal and transverse direction. The welded Al tape acts as an additional vapour barrier. These cables can be layed directly in the ground, in tubes and in ducts. They are mainly used in local and long-distance networks.

Aerial Fibre Optic Cable

metall free

HELUCOM®

ADSS





Cable structure

Core type: Loose tube
GRP support element
Strain relief elements: Aramide
Inner sheath material: PE
Outer sheath material: PE
Outer sheath colour: Black

Temperature range

Laying, min.: -10°C
Laying, max.: +60°C
Operating, min.: -25°C
Operating, max.: +70°C

Other data

Sag at 25°C ADSS 9: 2,0 m
Sag at 25°C ADSS 16: 4,5 m
Sag at 25°C ADSS 35: 9,5 m
Halogen-free acc. to 60754-2
Longitudinally water-tight acc. to IEC 60794-1-2-F5
Cable, laterally water-tight
UV-resistant

Designation	Number of fibres	Fibre type	Number of fibres per core	Span width m	Max. tensile force kN	Additional load daN / m	Min. stat. bending radius mm	Outer Ø app. mm	Weight kg / km	**Part no.**
ADSS 9	12	Single-mode E9/125	4	150	9	0,5	410	13,6	135	**82390**
ADSS 9	24	Single-mode E9/125	4	150	9	0,5	410	13,6	137	**82391**
ADSS 9	36	Single-mode E9/125	6	150	9	0,5	470	15,6	177	**82392**
ADSS 9	48	Single-mode E9/125	8	150	9	0,5	470	15,6	178	**82393**
ADSS 9	60	Single-mode E9/125	12	150	9	0,5	450	15,0	161	**82394**
ADSS 9	144	Single-mode E9/125	12	150	9	0,5	630	20,8	316	**82395**
ADSS 16	12	Single-mode E9/125	4	350	16	0,3	430	14,4	162	**82396**
ADSS 16	24	Single-mode E9/125	4	350	16	0,3	430	14,4	165	**82397**
ADSS 16	36	Single-mode E9/125	6	350	16	0,3	500	16,4	200	**82398**
ADSS 16	48	Single-mode E9/125	8	350	16	0,3	500	16,4	201	**82399**
ADSS 16	60	Single-mode E9/125	12	350	16	0,3	480	15,8	184	**82400**
ADSS 16	144	Single-mode E9/125	12	350	16	0,3	650	21,6	333	**82401**
ADSS 35	12	Single-mode E9/125	4	700	35	0,35	520	17,2	198	**82402**
ADSS 35	24	Single-mode E9/125	4	700	35	0,35	520	17,2	200	**82403**
ADSS 35	36	Single-mode E9/125	6	700	35	0,35	580	19,2	240	**82404**
ADSS 35	48	Single-mode E9/125	8	700	35	0,35	580	19,2	241	**82405**
ADSS 35	60	Single-mode E9/125	12	700	35	0,35	560	18,6	227	**82406**
ADSS 35	144	Single-mode E9/125	12	700	35	0,35	730	24,4	381	**82407**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® outdoor cables designed as aerial cables for freely suspended installations on posts and masts. The construction is waterproof in longitudinal direction thanks to the use of jelly-filled bundle cores and swelling tape. The outer jacket is UV-resistant and at the same time provides protection against environmental influences, such as snow, ice, sun insolation and wind.

R

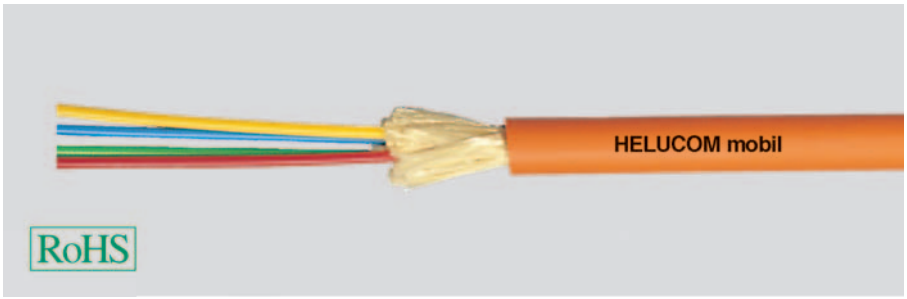
Fibre Optic Cable flexible

WK - mobile

HELUCOM® WK

A-V(ZN)11Y





Cable structure

Core type: Tight buffer
Strain relief elements: Aramide
Outer sheath colour: Orange

Temperature range

Laying, min.: +5°C
Laying, max.: +50°C
Operating, min.: -30°C
Operating, max.: +70°C

Other data

Max. tensile force: 650 N
Max. transverse pressure: 40 N / cm
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant
Resistant to hammer impact acc. to IEC 60794-1-2-E6
Bending cycles acc. to IEC 60794-1-2-E6: 500.000
Oil-resistant

Designation	Number of fibres	Fibre type	Outer Ø app. mm	Outer sheath material	Min. stat. bending radius mm	Flame proof	halogen-free	UL	Weight kg / km	**Part no.**
Fibre-optic cable	2	Multimode G50/125	5,0	PUR	75	yes	yes	no	20	**80382**
Fibre-optic cable	2	Multimode G62.5/125	5,0	PUR	75	yes	yes	no	20	**80363**
Fibre-optic cable	4	Multimode G50/125	5,8	PUR	90	yes	yes	no	31	**80534**
Fibre-optic cable	4	Multimode G62.5/125	5,8	PUR	90	yes	yes	no	31	**81036**
Fibre-optic cable	4	Single-mode E9/125	5,8	PUR	90	yes	yes	no	31	**801727**
Fibre-optic cable	8	Multimode G50/125	7,0	PUR	105	yes	yes	no	47	**81037**
Fibre-optic cable	8	Multimode G62.5/125	7,0	PUR	105	yes	yes	no	47	**81038**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® cables were designed as mobile field cables. They are easily wound up on a drum and are very tension-proof. As the outer sheath is tightly anchored on the aramid braiding, it is especially suitable for mobile use. The advantage of these cables is evident especially where mobile fibre-optic lines are to be installed, such as for drag chains, TV transmission, supervision of protected areas, etc.

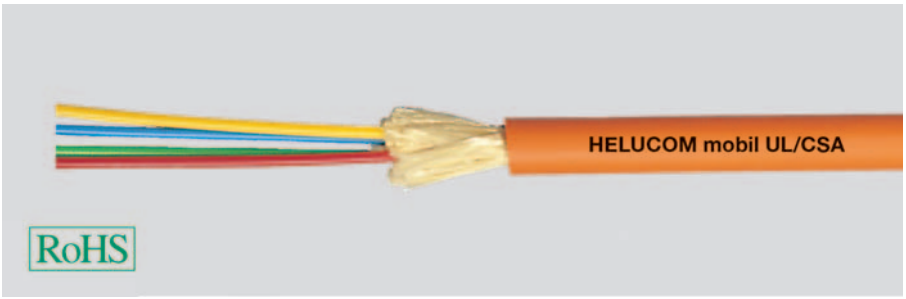
Fibre Optic Cable flexible

WK - UL/CSA

HELUCOM® WK

A-V(ZN)YY





Cable structure

Core type: Tight buffer
Strain relief elements: Aramide
Outer sheath colour: Orange

Temperature range

Laying, min.: 0°C
Laying, max.: +50°C
Operating, min.: -30°C
Operating, max.: +80°C

Other data

Max. tensile force: 1200 N
Max. transverse pressure: 44 N / cm
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant
Bending cycles acc. to IEC 60794-1-2-E6: 9.000
Oil-resistant

Designation	Number of fibres	Fibre type	Outer Ø app. mm	Outer sheath material	Inner sheath material	Min. stat. bending radius mm	Flame proof	halogen-free	UL	Weight kg / km	**Part no.**
Fibre-optic cable	4	Multimode G50/125	7,0	PVC	PVC	75	yes	no	yes	50	**802792**
Fibre-optic cable	4	Multimode G62.5/125	7,0	PVC	PVC	75	yes	no	yes	50	**803934**
Fibre-optic cable	4	Single-mode E9/125	7,0	PVC	PVC	75	yes	no	yes	50	**803935**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® cables were designed as mobile field cables. They are easily wound up on a drum and are very tension-proof. As the outer sheath is tightly anchored on the aramid braiding, it is especially suitable for mobile use. The advantage of these cables is evident especially where mobile fibre-optic lines are to be installed, such as windturbine projects, TV transmission, supervision of protected areas, etc.. This series with PVC jacket is certified according the **UL/CSA standard OFNG/ FT4**.

R

Fibre Optic Cable flexible

WK robust PUR + PVC (UL/CSA)

HELUCOM® WK

AT-V(ZN)H(ZN)11Y, AT-V(ZN)Y(ZN)Y





Cable structure

Core type: Composite buffered
Strain relief elements: Aramide
Outer sheath colour: Black

Temperature range

Laying, min.: -10°C
Laying, max.: +50°C
Operating, min.: -40°C
Operating, max.: +90°C

Other data

Max. tensile force: 4800 N
Max. transverse pressure: 200 N / cm
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant
Resistant to hammer impact acc. to IEC 60794-1-2-E6
Bending cycles acc. to IEC 60794-1-2-E6: 9.000
Oil-resistant

Designation	Number of fibres	Fibre type	Outer Ø app. mm	Outer sheath material	Inner sheath material	Min. stat. bending radius mm	Flame proof	halogen-free	UL	Weight kg / km	**Part no.**
AT-V(ZN)H(ZN)11Y	4	Multimode G50/125	8,5	PUR	ULSZH	100	yes	yes	no	125	**803346**
AT-V(ZN)Y(ZN)Y	4	Multimode G50/125	8,5	PVC	PVC	130	yes	no	yes	125	**803348**
AT-V(ZN)Y(ZN)Y	12	Multimode G50/125	12,4	PVC	PVC	190	yes	no	yes	320	**803349**
AT-V(ZN)H(ZN)11Y	12	Multimode G50/125	12,4	PUR	ULSZH	190	yes	yes	no	320	**803347**
AT-V(ZN)H(ZN)11Y	12	Single-mode E9/125	12,4	PUR	ULSZH	190	yes	yes	no	320	**804700**

Dimensions and specifications may be changed without prior notice.

Application

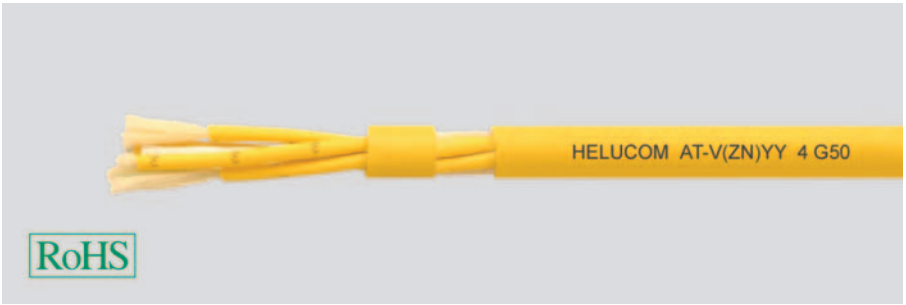
The HELUCOM ® WK range is set apart by its extreme rugged yet highly-flexible design. It is used wherever demanding environmental conditions and extreme movements occur. The tight buffer structure enables the cable to be pre-assembled on site with ease. Applications are for example Windturbines, TV transmissions, mobile field applications, etc..

Fibre Optic Cable flexible

HELUCOM® WK

AT-V(ZN)YY





Cable structure

Core type: Composite buffered
Strain relief elements: Aramide
Outer sheath colour: Yellow

Temperature range

Laying, min.: -10°C
Laying, max.: +50°C
Operating, min.: -40°C
Operating, max.: +90°C

Other data

Max. tensile force: 1200 N
Max. transverse pressure: 100 N / cm
UV-resistant
Resistant to hammer impact acc. to IEC 60794-1-2-E6
Bending cycles acc. to IEC 60794-1-2-E6: 15
Oil-resistant

Designation	Number of fibres	Fibre type	Outer Ø app. mm	Outer sheath material	Inner sheath material	Min. stat. bending radius mm	Flame proof	halogen-free	UL	Weight kg / km	**Part no.**
Fibre-optic cable	4	Multimode G50/125	7,4	PVC	PVC	90	yes	no	no	65	**803364**

Dimensions and specifications may be changed without prior notice.

Application

The HELUCOM ® range is set apart by its extreme rugged yet flexible design. It is used wherever demanding environmental conditions and movements occur. The tight buffer structure enables the cable to be pre-assembled on site with ease. Applications are for example industry applications, TV transmissions, etc..

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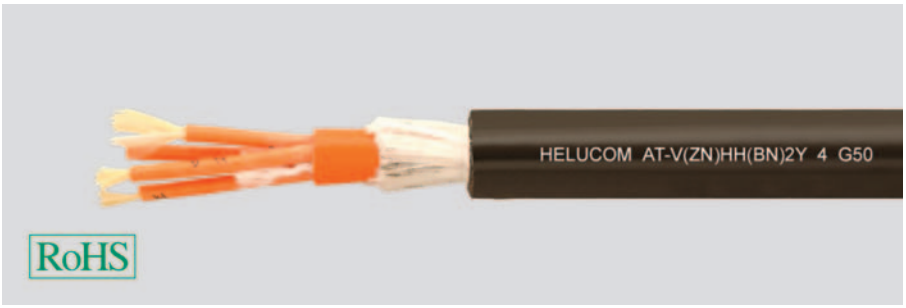
Fibre Optic Breakout Cable

outdoor

HELUCOM®

AT-V(ZN)HH(ZN)B2Y





Cable structure

Core type: Composite buffered
GRP support element
Strain relief elements: Aramide
Inner sheath material: ULSZH
Outer sheath material: PE
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +60°C

Other data

Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant
Oil-resistant

Designation	Number of fibres	Fibre type	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Max. transverse pressure N / cm	Caloric load app. MJ / m	Weight kg / km	**Part no.**
AT-V(ZN)HH(ZN)B2Y	4	Multimode G50/125	13,5	1200	340	300	2,95	140	**801352**

Dimensions and specifications may be changed without prior notice.

Application

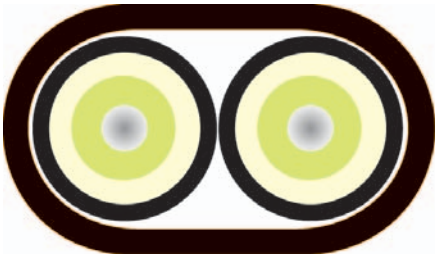
The HELUCOM ® range is set apart by its extreme rugged roden protected design. It is used wherever demanding environmental conditions while fixed installations occur. The tight buffer structure enables the cable to be pre-assembled on site with ease. Applications are for example industry applications, etc..

Fibre Optic Cable robust

multimode

HELUCOM®

AT-VYY





Cable structure

Core type: Tight buffer
Strain relief elements: Aramide
Outer sheath material: PVC
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +60°C

Other data

Flame-resistance acc. to IEC 60332-1
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant
Oil-resistant

Designation	Number of fibres	Fibre type	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Max. transverse pressure N / cm	Caloric load app. MJ / m	Weight kg / km	**Part no.**
AT-VYY	2	Multimode G62.5/125	1	6,8 x 10,2	400	110,0	300	1,10	76,0	**800126**

Dimensions and specifications may be changed without prior notice.

Application

This HELUCOM® fibre-optic cable is suited for fixed installations in pits and channels, but also for flexible applications as jumper cable. Because of the robust construction with Single- and Overall-jacket you also can use it in industrial areas. With the core-construction, direct plug manufacturing, even on site, poses no problems.

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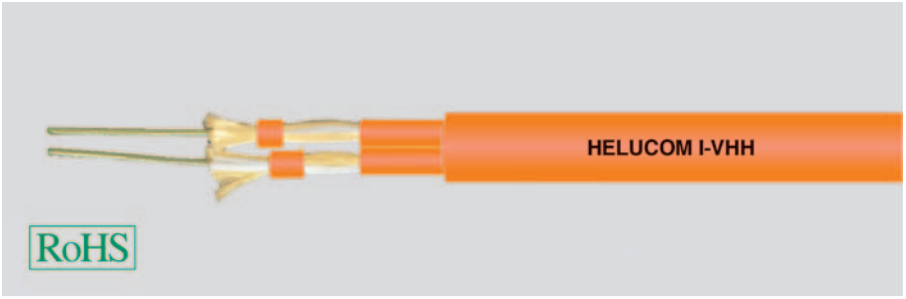
Fibre Optic Cable flexible

HCS

HELUCOM®

I-VH, I-VHH





Cable structure

Core type: Composite buffered
Strain relief elements: Aramide
Outer sheath material: FRNC
Outer sheath colour: Orange

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -10°C
Operating, max.: +60°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Flame-resistance acc. to IEC 60332-1
Smoke density acc. to IEC 61034

Designation	Number of fibres	Fibre type	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Max. transverse pressure N / cm	Caloric load app. MJ / m	Weight kg / km	**Part no.**
I-VH	1	HCS 200/230	2,8	300	40	10	0,26	2,8	**800579**
I-VHH	2	HCS 200/230	3,8 x 6,6	600	50	10	0,52	30,0	**81238**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® HCS fibre lines are suitable for stationary installation indoors. For heavy-duty mechanical requirements, such as application in industrial environments, a version with PUR outer sheath is available on request. With a HCS fibre transmission lengths of up to 300m can be achieved. With the tight buffer construction, direct plug manufacturing, even on site, poses no problems.

Fibre Optic Breakout Cable flexible

HCS

HELUCOM®

AT-V(ZN)HH





Cable structure

Core type: Composite buffered
GRP support element
Strain relief elements: Aramide
Outer sheath material: FRNC
Outer sheath colour: Black

Temperature range

Laying, min.: -20°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +70°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Flame-resistance acc. to IEC 60332-1
Smoke density acc. to IEC 61034
UV-resistant
Oil-resistant

Designation	Number of fibres	Fibre type	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Max. transverse pressure N / cm	Caloric load app. MJ / m	Weight kg / km	**Part no.**
AT-V(ZN)HH	4	HCS 200/230	1	9,0	800	225,0	100	1,60	76,0	**802260**

Dimensions and specifications may be changed without prior notice.

Application

This HELUCOM® HCS fibre cable is suitable for fixed and normal flexible installation. Possible applications are normal requirements and also limited industrial environments. With the tight buffer construction, direct plug manufacturing, even on site, poses no problems. With a HCS fibre transmission lengths of up to 300m can be achieved.

R

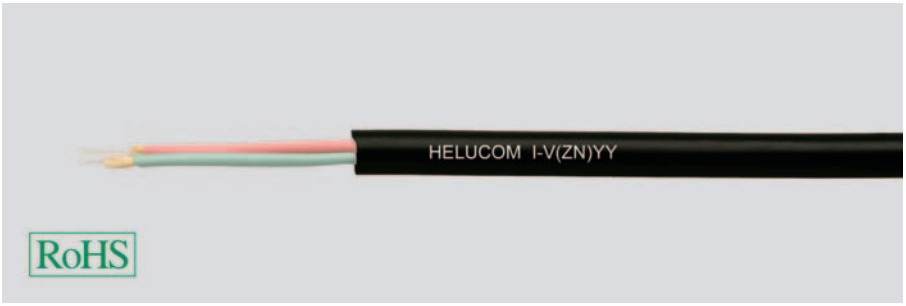
Fibre Optic Breakout Cable robust, flexible

HCS UL/CSA

HELUCOM®

I-V(ZN)YY





Cable structure

Core type: Composite buffered
Strain relief elements: Aramide
Outer sheath material: PVC
Outer sheath colour: Black

Temperature range

Laying, min.: -20°C
Laying, max.: +75°C
Operating, min.: -30°C
Operating, max.: +85°C

Other data

Flame-resistance acc. to IEC 60332-1 and IEC 60332-3
UV-resistant
Oil-resistant

Designation	Number of fibres	Fibre type	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Max. transverse pressure N / cm	Caloric load app. MJ / m	Weight kg / km	**Part no.**
I-V(ZN)YY	2	HCS 200/230	1	7,5	800	100,0	300	1,40	68,0	**801733**

Dimensions and specifications may be changed without prior notice.

Application

This HELUCOM® HCS fibre cable is suitable for fixed and normal flexible installations. Possible applications are normal and heavy-duty mechanical requirements for example in industrial environments. Because of a special PVC jacket this construction is certified by UL (FT1 and FT4). With the tight buffer construction, direct plug manufacturing, even on site, poses no problems. With a HCS fibre transmission lengths of up to 300m can be achieved.

Fibre Optic Breakout Cable robust, flexible

HCS

HELUCOM®
I-V(ZN)Y11Y





Cable structure

Core type: Composite buffered
Strain relief elements: Aramide
Outer sheath material: PUR
Outer sheath colour: Red

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +70°C

Other data

Oil-resistant

Designation	Number of fibres	Fibre type	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Max. transverse pressure N / cm	Caloric load app. MJ / m	Weight kg / km	**Part no.**
I-V(ZN)Y11Y	2	HCS 200/230	1	7,0	800	50,0	150	1,014	43,0	**800980**

Dimensions and specifications may be changed without prior notice.

Application

This HELUCOM® HCS fibre cable is suitable for fixed installation. Possible applications are normal and heavy-duty mechanical requirements for example in industrial environments. With the tight buffer construction, direct plug manufacturing, even on site, poses no problems. With a HCS fibre transmission lengths of up to 300m can be achieved.

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Fibre Optic Breakout Cable robust

HCS

AT-VQH(ZN)B2Y





Cable structure

Core type: Composite buffered
GRP support element
Strain relief elements: Aramide
Type of armouring: Glass yarns
Outer sheath material: PE
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -25°C
Operating, max.: +70°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant
Oil-resistant

Designation	Number of fibres	Fibre type	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Max. transverse pressure N / cm	Caloric load app. MJ / m	Weight kg / km	**Part no.**
AT-VQH(ZN)B2Y	2	HCS 200/230	1	11,0	1500	200,0	500	2,10	90,0	**801196**

Dimensions and specifications may be changed without prior notice.

Application

This HELUCOM® HCS fibre cable is suitable for fixed installation outdoors. Possible applications are normal and heavy-duty mechanical requirements for example in industrial environments. This is the reason we also equiped the cable with a non-metallic rodent-protection.With the tight buffer construction, direct plug manufacturing, even on site, poses no problems. With a HCS fibre transmission lengths of up to 300m can be achieved.

Fibre Optic Universal Cable

HCS

HELUCOM®

A/I-DQ(ZN)BH





Cable structure

Core type: Loose tube
Strain relief elements: Glass yarns
Type of armouring: Glass yarns
Outer sheath material: FR/LSOH
Outer sheath colour: Black

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +70°C

Other data

Corrosiveness acc. to EN50267-2-3
Halogen-free acc. to 60754-2
Flame-resistance acc. to IEC 60332-1
Smoke density acc. to IEC 61034
Longitudinally water-tight acc. to IEC 60794-1-2-F5
UV-resistant

Designation	Number of fibres	Fibre type	Number of fibres per core	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Max. transverse pressure N / cm	Caloric load app. MJ / m	Weight kg / km	**Part no.**
A/I-DQ(ZN)BH	4	HCS 200/230	4	8,5	1500	130,0	150	2,00	76,0	**801198**
A/I-DQ(ZN)BH	8	HCS 200/230	8	8,5	1500	130,0	150	2,00	79,0	**802001**
A/I-DQ(ZN)BH	12	HCS 200/230	12	8,5	1500	130,0	150	2,00	82,0	**802002**
A/I-DQ(ZN)BH	24	HCS 200/230	8	17,7	6000	265,0	300	3,20	280,0	**802003**
A/I-DQ(ZN)BH	48	HCS 200/230	8	18,9	6000	285,0	300	3,20	355,0	**802004**

Dimensions and specifications may be changed without prior notice.

Application

These HELUCOM® fibre-optic cables are available either as central bundle core cable or as stranded versions. They are suitable for fixed indoor and outdoor cabling of buildings and industry facilities. They are used in particular if the installation is to be done in one piece from the inside to the outside without additional use of couplings. With their black UV-resistant outer sheath and the non-metallic rodent protection, they are perfectly suited for outdoor use. The halogen-free outer sheath makes installation inhouse possible without any problems.

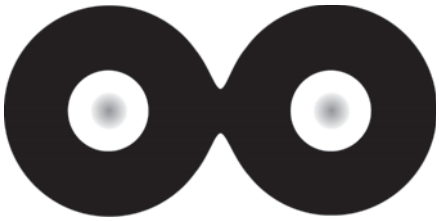
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Plastic Fibre cable industry

POF/PE

HELUCOM®

I-V2Y, I-V2Y(ZN)11Y





Cable structure

Fibre type: POF 980/1000
Fibre cladding: PE

Optical characteristic

Refractive index core: 1,492
Refractive index cladding: 1,419
Numerical aperture: 0,5
Attenuation see table

Temperature range

Laying, min.: -20°C
Laying, max.: +80°C
Operating, min.: -20°C
Operating, max.: +80°C

Designation	Outer sheath material	Sheath colour	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Fibre attenuation	Oil-resistant	Acc. to DESINA®	Weight kg / km	Part no.
I-V2Y 1P 980/1000	PE	Black	2,2	70	25,0	160A1	no	no	4,0	**80532**
I-V2Y 2P 980/1000	PE	Black	2,2 x 4,4	140	25,0	160A1	no	no	8,0	**80388**
I-V2Y(ZN)11Y 1P 980/1000	PUR	Violet	5,8	400	30,0	230A1	yes	yes	30,0	**81611**
I-V2Y(ZN)11Y 2P 980/1000	PUR	Violet	6,0	400	31,0	230A1	yes	yes	36,0	**80629**
I-V2Y(ZN)11Y 2P 980/1000	PUR	Violet	6,0	400	31,0	230A1	yes	yes	36,0	**81882**
I-V2Y(ZN)11Y 4P 980/1000	PUR	Violet	7,1	400	45,0	230A1	yes	yes	65,0	**80630**
I-V2Y(ZN)11Y 2P 980/1000 + 2x1mm² Cu	PUR	Red	7,8	200	70,0	230A1	yes	no	60,0	**82032**
I-V2Y(ZN)11Y 2P 980/1000 + 3x1,5mm² Cu	PUR	Red	11,0	200	70,0	230A1	yes	no	132,0	**82033**

Dimensions and specifications may be changed without prior notice.

Application

HELUCOM® plastic-fibre cables are used in mechanical engineering, both in mobile and fixed applications. With different constructions, such as PUR outer sheaths, special strain relief components, hybrid construction with copper cores for power supply or only raw fibre cables, any possible fields of application are covered. Due to their solidity and their simple adjustability on site, the plastic-fibres (PMMA) are particularly suitable for applications where trouble-free data transmission in necessary under heavy-duty conditions.

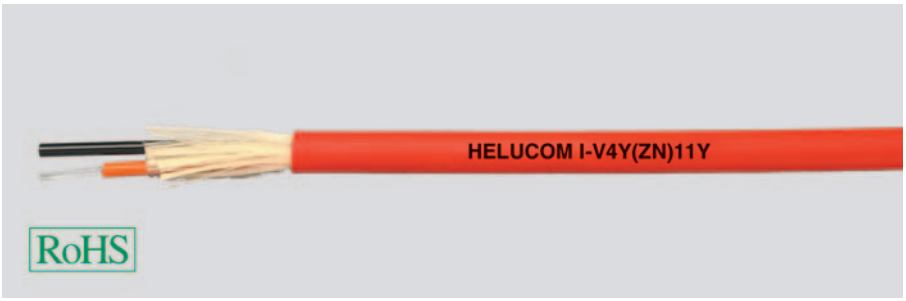
Plastic Fibre Cable Industry

POF/PA

HELUCOM®

I-V4Y(ZN)11Y





Cable structure

Fibre type: POF 980/1000
Fibre cladding: PA

Optical characteristic

Refractive index core: 1,492
Refractive index cladding: 1,419
Numerical aperture: 0,5
Attenuation see table

Temperature range

Laying, min.: -5°C
Laying, max.: +50°C
Operating, min.: -20°C
Operating, max.: +70°C

Designation	Outer sheath material	Sheath colour	Outer Ø app. mm	Max. tensile force N	Min. stat. bending radius mm	Fibre attenuation	Oil-resistant	Acc. to DESINA®	Weight kg / km	**Part no.**
I-V4Y(ZN)11Y 2P980/1000 RUGGED	PUR	Red	8,0	100	50,0	160A1	yes	no	42,0	**801200**
I-V4Y(ZN)11Y 2P980/1000 FLEX RUGGED	PUR	Red	8,0	100	50,0	250A1	yes	no	51,0	**801201**
I-V4Y(ZN)11Y 2P980/1000 HEAVY	PUR	Red	6,0	100	30,0	160A1	yes	no	28,0	**801202**

Dimensions and specifications may be changed without prior notice.

Application

Signal lines as plastic optical fibre. The use of these transmission systems significantly reduces the number of different cables in a planned bus installation in machine tools operations. Furthermore, possible EMC problems are prevented by the metal-free construction. The main application of these cables are in machine construction and automobile industry (PA version).

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FIBRESPECIFICATIONS

HELUCOM®

Granded index fibres (multimode)			
Specification		**Fibre type G 50/125**	**Fibre type G 62,5/125**
Fibre catergorie		OM2 Standardfibre	OM1 Standardfibre
Core diameter		50 ± 3 µm	62,5 ± 3 µm
Numerical aperture		0,200 ± 0,015	0,275 ± 0,015
Typ. attenuation	850 nm	2,8 dB/km	3,0 dB/km
	1300 nm	0,7 dB/km	1,0 dB/km
Min. bandwidth	850 nm	500 MHz x km	200 MHz x km
	1300 nm	800 MHz x km	500 MHz x km
Cladding diameter		125 ± 1 µm	
Primary coating diameter		245 ± 10 µm	
Core noncircularity		< 5 %	
Cladding concentricity error		< 3,0 µm	
Cladding noncircularity		< 2,0 %	

Specification		**Fibre type G 50/125**	
Fibre catergorie		OM3 Standardfibre	OM4 Standardfibre
Core diameter		50 ± 3 µm	50 ± 3 µm
Numerical aperture		0,200 ± 0,015	0,200 ± 0,015
Typ. attenuation	850 nm	2,5 dB/km	3,0 dB/km
	1300 nm	0,5 dB/km	1,0 dB/km
Min. bandwidth	850 nm	1500 MHz x km	3500 MHz x km
	1300 nm	500 MHz x km	500 MHz x km
Cladding diameter		125 ± 1 µm	125 ± 1 µm
Primary coating diameter		245 ± 10 µm	245 ± 10 µm
Core noncircularity		< 5 %	< 5 %
Cladding concentricity error		< 3,0 µm	< 6,0 µm
Cladding noncircularity		< 2,0 %	< 2,0 %

Single-Mode-Fibre		
Specification		**Fibre type E9...10/125 (single mode)**
Fibre catergorie		ITU-T G. 652.d
Attenuation	1300 nm	0,36 dB/km
	1550 nm	0,22 dB/km
Dispersion	1285 - 1330 nm	< 3,5 ps/(nm x km)
	1550 nm	< 19 ps/(nm x km)
Wave length		1312 nm
Mode field diameter at 1310 nm		9,3 ± 0,5 µm
Cladding diameter		125 ± 1 µm
Primary coating diameter		245 ± 10 µm
Cut-off wavelength		< 1250 nm
Cladding concentricity error		≤ 0,8 µm
Cladding noncircularity		< 1,0 %

POF and HCS-Fibre			
Specification		**Fibre type POF P980/1000**	**Fibre type HCS K200/230**
Core diameter		980 µm	200 µm
Numerical aperture		0,5	0,37
Typ. attenuation	650 nm	160 dB/km	10 db/km
	850 nm	-	8 dB/km
Min. Bandwidth	650 nm	10 MHz x 100 m	17 MHz x km
	850 nm	-	20 MHz x km
Wallthickness		1000 µm	230 µm

Fibres with other parameteres on request

FIBRE OPTIC DESIGN CODE acc. to DIN VDE 0888

HELUCOM®

□ — □ □ □ □ □ □ □ □ □ □ □ □ □ □

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Lg layerstranding

Bandwidth in MHz for 1 km (GF) dispersion parameter in: $\frac{ps}{nmxkm}$

Wavelength
B ≙ 850 nm
F ≙ 1300 nm
H ≙ 1550 nm

Attenuation coefficient in dB/km

Cladding diameter in µm

Core diameter in µm of graded index fibre
Field diameter in µm of single mode fibre

Design
E Single mode fibre
G Graded index fibre

Number of fibres
Number of fibres per buffer
Number of multifibre buffer

Y PVC-sheath
H Sheath with halogenfree material
B Armouring
BY Armouring with PVC-protective covering sheath
B2Y Armouring with PE-protective covering sheath

Y PVC-sheath
2Y PE-sheath
4Y PA-sheath
11Y PUR-sheath
(L)2Y PE-Laminated sheath
(ZN)2Y PE-sheath with nometallic strength member
(L)(ZN)2Y PE-Laminated sheath with nonmetallic strength member

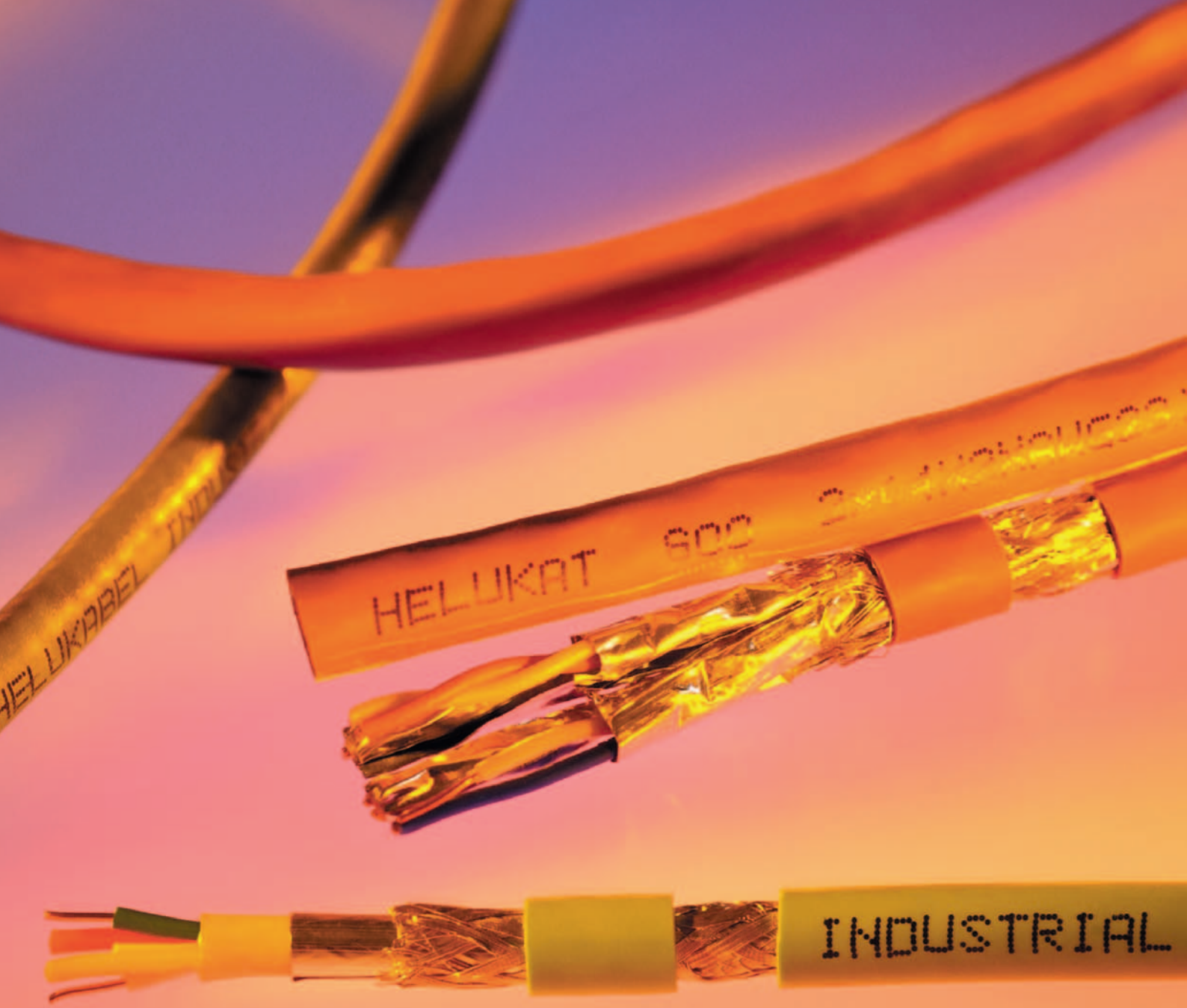
F Filling of the cable core with petroleum jelly
Q Swellingmaterial

S Metallic element in the cable core

V Tight buffer
K Composite buffer fibre
H Loose buffer nonfilled
W Loose buffer, filled
B Multifibre buffer nonfilled
D Multifibre buffer filled

I Indoor cable
A Outdoor cable
AT Outdoor fan out cable

R



LAN Cable 300 UTP UL

LAN Cable 155 UTP

LAN Cable 100 UTP flex

LAN Cable 450 S-STP

LAN Cable 1000 S-STP duplex

LAN Cable 200 S-FTP flex

Multimedia Cable 1500 S-STP

COPPER DATA CABLES HELUKAT®

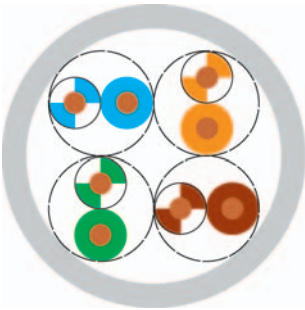
Designation	Page
HELUKAT 155 UTP solid	654
HELUKAT 155 U/UTP solid, UL	655
HELUKAT 300 U/UTP solid, UL	656
HELUKAT 100 U/UTP flex	657
HELUKAT 155 F/UTP solid	658
HELUKAT 100 F/UTP flex	659
HELUKAT 100-FE60 F/UTP solid	660
HELUKAT 200 F/UTP flex, UL	661
HELUKAT 200 SF/UTP solid	662
HELUKAT 200 SF/UTP duplex solid	663
HELUKAT 200 SF/UTP flex	664
HELUKAT 300 U/FTP flex, UL	665
HELUKAT 450 F/FTP solid	666
HELUKAT 450 F/FTP duplex solid	667
HELUKAT 500 F/FTP solid	668
HELUKAT 500 F/FTP duplex solid	669
HELUKAT 500 U/FTP flex	670
HELUKAT 600 S/FTP solid	671
HELUKAT 600 S/FTP duplex solid	672
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HELUKAT 600A S/FTP solid outdoor	674
HELUKAT 600E S/FTP solid, direct burial	675
HELUKAT 600AE S/FTP solid direct burial	676
HELUKAT 1200-7A S/FTP solid	677
HELUKAT 1200-7A S/FTP duplex solid	678
HELUKAT 1200 S/FTP solid	679
HELUKAT 1200 S/FTP duplex solid	680
HELUKAT 1500 S/FTP solid	681
HELUKAT 1500 S/FTP duplex solid	682
IBM type 1A	683

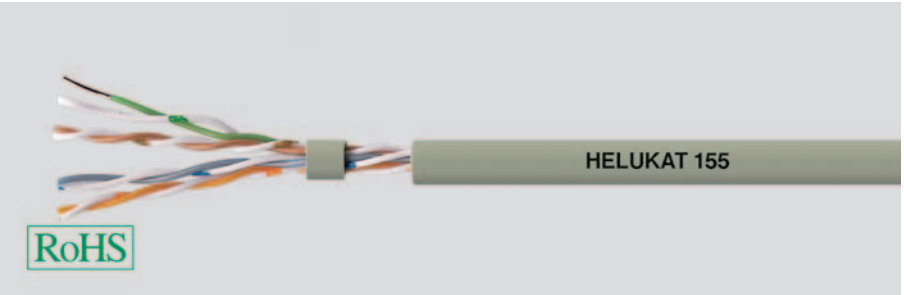
LAN Cable

Category 5e

HELUKAT® 155

U/UTP

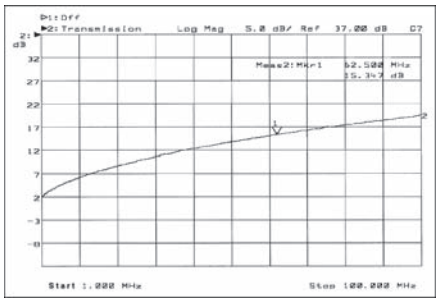




Cable structure

U/UTP 4x2xAWG 24/1 PVC

Inner conductor Ø:	0,51 mm
Conductor material:	Copper, bare
Core insulation:	PE
Core colours:	whbu/bu, whog/og, whgn/gn, whbn/bn
Shielding 1:	-
Screen over stranding element:	-
Screen 1 over stranding:	-
Screen 2 over stranding:	-
Outer sheath material:	PVC
Outer diameter:	app. 4,9 mm
Outer sheath colour:	Grey



Electrical data

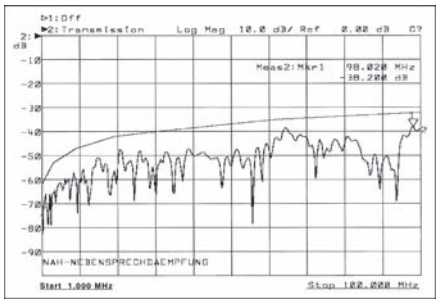
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 155 MHz
Loop resistance:	190 Ohm/km max.
Mutual capacitance:	50 nF/km nom.
Rel. propagation velocity:	66 %

Typical values

Frequency	(MHz)	10	16	62,5	100	155
Attenuation	(dB/100m)	6,3	8,0	16,5	21,3	26,8
Next	(db)	50,3	47,3	38,4	35,3	33,0
ACR	(db)	44,0	39,3	21,9	14,0	6,2

Technical data

Weight:	app. 26 kg/km
bending radius, repeated:	40 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,40 MJ/m
Copper weight:	17,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5e

Application

HELUKAT®155 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

Part no.

80053, U/UTP 4x2xAWG24/1 PVC (UTP)

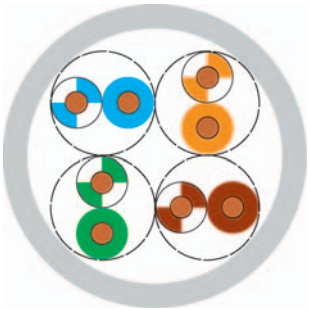
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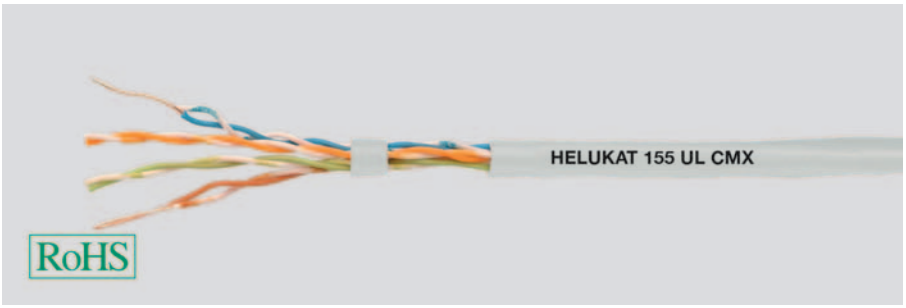
LAN Cable

Category 5e

HELUKAT® 155

U/UTP UL

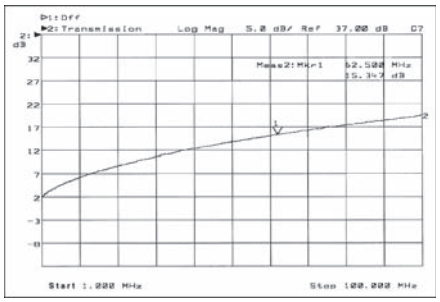




Cable structure

U/UTP 4x2xAWG 24/1 PVC, UL

Inner conductor Ø:	0,53 mm
Conductor material:	Copper, bare
Core insulation:	PE
Core colours:	whbu/bu, whog/og, whgn/gn, whbn/bn
Shielding 1:	-
Screen over stranding element:	-
Screen 1 over stranding:	-
Screen 2 over stranding:	-
Outer sheath material:	PVC
Outer diameter:	app. 5,2 mm
Outer sheath colour:	Grey



Electrical data

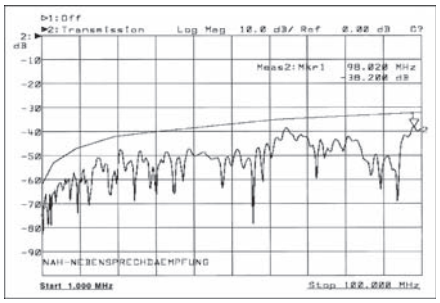
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 155 MHz
Loop resistance:	190 Ohm/km max.
Mutual capacitance:	50 nF/km nom.
Rel. propagation velocity:	66 %

Typical values

Frequency	(MHz)	10	16	62,5	100	155
Attenuation	(db/100m)	6,1	7,7	15,2	19,9	22,7
Next	(db)	65,0	63,0	53,0	40,0	37,0
ACR	(db)	58,9	55,3	37,8	20,1	14,3

Technical data

Weight:	app. 35 kg/km
bending radius, repeated:	42 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,43 MJ/m
Copper weight:	17,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5e, Flame-retardant acc. to IEC 60332-1, Smoke density acc. to IEC 61034, CMX 444

Application

HELUKAT®155 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction. This type is certified according UL because of the special PVC jacket

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Part no.

802171, U/UTP 4x2xAWG24/1 PVC UL (UTP)

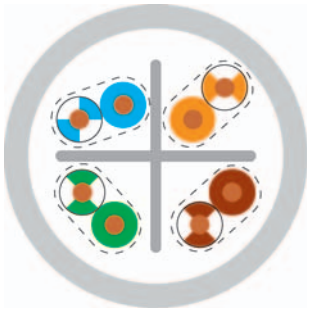
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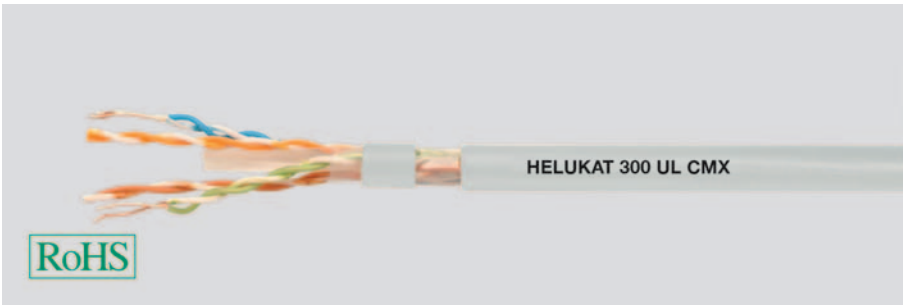
LAN Cable

Category 6

HELUKAT® 300

U/UTP UL

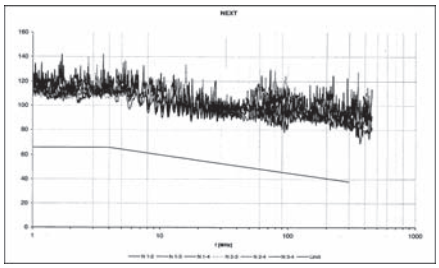




Cable structure

U/UTP 4x2xAWG 24/1 PVC, UL

Inner conductor Ø:	0,55 mm
Conductor material:	Copper, bare
Core insulation:	PE
Core colours:	whbu/bu, whog/og, whgn/gn, whbn/bn
Shielding 1:	Polyester foil over stranded bundle
Screen over stranding element:	-
Screen 1 over stranding:	-
Screen 2 over stranding:	-
Outer sheath material:	PVC
Outer diameter:	app. 6,3 mm
Outer sheath colour:	Grey



Electrical data

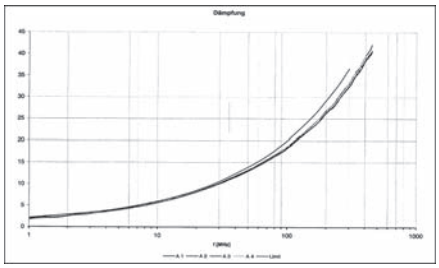
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 Ohm at 101 to 300 MHz
Loop resistance:	190 Ohm/km max.
Mutual capacitance:	50 nF/km nom.
Rel. propagation velocity:	67 %

Typical values

Frequency	(MHz)	10	16	62,5	100	155	200	300
Attenuation	(db/100m)	5,6	7,0	14,3	18,2	22,9	26,0	32,5
Next	(db)	72,0	70,0	65,0	63,0	60,0	57,0	55,0
ACR	(db)	66,4	63,0	50,7	44,8	37,1	31,0	22,5

Technical data

Weight:	app. 46 kg/km
bending radius, repeated:	55 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,68 MJ/m
Copper weight:	20,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 6, Flame-retardant acc. to IEC 60332-1, Smoke density acc. to IEC 61034, CMX 444

Application

HELUKAT®300 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction. This type is certified according UL because of the special PVC jacket

Part no.

802172, U/UTP 4x2xAWG24/1 PVC UL (UTP)

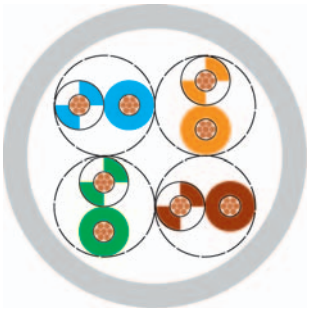
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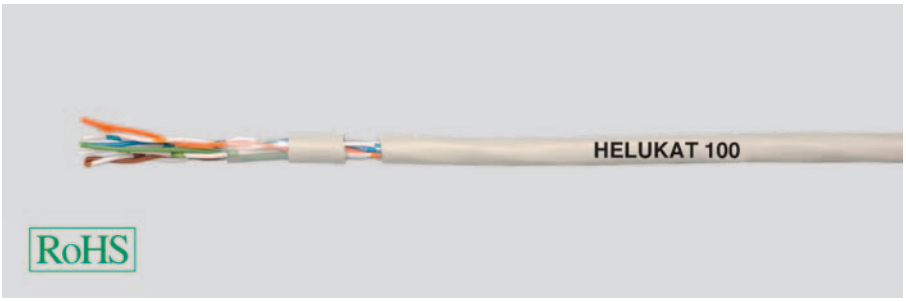
LAN-Cable

Category 5

HELUKAT® 100

U/UTP flex

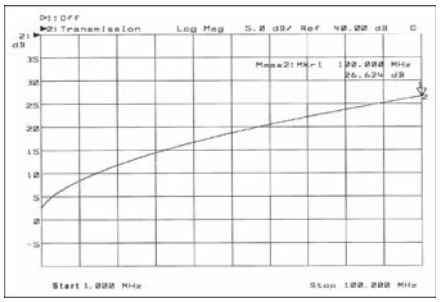




Cable structure

U/UTP 4x2xAWG 26/7 PVC

Inner conductor Ø:	0,48 mm
Conductor material:	Copper, bare
Core insulation:	PO
Core colours:	whbu/bu, whog/og, whgn/gn, whbn/bn
Shielding 1:	-
Screen over stranding element:	-
Screen 1 over stranding:	-
Screen 2 over stranding:	-
Outer sheath material:	PVC
Outer diameter:	app. 4,5 mm
Outer sheath colour:	Grey similar to RAL 7035



Electrical data

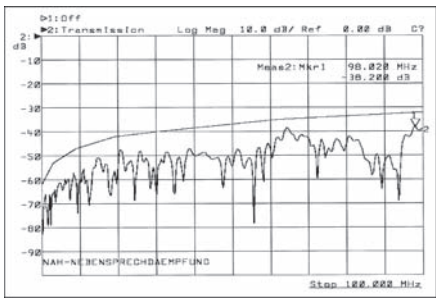
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz
Loop resistance:	290 Ohm/km max.
Mutual capacitance:	50 nF/km nom.
Rel. propagation velocity:	74 %

Typical values

Frequency	(MHz)	10	16	62,5	100
Attenuation	(dB/10m)	0,9	1,2	2,4	3,1
Next	(db)	53,0	50,0	41,0	38,0
ACR	(db)	52,1	48,8	38,6	34,9

Technical data

Weight:	app. 17 kg/km
bending radius, repeated:	35 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,527 MJ/m
Copper weight:	11,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5

Application

HELUKAT®100 data cables are used in the tertiary level of a network as patch cables and connection cables. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. With its optimized construction, the HELUKAT®100 series can be manufactured quickly and easily with all common RJ45 plugs.

R

Part no.

80055, U/UTP 4x2xAWG 26/7 PVC (UTP)

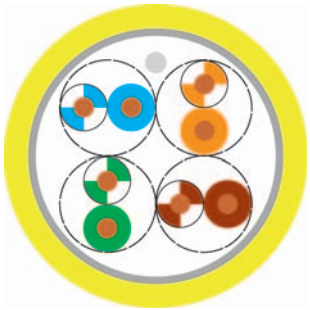
Dimensions and specifications may be changed without prior notice.

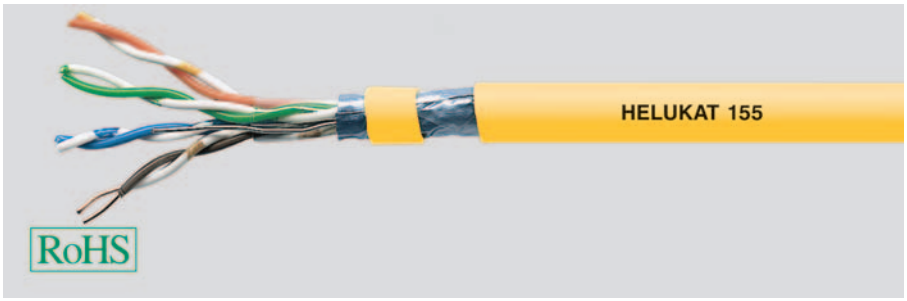
LAN Cable

Category 5e

HELUKAT® 155

F/UTP

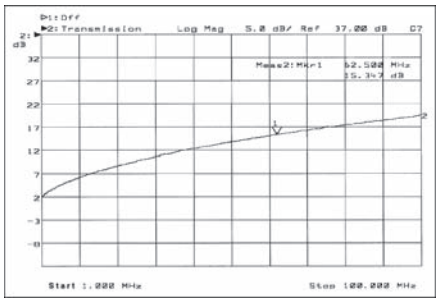




Cable structure

F/UTP 4x2xAWG 24/1 PVC

Inner conductor Ø:	0,51 mm
Conductor material:	Copper, bare
Core insulation:	PE
Core colours:	whbu/bu, whog/og, whgn/gn, whbn/bn
Shielding 1:	Polyester foil over stranded bundle
Screen over stranding element:	-
Screen 1 over stranding:	Polyester foil, aluminium-lined
Screen 2 over stranding:	-
Drain wire:	yes
Outer sheath material:	PVC
Outer diameter:	app. 5,9 mm
Outer sheath colour:	Yellow similar to RAL 1021



Electrical data

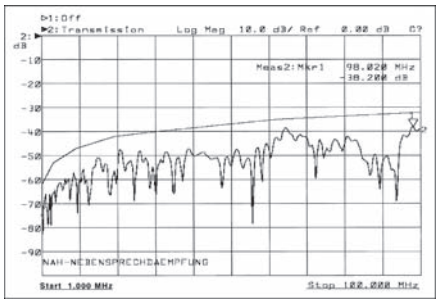
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 155 MHz
Loop resistance:	170 Ohm/km max.
Mutual capacitance:	50 nF/km nom.
Rel. propagation velocity:	69 %

Typical values

Frequency	(MHz)	10	16	62,5	100	155
Attenuation	(dB/100m)	5,9	7,6	15,7	20,3	22,0
Next	(db)	59,0	53,0	44,0	40,0	40,0
ACR	(db)	53,1	45,4	28,3	19,7	18,0

Technical data

Weight:	app. 40 kg/km
bending radius, repeated:	48 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,40 MJ/m
Copper weight:	18,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5e

Application

HELUKAT®155 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

Part no.

80043, F/UTP 4x2xAWG24/1 PVC (FTP)

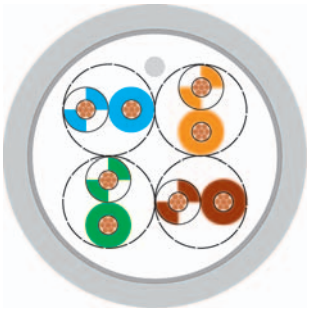
Dimensions and specifications may be changed without prior notice.

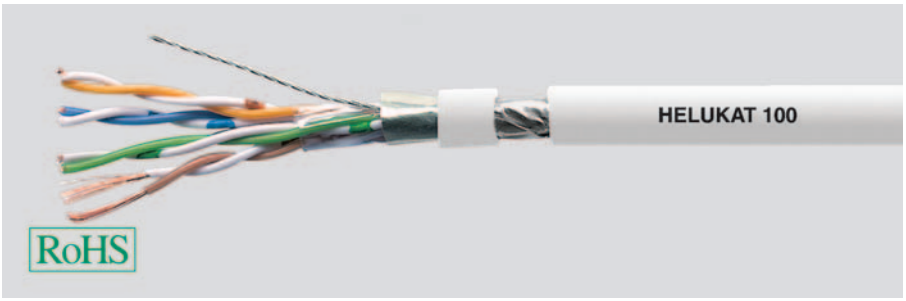
LAN Cable

Category 5

HELUKAT® 100

F/UTP flex

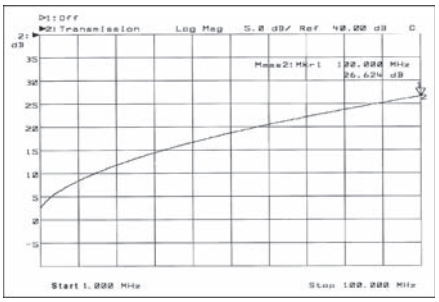




Cable structure

F/UTP 4x2xAWG 26/7 FRNC

Inner conductor Ø:	0,48 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	whbu/bu, whog/og, whgn/gn, whbn/bn
Shielding 1:	-
Screen over stranding element:	-
Screen 1 over stranding:	Polyester foil, aluminium-lined
Screen 2 over stranding:	-
Drain wire:	yes
Outer sheath material:	FRNC
Outer diameter:	app. 5,3 mm
Outer sheath colour:	Grey similar to RAL 7035



Electrical data

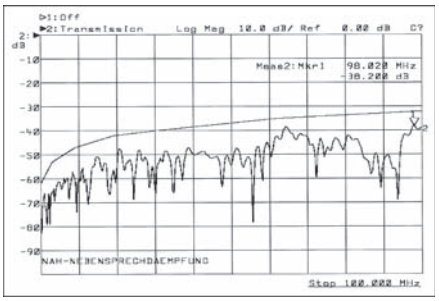
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz
Loop resistance:	290 Ohm/km max.
Mutual capacitance:	50 nF/km nom.
Rel. propagation velocity:	74 %

Typical values

Frequency	(MHz)	10	16	62,5	100
Attenuation	(dB/10m)	0,9	1,2	2,4	2,9
Next	(db)	58,0	56,0	45,0	43,0
ACR	(db)	57,1	54,8	42,6	40,1

Technical data

Weight:	app. 31 kg/km
bending radius, repeated:	40 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,45 MJ/m
Copper weight:	14,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5, Flame-retardant acc. to IEC 60332-1, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

Application

HELUKAT®100 data cables are used in the tertiary level of a network as patch cables and connection cables. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. With its optimized construction, the HELUKAT®100 series can be manufactured quickly and easily with all common RJ45 plugs.

R

Part no.

81278, F/UTP 4x2xAWG 26/7 FRNC (FTP)

Dimensions and specifications may be changed without prior notice.

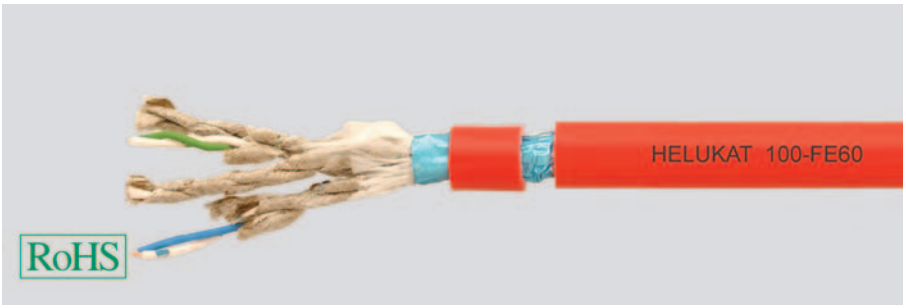
LAN Cable

Category 5

HELUKAT® 100

F/UTP FE60

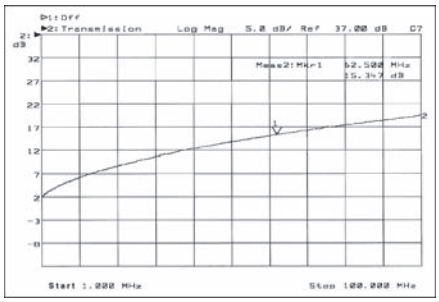




Cable structure

F/UTP 4x2xAWG 23/1 FR-0H

Inner conductor Ø:	0,57 mm
Conductor material:	Copper, bare
Core insulation:	PO + flame resistant tape
Core colours:	whbu/bu, whog/og, whgn/gn, whbn/bn
Shielding 1:	-
Screen over stranding element:	PO tape
Screen 1 over stranding:	Helical glasfibre tape
Screen 2 over stranding:	Polyester foil, aluminium-lined
Drain wire:	yes
Outer sheath material:	LSZH
Outer diameter:	app. 8,3 mm
Outer sheath colour:	Red



Electrical data

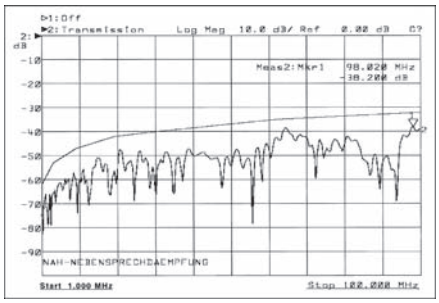
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz
Loop resistance:	188 Ohm/km max.
Mutual capacitance:	65 nF/km nom.
Rel. propagation velocity:	67 %

Typical values

Frequency	(MHz)	10	16	62,5	100
Attenuation	(dB/100m)	5,7	7,3	14,9	19,3
Next	(db)	56,0	53,0	42,0	38,0
ACR	(db)	50,3	45,7	27,1	18,7

Technical data

Weight:	app. 75 kg/km
bending radius, repeated:	130 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+70°C
Caloric load, approx. value:	0,72 MJ/m
Copper weight:	24,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

Application

HELUKAT®100-FE60 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. Likewise, the thermal characteristics are perfectly suited to realize an isolation integrity according EN50200-FE60 due to their optimized construction.

Part no.

804045, F/UTP 4x2xAWG23/1 FRNC (FTP)

Dimensions and specifications may be changed without prior notice.

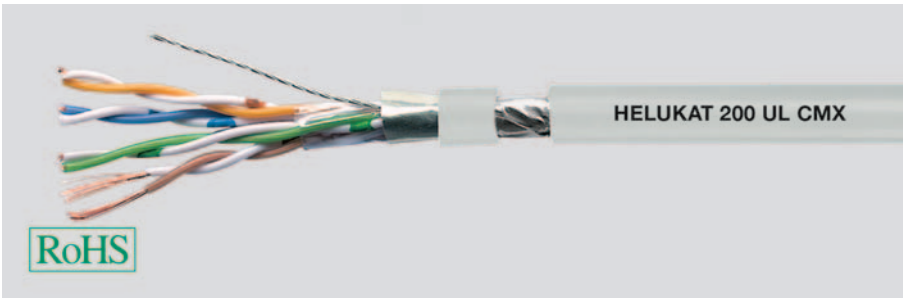
LAN Cable

Category 5e

HELUKAT® 200

F/UTP Flex, UL

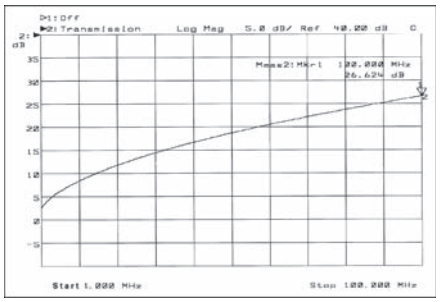




Cable structure

F/UTP 4x2xAWG 26/7 PVC, UL

Inner conductor Ø:	0,48 mm
Conductor material:	Copper, bare
Core insulation:	PE
Core colours:	whbu/bu, whog/og, whgn/gn, whbn/bn
Shielding 1:	-
Screen over stranding element:	-
Screen 1 over stranding:	Polyester foil, aluminium-lined
Screen 2 over stranding:	-
Drain wire:	yes
Outer sheath material:	PVC
Outer diameter:	app. 5,4 mm
Outer sheath colour:	Grey similar to RAL 7035



Electrical data

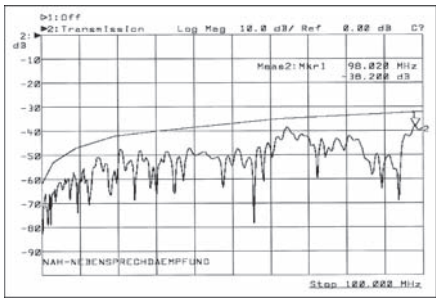
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 Ohm at 101 to 200 MHz
Loop resistance:	290 Ohm/km max.
Mutual capacitance:	50 nF/km nom.
Rel. propagation velocity:	67 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200
Attenuation	(db/10m)	0,9	1,2	2,4	3,1	3,9
Next	(db)	62,0	60,0	50,0	48,0	45,0
ACR	(db)	61,1	58,8	47,6	44,9	41,1

Technical data

Weight:	app. 30 kg/km
bending radius, repeated:	44 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,40 MJ/m
Copper weight:	15,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5e, Flame-retardant acc. to IEC 60332-1, Smoke density acc. to IEC 61034, CMX 444

R

Application

HELUKAT®200 data cables are used in the tertiary level of a network as patch cables and connection cables. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. With its optimized construction, the HELUKAT®200 series can be manufactured quickly and easily with all common RJ45 plugs. This type is certified according UL because of the special PVC jacket.

Part no.

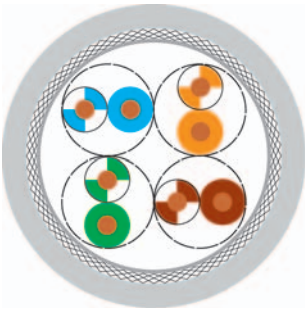
802173, F/UTP 4x2xAWG26/7 PVC UL (FTP)

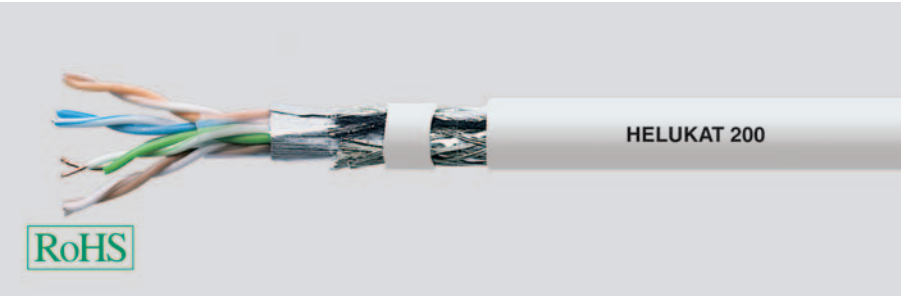
Dimensions and specifications may be changed without prior notice.

LAN Cable

Category 5e

HELUKAT® 200
SF/UTP

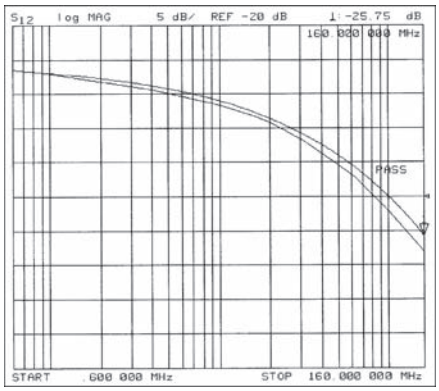




Cable structure

SF/UTP 4x2xAWG 24/1 PVC

Inner conductor Ø:	0,51 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	whbu/bu, whog/og, whgn/gn, whbn/bn
Shielding 1:	-
Screen over stranding element:	-
Screen 1 over stranding:	Polyester foil, aluminium-lined
Screen 2 over stranding:	Cu braid
Outer sheath material:	PVC / FRNC
Outer diameter:	app. 6,0 mm / app. 6,0 mm
Outer sheath colour:	Grey similar to RAL 7035



Electrical data

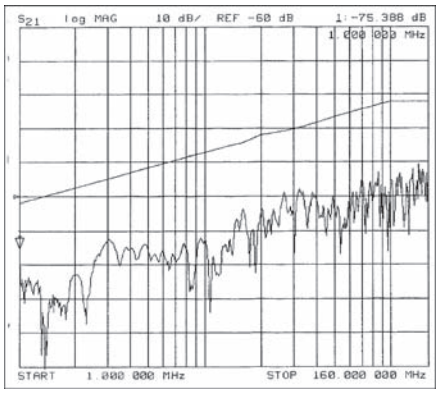
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 Ohm at 101 to 200 MHz
Loop resistance:	185 Ohm/km max.
Mutual capacitance:	48 nF/km nom.
Rel. propagation velocity:	74 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200
Attenuation	(dB/100m)	5,6	7,2	14,4	18,2	25,9
Next	(db)	62,0	59,0	50,0	46,0	40,0
ACR	(db)	56,4	51,8	35,6	27,8	14,6

Technical data

Weight:	app. 50 kg/km
bending radius, repeated:	52 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,60 MJ/m / 0,48 MJ/m
Copper weight:	28,00 kg/km



Norms

81610:
Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5e
81609:
Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5e, Flame-retardant: acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

Application

HELUKAT®200 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

Part no.

81610, SF/UTP 4x2xAWG 24/1 PVC (S-FTP) **81609,** SF/UTP 4x2xAWG 24/1 FRNC (S-FTP)

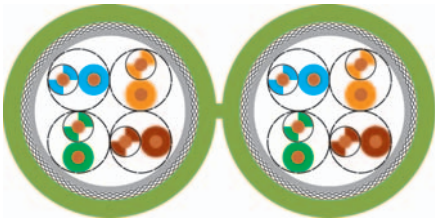
Dimensions and specifications may be changed without prior notice.

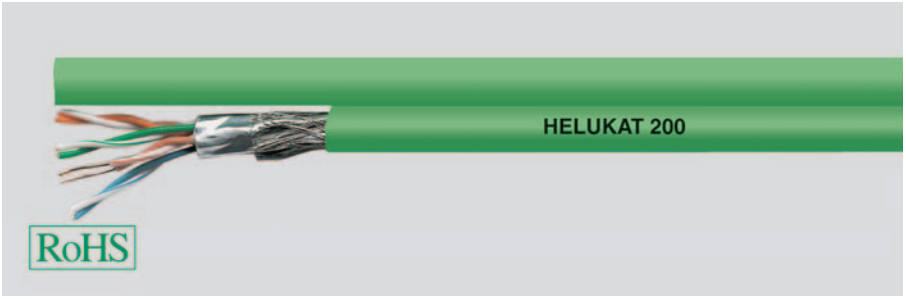
LAN Cable

Category 5e

HELUKAT® 200

SF/UTP duplex

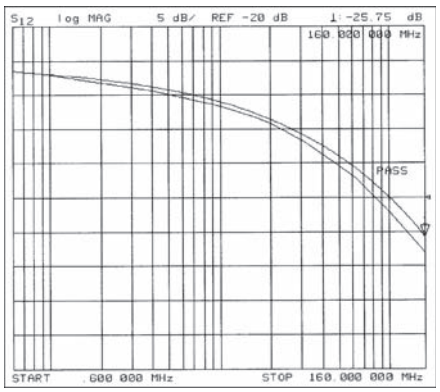




Cable structure

SF/UTP 2x(4x2xAWG 24/1) FRNC

Inner conductor Ø:	0,51 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	whbu/bu, whog/og, whgn/gn, whbn/bn
Shielding 1:	-
Screen over stranding element:	-
Screen 1 over stranding:	Polyester foil, aluminium-lined
Screen 2 over stranding:	Cu braid
Outer sheath material:	FRNC
Cable dimensions:	app. 6,0 mm x 12,5 mm
Outer sheath colour:	Green similar to RAL 6018



Electrical data

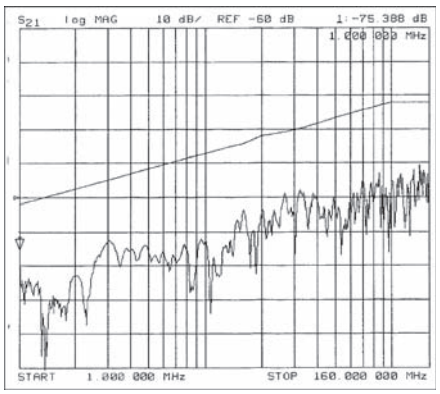
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 Ohm at 101 to 200 MHz
Loop resistance:	185 Ohm/km max.
Mutual capacitance:	48 nF/km nom.
Rel. propagation velocity:	74 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200
Attenuation	(dB/100m)	5,6	7,2	14,4	18,2	25,9
Next	(db)	62,0	59,0	50,0	46,0	40,0
ACR	(db)	56,4	51,8	35,6	27,8	14,6

Technical data

Weight:	app. 100 kg/km
bending radius, repeated:	52 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,96 MJ/m
Copper weight:	56,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5e, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

R

Application

HELUKAT®200 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

Part no.

81123, SF/UTP 2x(4x2xAWG 24/1) FRNC (S-FTP)

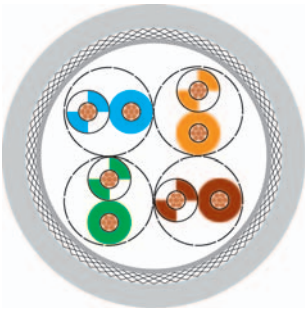
Dimensions and specifications may be changed without prior notice.

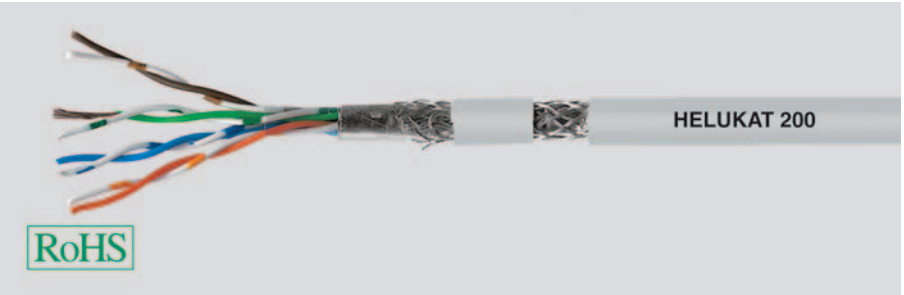
LAN Cable

Category 5e

HELUKAT® 200

SF/UTP flex

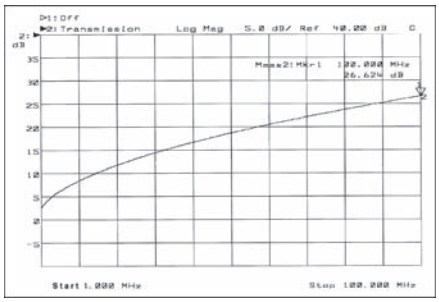




Cable structure

SF/UTP 4x2xAWG 26/7 FRNC

Inner conductor Ø:	0,48 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	whbu/bu, whog/og, whgn/gn, whbn/bn
Shielding 1:	-
Screen over stranding element:	-
Screen 1 over stranding:	Polyester foil, aluminium-lined
Screen 2 over stranding:	Cu braid
Outer sheath material:	FRNC
Outer diameter:	app. 5,4 mm
Outer sheath colour:	Grey similar to RAL 7035



Electrical data

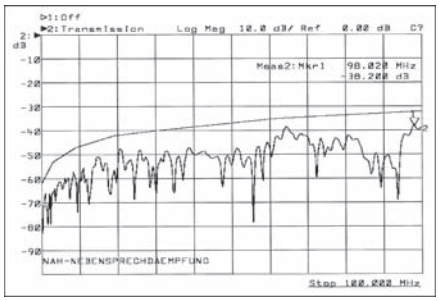
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 Ohm at 101 to 200 MHz
Loop resistance:	300 Ohm/km max.
Mutual capacitance:	47 nF/km nom.
Rel. propagation velocity:	69 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200
Attenuation	(dB/10m)	0,8	1,1	2,4	2,9	4,3
Next	(db)	58,0	56,0	45,0	43,0	37,0
ACR	(db)	57,2	54,9	42,6	40,1	32,7

Technical data

Weight:	app. 40 kg/km
bending radius, repeated:	46 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,543 MJ/m
Copper weight:	24,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5e, Flame-retardant acc. to IEC 60332-1, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

Application

HELUKAT®200 data cables are used in the tertiary level of a network as patch cables and connection cables. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. With its optimized construction, the HELUKAT®200 series can be manufactured quickly and easily with all common RJ45 plugs.

Part no.

81254, SF/UTP 4x2xAWG 26/7 FRNC (S-FTP)

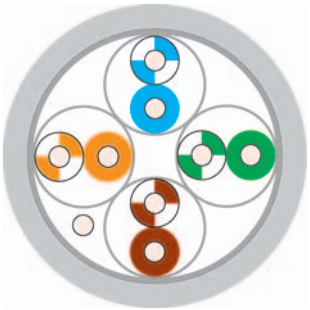
Dimensions and specifications may be changed without prior notice.

LAN Cable

Category 6

HELUKAT® 300

U/FTP, UL

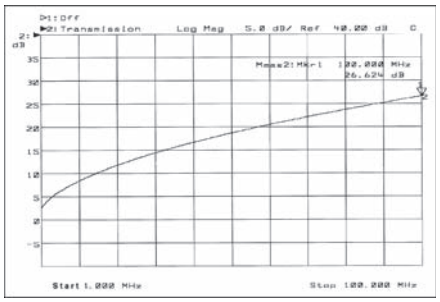




Cable structure

U/FTP 4x2xAWG 26/7 PVC, UL

Inner conductor Ø:	0,48 mm
Conductor material:	Copper, tinned
Core insulation:	Foam-skin-PE
Core colours:	whbu/bu, whog/og, whgn/gn, whbn/bn
Shielding 1:	Polyester foil over stranded bundle
Screen over stranding element:	Polyester foil, aluminium-lined
Screen 1 over stranding:	-
Screen 2 over stranding:	-
Drain wire:	yes
Outer sheath material:	PVC
Outer diameter:	app. 5,9 mm
Outer sheath colour:	Grey similar to RAL 7035



Electrical data

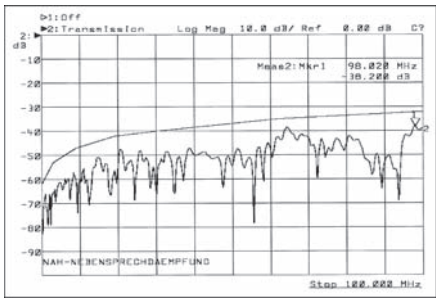
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 Ohm at 101 to 300 MHz
Loop resistance:	290 Ohm/km max.
Mutual capacitance:	45 nF/km nom.
Rel. propagation velocity:	77 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200	300
Attenuation	(db/10m)	0,9	1,1	2,2	2,7	3,9	4,7
Next	(db)	90,0	88,0	83,0	80,0	76,0	73,0
ACR	(db)	89,1	86,9	80,8	77,3	72,1	68,3

Technical data

Weight:	app. 37 kg/km
bending radius, repeated:	48 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,41 MJ/m
Copper weight:	20,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 6, Flame-retardant acc. to IEC 60332-1, Smoke density acc. to IEC 61034, CMX 444

Application

HELUKAT®300 data cables are used in the tertiary level of a network as patch cables and connection cables. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. With its optimized construction, the HELUKAT®300 series can be manufactured quickly and easily with all common RJ45 plugs. This type is certified according UL because of the special PVC jacket.

Part no.

802174, U/FTP 4x2xAWG 26/7 PVC

Dimensions and specifications may be changed without prior notice.

R

LAN Cable

Category 6

HELUKAT® 450

F/FTP

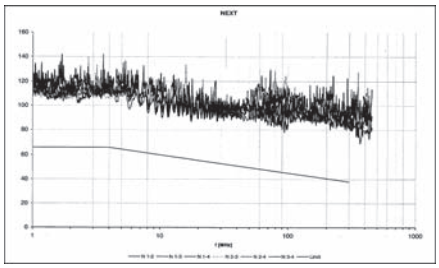




Cable structure

F/FTP 4x2xAWG 24/1 FRNC

Inner conductor Ø:	0,52 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Shielding 1:	-
Screen over stranding element:	Polyester foil, aluminium-lined
Screen 1 over stranding:	Polyester foil, aluminium-lined
Screen 2 over stranding:	-
Drain wire:	yes
Outer sheath material:	FRNC
Outer diameter:	app. 7,4 mm
Outer sheath colour:	Green similar to RAL 6018



Electrical data

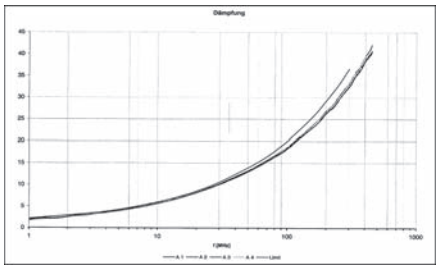
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 450 MHz
Loop resistance:	165 Ohm/km max.
Mutual capacitance:	43 nF/km nom.
Rel. propagation velocity:	79 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200	300	450
Attenuation	(dB/100m)	5,4	7,0	13,8	17,6	26,0	34,0	38,5
Next	(db)	100,0	100,0	95,8	94,5	91,0	87,0	84,3
ACR	(db)	94,6	93,0	82,0	76,9	65,0	53,0	45,8

Technical data

Weight:	app. 50 kg/km
bending radius, repeated:	59 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,57 MJ/m
Copper weight:	24,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 6, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

Application

HELUKAT®450 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

Part no.

82501, F/FTP 4x2xAWG 24/1 FRNC (S-STP)

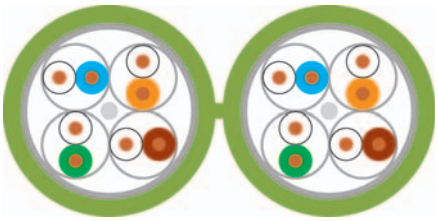
Dimensions and specifications may be changed without prior notice.

LAN Cable

Category 6

HELUKAT® 450

F/FTP duplex

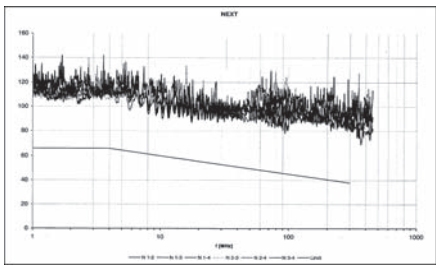




Cable structure

F/FTP 2x(4x2xAWG 24/1) FRNC

Inner conductor Ø:	0,52 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Shielding 1:	-
Screen over stranding element:	Polyester foil, aluminium-lined
Screen 1 over stranding:	Polyester foil, aluminium-lined
Screen 2 over stranding:	-
Drain wire:	yes
Outer sheath material:	FRNC
Cable dimensions:	app. 7,4 mm x 15,0 mm
Outer sheath colour:	Green similar to RAL 6018



Electrical data

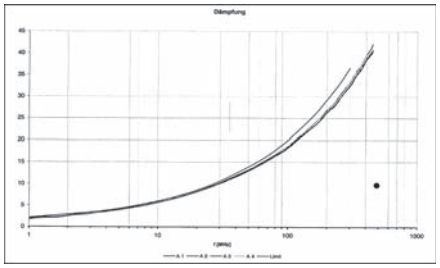
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 450 MHz
Loop resistance:	165 Ohm/km max.
Mutual capacitance:	43 nF/km nom.
Rel. propagation velocity:	79 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200	300	450
Attenuation	(dB/100m)	5,4	7,0	13,8	17,6	26,0	34,0	38,5
Next	(db)	100,0	100,0	95,8	94,5	91,0	87,0	84,3
ACR	(db)	94,6	93,0	82,0	76,9	65,0	53,0	45,8

Technical data

Weight:	app. 100 kg/km
bending radius, repeated:	59 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	1,14 MJ/m
Copper weight:	48,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 6, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

Application

HELUKAT®450 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

R

Part no.

82502, F/FTP 2x4x2xAWG 24/1 FRNC (S-STP)

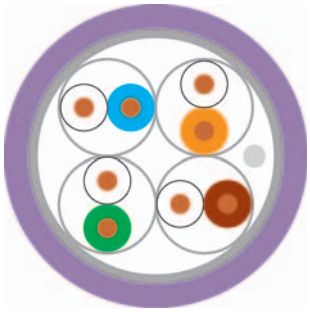
Dimensions and specifications may be changed without prior notice.

LAN Cable

Category 6_A

HELUKAT® 500

F/FTP

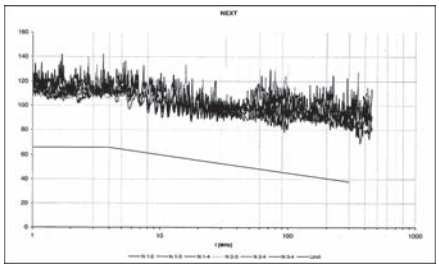




Cable structure

F/FTP 4x2xAWG 23/1 LSZH

Inner conductor Ø:	0,57 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Shielding 1:	-
Screen over stranding element:	Polyester foil, aluminium-lined
Screen 1 over stranding:	Polyester foil, aluminium-lined
Screen 2 over stranding:	-
Drain wire:	yes
Outer sheath material:	LSZH
Outer diameter:	app. 7,5 mm
Outer sheath colour:	Blue Lilac similar to RAL 4005



Electrical data

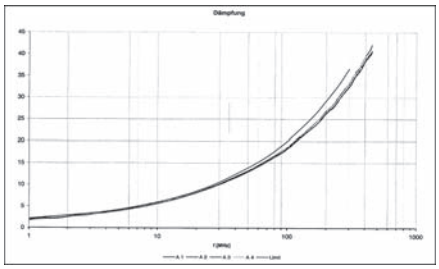
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 500 MHz
Loop resistance:	160 Ohm/km max.
Mutual capacitance:	45 nF/km nom.
Rel. propagation velocity:	80 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200	250	300	500
Attenuation	(db/100m)	5,7	7,2	14,2	18,1	25,8	29,0	31,9	41,8
Next	(db)	100,0	100,0	100,0	97,4	92,9	91,4	90,2	86,9
ACR	(db)	94,3	92,8	85,8	79,3	67,1	62,4	58,3	45,1

Technical data

Weight:	app. 50 kg/km
bending radius, repeated:	100 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,55 MJ/m
Copper weight:	26,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 6_A, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

Application

HELUKAT® 500 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as 10Gigabit Ethernet, Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

Part no.

803378, F/FTP 4x2xAWG 23/1 LSZH (S-STP)

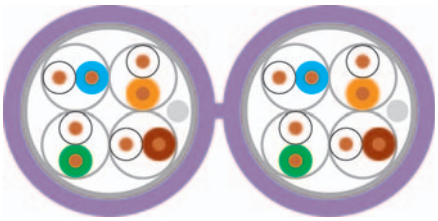
Dimensions and specifications may be changed without prior notice.

LAN Cable

Kategorie 6_A

HELUKAT® 500

F/FTP duplex

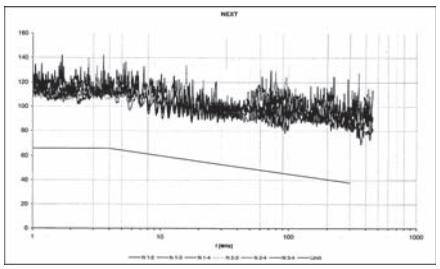




Cable structure

F/FTP 2x(4x2xAWG 23/1) LSZH (S-STP)

Inner conductor Ø:	0,57 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Shielding 1:	-
Screen over stranding element:	Polyester foil, aluminium-lined
Screen 1 over stranding:	Polyester foil, aluminium-lined
Screen 2 over stranding:	-
Drain wire:	yes
Outer sheath material:	LSZH
Cable dimensions:	app. 7,8 mm x 15,9 mm
Outer sheath colour:	Blue Lilac similar to RAL 4005



Electrical data

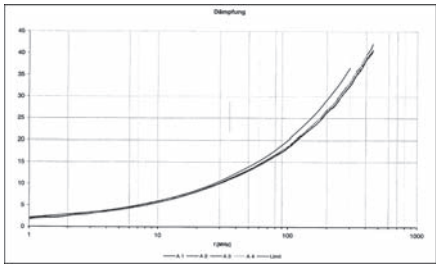
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 500 MHz
Loop resistance:	160 Ohm/km max.
Mutual capacitance:	45 nF/km nom.
Rel. propagation velocity:	80 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200	250	300	500
Attenuation	(db/100m)	5,7	7,2	14,2	18,1	25,8	29,0	31,9	41,8
Next	(db)	100,0	100,0	100,0	97,4	92,9	91,4	90,2	86,9
ACR	(db)	94,3	92,8	85,8	79,3	67,1	62,4	58,3	45,1

Technical data

Weight:	app. 100 kg/km
bending radius, repeated:	100 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	1,13 MJ/m
Copper weight:	52,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 6_A, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

Application

HELUKAT® 500 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as 10Gigabit Ethernet, Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

R

Part no.

803379, F/FTP 2x4x2xAWG 23/1 LSZH (S-STP)

Dimensions and specifications may be changed without prior notice.

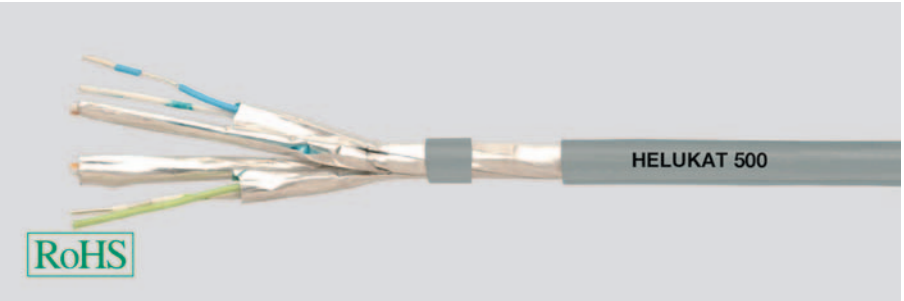
LAN Cable

Category 6_A

HELUKAT® 500

U/FTP, flex

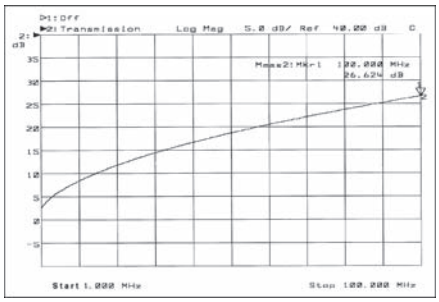




Cable structure

U/FTP 4x2xAWG 26/7 (stranded) LSZH

Inner conductor Ø:	0,48 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Shielding 1:	-
Screen over stranding element:	Polyester foil, aluminium-lined
Screen 1 over stranding:	-
Screen 2 over stranding:	-
Drain wire:	yes
Outer sheath material:	LSZH
Outer diameter:	app. 5,8 mm
Outer sheath colour:	Grey similar to RAL 7035



Electrical data

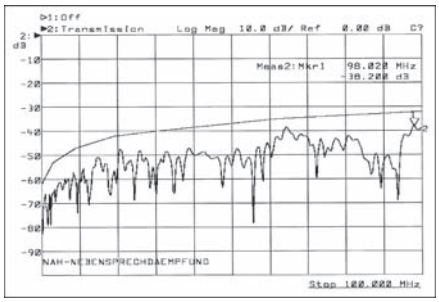
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 500 MHz
Loop resistance:	330 Ohm/km max.
Mutual capacitance:	54 nF/km nom.
Rel. propagation velocity:	78 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200	250	500
Attenuation	(dB/10m)	0,8	1,1	2,1	2,7	3,9	4,4	6,3
Next	(db)	100,0	100,0	100,0	97,0	92,0	91,0	86,0
ACR	(db)	99,2	98,9	97,9	94,3	88,1	86,6	79,7

Technical data

Weight:	app. 35 kg/km
bending radius, repeated:	49 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,39 MJ/m
Copper weight:	15,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 6_A, Flame-retardant acc. to IEC 60332-1, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

Application

HELUKAT® 500 data cables are used in the tertiary level of a network as patch cables and connection cables. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as 10Gigabit Ethernet, Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. With its optimized construction, the HELUKAT®500 series can be manufactured quickly and easily with many common RJ45 plugs.

Part no.

804043, U/FTP 4x2xAWG 26/7 LSZH

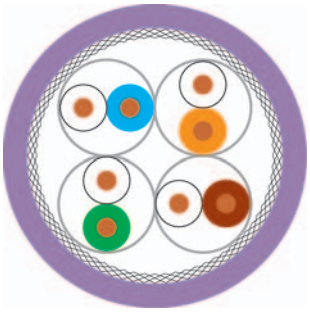
Dimensions and specifications may be changed without prior notice.

LAN Cable

Category 7e

HELUKAT® 600

S/FTP

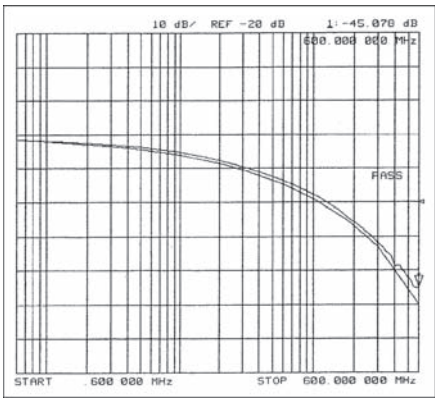




Cable structure

S/FTP 4x2xAWG 23/1 FRNC

Inner conductor Ø:	0,57 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Shielding 1:	-
Screen over stranding element:	Polyester foil, aluminium-lined
Screen 1 over stranding:	Cu braid
Screen 2 over stranding:	-
Outer sheath material:	FRNC
Outer diameter:	app. 7,5 mm
Outer sheath colour:	Blue Lilac similar to RAL 4005



Electrical data

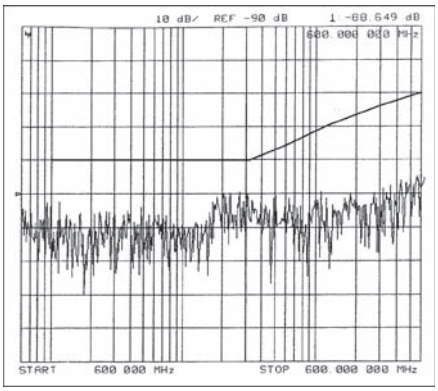
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 1000 MHz
Loop resistance:	169 Ohm/km max.
Mutual capacitance:	43 nF/km nom.
Rel. propagation velocity:	79 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200	300	600	900	1000
Attenuation	(dB/100m)	5,6	7,1	13,9	17,5	25,2	32,1	44,9	55,0	58,0
Next	(db)	100,0	100,0	96,0	94,0	88,0	84,0	73,0	71,0	69,0
ACR	(db)	94,4	92,9	82,1	76,5	62,8	51,9	28,1	16,0	9,0

Technical data

Weight:	app. 60 kg/km
bending radius, repeated:	60 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,60 MJ/m
Copper weight:	28,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7e, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

R

Application

HELUKAT®600 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

Part no.

80810, S/FTP 4x2xAWG 23/1 FRNC (S-STP)

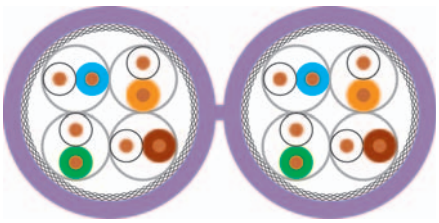
Dimensions and specifications may be changed without prior notice.

LAN Cable

Category 7e

HELUKAT® 600

S/FTP duplex

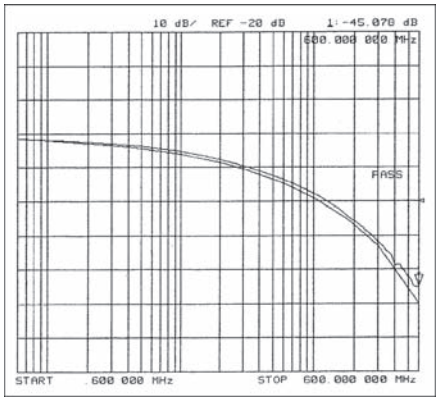




Cable structure

S/FTP 2x(4x2xAWG 23/1) FRNC

Inner conductor Ø:	0,57 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Shielding 1:	-
Screen over stranding element:	Polyester foil, aluminium-lined
Screen 1 over stranding:	Cu braid
Screen 2 over stranding:	-
Outer sheath material:	FRNC
Cable dimensions:	app. 7,5 mm x 16,0 mm
Outer sheath colour:	Blue Lilac similar to RAL 4005



Electrical data

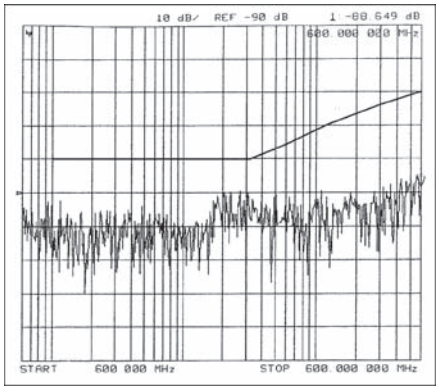
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 1000 MHz
Loop resistance:	169 Ohm/km max.
Mutual capacitance:	43 nF/km nom.
Rel. propagation velocity:	79 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200	300	600	900	1000
Attenuation	(dB/100m)	5,6	7,1	13,9	17,5	25,2	32,1	44,9	55,0	58,0
Next	(db)	100,0	100,0	96,0	94,0	88,0	84,0	73,0	71,0	69,0
ACR	(db)	94,4	92,9	82,1	76,5	62,8	51,9	28,1	16,0	9,0

Technical data

Weight:	app. 120 kg/km
bending radius, repeated:	60 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	1,20 MJ/m
Copper weight:	56,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7e, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

Application

HELUKAT®600 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

Part no.

81446, S/FTP 2x(4x2xAWG 23/1) FRNC (S-STP)

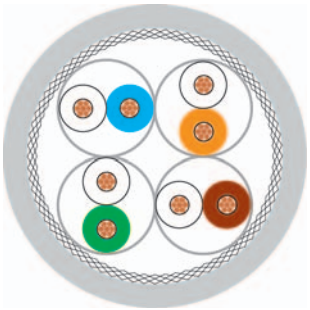
Dimensions and specifications may be changed without prior notice.

LAN Cable

Category 7

HELUKAT® 600

S/FTP flex

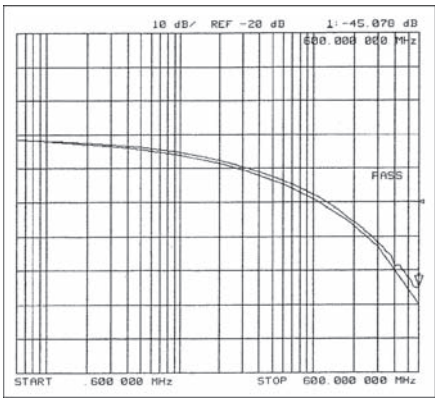




Cable structure

S/FTP 4x2xAWG 26/7 FRNC

Inner conductor Ø:	0,48 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Shielding 1:	-
Screen over stranding element:	Polyester foil, aluminium-lined
Screen 1 over stranding:	Cu braid
Screen 2 over stranding:	-
Outer sheath material:	FRNC
Outer diameter:	app. 5,9 mm
Outer sheath colour:	Grey similar to RAL 7035



Electrical data

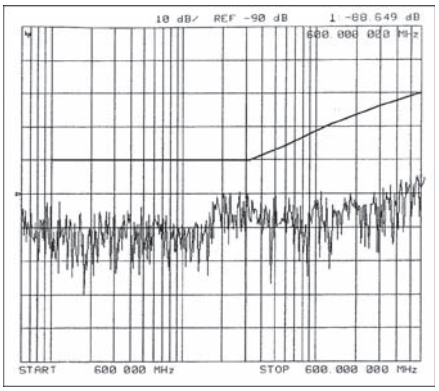
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 600 MHz
Loop resistance:	290 Ohm/km max.
Mutual capacitance:	45 nF/km nom.
Rel. propagation velocity:	77 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200	300	600
Attenuation	(dB/10m)	0,8	1,0	2,0	2,6	4,0	4,9	6,3
Next	(db)	96,0	96,0	95,0	94,0	88,0	86,0	80,0
ACR	(db)	95,2	95,0	93,0	91,4	84,0	81,1	73,7

Technical data

Weight:	app. 42 kg/km
bending radius, repeated:	55 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,47 MJ/m
Copper weight:	22,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7, Flame-retardant acc. to IEC 60332-1, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

R

Application

HELUKAT®600 data cables are used in the tertiary level of a network as patch cables and connection cables. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. With its optimized construction, the HELUKAT®600 series can be manufactured quickly and easily with all common RJ45 plugs.

Part no.

80294, S/FTP 4x2xAWG 26/7 FRNC (S-STP)

Dimensions and specifications may be changed without prior notice.

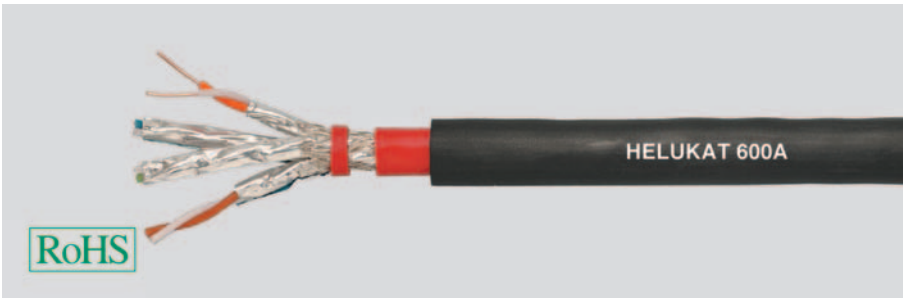
LAN Cable Outdoor

Category 7e

HELUKAT® 600A

S/FTP PVC/PVC

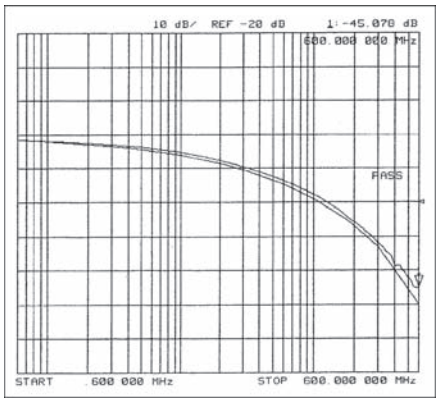




Cable structure

S/FTP 4x2xAWG 23/1 PVC/PVC

Inner conductor Ø:	0,58 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Shielding 1:	-
Inner sheath material:	PVC
Screen over stranding element:	Polyester foil, aluminium-lined
Screen 1 over stranding:	Cu braid
Screen 2 over stranding:	-
Outer sheath material:	PVC
Outer diameter:	app. 11,6 mm
Outer sheath colour:	Black similar to RAL 9005



Electrical data

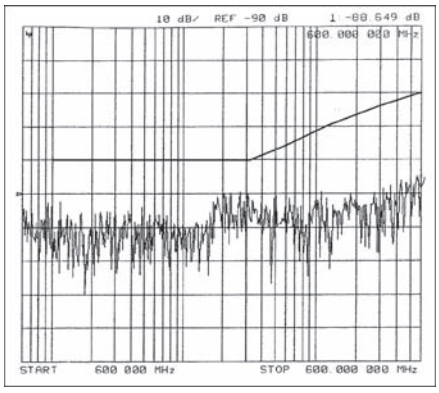
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 1000 MHz
Loop resistance:	160 Ohm/km max.
Mutual capacitance:	43 nF/km nom.
Rel. propagation velocity:	79 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200	300	600	900	1000
Attenuation	(dB/100m)	5,6	7,1	13,9	17,5	25,2	32,1	44,9	55,0	58,0
Next	(db)	100,0	100,0	96,0	94,0	88,0	84,0	73,0	71,0	69,0
ACR	(db)	94,4	92,9	82,1	76,5	62,8	51,9	28,1	16,0	9,0

Technical data

Weight:	app. 153 kg/km
bending radius, repeated:	95 mm
Operating temperature range min.:	-30°C
Operating temperature range max.:	+70°C
Caloric load, approx. value:	2,62 MJ/m
Copper weight:	32,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7e, Flame-retardant acc. to IEC 60332-1

Application

HELUKAT® 600 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. The serie of HELUKAT® 600A with a double PVC jacket is constructed especially for outdoor applications like laying at house walls or in cable lines.

Part no.

801147, S/FTP 4x2xAWG 23/1 PVC/PVC (S-STP)

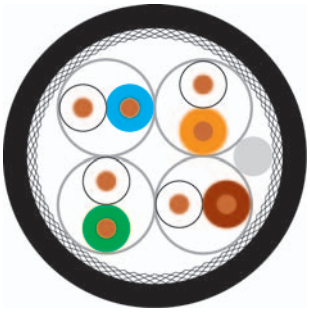
Dimensions and specifications may be changed without prior notice.

LAN Cable direct Burial

Category 7e

HELUKAT® 600E

S/FTP PVC

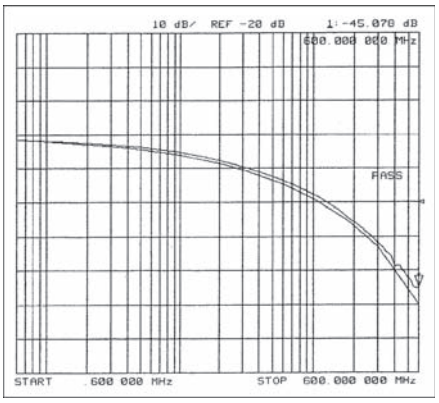




Cable structure

S/FTP 4x2xAWG 23/1 direct burial

Inner conductor Ø:	0,58 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Shielding 1:	-
Screen over stranding element:	Polyester foil, aluminium-lined
Screen 1 over stranding:	Cu braid
Screen 2 over stranding:	-
Outer sheath material:	PVC
Outer diameter:	app. 9,8 mm
Outer sheath colour:	Black



Electrical data

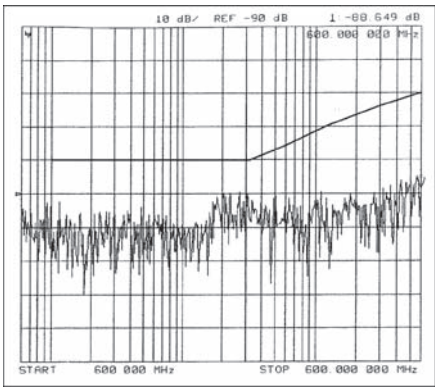
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 1000 MHz
Loop resistance:	150 Ohm/km max.
Mutual capacitance:	42 nF/km nom.
Rel. propagation velocity:	79 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200	300	600	900	1000
Attenuation	(dB/100m)	5,6	7,1	13,9	17,5	25,2	32,1	44,9	55,0	58,0
Next	(db)	100,0	100,0	96,0	94,0	88,0	84,0	73,0	71,0	69,0
ACR	(db)	94,4	92,9	82,1	76,5	62,8	51,9	28,1	16,0	9,0

Technical data

Weight:	app. 102 kg/km
bending radius, repeated:	100 mm
Operating temperature range min.:	-45°C
Operating temperature range max.:	+65°C
Caloric load, approx. value:	1,40 MJ/m
Copper weight:	32,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7e, Flame-retardant acc. to IEC 60332-1, Smoke density acc. to IEC 61034

R

Application

HELUKAT® 600 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. The serie of HELUKAT® 600E with a cold resistant PVC jacket is constructed especially for outdoor applications like laying at house walls or direct burial.

Part no.

802167, S/FTP 4x2xAWG23/1 PVC (S-STP)

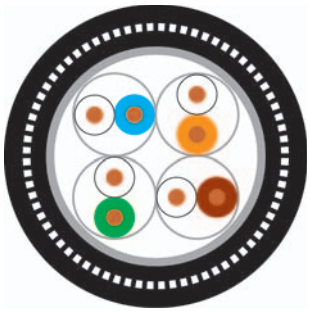
Dimensions and specifications may be changed without prior notice.

LAN Cable direct Burial / armoured

Category 7e

HELUKAT® 600AE

S/FTP FRNC/PE

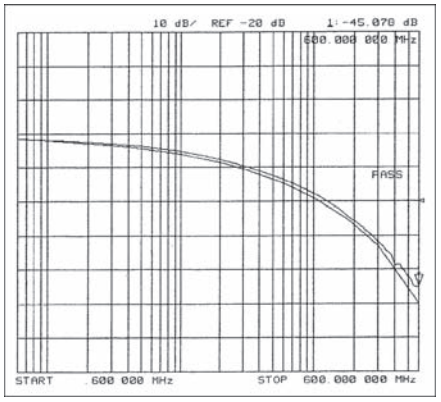




Cable structure

S/FTP 4x2xAWG 23/1 FRNC/PE

Inner conductor Ø:	0,58 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Shielding 1:	-
Inner sheath material:	FRNC
Screen over stranding element:	Polyester foil, aluminium-lined
Screen 1 over stranding:	Cu braid
Screen 2 over stranding:	-
:	Steel shaft
Outer sheath material:	PE
Outer diameter:	app. 12,2 mm
Outer sheath colour:	Black



Electrical data

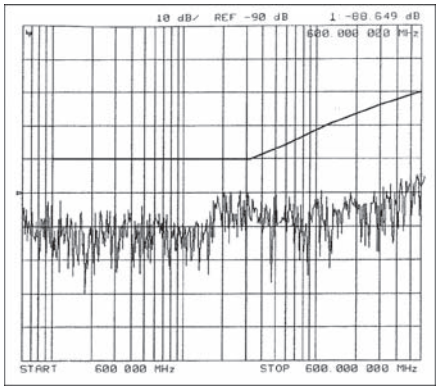
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 1000 MHz
Loop resistance:	150 Ohm/km max.
Mutual capacitance:	43 nF/km nom.
Rel. propagation velocity:	79 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200	300	600	900	1000
Attenuation	(dB/100m)	5,6	7,1	13,9	17,5	25,2	32,1	44,9	55,0	58,0
Next	(db)	100,0	100,0	96,0	94,0	88,0	84,0	73,0	71,0	69,0
ACR	(db)	94,4	92,9	82,1	76,5	62,8	51,9	28,1	16,0	9,0

Technical data

Weight:	app. 155 kg/km
bending radius, repeated:	330 mm
Operating temperature range min.:	-45°C
Operating temperature range max.:	+70°C
Caloric load, approx. value:	2,30 MJ/m
Copper weight:	32,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7e

Application

HELUKAT® 600 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. The serie of HELUKAT® 600AE with a FRNC/PE double jacket and the rodent protection is constructed especially for outdoor and direct burial applications.

Part no.

802168, S/FTP 4x2xAWG 23/1 FRNC/PE (S-STP)

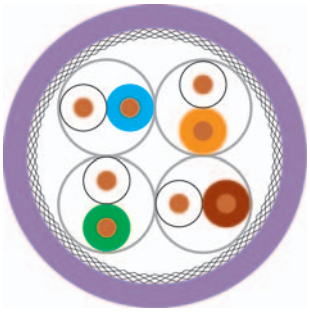
Dimensions and specifications may be changed without prior notice.

LAN Cable

Category 7_A

HELUKAT® 1200

S/FTP

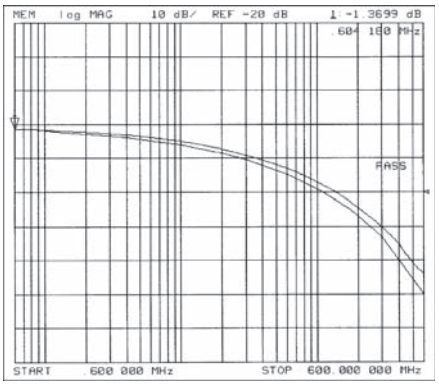




Cable structure

S/FTP 4x2xAWG 23/1 LSZH

Inner conductor Ø:	0,57 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Shielding 1:	-
Screen over stranding element:	Polyester foil, aluminium-lined
Screen 1 over stranding:	Cu braid
Screen 2 over stranding:	-
Outer sheath material:	LSZH
Outer diameter:	app. 7,5 mm
Outer sheath colour:	Blue Lilac similar to RAL 4005



Electrical data

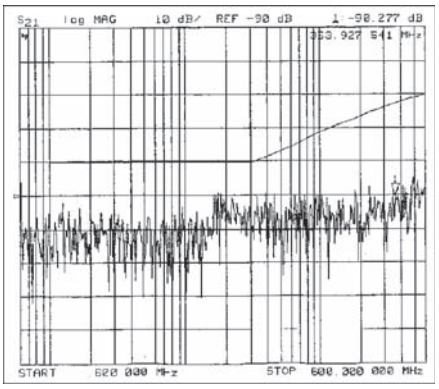
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 1200 MHz
Loop resistance:	160 Ohm/km max.
Mutual capacitance:	43 nF/km nom.
Rel. propagation velocity:	77 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200	300	600	900	1000	1200
Attenuation	(db/100m)	5,2	6,8	13,3	17,3	24,2	30,2	43,5	54,3	56,9	62,9
Next	(db)	105,0	105,0	105,0	100,0	95,0	93,0	88,0	85,0	84,0	82,0
ACR	(db)	99,8	98,2	91,7	82,7	70,8	62,8	44,5	30,7	27,1	19,1

Technical data

Weight:	app. 60 kg/km
bending radius, repeated:	65 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,57 MJ/m
Copper weight:	30,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7_A, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

R

Application

HELUKAT®1200-7A data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as 10Gigabit Ethernet, Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

Part no.

803380, S/FTP 4x2xAWG 23/1 FRNC (S-STP)

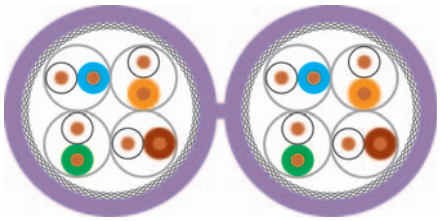
Dimensions and specifications may be changed without prior notice.

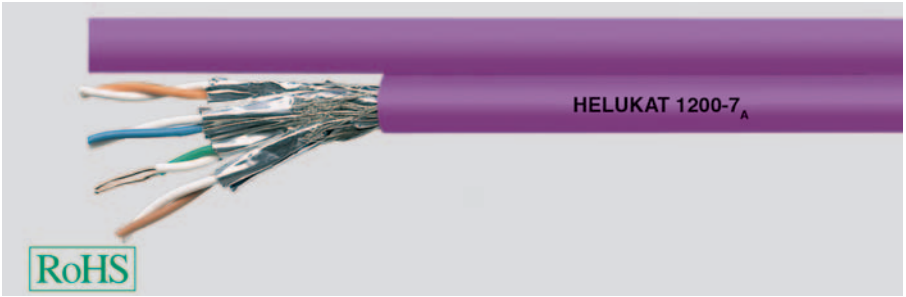
LAN Cable

Category 7A

HELUKAT® 1200

S/FTP duplex

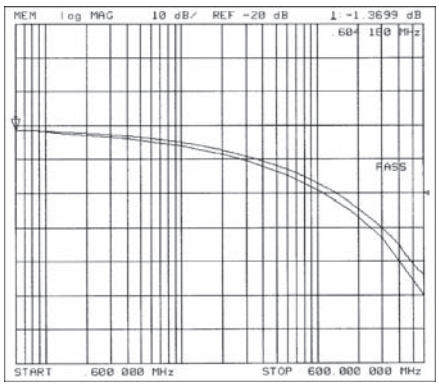




Cable structure

S/FTP 2x(4x2xAWG 23/1) LSZH

Inner conductor Ø:	0,57 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Shielding 1:	-
Screen over stranding element:	Polyester foil, aluminium-lined
Screen 1 over stranding:	Cu braid
Screen 2 over stranding:	-
Outer sheath material:	LSZH
Cable dimensions:	app. 16,0 mm x 7,5 mm
Outer sheath colour:	Blue Lilac similar to RAL 4005



Electrical data

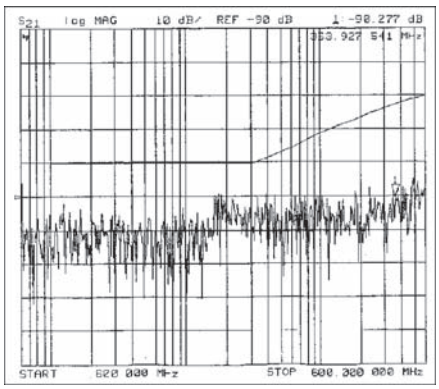
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 1200 MHz
Loop resistance:	160 Ohm/km max.
Mutual capacitance:	43 nF/km nom.
Rel. propagation velocity:	77 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200	300	600	900	1000	1200
Attenuation	(db/100m)	5,2	6,8	13,3	17,3	24,2	30,2	43,5	54,3	56,9	62,9
Next	(db)	105,0	105,0	105,0	100,0	95,0	93,0	88,0	85,0	84,0	82,0
ACR	(db)	99,8	98,2	91,7	82,7	70,8	62,8	44,5	30,7	27,1	19,1

Technical data

Weight:	app. 120 kg/km
bending radius, repeated:	65 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	1,16 MJ/m
Copper weight:	60,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7A, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

Application

HELUKAT®1200-7A data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as 10Gigabit Ethernet, Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

Part no.

803381, S/FTP 2x(4x2xAWG 23/1) FRNC (S-STP)

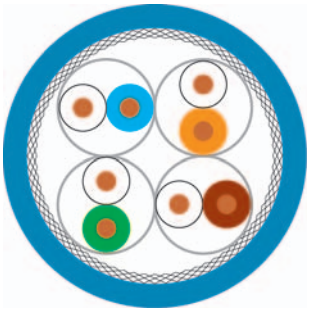
Dimensions and specifications may be changed without prior notice.

LAN Cable

Category 8

HELUKAT® 1200

S/FTP

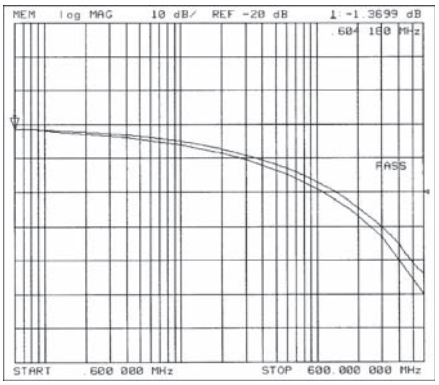




Cable structure

S/FTP 4x2xAWG 22/1 FRNC

Inner conductor Ø:	0,64 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Shielding 1:	-
Screen over stranding element:	Polyester foil, aluminium-lined
Screen 1 over stranding:	Cu braid
Screen 2 over stranding:	-
Outer sheath material:	FRNC
Outer diameter:	app. 7,7 mm
Outer sheath colour:	Blue similar to RAL 5015



Electrical data

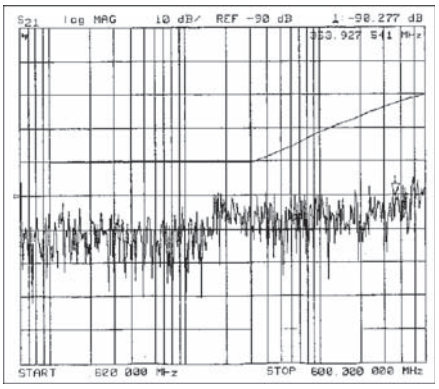
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 1200 MHz
Loop resistance:	120 Ohm/km max.
Mutual capacitance:	43 nF/km nom.
Rel. propagation velocity:	79 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200	300	600	1000	1200
Attenuation	(db/100m)	4,9	6,3	12,7	16,3	23,5	29,4	42,8	53,0	59,0
Next	(db)	100,0	100,0	95,0	93,0	90,0	87,0	81,0	78,0	77,0
ACR	(db)	95,1	93,7	82,3	76,7	66,5	57,6	38,2	25,0	18,0

Technical data

Weight:	app. 66 kg/km
bending radius, repeated:	72 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,70 MJ/m
Copper weight:	40,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 8 (draft), Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

R

Application

HELUKAT®1200 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

Part no.

81699, S/FTP 4x2xAWG 22/1 FRNC (S-FTP)

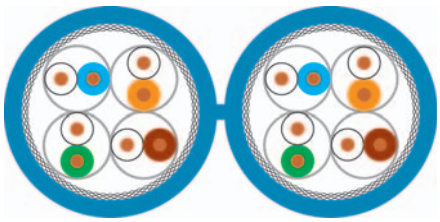
Dimensions and specifications may be changed without prior notice.

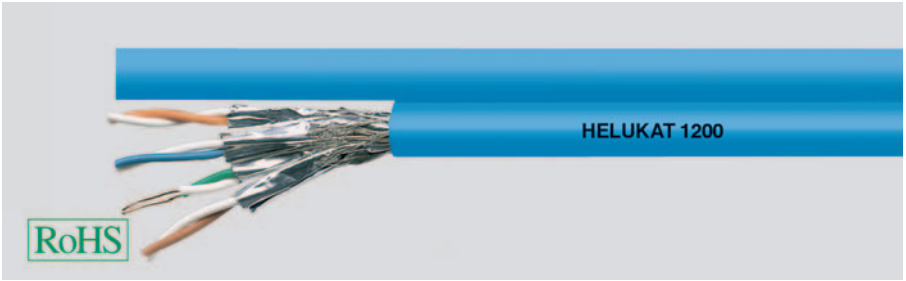
LAN Cable

Category 8

HELUKAT® 1200

S/FTP duplex

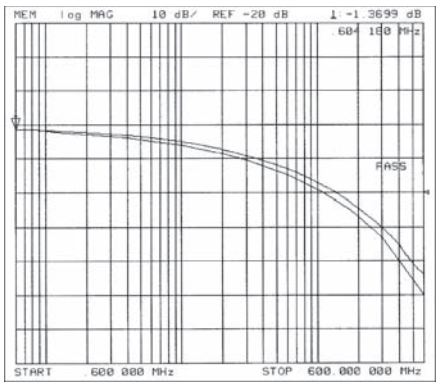




Cable structure

S/FTP 2x(4x2xAWG 22/1) FRNC

Inner conductor Ø:	0,64 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Shielding 1:	-
Screen over stranding element:	Polyester foil, aluminium-lined
Screen 1 over stranding:	Cu braid
Screen 2 over stranding:	-
Outer sheath material:	FRNC
Cable dimensions:	app. 7,7 mm x 16,5 mm
Outer sheath colour:	Blue similar to RAL 5015



Electrical data

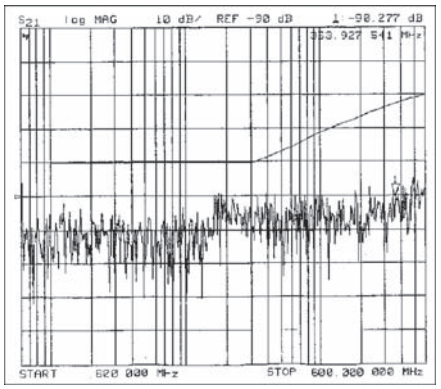
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 1200 MHz
Loop resistance:	120 Ohm/km max.
Mutual capacitance:	43 nF/km nom.
Rel. propagation velocity:	79 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200	300	600	1000	1200
Attenuation	(db/100m)	4,9	6,3	12,7	16,3	23,5	29,4	42,8	53,0	59,0
Next	(db)	100,0	100,0	95,0	93,0	90,0	87,0	81,0	78,0	77,0
ACR	(db)	95,1	93,7	82,3	76,7	66,5	57,6	38,2	25,0	18,0

Technical data

Weight:	app. 133 kg/km
bending radius, repeated:	72 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	1,50 MJ/m
Copper weight:	80,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 8 (draft), Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

Application

HELUKAT®1200 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

Part no.

800647, S/FTP 2x(4x2xAWG 22/1) FRNC (S-STP)

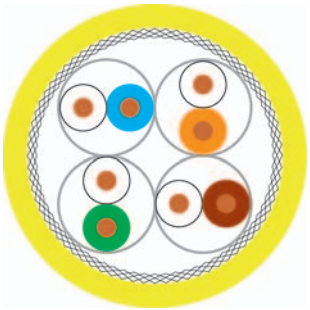
Dimensions and specifications may be changed without prior notice.

Multimedia Cable

Category 8

HELUKAT® 1500

S/FTP

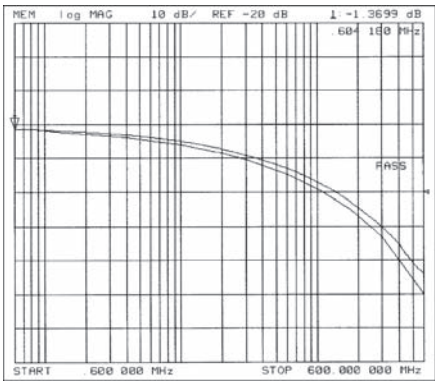




Cable structure

S/FTP 4x2xAWG 22/1 FRNC

Inner conductor Ø:	0,64 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Shielding 1:	-
Screen over stranding element:	Polyester foil, aluminium-lined
Screen 1 over stranding:	Cu braid
Screen 2 over stranding:	-
Outer sheath material:	FRNC
Outer diameter:	app. 7,7 mm
Outer sheath colour:	Yellow



Electrical data

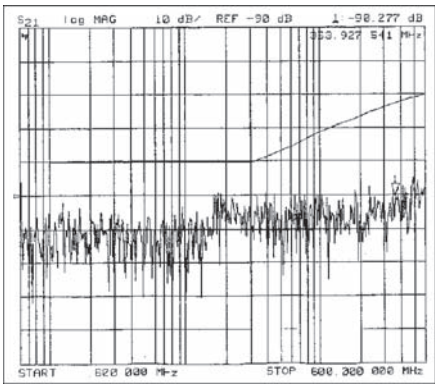
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 1200 MHz
Loop resistance:	120 Ohm/km max.
Mutual capacitance:	42 nF/km nom.
Rel. propagation velocity:	77 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200	300	600	1000	1200	1500
Attenuation	(db/100m)	4,2	6,3	12,7	16,5	21,5	27,5	41,7	54,4	59,8	66,2
Next	(db)	110,0	110,0	110,0	110,0	110,0	105,0	95,0	85,0	80,0	74,0
ACR	(db)	105,8	103,7	97,3	93,5	88,5	77,5	53,3	30,6	22,2	7,8

Technical data

Weight:	app. 66 kg/km
bending radius, repeated:	68 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,74 MJ/m
Copper weight:	41,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 8 (draft), Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

R

Application

HELUKAT® 1500 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as 10Gigabit Ethernet, Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. That means applications such as multimedia (TV, Video, Data, Speach) are no problem for this series.Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

Part no.

802169, S/FTP 4x2xAWG 22/1 FRNC (S-STP)

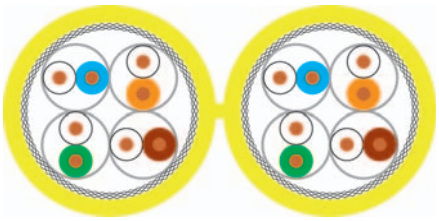
Dimensions and specifications may be changed without prior notice.

Multimedia Cable

Category 8

HELUKAT® 1500

S/FTP duplex

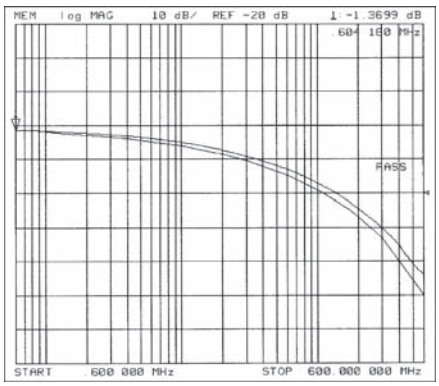




Cable structure

S/FTP 2x(4x2xAWG 22/1) FRNC

Inner conductor Ø:	0,64 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Shielding 1:	-
Screen over stranding element:	Polyester foil, aluminium-lined
Screen 1 over stranding:	Cu braid
Screen 2 over stranding:	-
Outer sheath material:	FRNC
Cable dimensions:	app. 7,7 mm x 16,2 mm
Outer sheath colour:	Yellow



Electrical data

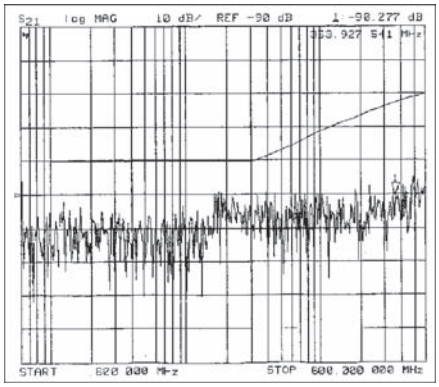
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 1200 MHz
Loop resistance:	120 Ohm/km max.
Mutual capacitance:	42 nF/km nom.
Rel. propagation velocity:	77 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200	300	600	1000	1200	1500
Attenuation	(db/100m)	4,2	6,3	12,7	16,5	21,5	27,5	41,7	54,4	59,8	66,2
Next	(db)	110,0	110,0	110,0	110,0	110,0	105,0	95,0	85,0	80,0	74,0
ACR	(db)	105,8	103,7	97,3	93,5	88,5	77,5	53,3	30,6	22,2	7,8

Technical data

Weight:	app. 135 kg/km
bending radius, repeated:	68 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	1,50 MJ/m
Copper weight:	82,00 kg/km



Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 8 (draft), Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

Application

HELUKAT®1500 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as 10Gigabit Ethernet, Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. That means applications such as multimedia (TV, Video, Data, Speach) are no problem for this series.Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

Part no.

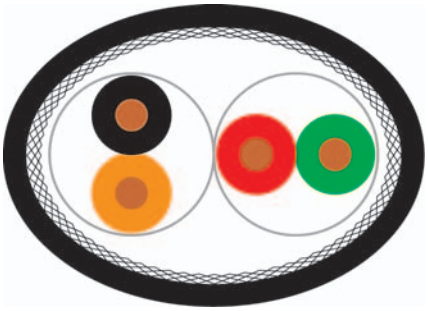
802170, S/FTP 2x(4x2xAWG 22/1) FRNC (S-STP)

Dimensions and specifications may be changed without prior notice.

LAN Cable

HELUKABEL® IVS

IBM P/N 33G2772





Cable structure

IBM P/N 33G2772 type 1A

Inner conductor Ø:	0,64 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Number of cores:	4
Core colours:	bk/og, rd/gn
Screen over stranding element:	Polyester foil, aluminium-lined
Screen over stranding 1:	Cu braid, tinned
Screen over stranding 2:	-
Outer sheath material:	PVC
Cable dimensions:	app. 7,6 mm x 11,9 mm
Outer sheath colour:	Black

Electrical data

Characteristic impedance:	150 Ohm ± 15 ohm at 3 to 20 MHz 185 Ohm ± 18.5 ohm at 38.4 kHz 270 Ohm ± 27 ohm at 9.6 kHz
Direct current resistance:	57,1 Ohm/km
Rel. propagation velocity:	78 %

Typical values

Frequency	(MHz)	20	100	20	100	20	100
Attenuation	(dB/100m)	7,4	18,7	4,9	12,3	7,4	18,7
Next	(db)	80,0	60,0	50,0	39,0	60,0	49,0

Technical data

Weight:	app. 85 kg/km
bending radius, repeated:	110 mm
Operating temperature range min.:	-10°C
Operating temperature range max.:	+70°C
Caloric load, approx. value:	1,70 MJ/m
Copper weight:	38,00 kg/km

Application

HELUKABEL® IVS types are used in the area of the IVS system, developed by IBM. They correspond to the wiring guidelines set by IBM.

Part no.

80068, IBM P/N 33G2772 type 1A

Dimensions and specifications may be changed without prior notice.

R

BUS Cables USB 3.0 Bus

BUS Cables Profibus SHIPLINE

BUS Cables E-Bus

BUS Cables CAN Bus

Industrial Ethernet PROFInet Typ A

Industrial Ethernet 200IND SF/UTP ROBUSTFLEX

Industrial Ethernet PROFinet C Torsion



CW&A Edition 27 (published 01.04.2015)

BUS CABLES

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BUS CABLES

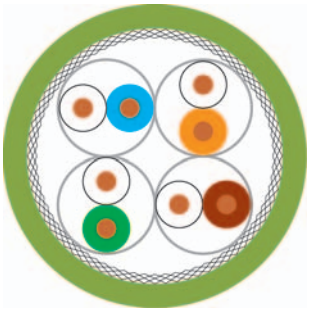
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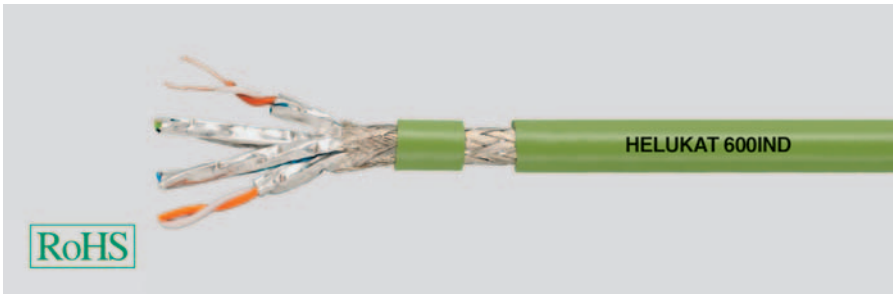
Industrial Ethernet

ROBUST

HELUKAT® 600IND

S/FTP, Category 7e





Type
Cable structure

Industrial Area
S/FTP 4x2xAWG 23/1 PUR

Inner conductor diameter:	Copper, bare (AWG 23/1)
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Stranding element:	Double core
Shielding 1:	-
Shielding 2:	Polyester foil, aluminium-lined
Screen 1 over stranding:	Cu braid
Screen 2 over stranding:	-
Outer sheath material:	PUR
Cable external diameter:	app. 8,2 mm
Outer sheath colour:	Green similar to RAL 6018

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 1000 MHz
Loop resistance:	148 Ohm/km max.
Mutual capacitance:	43 nF/km nom.
Relative propagation velocity:	78 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200	300	600	900	1000
Attenuation	(dB/100m)	5,6	7,1	13,9	17,5	25,2	32,1	44,9	55,0	58,0
Next	(db)	100,0	100,0	96,0	94,0	88,0	84,0	73,0	71,0	69,0
ACR	(db)	94,4	92,9	82,1	76,5	62,8	51,9	28,1	16,0	9,0

Technical data

Weight:	app. 62 kg/km
bending radius, repeated:	85 mm
Operating temperature range min.:	-40°C
Operating temperature range max.:	+80°C
Caloric load, approx. value:	0,74 MJ/m
Copper weight:	34,00 kg/km

Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7e, Flame-retardant acc. to IEC 60332-1, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3, Oil-resistant

Application

HELUKAT® 600IND Cat 7e Robust is used for harsh industrial environments. Mechanically, this product exhibits excellent resistance to mineral oils, greases and cooling lubricants and has good microbe and hydrolysis resistance. Electrically, this cable is characterized by^high reserve capacity and outstanding performance. This allows you to create services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, Token Ring 4/16 Mbit/s or ISDN without difficulty. These cable considerably exceed the requirement for compliance with Class B interference emission to EN55022, as well as interference immunity to EN55024. This gives the series outstanding EMC characteristics.

Part no.

801197, S/FTP 4x2xAWG 23/1 PUR (S-STP)

Dimensions and specifications may be changed without prior notice.

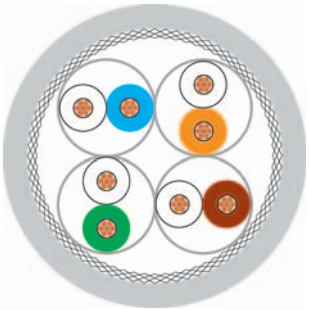
R

Industrial Ethernet

SHIPLINE

HELUKAT® 600IND

S/FTP, Category 7





Type
Cable structure

Marine and Offshore
S/FTP 4x2xAWG 24/7 (stranded) FRNC

Inner conductor diameter:	Copper, bare (AWG 24/7)
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Stranding element:	Double core
Shielding 1:	-
Shielding 2:	Polyester foil, aluminium-lined
Screen 1 over stranding:	Cu braid
Screen 2 over stranding:	-
Outer sheath material:	FRNC
Cable external diameter:	app. 9,1 mm ± 0,3 mm
Outer sheath colour:	Grey similar to RAL 7035

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 600 MHz
Loop resistance:	168 Ohm/km max.
Mutual capacitance:	43 nF/km nom.
Relative propagation velocity:	72 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200	600
Attenuation	(dB/10m)	0,7	0,8	1,6	2,1	3,1	5,2
Next	(db)	90,0	90,0	85,0	81,0	76,0	68,0
ACR	(db)	89,3	89,2	83,4	78,9	72,9	62,8

Technical data

Weight:	app. 85 kg/km
bending radius, repeated:	85 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+75°C
Caloric load, approx. value:	0,80 MJ/m
Copper weight:	36,00 kg/km

Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3, Oil-resistant

Application

HELUKAT® 600IND Cat 7 Shipline is designed specially for use in shipbuilding and exceptionally well-suited for Ethernet applications. It guarantees excellent transmission characteristics and may be used even under the harshest conditions.The cable listed here is certified by **German Lloyd**; this means it is designed for flexible marine and offshore applications.

Part no.

803382, S/FTP 4x2xAWG 24/7 stranded FRNC (S-STP)

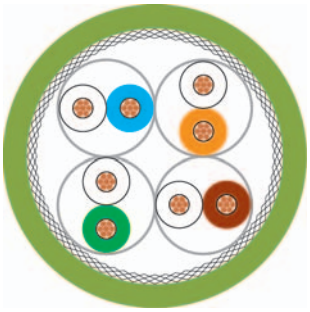
Dimensions and specifications may be changed without prior notice.

Industrial Ethernet

ROBUSTFLEX

HELUKAT® 600IND

S/FTP, Category 7





Type
Cable structure

Industrial Patch Cables
S/FTP 4x2xAWG 26/7 PUR

Inner conductor diameter:	Copper, bare (AWG 26/7)
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Stranding element:	Double core
Shielding 1:	-
Shielding 2:	Polyester foil, aluminium-lined
Screen 1 over stranding:	Cu braid
Screen 2 over stranding:	-
Outer sheath material:	PUR
Cable external diameter:	app. 6,4 mm ± 0,3 mm
Outer sheath colour:	Green similar to RAL 6018

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 ohm at 101 to 600 MHz
Loop resistance:	290 Ohm/km max.
Mutual capacitance:	42 nF/km nom.
Relative propagation velocity:	64 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200	600
Attenuation	(db/10m)	0,8	1,1	2,2	2,8	4,0	7,4
Next	(db)	80,0	80,0	75,0	72,0	68,0	61,0
ACR	(db)	79,2	78,9	72,8	69,2	64,0	53,6

Technical data

Weight:	app. 48 kg/km
bending radius, repeated:	64 mm
Operating temperature range min.:	-40°C
Operating temperature range max.:	+80°C
Caloric load, approx. value:	0,45 MJ/m
Copper weight:	28,00 kg/km

Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7, Flame-retardant acc. to IEC 60332-1, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3, Oil-resistant, AWM 20963 (80°C/30V)

Application

HELUKAT®600IND Cat 7 Robustflex is an Ethernet cable that, thanks to use of a halogen-free PU outer sheath, is ideal for harsh industrial surroundings. This cable is configurable with common RJ45 plugs (industrial and office version), as well as with some Sub-D and M12 plugs.

R

Part no.

802184, S/FTP 4x2xAWG 26/7 PUR (S-STP)

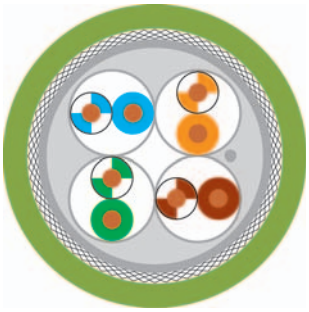
Dimensions and specifications may be changed without prior notice.

Industrial Ethernet

10GIG

HELUKAT® 500IND

S/FTP, Category 6A





Type
Cable structure

Industrial Area
S/FTP 4x2xAWG 22/1

Inner conductor diameter:	Copper, bare (AWG 22/1)
Core insulation:	Foam-skin-PE
Core colours:	whbu/bu, whog/og, whgn/gn, whbn/bn
Stranding element:	Double core
Shielding 1:	Polyester foil over stranded bundle
Inner sheath material:	PVC
Shielding 2:	Polyester foil, aluminium-lined
Total shielding:	Foil + braid
Drain wire:	yes
Outer sheath material:	PVC
Cable external diameter:	app. 9,6 mm ± 0,3 mm
Outer sheath colour:	Green similar to RAL 6018

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 Ohm at 101 to 500 MHz
Conductor resistance, max.:	59 Ohm/km
Insulation resistance, min.:	0,5 GOhm x km
Loop resistance:	118 Ohm/km max.
Mutual capacitance:	72 nF/km nom.
Test voltage:	0,7 kV
Relative propagation velocity:	62 %

Typical values

Frequency	(MHz)	10	16	62,5	100	250	500
Attenuation	(db/100m)	5,9	7,5	15,0	19,1	31,1	45,3
Next	(dB)	60,3	57,2	48,4	45,3	39,3	34,3
PSNext	(dB)	57,3	54,2	45,4	42,3	36,3	31,8

Technical data

Weight:	app. 115 kg/km
bending radius, repeated:	80 mm
Operating temperature range min.:	-40°C
Operating temperature range max.:	+70°C
Caloric load, approx. value:	1,69 MJ/m
Copper weight:	44,00 kg/km

Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 6A, Flame-retardant acc. to IEC 60332-3, CMG FT4

Application

HELUKAT® 600IND 10GIG was designed specially for extreme industrial applications. The copper data cable is especially well-suited for Category 6A Ethernet applications up to 10 Gigabits / 500 MHz **(IEC61156-5)**. It guarantees excellent transmission characteristics and may be used even under the harshest conditions. The cable listed here is based on PROFInet Type A. Thanks to the addtional inner sheath, the cable can be processed using the quick contact method. This version with PVC jacket is designed specifically for fixed installation under difficult industrial conditions.

Part no.

803693, INDUSTRIAL ETHERNET CAT.6A 10GIG

Dimensions and specifications may be changed without prior notice.

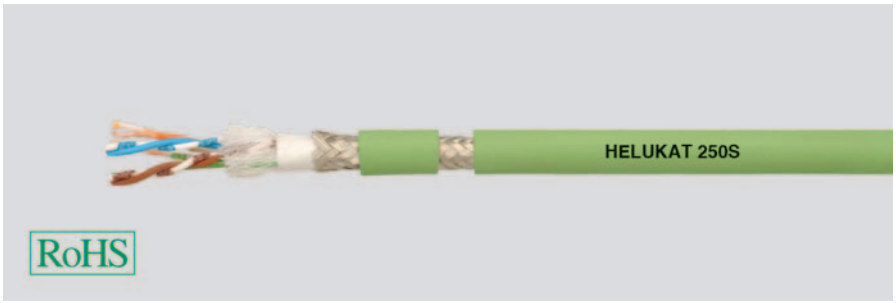
Industrial Ethernet

Drag Chain

HELUKAT® 250S

SF/UTP, Category 6





Type
Cable structure

Drag chain applications
SF/UTP 4x2x0.15 mm² (stranded) PUR

Inner conductor diameter:	Copper, tinned (AWG 26/19)
Core insulation:	PP
Core colours:	whbu/bu, whog/og, whgn/gn, whbn/bn
Stranding element:	Double core
Shielding 1:	-
Inner sheath material:	FRNC
Shielding 2:	-
Total shielding:	Foil + braid
Outer sheath material:	PUR
Cable external diameter:	app. 7,8 mm ± 0,2 mm
Outer sheath colour:	Green similar to RAL 6018

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 Ohm bei 101 bis 250 MHz
Conductor resistance, max.:	140 Ohm/km
Insulation resistance, min.:	0,5 GOhm x km
Loop resistance:	280 Ohm/km max.
Mutual capacitance:	52 nF/km nom.
Test voltage:	0,7 kV
Relative propagation velocity:	67 %

Typical values

Frequency	(MHz)	10	16	62,5	100	250
Attentuation	(db/10m)	0,9	1,2	2,4	2,9	4,9
Next	(db)	59,3	56,2	47,4	44,3	38,3
ACR	(db)	58,4	55,0	45,0	41,4	33,4

Technical data

Weight:	app. 63 kg/km
bending radius, repeated:	60 mm
Operating temperature range min.:	-30°C
Operating temperature range max.:	+70°C
Caloric load, approx. value:	1,35 MJ/m
Copper weight:	34,00 kg/km

Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 6, Flame-retardant acc. to IEC 60332-1, Halogen-free acc. to 60754-2, CMX 75°C (shielded)

Application

HELUKAT® 250S trailing cable Cat 6 is designed for use in cable carriers and the recurring loads caused by moving machine components and provides excellent transmission characteristics under extremely difficult conditions.

Part no.

803387, INDUSTRIAL ETHERNET CAT.6

Dimensions and specifications may be changed without prior notice.

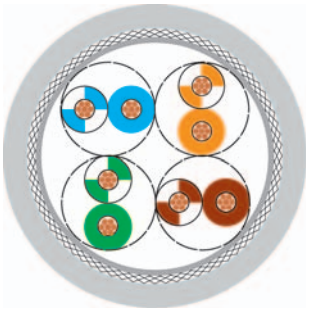
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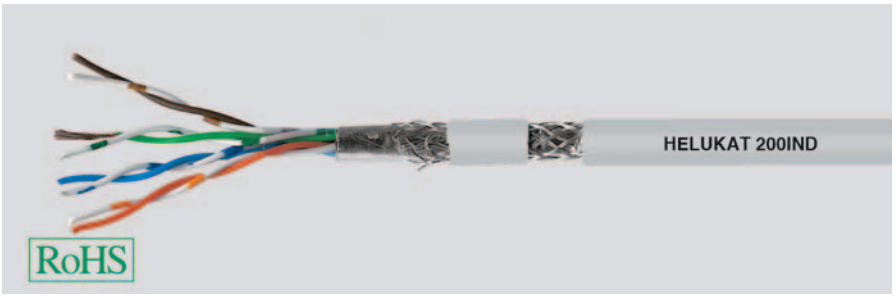
Industrial Ethernet

ROBUSTFLEX

HELUKAT® 200IND

SF/UTP, Category 5e





Type
Cable structure

Industrial Patch Cables
SF/UTP 4x2xAWG 26/7 PUR

Inner conductor diameter:	Copper, bare (AWG 26/7)
Core insulation:	PO
Core colours:	whbu/bu, whog/og, whgn/gn, whbn/bn
Stranding element:	Double core
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	-
Screen 1 over stranding:	Polyester foil, aluminium-lined
Screen 2 over stranding:	Cu braid
Outer sheath material:	PUR
Cable external diameter:	app. 5,8 mm
Outer sheath colour:	Grey similar to RAL 7035

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz 100 Ohm ± 20 Ohm at 101 to 200 MHz
Loop resistance:	260 Ohm/km max.
Mutual capacitance:	47 nF/km nom.
Relative propagation velocity:	74 %

Typical values

Frequency	(MHz)	10	16	62,5	100	200
Attenuation	(dB/10m)	0,8	1,1	2,4	2,9	4,3
Next	(db)	58,0	56,0	45,0	43,0	37,0
ACR	(db)	57,2	54,9	42,6	40,1	32,7

Technical data

Weight:	app. 44 kg/km
bending radius, repeated:	46 mm
Operating temperature range min.:	-40°C
Operating temperature range max.:	+80°C
Caloric load, approx. value:	0,54 MJ/m
Copper weight:	24,00 kg/km

Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5e, Flame-retardant acc. to IEC 60332-1, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Oil-resistant

Application

HELUKAT® 200IND Cat 5e Robustflex is used in harsh industrial surroundings and characterized by high reserve capacity and outstanding performance. Mechanically, the halogen-free PU outer sheath makes it ideal for harsh industrial surroundings. This cable is configurable with common RJ45 plugs (industrial and office version), as well as with various Sub-D and M12 plugs.

Part no.

800068, SF/UTP 4x2xAWG 26/7 PUR (S-FTP)

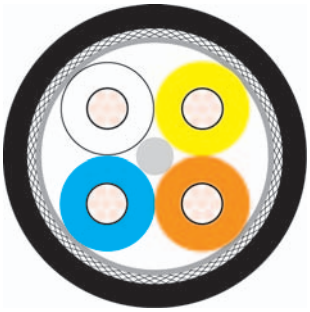
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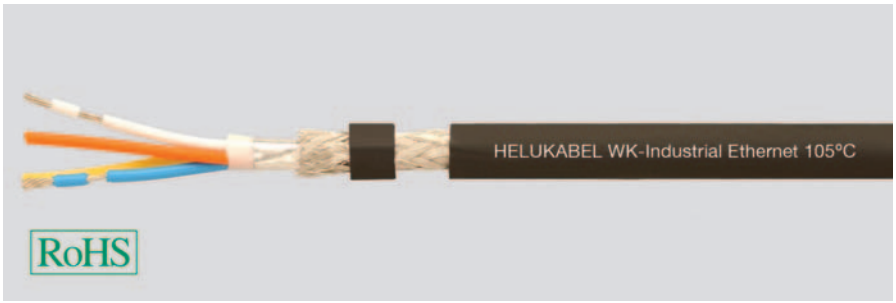
Industrial Ethernet

WK Industrial 105°C

HELUKAT® 100IND

SF/UTP, Category 5e





Type
Cable structure

Windenergy
SF/UTP 2x2x0,75 mm (stranded)

Inner conductor diameter:	Copper, tinned (AWG 22/7)
Core insulation:	XLPE ray cross-linking
Core colours:	wh, ye, bu, og
Stranding element:	Star quad
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned
Outer sheath material:	X-FRNC
Cable external diameter:	app. 6,5 mm ± 0,2 mm
Outer sheath colour:	Black similar to RAL 9005

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz
Conductor resistance, max.:	60 Ohm/km
Insulation resistance, min.:	0,5 GOhm x km
Loop resistance:	120 Ohm/km max.
Mutual capacitance:	52 nF/km nom.
Test voltage:	2 kV
Relative propagation velocity:	69 %

Typical values

Frequency	(MHz)	10	16	62,5	100
Attenuation	(dB/100m)	6,3	8,0	16,5	21,3
Next	(db)	70,0	65,0	55,0	50,0
ACR	(db)	63,7	57,0	38,5	28,7

Technical data

Weight:	app. 64 kg/km
bending radius, repeated:	52 mm
Operating temperature range min.:	-40°C
Operating temperature range max.:	+105°C *
Caloric load, approx. value:	0,89 MJ/m
Copper weight:	34,00 kg/km

Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Category 5, Flame-retardant acc. to IEC 60332-3, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3, UL-Syle 21281 80°C/300V

Application

HELUKAT® 100IND Cat 5e WK Industrial 105°C is designed specially for demanding temperature requirements such as those encountered in wind turbines. Radiation cross-linking provides improved thermal stability as well good oil resitance.

Part no.

802293, INDUSTRIAL ETHERNET CAT.5

Dimensions and specifications may be changed without prior notice.

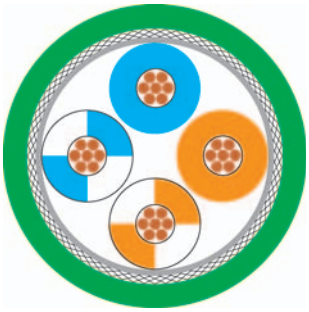
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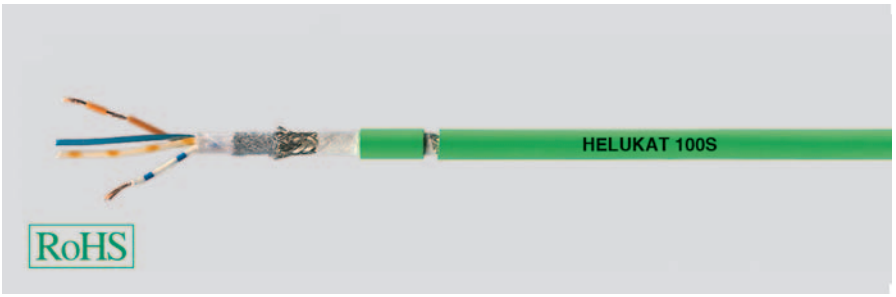
Industrial Ethernet

DRAG CHAIN ECO

HELUKAT® 100S

SF/UTP 4 core, Category 5e





Type
Cable structure

Drag chain applications
SF/UTP 4x1x0.15 mm² (stranded)

Inner conductor diameter:	Copper, bare (AWG 26/19)
Core insulation:	PO
Core colours:	whbl, bl, whor, or
Stranding element:	Star quad
Shielding 1:	-
Shielding 2:	PETP fleece
Total shielding:	Foil + braid
Outer sheath material:	PUR
Cable external diameter:	app. 4,8 mm ± 0,2 mm
Outer sheath colour:	Green

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz
Insulation resistance, min.:	5 GOhm x km
Loop resistance:	250 Ohm/km max.
Mutual capacitance:	51 nF/km nom.
Test voltage:	0,5 kV
Relative propagation velocity:	67 %

Typical values

Frequency	(MHz)	10	16	62,5	100	155
Attentuation	(db/100m)	9,5	12,1	24,8	32,0	41,0
Next	(db)	50,0	48,0	38,5	35,3	30,0

Technical data

Weight:	app. 30 kg/km
bending radius, repeated:	70 mm
Operating temperature range min.:	-40°C
Operating temperature range max.:	+80°C
Caloric load, approx. value:	0,37 MJ/m
Copper weight:	17,00 kg/km

Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5e, Flame-retardant acc. to IEC 60332-1, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3, AWM 20963 (80°C/30V)

Application

HELUKAT® 100S Cat 5e drag chain Eco is designed in use in cable carriers and the recurring loads cause by moving machine components. Thanks to the PU sheath, it also offers excellent resistance to common mineral oils, greases and cooling lubricants.

Part no.

82838, INDUSTRIAL ETHERNET CAT.5e

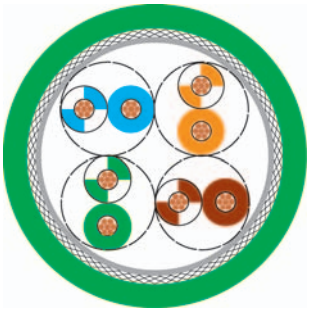
Dimensions and specifications may be changed without prior notice.

Industrial Ethernet

Drag chain ECO

HELUKAT® 100S

SF/UTP 4-pair, Category 5e





Type
Cable structure

Drag chain applications
SF/UTP 4x2x0.15 mm² (stranded)

Inner conductor diameter:	Copper, bare (AWG 26/19)
Core insulation:	PO
Core colours:	whbu/bu, whog/og, whgn/gn, whbn/bn
Stranding element:	Double core
Shielding 1:	-
Shielding 2:	PETP fleece
Total shielding:	Foil + braid
Outer sheath material:	PUR
Cable external diameter:	app. 6,6 mm ± 0,2 mm
Outer sheath colour:	Green

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz
Insulation resistance, min.:	5 GOhm x km
Loop resistance:	250 Ohm/km max.
Mutual capacitance:	48 nF/km nom.
Test voltage:	0,5 kV
Relative propagation velocity:	67 %

Typical values

Frequency	(MHz)	10	16	62,5	100	155
Attentuation	(db/100m)	9,5	12,1	24,8	32,0	41,0
Next	(db)	50,0	48,0	38,5	35,3	30,0

Technical data

Weight:	app. 56 kg/km
bending radius, repeated:	102 mm
Operating temperature range min.:	-40°C
Operating temperature range max.:	+80°C
Caloric load, approx. value:	0,64 MJ/m
Copper weight:	31,00 kg/km

Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5e, Flame-retardant acc. to IEC 60332-1, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3, AWM 20963 (80°C/30V)

Application

HELUKAT® 100S Cat 5e drag chain Eco is designed for use in cable carriers and the recurring loads caused by moving machine components. Thanks to the PU sheath, it also offers excellent resistance to common mineral oils, greases and cooling lubricants.

R

Part no.

82839, INDUSTRIAL ETHERNET CAT.5e

Dimensions and specifications may be changed without prior notice.

Industrial Ethernet

DRAG CHAIN

HELUKAT® 200S

SF/UTP 4 core, Category 5





Type
Cable structure

Drag Chain Patch Cables
SF/UTP 4x1xAWG 24/19 (stranded) PUR

Inner conductor diameter:	Copper, bare (AWG 24/19)
Core insulation:	PP
Core colours:	wh/bn, gn/ye
Stranding element:	Quad
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	-
Screen 1 over stranding:	Polyester foil, aluminium-lined
Screen 2 over stranding:	Cu braid
Outer sheath material:	PUR
Cable external diameter:	app. 6,2 mm ± 0,2 mm
Outer sheath colour:	Green similar to RAL 6026

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz
Loop resistance:	156 Ohm/km max.
Mutual capacitance:	51 nF/km nom.
Relative propagation velocity:	67 %

Typical values

Frequency	(MHz)	10	16	62,5	100
Attenuation	(dB/10m)	1,0	1,2	2,6	3,3
Next	(db)	47,0	44,0	35,0	32,0
ACR	(db)	46,0	42,8	32,4	28,7

Technical data

Weight:	app. 54 kg/km
bending radius, repeated:	75 mm
Operating temperature range min.:	-25°C
Operating temperature range max.:	+70°C
Caloric load, approx. value:	0,944 MJ/m
Copper weight:	30,00 kg/km

Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5, Flame-retardant acc. to IEC 60332-1, Halogen-free acc. to 60754-2, Oil-resistant

Application

HELUKAT® 200S Cat 5 drag chain is designed for use in cable carriers and the extreme loads caused by moving machine components and provides excellent transmission characteristics under the most difficult and extreme conditions. Thanks to the clever structure, it is also suitable mechanically for use even in cable carriers with a high packing density. This cable configurable with conventional Sub-D plugs, as well as with various RJ45 plugs.

Part no.

800088, SF/UTP 4x1xAWG 24/19 PUR (S-FTP)

Dimensions and specifications may be changed without prior notice.

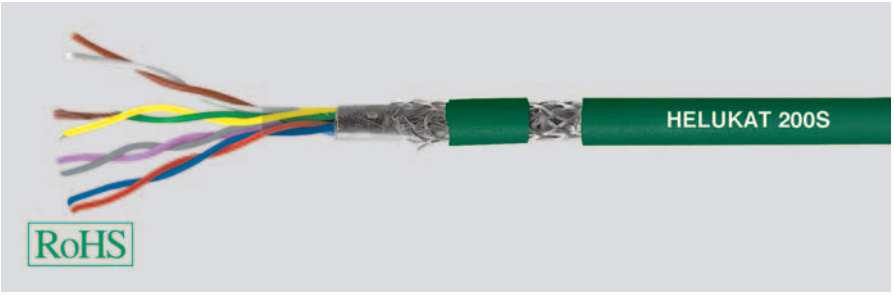
Industrial Ethernet

DRAG CHAIN

HELUKAT® 200S

SF/UTP 4 pair, Category 5





Type
Cable structure

Drag Chain Patch Cables
SF/UTP 4x2xAWG 24/19 PUR (stranded)

Inner conductor diameter:	Copper, bare (AWG 24/19)
Core insulation:	PE
Core colours:	wh/bn, gn/ye, gy/pk, bu/rd
Stranding element:	Double core
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	-
Screen 1 over stranding:	Polyester foil, aluminium-lined
Screen 2 over stranding:	Cu braid
Outer sheath material:	PUR
Cable external diameter:	app. 9,5 mm ± 0,2 mm
Outer sheath colour:	Green similar to RAL 6026

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz
Loop resistance:	156 Ohm/km max.
Mutual capacitance:	51 nF/km nom.
Relative propagation velocity:	67 %

Typical values

Frequency	(MHz)	10	16	62,5	100
Attenuation	(dB/10m)	1,0	1,2	2,6	3,3
Next	(db)	47,0	44,0	35,0	32,0
ACR	(db)	46,0	42,8	32,4	28,7

Technical data

Weight:	app. 110 kg/km
bending radius, repeated:	115 mm
Operating temperature range min.:	-25°C
Operating temperature range max.:	+70°C
Caloric load, approx. value:	2,08 MJ/m
Copper weight:	54,30 kg/km

Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5, Flame-retardant acc. to IEC 60332-1, Halogen-free acc. to 60754-2, Oil-resistant

Application

HELUKAT® 200S Cat 5 drag chain is designed for use in cable carriers and the extreme loads caused by moving machine components and provides excellent transmission characteristics under the most difficult and extreme conditions. Thanks to the clever structure, it is also suitable mechanically for use even in cable carriers with a high packing density. This cable is configurable with conventional Sub-D plugs, as well as with various RJ45 plugs.

R

Part no.

81155, SF/UTP 4x2xAWG 24/19 PUR (S-FTP)

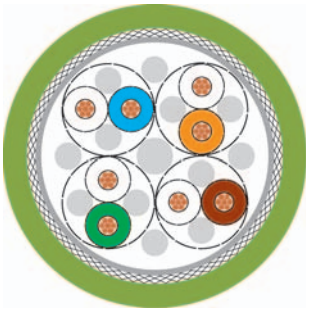
Dimensions and specifications may be changed without prior notice.

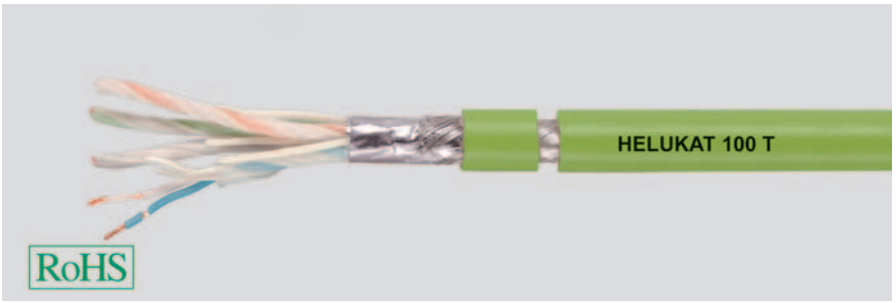
Industrial Ethernet

TORDIERFLEX

HELUKAT® 100T

SF/UTP, Category 5





Type
Cable structure

Torsion Patch Cables
SF/UTP 4x2xAWG 26/19 PUR (stranded)

Inner conductor diameter:	Copper, bare (AWG 26/19)
Core insulation:	PP
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Stranding element:	Double core
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	-
Screen 1 over stranding:	Polyester foil, aluminium-lined
Screen 2 over stranding:	Cu braid
Outer sheath material:	PUR
Cable external diameter:	app. 7,5 mm
Outer sheath colour:	Green similar to RAL 6018

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz
Loop resistance:	260 Ohm/km max.
Mutual capacitance:	50 nF/km nom.
Relative propagation velocity:	68 %

Typical values

Frequency	(MHz)	10	16	62,5	100
Attenuation	(dB/10m)	1,3	1,6	3,2	4,0
Next	(db)	47,0	44,0	35,0	32,0
ACR	(db)	45,7	42,4	31,8	28,0

Technical data

Weight:	app. 63 kg/km
bending radius, repeated:	56 mm
Operating temperature range min.:	-40°C
Operating temperature range max.:	+80°C
Caloric load, approx. value:	1,234 MJ/m
Copper weight:	29,50 kg/km

Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5, Flame-retardant acc. to IEC 60332-1, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Oil-resistant, AWM Style 20236 80°C/30V

Application

HELUKAT® 100T Cat 5 Torsionflex is designed for applications with torsion loads, e.g. in robots, and characterized by high reserve capacity and outstanding performance, even after exposure to extreme conditions. Thanks to the clever structure, it is also possible to achieve a long service life mechanically. These cables are configurable with conventional Sub-D plugs, as well as with various RJ45 plugs.

Part no.

800067, SF/UTP 4x2xAWG 26/19 PUR (S-FTP)

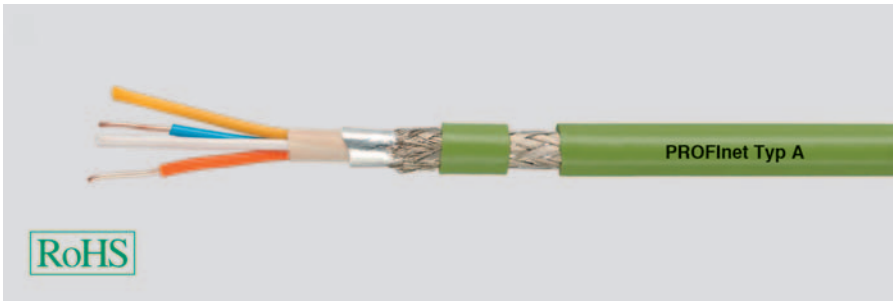
Dimensions and specifications may be changed without prior notice.

Industrial Ethernet

PROFInet Type A

HELUKAT®
fixed installed + robust





Type	Fixed installation, indoor	Industrial Area
Cable structure	**2x2x0.64 mm**	**2x2x0.64 mm**
Inner conductor diameter:	Copper, bare (AWG 22/1)	Copper, bare (AWG 22/1)
Core insulation:	PE	PE
Core colours:	wh, ye, bu, og	wh, ye, bu, og
Stranding element:	Star quad	Star quad
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Inner sheath material:	PVC	FRNC
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PVC	PUR
Cable external diameter:	app. 6,5 mm ± 0,2 mm	app. 6,5 mm ± 0,2 mm
Outer sheath colour:	Green similar to RAL 6018	Green similar to RAL 6018

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz	100 Ohm ± 15 ohm at 1 to 100 MHz
Conductor resistance, max.:	62 Ohm/km	62 Ohm/km
Insulation resistance, min.:	0,5 GOhm x km	0,5 GOhm x km
Loop resistance:	115 Ohm/km max.	115 Ohm/km max.
Mutual capacitance:	50 nF/km nom.	50 nF/km nom.
Test voltage:	2 kV	2 kV

Typical values

Frequency	(MHz)	10	16	62,5	100
Attenuation	(dB/100m)	5,2	6,9	15,0	19,5
Next	(db)	70,0	65,0	55,0	50,0
ACR	(db)	64,8	58,1	40,0	30,5

Technical data

Weight:	app. 67 kg/km	app. 64 kg/km
bending radius, repeated:	65 mm	65 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+80°C	+70°C
Caloric load, approx. value:	0,34 MJ/m	0,91 MJ/m
Copper weight:	32,00 kg/km	32,00 kg/km

Norms

Applicable standards:	PROFInet Guideline Acc. to ISO/IEC 11801 Acc. to EN 50173 Category 5e Flame-retardant acc. to IEC 60332-1	PROFInet Guideline Acc. to ISO/IEC 11801 Acc. to EN 50173 Category 5e Flame-retardant acc. to IEC 60332-1
UL Style:	CMG 75°C PLTC FT4	-
CSA standard:	CSA FT 4	-

Application

HELUKAT® PROFInet Type A Cat 5e for fixed installation in industrial networks, rugged. It guarantees excellent transmission characteristics and may be used even under the harshest conditions. The cable listed here corresponds to PROFInet Type A; this means the version with PVC sheath is designed for normal fixed installations and the version with PU sheath is for difficult fixed installations in harsh industrial environments.

Part no.

800653, PROFInet type A (SK)

801194, PROFInet type A (SK)

Dimensions and specifications may be changed without prior notice.

R

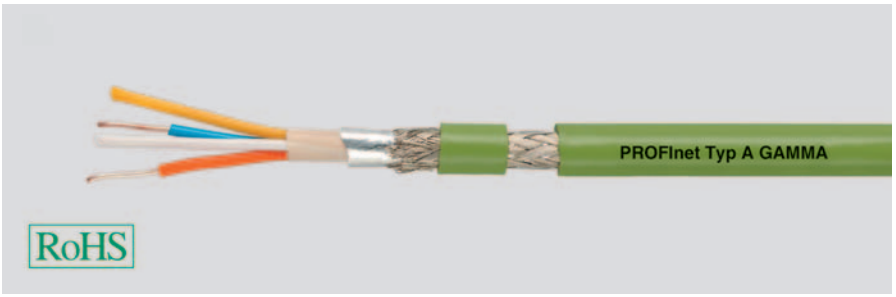
Industrial Ethernet

PROFInet Type A

HELUKAT®

radiation resistant + armoured





Type	ray loaded areas	Fixed installation, outdoor
Cable structure	**2x2x0.64 mm**	**2x2x0.64 mm**
Inner conductor diameter:	Copper, bare (AWG 22/1)	Copper, bare (AWG 22/1)
Core insulation:	XLPE ray cross-linking	PE
Core colours:	wh, ye, bu, og	wh, ye, bu, og
Stranding element:	Star quad	Star quad
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Inner sheath material:	TPR ray cross-linking	PVC
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Armouring:	-	Steel band
Outer sheath material:	PUR	PE
Cable external diameter:	app. 6,5 mm ± 0,2 mm	app. 9,3 mm ± 0,5 mm
Outer sheath colour:	Green similar to RAL 6018	Black

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz	100 Ohm ± 15 ohm at 1 to 100 MHz
Conductor resistance, max.:	62 Ohm/km	62 Ohm/km
Insulation resistance, min.:	0,5 GOhm x km	0,5 GOhm x km
Loop resistance:	124 Ohm/km max.	115 Ohm/km max.
Mutual capacitance:	50 nF/km nom.	50 nF/km nom.
Test voltage:	2 kV	2 kV

Typical values

Frequency	(MHz)	10	16	62,5	100
Attenuation	(dB/100m)	5,2	6,9	15,0	19,5
Next	(db)	70,0	65,0	55,0	50,0
ACR	(db)	64,8	58,1	40,0	30,5

Technical data

Weight:	app. 63 kg/km	app. 124 kg/km
bending radius, repeated:	100 mm	100 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+80°C	+70°C
Caloric load, approx. value:	0,29 MJ/m	2,14 MJ/m
Copper weight:	32,00 kg/km	31,00 kg/km

Norms

Applicable standards:	PROFInet Guideline Acc. to ISO/IEC 11801 Acc. to EN 50173 Category 5e	PROFInet Guideline Acc. to ISO/IEC 11801 Acc. to EN 50173 Category 5e

Application

HELUKAT® PROFInet Type A Cat 5e is radiation-resistant + armoured for fixed installation in industrial networks. It guarantees excellent transmission characteristics and may be used even under the harshest conditions. The cables listed here correspond to PROFInet Type A and thanks to their special construction with cross-linked PVC-inner sheath/PU outer sheath are well-suited for fixed applications inside irradiated areas, while the armoured type with PVC inner sheath/PE outer sheath is ideal for areas with rodent problems.

Part no.

801195, PROFInet type A (SK)

801650, PROFInet type A (SK)

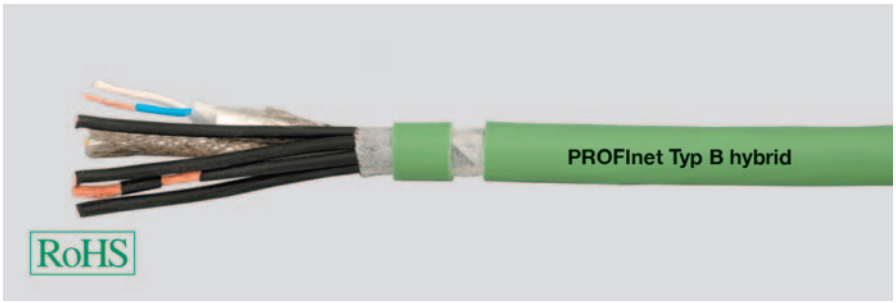
Dimensions and specifications may be changed without prior notice.

Industrial Ethernet

PROFInet Type B

HELUKAT® hybrid





Type
Cable structure

Mobile use
2x2x0,75 mm (stranded)+ 4x1,5qmm

Inner conductor diameter 1:	Copper, bare (AWG 22/7)
Inner conductor diameter 2:	Copper, bare (AWG 16/84)
Core insulation 1:	Foam-skin-PE
Core insulation 2:	PO
Core colours 1:	wh, ye, bu, og
Core colours 2:	Black
Stranding element 1:	Double core
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	Polyester foil, aluminium-lined
Total shielding:	Polyester foil
Outer sheath material:	FRNC
Cable external diameter:	app. 10,3 mm ± 0,3 mm
Outer sheath colour:	Green similar to RAL 6018

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz
Conductor resistance, max.:	60 Ohm/km
Insulation resistance, min.:	0,5 GOhm x km
Loop resistance:	120 Ohm/km max.
Mutual capacitance:	52 nF/km nom.
Test voltage:	2 kV

Typical values

Frequency	(MHz)	10	16	62,5	100
Attenuation	(dB/100m)	6,3	8,0	16,5	21,3
Next	(db)	50,0	47,0	38,0	35,0
ACR	(db)	43,7	39,0	21,5	13,7

Technical data

Weight:	app. 153 kg/km
bending radius, repeated:	103 mm
Operating temperature range min.:	-40°C
Operating temperature range max.:	+70°C
Caloric load, approx. value:	1,50 MJ/m
Copper weight:	94,00 kg/km

Norms

Applicable standards:	PROFInet Guideline Acc. to ISO/IEC 11801 Acc. to EN 50173 Category 5e Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1 Corrosiveness acc. to EN50267-2-3 Low-smoke acc. to EN50268-2
UL Style:	UL Style 21282

Application

HELUKAT® PROFInet Type B Cat 5e hybrid for flexible applications. The cable listed here corresponds to PROFInet Type B with integrated power supply in a cable with halogen-free and flame-retardent construction.

Part no.

801651, PROFInet type B (SK)

Dimensions and specifications may be changed without prior notice.

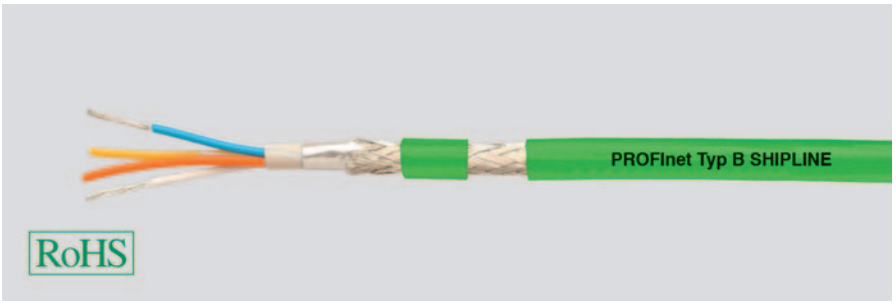
R

Industrial Ethernet

PROFInet Typ B

HELUKAT®
SHIPLINE + FESTOON





Type	Marine and Offshore	FESTOON
Cable structure	**2x2x0,34 qmm (stranded)**	**2x2x0.75 mm (stranded)**
Inner conductor diameter:	Copper, tinned (AWG 22/7)	Copper, tinned (AWG 22/7)
Core insulation:	PP	PE
Core colours:	wh, ye, bu, og	wh, ye, bu, og
Stranding element:	Star quad	Star quad
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Inner sheath material:	FRNC	PVC
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	FRNC	PVC
Cable external diameter:	app. 6,5 mm ± 0,4 mm	app. 6,5 mm ± 0,2 mm
Outer sheath colour:	Green similar to RAL 6018	Green similar to RAL 6018

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz	100 Ohm ± 5 %
Conductor resistance, max.:	60 Ohm/km	60 Ohm/km
Insulation resistance, min.:	0,5 GOhm x km	0,5 GOhm x km
Loop resistance:	120 Ohm/km max.	120 Ohm/km max.
Mutual capacitance:	52 nF/km nom.	52 nF/km nom.
Test voltage:	2 kV	2 kV

Typical values

Frequency	(MHz)	10	16	62,5	100
Attenuation	(dB/100m)	6,0	7,6	16,0	21,0
Next	(db)	70,0	65,0	55,0	50,0
ACR	(db)	64,0	57,4	39,0	29,0

Technical data

Weight:	app. 68 kg/km	app. 68 kg/km
bending radius, repeated:	50 mm	70 mm
Operating temperature range min.:	-40°C	-10°C
Operating temperature range max.:	+70°C	+80°C
Caloric load, approx. value:	0,45 MJ/m	1,20 MJ/m
Copper weight:	32,00 kg/km	32,00 kg/km

Norms

Applicable standards:	PROFInet Guideline Acc. to ISO/IEC 11801 Acc. to EN 50173 Category 5e Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-3 Corrosiveness acc. to EN50267-2-3 Low-smoke acc. to EN50268-2	PROFInet Guideline Acc. to ISO/IEC 11801 Acc. to EN 50173 Category 5e Flame-retardant acc. to IEC 60332-3
UL Style:	CMG 75°C PLTC FT4	CMG 75°C or PLTC or AWM 21694 600V
CSA standard:	CSA FT 4	CSA FT 4

Application

HELUKAT® PROFInet Type B Cat 5e SHIPLINE + FESTOON designed specially for marine/offshore applications as well as FESTOON applications. The SHIPLINE version is certified by the **Germanische Lloyd** and suitable for flexible **marine and offshore applications**.

Part no.

802185, PROFInet type B (SK)

803295, PROFInet type B (SK)

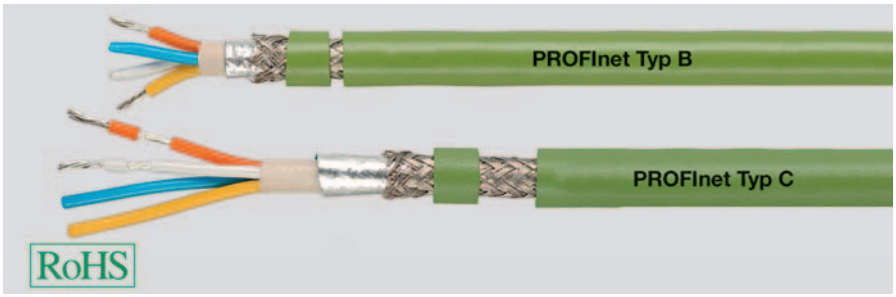
Dimensions and specifications may be changed without prior notice.

Industrial Ethernet

PROFInet Type B + C

HELUKAT®
flexible + high flexible





Type Cable structure	Mobile use 2x2x0,75 mm (stranded)	Drag chain applications 2x2x0.75 mm (stranded)
Inner conductor diameter:	Copper, tinned (AWG 22/7)	Copper, tinned (AWG 22/7)
Core insulation:	PE	PE
Core colours:	wh, ye, bu, og	wh, ye, bu, og
Stranding element:	Star quad	Star quad
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Inner sheath material:	PVC	FRNC
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PVC	PUR
Cable external diameter:	app. 6,5 mm ± 0,2 mm	app. 6,5 mm ± 0,2 mm
Outer sheath colour:	Green similar to RAL 6018	Green similar to RAL 6018

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz	100 Ohm ± 15 ohm at 1 to 100 MHz
Conductor resistance, max.:	62 Ohm/km	60 Ohm/km
Insulation resistance, min.:	0,5 GOhm x km	0,5 GOhm x km
Loop resistance:	115 Ohm/km max.	115 Ohm/km max.
Mutual capacitance:	52 nF/km nom.	52 nF/km nom.
Test voltage:	2 kV	0,7 kV

Typical values

Frequency	(MHz)	10	16	62,5	100
Attenuation	(dB/100m)	6,0	7,6	16,0	21,0
Next	(db)	70,0	65,0	55,0	50,0
ACR	(db)	64,0	57,4	39,0	29,0

Technical data

Weight:	app. 67 kg/km	app. 61 kg/km
bending radius, repeated:	100 mm	55 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	0,32 MJ/m	0,85 MJ/m
Copper weight:	32,00 kg/km	32,00 kg/km

Norms

Applicable standards:	PROFInet Guideline Acc. to ISO/IEC 11801 Acc. to EN 50173 Category 5e Flame-retardant acc. to IEC 60332-1	PROFInet Guideline Acc. to ISO/IEC 11801 Acc. to EN 50173 Category 5e Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1
UL Style:	CMG 75°C PLTC FT4	CMX 75°C (shielded)
CSA standard:	CSA FT 4	-

Application

HELUKAT® PROFInet Type B (flexible) + Type C (highly flexible) Cat 5e for use on moving parts and in cable carriers. The cables listed here correspond to the PROFInet classifications Type B and Type C for moving cables and are designed to withstand mechanical loads.

Part no.

800654, PROFInet type B (SK)

800655, PROFInet type C (SK)

Dimensions and specifications may be changed without prior notice.

R

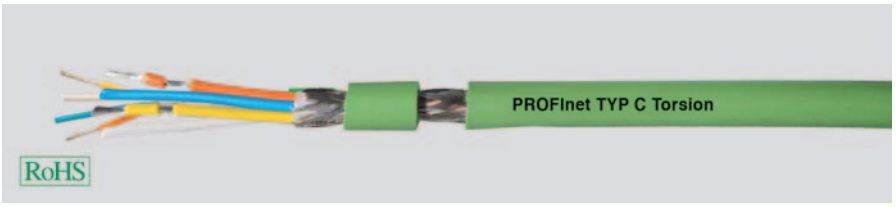
Industrial Ethernet

PROFInet Type C

HELUKAT®

Torsion





Type
Cable structure

Inner conductor diameter:	Copper, tinned (AWG 22/19)
Core insulation:	Foam-skin-PE
Core colours:	wh, ye, bu, og
Stranding element:	Star quad
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	Cu braid, tinned
Total shielding:	Cu braid, tinned
Outer sheath material:	PUR
Cable external diameter:	app. 6,5 mm ± 0,2 mm
Outer sheath colour:	Green similar to RAL 6018

Torsional applications
2x2x0,75 mm (stranded)

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz
Conductor resistance, max.:	60 Ohm/km
Insulation resistance, min.:	0,5 GOhm x km
Loop resistance:	120 Ohm/km max.
Mutual capacitance:	52 nF/km nom.
Test voltage:	0,7 kV

Typical values

Frequency	(MHz)	10	16	62,5	100
Attenuation	(db/100m)	7,6	10,0	26,5	41,0
ELFEXT	(db)	43,8	39,7	24,0	20,0

Technical data

Weight:	app. 54 kg/km
bending radius, repeated:	70 mm
Operating temperature range min.:	-40°C
Operating temperature range max.:	+80°C
Caloric load, approx. value:	0,45 MJ/m
Copper weight:	32,00 kg/km

Norms

Applicable standards:	PROFInet Guideline Category 5e Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1 Corrosiveness acc. to EN50267-2-3 Low-smoke acc. to EN50268-2
UL Style:	AWM Style 21161 80°C

Application

HELUKAT® PROFInet Type C Cat 5e TORSION offers excellent transmission characteristics and is designed for applications with torsion loads, e.g. in robots. The cable listed here corresponds to the PROFInet Type C classification for continous movement.

Part no.

802186, PROFInet type C (SK)

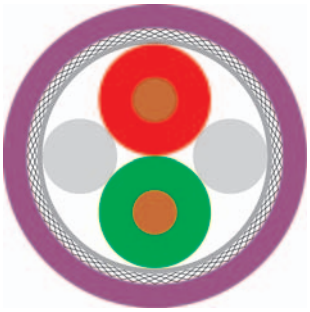
Dimensions and specifications may be changed without prior notice.

BUS Cables

Profibus L2

HELUKABEL

Indoor





Type Cable structure	Fixed installation, indoor 1x2x0.64 mm	Fixed installation, indoor 1x2x0.64 mm
Inner conductor diameter:	Copper, bare (AWG 22/1)	Copper, bare (AWG 22/1)
Core insulation:	Foam-skin-PE	Foam-skin-PE
Core colours:	rd, gn	rd, gn
Stranding element:	2 cores + 2 fillers stranded together	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PVC	PVC
Cable external diameter:	app. 7,8 mm ± 0,2 mm	app. 7,8 mm ± 0,2 mm
Outer sheath colour:	Grey similar to RAL 7001	Violet similar to RAL 4001
Electrical data		
Characteristic impedance:	150 Ohm ± 10 %	150 Ohm ± 10 %
Conductor resistance, max.:	55 Ohm/km	55 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	110 Ohm/km max.	110 Ohm/km max.
Mutual capacitance:	30 nF/km nom.	30 nF/km nom.
Test voltage:	1,5 kV	1,5 kV
Attenuation:	9,6 kHz < 2,5 dB/km 38,4 kHz < 4,0 dB/km 4 MHz < 22,0 dB/km 16 MHz < 42,0 dB/km	9,6 kHz < 2,5 dB/km 38,4 kHz < 4,0 dB/km 4 MHz < 22,0 dB/km 16 MHz < 42,0 dB/km
Technical data		
Weight:	app. 69 kg/km	app. 69 kg/km
bending radius, repeated:	120 mm	120 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	0,99 MJ/m	0,99 MJ/m
Copper weight:	24,00 kg/km	24,00 kg/km
Norms		
Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to IEC 60332-1	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to IEC 60332-1
UL Style:	CMX 75°C (shielded)	CMX 75°C (shielded)
CSA standard:	CSA FT1	CSA FT1

Application

HELUKABEL® Profibus L2 Indoor is designed for fixed indoor installation in Profibus industrial networks. Depending on the application, the colour grey (special colour) or violet (standard colour) is availiable. Otherwise, the technical characteristics of the two products are identical.

R

Part no.

80384, Profibus L2

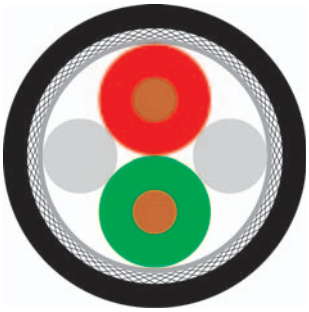
81448, Profibus L2

Dimensions and specifications may be changed without prior notice.

BUS Cables

PROFIBUS L2 Outdoor + Industry

HELUKABEL
Outdoor + Industry





Type	Fixed installation, outdoor	Industrial Area
Cable structure	**1x2x0.64 mm**	**1x2x0.64 mm**
Inner conductor diameter:	Copper, bare (AWG 22/1)	Copper, bare (AWG 22/1)
Core insulation:	Foam-skin-PE	Foam-skin-PE
Core colours:	rd, gn	rd, gn
Stranding element:	2 cores + 2 fillers stranded together	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PE	PUR
Cable external diameter:	app. 8,0 mm ± 0,4 mm	app. 8,0 mm ± 0,4 mm
Outer sheath colour:	Black similar to RAL 9005	Petrol similar to RAL 5018
Electrical data		
Characteristic impedance:	150 Ohm ± 10 %	150 Ohm ± 10 %
Conductor resistance, max.:	55 Ohm/km	55 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	110 Ohm/km max.	110 Ohm/km max.
Mutual capacitance:	30 nF/km nom.	30 nF/km nom.
Test voltage:	1,5 kV	1,5 kV
Attenuation:	9,6 kHz < 2,5 dB/km 38,4 kHz < 4,0 dB/km 4 MHz < 22,0 dB/km 16 MHz < 42,0 dB/km	9,6 kHz < 2,5 dB/km 38,4 kHz < 4,0 dB/km 4 MHz < 22,0 dB/km 16 MHz < 42,0 dB/km
Technical data		
Weight:	app. 64 kg/km	app. 67 kg/km
bending radius, repeated:	120 mm	120 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	2,26 MJ/m	1,52 MJ/m
Copper weight:	24,00 kg/km	24,00 kg/km
Norms		
Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Halogen-free acc. to 60754-2	Profibus acc. to DIN 19245 T3 and EN50170 Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1

Application

HELUKABEL® Profibus L2 Outdoor + Industry are special cables for use in Profibus industrial networks. The Outdoor version is designed for use in open-air environments, i.e. can withstand wind, weather and sun (not for burial direcly in the ground). The Industry version is used in fixed installation applications in harsh industrial environment. Mechanically, this product exhibits excellent resistance to mineral oils, greases and cooling lubricants and has good microbe and hydrolysis resistance.

Part no.		
	80792, Profibus L2	**81186,** Profibus L2

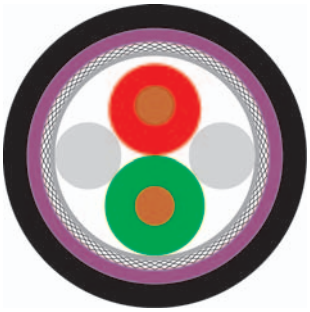
Dimensions and specifications may be changed without prior notice.

BUS Cables

Profibus L2 direct Burial

HELUKABEL

without + with Armouring





Type Cable structure	Direct burial 1x2x0.64 mm	Direct burial 1x2x0.64 mm
Inner conductor diameter:	Copper, bare (AWG 22/1)	Copper, bare (AWG 22/1)
Core insulation:	Foam-skin-PE	Cell PE
Core colours:	rd, gn	rd, gn
Stranding element:	2 cores + 2 fillers stranded together	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle	-
Inner sheath material:	PVC	PVC
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Armouring:	-	Steel band
Outer sheath material:	PE	PE
Cable external diameter:	app. 10,0 mm ± 0,2 mm	app. 10,6 mm ± 0,5 mm
Outer sheath colour:	Black similar to RAL 9005	Black similar to RAL 9005

Electrical data

Characteristic impedance:	150 Ohm ± 10 %	150 Ohm ± 10 %
Conductor resistance, max.:	55 Ohm/km	55 Ohm/km
Insulation resistance, min.:	1 GOhm x km	5 GOhm x km
Loop resistance:	110 Ohm/km max.	110 Ohm/km max.
Mutual capacitance:	30 nF/km nom.	30 nF/km nom.
Nominal voltage:	-	250 V
Test voltage:	1,5 kV	1,5 kV
Attenuation:	9,6 kHz < 2,5 dB/km 38,4 kHz < 4,0 dB/km 3 MHz < 22,0 dB/km 20 MHz < 42,0 dB/km	9,6 kHz < 2,5 dB/km 38,4 kHz < 4,0 dB/km 4 MHz < 22,0 dB/km 16 MHz < 42,0 dB/km

Technical data

Weight:	app. 92 kg/km	app. 132 kg/km
bending radius, repeated:	150 mm	165 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+80°C	+80°C
Caloric load, approx. value:	2,657 MJ/m	2,40 MJ/m
Copper weight:	24,00 kg/km	24,00 kg/km

Norms

Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170	Profibus acc. to DIN 19245 T3 and EN50170

Application

HELUKABEL® Profibus L2 Direct Burial cables without + with armouring are special cables in the Profibus industrial networks. The version without armouring is for normal an direct cable burial in the ground. The version with steel tape armouring offers additional protection against rodents and is the right choice for regions with such animals.

Part no.

82824, Profibus ERD

802177, Profibus L2

Dimensions and specifications may be changed without prior notice.

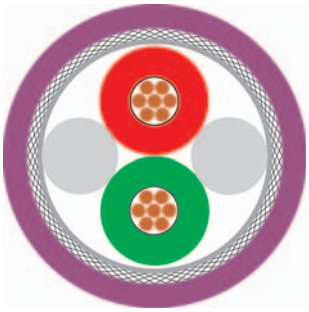
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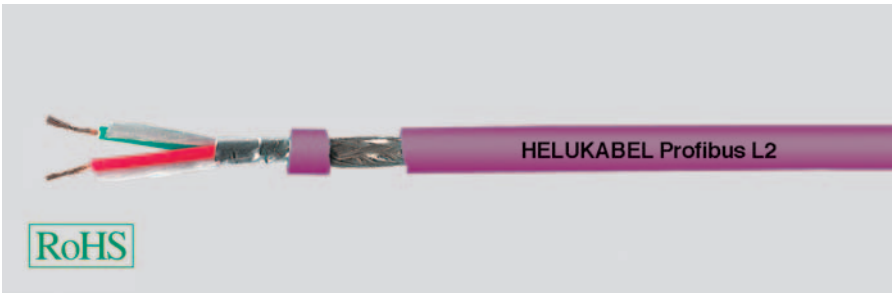
BUS Cables

Profibus L2

HELUKABEL

7-wire





Type
Cable structure

Inner conductor diameter:	Copper, bare (AWG 24/7)
Core insulation:	Foam-skin-PE
Core colours:	rd, gn
Stranding element:	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned
Outer sheath material:	PVC
Cable external diameter:	app. 7,8 mm ± 0,3 mm
Outer sheath colour:	Violet similar to RAL 4001

Mobile use
1x2x0.64 mm (stranded)

Electrical data

Characteristic impedance:	150 Ohm ± 10 %
Conductor resistance, max.:	86,7 Ohm/km
Insulation resistance, min.:	1 GOhm x km
Loop resistance:	173 Ohm/km max.
Mutual capacitance:	30 nF/km nom.
Test voltage:	1,5 kV
Attenuation:	9,6 kHz < 3,0 dB/km
	38,4 kHz < 5,0 dB/km
	4 MHz < 26,0 dB/km
	16 MHz < 55,0 dB/km

Technical data

Weight:	app. 75 kg/km
bending radius, repeated:	80 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+80°C
Caloric load, approx. value:	1,20 MJ/m
Copper weight:	24,00 kg/km

Norms

Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170
	Flame-retardant acc. to EN 50265-2-1
UL Style:	UL Style 2571

Application

HELUKABEL® Profibus L2 7-wire for mobile applications in Profibus industrial networks. With its core design and the special PVC sheath, the type described here is suitable for normal mobile applications.

Part no.

800648, Profibus L2

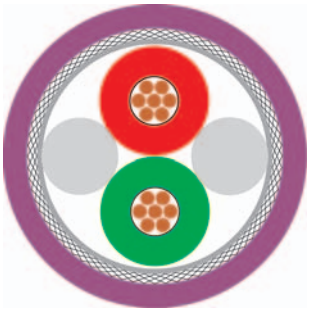
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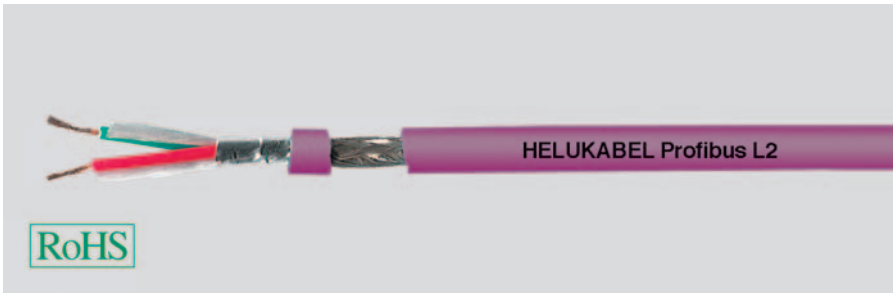
BUS Cables

Profibus L2

HELUKABEL

Drag Chain





Type Cable structure	Drag chain applications 1x2x0.64 mm (stranded)	Drag chain applications 1x2x0.64 mm (stranded)
Inner conductor diameter:	Copper, bare (AWG 24/19)	Copper, bare (AWG 24/19)
Core insulation:	Foam-skin-PE	Foam-skin-PE
Core colours:	rd, gn	rd, gn
Stranding element:	2 cores + 2 fillers stranded together	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PUR	PUR
Cable external diameter:	app. 8,0 mm ± 0,4 mm	app. 8,0 mm ± 0,4 mm
Outer sheath colour:	Violet similar to RAL 4001	Petrol similar to RAL 5018
Electrical data		
Characteristic impedance:	150 Ohm ± 10 %	150 Ohm ± 10 %
Conductor resistance, max.:	80 Ohm/km	80 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	160 Ohm/km max.	160 Ohm/km max.
Mutual capacitance:	30 nF/km nom.	30 nF/km nom.
Test voltage:	1,5 kV	1,5 kV
Attenuation:	9,6 kHz < 3,0 dB/km 38,4 kHz < 5,0 dB/km 4 MHz < 25,0 dB/km 16 MHz < 52,0 dB/km	9,6 kHz < 3,0 dB/km 38,4 kHz < 5,0 dB/km 4 MHz < 25,0 dB/km 16 MHz < 52,0 dB/km
Technical data		
Weight:	app. 65 kg/km	app. 65 kg/km
bending radius, repeated:	63 mm	63 mm
Operating temperature range min.:	-30°C	-30°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	1,52 MJ/m	1,52 MJ/m
Copper weight:	25,00 kg/km	25,00 kg/km
Norms		
Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1	Profibus acc. to DIN 19245 T3 and EN50170 Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1

Application

This system cable is used to interconnect L2-BUS components. This cable is an economical solution for the cell and field area. For the information exchange between different automation systems as well as for communication with the connected decentralized field units, serial field bus systems are used. The above mentioned types are suitable for drag chains (stranded).

R

Part no.

80267, Profibus L2

81003, Profibus L2

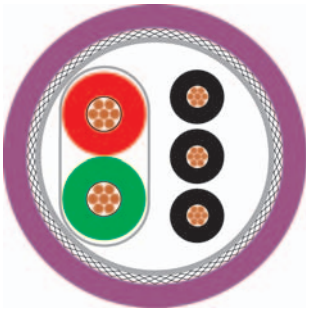
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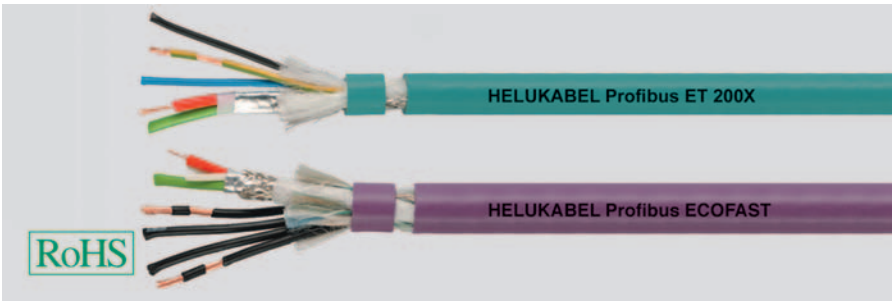
BUS Cables

Profibus

HELUKABEL

ET200X + ECOFAST





Type Cable structure	Drag chain applications 1x2x0.65 mm + 3x1x0.75 mm² (stranded)	Drag chain applications 1x2x0.65 mm + 4x1x1.5 mm² (stranded)
Inner conductor diameter 1:	Copper, bare (AWG 22/19)	Copper, bare (AWG 24/19)
Inner conductor diameter 2:	Copper, bare (AWG 18/24)	Copper, bare (AWG 18/84)
Core insulation 1:	Foam-skin-PE	Foam-skin-PE
Core insulation 2:	PVC	TPM
Core colours 1:	rd, gn	rd, gn
Core colours 2:	bk, bu, gnye	bk, bk, bk, bk
Stranding element 1:	Double core	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	Foil + braid	Foil + braid
Total shielding:	Polyester foil	-
Outer sheath material:	PUR	TPU
Cable external diameter:	app. 9,7 mm ± 0,5 mm	app. 11,5 mm ± 0,3 mm
Outer sheath colour:	Petrol similar to RAL 5018	Violet similar to RAL 4001

Electrical data

Characteristic impedance:	150 Ohm ± 10 %	150 Ohm ± 15 %
Conductor resistance, max.:	73 Ohm/km	73 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	145 Ohm/km max.	145 Ohm/km max.
Mutual capacitance:	30 nF/km nom.	30 nF/km nom.
Test voltage:	1,5 kV	1,5 kV
Relative propagation velocity:	-	81 %
Attenuation:	9,6 kHz < 3,0 dB/Km 38,4 kHz < 5,0 dB/Km 4 MHz < 25,0 dB/Km 16 MHz < 52,0 dB/Km	9,6 kHz ≤ 3,0 dB/km 38,4 kHz ≤ 5,0 dB/km 4 MHz ≤ 30,0 dB/km 16 MHz ≤ 60,0 dB/km

Technical data

Weight:	app. 105 kg/km	app. 159 kg/km
bending radius, repeated:	140 mm	165 mm
Operating temperature range min.:	-5°C	-15°C
Operating temperature range max.:	+60°C	+60°C
Caloric load, approx. value:	1,973 MJ/m	2,835 MJ/m
Copper weight:	46,00 kg/km	90,00 kg/km

Norms

Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Halogen-free acc. to 60754-2	Profibus acc. to DIN 19245 T3 and EN50170 Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1
UL Style:	AWM Style 20236 AWM I/II A/B 80°C 30V FT1	UL Style 20233

Application

HELUKABEL® Profibus ET200X + Ecofast Hybrid cables are designed for continuous motion in cable carriers. The hybrid construction integrates the power supply next to the Profibus in one cable. The type ET200X offers three 0,75mm² power conductors, while the type Ecofast 4 has 1,5mm² power conductors and greater current-carrying capacity.

Part no.

82913, Profibus L2

800044, Profibus L2

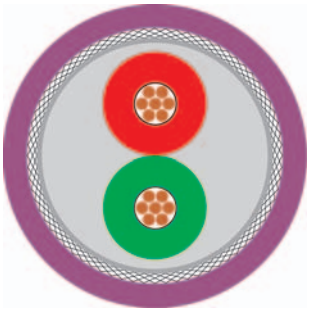
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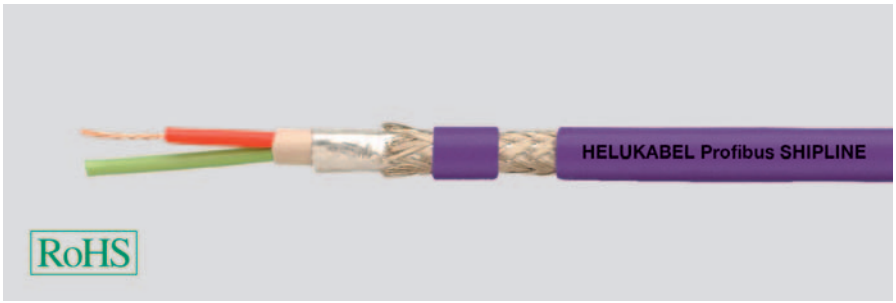
BUS Cables

Profibus

HELUKABEL

SHIPLINE and High Temperature





Type	Marine and Offshore	High temperature areas
Cable structure	**1x2x0.75 mm (stranded)**	**1x2x0.64 mm**
Inner conductor diameter:	Copper, bare (AWG 22/7)	Copper, bare (AWG 22/1)
Core insulation:	Foam-skin-PE	FEP
Core colours:	rd, gn	rd, gn
Stranding element:	Double core	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle	-
Inner sheath material:	FRNC	-
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	X-FRNC	FEP
Cable external diameter:	app. 8,0 mm ± 0,4 mm	app. 7,2 mm ± 0,3 mm
Outer sheath colour:	Violet similar to RAL 4001	Violet similar to RAL 4001
Electrical data		
Characteristic impedance:	150 Ohm ± 10 %	150 Ohm ± 10 %
Conductor resistance, max.:	55 Ohm/km	55 Ohm/km
Insulation resistance, min.:	1,6 GOhm x km	1,6 GOhm x km
Loop resistance:	110 Ohm/km max.	110 Ohm/km max.
Mutual capacitance:	29 nF/km nom.	28 nF/km nom.
Nominal voltage:	60 V	250 V
Test voltage:	1 kV	3,6 kV
Attenuation:	9,6 kHz < 2,5 dB/Km 38,4 kHz < 4,0 dB/Km 4 MHz < 22,0 dB/Km 16 MHz < 42,0 dB/Km	9,6 kHz < 2,5 dB/km 38,4 kHz < 4,0 dB/km 4 MHz < 22,0 dB/km 16 MHz < 42,0 dB/km
Technical data		
Weight:	app. 84 kg/km	app. 64 kg/km
bending radius, repeated:	80 mm	52 mm
Operating temperature range min.:	-25°C	-50°C
Operating temperature range max.:	+80°C	+180°C
Caloric load, approx. value:	1,26 MJ/m	0,30 MJ/m
Copper weight:	35,00 kg/km	24,00 kg/km
Norms		
Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to IEC 60332-3

R

Application

HELUKABEL® Profibus Shipline is designed for marine/offshore applications and **certified by German Lloyd**. Thanks to use of stranded conductors, this cable can be moved occasionally. The High-Temperature version is used in fixed installations with demanding temperature requirements, e.g. in the vicinity of a hot furnace or near welding activities.

Part no.

802178, Profibus SHIPLINE

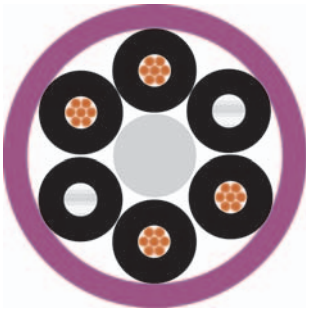
802179, Profibus high temperature

Dimensions and specifications may be changed without prior notice.

BUS Cables

DESINA®-HYBRID-BUS

hybrid





Type
Cable structure

Hybrid Bus Cable
4x1.5 mm² + 2xPOF

Conductor material	Copper, bare, KL.6 = extra fine wire
Core insulation:	TPM
Polymer optical fibre:	4x POF 980/1000
Core colours:	Black
Core identification:	Numbers
Total shielding:	PETP fleece
Outer sheath material:	TPU
Cable external diameter:	app. 8,8 mm ± 0,3 mm
Outer sheath colour:	Violet similar to RAL 4001

Electrical data

Conductor resistance, max.:	13,7 Ohm/km
Insulation resistance, min.:	0,5 GOhm x km
Test voltage:	3 kV

Optical characteristic

Fibre attenuation:	230 dB/km max. at 650 nm

Technical data

Weight:	app. 120 kg/km
bending radius, repeated:	130 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+80°C
Copper weight:	60,00 kg/km

Norms

Applicable standards:	Detail specification for DESINA®

Application

HELUKABEL® DESINA®-Hybrid-Bus is used for mobile applications in machinery. Use of a PU sheath provides excellent resistance to common mineral oils, greases and cooling lubricants in industrial automation.

Part no.

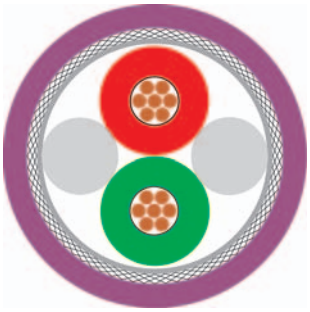
81713, DESINA® HYBRID BUS

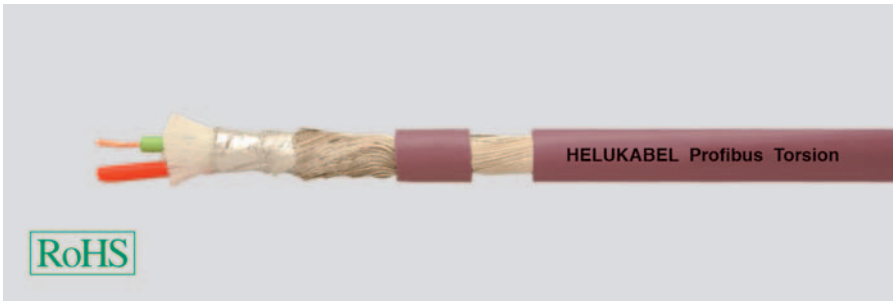
Dimensions and specifications may be changed without prior notice.

BUS Cables

Profibus L2

HELUKABEL
TORSION + FESTOON





Type Cable structure	Torsional applications 1x2x0.80 mm (stranded)	Mobile use 1x2x0.65 mm (stranded)
Inner conductor diameter:	Copper, bare (AWG 22/19)	Copper, bare (AWG 24/19)
Core insulation:	Foam-skin-PE	Cell PE
Core colours:	rd, gn	rd, gn
Stranding element:	2 cores + filler	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PUR	PVC
Cable external diameter:	app. 8,0 mm ± 0,4 mm	app. 8,0 mm ± 0,3 mm
Outer sheath colour:	Violet similar to RAL 4001	Petrol similar to RAL 5018

Electrical data

Characteristic impedance:	150 Ohm ± 10 %	150 Ohm ± 10 %
Conductor resistance, max.:	49 Ohm/km	66,5 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1,6 GOhm x km
Loop resistance:	98 Ohm/km max.	133 Ohm/km max.
Mutual capacitance:	29 nF/km nom.	28 nF/km nom.
Test voltage:	3,6 kV	2 kV
Relative propagation velocity:	-	81 %
Attenuation:	9,6 kHz < 3,0 dB/km	9,6 kHz ≤ 3,0 dB/km
	38,4 kHz < 5,0 dB/km	38,4 kHz ≤ 4,0 dB/km
	4 MHz < 25,0 dB/km	4 MHz ≤ 25,0 dB/km
	16 MHz < 51,0 dB/km	16 MHz ≤ 49,0 dB/km

Technical data

Weight:	app. 66 kg/km	app. 64 kg/km
bending radius, repeated:	100 mm	70 mm
Operating temperature range min.:	-25°C	-40°C
Operating temperature range max.:	+75°C	+60°C
Caloric load, approx. value:	0,89 MJ/m	1,09 MJ/m
Copper weight:	32,00 kg/km	23,00 kg/km

Norms

Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to EN 50265-2-1
UL Style:	CMX 75°C (shielded)	CMG 75°C or CL2 or AWM 20201 600V
CSA standard:	-	CSA FT 4

R

Application

HELUKABEL® Profibus Torsion is used in mobile applications in robots. The special torsion construction allows this cable to be twisted (torsioned) and is halogen-free thanks to use PU sheath. The Festoon version is used for hanging/moving loads in garland applications.

Part no.

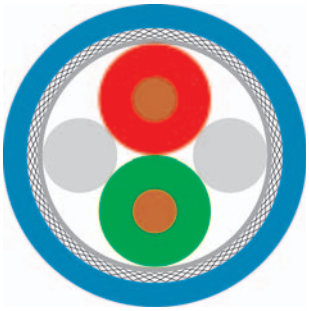
800109, Profibus L2

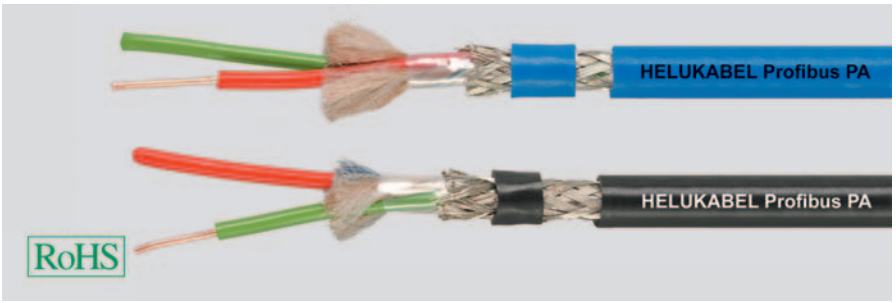
800649, Profibus L2

Dimensions and specifications may be changed without prior notice.

BUS Cables

Profibus PA





Type	Hazardous areas	Non-hazardous areas
Cable structure	**1x2x1.0/2.55 mm**	**1x2x1.0/2.55 mm**
Inner conductor diameter:	Copper, bare (AWG 18/1)	Copper, bare (AWG 18/1)
Core insulation:	PE	PE
Core colours:	rd, gn	rd, gn
Stranding element:	2 cores + 2 fillers stranded together	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PVC	PVC
Cable external diameter:	app. 7,6 mm ± 0,2 mm	app. 7,6 mm ± 0,2 mm
Outer sheath colour:	Blue	Black
Electrical data		
Characteristic impedance:	100 Ohm ± 20 %	100 Ohm ± 20 %
Conductor resistance, max.:	22 Ohm/km	22 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	44 Ohm/km max.	44 Ohm/km max.
Mutual capacitance:	60 nF/km nom.	60 nF/km nom.
Nominal voltage:	300 V	300 V
Test voltage:	2,5 kV	2,5 kV
Attenuation:	39 kHz ≤ 3,0 dB/km	39 kHz ≤ 3,0 dB/km
Technical data		
Weight:	app. 76 kg/km	app. 76 kg/km
bending radius, repeated:	140 mm	140 mm
Operating temperature range min.:	-30°C	-30°C
Operating temperature range max.:	+80°C	+80°C
Caloric load, approx. value:	0,95 MJ/m	0,95 MJ/m
Copper weight:	44,00 kg/km	44,00 kg/km
Norms		
Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to EN 50265-2-1	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to EN 50265-2-1
UL Style:	UL Style 2571	UL Style 2571

Application

HELUKABEL® Profibus PA is used for normal requirements in the process automation field (chemical industry). The colour blue identifies it as suitable for use in potentially explosive areas (and ATEX/ Class II, EX-i/ EN 60079-14). For other applications, the colour black is usually selected.

Part no.		
	82835, Profibus PA	**82836,** Profibus PA

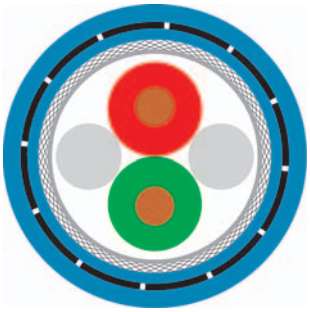
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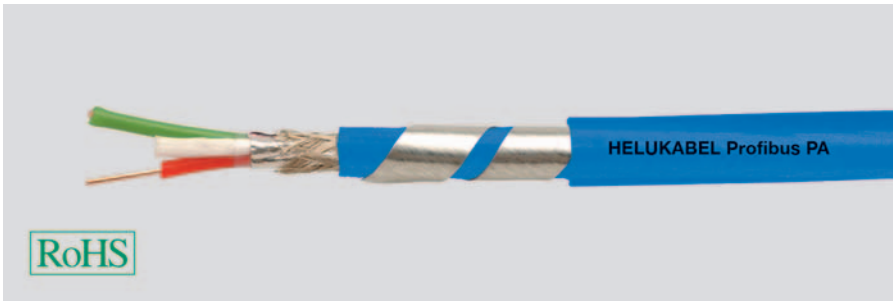
BUS Cables

Profibus PA

HELUKABEL

armoured





Type Cable structure	Hazardous areas 1x2x1.0/2.55 mm	Non-hazardous areas 1x2x1.0/2.55 mm
Inner conductor diameter:	Copper, bare (AWG 18/1)	Copper, bare (AWG 18/1)
Core insulation:	PE	PE
Core colours:	rd, gn	rd, gn
Stranding element:	2 cores + 2 fillers stranded together	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Inner sheath material:	PVC	PVC
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Armouring:	Steel band	Steel band
Outer sheath material:	PVC	PVC
Cable external diameter:	app. 10,2 mm ± 0,2 mm	app. 10,2 mm ± 0,2 mm
Outer sheath colour:	Blue	Black
Electrical data		
Characteristic impedance:	100 Ohm ± 15 %	100 Ohm ± 15 %
Conductor resistance, max.:	22 Ohm/km	22 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	44 Ohm/km max.	44 Ohm/km max.
Mutual capacitance:	55 nF/km nom.	55 nF/km nom.
Nominal voltage:	300 V	300 V
Test voltage:	2,5 kV	2,5 kV
Attenuation:	39 kHz ≤ 3,0 dB/km	39 kHz ≤ 3,0 dB/km
Technical data		
Weight:	app. 170 kg/km	app. 170 kg/km
bending radius, repeated:	140 mm	200 mm
Operating temperature range min.:	-20°C	-20°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	1,95 MJ/m	1,95 MJ/m
Copper weight:	45,00 kg/km	45,00 kg/km
Norms		
Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to EN 50265-2-1	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to EN 50265-2-1

Application

HELUKABEL® Profibus PA Armoured finds use in areas with rodent such as rats, nutria etc. but also offers additional protection against all other outside mechanical influences thanks to it steel tape armouring. The colour blue identifies it as suitable for use in potentially explosive areas (and ATEX/ Class II, EX-i/EN 60079-14). For other applications, the colour black is usually selected.

R

Part no.

802180, Profibus PA

802181, Profibus PA

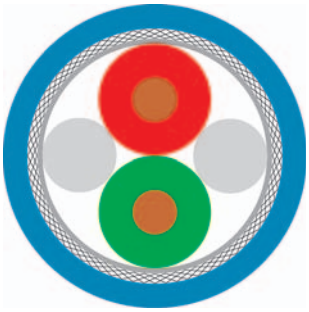
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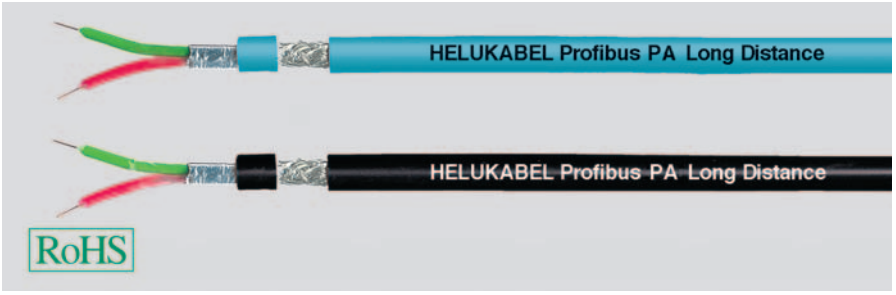
BUS Cables

Profibus PA

HELUKABEL

Long Distance





Type Cable structure	Hazardous areas 1x2x1.6/3.2 mm	Non-hazardous areas 1x2x1.6/3.2 mm
Inner conductor diameter:	Copper, bare (AWG 16/7)	Copper, bare (AWG 16/7)
Core insulation:	Foam-skin-PE	Foam-skin-PE
Core colours:	rd, gn	rd, gn
Stranding element:	2 cores + 2 fillers stranded together	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PVC	PVC
Cable external diameter:	app. 9,5 mm ± 0,3 mm	app. 9,5 mm ± 0,3 mm
Outer sheath colour:	Blue	Black
Electrical data		
Characteristic impedance:	100 Ohm ± 20 %	100 Ohm ± 20 %
Conductor resistance, max.:	24 Ohm/km	24 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	48 Ohm/km max.	48 Ohm/km max.
Mutual capacitance:	60 nF/km nom.	60 nF/km nom.
Nominal voltage:	300 V	300 V
Test voltage:	1 kV	1 kV
Attenuation:	39 kHz ≤ 2,7 dB/km	39 kHz ≤ 2,7 dB/km
Technical data		
Weight:	app. 131 kg/km	app. 131 kg/km
bending radius, repeated:	100 mm	100 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	1,57 MJ/m	1,57 MJ/m
Copper weight:	62,00 kg/km	62,00 kg/km
Norms		
Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to IEC 60332-1	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to IEC 60332-1
UL Style:	UL Style 2571	UL Style 2571

Application

HELUKABEL® Profibus PA Long Distance is used for especially long transmission distances in process networks. It uses a larger conductor cross-section to satisfy the attenuation requirements. The colour blue identifies it as suitable for use in potentially explosive areas (and ATEX/Class II, EX-i/EN 60079-14). For other applications, the colour black is usually selected.

Part no.

800650, Profibus PA

800715, Profibus PA

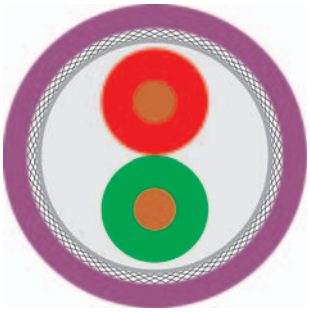
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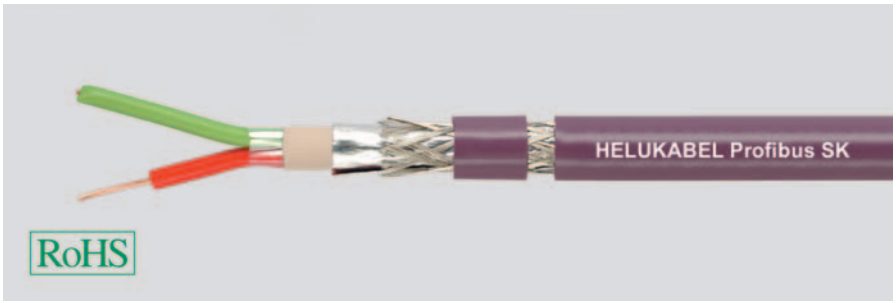
BUS Cables

Profibus SK

HELUKABEL

Indoor + Outdoor





Type	Fixed installation, indoor	Fixed installation, outdoor
Cable structure	**1x2x0.64 mm**	**1x2x0.64 mm**
Inner conductor diameter:	Copper, bare (AWG 22/1)	Copper, bare (AWG 22/1)
Core insulation:	Foam-skin-PE	Foam-skin-PE
Core colours:	rd, gn	rd, gn
Stranding element:	Double core	Double core
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Inner sheath material:	PVC	PVC
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PVC	PE
Cable external diameter:	app. 8,0 mm ± 0,4 mm	app. 8,0 mm ± 0,4 mm
Outer sheath colour:	Violet similar to RAL 4001	Black similar to RAL 9005
Electrical data		
Characteristic impedance:	150 Ohm ± 10 %	150 Ohm ± 10 %
Conductor resistance, max.:	55 Ohm/km	55 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	110 Ohm/km max.	110 Ohm/km max.
Mutual capacitance:	35 nF/km nom.	35 nF/km nom.
Test voltage:	1,5 kV	1,5 kV
Attenuation:	9,6 kHz < 2,5 dB/km	9,6 kHz < 2,5 dB/km
	38,4 kHz < 4,0 dB/km	38,4 kHz < 4,0 dB/km
	4,0 MHz < 22,0 dB/km	4 MHz < 22,0 dB/km
	16,0 MHz < 42,0 dB/km	16 MHz < 42,0 dB/km
Technical data		
Weight:	app. 79 kg/km	app. 65 kg/km
bending radius, repeated:	120 mm	120 mm
Operating temperature range min.:	-40°C	-20°C
Operating temperature range max.:	+80°C	+70°C
Caloric load, approx. value:	1,068 MJ/m	1,451 MJ/m
Copper weight:	24,00 kg/km	24,00 kg/km
Norms		
Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170	Profibus acc. to DIN 19245 T3 and EN50170
	Flame-retardant acc. to IEC 60332-3	Halogen-free acc. to 60754-2
UL Style:	CMG 75°C or CL3 or AWM 21694 600V	-
CSA standard:	CSA FT 4	-

R

Application

HELUKABEL® Profibus SK Indoor + Outdoor have a special structure for processing with the Fast Connect Stripping Tool from Siemens. The indoor version is used for normal requirements in fixed installation applications in equipment; the Outdoor version is used in open-air applications, i.e. can withstand wind, weather and sun (not for burial directly in the ground).

Part no.

81903, Profibus SK

81904, Profibus SK

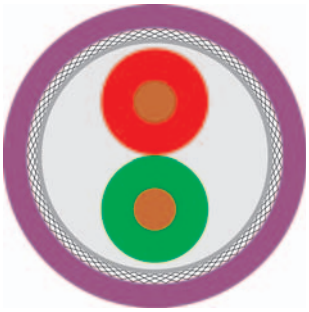
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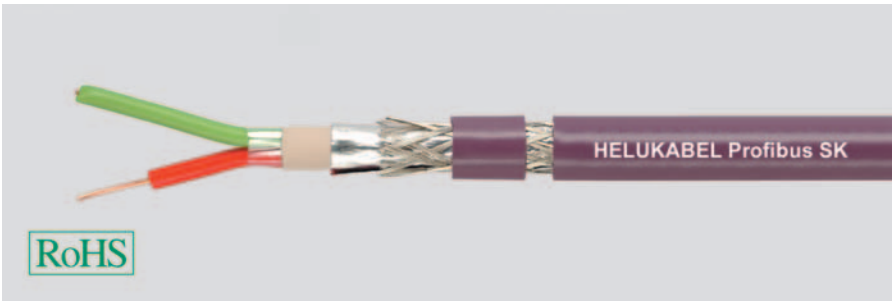
BUS Cables

Profibus SK

HELUKABEL

FRNC + Robust





Type Cable structure	Fixed installation, indoor 1x2x0.64 mm	Industrial Area 1x2x0.64 mm
Inner conductor diameter:	Copper, bare (AWG 22/1)	Copper, bare (AWG 22/1)
Core insulation:	Foam-skin-PE	Foam-skin-PE
Core colours:	rd, gn	rd, gn
Stranding element:	Double core	Double core
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Inner sheath material:	FRNC	FRNC
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	FRNC	PUR
Cable external diameter:	app. 8,0 mm ± 0,4 mm	app. 8,0 mm ± 0,4 mm
Outer sheath colour:	Violet similar to RAL 4001	Violet similar to RAL 4001

Electrical data

Characteristic impedance:	150 Ohm ± 10 %	150 Ohm ± 10 %
Conductor resistance, max.:	55 Ohm/km	55 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	110 Ohm/km max.	110 Ohm/km max.
Mutual capacitance:	35 nF/km nom.	35 nF/km nom.
Test voltage:	1,5 kV	1,5 kV
Attenuation:	9,6 kHz < 2,5 dB/km 38,4 kHz < 4,0 dB/km 4 MHz < 22,0 dB/km 16 MHz < 42,0 dB/km	9,6 kHz < 2,5 dB/km 38,4 kHz < 4,0 dB/km 4 MHz < 22,0 dB/km 16 MHz < 42,0 dB/km

Technical data

Weight:	app. 73 kg/km	app. 71 kg/km
bending radius, repeated:	160 mm	120 mm
Operating temperature range min.:	-25°C	-40°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	1,203 MJ/m	1,574 MJ/m
Copper weight:	24,00 kg/km	24,00 kg/km

Norms

Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Halogen-free acc. to 60754-2 Flame-retardant acc. to EN 50265-2-1	Profibus acc. to DIN 19245 T3 and EN50170 Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1
UL Style:	CM 750C (shielded)	AWM Style 20236 AWM I/II A/B 80°C 30V FT1
CSA standard:	-	CSA FT1

Application

HELUKABEL® Profibus SK FRNC + Robust has a special structure for processing with the Fast Connect Stripping Tool from Siemens. The FRNC version is used to satisfy halogen-free and flame-retardent requirements in buildings. The Rpbust version is used in harsh industrial environments and offers excellent resistance to mineral oils, greases and cooling lubricants.

Part no.

81501, Profibus SK

81905, Profibus SK

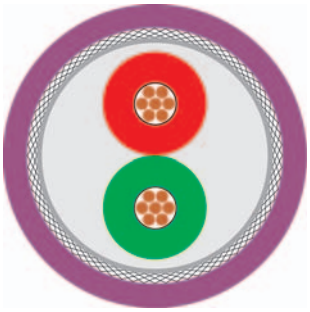
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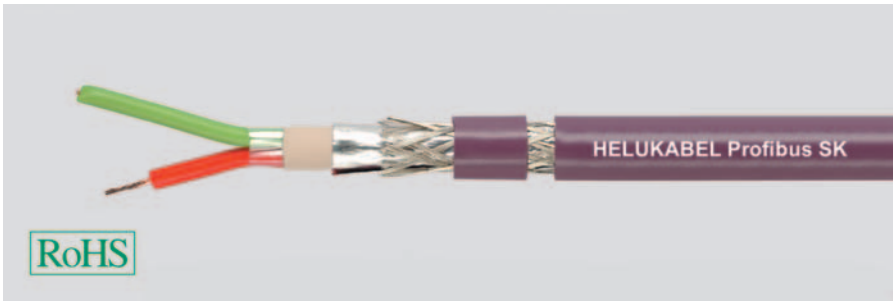
BUS Cables

Profibus SK

HELUKABEL

Drag Chain





Type Cable structure	Drag chain applications 1x2x0.65 mm (stranded)	Drag chain applications 1x2x0.65 mm (stranded)
Inner conductor diameter:	Copper, bare (AWG 24/19)	Copper, bare (AWG 24/19)
Core insulation:	Foam-skin-PE	Foam-skin-PE
Core colours:	rd, gn	rd, gn
Stranding element:	Double core	Double core
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Inner sheath material:	PVC	PVC
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PUR	PUR
Cable external diameter:	app. 8,0 mm ± 0,4 mm	app. 8,0 mm ± 0,4 mm
Outer sheath colour:	Violet similar to RAL 4001	Petrol similar to RAL 5018

Electrical data

Characteristic impedance:	150 Ohm ± 10 %				150 Ohm ± 10 %	
Conductor resistance, max.:	67 Ohm/km				67 Ohm/km	
Insulation resistance, min.:	1 GOhm x km				1 GOhm x km	
Loop resistance:	134 Ohm/km max.				134 Ohm/km max.	
Mutual capacitance:	35 nF/km nom.				35 nF/km nom.	
Test voltage:	1,5 kV				1,5 kV	
Attenuation:	9,6	kHz	< 3,0	dB/km	9,6	kHz < 3,0 dB/km
	38,4	kHz	< 5,0	dB/km	38,4	kHz < 5,0 dB/km
	4	MHz	< 25,0	dB/km	4	MHz < 25,0 dB/km
	16	MHz	< 52,0	dB/km	16	MHz < 52,0 dB/km

Technical data

Weight:	app. 70 kg/km	app. 70 kg/km
bending radius, repeated:	100 mm	100 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	1,53 MJ/m	1,53 MJ/m
Copper weight:	25,00 kg/km	25,00 kg/km

Norms

Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to IEC 60332-1	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to IEC 60332-1
UL Style:	CMX 75°C (shielded)	CMX 75°C (shielded)
CSA standard:	CSA FT1	CSA FT1

R

Application

HELUKABEL® Profibus SK drag chain is designed for continous motion in cable carriers and has a special structure for processing with the Fast Connect Stripping Tool from Siemens. Thanks to the PU sheath, it also offers excellent resistance to common mineral oils, greases and cooling lubricants. Depending on the application, the colour petrol or violet is availiable.

Part no.

801659, Profibus SK	**81906,** Profibus SK

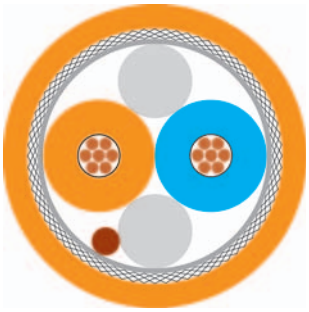
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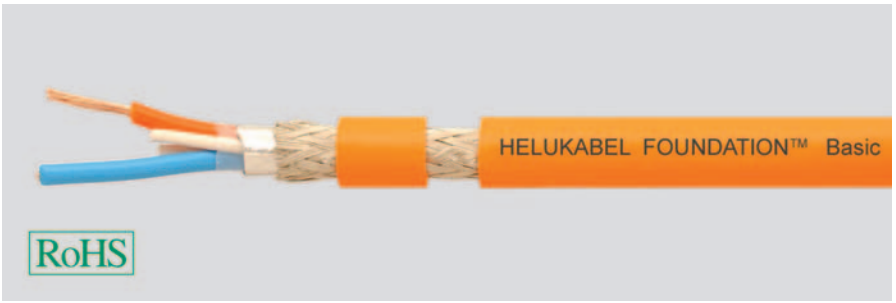
BUS Cables

FOUNDATION™ Fieldbus

HELUKABEL

Basic





Type
Cable structure

process automation
1x2x1.1/2,55-100 LI

Inner conductor diameter:	Copper, bare (AWG 18/7)
Core insulation:	PO
Core colours:	or, bl
Stranding element:	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned
Drain wire:	yes
Outer sheath material:	PVC
Cable external diameter:	app. 8,0 mm ± 0,3 mm
Outer sheath colour:	Orange

Electrical data

Characteristic impedance:	100 Ohm ± 20 Ohm
Conductor resistance, max.:	22 Ohm/km
Insulation resistance, min.:	5 GOhm x km
Loop resistance:	44 Ohm/km max.
Mutual capacitance:	60 nF/km nom.
Nominal voltage:	300 V
Test voltage:	1,5 kV
Attenuation:	39 kHz ≤ 3,4 dB/km

Technical data

Weight:	app. 85 kg/km
bending radius, repeated:	80 mm
Operating temperature range min.:	-40°C
Operating temperature range max.:	+80°C
Caloric load, approx. value:	1,22 MJ/m
Copper weight:	45,00 kg/km

Norms

Applicable standards:	Foundation Fieldbus Spec. FF-816-1.4 Flame-retardant acc. to IEC 60332-3
UL Style:	CMG 75°C PLTC FT4
CSA standard:	CSA FT 4

Application

HELUKABEL® FOUNDATION™ Fieldbus Basic for normal requirements in this industrial networks. Thanks to use of stranded conductors, this cable can be moved occasionally and satisfies the usual American requirements for such networks.

Part no.

803354, Foundation™ Fieldbus Basic

Dimensions and specifications may be changed without prior notice.

BUS Cables

FOUNDATION™ Fieldbus

HELUKABEL

Type A + gnye





Type
process automation
Cable structure
1x2x1.1/2,85-100 LI + 1x0,8 gnye

Inner conductor diameter 1:	Copper, bare (AWG 18/41)
Inner conductor diameter 2:	Copper, bare (AWG 18/41)
Core insulation 1:	XLPE ray cross-linking
Core insulation 2:	PVC
Core colours 1:	bu, bn
Core colours 2:	gn/ye
Stranding element 1:	Double core
Shielding 1:	-
Shielding 2:	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned
Drain wire:	yes
Outer sheath material:	PVC
Cable external diameter:	app. 7,9 mm ± 0,3 mm
Outer sheath colour:	Yellow

Electrical data

Characteristic impedance:	100 Ohm ± 20 Ohm
Conductor resistance, max.:	24 Ohm/km
Insulation resistance, min.:	2 GOhm x km
Loop resistance:	48 Ohm/km max.
Mutual capacitance:	65 nF/km nom.
Nominal voltage:	300 V
Test voltage:	1,5 kV
Attenuation:	39 kHz ≤ 3,4 dB/km

Technical data

Weight:	app. 84 kg/km
bending radius, repeated:	80 mm
Operating temperature range min.:	-25°C
Operating temperature range max.:	+105°C
Caloric load, approx. value:	1,00 MJ/m
Copper weight:	49,00 kg/km

Norms

Applicable standards:	Foundation Fieldbus Spec. FF-816-1.4 Flame-retardant acc. to IEC 60332-3
UL Style:	CMG 105° or CL3 FT4
CSA standard:	CSA FT 4

R

Application

HELUKABEL® FOUNDATION™ Fieldbus Type A + gnge offers an additional conductor in the structure in compliance with the FF specification. Thanks to use of stranded conductors, this cable can be moved occasionally and satisfies the usual American requirements for such networks.

Part no.

801191, Foundation Fieldbus FF A

Dimensions and specifications may be changed without prior notice.

BUS Cables

FOUNDATION™ Fieldbus

HELUKABEL

Type A armoured





Type
process automation
Cable structure
1x2x1.1/2,85-100 LI + 1x0,8 gnye, armoured

Inner conductor diameter 1:	Copper, bare (AWG 18/41)
Inner conductor diameter 2:	Copper, bare (AWG 18/37)
Core insulation 1:	XLPE ray cross-linking
Core insulation 2:	PVC
Core colours 1:	bu, bn
Core colours 2:	gn/ye
Stranding element 1:	Double core
Shielding 1:	-
Shielding 2:	Polyester foil, aluminium-lined
Total shielding:	Polyester foil, aluminium-lined
Drain wire:	yes
Armouring:	Corrugated copper tube
Outer sheath material:	PVC
Cable external diameter:	app. 12,3 mm ± 0,3 mm
Outer sheath colour:	Yellow

Electrical data

Characteristic impedance:	100 Ohm ± 20 Ohm
Conductor resistance, max.:	24 Ohm/km
Insulation resistance, min.:	2 GOhm x km
Loop resistance:	48 Ohm/km max.
Mutual capacitance:	65 nF/km nom.
Nominal voltage:	300 V
Test voltage:	1,5 kV
Attenuation:	39 kHz ≤ 3,4 dB/km

Technical data

Weight:	app. 187 kg/km
bending radius, repeated:	130 mm
Operating temperature range min.:	-25°C
Operating temperature range max.:	+105°C
Caloric load, approx. value:	1,65 MJ/m
Copper weight:	125,00 kg/km

Norms

Applicable standards:	Foundation Fieldbus Spec. FF-816-1.4 Flame-retardant acc. to IEC 60332-3
UL Style:	CMG 105°C or PLTC FT4 Sun Res
CSA standard:	CSA FT 4

Application

HELUKABEL® FOUNDATION™ Type A Armoured finds use in areas with rodents such as rats, nutria etc. but also offers additional protection against all other outside mechanical influences thanks to its corrugated tape armouring. Thanks to use of stranded conductors, this cable can be moved occasionally and satisfies the usual American requirements for such networks.

Part no.

801192, Foundation Fieldbus FF A

Dimensions and specifications may be changed without prior notice.

BUS Cables

FOUNDATION™ Fieldbus

HELUKABEL

Type A





Type
process automation

Cable structure
1x2x1.1/2,85-100 LI

Inner conductor diameter:	Copper, bare (AWG 18/37)
Core insulation:	XLPE ray cross-linking
Core colours:	bu, bn
Stranding element:	Double core
Shielding 1:	-
Shielding 2:	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned
Drain wire:	yes
Outer sheath material:	PVC
Cable external diameter:	app. 7,9 mm ± 0,3 mm
Outer sheath colour:	Yellow

Electrical data

Characteristic impedance:	100 Ohm ± 20 Ohm
Conductor resistance, max.:	24 Ohm/km
Insulation resistance, min.:	2 GOhm x km
Loop resistance:	48 Ohm/km max.
Mutual capacitance:	65 nF/km nom.
Nominal voltage:	300 V
Test voltage:	1,5 kV
Attenuation:	39 kHz ≤ 3,4 dB/km

Technical data

Weight:	app. 89 kg/km
bending radius, repeated:	80 mm
Operating temperature range min.:	-40°C
Operating temperature range max.:	+105°C
Caloric load, approx. value:	1,05 MJ/m
Copper weight:	42,00 kg/km

Norms

Applicable standards:	Foundation Fieldbus Spec. FF-816-1.4 Flame-retardant acc. to IEC 60332-3
UL Style:	CMG 105° or CL3 FT4
CSA standard:	CSA FT 4

Application

HELUKABEL® FOUNDATION™ Fieldbus Type A for normal requirements in this industrial network. Thanks to use of stranded conductors, this cable can be moved occasionally and satisfies the usual American requirements for such networks.

R

Part no.

801193, Foundation Fieldbus FF A

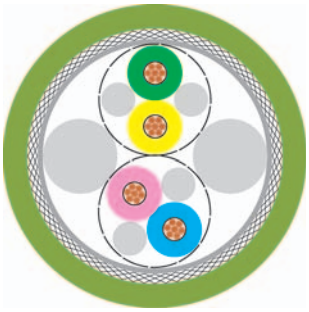
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BUS Cables

HMCB200

HELUKABEL

fixed installed





Type
Cable structure

Fixed installation, indoor
2x2x0,22qmm

Inner conductor diameter:	Copper, bare (AWG 22/7)
Core insulation:	Foam-skin-PE
Core colours:	gn, ye, pk, bu
Stranding element:	Double core
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned
Outer sheath material:	PVC
Cable external diameter:	app. 6,8 mm ± 0,15 mm
Outer sheath colour:	Green similar to RAL 6018

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz
Conductor resistance, max.:	90 Ohm/km
Insulation resistance, min.:	1 GOhm x km
Loop resistance:	180 Ohm/km max.
Mutual capacitance:	50 nF/km nom.
Test voltage:	0,5 kV

Typical values

Frequency	(MHz)	10	16	62,5	100
Attenuation	(db/100m)	8,0	10,0	20,0	27,0
Next	(db)	47,0	44,0	35,0	32,0
ACR	(db)	39,0	34,0	15,0	5,0

Technical data

Weight:	app. 63 kg/km
bending radius, repeated:	70 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+80°C
Caloric load, approx. value:	0,92 MJ/m
Copper weight:	35,00 kg/km

Norms

Applicable standards:	Flame-retardant acc. to IEC 60332-1
UL Style:	AWM Style 2502 AWM I/II A/B 80°C 30V FT1

Application

HELUKABEL® HMCB200 for fixed installation and slight occasional movement, range up to 100m. This cable is used in Siemens Systems. Typical plugs are RJ45 Industrial IP20 Siemens or Y-Con RJ45 Yamaichi or round M-Connectors from Molex.

Part no.

802471, HMCB200

Dimensions and specifications may be changed without prior notice.

* Drive Cliq is registered trademark from Siemens AG.

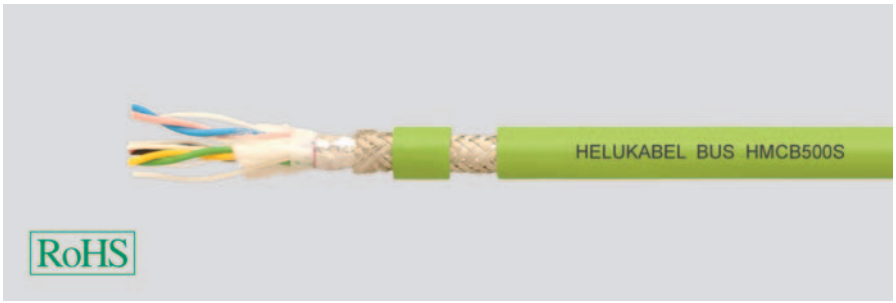
BUS Cables

HMCB500S

HELUKABEL

Drag Chain





Type
Cable structure

Drag chain applications
2x2xAWG24 + 1x2xAWG22

Inner conductor diameter 1:	Copper, bare (AWG 24/7)
Inner conductor diameter 2:	Copper, tinned (AWG 22/19)
Core insulation 1:	Foam-skin-PE
Core insulation 2:	PE
Core colours 1:	gn, ye, pk, bu
Core colours 2:	rd, bk
Stranding element 1:	Double core
Shielding 1:	-
Shielding 2:	-
Total shielding:	Foil + braid
Outer sheath material:	PVC
Cable external diameter:	app. 6,95 mm ± 0,15 mm
Outer sheath colour:	Green similar to RAL 6018

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz
Conductor resistance, max.:	90 Ohm/km
Insulation resistance, min.:	1 GOhm x km
Loop resistance:	180 Ohm/km max.
Mutual capacitance:	50 nF/km nom.
Test voltage:	0,5 kV

Typical values

Frequency	(MHz)	10	16	62,5	100
Attenuation	(db/100m)	10,0	12,0	23,0	30,0
Next	(db)	47,0	44,0	35,0	32,0
ACR	(db)	37,0	36,0	12,0	2,0

Technical data

Weight:	app. 66 kg/km
bending radius, repeated:	125 mm
Operating temperature range min.:	0°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,00 MJ/m
Copper weight:	38,00 kg/km

Norms

Applicable standards:	Flame-retardant acc. to IEC 60332-1
UL Style:	AWM Style 2502 AWM I/II A/B 80°C 30V FT1
CSA standard:	CSA FT1

R

Application

HELUKABEL® HMCB500S is designed for occasional moving in cable carriers and ranges up to 100m without repeater. This cable is used in Siemens Systems.
Typical plugs are RJ45 Industrial IP20 Siemens or Y-Con RJ45 Yamaichi or round M-Connectors from Molex.

Part no.

803672, HMCB500S

Dimensions and specifications may be changed without prior notice.

* Drive Cliq is registered trademark from Siemens AG.

BUS Cables

HMCB800

HELUKABEL

Drag Chain





Type
Cable structure

Drag chain applications
2x2x0,20qmm + 1x2x0,38qmm

Inner conductor diameter 1:	Copper, bare (AWG 25/19)
Inner conductor diameter 2:	Copper, tinned (AWG 22/19)
Core insulation 1:	PE
Core insulation 2:	PE
Core colours 1:	gn, ye, pk, bu
Core colours 2:	rd, bk
Stranding element 1:	Double core
Shielding 1:	-
Shielding 2:	-
Total shielding:	Foil + braid
Outer sheath material:	PUR
Cable external diameter:	app. 6,95 mm ± 0,15 mm
Outer sheath colour:	Green similar to RAL 6018

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz
Conductor resistance, max.:	100 Ohm/km
Insulation resistance, min.:	1 GOhm x km
Loop resistance:	270 Ohm/km max.
Mutual capacitance:	50 nF/km nom.
Test voltage:	0,5 kV

Typical values

Frequency	(MHz)	10	16	62,5	100
Attenuation	(db/100m)	8,0	10,0	20,0	27,0
Next	(db)	47,0	44,0	35,0	32,0
ACR	(db)	39,0	34,0	15,0	5,0

Technical data

Weight:	app. 61 kg/km
bending radius, repeated:	75 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,90 MJ/m
Copper weight:	40,00 kg/km

Norms

Applicable standards:	Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1
UL Style:	AWM Style 20236 AWM I/II A/B 80°C 30V FT1
CSA standard:	CSA FT1

Application

HELUKABEL® HMCB800W is designed for the most demanding continous moving requirements in cable carriers and ranges up to 70 m without repeater. This cable is ideal solution in Siemens systems.
Typical plugs are RJ45 Industrial IP20 Siemens or Y-Con RJ45 Yamaichi or round M-Connectors from Molex.

Part no.

804767, HMCB800

Dimensions and specifications may be changed without prior notice.

BUS Cables

USB Bus S

HELUKABEL

Drag Chain





Type
Cable structure

Drag chain applications
1x2xAWG28 + 1x2xAWG20

Inner conductor diameter 1:	Copper, tinned (AWG 28/19)
Inner conductor diameter 2:	Copper, tinned (AWG 20/64)
Core insulation 1:	PP
Core insulation 2:	PP
Core colours 1:	wh, gn
Core colours 2:	rd, bk
Stranding element 1:	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	-
Total shielding:	Foil + braid
Outer sheath material:	PUR
Cable external diameter:	app. 5,0 mm ± 0,2 mm
Outer sheath colour:	Violet similar to RAL 4001

Electrical data

Characteristic impedance:	90 Ohm ± 15 %
Conductor resistance, max.:	230 Ohm/km
Insulation resistance, min.:	0,1 GOhm x km
Loop resistance:	460 Ohm/km max.
Mutual capacitance:	60 nF/km nom.
Test voltage:	0,5 kV

Typical values

Frequency	(MHz)	10	16	62,5	100	200	300	400
Attenuation	(db/100m)	10,1	15,4	31,0	39,7	60,2	76,2	99,7

Technical data

Weight:	app. 45 kg/km
bending radius, repeated:	50 mm
Operating temperature range min.:	-30°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,55 MJ/m
Copper weight:	30,00 kg/km

Norms

Applicable standards:	USB-Standard 2.0 Halogen-free acc. to 60754-2 Flame-retardant CSA FT1
UL Style:	AWM 20963 (80°C/30V)
CSA standard:	CSA FT1

Application

HELUKABEL® USB BUS S is designed for continous moving in cable carriers and lengths up to max. 5m. Conventional USB cables fail within a short period of time, which is why HELUKABEL developed this special cable. Thanks to the PU sheath, it also offers excellent resistance to common mineral oils, greases and cooling lubricants.

Part no.

802469, USB S

Dimensions and specifications may be changed without prior notice.

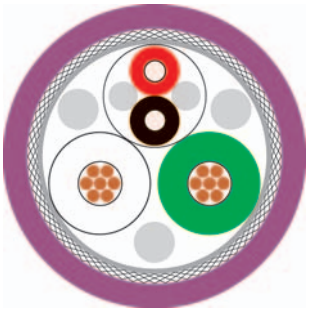
R

BUS Cables

USB Bus L

HELUKABEL

Drag Chain





Type
Cable structure

Drag chain applications
1x2xAWG24 + 1x2xAWG20

Inner conductor diameter 1:	Copper, tinned (AWG 24/19)
Inner conductor diameter 2:	Copper, tinned (AWG 20/19)
Core insulation 1:	PO
Core insulation 2:	PVC
Core colours 1:	wh, gn
Core colours 2:	rd, bk
Stranding element 1:	Double core
Shielding 1:	-
Shielding 2:	-
Total shielding:	Foil + braid
Drain wire:	yes
Outer sheath material:	PUR
Cable external diameter:	app. 6,3 mm ± 0,2 mm
Outer sheath colour:	Violet similar to RAL 4001

Electrical data

Characteristic impedance:	90 Ohm ± 15 %
Conductor resistance, max.:	36 Ohm/km
Insulation resistance, min.:	0,2 GOhm x km
Loop resistance:	71 Ohm/km max.
Mutual capacitance:	50 nF/km nom.
Nominal voltage:	300 V
Test voltage:	2 kV

Typical values

Frequency	(MHz)	1	24	48	96	200	400
Attenuation	(db/100m)	4,0	19,0	27,0	38,0	64,0	116,0

Technical data

Weight:	app. 56 kg/km
bending radius, repeated:	95 mm
Operating temperature range min.:	-30°C
Operating temperature range max.:	+70°C
Caloric load, approx. value:	0,57 MJ/m
Copper weight:	40,00 kg/km

Norms

Applicable standards:	USB-Standard 2.0 Flame-retardant acc. to IEC 60332-1
UL Style:	AWM 21198 (80°C/ 300V)

Application

HELUKABEL® USB BUS L is designed for continous motion in cable carriers and lengths up to max. 10m without a repeater. Conventional USB cables fail within a short period of time and need a repeater after a cable length of 5m, which is why HELUKABEL developed this special cable with a larger cross-section. Thanks to the PU sheath, it also offers excellent resistance to common mineral oils, greases and cooling lubricants.

Part no.

802470, USB L

Dimensions and specifications may be changed without prior notice.

BUS Cables

USB Bus 3.0

HELUKABEL

Drag Chain





Type
Cable structure

Drag chain applications
2x2xAWG28 + 2x(1x2xAWG28)

Inner conductor diameter 1:	Copper, tinned (AWG 28/19)
Inner conductor diameter 2:	Copper, tinned (AWG 28/19)
Core insulation 1:	Foam-skin-PE
Core insulation 2:	PE
Core colours 1:	bu/ye, or/vio
Core colours 2:	rd/bk, gn/gnwh
Stranding element 1:	Double core
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	Foil + braid
Total shielding:	Cu braid, tinned
Outer sheath material:	PUR
Cable external diameter:	app. 6,5 mm ± 0,3 mm
Outer sheath colour:	Violet similar to RAL 4001

Electrical data

Characteristic impedance:	90 Ohm ± 20 % 105 Ohm ± 15% at 1 MHz
Conductor resistance, max.:	205 Ohm/km
Insulation resistance, min.:	2 GOhm x km
Loop resistance:	410 Ohm/km max.
Mutual capacitance:	60 nF/km nom.
Test voltage:	0,7 kV
Relative propagation velocity:	75 %

Typical values

Frequency	(MHz)	1	625	1200
Attenuation	(db/100m)	4,0	115	180

Technical data

Weight:	app. 62 kg/km
bending radius, repeated:	55 mm
Operating temperature range min.:	-30°C
Operating temperature range max.:	+70°C
Caloric load, approx. value:	0,69 MJ/m
Copper weight:	42,00 kg/km

Norms

Applicable standards:	USB-Standard 3.0 Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1
UL Style:	AWM Style 20236 AWM I/II A/B 80°C 30V FT1
CSA standard:	CSA FT1

R

Application

HELUKABEL® USB S 3.0, designed specifically for use in heavy-duty industries, are the ideal solution for highly-flexible applications such as drag chains and camera technology. They guarantee superior transmission properties. The transmission distance is connected with the transmission rate.

Part no.

805287, USB S

Dimensions and specifications may be changed without prior notice.

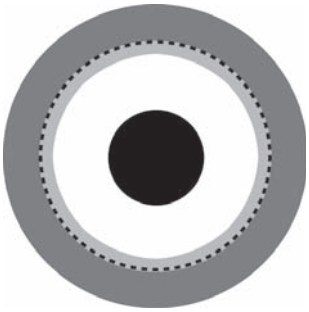
BUS Cables

Coax 50 Ohm, PUR

HELUKABEL®

Drag Chain

NEW





Cable structure

19x0,18/ 2,95mm 50 Ohm

Inner conductor material:	Copper, bare
Inner conductor diameter:	0.9 mm
Outer conductor material:	Copper, tinned
Outer conductor form:	Screening
Dialektrikum:	PP
Total shielding:	Cu braid, vz
Sheat material:	PUR (Polyurethan)
External diameter:	app. 5,4 mm ± 0,2 mm
Sheat colour:	black

Electrical data

Characteristic impedance:	50 Ohm ± 2 Ohm
Conductor resistance, max.:	38 Ohm/km
Insulation resistance, min.:	1 GOhm x km
Test voltage:	2 kV
Relative propagation velocity:	67 %

Typical values

Frequency	(MHz)	50	100	200	300	500	800	900	1000	1800	2000
Attenuation	(db/100m)	11,5	16,5	24,0	30,0	40,0	52,0	59,0	65,0	105,0	112,0

Technical data

Weight:	app. 45 kg/km
bending radius, repeated:	54 mm
Operating temperature range max.:	+50°C
Laying temperature range min.:	-20°C
Laying temperature range max.:	+50°C
Copper weight:	23,00 kg/km

Norms

Applicable standards: Halogen-free acc. to 60754-2

Application

This Coax cable, designed specifically for use in heavy-duty industries, is the ideal solution for highly-flexible applications such as drag chains. It guarantee superior transmission properties.

Part no.

804299, Coax, Drag Chain

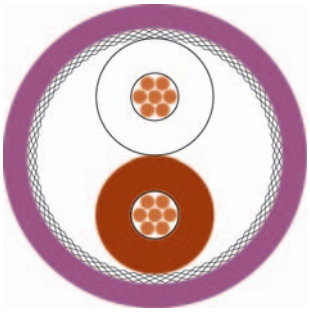
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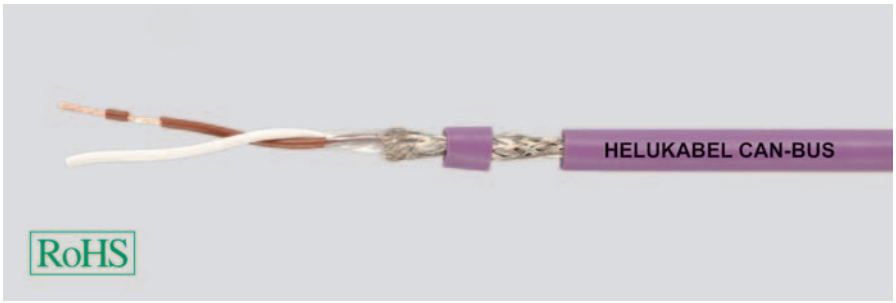
BUS Cables

CAN Bus

HELUKABEL

fixed installed





Type Cable structure	Fixed installation, indoor 1x2x0.22 mm² (stranded)	Fixed installation, indoor 4x1x0.22 mm² (stranded)
Inner conductor diameter:	Copper, bare (AWG 24/7)	Copper, bare (AWG 24/7)
Core insulation:	Cell PE	Cell PE
Core colours:	wh/bn	wh, bn, gn, ye
Stranding element:	Double core	Star quad
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	-	-
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PVC	PVC
Cable external diameter:	app. 5,4 mm ± 0,2 mm	app. 6,9 mm ± 0,2 mm
Outer sheath colour:	Violet similar to RAL 4001	Violet similar to RAL 4001
Electrical data		
Characteristic impedance:	120 Ohm ± 10 %	120 Ohm ± 10 %
Conductor resistance, max.:	88 Ohm/km	88 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	175 Ohm/km max.	175 Ohm/km max.
Mutual capacitance:	58 nF/km nom.	58 nF/km nom.
Nominal voltage:	30 V	30 V
Test voltage:	1,5 kV	1,5 kV
Technical data		
Weight:	app. 41 kg/km	app. 60 kg/km
bending radius, repeated:	81 mm	107 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	0,574 MJ/m	1,234 MJ/m
Copper weight:	17,00 kg/km	21,00 kg/km
Norms		
Applicable standards:	CAN Bus acc. to ISO 11898-2 Flame-retardant acc. to EN 50265-2-1	CAN Bus acc. to ISO 11898-2 Flame-retardant acc. to EN 50265-2-1
UL Style:	UL Style 2571	UL Style 2571

Application

HELUKABEL® CAN Bus for fixed installation and occasional motion, for normal requirements. The 2-pair version is designed with star-quad twisting, i.e. diagonal conductors form an electrial pair and satisfy the requirements of the CAN Standard. For cable lengths up to max. 40m (observe CAN specifications).

Part no.		
	81286, CAN BUS	**81287,** CAN BUS

Dimensions and specifications may be changed without prior notice.

R

BUS Cables

CAN Bus

HELUKABEL
fixed installed





Type
Cable structure

Fixed installation, indoor
2x2x0.22 mm² (stranded)

Inner conductor diameter:	Copper, bare (AWG 24/7)
Core insulation:	Cell PE
Core colours:	wh/bn, gn/ye
Stranding element:	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	-
Total shielding:	Cu braid, tinned
Outer sheath material:	PVC
Cable external diameter:	app. 7,5 mm ± 0,3 mm
Outer sheath colour:	Violet similar to RAL 4001

Electrical data

Characteristic impedance:	120 Ohm ± 10 %
Conductor resistance, max.:	87,6 Ohm/km
Insulation resistance, min.:	5 GOhm x km
Loop resistance:	175 Ohm/km max.
Mutual capacitance:	40 nF/km nom.
Nominal voltage:	30 V
Test voltage:	1,5 kV

Technical data

Weight:	app. 60 kg/km
bending radius, repeated:	113 mm
Operating temperature range min.:	-25°C
Operating temperature range max.:	+70°C
Caloric load, approx. value:	1,13 MJ/m
Copper weight:	32,00 kg/km

Norms

Applicable standards:	CAN Bus acc. to ISO 11898-2 Flame-retardant acc. to IEC 60332-1
UL Style:	UL Style 2571
CSA standard:	CSA FT1

Application

HELUKABEL® CAN BUS for fixed installation and occasion motion, for normal requirements. The two signal pairs are provided in the form twisted pais. As a result, the diameter is somewhat larger than that of 81287. In the event of diameter problems, please see this type. For cable lengths up to max. 40m (observe CAN specifications).

Part no.

82509, CAN BUS

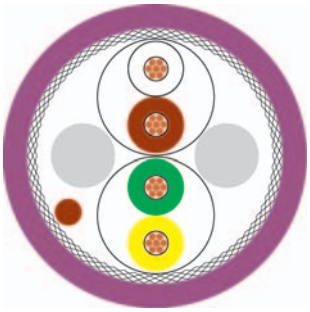
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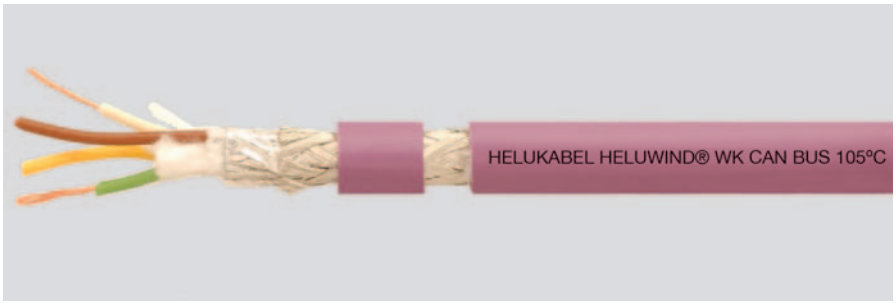
BUS Cables

CAN Bus

HELUKABEL

fixed installed, 105°C





Type
Cable structure

Industrial Area
2x2xAWG 24/19 mm² (stranded)

Inner conductor diameter:	Copper, bare (AWG 24/19)
Core insulation:	XLPE ray cross-linking
Core colours:	wh/bn, gn/ye
Stranding element:	Double core
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	-
Total shielding:	Cu braid, tinned
Outer sheath material:	PUR
Cable external diameter:	app. 8,4 mm ± 0,3 mm
Outer sheath colour:	Violet similar to RAL 4001

Electrical data

Characteristic impedance:	120 Ohm ± 10 %
Conductor resistance, max.:	87,2 Ohm/km
Insulation resistance, min.:	1 GOhm x km
Loop resistance:	174 Ohm/km max.
Mutual capacitance:	42 nF/km nom.
Nominal voltage:	600 V
Test voltage:	2,5 kV

Technical data

Weight:	app. 80 kg/km
bending radius, repeated:	126 mm
Operating temperature range min.:	-40°C
Operating temperature range max.:	+105°C *
Caloric load, approx. value:	1,31 MJ/m
Copper weight:	40,00 kg/km

Norms

Applicable standards:	CAN Bus acc. to ISO 11898-2 Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1
UL Style:	UL/CSA 21223 80°C, 600V

Application

HELUKABEL® CAN Bus for fixed installation up to 105°C in difficult industrial environments with demanding temperature requirements thanks to cross-linking of the conductor insulation. Thanks to use a PU sheath, this version is also halogen-free. For cable lengths up to max. 40m (observe CAN specifications).

R

Part no.

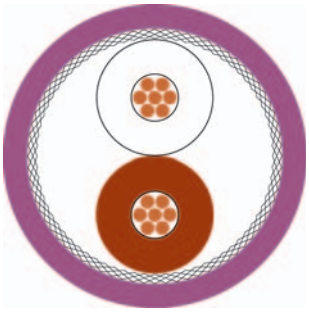
801982, CAN BUS

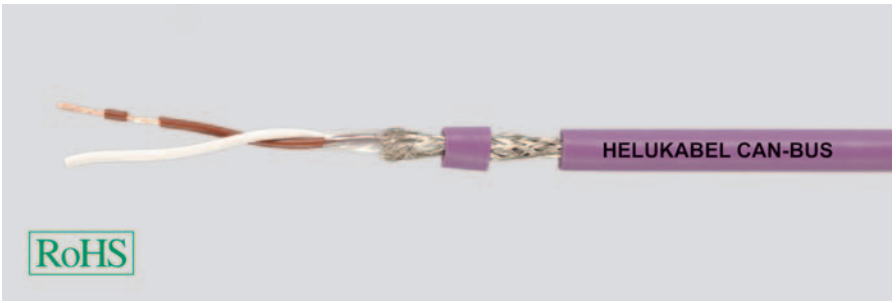
Dimensions and specifications may be changed without prior notice.

BUS Cables

CAN Bus

HELUKABEL
fixed installed





Type	Fixed installation, indoor	Fixed installation, indoor
Cable structure	**1x2x0.34 mm² (stranded)**	**4x1x0.34 mm² (stranded)**
Inner conductor diameter:	Copper, bare (AWG 22/7)	Copper, bare (AWG 22/7)
Core insulation:	Cell PE	Cell PE
Core colours:	wh/bn	wh/bn, gn/ye
Stranding element:	Double core	Star quad
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	-	-
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PVC	PVC
Cable external diameter:	app. 6,5 mm ± 0,2 mm	app. 8,0 mm ± 0,2 mm
Outer sheath colour:	Violet similar to RAL 4001	Violet similar to RAL 4001
Electrical data		
Characteristic impedance:	120 Ohm ± 10 %	120 Ohm ± 10 %
Conductor resistance, max.:	57 Ohm/km	57 Ohm/km
Insulation resistance, min.:	5 GOhm x km	5 GOhm x km
Loop resistance:	114 Ohm/km max.	114 Ohm/km max.
Mutual capacitance:	58 nF/km nom.	40 nF/km nom.
Nominal voltage:	30 V	30 V
Test voltage:	2 kV	2 kV
Technical data		
Weight:	app. 65 kg/km	app. 77 kg/km
bending radius, repeated:	98 mm	120 mm
Operating temperature range min.:	-30°C	-30°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	1,109 MJ/m	1,179 MJ/m
Copper weight:	23,00 kg/km	30,00 kg/km
Norms		
Applicable standards:	CAN Bus acc. to ISO 11898-2 Flame-retardant acc. to EN 50265-2-1	CAN Bus acc. to ISO 11898-2 Flame-retardant acc. to EN 50265-2-1
UL Style:	UL Style 2571	UL Style 2571

Application

HELUKABEL® CAN Bus for fixed installation and occasional motion, for normal requirements. The 2-pair version is designed with a star-quad twisting, i.e. diagonal conductors form an electrical pair and satisfy the requirements of the CAN standard. For cable lenghts up to max. 40m (observe CAN specifications).

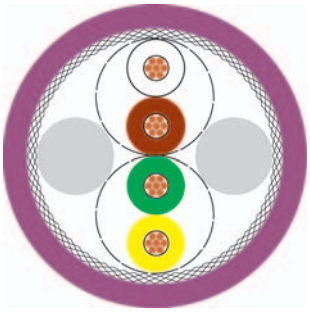
Part no.		
	801572, CAN BUS	**801573,** CAN BUS

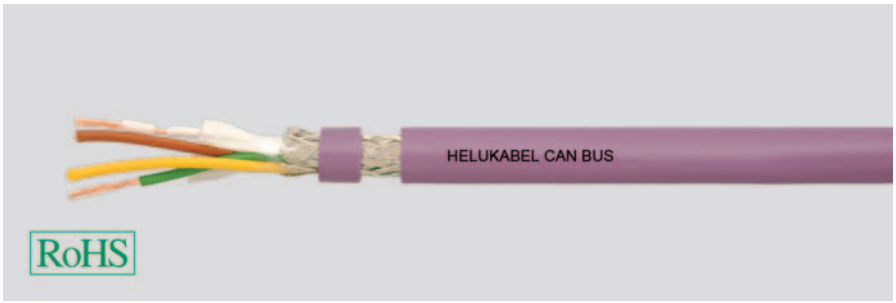
Dimensions and specifications may be changed without prior notice.

BUS Cables

CAN Bus

HELUKABEL
fixed installed





Type
Cable structure

Fixed installation, indoor
2x2x0.34 mm² (stranded)

Inner conductor Ø:	Copper, bare (AWG 22/7)
Core insulation:	Foam-skin-PE
Core colours:	wh/bn, gn/ye
Stranding element:	Double core
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	-
Total shielding:	Cu braid, tinned
Outer sheath material:	PVC
Cable external diameter:	app. 8,5 mm ± 0,3 mm
Outer sheath colour:	Violet similar to RAL 4001

Electrical data

Characteristic impedance:	120 Ohm ± 10 %
Conductor resistance, max.:	55,4 Ohm/km
Insulation resistance, min.:	5 GOhm x km
Loop resistance:	110 Ohm/km max.
Mutual capacitance:	40 nF/km nom.
Nominal voltage:	250 V
Test voltage:	1,5 kV

Technical data

Weight:	app. 85 kg/km
bending radius, repeated:	130 mm
Operating temperature range min.:	-40°C
Operating temperature range max.:	+70°C
Caloric load, approx. value:	1,32 MJ/m
Copper weight:	46,00 kg/km

Norms

Applicable standards:	CAN Bus acc. to ISO 11898-2 Flame-retardant acc. to IEC 60332-1
UL Style:	CMX 75°C (shielded)
CSA standard:	CSA FT1

Application

HELUKABEL® CAN Bus for fix installations an occasion motion, for normal requirements. The two signal pairs are provided in the form twisted pairs. As a result, the diameter is somewhat larger than that of 801573. In the event of diameter problems, please see this type. For cable lengths up to max. 40m (observe CAN specifications).

Part no.

803344, CAN BUS

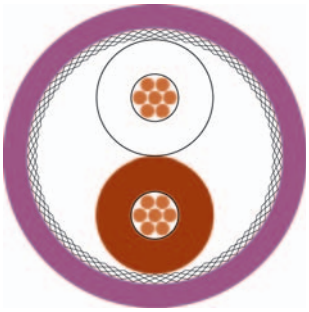
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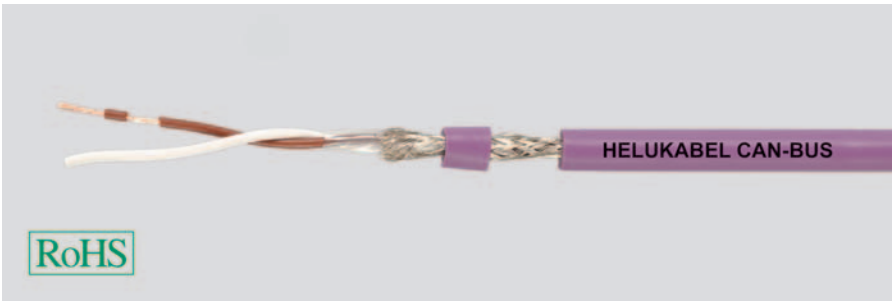
R

BUS Cables

CAN Bus

HELUKABEL
fixed installed





Type Cable structure	Fixed installation, indoor 1x2x0.50 mm² (stranded)	Fixed installation, indoor 4x1x0.50 mm² (stranded)
Inner conductor diameter:	Copper, bare (AWG 20/7)	Copper, bare (AWG 20/7)
Core insulation:	Foam-skin-PE	Foam-skin-PE
Core colours:	wh/bn	wh, bn, gn, ye
Stranding element:	Double core	Star quad
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	-	-
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PVC	PVC
Cable external diameter:	app. 7,0 mm ± 0,2 mm	app. 8,5 mm ± 0,2 mm
Outer sheath colour:	Violet similar to RAL 4001	Violet similar to RAL 4001
Electrical data		
Characteristic impedance:	120 Ohm ± 10 %	120 Ohm ± 10 %
Conductor resistance, max.:	33 Ohm/km	37 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	66 Ohm/km max.	74 Ohm/km max.
Mutual capacitance:	40 nF/km nom.	44 nF/km nom.
Test voltage:	1,5 kV	1,5 kV
Technical data		
Weight:	app. 69 kg/km	app. 100 kg/km
bending radius, repeated:	100 mm	130 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	1,09 MJ/m	1,64 MJ/m
Copper weight:	30,00 kg/km	45,00 kg/km
Norms		
Applicable standards:	CAN Bus acc. to ISO 11898-2 Flame-retardant acc. to EN 50265-2-1	CAN Bus acc. to ISO 11898-2 Flame-retardant acc. to EN 50265-2-1
UL Style:	UL Style 2571	UL Style 2571

Application

HELUKABEL® CAN Bus for fixed installation and occasion motion, for normal requirements. The 2-pair version is designed with star-quad twisting, i.e. diagonal conductors form an electrical pair and satisfy the requirements of the CAN standard. For cable lengths up to 600m (observe CAN specifications).

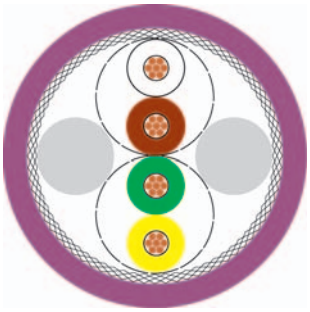
Part no.		
	800571, CAN BUS	**800685,** CAN BUS

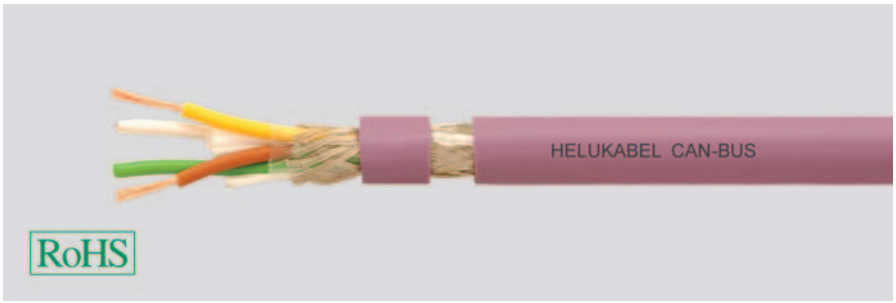
Dimensions and specifications may be changed without prior notice.

BUS Cables

CAN Bus

HELUKABEL
fixed installed





Type
Cable structure

Fixed installation, indoor
2x2x0.50 mm² (stranded)

Inner conductor diameter:	Copper, bare (AWG 20/7)
Core insulation:	Foam-skin-PE
Core colours:	wh/bn, gn/ye
Stranding element:	Double core
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	-
Total shielding:	Cu braid, tinned
Outer sheath material:	PVC
Cable external diameter:	app. 9,6 mm ± 0,3 mm
Outer sheath colour:	Violet similar to RAL 4001

Electrical data

Characteristic impedance:	120 Ohm ± 10 %
Conductor resistance, max.:	34,4 Ohm/km
Insulation resistance, min.:	5 GOhm x km
Loop resistance:	68 Ohm/km max.
Mutual capacitance:	40 nF/km nom.
Nominal voltage:	250 V
Test voltage:	1,5 kV

Technical data

Weight:	app. 116 kg/km
bending radius, repeated:	150 mm
Operating temperature range min.:	-40°C
Operating temperature range max.:	+70°C
Caloric load, approx. value:	1,62 MJ/m
Copper weight:	60,00 kg/km

Norms

Applicable standards:	CAN Bus acc. to ISO 11898-2 Flame-retardant acc. to IEC 60332-1
UL Style:	CMX 75°C (shielded)
CSA standard:	CSA FT1

Application

HELUKABEL® CAN Bus for fixed installation and occasion motion, for normal requirements. The two signal pairs are provided in the form twisted pairs. As a result, the diameter is somewhat larger than that of 800685. In the event of diameter problems, please see this type. For cable lengths up to 600m (observe CAN specifications).

R

Part no.

803722, CAN BUS

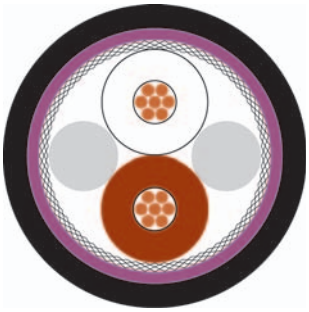
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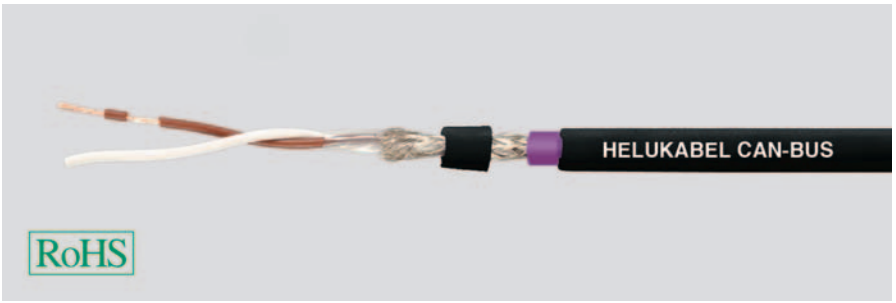
BUS Cables

CAN Bus

HELUKABEL

direct Burial





Type Cable structure	Direct burial 1x2x0.50 mm² (stranded)	Direct burial 4x1x0.50 mm² (stranded)
Inner conductor diameter:	Copper, bare (AWG 20/7)	Copper, bare (AWG 20/7)
Core insulation:	Foam-skin-PE	Foam-skin-PE
Core colours:	wh/bn	wh, bn, gn, ye
Stranding element:	2 cores + 2 fillers stranded together	Star quad
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Inner sheath material:	PVC	PVC
Shielding 2:	-	-
Total shielding:	Cu braid, tinned	Cu braid, tinned
Armouring:	PET/PA tape	PET/PA tape
Outer sheath material:	PE	PE
Cable external diameter:	app. 9,2 mm ± 0,4 mm	app. 9,7 mm ± 0,4 mm
Outer sheath colour:	Black similar to RAL 9005	Black similar to RAL 9005
Electrical data		
Characteristic impedance:	120 Ohm ± 10 %	120 Ohm ± 10 %
Conductor resistance, max.:	37 Ohm/km	36,4 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	74 Ohm/km max.	72 Ohm/km max.
Mutual capacitance:	40 nF/km nom.	44 nF/km nom.
Test voltage:	1,5 kV	1,5 kV
Technical data		
Weight:	app. 105 kg/km	app. 115 kg/km
bending radius, repeated:	150 mm	160 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	2,05 MJ/m	2,18 MJ/m
Copper weight:	33,00 kg/km	45,00 kg/km
Norms		
Applicable standards:	CAN Bus acc. to ISO 11898-2	CAN Bus acc. to ISO 11898-2

Application

HELUKABEL® CAN Bus Direct Burial is suitable for fixed outdoor installation or direct burial applications. The 2-pair version is designed with star-quad twisting, i.e. diagonal conductors form an electrical pair and satisfy the requirements of the CAN standard. For cable lengths up to 600m (observe CAN specifications).

Part no.		
	804268, CAN BUS	**804269,** CAN BUS

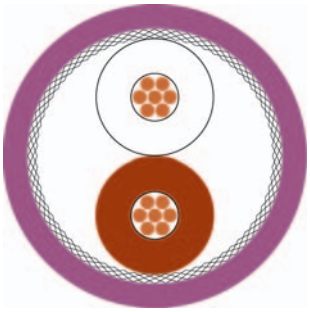
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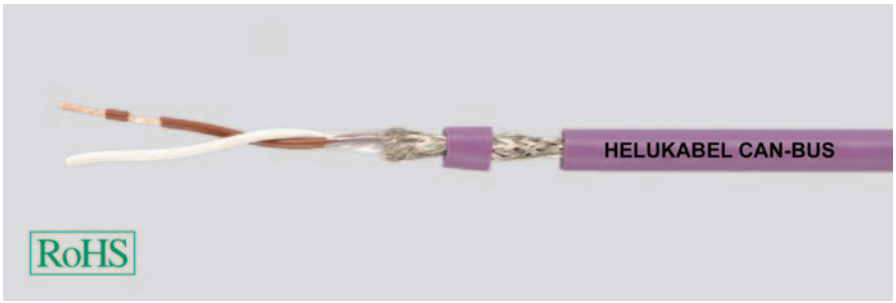
BUS Cables

CAN Bus

HELUKABEL

fixed installed





Type Cable structure	Fixed installation, indoor 1x2x0.75 mm² (stranded)	Fixed installation, indoor 4x1x0.75 mm² (stranded)
Inner conductor diameter:	Copper, bare (AWG 18/24)	Copper, bare (AWG 18/24)
Core insulation:	Foam-skin-PE	Foam-skin-PE
Core colours:	wh/bn	wh, bn, gn, ye
Stranding element:	Double core	Star quad
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	-	-
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PVC	PVC
Cable external diameter:	app. 8,3 mm ± 0,3 mm	app. 8,8 mm ± 0,3 mm
Outer sheath colour:	Violet similar to RAL 4001	Violet similar to RAL 4001
Electrical data		
Characteristic impedance:	120 Ohm ± 15 %	120 Ohm ± 15 %
Conductor resistance, max.:	27,5 Ohm/km	27,5 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	55 Ohm/km max.	55 Ohm/km max.
Mutual capacitance:	42 nF/km nom.	42 nF/km nom.
Nominal voltage:	300 V	300 V
Test voltage:	1,5 kV	1,5 kV
Technical data		
Weight:	app. 101 kg/km	app. 112 kg/km
bending radius, repeated:	110 mm	110 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	1,67 MJ/m	1,76 MJ/m
Copper weight:	40,00 kg/km	58,00 kg/km
Norms		
Applicable standards:	CAN Bus acc. to ISO 11898-2 Flame-retardant acc. to IEC 60332-1	CAN Bus acc. to ISO 11898-2 Flame-retardant acc. to IEC 60332-1
UL Style:	UL Style 2571	UL Style 2571
CSA standard:	CSA FT1	CSA FT1

Application

HELUKABEL® CAN Bus for fix installation and occasion motion, for normal requirements. The 2-pair version is designed with star-quad twisting, i.e. diagonal conductors form an electrical pair and satisfy the requirements of the CAN standard. For cable lengths over 600m (observe CAN specifications).

Part no.	**803383,** CAN BUS	**803384,** CAN BUS

Dimensions and specifications may be changed without prior notice.

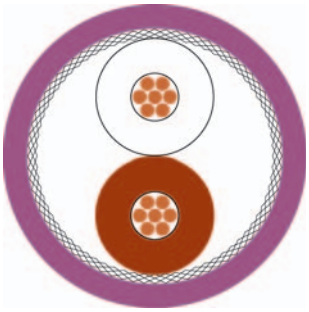
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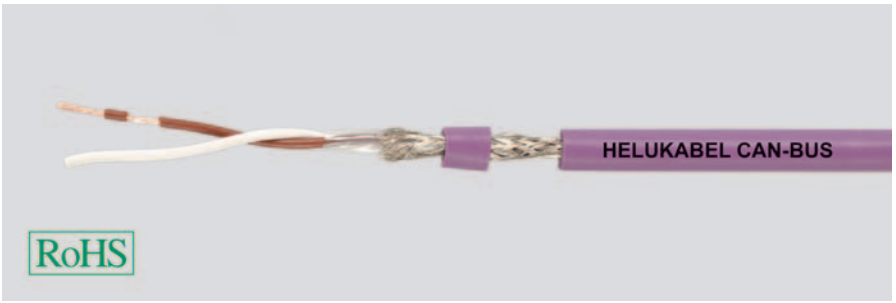
BUS Cables

CAN Bus

HELUKABEL

Drag Chain





Type Cable structure	Drag chain applications 1x2x0.25 mm² (stranded)	Drag chain applications 4x1x0.25 mm² (stranded)
Inner conductor diameter:	Copper, bare (AWG 24/19)	Copper, bare (AWG 24/19)
Core insulation:	PE	PE
Core colours:	wh/bn	wh, bn, gn, ye
Stranding element:	Double core	Star quad
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	-	-
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PUR	PUR
Cable external diameter:	app. 6,1 mm ± 0,3 mm	app. 6,5 mm ± 0,3 mm
Outer sheath colour:	Violet similar to RAL 4001	Violet similar to RAL 4001
Electrical data		
Characteristic impedance:	120 Ohm ± 10 %	120 Ohm ± 10 %
Conductor resistance, max.:	74 Ohm/km	85 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	148 Ohm/km max.	170 Ohm/km max.
Mutual capacitance:	50 nF/km nom.	50 nF/km nom.
Test voltage:	1,5 kV	1,5 kV
Technical data		
Weight:	app. 40 kg/km	app. 45 kg/km
bending radius, repeated:	90 mm	95 mm
Operating temperature range min.:	-40°C	-30°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	0,798 MJ/m	0,943 MJ/m
Copper weight:	18,00 kg/km	25,00 kg/km
Norms		
Applicable standards:	CAN Bus acc. to ISO 11898-2 Halogen-free acc. to 60754-2	CAN Bus acc. to ISO 11898-2 Halogen-free acc. to 60754-2

Application

HELUKABEL® CAN Bus is designed for guided continous motion in cable carriers. The 2-pair version is designed with a star-quad twisting, i.e. diagonal conductors form an electrical pair and satisfy the requirements of the CAN standard. For cable lengths up to max. 40m (observe CAN specifications).

Part no.		
	81911, CAN BUS, highly flexible	**81912,** CAN BUS, highly flexible

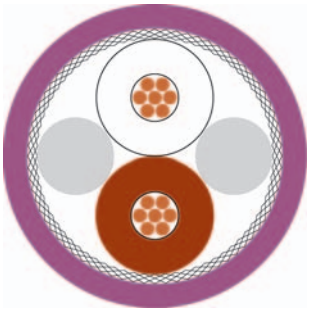
Dimensions and specifications may be changed without prior notice.

BUS Cables

CAN Bus

HELUKABEL

Drag Chain, UL





Type Cable structure	Drag chain applications 1x2x0.34 mm² (stranded)	Drag chain applications 4x1x0.34 mm² (stranded)
Inner conductor diameter:	Copper, bare (AWG 22)	Copper, bare (AWG 22/43)
Core insulation:	Foam-skin-PE	Foam-skin-PE
Core colours:	wh/bn	wh/bn, gn/ye
Stranding element:	2 cores + 2 fillers stranded together	Star quad
Shielding 1:	-	-
Shielding 2:	-	-
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PUR	PUR
Cable external diameter:	app. 6,9 mm ± 0,3 mm	app. 7,5 mm ± 0,3 mm
Outer sheath colour:	Violet similar to RAL 4001	Violet similar to RAL 4001
Electrical data		
Characteristic impedance:	120 Ohm ± 15 %	120 Ohm ± 15 %
Conductor resistance, max.:	56 Ohm/km	56 Ohm/km
Insulation resistance, min.:	5 GOhm x km	5 GOhm x km
Loop resistance:	170 Ohm/km max.	170 Ohm/km max.
Mutual capacitance:	40 nF/km nom.	40 nF/km nom.
Nominal voltage:	250 V	250 V
Test voltage:	1,5 kV	1,5 kV
Technical data		
Weight:	app. 54 kg/km	app. 64 kg/km
bending radius, repeated:	105 mm	130 mm
Operating temperature range min.:	-30°C	-30°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	1,20 MJ/m	1,20 MJ/m
Copper weight:	30,00 kg/km	42,00 kg/km
Norms		
Applicable standards:	CAN Bus acc. to ISO 11898-2 Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1	CAN Bus acc. to ISO 11898-2 Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1
UL Style:	CMX 444	CMX 444

Application

HELUKABEL® CAN Bus is designed for guided continous motion in cable carriers. The 2-pair version is designed with star-quad twisting, i.e. diagonal conductors form an electrical pair and satisfy the requirements of the CAN standard. For cable lengths up to max. 40m (observe CAN specifications).

Part no.

802182, CAN BUS, highly flexible

802339, CAN BUS, highly flexible

Dimensions and specifications may be changed without prior notice.

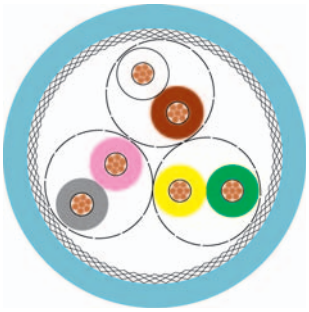
R

BUS Cables

I-BUS

HELUKABEL

fixed installed





Type Cable structure	Fixed installation, indoor 3x2x0.22 mm²	Fixed installation, indoor 3x2x0.22 mm² + 3x1.0 mm²
Inner conductor diameter:	Copper, bare (AWG 24/7)	Copper, bare (AWG 24/7)
Inner conductor diameter 2:	-	Copper, bare (AWG 17/56)
Core insulation:	PE	PE
Core insulation 2:	-	PE
Core colours:	wh/bn, gn/rd, ye/gn	wh/bn, gn/rd, ye/gn
Core colours 2:	-	bu, rd, gnye
Stranding element:	Double core	Double core
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	-	-
Total shielding:	Cu braid, bare	Cu braid, bare
Outer sheath material:	PVC	PVC
Cable external diameter:	app. 7,0 mm ± 0,3 mm	app. 8,0 mm ± 0,3 mm
Outer sheath colour:	Pastel turquoise similar to RAL 6034	Pastel turquoise similar to RAL 6034

Electrical data

Characteristic impedance:	100 Ohm ± 15 Ohm				100 Ohm ± 15 Ohm		
Conductor resistance, max.:	96 Ohm/km				96 Ohm/km		
Insulation resistance, min.:	1 GOhm x km				1 GOhm x km		
Loop resistance:	192 Ohm/km max.				192 Ohm/km max.		
Mutual capacitance:	60 nF/km nom.				60 nF/km nom.		
Test voltage:	1 kV				1 kV		
Attenuation:	256	kHz	< 1,5	dB/100m	256	kHz	< 1,5	dB/100m
	772	kHz	< 2,4	dB/100m	772	kHz	< 2,4	dB/100m
	1	MHz	< 2,7	dB/100m	1	MHz	< 2,7	dB/100m
	4	MHz	< 5,2	dB/100m	4	MHz	< 5,2	dB/100m
	10	MHz	< 8,4	dB/100m	10	MHz	< 8,4	dB/100m
	16	MHz	< 11,2	dB/100m	16	MHz	< 11,2	dB/100m
	20	MHz	< 11,9	dB/100m	20	MHz	< 11,9	dB/100m

Technical data

Weight:	app. 70 kg/km	app. 96 kg/km
bending radius, repeated:	110 mm	120 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	1,20 MJ/m	1,31 MJ/m
Copper weight:	35,00 kg/km	68,00 kg/km

Norms

Applicable standards:	interbus specification 2.0, IEC61158 Flame-retardant acc. to EN 50265-2-1	interbus specification 2.0, IEC61158 Flame-retardant acc. to EN 50265-2-1
UL Style:	UL Style 2571	UL Style 2571

Application

HELUKABEL® I-Bus is designed for fixed installation and occasional motion, for normal Interbus installation and as a hybrid cable with integrated power supply.

Part no.

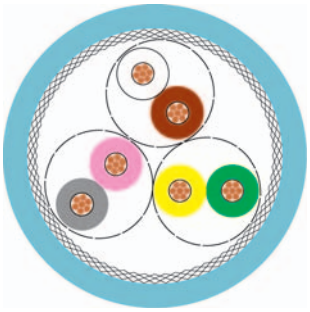
80778, I-BUS	**81202,** I-BUS

Dimensions and specifications may be changed without prior notice.

BUS Cables

I-BUS

fixed installed, halogenfree





Type
Cable structure

Fixed installation, indoor
3x2x0.22 mm²

Inner conductor diameter:	Copper, bare (AWG 24/7)
Core insulation:	PE
Core colours:	wh/bn, gn/rd, ye/gn
Stranding element:	Double core
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	Polyester foil, aluminium-lined
Total shielding:	Cu braid, bare
Outer sheath material:	PE
Cable external diameter:	app. 7,0 mm ± 0,3 mm
Outer sheath colour:	Pastel turquoise similar to RAL 6034

Electrical data

Characteristic impedance:	100 Ohm ± 15 Ohm
Conductor resistance, max.:	96 Ohm/km
Insulation resistance, min.:	1 GOhm x km
Loop resistance:	192 Ohm/km max.
Mutual capacitance:	50 nF/km nom.
Test voltage:	1 kV
Attenuation:	256 kHz < 1,5 dB/100m
	772 kHz < 2,4 dB/100m
	1 MHz < 2,7 dB/100m
	4 MHz < 5,2 dB/100m
	10 MHz < 8,4 dB/100m
	16 MHz < 11,2 dB/100m
	20 MHz < 11,9 dB/100m

Technical data

Weight:	app. 67 kg/km
bending radius, repeated:	110 mm
Operating temperature range min.:	-25°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	1,10 MJ/m
Copper weight:	35,00 kg/km

Norms

Applicable standards:	interbus specification 2.0, IEC61158
	Halogen-free acc. to 60754-2

Application

HELUKABEL® I-Bus is halogen-free and designed for fixed installation in buildings in an Interbus network. The cable is used in dry areas where its halogen-free construction is a major aspect.

Part no.

81557, I-BUS

Dimensions and specifications may be changed without prior notice.

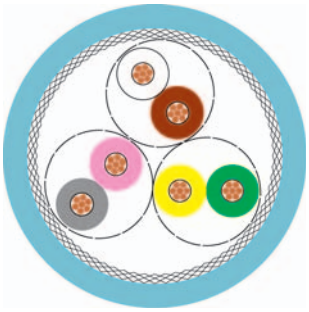
R

BUS Cables

I-BUS

HELUKABEL

Drag Chain





Type Cable structure	Drag chain applications 3x2x0.25 mm²	Drag chain applications 3x2x0.25 mm² + 3x1.0 mm²
Inner conductor diameter:	Copper, bare (AWG 24/19)	Copper, bare (AWG 24/19)
Inner conductor diameter 2:	-	Copper, bare (AWG 17/56)
Core insulation:	PE	PE
Core insulation 2:	-	PE
Core colours:	wh/bn, gn/rd, ye/gn	wh/bn, gn/rd, ye/gn
Core colours 2:	-	bu, rd, gnye
Stranding element:	Double core	Double core
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	-	-
Total shielding:	Cu braid, bare	Cu braid, bare
Outer sheath material:	PUR	PUR
Cable external diameter:	app. 7,6 mm ± 0,3 mm	app. 8,6 mm ± 0,3 mm
Outer sheath colour:	Pastel turquoise similar to RAL 6034	Violet similar to RAL 4001

Electrical data

Characteristic impedance:	100 Ohm ± 15 Ohm				100 Ohm ± 15 Ohm	
Conductor resistance, max.:	96 Ohm/km				96 Ohm/km	
Insulation resistance, min.:	1 GOhm x km				1 GOhm x km	
Loop resistance:	192 Ohm/km max.				192 Ohm/km max.	
Mutual capacitance:	60 nF/km nom.				60 nF/km nom.	
Test voltage:	1 kV				1 kV	
Attenuation:	256	kHz	< 1,5	dB/100m	256	kHz < 1,5 dB/100m
	772	kHz	< 2,4	dB/100m	772	kHz < 2,4 dB/100m
	1	MHz	< 2,7	dB/100m	1	MHz < 2,7 dB/100m
	4	MHz	< 5,2	dB/100m	4	MHz < 5,2 dB/100m
	10	MHz	< 8,4	dB/100m	10	MHz < 8,4 dB/100m
	16	MHz	< 11,2	dB/100m	16	MHz < 11,2 dB/100m
	20	MHz	< 11,9	dB/100m	20	MHz < 11,90 dB/100m

Technical data

Weight:	app. 63 kg/km	app. 92 kg/km
bending radius, repeated:	120 mm	130 mm
Operating temperature range min.:	-20°C	-20°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	0,937 MJ/m	1,227 MJ/m
Copper weight:	36,00 kg/km	70,00 kg/km

Norms

Applicable standards:	interbus specification 2.0, IEC61158 Halogen-free acc. to 60754-2 Flame-retardant acc. to EN 50265-2-1	interbus specification 2.0, IEC61158 Halogen-free acc. to 60754-2

Application

HELUKABEL® I-Bus is designed for guided continuous motion in cable carriers and as strictly a bus cable or a hybrid version (with integrated power supply). Both versions feature a halogen-free PU jacket.

Part no.

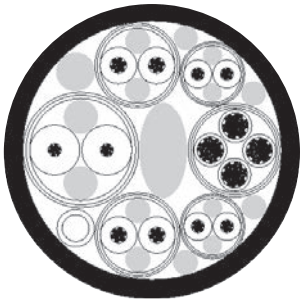
81203, I-BUS	**82696,** I-BUS

Dimensions and specifications may be changed without prior notice.

BUS-Cables

HELUKABEL

Multibus I, high flexible





Type
Multibus I, 15 cores high flexible

Cable structure

Profibus:	1 x 2 x AWG 22 mm² (Foam-Skin PO/rd/gn)
DeviceNet™:	2 x 2 x AWG 22 mm² (Foam-Skin PO/wh/bn, ye/gn)
Interbus:	2 x 2 x 0,25 (Foam-Skin PO/ gn/pk, ye/gn)
Power cores:	4 x 1 x 1,0 mm² (PO/rd, bl, bu, bn)
Protective earth core:	1,0 mm² (PO/gnye)
Stranding:	Single cores totaly stranded together and filled with plastic elements
Total shielding:	PP vlies
Outer sheath material:	PUR, halogenfree
Cable external diameter:	app. 14,7 mm
Outer sheath colour:	violet similar to RAL 4001

Electrical data

Characteristic impedance:	150 + -15 Ohm (Profibus) 120 + -12 Ohm (DeviceNet™) 100 + -15 Ohm (Interbus)
Conductor resistance:	<= 20 Ohm/km (power cores + protection core) <= 70 Ohm/km (Profibus) <= 70 Ohm/km (DeviceNet™) <= 80 Ohm/km (Interbus)
Insulation resistance:	>= 500 Mohm x km (at 20° C)
Mutual capacitance:	30 pF/m nominal (Profibus) 40 pF/m nominal (DeviceNet™) 50 pF/m nominal (Interbus)
Testvoltage:	2500 V (core/ core) 1500 V (core/ screen)

Mechanical data

Bending radius single:	<= 70 mm
Bending radius repeated:	<= 110 mm
Tensile strength static:	300 N
Tensile strength dynamic:	140 N
Oil resistance:	Diesel, IRM 902, Biohydran TM68, Ecocut HFN 10LE
Flame resistance:	IEC 60332-1, VW1/ FT1 acc. C-UL
FCKW free:	yes
Self extinguishable:	yes
Other attributes:	PVC free, free of lacquer wetting disturbing substances, siliconfree, resistant against PVC flexibiliser and cable fat RB1

Thermal attributes

Operating temperature range:	- 40° C to + 80° C
Laying temperature range:	- 30° C to + 80° C

Norms

Profibus standard, DeviceNet™ standard, Interbus standard

UL-Style

VW1/ FT1 acc. C-UL, AWM style 20236

Application

HELUKABEL® Multibus I is highly flexible with a special structure for use in cable carrier applications and robotics (use in acc. with HELU specification) in a PVC-free design. The Multibus I combines the Profibus / DeviceNet™ / Interbus bus systems as well as the power supply in a single hybrid cable.

Part no.

801652, Multibus I, 15 cores

R

BUS-Cables

HELUKABEL

Multibus II, high flexible





Type
Multibus II, 15 cores high flexible

Cable structure

Profibus:	1 x 2 x 0,34 mm² (Foam-Skin PO/rd/gn)
DeviceNet™:	4 x 2 x 0,34 mm² (Foam-Skin PE/ye, or, wh, bu-ye, or, wh, bu)
Power cores 1:	2 x 1,0 mm² (PO/rd, bl)
Power cores 2:	2 x 1,5 mm² (PO/bu, bn)
Protective earth core:	1,5 mm² (PO/gnye)
Stranding:	Single cores totaly stranded together and filled with plastic elements
Total shielding:	PP vlies
Outer sheath material:	PUR, halogenfree
Cable external diameter:	app. 15,0 mm
Outer sheath colour:	violet similar to RAL 4001

Electrical data

Characteristic impedance:	150 + -15 Ohm (Profibus) 100 + -15 Ohm (PROFInet)
Conductor resistance:	<= 20 Ohm/km (power cores + protection core) <= 70 Ohm/km (Profibus) <= 62 Ohm/km (PROFInet)
Insulation resistance:	>= 500 Mohm x km (at 20° C)
Mutual capacitance:	30 pF/m nominal (Profibus) 40 pF/m nominal (PROFInet)
Testvoltage:	2500 V (core/ core) 1500 V (core/ screen)

Mechanical data

Bending radius single:	<= 70 mm
Bending radius repeated:	<= 110 mm
Tensile strength static:	300 N
Tensile strength dynamic:	140 N
Oil resistance:	Diesel, IRM 902, Biohydran TM68, Ecocut HFN 10LE
Flame resistance:	IEC 60332-1, VW1/ FT1 acc. C-UL
FCKW free:	yes
Self extinguishable:	yes
Other attributes:	PVC free, free of lacquer wetting disturbing substances, siliconfree, resistant against PVC flexibiliser and cable fat RB1

Thermal attributes

Operating temperature range:	- 40° C to + 80° C
Laying temperature range:	- 20° C to + 80° C

Norms

Profibus standard, PROFInet standard

UL-Style

VW1/ FT1 acc. C-UL, AWM style 20236

Application

HELUKABEL® Multibus II is highly flexible with a special structure for use in cable carrier applications and robotics (use in acc. with HELU specification) in a PVC-free design. The Multibus II (further development of Multibus I) combines the Profibus /Profinet bus systems as well as the power supply in a single hybrid cable.

Part no.

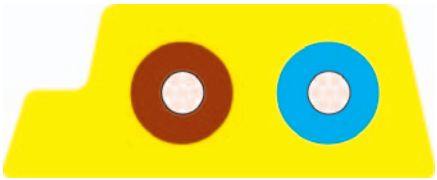
804115, Multibus II, 15 cores

BUS Cables

A-BUS

HELUKABEL

EPDM





Type	Actuator Sensor Interface 2x1.5 mm²	Actuator Sensor Interface 2x1.5 mm²
Cable structure		
Inner conductor:	Copper, tinned	Copper, tinned
Core insulation:	Rubber compound	Rubber compound
Core colours:	bu, bn	bu, bn
Shielding 1:	-	-
Shielding 2:	-	-
Total shielding:	-	-
Outer sheath material:	EPDM	EPDM
Outer sheath colour:	Yellow similar to RAL 1023	Black similar to RAL 9005
Electrical data		
Conductor resistance, max.:	13,7 Ohm/km	13,7 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	27 Ohm/km max.	27 Ohm/km max.
Nominal voltage:	32 V	48 V
Test voltage:	1 kV at 15 min.	1 kV at 15 min.
Technical data		
Weight:	app. 70 kg/km	app. 70 kg/km
bending radius, repeated:	30 mm	30 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+85°C	+85°C
Caloric load, approx. value:	0,975 MJ/m	0,975 MJ/m
Copper weight:	31,00 kg/km	31,00 kg/km
Norms		
Applicable standards:	ASI standard Halogen-free acc. to 60754-2	ASI standard Halogen-free acc. to 60754-2

Application

HELUKABEL® A-Bus EPDM Rubber for normal use in an AS-I system. Applications include wet/dry areas where the properties of a rubber jacket are desired. In addition, this material offers benefits such as low compression forces needed when contacting and the best sealing against the AS-I module.

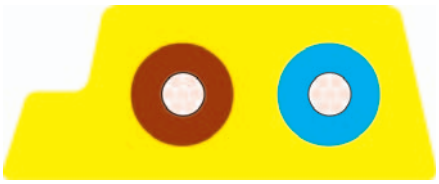
Part no.		
	80824, A-BUS EPDM	**80825,** A-BUS EPDM

Dimensions and specifications may be changed without prior notice.

R

BUS Cables

A-BUS EPDM, Long Distance





Type	Industrial Area	Industrial Area
Cable structure	**2x2.5 mm²**	**2x2.5 mm²**
Inner conductor:	Copper, tinned	Copper, tinned
Core insulation:	Rubber compound	Rubber compound
Core colours:	bu, bn	bu, bn
Shielding 1:	-	-
Shielding 2:	-	-
Total shielding:	-	-
Outer sheath material:	EPDM	EPDM
Outer sheath colour:	Yellow similar to RAL 1023	Black similar to RAL 9005

Electrical data

Technical data

Weight:	app. 130 kg/km	app. 130 kg/km
bending radius, repeated:	35 mm	30 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+85°C	+85°C
Caloric load, approx. value:	0,70 MJ/m	0,70 MJ/m
Copper weight:	49,00 kg/km	49,00 kg/km

Norms

Applicable standards:	ASI standard Halogen-free acc. to 60754-2	ASI standard Halogen-free acc. to 60754-2

Application

HELUKABEL® A-Bus Long Distance EPDM Rubber 2,5mm² for normal use in an AS-I system. The enlarged cross-section allows bigger transmission distances, higher ampacity and this results in savings of supplementary power packs. Applications include wet/dry areas where the properties of a rubber jacket are desired. In addition, this material offers benefits such as low compression forces needed when contacting and the best sealing against the AS-I module.

Part no.		
	804408, A-BUS EPDM	**804409,** A-BUS EPDM

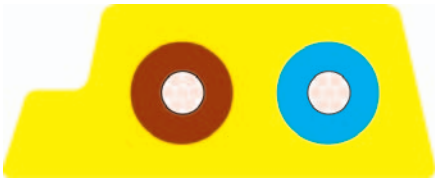
Dimensions and specifications may be changed without prior notice.

BUS Cables

A-BUS

HELUKABEL

PUR, UL/CSA





Type	Actuator Sensor Interface 2x1.5 mm²	Actuator Sensor Interface 2x1.5 mm²
Cable structure		
Inner conductor:	Copper, tinned	Copper, tinned
Core insulation:	PO	PO
Core colours:	bu, bn	bu, bn
Shielding 1:	-	-
Shielding 2:	-	-
Total shielding:	-	-
Outer sheath material:	PUR	PUR
Outer sheath colour:	Yellow similar to RAL 1023	Black similar to RAL 9005
Electrical data		
Conductor resistance, max.:	13,7 Ohm/km	13,7 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	27 Ohm/km max.	27 Ohm/km max.
Nominal voltage:	32 V	48 V
Test voltage:	1 kV at 15 min.	1 kV at 15 min.
Technical data		
Weight:	app. 64 kg/km	app. 64 kg/km
bending radius, repeated:	30 mm	30 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+80°C	+80°C
Caloric load, approx. value:	0,965 MJ/m	0,965 MJ/m
Copper weight:	31,00 kg/km	31,00 kg/km
Norms		
Applicable standards:	ASI standard Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1	ASI standard Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1
UL Style:	AWM Style 20549	AWM Style 20549
CSA standard:	CSA FT2	CSA FT2

Application

HELUKABEL® A-Bus PU is ideal for use in wet/dry areas thanks to its outstanding characteristics when exposed to common coolants/lubricants. This version can also be used in cable carriers (special installation conditions must be observed: place wide cable side on inside radius, use partitions and install flat/round cables separately). These types are approved for use in the American market (UL 1581, FT2) thanks to use of special materials.

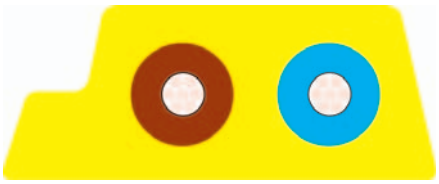
Part no.		
	82434, A-BUS PUR	**82822,** A-BUS PUR

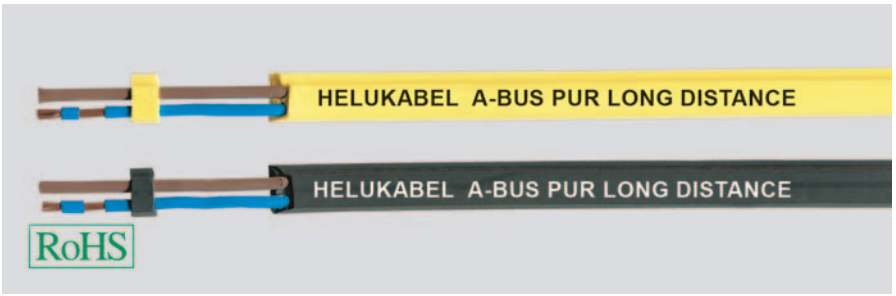
Dimensions and specifications may be changed without prior notice.

R

BUS Cables

A-BUS PUR 2X2.5 PUR, Long Distance, UL/CSA





Type Cable structure	Drag chain applications 2x2.5 mm²	Drag chain applications 2x1.5 mm²
Inner conductor:	Copper, tinned	Copper, tinned
Core insulation:	PO	PO
Core colours:	bu, bn	bu, bn
Shielding 1:	-	-
Shielding 2:	-	-
Total shielding:	-	-
Outer sheath material:	PUR	PUR
Outer sheath colour:	Yellow similar to RAL 1023	Black similar to RAL 9005
Electrical data		
Conductor resistance, max.:	8,21 Ohm/km	8,21 Ohm/km
Loop resistance:	16 Ohm/km max.	16 Ohm/km max.
Nominal voltage:	32 V	48 V
Technical data		
Weight:	app. 140 kg/km	app. 140 kg/km
bending radius, repeated:	30 mm	30 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+80°C	+80°C
Caloric load, approx. value:	0,90 MJ/m	0,90 MJ/m
Copper weight:	49,00 kg/km	49,00 kg/km
Norms		
Applicable standards:	ASI standard Halogen-free acc. to 60754-2 Flame-retardant CSA FT2	ASI standard Halogen-free acc. to 60754-2 Flame-retardant CSA FT2
UL Style:	AWM Style 20549	AWM Style 20549
CSA standard:	CSA FT2	CSA FT2

Application

AS components are interconnected with this special system cable. With the AS interface, the cable assembly from the control system to the sensor/actuator is not needed. The AS interface is the field bus system that transmitts both data and power in one single cable. With fast contacting in penetration technique, the possibility of errors in cabling is largely reduced. The special outer jacket provides protection against oil, grease, and refrigerant lubricants, and the cable is therefore even suitable for applications in wet surroundings, in machinery and plant construction, as well as in the machine tool and automotive industry. The PUR variant is suitable for heavy-duty industrial environments.
Because of the cross section 2,5qmm it is possible to realize longer distances.
These types are certified for the American market (UL 1581, FT2) through the use of special materials.

Part no.	**804410,** A-BUS PUR	**804411,** A-BUS PUR

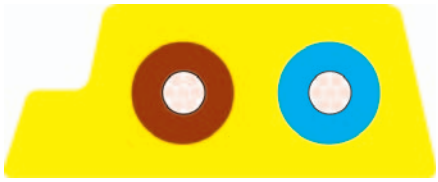
Dimensions and specifications may be changed without prior notice.

BUS Cables

A-BUS

HELUKABEL

TPE





Type	Actuator Sensor Interface 2x1.5 mm²	Actuator Sensor Interface 2x1.5 mm²
Cable structure		
Inner conductor:	Copper, tinned	Copper, tinned
Core insulation:	TPE	TPE
Core colours:	bu, bn	bu, bn
Shielding 1:	-	-
Shielding 2:	-	-
Total shielding:	-	-
Outer sheath material:	TPE	TPE
Outer sheath colour:	Yellow	Black
Electrical data		
Conductor resistance, max.:	13,7 Ohm/km	13,7 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	27 Ohm/km max.	27 Ohm/km max.
Nominal voltage:	32 V	48 V
Test voltage:	1,5 kV at 15 min.	1,5 kV at 15 min.
Technical data		
Weight:	app. 70 kg/km	app. 70 kg/km
bending radius, repeated:	24 mm	24 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+105°C	+105°C
Caloric load, approx. value:	1,10 MJ/m	1,10 MJ/m
Copper weight:	31,00 kg/km	31,00 kg/km
Norms		
Applicable standards:	ASI standard Flame-retardant acc. to IEC 60332-1	ASI standard Flame-retardant acc. to IEC 60332-1

Application

HELUKABEL® A-Bus TPE for demanding temperature requirements up to 105 °C and flame retardance. The special outer sheath makes the cable resistant to many oils, greases and cooling lubricants and thus suitable for applications in wet surroundings, in machinery and plant construction as well as the machine tool and automotive industries.

Part no.		
	801846, A-BUS TPE	**801847,** A-BUS TPE

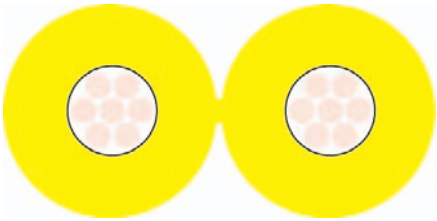
Dimensions and specifications may be changed without prior notice.

R

BUS Cables

AS-Interface

HELUKABEL
Electrical Cabinet FLIH





Type
Fixed installation, indoor

Cable structure
2x0,86/ 2,5

Inner conductor:	Copper, tinned
Shielding 1:	-
Shielding 2:	-
Total shielding:	-
Outer sheath material:	FRNC
Outer sheath colour:	Yellow

Electrical data

Characteristic impedance:	105 Ohm ± 35 Ohm
Conductor resistance, max.:	23 Ohm/km
Insulation resistance, min.:	0,01 GOhm x km
Loop resistance:	46 Ohm/km max.
Nominal voltage:	300 V
Test voltage:	2 kV at 15 min.

Technical data

Weight:	app. 24 kg/km
bending radius, repeated:	30 mm
Operating temperature range min.:	-25°C
Operating temperature range max.:	+70°C
Caloric load, approx. value:	0,30 MJ/m
Copper weight:	20,00 kg/km

Norms

Applicable standards:	ASI standard Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1
UL Style:	UL Style 2444

Application

HELUKABEL® AS-Interface FLIH for electrical cabinet applications, especially for wiring inside electrical cabinets. Compared to "normal" AS-I wire, less space is needed and routing is improved. This cable is also designed for appropriate fast contacting through use of the penetration technique. Special modules for electrical cabinets that are compatible with this wire are available on the market.

Part no.

802183, AS-Interface FLIH

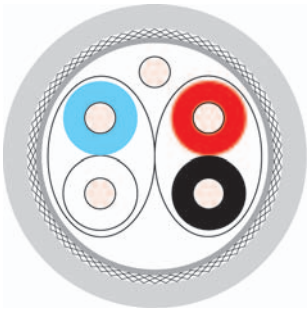
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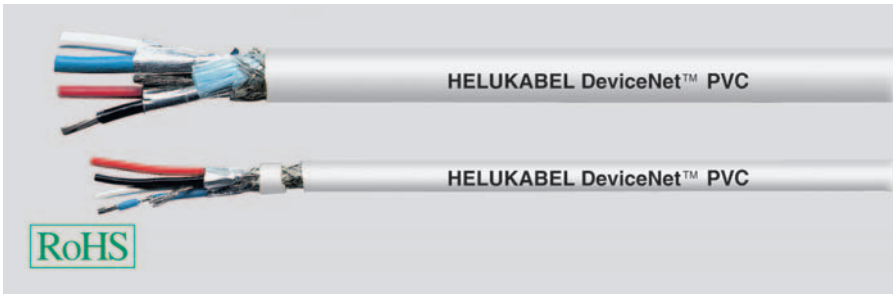
BUS Cables

DeviceNet™

HELUKABEL

PVC





Type Cable structure	Fixed installation, indoor 1x2xAWG18 + 1x2xAWG15	Fixed installation, indoor 1x2xAWG24 + 1x2xAWG22
Inner conductor diameter 1:	Copper, tinned (AWG 18/19)	Copper, tinned (AWG 24/19)
Inner conductor diameter 2:	Copper, tinned (AWG 15/19)	Copper, tinned (AWG 22/19)
Core insulation 1:	Foam-skin-PE	Foam-skin-PE
Core insulation 2:	PVC	PVC
Core colours 1:	light bu, wh	light bu, wh
Core colours 2:	rd, bk	rd, bk
Stranding element 1:	Double core	Double core
Shielding 1:	-	-
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Copper shifting, tinned
Drain wire:	yes	yes
Outer sheath material:	PVC	PVC
Cable external diameter:	app. 12,2 mm ± 0,3 mm	app. 6,9 mm ± 0,3 mm
Outer sheath colour:	Grey	Grey
Electrical data		
Characteristic impedance:	120 Ohm ± 10 %	120 Ohm ± 10 %
Conductor resistance, max.:	22,6 Ohm/km	90 Ohm/km
Insulation resistance, min.:	0,2 GOhm x km	0,2 GOhm x km
Loop resistance:	45 Ohm/km max.	180 Ohm/km max.
Mutual capacitance:	39,8 nF/km nom.	39,8 nF/km nom.
Test voltage:	2 kV	2 kV
Attenuation:	125 kHz < 0,42 dB/100m 500 kHz < 0,81 dB/100m	125 kHz < 0.95 dB/100m 500 kHz < 1.64 dB/100m
Technical data		
Weight:	app. 192 kg/km	app. 67 kg/km
bending radius, repeated:	190 mm	110 mm
Operating temperature range min.:	-20°C	-20°C
Operating temperature range max.:	+80°C	+80°C
Caloric load, approx. value:	2,92 MJ/m	0,91 MJ/m
Copper weight:	88,00 kg/km	35,00 kg/km
Norms		
Applicable standards:	ODVA DeviceNet™ Flame-retardant acc. to EN 50265-2-1	ODVA DeviceNet™ Flame-retardant acc. to EN 50265-2-1
UL Style:	CMG 75°C PLTC FT4	CMG 75°C PLTC FT4
CSA standard:	CEC: CMG FT4	CSA FT 4

R

Application

HELUKABEL® DeviceNet™ PVC for fixed installation. The special aspect of this bus system is that a data pair and a power supply pair are **always** integrated in one cable. The small cross-section is used for short distances or as a point-to-point connection; the large cross-section as main conductor for long distances and frequently in combination with the thin conductor as drain wire.

Part no.

800683, DeviceNet™ PVC

800684, DeviceNet™ PVC

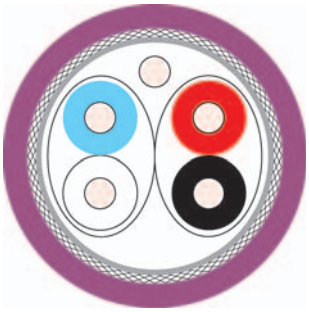
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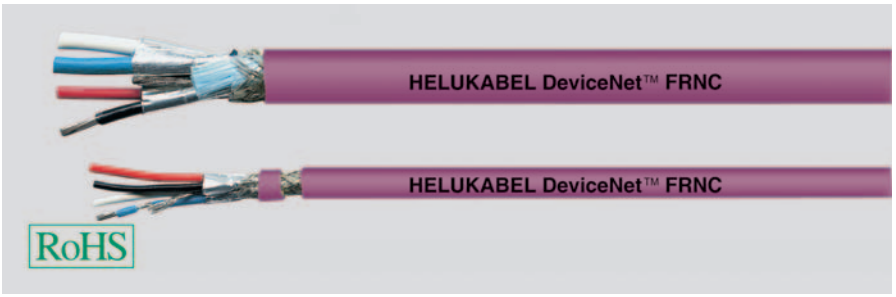
BUS Cables

DeviceNet™

HELUKABEL

FRNC





Type Cable structure	Fixed installation, indoor 1x2xAWG18 + 1x2xAWG15	Fixed installation, indoor 1x2xAWG24 + 1x2xAWG22
Inner conductor diameter 1:	Copper, tinned (AWG 18/19)	Copper, tinned (AWG 24/19)
Inner conductor diameter 2:	Copper, tinned (AWG 15/19)	Copper, tinned (AWG 22/19)
Core insulation 1:	Cell PE	Cell PE
Core insulation 2:	PE	PE
Core colours 1:	light bu, wh	light bu, wh
Core colours 2:	rd, bk	rd, bk
Stranding element 1:	Double core	Double core
Shielding 1:	-	-
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Drain wire:	yes	yes
Outer sheath material:	FRNC	FRNC
Cable external diameter:	app. 12,2 mm ± 0,3 mm	app. 6,9 mm ± 0,3 mm
Outer sheath colour:	Violet similar to RAL 4001	Violet similar to RAL 4001
Electrical data		
Characteristic impedance:	120 Ohm ± 10 %	120 Ohm ± 10 %
Conductor resistance, max.:	22,6 Ohm/km	90 Ohm/km
Insulation resistance, min.:	0,2 GOhm x km	0,2 GOhm x km
Loop resistance:	45 Ohm/km max.	180 Ohm/km max.
Mutual capacitance:	39 nF/km nom.	39,8 nF/km nom.
Test voltage:	2 kV	2 kV
Attenuation:	125 kHz < 0.42 dB/100m 500 kHz < 0.81 dB/100m	125 kHz < 0.95 dB/100m 500 kHz < 1.64 dB/100m
Technical data		
Weight:	app. 195 kg/km	app. 70 kg/km
bending radius, repeated:	190 mm	110 mm
Operating temperature range min.:	-25°C	-25°C
Operating temperature range max.:	+80°C	+80°C
Caloric load, approx. value:	2,73 MJ/m	0,82 MJ/m
Copper weight:	88,00 kg/km	34,00 kg/km
Norms		
Applicable standards:	ODVA DeviceNet™ Halogen-free acc. to 60754-2 Flame-retardant acc. to EN 50265-2-1	ODVA DeviceNet™ Halogen-free acc. to 60754-2 Flame-retardant acc. to EN 50265-2-1
UL Style:	CL2 CMG	CL2 CMG
CSA standard:	CEC: CMG FT4	CEC: CMG FT4

Application

HELUKABEL® DeviceNet™ FRNC for fixed installation in areas where high flame retardance and a halogen-free design are needed. The special aspect of this bus system is that a data pair and a power supply pair are **always** integrated in one cable. The small cross-section is used for short distances or as a point-to-point connection; the large cross-section as main conductor for long distances and frequently in combination with the thin conductor as drain wire.

Part no.		
	800681, DeviceNet™ FRNC	**800682,** DeviceNet™ FRNC

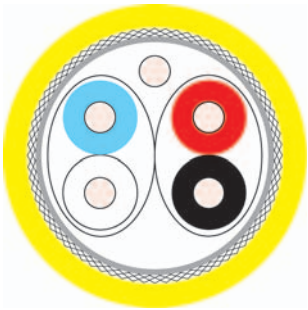
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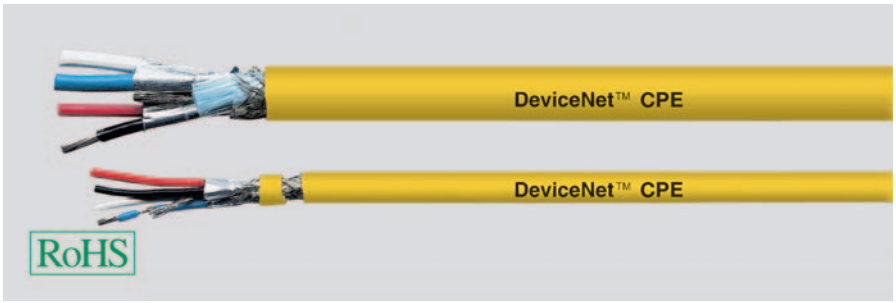
BUS Cables

DeviceNet™

HELUKABEL

CPE





Type Cable structure	Fixed installation, indoor 1x2xAWG18 + 1x2xAWG15	Fixed installation, indoor 1x2xAWG24 + 1x2xAWG22
Inner conductor diameter 1:	Copper, tinned (AWG 18/19)	Copper, tinned (AWG 24/19)
Inner conductor diameter 2:	Copper, tinned (AWG 15/19)	Copper, tinned (AWG 22/19)
Core insulation 1:	Cell PE	PE
Core insulation 2:	PE	PVC
Core colours 1:	light bu, wh	light bu, wh
Core colours 2:	rd, bk	rd, bk
Stranding element 1:	Double core	Double core
Shielding 1:	-	-
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Drain wire:	yes	yes
Outer sheath material:	CPE	CPE
Cable external diameter:	app. 12,0 mm ± 0,3 mm	app. 7,0 mm ± 0,3 mm
Outer sheath colour:	Yellow	Yellow
Electrical data		
Characteristic impedance:	120 Ohm ± 10 %	120 Ohm ± 10 %
Conductor resistance, max.:	22,6 Ohm/km	90 Ohm/km
Insulation resistance, min.:	0,2 GOhm x km	0,2 GOhm x km
Loop resistance:	45 Ohm/km max.	180 Ohm/km max.
Mutual capacitance:	39 nF/km nom.	39 nF/km nom.
Test voltage:	2 kV	2 kV
Attenuation:	125 kHz < 0,43 dB/100m 500 kHz < 0,82 dB/100m	125 kHz < 0,95 dB/100m 500 kHz < 1,64 dB/100m
Technical data		
Weight:	app. 195 kg/km	app. 70 kg/km
bending radius, repeated:	190 mm	110 mm
Operating temperature range min.:	-20°C	-20°C
Operating temperature range max.:	+60°C	+60°C
Caloric load, approx. value:	2,73 MJ/m	0,82 MJ/m
Copper weight:	71,20 kg/km	28,10 kg/km
Norms		
Applicable standards:	ODVA DeviceNet™ Flame-retardant acc. to EN 50265-2-1	ODVA DeviceNet™ Flame-retardant acc. to EN 50265-2-1
UL Style:	CMG PLTC	CL2 CMG
CSA standard:	CEC: CMG FT4	CEC: CMG FT4

R

Application

HELUKABEL® DeviceNet™ CPE for fixed installation with very high flame-retardance requirements. The special aspect of this bus system is that a data pair and a power supply pair are **always** integrated in one cable. The small cross-section is used for short distances or as a point-to-point connection; the large cross-section as main conductor for long distances and frequently in combination with the thin conductor as drain wire.

Part no.

81907, DeviceNet™ CPE

81908, DeviceNet™ CPE

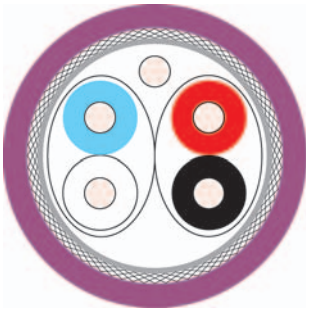
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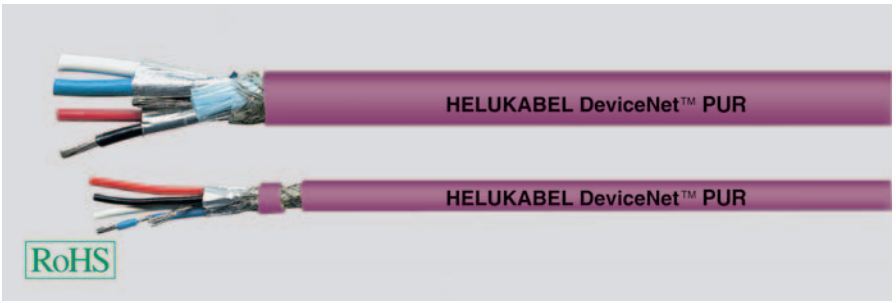
BUS Cables

DeviceNet™

HELUKABEL

PUR, high flexible





Type Cable structure	Drag chain applications 1x2xAWG18 + 1x2xAWG15	Drag chain applications 1x2xAWG24 + 1x2xAWG22
Inner conductor diameter 1:	Copper, tinned (AWG 18/40)	Copper, tinned (AWG 24/19)
Inner conductor diameter 2:	Copper, tinned (AWG 15/84)	Copper, tinned (AWG 22/19)
Core insulation 1:	Cell PE	Cell PE
Core insulation 2:	PE	PE
Core colours 1:	light bu, wh	light bu, wh
Core colours 2:	rd, bk	rd, bk
Stranding element 1:	Double core	Double core
Shielding 1:	-	-
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Drain wire:	yes	yes
Outer sheath material:	PUR	PUR
Cable external diameter:	app. 12,2 mm ± 0,3 mm	app. 6,9 mm ± 0,3 mm
Outer sheath colour:	Violet similar to RAL 4001	Violet similar to RAL 4001

Electrical data

Characteristic impedance:	120 Ohm ± 10 %	120 Ohm ± 10 %
Conductor resistance, max.:	22,6 Ohm/km	90 Ohm/km
Insulation resistance, min.:	0,2 GOhm x km	0,2 GOhm x km
Loop resistance:	45 Ohm/km max.	45 Ohm/km max.
Mutual capacitance:	39,8 nF/km nom.	39,8 nF/km nom.
Test voltage:	2 kV	2 kV
Attenuation:	125 kHz < 0,41 dB/100m 500 kHz < 0,82 dB/100m	125 kHz < 0,95 dB/100m 500 kHz < 1,64 dB/100m

Technical data

Weight:	app. 185 kg/km	app. 68 kg/km
bending radius, repeated:	61 mm	70 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+80°C	+80°C
Caloric load, approx. value:	2,54 MJ/m	0,76 MJ/m
Copper weight:	90,00 kg/km	35,00 kg/km

Norms

Applicable standards:	ODVA DeviceNet™ Halogen-free acc. to 60754-2 Flame-retardant acc. to EN 50265-2-1	ODVA DeviceNet™ Halogen-free acc. to 60754-2 Flame-retardant acc. to EN 50265-2-1
UL Style:	CMX 75°C CL2X	CMX 75°C CL2X

Application

HELUKABEL® DeviceNet™ PU highly flexible for use in cable carriers with outstanding resistance to common coolants/lubricants. The special aspect of this bus system is that a data pair and a power supply pair are **always** integrated in one cable. The small cross-section is used for short distances or as a point-to- point connection; the large cross-section as main conductor for long distances and frequently in combination with the thin conductor as drain wire.

Part no.

81909, DeviceNet™ PUR

81910, DeviceNet™ PUR

Dimensions and specifications may be changed without prior notice.

BUS Cables

CC-Link BUS

HELUKABEL

PVC





Type
Cable structure

Fixed installation, indoor
3x0.5 mm²

Inner conductor diameter:	Copper, bare (AWG 20/7)
Core insulation:	Foam-skin-PE
Core colours:	wh, bu, ye
Stranding element:	Triple core
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned
Drain wire:	yes
Outer sheath material:	PVC
Cable external diameter:	app. 7,7 mm ± 0,3 mm
Outer sheath colour:	Red

Electrical data

Characteristic impedance:	110 Ohm ± 15 Ohm
Conductor resistance, max.:	37,8 Ohm/km
Insulation resistance, min.:	10 GOhm x km
Loop resistance:	75 Ohm/km max.
Mutual capacitance:	60 nF/km nom.
Test voltage:	2 kV
Attenuation:	1 MHz < 16,0 dB/100m 5 MHz < 35,0 dB/100m

Technical data

Weight:	app. 77 kg/km
bending radius, repeated:	120 mm
Operating temperature range min.:	-40°C
Operating temperature range max.:	+75°C
Caloric load, approx. value:	1,10 MJ/m
Copper weight:	40,00 kg/km

Norms

Applicable standards:	CC-Link Specification 1.10 Flame-retardant acc. to EN 50265-2-1
UL Style:	CM 75°C or PLTC
CSA standard:	CSA FT 4

Application

HELUKABEL® CC-Link Bus PVC for fixed installation. The primary market is Asia, but the USA and the United Kingdom are using CC-Link increasingly. The cable has the appropriate approvals for these markets. A version with power supply conductors is optionally available. It is used particularly in channels.

R

Part no.

800497, CC-Link communications cable

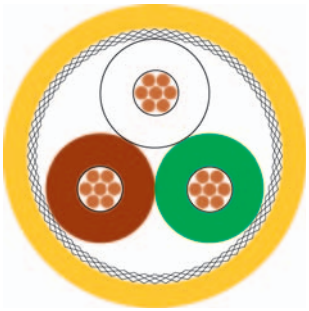
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BUS Cables

SafetyBUS

HELUKABEL

FRNC + PUR





Type Cable structure	Fixed installation, indoor 3x0,75 mm² (stranded)	Drag chain applications 3x0,75 mm² (stranded)
Inner conductor diameter:	Copper, bare (AWG 18/24)	Copper, bare (AWG 18)
Core insulation:	Foam-skin-PE	Foam-skin-PE
Core colours:	wh, bn, gn	wh, bn, gn
Stranding element:	Triple core	Triple core
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	-	-
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	FRNC	PUR
Cable external diameter:	app. 7,5 mm ± 0,3 mm	app. 7,8 mm ± 0,2 mm
Outer sheath colour:	Yellow similar to RAL 1003	Yellow similar to RAL 1003

Electrical data

Characteristic impedance:	110 Ohm ± 10 Ohm	110 Ohm ± 10 Ohm
Conductor resistance, max.:	27,7 Ohm/km	26 Ohm/km
Insulation resistance, min.:	5 GOhm x km	5 GOhm x km
Loop resistance:	52 Ohm/km max.	52 Ohm/km max.
Mutual capacitance:	45 nF/km nom.	45 nF/km nom.
Nominal voltage:	250 V	250 V
Test voltage:	3 kV	3 kV
Attenuation:	1 MHz < 1,6 dB/Km	1 MHz < 1,6 dB/Km
	5 MHz < 3,4 dB/Km	5 MHz < 3,4 dB/Km
	10 MHz < 5,6 dB/Km	10 MHz < 5,6 dB/Km
	16 MHz < 7,5 dB/Km	16 MHz < 7,5 dB/Km

Technical data

Weight:	app. 68 kg/km	app. 65 kg/km
bending radius, repeated:	75 mm	80 mm
Operating temperature range min.:	-25°C	-30°C
Operating temperature range max.:	+80°C	+80°C
Caloric load, approx. value:	0,72 MJ/m	0,76 MJ/m
Copper weight:	50,00 kg/km	50,00 kg/km

Norms

Applicable standards:	abutted at SafetyBUS p technical guidelines copper wires 1.0 Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-3	abutted at SafetyBUS p technical guidelines copper wires 1.0 Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1
UL Style:	-	CMX 75°C (shielded)

Application

HELUKABEL® SafetyBUS FRNC for fixed installation; the PU version is intended for use in cable carriers. Both versions are halogen-free.

Part no.

800651, SafetyBus p	**800652,** SafetyBus p

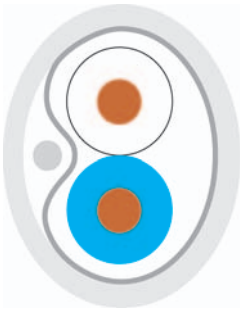
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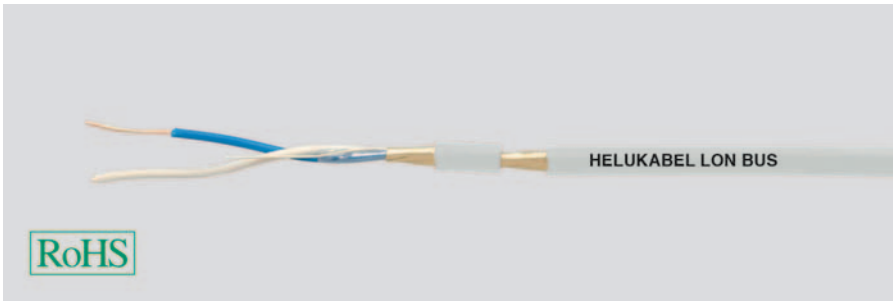
BUS Cables

LON BUS

HELUKABEL

H122 + Y116





Type Cable structure	Fixed installation, indoor 1x2xAWG 22/1	Mobile use 1x2xAWG 16/19
Inner conductor diameter:	Copper, tinned (AWG 22/1)	Copper, tinned (AWG 16/19)
Core insulation:	PE	PVC
Core colours:	wh, bu	wh, bk
Stranding element:	Double core	Double core
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	-	-
Total shielding:	Polyester foil, aluminium-lined	-
Drain wire:	yes	-
Outer sheath material:	FRNC	PVC
Cable external diameter:	app. 4,4 mm ± 0,3 mm	app. 7,0 mm ± 0,4 mm
Outer sheath colour:	White	Grey

Electrical data

Characteristic impedance:	100 Ohm ± 10 %	85 Ohm ± 15 %
Conductor resistance, max.:	57 Ohm/km	15,8 Ohm/km
Insulation resistance, min.:	5 GOhm x km	0,02 GOhm x km
Loop resistance:	114 Ohm/km max.	31 Ohm/km max.
Mutual capacitance:	45 nF/km nom.	10 nF/km nom.
Nominal voltage:	125 V	300 V
Test voltage:	0,7 kV	2 kV

Technical data

Weight:	app. 25 kg/km	app. 65 kg/km
bending radius, repeated:	70 mm	85 mm
Operating temperature range min.:	-20°C	-20°C
Operating temperature range max.:	+75°C	+80°C
Caloric load, approx. value:	0,337 MJ/m	1,25 MJ/m
Copper weight:	11,00 kg/km	30,00 kg/km
Applicable standards:	Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1	Flame-retardant acc. to IEC 60332-1

Application

HELUKABEL® LON BUS H122 FRNC for fixed installation; version Y116 for mobile applications. For both versions: Use indoors is in fixed installations (H122) and as a patch cable (Y116) and must comply with DIN EN 50090-2-2 (VDE 0892 Part 2-2:1997-06).

Part no.

802187, LON H122

802188, LON Y116

Dimensions and specifications may be changed without prior notice.

R

BUS Cables

E-BUS

HELUKABEL

PVC





Type	2-pairs	2-pairs
Cable structure	**2x2x0.8 mm**	**2x2x0.8 mm**
Inner conductor:	Copper, bare	Copper, bare
Core insulation:	PVC	PVC
Core colours:	wh, ye, rd, bk	wh, ye, rd, bk
Stranding element:	Star quad	Star quad
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	-	-
Total shielding:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Drain wire:	yes	yes
Outer sheath material:	PVC	PVC
Cable external diameter:	app. 6,6 mm ± 0,3 mm	app. 6,6 mm ± 0,3 mm
Outer sheath colour:	Blue Lilac similar to RAL 4005	Green similar to RAL 6010
Electrical data		
Characteristic impedance:	100 Ohm	100 Ohm
Conductor resistance, max.:	73,2 Ohm/km	73,2 Ohm/km
Insulation resistance, min.:	0,1 GOhm x km	0,1 GOhm x km
Loop resistance:	146 Ohm/km max.	146 Ohm/km max.
Mutual capacitance:	100 nF/km nom.	100 nF/km nom.
Test voltage:	4 kV	4 kV
Technical data		
Weight:	app. 64 kg/km	app. 64 kg/km
bending radius, repeated:	95 mm	95 mm
Operating temperature range min.:	-30°C	-30°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	0,90 MJ/m	0,90 MJ/m
Copper weight:	25,00 kg/km	25,00 kg/km
Norms		
Applicable standards:	EIB standard Flame-retardant acc. to EN 50265-2-1	EIB standard Flame-retardant acc. to EN 50265-2-1

Application

HELUKABEL® E-BUS PVC for fixed installation. The E-Bus cable is intended for transmission of bus signals in intelligent building systems. The cables ensure perfect communication in compliance with EIB regulations. They can be installed over, in and under plaster, in conduits and cable channels, in dry, damp and wet rooms as well as outdoors - if protected from direct sunlight. Wiring together with high-power cables is possible without limitation. The EIB bus can be used to control lighting, blinds, heating, ventilation, indicator boards etc.

Part no.		
	81081, E-BUS	**81663,** E-BUS

Dimensions and specifications may be changed without prior notice.

BUS Cables

E-BUS

HELUKABEL

FRNC + PVC





Type	2-pairs	4-pairs
Cable structure	**2x2x0.8 mm**	**4x2x0.8 mm**
Inner conductor:	Copper, bare	Copper, bare
Core insulation:	PE	PVC
Core colours:	wh, ye, rd, bk	wh, ye, rd, gn, bu, bn, wh, wh
Stranding element:	Star quad	Double core
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	-	-
Total shielding:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Drain wire:	yes	yes
Outer sheath material:	FRNC	PVC
Cable external diameter:	app. 6,6 mm ± 0,3 mm	app. 8,2 mm ± 0,4 mm
Outer sheath colour:	Blue Lilac similar to RAL 4005	Blue Lilac similar to RAL 4005
Electrical data		
Characteristic impedance:	100 Ohm	100 Ohm
Conductor resistance, max.:	73,2 Ohm/km	73,2 Ohm/km
Insulation resistance, min.:	0,1 GOhm x km	0,1 GOhm x km
Loop resistance:	146 Ohm/km max.	146 Ohm/km max.
Mutual capacitance:	100 nF/km nom.	100 nF/km nom.
Test voltage:	4 kV	4 kV
Technical data		
Weight:	app. 54 kg/km	app. 92 kg/km
bending radius, repeated:	95 mm	120 mm
Operating temperature range min.:	-30°C	-30°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	0,58 MJ/m	1,37 MJ/m
Copper weight:	25,00 kg/km	41,00 kg/km
Norms		
Applicable standards:	EIB standard Halogen-free acc. to 60754-2 Flame-retardant acc. to EN 50265-2-1	EIB standard Flame-retardant acc. to EN 50265-2-1

Application

HELUKABEL® E-BUS FRNC + PVC for fixed installation. If the application requires a halogen-free installation, the FRNC version is the right choice. The E-Bus cable is intended for transmission of bus signals in intelligent building systems. The cables ensure perfect communication in compliance with EIB regulations. They can be installed over, in and under plaster, in conduits and cable channels, in dry, damp and wet rooms as well as outdoors - if protected from direct sunlight. Wiring together with high-power cables is possible without limitation. The EIB bus can be used to control lighting, blinds, heating, ventilation, indicator boards etc.

R

Part no.		
	80826, E-BUS	**81077,** E-BUS

Dimensions and specifications may be changed without prior notice.

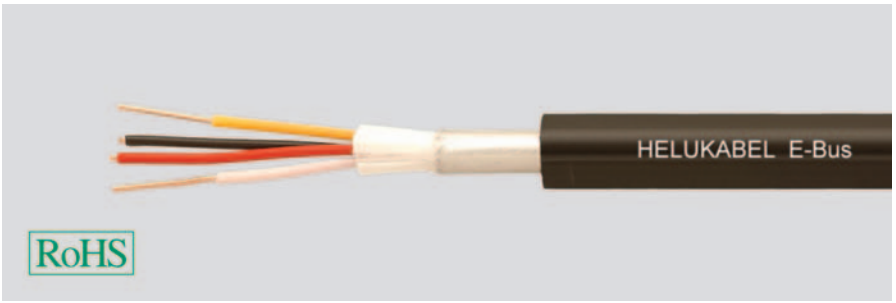
BUS Cables

E-BUS DIRECT BURIAL

HELUKABEL

PE, ERD





Type
Direct burial

Cable structure
2x2x0.8 mm

Inner conductor:	Copper, bare
Core insulation:	PE
Core colours:	wh, ye, rd, bk
Stranding element:	Star quad
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	-
Total shielding:	Polyester foil, aluminium-lined
Outer sheath material:	PE
Cable external diameter:	app. 8,8 mm ± 0,3 mm
Outer sheath colour:	Black similar to RAL 9005

Electrical data

Characteristic impedance:	100 Ohm
Conductor resistance, max.:	73,2 Ohm/km
Insulation resistance, min.:	5 GOhm x km
Loop resistance:	146 Ohm/km max.
Mutual capacitance:	55 nF/km nom.
Test voltage:	0,8 kV

Technical data

Weight:	app. 75 kg/km
bending radius, repeated:	130 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+70°C
Caloric load, approx. value:	2,00 MJ/m
Copper weight:	25,00 kg/km

Norms

Applicable standards:	EIB standard Halogen-free acc. to 60754-2

Application

HELUKABEL® E-BUS ERD with PE jacket for fixed installation in the ground or outdoors and as a connection between buildings or to EIB components on the building. They can be installed over, in and under plaster, in conduits and cable channels, in dry, damp and wet rooms as well as outdoors - if protected from direct sunlight. Wiring together with high-power cables is possible without limitation. The EIB bus can be used to control lighting, blinds, heating, ventilation, indicator boards etc.

Part no.

802800, E-BUS BURIAL

Dimensions and specifications may be changed without prior notice.

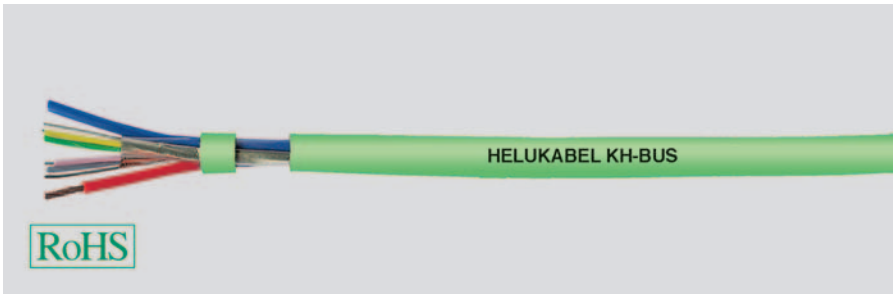
BUS Cables

KH-BUS

HELUKABEL

PVC + FRNC





Type Cable structure	Hospital-Bus 2x1.5mm² (stranded) + 2x2x0.60 mm (solid)	Hospital-Bus 2x1.5mm² (stranded) + 2x2x0.60 mm (solid)
Inner conductor, power core:	Copper, bare	Copper, bare
Inner conductor, data core:	Copper, tinned	Copper, tinned
Core insulation, power core:	PVC	PE
Core insulation, data core:	PE	PE
Core colours, power core:	rd, bu	rd, bu
Core colours, data core:	gn/ye, gy/pk	gn/ye, gy/pk
Stranding element, data core:	Double core	Double core
Shielding, data pair:	PP foil + aluminium-lined foil + PP foil	PP foil + aluminium-lined foil + PP foil
Drain wire:	yes	yes
Outer sheath material:	PVC	FRNC
Cable external diameter:	app. 8,0 mm ± 0,3 mm	app. 8,0 mm ± 0,3 mm
Outer sheath colour:	Green similar to RAL 6001	Green similar to RAL 6001
Electrical data		
Insulation resistance, min.:	0,02 GOhm x km	0,02 GOhm x km
Mutual capacitance:	70 nF/km nom.	70 nF/km nom.
Test voltage:	2 kV	2 kV
Technical data		
Weight:	app. 90 kg/km	app. 93 kg/km
bending radius, repeated:	120 mm	120 mm
Operating temperature range min.:	-40°C	-25°C
Operating temperature range max.:	+80°C	+80°C
Caloric load, approx. value:	1,01 MJ/m	0,86 MJ/m
Copper weight:	53,00 kg/km	53,00 kg/km

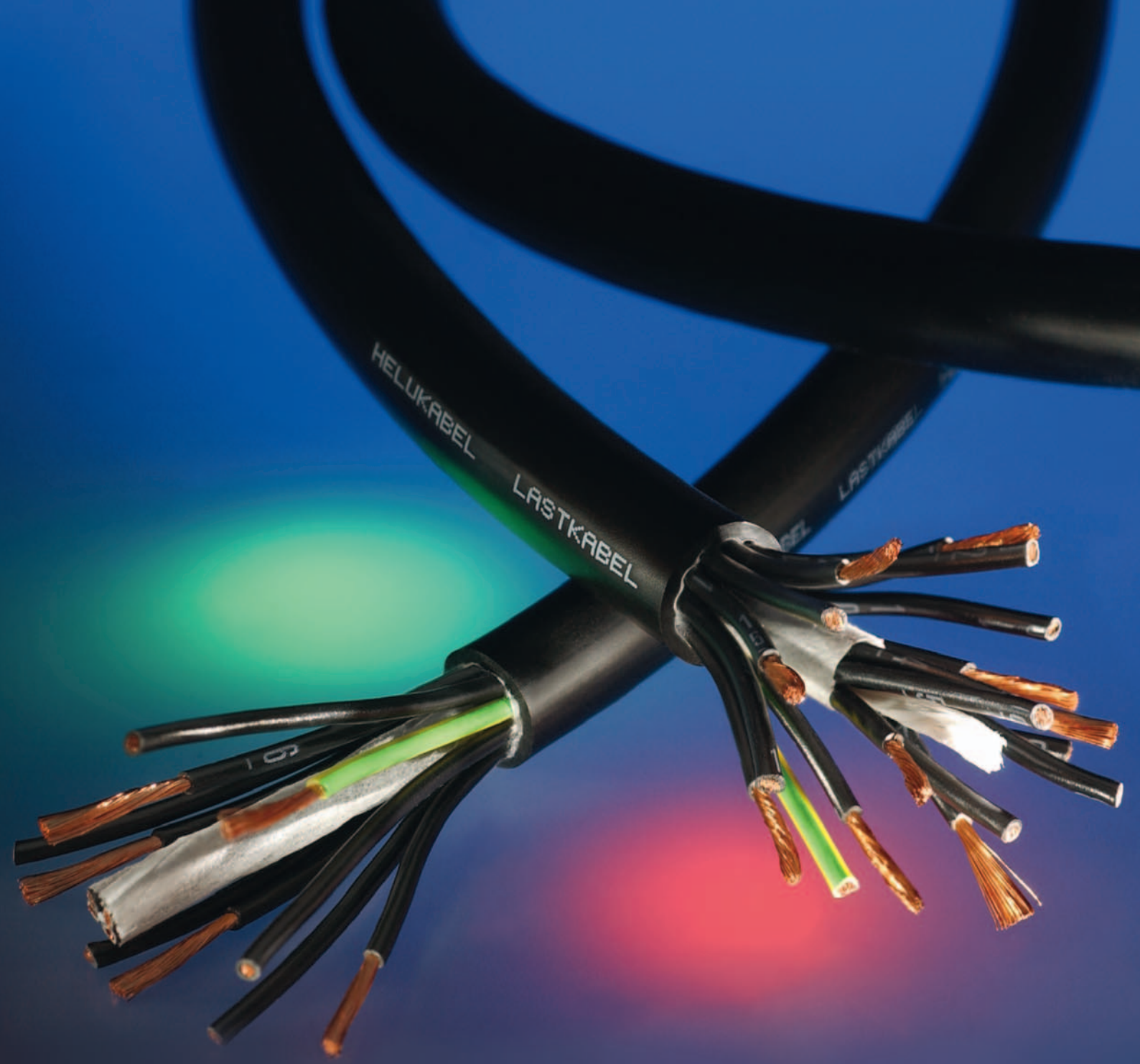
Application

HELUKABEL® KH-BUS PVC + FRNC for fixed installation of patient calling systems. Simple and fast installation is an important factor there. For this reason, a 6-conductor hybrid cable is used to connect the individual components of the calling system. This cable is used for the power supply, speech and data transmission. The FRNC version is the right choice when a halogen-free installation is required.

Part no.		
	81085, KH-BUS	**81447,** KH-BUS

Dimensions and specifications may be changed without prior notice.

R



Audio & Light

Light & Power

HELUSOUND® 600 FRNC halogen-free

HELUSOUND® 400 PVC

Speaker cable

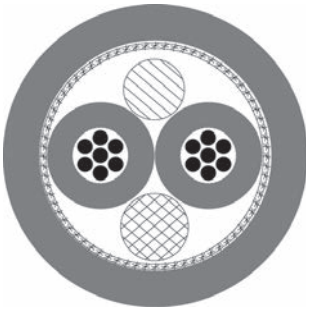
HELUSOUND® DMX + Power

MEDIA TECHNOLOGY

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Audio

Audio cables with braided shielding





Type **HELUSOUND audio cable analog**

Cable structure **2x0,25 + 0,25**

Conductor material:	Copper, bare
Core insulation:	PVC
Core colours:	rd, wh
Stranding element:	2 cores with 1 filler and 1 earth conductor stranded
Sheath material:	PVC
Cable external diameter:	approx. 3,4 mm
Sheath colour:	black

Electrical data

Conductor resistance, max.:	75 Ohm/km
Insulation resistance, min.:	5 MOhm x km

Technical data

Weight:	approx. 20 kg/km
Min. bending radius for laying:	35 mm
Operating temperature range min.:	-25°C
Operating temperature range max.:	+70°C
Copper weight:	13,5 kg/km

Norms

Corrosiveness acc. to EN50267-2-3

Part no.	Cable structure	Conductor resistance Ohm / km	Outer diameter approx. mm	Cop. weight kg / km	Weight approx. kg / km
400000	2x0,25 + 0,25	< 75,0	3,4	13,5	20,0
400001	2x0,33+0,33	< 60,0	4,0	16,3	26,0
400002	2x0,5+0,33	< 36,8	5,6	26,1	49,0

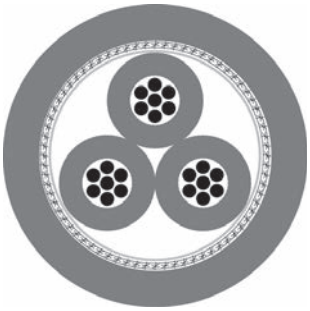
Dimensions and specifications may be changed without prior notice.

Application

The HELUSOUND® audio cable is a 2-core, shielded multipurpose cable with earth conductor. It is particularly suitable for use in microphone, radio, studio and transmission systems.
Analog cable for short transmission distances and low frequencies.

Audio

Audio cables, multicore, with braided shielding





Type **HELUSOUND audio cable analog**

Cable structure **2x0,26**

Conductor material:	Copper, bare
Core insulation:	PE
Stranding element:	pairs stranded
Sheath material:	PVC
Cable external diameter:	approx. 5,2 mm
Sheath colour:	black

Electrical data

Conductor resistance, max.:	73,9 Ohm/km
Insulation resistance, min.:	1 GOhm x km

Technical data

Weight:	approx. 37 kg/km
Min. bending radius for laying:	52 mm
Operating temperature range min.:	-25°C
Operating temperature range max.:	+70°C
Copper weight:	16,8 kg/km

Norms

Corrosiveness acc. to EN50267-2-3

Part no.	Cable structure	Conductor resistance Ohm / km	Outer diameter approx. mm	Cop. weight kg / km	Weight approx. kg / km
400003	2x0,26	< 73,9	5,2	16,8	37,0
400004	2x0,33	< 61,6	5,3	18,2	38,0
400005	4x0,33	< 61,6	5,9	27,2	52,0
400006	2x0,50	< 39,0	5,7	22,0	46,0
400007	2x0,75	< 26,0	7,2	30,0	70,0
400008	3x0,75	< 26,0	7,7	50,0	90,0
400009	4x0,75	< 26,0	8,3	60,0	102,0
400010	5x0,75	< 26,0	8,9	72,0	120,0

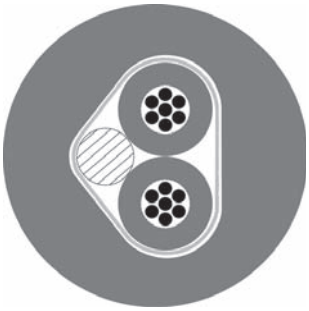
Dimensions and specifications may be changed without prior notice.

Application

The 2-5-core shielded HELUSOUND® audio cable with a common PE core insulation, braided shielding and PVC outer sheath is especially well suited for use in microphone, loudspeaker, radio and transmission systems.

Audio

Audio cables with foil shielding, single pair





Type	**Analog audio cables**
Cable structure	**2x0,22**
Conductor material:	Copper, tinned
Core insulation:	PE
Core colours:	rd, bu
Stranding element:	2 cores with 1 filler
Sheath material:	PVC
Cable external diameter:	approx. 3,4 mm
Sheath colour:	black

Electrical data

Conductor resistance, max.:	86 Ohm/km
Insulation resistance, min.:	1 GOhm x km

Technical data

Weight:	approx. 17 kg/km
Min. bending radius for laying:	35 mm
Operating temperature range min.:	-25°C
Operating temperature range max.:	+70°C
Copper weight:	6,6 kg/km

Norms	Corrosiveness acc. to EN50267-2-3
Part no.	**400011**

Dimensions and specifications may be changed without prior notice.

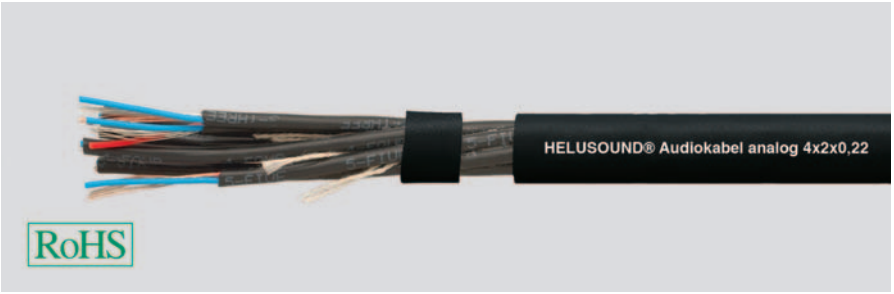
Application

The 2-core HELUSOUND® audio cable is a foil shielded cable with earth conductor. This symmetrical cable is suitable for use in racks and for studio cabling.

Audio

Audio cables, multipaired, pairs with foil shielding





Type	**Analog audio cables**
Cable structure	**2x2x0,22**
Conductor material:	Copper, tinned
Core insulation:	PE
Core colours:	rd, bu
Stranding element:	pairs stranded
Sheath material:	PVC
Cable external diameter:	approx. 7,6 mm
Sheath colour:	black

Electrical data

Conductor resistance, max.:	86 Ohm/km
Insulation resistance, min.:	1 GOhm x km

Technical data

Weight:	approx. 72 kg/km
Min. bending radius for laying:	76 mm
Operating temperature range min.:	-25°C
Operating temperature range max.:	+70°C
Copper weight:	15,0 kg/km

Norms

Corrosiveness acc. to EN50267-2-3

Part no.	Cable structure	Outer diameter approx. mm	Cop. weight kg / km	Weight approx. kg / km
400012	2x2x0,22	7,6	15,0	72,0
400013	4x2x0,22	9,2	29,0	100,0
400014	8x2x0,22	12,2	59,0	179,0
400015	12x2x0,22	14,2	90,0	248,0
400016	16x2x0,22	16,4	111,0	337,0
400017	20x2x0,22	18,4	149,0	421,0
400018	24x2x0,22	20,4	178,0	493,0
400019	32x2x0,22	22,4	238,0	620,0
400020	40x2x0,22	24,6	303,0	759,0

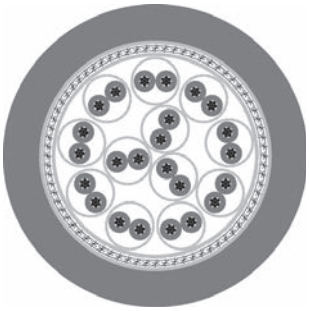
Dimensions and specifications may be changed without prior notice.

Application

The HELUSOUND® audio cable is an insulated, multi-core audio cable which is screened symmetrically and in pairs. The cable is particularly suitable for permanent laying in public buildings, such as, e.g. theatres or music stages and for permanent studio installation.

Audio

Audio cables, multipaired, spirally screened pairs and overall braided shielding





Type	Analog audio cables 12x2x0,14	Analog audio cables 16x2x0,14
Cable structure		
Conductor material:	Copper, tinned	Copper, tinned
Core insulation:	TPE	TPE
Stranding element:	pairs stranded	pairs stranded
Sheath material:	PUR	PUR
Cable external diameter:	approx. 12,7 mm	approx. 14,1 mm
Sheath colour:	black	black
Electrical data		
Conductor resistance, max.:	150 Ohm/km	150 Ohm/km
Insulation resistance, min.:	100 MOhm x km	100 MOhm x km
Technical data		
Weight:	approx. 190 kg/km	approx. 247 kg/km
Min. bending radius for laying:	127 mm	142 mm
Operating temperature range min.:	-25°C	-25°C
Operating temperature range max.:	+70°C	+70°C
Copper weight:	118,0 kg/km	165,0 kg/km
Norms	Halogen-free acc. to 60754-2	Halogen-free acc. to 60754-2
Part no.	**400042**	**400043**

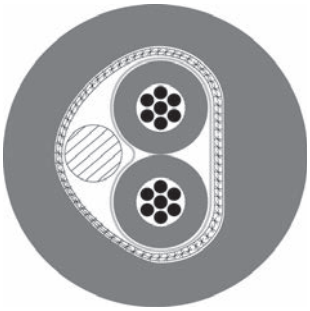
Dimensions and specifications may be changed without prior notice.

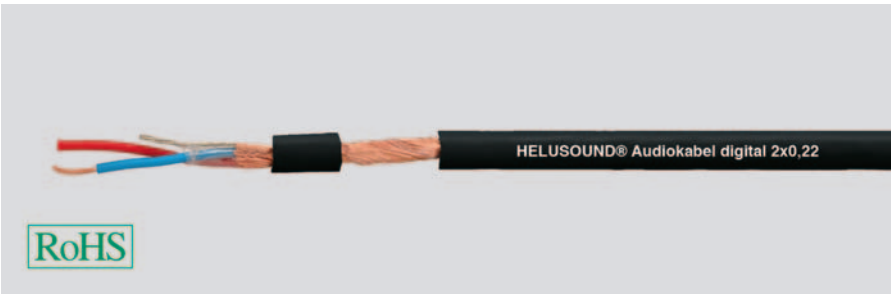
Application

The multipaired HELUSOUND® special sound audio cable has individually shielded pairs and is protected by an additional braided shielding and ribbed PUR sheath. This cable is particularly suitable for use in mobile radio and transmission systems.

Audio

AES/EBU digital audio cables, single pair, with spiral screen





Type	**Digital audio cables**
Cable structure	**2x0,22**
Conductor material:	Copper, bare
Core insulation:	PE
Core colours:	rd, bu
Stranding element:	2 cores with 1 earth conductor
Sheath material:	PVC
Cable external diameter:	approx. 5,0 mm
Sheath colour:	black

Electrical data

Characteristic impedance:	110 Ohm
Conductor resistance, max.:	86 Ohm/km
Insulation resistance, min.:	1 GOhm x km

Technical data

Weight:	approx. 35 kg/km
Min. bending radius for laying:	50 mm
Operating temperature range min.:	-25°C
Operating temperature range max.:	+70°C
Copper weight:	14,7 kg/km

Norms	Corrosiveness acc. to EN50267-2-3
Part no.	**400021**

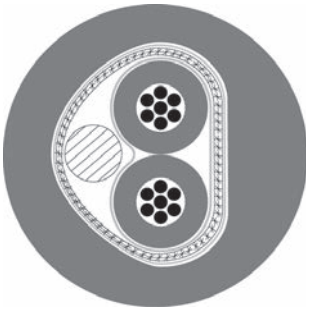
Dimensions and specifications may be changed without prior notice.

Application

The HELUSOUND® AES/EBU audio cable is a 2-core, symmetrical and shielded digital sound cable with flexible spiral screen and PVC outer sheath. The cable is suitable for longer transmission rates and larger data volumes, the transmission of digital and analog audio signals and can therefore, for example, be used for connecting audio amplifiers, digital mixers, DAT recorders etc. The cable is also available with PUR outer sheath.

Audio

AES/EBU digital audio cables, single pair, foil/braided shielding





Type	**Digital audio cables**
Cable structure	**2x0,22**
Conductor material:	Copper, tinned
Core insulation:	Cell PE
Core colours:	rd, bu
Stranding element:	2 cores with 1 earth conductor
Sheath material:	PVC
Cable external diameter:	approx. 6,0 mm
Sheath colour:	black

Electrical data

Characteristic impedance:	110 Ohm
Conductor resistance, max.:	86 Ohm/km
Insulation resistance, min.:	1 GOhm x km

Technical data

Weight:	approx. 43 kg/km
Min. bending radius for laying:	60 mm
Operating temperature range min.:	-25°C
Operating temperature range max.:	+70°C
Copper weight:	16,5 kg/km

Norms

Corrosiveness acc. to EN50267-2-3

Part no.	Cable structure	Screen	Conductor resistance Ohm / km	Outer diameter approx. mm	Cop. weight kg / km	Weight approx. kg / km
400022	2x0,22	Foil + braid	< 86,0	6,0	16,5	43,0
400023	2x0,22	Foil + braid	< 86,0	4,5	15,7	25,0
400024	2x0,22	Foil	< 86,0	4,2	7,3	18,0

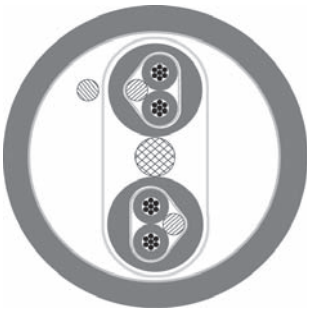
Dimensions and specifications may be changed without prior notice.

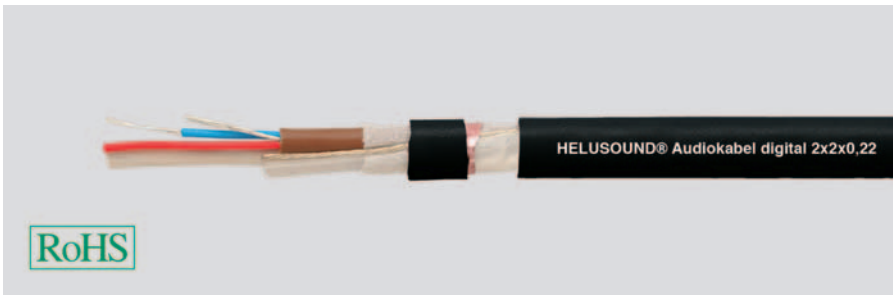
Application

The HELUSOUND® AES/EBU audio cable is a 2-core, symmetrical and shielded digital sound cable. The cable is available in three different versions. The standard version is characterised by double shielding; the patch variant has reduced outside diameter and the foil shielded variant is suitable for the permanent wiring of digital devices. All three versions are suitable for the transmission of digital audio signals.

Audio

AES/EBU digital audio cables, multipaired, pairs with foil shielding and overall foil shielding





Type	**Digital audio cables**
Cable structure	**2x2x0,22**
Conductor material:	Copper, tinned
Core insulation:	Cell PE
Core colours:	rd, bu
Stranding element:	2 cores with 1 earth conductor
Sheath material:	PVC
Cable external diameter:	approx. 9,9 mm
Sheath colour:	black

Electrical data

Characteristic impedance:	110 Ohm
Conductor resistance, max.:	86 Ohm/km
Insulation resistance, min.:	1 GOhm x km

Technical data

Weight:	approx. 85 kg/km
Min. bending radius for laying:	100 mm
Operating temperature range min.:	-25°C
Operating temperature range max.:	+70°C
Copper weight:	16,0 kg/km

Norms

Corrosiveness acc. to EN50267-2-3

Part no.	Cable structure	Outer diameter approx. mm	Cop. weight kg / km	Weight approx. kg / km
400025	2x2x0,22	9,9	16,0	85,0
400026	4x2x0,22	11,8	31,0	119,0
400027	6x2x0,22	14,9	46,0	195,0
400028	8x2x0,22	16,1	59,0	232,0
400029	12x2x0,22	19,1	85,0	330,0
400158	24x2x0,22	24,5	162,0	670,0

Dimensions and specifications may be changed without prior notice.

Application

The multipaired, digital HELUSOUND® AES/EBU audio cable is characterised by its shielding in pairs, its element sheaths and by the additional overall sheath. This cable is suitable for the transmission of digital audio signals.

Audio

AES/EBU digital audio cables, multipaired, spirally screened pairs and overall foil shielding





Type	**Digital audio cables**
Cable structure	**12x2x0,22**
Conductor material:	Copper, bare
Core insulation:	Cell PE
Core colours:	rd, bu
Stranding element:	2 cores with 1 earth conductor
Sheath material:	PVC
Cable external diameter:	approx. 17,0 mm
Sheath colour:	black

Electrical data

Characteristic impedance:	110 Ohm
Conductor resistance, max.:	86 Ohm/km
Insulation resistance, min.:	1 GOhm x km

Technical data

Weight:	approx. 320 kg/km
Min. bending radius for laying:	170 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+70°C
Copper weight:	171,0 kg/km

Norms Corrosiveness acc. to EN50267-2-3

Part no. **400030**

Dimensions and specifications may be changed without prior notice.

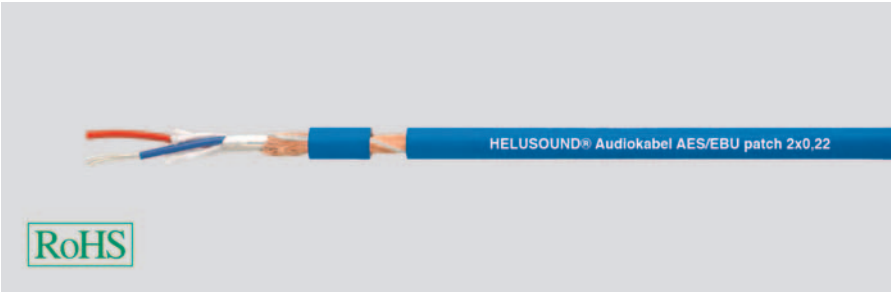
Application

The multipaired, digital HELUSOUND® AES/EBU audio cable is characterised by its shielding in pairs, its element sheaths and by the additional overall sheath. This cable is suitable for the transmission of digital audio signals.

Audio & Light

AES/EBU & DMX patch cable





Type	**DMX cables**
Cable structure	**2x0,22**
Conductor material:	Copper, tinned
Core insulation:	Cell PE
Core colours:	rd, bu
Stranding element:	2 cores with 1 filler
Sheath material:	PVC
Cable external diameter:	approx. 5,0 mm
Sheath colour:	blue

Electrical data

Characteristic impedance:	110 Ohm
Conductor resistance, max.:	80 Ohm/km
Insulation resistance, min.:	5 GOhm x km

Technical data

Weight:	approx. 33 kg/km
Min. bending radius for laying:	50 mm
Operating temperature range min.:	-30°C
Operating temperature range max.:	+70°C
Copper weight:	14,0 kg/km

Part no. 400031

Dimensions and specifications may be changed without prior notice.

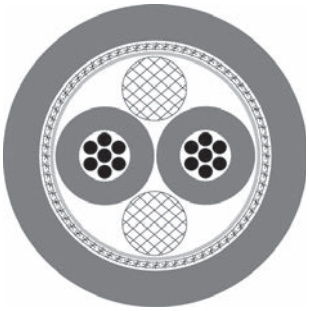
Application

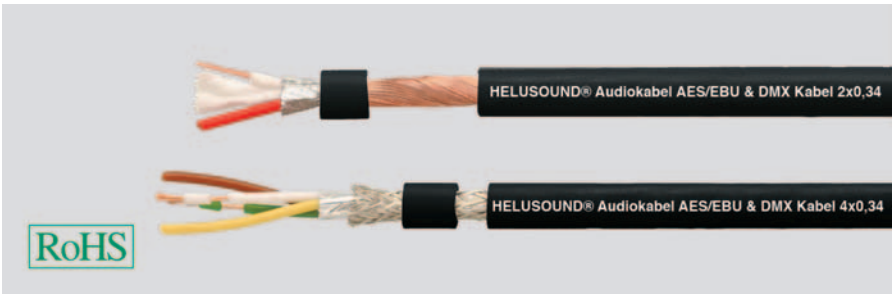
The 2-core HELUSOUND® AES/EBU & DMX patch cable is foil shielded and optimally protected against external interference by its copper spiral screen. This cable is suitable for indoor use for permanent laying for the control of lighting systems or for patching in studio technology.

S

Audio & Light

AES/EBU & DMX cables





Type	DMX cables	DMX cables
Cable structure	**2x0,34**	**4x0,34**
Conductor material:	Copper, bare	Copper, bare
Core insulation:	Cell PE	Cell PE
Core colours:	rd, wh	wh,gn,bn,ye
Stranding element:	2 cores with textile filler stranded	Star quad
Sheath material:	PVC	PVC
Cable external diameter:	approx. 6,4 mm	approx. 7,0 mm
Sheath colour:	black	black
Electrical data		
Characteristic impedance:	110 Ohm	110 Ohm
Conductor resistance, max.:	53 Ohm/km	53 Ohm/km
Insulation resistance, min.:	10 GOhm x km	5 GOhm x km
Technical data		
Weight:	approx. 50 kg/km	approx. 65 kg/km
Min. bending radius for laying:	64 mm	70 mm
Operating temperature range min.:	-30°C	-30°C
Operating temperature range max.:	+70°C	+70°C
Copper weight:	18,0 kg/km	29,0 kg/km
Part no.	**400032**	**400033**

Dimensions and specifications may be changed without prior notice.

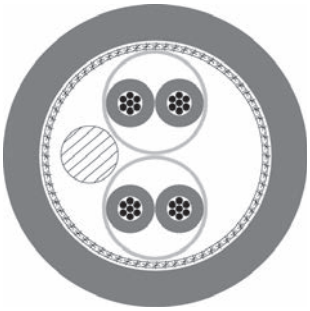
Application

The 2-core HELUSOUND® AES/EBU & DMX patch cable is protected against external interferences by its copper spiral screen. This cable is suitable for permanent laying for the control of lighting systems or for connecting digital audio amplifiers. It can be installed indoors and outdoors. The max. transmission path for DMX control amounts approx. 1000m

Audio & Light

AES/EBU TP DMX 512

HELULIGHT®





Type	**DMX cables**
Cable structure	**2x2x0,22**
Conductor material:	Copper, tinned
Core insulation:	Cell PE
Core colours:	or/wh, bu/wh
Stranding element:	pairs stranded
Sheath material:	PVC soft
Cable external diameter:	approx. 8,0 mm
Sheath colour:	black matt

Electrical data

Characteristic impedance:	110 Ohm
Conductor resistance, max.:	85 Ohm/km
Insulation resistance, min.:	100 GOhm x km

Technical data

Weight:	approx. 76 kg/km
Min. bending radius for laying:	80 mm
Operating temperature range min.:	-25°C
Operating temperature range max.:	+70°C
Copper weight:	38,0 kg/km

Part no.

400034

Dimensions and specifications may be changed without prior notice.

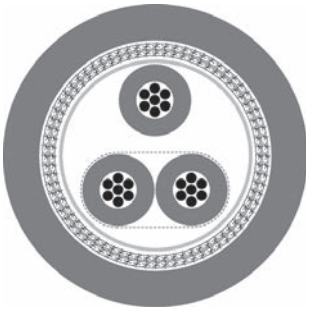
Application

The 4-core HELUSOUND® AES/EBU & DMX cable is protected against external interference by its AL/PT foil, its copper spiral screen and its PVC outer sheath. This cable is suitable for controlling all types of digital equipment. Also to use as microphon cabel.

S

Audio & Light

DMX cables, multicore with spiral screen





Type	**DMX cables**
Cable structure	**2x0,22+0,22**
Conductor material:	Copper, tinned
Core insulation:	PE spumed
Core colours:	wh,bu+rd
Stranding element:	pair and core stranded together
Sheath material:	PVC
Cable external diameter:	approx. 6,4 mm
Sheath colour:	black

Electrical data

Characteristic impedance:	110 Ohm
Conductor resistance, max.:	86 Ohm/km
Insulation resistance, min.:	1 MOhm x km

Technical data

Weight:	approx. 79 kg/km
Min. bending radius for laying:	64 mm
Operating temperature range min.:	-25°C
Operating temperature range max.:	+70°C
Copper weight:	66,0 kg/km

Norms

Corrosiveness acc. to EN50267-2-3

Part no.

400035

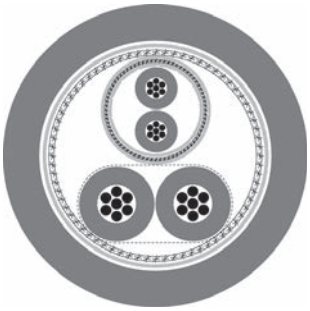
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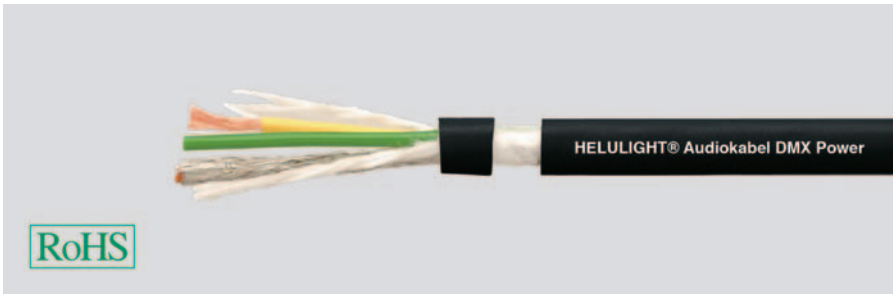
Application

The 3-core, shielded HELUSOUND® digital sound cable consists of a symmetrical pair and an additional third core. A double spiral screen and the PVC outer sheath protect the cable against electrical interference. This AES/EBU and DMX compliant (110 Ohm) special cable is suitable for the transmission of digital audio signals and can therefore, for example, be used for connecting digital mixers, audio amplifiers, DAT recorders, light and scanner systems etc.

Light+Power

DMX-POWER





Type	**DMX cables**
Cable structure	**(1x2x0,24)+2x1,0**
Conductor material:	Copper, bare
Core insulation:	Foam-Skin-PE (DMX), PVC (Power)
Core colours:	red, white (DMX); yellow, green (Power)
Stranding element:	2 cores with 1 filler
Sheath material:	PVC soft
Cable external diameter:	approx. 7,4 mm
Sheath colour:	black matt

Electrical data

Characteristic impedance:	110 Ohm

Technical data

Weight:	approx. 74 kg/km
Copper weight:	36,0 kg/km

Part no.

400081

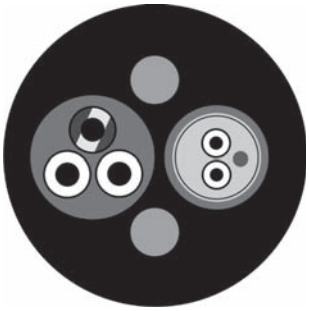
Dimensions and specifications may be changed without prior notice.

Application

The hybrid DMX Power cable is used in the professional DMX light controller. It transmits power for the light and control signals for the movement. The cable is compact, flexible and easy to process.

S

HELUSOUND® DMX+POWER





Type	**DMX cables**
Cable structure	**(1x2x0,25)+3G1,5**
Conductor material:	Copper, bare
Core insulation:	Foam-Skin-PE (DMX), PVC (Power)
Core insulation 2:	PVC
Core colours:	red, white (DMX); brown, blue, green/yellow (Power)
Stranding element:	DMX-Element together with Power-Element and filler stranded
Sheath material:	PVC flexible at low temperatures
Cable external diameter:	approx. 13,2 mm
Sheath colour:	black

Electrical data

Characteristic impedance:	110 Ohm
Conductor resistance, max.:	78 Ohm/km
Insulation resistance, min.:	20 GOhm x km

Technical data

Weight:	approx. 50 kg/km
Min. bending radius for laying:	64 mm
Operating temperature range min.:	-30°C
Operating temperature range max.:	+70°C
Copper weight:	60,5 kg/km

Part no. **400151**

Dimensions and specifications may be changed without prior notice.

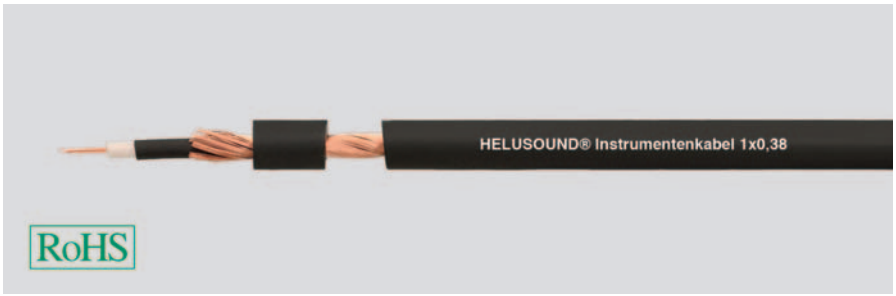
Application

The HELUSOUND® DMX+POWER hybrid cable combines a shielded light control wire and the power supply wire. The DMX-cable, which is shielded by a tin-coated copper braiding is perfectly suited for the control of light systems and mixing boards (110 Ohm characteristic intrinsic impedance). It highlights a soft PVC insulation and it is qualified for the use at indoor and outdoor installations. The DMX cable can also be used for the transmission of audio signals such as a microphone wire or as a power supply wire for active loudspeaker systems.

Audio

Instrument cables with spiral screen





Type	Instrument cables	Instrument cables
Cable structure	**1x0,22**	**1x0,38**
Conductor material:	Copper, bare	Copper, bare
Core insulation:	Foam-skin-PE	Cell PE
Sheath material:	PVC	PVC
Cable external diameter:	approx. 5,9 mm	approx. 7,0 mm
Sheath colour:	black	black
Electrical data		
Conductor resistance, max.:	86 Ohm/km	55 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Technical data		
Weight:	approx. 44 kg/km	approx. 55 kg/km
Min. bending radius for laying:	60 mm	70 mm
Operating temperature range min.:	-25°C	-25°C
Operating temperature range max.:	+70°C	+70°C
Copper weight:	7,9 kg/km	29,0 kg/km
Norms	Corrosiveness acc. to EN50267-2-3	Corrosiveness acc. to EN50267-2-3
Part no.	**400036**	**400037**

Dimensions and specifications may be changed without prior notice.

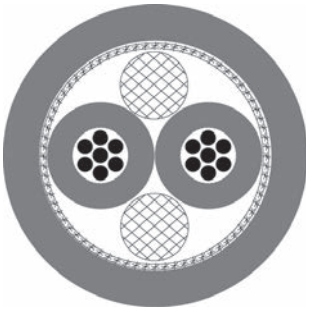
Application

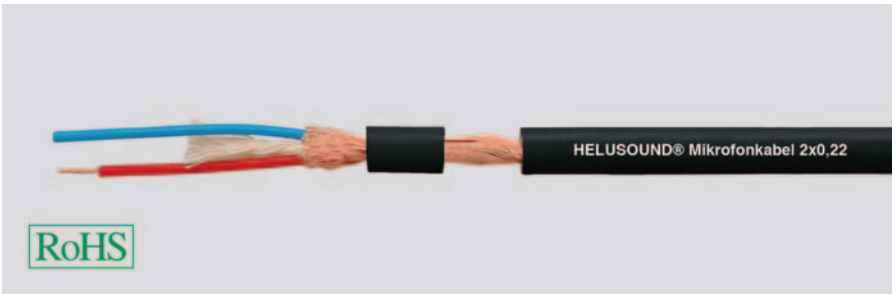
The HELUSOUND® instrument cable with spiral screen is a non-symmetrical, double shielded cable. This cable is specially suitable for connecting high ohmic components such as synthesisers, keyboards or guitars in professional stage and studio operation. The high-quality 1x0.38 special cable has an increased cross-section, a semi-conductor layer and a double spiral screen, which makes it suitable for the most stringent requirements of professional stages and studios.

S

Audio

Microphone cables with spiral screen, paired





Type	Microphone cable	Microphone cable
Cable structure	**2x0,22**	**2x0,15**
Conductor material:	Copper, bare	Copper, bare
Core insulation:	PE	PVC
Core colours:	rd, bu	rd, wh
Stranding element:	2 cores with textile filler stranded	pairs stranded
Sheath material:	PVC	PVC
Cable external diameter:	approx. 6,0 mm	approx. 4,2 mm
Sheath colour:	black	black
Electrical data		
Conductor resistance, max.:	86 Ohm/km	120 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Technical data		
Weight:	approx. 55 kg/km	approx. 27 kg/km
Min. bending radius for laying:	60 mm	42 mm
Operating temperature range min.:	-25°C	-25°C
Operating temperature range max.:	+70°C	+70°C
Copper weight:	12,1 kg/km	14,0 kg/km
Norms	Corrosiveness acc. to EN50267-2-3	Corrosiveness acc. to EN50267-2-3
Part no.	**400038**	**400039**

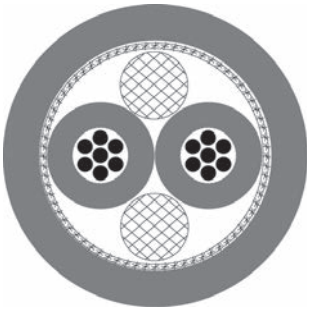
Dimensions and specifications may be changed without prior notice.

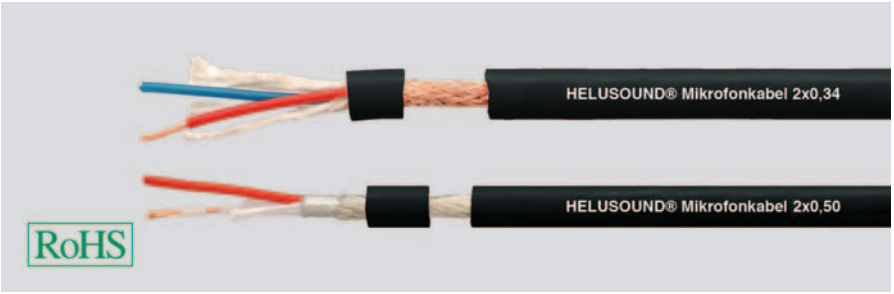
Application

The 2-core HELUSOUND® microphone cable with spiral screen is suitable for use in professional stage and studio operation. The microphone cable 2x0.15 has a double spiral screen made of bare copper wires.

Audio

Microphone cables with braided shielding





Type	Microphone cable 2x0,34	Microphone cable 2x0,50
Cable structure		
Conductor material:	Copper, bare	Copper, bare
Core insulation:	PE	PE
Core colours:	rd, bu	rd, wh
Stranding element:	2 cores with textile filler stranded	2 cores with textile filler stranded
Sheath material:	PVC	PVC
Cable external diameter:	approx. 6,5 mm	approx. 6,7 mm
Sheath colour:	black	black
Electrical data		
Conductor resistance, max.:	53 Ohm/km	37 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Technical data		
Weight:	approx. 30 kg/km	approx. 59 kg/km
Min. bending radius for laying:	65 mm	67 mm
Operating temperature range min.:	-30°C	-30°C
Operating temperature range max.:	+70°C	+70°C
Copper weight:	15,2 kg/km	37,0 kg/km
Part no.	**400040**	**400080**

Dimensions and specifications may be changed without prior notice.

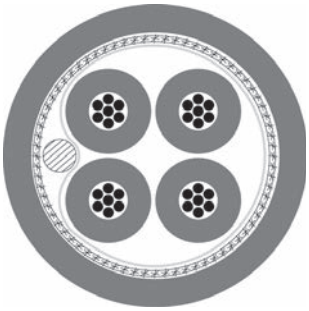
Application

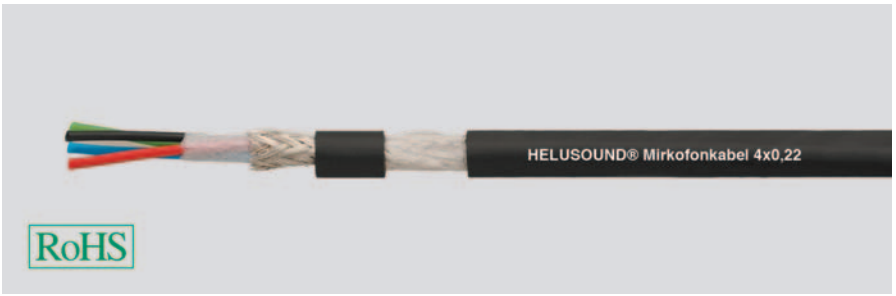
The 2-wire HELUSOUND® microphone cable with copper braid shield is suitable for use in the professional stage and studio operations, as well as for fixed installation. The line is characterized by its highly flexible PVC jacket.

S

Audio

Microphone cables with braided shielding, star quads





Type	**Microphone cable**
Cable structure	**4x0,22**
Conductor material:	Copper, bare
Core insulation:	PE
Core colours:	rd,bu,gn,bk
Stranding element:	Star quad
Drain wire:	AWG 26/7, copper bare
Inner sheath material:	PE
Sheath material:	PVC
Cable external diameter:	approx. 6,1 mm
Sheath colour:	black

Electrical data

Conductor resistance, max.:	86 Ohm/km
Insulation resistance, min.:	1 GOhm x km

Technical data

Weight:	approx. 50 kg/km
Min. bending radius for laying:	62 mm
Operating temperature range min.:	-25°C
Operating temperature range max.:	+70°C
Copper weight:	25,0 kg/km

Norms

Corrosiveness acc. to EN50267-2-3

Part no.

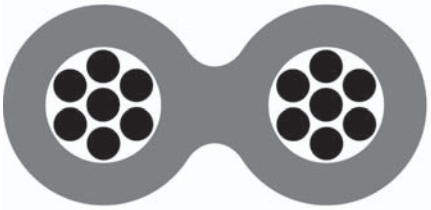
400041

Dimensions and specifications may be changed without prior notice.

Application

The 4-core HELUSOUND® microphone cable is stranded in star quads and suitable for special application due to its earth conductor and braided shielding. It is e.g. used as a stereo cable in the area of professional studio and microphone technique.
Easy stripping.

Loudspeaker Cables







Cross section (mm²)	**2 x 0,5**	**2 x 0,5**	**2 x 0,75**	**2 x 0,75**	**2 x 1,5**	**2 x 1,5**	**2 x 2,5**	**2 x 2,5**	**2 x 4**	**2 x 4**
Part no.	40180	40023	40181	40024	40182	40025	40183	40026	40184	40027
Cable structure										
Conductor material: Copper litz wire, bare										
Identification: Grooves										
Cond. make-up	16 x 0,20	16 x 0,20	24 x 0,20	24 x 0,20	28 x 0,25	28 x 0,25	48 x 0,25	48 x 0,25	55 x 0,30	55 x 0,30
Insulation h x w mm	2,0 x 5,0	2,1 x 4,7	2,2 x 4,9	2,2 x 4,9	2,6 x 5,5	2,6 x 5,5	3,3 x 7,0	3,3 x 7,0	4,3 x 8,2	4,3 x 8,2
Sheath material	PVC	PVC	PVC	PVC	PVC	PVC	PVC	PVC	PVC	PVC
Sheath colour	transparent	black/red	transparent	black/red	transparent	black/red	transparent	black/red	transparent	black/red
Weight approx. kg / km	15	15	20	20	37	37	63	63	80	80
Electrical characteristics										
Loop resistance max. (Ohm/km)	**70**	**70**	**47**	**47**	**23**	**23**	**14**	**14**	**9**	**9**
CapacitancepF/m	47	47	60	60	67	67	67	67	64	64
Inductance µH/m at										
1 kHz	0,7	0,67	0,61	0,61	0,54	0,54	0,54	0,54	0,58	0,58
10 kHz	0,8	0,79	0,73	0,73	0,59	0,59	0,62	0,62	0,65	0,65
100 kHz	0,8	0,85	0,73	0,73	0,59	0,59	0,62	0,62	0,65	0,65
1000 kHz	0,8	0,8	0,67	0,67	0,52	0,52	0,56	0,56	0,59	0,59
Copper weight kg/km	9,6	9,6	14,4	14,4	28,8	28,8	48,0	48,0	76,8	76,8

Cross section (mm²)	**2 x 1,5**	**2 x 2,5**	**2 x 4**	**2 x 6**	**2 x 10**
Part no.	40185	40186	40187	40188	40189
Cable structure					
Conductor material: Bare copper litz wire, highly flexible					
Identification: Stripes					
Cond. make-up	189 x 0,10	322 x 0,10	511 x 0,10	777 x 0,10	1273 x 0,10
Insulation h x w mm	3,1 x 6,5	3,6 x 7,5	5 x 10,2	6,1 x 12,5	7,0 x 15,0
Sheath material	PVC	PVC	PVC	PVC	PVC
Sheath colour	transparent	transparent	transparent	transparent	transparent
Weight approx. kg / km	41	60	79	136	254
Electrical characteristics					
Loop resistance max. (Ohm/km)	**23**	**14**	**9**	**6**	**3**
CapacitancepF/m	67	53	50	54	59
Inductance µH/m at					
1 kHz	0,54	0,48	0,49	0,46	0,45
10 kHz	0,61	0,55	0,56	0,54	0,53
100 kHz	0,62	0,59	0,6	0,56	0,56
1000 kHz	0,55	0,54	0,56	0,53	0,52
Copper weight kg/km	28,8	48,0	76,8	115,2	192,0

Dimensions and specifications may be changed without prior notice. (RM01)

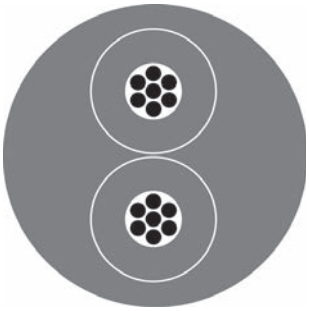
Note

The materials used in manufacture are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers.

S

HELUSOUND® 400 PVC

Speaker cables, round





Type **Speaker cable HELUSOUND® 400**

Cable structure 2x1,5

Conductor material:	Copper, bare
Core insulation:	PVC
Core colours:	rd, bk
Sheath material:	PVC
Cable external diameter:	approx. 6,6 mm
Sheath colour:	black

Electrical data

Conductor resistance, max.:	12,7 Ohm/km

Technical data

Weight:	approx. 73,4 kg/km
Min. bending radius for laying:	33 mm
Operating temperature range min.:	-10°C
Operating temperature range max.:	+70°C
Copper weight:	28,8 kg/km

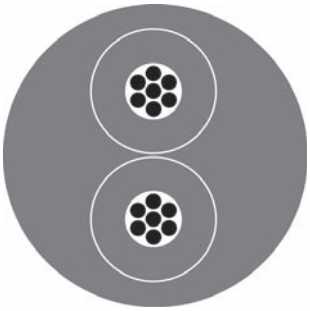
Part no.	Cable structure	Conductor resistance Ohm / km	Outer diameter approx. mm	Cop. weight kg / km	Weight approx. kg / km
400089	2x1,5	< 12,7	6,6	28,8	73,4
400090	2x2,5	< 7,9	7,5	48,0	106,9
400091	2x4,0	< 4,9	9,4	76,8	163,7
400092	4x2,5	< 7,9	8,8	96,0	169,3
400093	4x4,0	< 4,9	11,6	153,6	272,4
400060	8x2,5	< 7,9	13,5	192,0	349,0
400094	8x4,0	< 4,9	16,8	307,2	541,6

Dimensions and specifications may be changed without prior notice.

Application

All products of the HELUSOUND® 400 LOUDSPEAKER series impress with their extremely high flexibility. 0,15 stranded wires and a very soft PVC outer sheath make this possible. These cables are particularly used in mobile applications on stages, in studios or in the conference industry.

HELUSOUND® 500 PUR





Type **Speaker cable HELUSOUND® 500 PUR**

Cable structure 2x1,5

Conductor material:	Copper, bare
Core insulation:	PVC
Core colours:	rd, bk
Stranding element:	pairs stranded
Sheath material:	PUR
Cable external diameter:	approx. 6,6 mm
Sheath colour:	black

Electrical data

Conductor resistance, max.:	12,7 Ohm/km

Technical data

Weight:	approx. 66,9 kg/km
Min. bending radius for laying:	33 mm
Operating temperature range min.:	-25°C
Operating temperature range max.:	+80°C
Copper weight:	28,8 kg/km

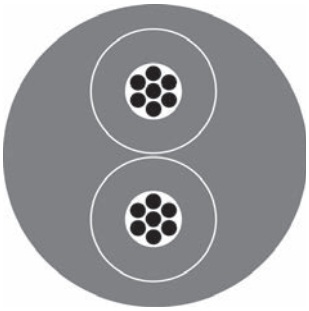
Part no.	Cable structure	Conductor resistance Ohm / km	Outer diameter approx. mm	Cop. weight kg / km	Weight approx. kg / km
400109	2x1,5	< 12,7	6,6	28,8	66,9
400110	2x2,5	< 7,9	7,5	48,0	98,5
400111	2x4,0	< 4,9	9,4	76,8	150,2
400112	4x2,5	< 7,9	8,8	96,0	159,1
400113	4x4,0	< 4,9	11,6	153,6	253,0
400114	8x2,5	< 7,9	13,5	192,0	332,1
400115	8x4,0	< 4,9	16,8	307,2	499,5

Dimensions and specifications may be changed without prior notice.

Application

The robust solution for medium and high mechanical stresses, as robust, abrasion-resistant and cut resistant. Also suitable for outdoor use.

HELUSOUND® 600 FRNC, halogen-free





Type **Speaker cable HELUSOUND® 600 FRNC**

Cable structure **2x1,5**

Conductor material:	Copper, bare
Core insulation:	FRNC
Core colours:	rd, bk
Stranding element:	pairs stranded
Sheath material:	FRNC
Cable external diameter:	approx. 6,6 mm
Sheath colour:	black

Electrical data

Conductor resistance, max.:	12,7 Ohm/km

Technical data

Weight:	approx. 77 kg/km
Min. bending radius for laying:	33 mm
Operating temperature range min.:	-5°C
Operating temperature range max.:	+70°C
Copper weight:	28,8 kg/km

Part no.	Cable structure	Conductor resistance Ohm / km	Outer diameter approx. mm	Cop. weight kg / km	Weight approx. kg / km
400116	2x1,5	< 12,7	6,6	28,8	77,0
400117	2x2,5	< 7,9	7,5	48,0	105,6
400118	2x4,0	< 4,9	9,4	76,8	166,9
400119	4x2,5	< 7,9	8,8	96,0	161,5
400120	4x4,0	< 4,9	11,6	153,6	271,6
400121	8x2,5	< 7,9	13,5	192,0	338,6
400122	8x4,0	< 4,9	16,8	307,2	531,5

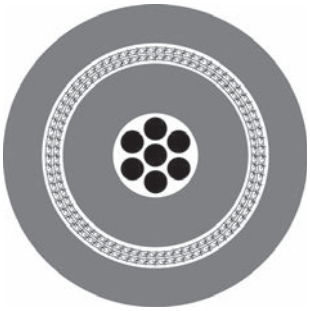
Dimensions and specifications may be changed without prior notice.

Application

The safe solution for increasing demands on the security in case of fire, as flame retardant, low smoke, halogen-free, no corrosion damage by released gases and fumes, no flame propagation provide for local flame propagation for the integrity of important systems.

Audio

Speaker cables, coaxial





Type	Speaker cable	Speaker cable
Cable structure	**2x2,5**	**2x4,0**
Conductor material:	Copper, bare	Copper, bare
Core insulation:	PVC	PVC
Core colours:	Black	Black
Sheath material:	PVC	PVC
Cable external diameter:	approx. 6,8 mm	approx. 7,9 mm
Sheath colour:	black	black
Electrical data		
Conductor resistance, max.:	7,98 Ohm/km	4,95 Ohm/km
Insulation resistance, min.:	5 MOhm x km	5 MOhm x km
Technical data		
Weight:	approx. 84 kg/km	approx. 129 kg/km
Min. bending radius for laying:	68 mm	80 mm
Operating temperature range min.:	-25°C	-25°C
Operating temperature range max.:	+70°C	+70°C
Copper weight:	52,0 kg/km	87,0 kg/km
Norms	Corrosiveness acc. to EN50267-2-3	Corrosiveness acc. to EN50267-2-3
Part no.	**400061**	**400062**

Dimensions and specifications may be changed without prior notice.

Application

The coaxial HELUSOUND® speaker cable is protected by a counter-rotating double spiral shield and outer jacket. It is characterized due to the construction, in addition to robustness and good drum reeling, especially by high flexibilty and small dimensions.

S

Loadcable 300/500 V + 600/1000 V





Type

Loadcable 300V/500V/0,6kV/1kV

Cable structure

Conductor material:	Copper, bare
Core insulation:	PVC flexible at low temperatures
Core colours:	black number coded + gn/ye
Stranding element:	14 cores stranded
Sheath material:	PVC flexible at low temperatures
Cable external diameter:	approx. 13,4 mm
Sheath colour:	black

Electrical data

Conductor resistance, max.:	13,3 Ohm/km

Technical data

Weight:	approx. 322 kg/km
Min. bending radius for laying:	53,6 mm
Operating temperature range min.:	-40°C
Operating temperature range max.:	+80°C
Copper weight:	201,6 kg/km

Loadcable 300/500 V

Part no.	Cable structure	Conductor resistance Ohm / km	Outer diameter approx. mm	Cop. weight kg / km	Weight approx. kg / km
400143	14 G 1,5	< 13,3	13,4	201,6	322,0
400144	18 G 1,5	< 13,3	15,2	259,2	422,0
400145	14 G 2,5	< 7,98	16,6	336,0	487,0
400146	18 G 2,5	< 7,98	19,0	432,0	634,0

Loadcable 0,6/1 kV

Part no.	Cable structure	Conductor resistance Ohm / km	Outer diameter approx. mm	Cop. weight kg / km	Weight approx. kg / km
400147	14 G 1,5	< 13,3	17,7	201,6	430,0
400148	18 G 1,5	< 13,3	20,2	259,2	560,0
400149	14 G 2,5	< 7,98	20,0	336,0	604,0
400150	18 G 2,5	< 7,98	22,6	432,0	778,0

Dimensions and specifications may be changed without prior notice.

Application

The highly flexible load cables are applied at medium mechanical stress in the professional stage and lighting technology, and other load circuits. The flexibility is achieved through the building with extra fine 0,15 mm² strands and the core and sheath insulation from cold-flexible PVC.

Video Cables



used as	Indoors	Indoors, underground	Indoors	Indoors	Indoors, underground	Indoors	Indoors	Indoors	Indoors, outdoors
Type	**0,6/2,8**	**1,0/6,6**	**1.0/6.6 2YD**	**1,0/6,6**	**1.0/6.6D**	**0.6L/3.7**	**0,6/3,7**	**1.0/6.6D**	**0,6L/3,7+2x0,75**
Part no.	40022	40056	40175	40173	40073	40170	40171	40174	40028
Cable structure									
Inner conductor diameter mm	0,6 Copper, bare	1 Copper, bare	1 Copper, bare	1 Copper, bare	1 Copper, bare	0,2 Copper, bare	0,6 Copper, bare	1 Copper, bare	0,6 Copper, bare
Insulation Ø mm	2,8 Cell PE	6,4 PE	6,4 PE	6,4 PE	6,4 PE	3,7 PE	3,7 PE	6,4 PE	3,7 PE
1st Outer conductor	Polyester foil coated with aluminium on both sides	Bare copper braid	Bare copper braid	Bare copper braid	Bare copper braid	Bare copper braid	Bare copper braid	Bare copper braid	Bare copper braid
Ø approx. mm	-	7	7	7	7	4,2	4,3	7	-
Inner steath/Foil	-	-	PE	-	Foil	-	-	Foil	-
Ø approx. mm	-	-	8,5	-	-	-	-	-	-
2nd Outer conductor	Tinned copper braid	no	Bare copper braid	no	Bare copper braid	no	no	Bare copper braid	-
Ø approx. mm	-	-	9,1	-	7,6	-	-	7,6	-
Outer sheath	FRNC	PE	PVC	PVC	PE	PVC	PVC	PVC	PVC
Sheath colour	green	black	green	green	black	green	green	green	black
Outer Ø approx. mm	4,3	8,8	11,0	8,8	9,0	6,1	6,1	9,0	11,8
Min. bending radius approx. mm	25	45	55	45	50	30	30	50	50
Weight approx. kg / km	24	93	151	95	125	48	48	128	85
Electrical characteristics									
Impedance (Ohm)	**75 ± 2**	**75 ± 1**	**75 ± 1**	**75 ± 1**	**75 ± 1**	**75 ± 1**	**75 ± 1**	**75 ± 1**	**75 ± 3**
Attenuation at 20°C (db/100m)									
1 MHz	0,9	0,6	0,6	0,6	0,6	1,2	1,1	0,6	1,1
5 MHz	2,2	1,3	1,4	1,3	1,4	2,6	2,5	1,4	2,5
7 MHz	2,6	-	-	-	-	-	-	-	-
10 MHz	3,2	2	2	2	2	3,6	3,5	2	3,5
50 MHz	7,5	-	-	-	-	-	-	-	-
100 MHz	10,2	-	-	-	-	-	-	-	-
Propagation velocity v/c	0,8	0,66	0,66	0,66	0,66	0,66	0,66	0,66	0
DC resistance at 20°C									
Inner conductor max.Ohm/km	63	22	24	22	24	83	63	24	63
Outer conductor max.Ohm/km	21	7,5	6,5	7,5	3,5	12,5	13	3,5	13
CapacitancepF/m	54	67	67	67	67	67	67	67	67
Test voltage (50 Hz, kVeff.)	3,5	7	7	7	7	4,2	4,2	7	4
Working voltage at (kV)									
Pulse operation	-	6	6	6	6	3,6	3,6	6	-
HF-operation (peak value)	-	3	3	3	3	1,8	1,8	3	-
DC operation	-	14	14	14	14	8	8	14	-
Screening efficiency (dB)									
50 and 900 MHz≥	90	-	-	-	-	-	-	-	-
Copper weight kg/km	11,0	32,0	78,0	32,0	78,0	22,0	22,0	78,0	38,0

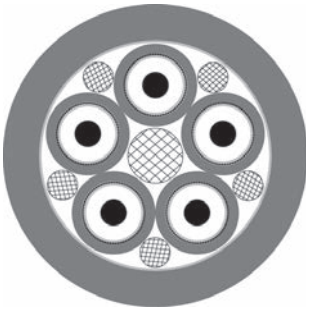
Dimensions and specifications may be changed without prior notice. (RM01)

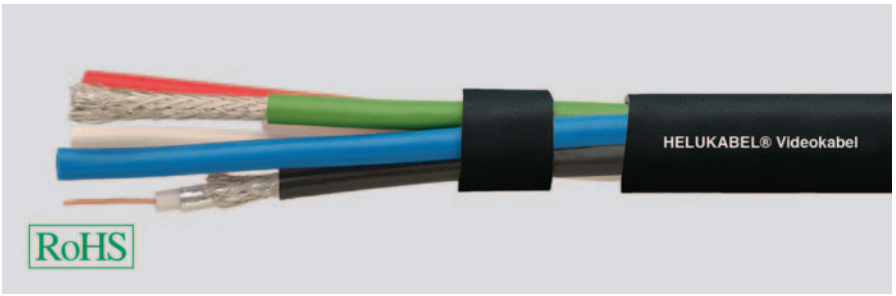
Note

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers.
- **ALPR**=Polyesterfoil coated with Aluminium on both sides
  bl=Bare, **bk**=Black, **Cu**=Copper, **D**=2xbraiding, **FRNC**=Flame Retardant Non-Corrosive, **G**=Braid, **gn**=Green, **PE**=Polyethylene, **PEE**=Cell-PE, **PVC**=Polyvinylchloride

Video

Video cables, multicore





Type	**Video Cables**
Cable structure	**3x(0,6/2,8)**
Conductor material:	Copper, bare
Core insulation:	Cell PE
Sheath material:	PVC
Cable external diameter:	approx. 12,9 mm
Sheath colour:	black

Electrical data

Characteristic impedance:	75 Ohm
Inner conductor resistance, max.:	65 Ohm/km

Technical data

Weight:	approx. 178 kg/km
Min. bending radius for laying:	130 mm
Operating temperature range min.:	-25°C
Operating temperature range max.:	+70°C
Copper weight:	49,0 kg/km

Norms

Corrosiveness acc. to EN50267-2-3

Part no.	Cable structure	Outer diameter approx. mm	Cop. weight kg / km	Weight approx. kg / km
400068	3x(0,6/2,8)	12,9	49,0	178,0
400069	4x(0,6/2,8)	14,1	65,0	214,0
400070	5x(0,6/2,8)	15,3	81,0	259,0
400071	6x(0,6/2,8)	16,7	97,0	295,0
400072	7x(0,6/2,8)	16,7	113,0	310,0

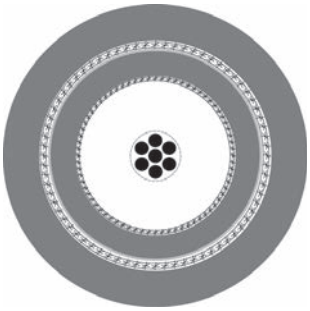
Dimensions and specifications may be changed without prior notice.

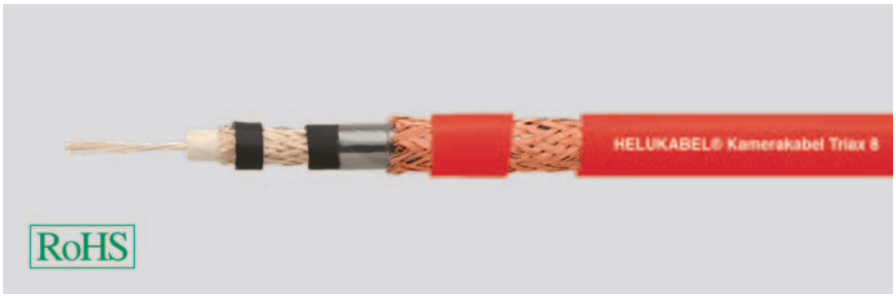
Application

The multi-core, coaxial HELUKABEL® video cable is distinguished by 75 Ohm, cell PE insulation, AL foil and braided shielding, PVC element sheath and outer sheath. Alternative we also offer a halogen-free and flame-resistant version. As example it is suitable for the parallel transmission of signals (e.g. RGB).

Video

Camera cables





Type
Cable structure

	Camera Cables Triax 8
Conductor material:	Copper, silvered
Core insulation:	PE
Sheath material:	PUR
Cable external diameter:	approx. 8,5 mm
Sheath colour:	red

Electrical data

Characteristic impedance:	75 Ohm

Technical data

Weight:	approx. 95 kg/km
Min. bending radius for laying:	80 mm
Operating temperature range min.:	-30°C
Operating temperature range max.:	+80°C
Copper weight:	55,0 kg/km

Part no.	Cable structure	Conductor insulation mm	Outer diameter approx. mm	Cop. weight kg / km	Weight approx. kg / km
400073	Triax 8	4,5	8,5	55,0	95,0
400074	Triax 11	6,5	11,0	80,0	150,0
400075	Triax 14	9,7	14,4	128,0	235,0
400076	Triax 8 flex	4,5	8,5	55,0	105,0
400077	Triax 11 flex	6,1	11,2	80,0	160,0
400078	Triax 14 flex	9,7	14,4	133,0	250,0

Dimensions and specifications may be changed without prior notice.

Application

The HELUKABEL® Triax cable ensures the optimal transmission of image signals. This is possible because of the low attenuation values, thick cross-braided shielding and an especially rugged outer sheath. For the Flex variant, the PVC inner and outer sheath are replaced by TPE to guarantee greater flexibility. The Triax cables are primarily used to connect video cameras and image transmission systems and are suitable for mobile use.



RENEWABLE ENERGY & TRANSPORTATION

Cables for photovoltaic installations	796
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CABLES FOR PHOTOVOLTAIC INSTALLATIONS

Designation	Properties	Approvals	Page
SOLARFLEX®-X PV1-F		EAC	798
SOLARFLEX®-X PV1-F NTS			799
SOLARFLEX®-X PV1-F TWIN			800

T

SOLARFLEX®-X PV1-F



Technical data

- **Temperature range**
  -40°C to +90°C
  max. temperature at conductor +120°C
- **Short circuit temperature**
  200°C (short circuit duration up to 5 s)
- **Nominal voltage**
  VDE 600/1000 V AC
  1800 V DC conductor/conductor
- **AC test voltage**
  10000 V
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 4x cable Ø
- **Highest permissible Voltage**
  - DC:
    Conductor/Conductor 1,8 kV
    Conductor/Earth 0,9 kV
  - AC: Conductor/Earth 0,7 kV
  - Three phase: Conductor/Conductor 1,2 kV

Cable structure

- Tinned copper-conductor, to DIN VDE 0295 cl.5, fine-wire, IEC 60228 cl.5
- Core insulation of cross-linked Polyolefin
- Core identification white
- Outer sheath of cross-linked Polyolefin
- Sheath colour see table below
- with meter marking

Properties

- Double-insulated
- Ozone resistant acc. to EN 50396
- Weather und UV resistant acc. to HD 605/A1
- Halogen-free acc. to DIN EN 50267-2-1, EN 60684-2
- Resistant to acid and bases acc. to EN 60811-2-1
- Flame retardant to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Very robust and abraison-resistant sheath acc. to DIN EN 53516
- Anticipated service life: 25 year
- Hydrolysis and ammoniac resistant

Approvals

- According to PV1-F requirement profile for PV cable DKE / VDE AK 411.2.3
- VDE (Reg. 8266)
- TÜV (2 PfG 1169 / 08.2007, R60025298)
- UL certification in progress (UL Subject 4703)

Note

- Not for direct installation in ground
- Version with rodent protection available: **SOLARFLEX®-X PV1-F NTS**, confer page 799

Application

The SOLARFLEX®-X PV1-F is used for cabling solar modules.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Sheath colour	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
704225	1 x 2,5	black	4,5	24,0	42,0	14
705892	1 x 2,5	blue	4,5	24,0	42,0	14
705891	1 x 2,5	red	4,5	24,0	42,0	14
704226	1 x 4	black	5,2	38,4	60,0	12
705776	1 x 4	blue	5,2	38,4	60,0	12
705775	1 x 4	red	5,2	38,4	60,0	12
704227	1 x 6	black	5,9	57,6	82,0	10
705778	1 x 6	blue	5,9	57,6	82,0	10
705777	1 x 6	red	5,9	57,6	82,0	10
704228	1 x 10	black	6,9	96,0	123,0	8
705894	1 x 10	blue	6,9	96,0	123,0	8
705893	1 x 10	red	6,9	96,0	123,0	8
704229	1 x 16	black	8,3	153,6	190,0	6
706840	1 x 16	blue	8,3	153,6	190,0	6
706839	1 x 16	red	8,3	153,6	190,0	6
704230	1 x 25	black	10,0	240,0	285,0	4
704231	1 x 35	black	11,0	336,0	376,0	2
704232	1 x 50	black	13,0	480,0	530,0	1
704233	1 x 70	black	15,3	672,0	745,0	2/0
704234	1 x 95	black	17,0	912,0	960,0	3/0
705738	1 x 120	black	19,1	1152,0	1220,0	4/0
705739	1 x 150	black	22,7	1440,0	1550,0	300 kcmil
706288	1 x 185	black	25,5	1776,0	1930,0	350 kcmil
706289	1 x 240	black	28,3	2304,0	2550,0	500 kcmil

Dimensions and specifications may be changed without prior notice.

SOLARFLEX®-X PV1-F NTS



NEW

Technical data

- **Temperature range**
  -40°C to +90°C
  max. temperature at conductor +120°C
- **Short circuit temperature**
  200°C (short circuit duration up to 5 s)
- **Nominal voltage**
  VDE 600/1000 V AC
  1800 V DC conductor/conductor
- **AC test voltage**
  10000 V
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 4x cable Ø
- **Highest permissible Voltage**
  - DC:
    Conductor/Conductor 1,8 kV
    Conductor/Earth 0,9 kV
  - AC: Conductor/Earth 0,7 kV
  - Three phase: Conductor/Conductor 1,2 kV

Cable structure

- Tinned copper-conductor, to DIN VDE 0295 cl.5, fine-wire, IEC 60228 cl.5
- Core insulation of cross-linked Polyolefin
- Core identification white
- Outer sheath of cross-linked Polyolefin
- Sheath colour black
- Braiding of of stainless steel single V2A (rodent protection)

Properties

- Double-insulated
- Approval: TÜV 2Pfg 1169/08.2007
- UV-, ozone-resistant, weather-resistant
- Halogen-free
- Abrasion and cut resistant
- Relatively flexible
- Easy to strip
- Flame-resistant according to DIN VDE 0482 Part 332-1-2, IEC 60332-1-2
- Resistant to short circuits up to 200°C thanks to double insulation, short circuit temperature 200°C/5 sec.
- Anticipated service life 25 years

Note

- Further sizes are available on request.
- Not for direct installation in ground

Application

The SOLARFLEX®-X PV1-F NTS version with rodent protection, is used in PV systems mainly in farms and agricultural areas.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
706307	1 x 4	5,8	38,4	80,0	12
706308	1 x 6	6,5	57,6	106,0	10
706309	1 x 10	7,5	96,0	152,0	8

Dimensions and specifications may be changed without prior notice.

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SOLARFLEX®-X PV1-F TWIN



Technical data

- **Temperature range**
  -40°C to +90°C
  max. temperature at conductor +120°C
- **Short circuit temperature**
  250°C (short circuit duration up to 5 s)
- **Nominal voltage**
  VDE U_0/U 600/1000 V AC
  1800 V DC conductor/conductor
- **AC test voltage**
  6500 V, 50 Hz, 15 kV DC
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 4x cable Ø
- **Highest permissible Voltage**
  • DC:
  Conductor/Conductor 1,8 kV
  Conductor/Earth 0,9 kV
  • AC: Conductor/Earth 0,7 kV
  • Three phase: Conductor/Conductor 1,2 kV

Cable structure

- Tinned copper-conductor, to DIN VDE 0295 cl.5, fine-wire, IEC 60228 cl.5
- Core insulation of cross-linked Polyolefin
- Core identification black and red
- Outer sheath of cross-linked Polyolefin
- Sheath colour black

Properties

- Double-insulated
- Approval: TÜV 2Pfg 1169/08.2007
- UV-, ozone-resistant, weather-resistant
- Halogen-free
- Abrasion and cut resistant
- Relatively flexible
- Easy to strip
- Flame-resistant acc. to DIN VDE 0482 part 332-1-2, IEC 60332-1-2
- Anticipated service life 25 years

Note

- Further sizes are available on request.
- Not for direct installation in ground

Application

The SOLARFLEX®-X PV1-F TWIN is used for cabling solar modules.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer dimension app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
707234	2 x 2,5	5,4 x 11,0	50,0	95,0	14
707235	2 x 4	5,8 x 11,8	80,0	125,0	12

Part no.	No.cores x cross-sec. mm²	Outer dimension app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
705769	2 x 6	6,8 x 13,6	120,0	187,0	10
707236	2 x 10	7,8 x 15,8	200,0	254,0	8

Dimensions and specifications may be changed without prior notice.


1500kg
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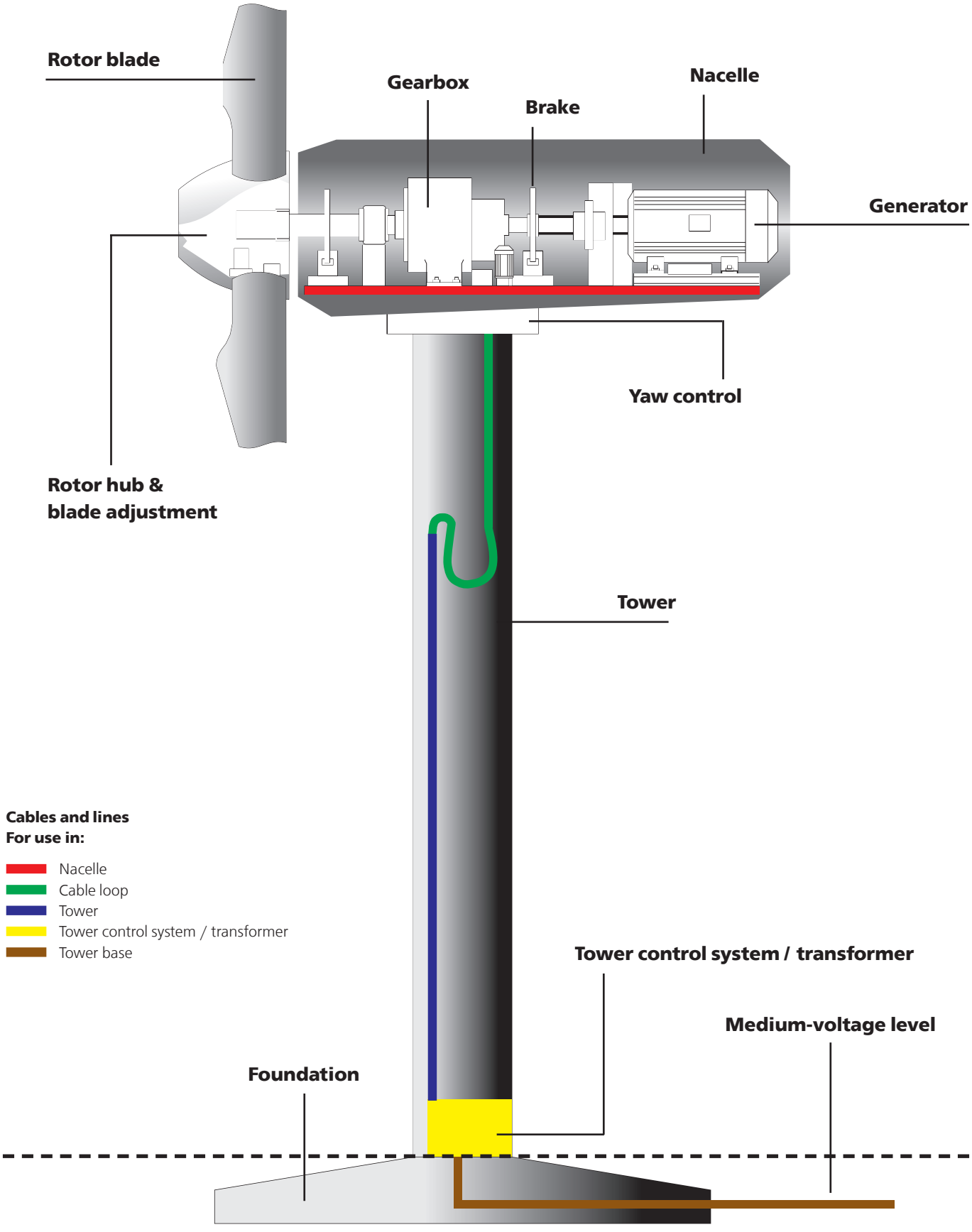


CABLES FOR WIND TURBINES

Designation	Properties	Approvals	Page
HELUWIND® WK 103w EMV D-T	UV-resistant, UL/CSA style 10678/21179 single-core/multicore		808
HELUWIND® WK 103k EMV D-T	UV-resistant, UL/CSA style 10269/2570 single-core/multicore		809
HELUWIND® WK 135-Torsion	UV-resistant, UL/CSA style** 10553 / 20234, single-core/multicore 90°C (80°C in accordance with UL), suitable for offshore		810
HELUWIND® WK 137-Torsion	UV-resistant, suitable for offshore, UL/CSA style 10553/20234, single-core/multicore, 90°C (80°C in accordance with UL)		811
HELUWIND® WK 300w-Torsion	UV-resistant, also suitable for direct burial		812
HELUWIND® WK 310-Torsion	UV-resistant, suitable for offshore		813
HELUWIND® WK H07BN4N4-F WIND-Torison	Torsion +/- 150°/1m, UV-resistant, 750V/90°C		814
HELUWIND® WK 101 H	0.6/1 kV halogen-free		815
HELUWIND® WK fire alarm cable Torsion	Halogen-free, FT1, 24V		816
HELUWIND® WK DLO 2kV	FT4, UV-resistant, UL44 1kV, 90°C, VW-1, LS, MSHA		817
HELUWIND® WK Powerline ALU	0.6/1 kV or 1.8/3kV, each also available as robust version		818
HELUWIND® THERMFLEX® 145	Halogen-free, +145°C		819
WK (N)A2XH	0.6/1 kV, halogen-free		820

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FUNCTION VIEW - WIND TURBINES



SELECTION TABLE - CABLES & WIRES

	Use, see graphic	Approval	Fire test FT 4	Fire test FT 1 (with FT 2)	Nominal voltage in accordance with UL	Nominal voltage in accordance with VDE	Halogen-free	Oil-resistant **	Extensively oil-resistant	UV-resistant	Offshore use	Temp. fixed installation in °C	Temp. flexing in °C	Torsionable +/- per meter	Cu-screen	Page
Torsion cables																
WK 103w-T		UL 10678/ 21179, cRUus, CE		x	1000 V	0.6/1 kV		x*	x	x		-40° to +90°	-35° to +90°	140°		808
WK 103w EMV D-T		UL 10269, 2570, cRUus, CE		x	1000 V	0.6/1 kV		x*	x	x		-40° to +90°	-35° to +90°	90°		808
WK 103k-T		UL 10269, 2570, cRUus, CE		x	1000 V	0.6/1 kV			x	x		-40° to +80°	-40° to +80°	140°		809
WK 103k EMV D-Torsion		UL 10269, 2570, cRUus, CE		x	1000 V	0.6/1 kV			x	x		-40° to +80°	-40° to +80°	90°		809
WK 135-T		UL 10553, 20234, cRUus, CE, VDE	60332-3		1000 V	0.6/1 kV	x	x		x	x	-40° to +90°	-40° to +90°	150°		810
WK 135 EMV D-T		UL 10553, 20234, cRUus, CE, VDE	60332-3		1000 V	0.6/1 kV	x	x		x	x	-40° to +90°	-40° to +90°	150°		810
WK 137-T FT4		UL 10553, 20234, cRUus, CE, VDE	x[1]		1000 V	0.6/1 kV	x	x		x	x	-40° to +90°	-40° to +90°	150°		811
WK 137 EMV D-T		UL 10553, 20234, cRUus, CE, VDE	x[1]		1000 V	0.6/1 kV	x	x		x	x	-40° to +90°	-40° to +90°	150°		811
WK 300w-T		CE				1.8/3kV			x	x		-40° to +90°	-35° to +90°	90°		812
WK 310-T		CE	30332-3			1.8/3kV	x	x		x		-40° to +90°	-40° to +90°	150°		813
WK H07BN4-F WIND-T		CE				450/750V				x		-45° to +90°	-35° to +90°	150°		814
WK 101 H		CE				0.6/1 kV	x		x	x		-50° to +100°	-40° to +90°			815
WK fire alarm cable-T		CE		x		24V	x	x				-50° to +90°	-40° to +80°	215°		816
WK NTSCGEWOEU-T		CE				3.6/6kV			x	x		-40° to +90°	-40° to +90°	100°		???
WK DLO 2 kV		UL 44, CSA, CE	x	x	2000 V					x		-40° to +90°				817
WK Powerline ALU			60332-3			0.6/1 kV			x	x	x	-40° to +105°	-20° to +105°			818
WK THERMFLEX® 145		CE				0.6/1 kV	x			x		-55° to +145°	-20° to +120°			819
WK (N)A2XH		CE	60332-3			0.6/1 kV	x			x		-30° to +90°	-5° to +50°			820
Tower & infrastructure cables																
NYY-J/-0		CE		x		0.6/1 kV						-40° to +70°	-5° to +50°			538
NAYY		CE		x		0.6/1 kV						-40° to +70°	-5° to +50°			544
NA2XY		CE		x		0.6/1 kV						-40° to +70°	-5° to +50°			551
N2XH		CE		x		0.6/1 kV	x					-30° to +90°	-5° to +50°			???
WK (N)A2XH		CE	60332-3			0.6/1 kV	x			x		-40° to +90°	-5° to +50°			820
N2XS2Y						6-30 kV				x		-40° to +90°			x	587
NA2XS2Y						6-30 kV				x		-40° to +90°			x	595
N2XS(F)2Y						6-30 kV				x		-40° to +90°			x	589
NA2XS(F)2Y						6-30 kV				x		-40° to +90°			x	597

x[1] for multicore types *in preparation **based on UL 1277

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SELECTION TABLE - CABLES & WIRES

	Use, see graphic	Approval	FT1 corresponds to IEC 60332-1	Nominal voltage in accordance with UL	Nominal voltage in accordance with VDE	Halogen-free	Extensively oil-resistant	UV-resistant	Temp. fixed installation in °C	Temp. flexing in °C	Cu-screen	Page
Control cables												
JZ-500		CE, VDE	x		300/500 V	x			-40° to +80°	-15° to +80°		30
F-CY-JZ		CE, VDE	x		300/500 V	x			-40° to +80°	-40° to +80°		50
Y-CY-JZ		CE, VDE	x		300/500 V				-40° to +80°	-5° to +80°	x	53
JZ-500 HMH		CE	60332-3		300/500 V		x		-40° to +70°	-15° to +70°	x	86
JZ-500 HMH-C		CE	60332-3		300/500 V		x		-40° to +70°	-15° to +70°	x	96
MEGAFLEX® 500		UL, CSA, CE	60332-3	300/600 V	300/500 V	x	x	x	-40° to +80°	-30° to +90°	x	88
MEGAFLEX® 500-C		UL, CSA, CE	60332-3	300/600 V	300/500 V	x	x	x	-40° to +80°	-30° to +90°	x	98
JZ-600		CE	x		0.6/1 kV		x	x	-40° to +80°	-5° to +80°	x	40
JZ-600-Y-CY		CE	x		0.6/1 kV		x	x	-40° to +80°	-5° to +80°	x	60
Single 600-J/-O		UL, CSA, CE	x	600 V	0.6/1 kV			x	-40° to +90°	-5° to +90°	x	498
Single 600-CY -J/-O		UL, CSA, CE	x	600 V	0.6/1 kV			x	-40° to +90°	-5° to +90°	x	499
JZ-600 HMH		CE	60332-3		0.6/1 kV	x	x	x	-40° to +70°	-15° to +70°	x	91
JZ-600 HMH-C		CE	60332-3		0.6/1 kV	x	x	x	-40° to +70°	-5° to +70°	x	100
JZ-600 UL/CSA		UL, CSA, CE	x	1kV	0.6/1 kV		x	in sw	-40° to +80°	-5° to +80°	x	362
JZ-600-Y-CY-UL/CSA		UL, CSA, CE	x	1kV	0.6/1 kV		x	in sw	-40° to +80°	-5° to +80°	x	378
JZ-602		UL, CSA, CE	x	600 V			x		-40° to +90°	-5° to +90°	x	356
JZ-602-CY		UL, CSA, CE	x	600 V			x		-40° to +90°	-5° to +90°	x	373
JZ-603		UL, CSA, CE, HAR	x	600 V	300/500 V		x		-40° to +70°	-5° to +70°	x	358
JZ-603-CY		UL, CSA, CE, HAR	x	600 V	300/500 V		x		-40° to +70°	-5° to +70°	x	375
H07RN-F		UL, CSA, CE, HAR		600 V	450/750 V			x	-40° to +90°			242
H07RN-F/SOOW		UL, CSA, CE, HAR		600 V	450/750 V			x	-40° to +90°			481
HELUTHERM® 145 MULTI		CE	60332-3		300/500 V	x	x	x	-55° to +145°	-35° to +120°	x	221
HELUTHERM® 145 MULTI/-C		CE	60332-3		450/750 V	x	x	x	-55° to +145°	-35° to +120°	x	230
Data lines												
TRONIC-CY		CE	x		350/500V		x		-40° to +80°	-5° to +80°	x	133
PAAR-TRONIC-CY		CE	x		350/500V		x		-30° to +80°	-5° to +80°	x	135
DATAFLAMM®		CE	x		350/500V	x			-40° to +70°	-5° to +70°	x	130
DATAFLAMM®-C		CE	x		350/500V	x			-40° to +70°	-5° to +70°	x	147
DATAFLAMM®-C-PAAR		CE	x		350/500V	x			-40° to +70°	-5° to +70°	x	148
LIYY-UL		UL, CSA, CE		300V			x		-20° to +80°	-10° to +80°	x	403
LIYY-TP-UL		UL, CSA, CE		300V			x		-20° to +80°	-10° to +80°	x	407
SUPERTRONIC®-PURö		CE			350V		x		-40° to +70°	-5° to +70°	x	191
SUPERTRONIC®-C-PURö		CE			350V		x		-40° to +70°	-5° to +70°	x	192
SUPERTRONIC®-330 PURö		UL, CSA, CE	x	300V	300V	x	x		-50° to +80°	-40° to +80°	x	447
SUPERTRONIC®-330-C-PURö		UL, CSA, CE	x	300V	300V	x	x		-50° to +80°	-40° to +80°	x	449
SUPER-PAAR-TRONIC-C-PUR®		UL, CSA, CE	x	300V	350V	x	x		-50° to +70°	-40° to +70°	x	193
SUPER-PAAR-TRONIC 340-C-PUR®		UL, CSA, CE	x	300V	350V	x	x		-50° to +70°	-40° to +70°	x	451

SELECTION TABLE - CABLES & WIRES

	Use, see graphic	Approval	FT1 corresponds to IEC 60332-1	Nominal voltage in accordance with UL	Nominal voltage in accordance with VDE	Halogen-free	Extensively oil-resistant	UV-resistant	Temp. fixed installation in °C	Temp. flexing in °C	Cu-screen	Page
Single cores												
H07 V-K/(H)07 V-K		CE	x			x			-30° to +80°	-5° to +70°		291
H05Z-K/H07Z-K		CE	x			x			-40° to +90°	-5° to +70°		300
FIVE APPROVAL		UL, CSA, CE	x			x			-40° to +90°	-5° to +90°		490
HELUTHERM® 145 600V		UL, CSA, CE				x	x		-55° to +125°	-35° to +120°		305
HELUTHERM® 145 600V UL		UL, CSA, CE				x	x		-55° to +125°	-35° to +120°		496
TC TRAY CABLES USA												
TRAYCONTROL® 300		UL, CSA, CE	FT 4	300V			x		-25° to +105°	-25° to +105°		405
TRAYCONTROL® 300-C		UL, CSA, CE	FT 4	300V			x		-25° to +105°	-25° to +105°	x	416
TRAYCONTROL® 300-C TP		UL, CSA, CE	FT 4	300V			x		-25° to +105°	-25° to +105°	x	420
TRAYCONTROL® 500		UL 1277, CSA, CE	FT 4	1000V			x		-40° to +90°	-5° to +90°		359
TRAYCONTROL® 500-C		UL 1277, CSA, CE	FT 4	1000V			x		-40° to +90°	-5° to +90°	x	376
JZ-604 TC TRAY CABLE		UL 1277, CSA, CE	FT 4	600V			x	x	-25° to +90°	-5° to +90°		364
JZ-604-YCY TC TRAY CABLE		UL 1277, CSA	FT 4	600V			x	x	-25° to +90°	-5° to +90°	x	381
TRAYCONTROL® 600		UL 1277, CSA, CE	FT 4	1000V			x	x	-40° to +90°	-5° to +90°		366
Communication cables												
Industrial Ethernet 105°C		UL, CSA, CE	60332-1	300V	100V	x	x	x	-40° to +105°	-40° to +105°	x	693
Industrial Ethernet S-FTP TORDIERFLEX		UL, CSA, CE	60332-1	300V	100V	x	x	x	-20° to +80°	-20° to +80°	x	697
BUS cable HELUWIND® WK CAN BUS 105°C		UL, CSA, CE	x	600V	100V	x	x	x	-40° to +105°	-20° to +60°	x	???
BUS cable Indoor		UL, CSA, CE	x	600V	100V			x	-40° to +70°	-5° to +60°	x	717
Profibus SK Outdoor		CE			100V	x		x	-40° to +70°	-5° to +60°	x	717
BUS cable Torsion		UL, CMX, CE	x	300V	100V	x	x	x	-40° to +75°	-25° to +75°	x	704
Profibus L2 Industry		CE	x		100V	x	x	x	-40° to +70°	-5° to +60°	x	706
AT-V(ZN)Y(ZN)Y		Submitted	Submitted				x	x	-40° to +90°	-40° to +90°		638
AT-V(ZN)H(ZN)11Y						x	x	x	-40° to +90°	-40° to +90°		638
Fiber-optic cable, mobile, easy-to-wind A-V(ZN)11Y			60332-1			x	x	x	-30° to +70°	-20° to +70°		636
Fiber-optic cable mobile A-V(ZN)Y		UL, CSA	FT4				x	x	-30° to +80°	-20° to +80°		637
Fiber optic breakout cable Industry HCS I-V(ZN)YY		UL, CSA	FT4				x	x	-30° to +85°	-20° to +85°		644
Fiber optic breakout cable Industry HCS I-V(ZN)Y11Y						x	x		-20° to +80°	-20° to +80°		645
Plastic fiber cable Industry POF/PE I-V2Y, I-V2Y(ZN)11Y			60332-1				x	x	-20° to +80°	-20° to +80°		648
Fiber optic universal cable A/I-DQ(ZN)BH			60332-1			x	x	x	-20° to +60°	-5° to +50°		613
Fiber optic outdoor cable A-DQ(ZN)B2Y (central)								x	-20° to +60°	-5° to +50°		619
Fiber optic outdoor cable A-DQ(ZN)B2Y (stranded)								x	-20° to +60°	-5° to +50°		620
Fiber optic outdoor cable A-DQ(ZN)B2Y (Stranded, fiber combination)								x	-20° to +60°	-5° to +50°		625

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HELUWIND® WK 103w-T, WK 103w EMV D-T UV-resistant, UL/CSA-Style 10678/21179

Single-/Multicore



Technical data

- **Temperature range**
  flexing -35°C to +90°C
  fixed installation -40°C to +90°C
  installation -20°C to +90°C
- **Operating temperature at conductor**
  max. +90°C
- **Nominal voltage**
  VDE U_0/U 0,6/1 kV
  UL 1000 V
- **Test voltage**
  core/core 4000 V
- **Minimum bending radius**
  flexing 8x cable Ø
  fixed installation 4x cable Ø
- **Torsion application**
  +/-140° per 1m
- **Approvals**
  Singlecore UL-Style 10678
  Multicore UL-Style 21179
  cRUus
- **Flame test**
  FT1, VW-1, IEC 60332-1

Cable structure

- Special bare copper conductors, fine stranded acc. to IEC 60228
- Special heat-resistant insulation
- Core identification JZ: black with white numbers + GN-YE conductor
- Multiconductors cabled
- Sheath special heat-resistant compound
- Black sheath

Properties

- UV-resistant
- multi-climate operation
- torsion tested
- flame-retardant
- oil-resistant
- recyclable
- **easy to assemble**

Note

Other diameters, part-no. and prices on request. Please contact us with your individual requirements via
fax +49 7150 9209 5135.

Highest permissible Voltage

- DC:
  Conductor/Conductor 1,8 kV
  Conductor/Earth 0,9 kV
- AC: Conductor/Earth 0,7 kV
- Three phase: Conductor/Conductor 1,2 kV

Application

The WK 103w has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The voltage level has been configured as 0. 6/1 kV for all dimensions, which means that the cables can also be laid in parallel in compliance with UL standards. It is no longer necessary to separate the cable routes. The WK series has been successfully tested with more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Dimensions and specifications may be changed without prior notice.

HELUWIND® WK 103k-T, WK 103k EMV D-T

UV-resistant, UL/CSA-Style 10269/2570 Single-/Multicore, screened/unscreened



Technical data

- **Temperature range**
  flexing -40°C to +80°C
  fixed installation -40°C to +80°C
  installation -40°C to +80°C
- **Nominal voltage**
  VDE U_0/U 0,6/1 kV
  UL 1000 V
- **Test voltage**
  core/core 4000 V
- **Minimum bending radius**
  flexing 8x cable Ø
  fixed installation 4x cable Ø
- **Torsion application**
  +/-140° per 1 m
- **Approvals**
  Singlecore UL-Style 10269
  Multicore UL-Style 2570
  cRUus
- **Flame test**
  FT1, VW-1, IEC 60332-1

Cable structure

- Special bare copper conductors, fine stranded acc. to IEC 60228
- Special flexible insulation material for low temperatures
- Core identification to DIN 47100
  JZ: black with white numbers +
  GN-YE conductor
- Multiconductors cabled
- Sheath special heat-resistant compound
- Sheath colour black

Properties

- UV-resistant
- multi-climate operation
- torsion tested
- flame-retardant
- oil-resistant
- recyclable
- **easy to assemble**

Note

Other diameters, part-no. and prices on request. Please contact us with your individual requirements via
fax +49 7150 9209 5135.

Highest permissible Voltage

- DC:
  Conductor/Conductor 1,8 kV
  Conductor/Earth 0,9 kV
- AC: Conductor/Earth 0,7 kV
- Three phase: Conductor/Conductor 1,2 kV

Application

The WK 103k has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The voltage level has been configured as 0. 6/1 kV for all dimensions, which means that the cables can also be laid in parallel in compliance with UL standards. It is no longer necessary to separate the cable routes. The WK series has been successfully tested with more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC..

Dimensions and specifications may be changed without prior notice.



Suitable accessories can be found in Chapter X.

- Cable lug

HELUWIND® WK 135-T, WK 135 D-EMV T UV-resistant, UL/CSA-Style** 10553 / 20234, Single-/Multicore 90°C (80°C acc. to UL), suitable for offshore



Technical data

- **Temperature range**
  flexing -40°C to +90°C
  fixed installation -40°C to +90°C
  UL +80°C
- **Operating temperature at conductor**
  max. +90°C
- **Nominal voltage**
  VDE U_0/U 0,6/1 kV
  UL 1000 V
- **Test voltage**
  core/core 4000 V
- **Minimum bending radius**
  flexing 8x cable Ø
  fixed installation 4x cable Ø
- **Torsion application**
  +/-150° per 1m
- **Approvals**
  Singlecore UL-Style 10553
  Multicore UL-Style 20234
  cRUus
- **Flame test**
  FT1, IEC 60332-3-24
  UL 758, Cable flame test
- **Halogen free**
  IEC 60754-1
- **Smoke density**
  IEC 61034-1+2
- **Oil**
  acc. to oil res II
- **WTTC** in preparation

Cable structure

- Special bare copper conductors, fine stranded acc. to IEC 60228
- Insulation special compound
- Core identification
  JZ: black with white numbers + GN-YE conductor
  or colour code DIN 47100 or VDE 0293 HD 308
- Multiconductors cabled
- Sheath special compound
- Black sheath

Properties

- halogen-free
- extremely abrasion-resistant
- low adhesion
- high flame retardant
- torsion testet
- suitable for Offshore
- extremely oil resistant
- UV-resistant
- recyclable
- multi climate operation
- designed for CCV application
- **easy to assemble**

Note

Other diameters, part-no. and prices on request. Please contact us with your individual requirements via
fax +49 7150 9209 5135.

Highest permissible Voltage

- DC:
  Conductor/Conductor 1,8 kV
  Conductor/Earth 0,9 kV
- AC: Conductor/Earth 0,7 kV
- Three phase: Conductor/Conductor 1,2 kV

Application

The WK 135 has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The voltage level has been configured as 0. 6/1 kV for all dimensions, which means that the cables can also be laid in parallel in compliance with UL standards. It is no longer necessary to separate the cable routes. Thanks to its highly durable sheath and absence of halogen, this cable is ideal for use in offshore wind power plants. The WK series has been successfully tested with more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant. Advantages of WK 135-T over H07BN4-F: Fire behaviour in accordance with IEC 60332-3-24 Increased wear resistance Recyclable

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Dimensions and specifications may be changed without prior notice.

HELUWIND® WK 137-T / WK 137 EMV D-T FT 4 UV-resistant, suitable for offshore, UL/CSA-Style 10553/20234, Single-/Multicore, 90°C, (80°C according to UL)



Technical data

- **Temperature range**
  flexing -40°C to +90°C
  fixed installation -40°C to +90°C
  acc. UL to +80°C
- **Operating temperature at conductor**
  max. +90°C
- **Nominal voltage**
  VDE U_0/U 0,6/1 kV
  UL 1000 V
- **Test voltage**
  core/core 4000 V
  core/shield 2000 V
- **Minimum bending radius**
  flexing 8x cable Ø
  fixed installation 4x cable Ø
- **Torsion application**
  +/-150° per 1m
- **Approvals**
  Singlecore UL-Style 10553
  Multicore UL-Style 20234
  cRUus
- **Flame test**
  FT 4
  IEC 60332-3-24
  UL 758, Cable flame test
- **Halogen free**
  IEC 60754-1
- **Smoke density**
  IEC 61034-1+2
- **Oil**
  acc. to oil res II
- **WTTC** in preparation

Cable structure

- Special bare copper conductors, fine stranded acc. to IEC 60228
- Insulation special compound
- Core identification
  JZ: black with white numbers +
  GN-YE conductor or colour code DIN 47100
- Multiconductors cabled
- Sheath special compound SSH
- Black sheath

Properties

- halogen-free
- extremely abrasion-resistant
- low adhesion
- high flame retardant
- torsion testet
- suitable for Offshore
- extremely oil resistant
- UV-resistant
- multi climate operation
- designed for CCV application
- **easy to assemble**

Note

Other diameters, part-no. and prices on request. Please contact us with your individual requirements
via fax +49 7150 9209 5135.

Highest permissible Voltage

- DC:
  Conductor/Conductor 1,8 kV
  Conductor/Earth 0,9 kV
- AC: Conductor/Earth 0,7 kV
- Three phase: Conductor/Conductor 1,2 kV

Application

The WK 137 has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The voltage level has been configured as 0. 6/1 kV for all dimensions, which means that the cables can also be laid in parallel in compliance with UL standards. It is no longer necessary to separate the cable routes. Additionally, this cable meets the strict requirements of CSA flame test FT4 and, thanks to its highly durable sheath and absence of halogen, is ideal for use in offshore wind power plants. The WK series has been successfully tested with more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant. Advantages of WK 137-T FT4 over H07BN4-F: Fire behaviour in accordance with IEC 60332-3-24 and FT4 Increased wear resistance

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Dimensions and specifications may be changed without prior notice.



Suitable accessories can be found in Chapter X.

- Cable lug

T

HELUWIND® WK 300w-Torsion 1,8/3kV UV-resistant, also suitable for underground laying

+90°



Technical data

- **Temperatur range**
  flexing -35°C to +90°C
  fixed installation -40°C to +90°C
  installation -20°C to +90°C
- **Operating temperature at conductor**
  max. +90°C
- **Nominal voltage**
  VDE U_0/U 1,8/3 kV
- **Test voltage**
  9000 V
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Torsion application**
  +/-100° per 1m for unscreened version
- **Flame test**
  FT1, VW-1, IEC 60332-1
  flame retardant and self-extinguishing

Cable structure

- Special bare copper conductor, fine stranded acc. to IEC 60228
- Special heat-resistant insulation black
- Sheath special heat-resistant compound
- Black sheath

Properties

- UV-resistant
- multi-climate operation
- torsion tested
- flame-retardant
- oil-resistant
- recyclable
- **easy to assemble**
- also for direct burial

Note

Other diameters, part-no. and prices on request. Please contact us with your individual requirements via
fax +49 7150 9209 5135.

Application

The WK 300w has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The WK series has been successfully tested with more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant. Another special feature is the higher voltage level of 1.8/3 kV. The WK 300w is also designed for flexible installation through ductwork and in the ground. It can be used in power cabling from a converter cabinet to an external transformer station, for example. A conductor temperature of +90° enables a high level of current carrying capacity.

Dimensions and specifications may be changed without prior notice.



Suitable accessories can be found in Chapter X.

• Cable lug

HELUWIND® WK 310-Torsion 1,8/3kV

UV-resistant, suitable for offshore



Technical data

- **Temperature range**
  flexing -40°C to +90°C
  fixed installation -40°C to +90°C
- **Operating temperature at conductor**
  max. +90°C
- **Nominal voltage**
  VDE U_0/U 1,8/3 kV
- **Test voltage**
  9000 V
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Torsion application**
  +/-100° per 1m
- **Flame test**
  IEC 60332-3, FT2
- **Halogen free**
  IEC 60754-1
- **Smoke density**
  IEC 61034-1+2
- **Oil test**
  acc. to oil res II

Cable structure

- Special bare copper conductor, fine stranded acc. to IEC 60228
- Special insulation black
- Sheath SSH compound low adhesion
- Black sheath

Properties

- halogen free
- extremely abrasion resistant
- low adhesion
- high flame retardant
- torsion testet
- suitable for offshore
- extremely oil resistant
- UV resistant
- recyclable
- Multi climate operation
- designed for CCV application
- **easy to assemble**

Note

Other diameters, part-no. and prices on request. Please contact us with your individual requirements via
fax +49 7150 9209 5135.

Application

The WK 310 has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The WK series has been successfully tested with more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant. Another special feature is the higher voltage level of 1.8/3 kV. The WK 310 can be used instead of the WK 300 in cases where cables need to be halogen-free.

Dimensions and specifications may be changed without prior notice.



Suitable accessories can be found in Chapter X.

• Cable lug

HELUWIND® WK H07BN4-F WIND-Torsion

Torsion +/- 150°/1m, UV-resistant, 750 V/90°C



Technical data

- **Temperature range**
  Ambient temperature -45°C to +90°C
- **Operating temperature at conductor**
  max. +90°C
- **Nominal voltage**
  450/750 V
- **Test voltage**
  3000 V
- **Minimum bending radius**
  6x cable Ø
- **Torsion application**
  +/-150° per 1m

Cable structure

- Special bare copper conductors, fine stranded acc. to IEC 60228
- Insulation Special EPR compound black
- Sheath Special EPR compound
- colour black

Properties

- UV-resistant

Note

Other diameters, part-no. and prices on request. Please contact us with your individual requirements via
fax +49 7150 9209 5135.

Application

The HELUWIND® WK H07BN4-F Wind-Torsion cable is the special version for torsion applications in wind power plants. We supply the leading wind power plant manufacturers with our cables.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Dimensions and specifications may be changed without prior notice.



Suitable accessories can be found in Chapter X.

• Cable lug

HELUWIND® WK 101 H 0,6/1kV halogen-free



Technical data

- **Temperature range**
  flexing -40°C to +90°C
  fixed installation -50°C to +100°C
  acc. to UL +80°C
- **Operating temperature at conductor**
  max. +90°C
- **Nominal voltage**
  VDE U_0/U 0,6/1 kV
- **Test voltage**
  4000 V
- **Minimum bending radius**
  flexing 7,5x cable Ø
  fixed installation 4x cable Ø
- **Halogen free**
  IEC 60754-1

Cable structure

- Special bare copper conductors, fine stranded acc. to IEC 60228
- Seperarting foil wrap
- Insulation special compound black
- Sheath special compound
- Sheath colour black

Properties

- halogen-free
- abrasion-resistant
- extremely oil resistant
- UV and ozone resistant
- recyclable
- multi climate application

Note

Other diameters, part-no. and prices on request. Please contact us with your individual requirements via
fax +49 7150 9209 5135.
A torsional version for loop application is available on request.
Highest permissible Voltage

- DC:
  Conductor/Conductor 1,8 kV
  Conductor/Earth 0,9 kV
- AC: Conductor/Earth 0,7 kV
- Three phase: Conductor/Conductor 1,2 kV

Application

The HELUWIND® WK series has been specifically designed for use in wind power plants. These cables are used in cases that require extremely narrow bending radii and high current carrying capacity levels (+90°C conductor temperature).
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC..

Dimensions and specifications may be changed without prior notice.



Suitable accessories can be found in Chapter X.

- Cable lug

T

HELUWIND® WK Fire Alarm Cable-Torsion

halogen-free, FT1, 24V



Technical data

- **Temperature range**
  flexing -40°C to +80°C
  fixed installation -50°C to +90°C
- **Nominal voltage**
  300/500 V
- **Test voltage**
  core/core 1500 V
  core/shield 800 V
- **Minimum bending radius**
  10x cable Ø
- **Torsion application**
  3 x 360° on 5m (= 216° je m)
- **Approvals**
  IEC 60332-1, test type B acc. to VDE 0472 Part 804,
- **Flame test**
  FT1

Cable structure

- Special bare copper conductors, fine stranded acc. to IEC 60228
- Special Polyester insulation
- Core identification (OZ) black with numbers 1 - _
- Multiconductors cabled
- EMV-shielded types have tinned copper wrapping
- Sheath special polyurethane compound low adhesion
- Sheath colour red RAL 3000

Properties

- very good oil and petrol-resistance acc. to DIN VDE 0250 and 0472
- good resistance to acids, alkalis and solvents

Note

Other diameters, part-no. and prices on request. Please contact us with your individual requirements via
fax +49 7150 9209 5135.

Application

This fire alarm cable has been specifically developed for torsion applications in wind power plant loops. We supply the leading wind power plant manufacturers with our cables.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Dimensions and specifications may be changed without prior notice.



Suitable accessories can be found in Chapter X.

• Cable lug

HELUWIND® WK DLO 2kV FT4, UV-resistant, UL44

1kV, 90°C, VW-1, LS, MSHA



Technical data

- **Temperature range**
  flexing -40°C to +90°C
- **Nominal voltage**
  DLO 2000 V
- **Approvals**
  UL44, CSA, ICEA S-68-516/NEMA WC-8, MSHA, VW-1, FOR CT USE. LS CERTIFIED
- **Flame test**
  FT4, FT1

Cable structure

- Tinned copper conductors acc. to ASTM B-172, ASTM B-33
- Special wrapping
- Special EPR insulation
- Special CPE sheath compound, non-adhesive
- Sheath colour black

Properties

- UV-resistant

Note

Other diameters, part-no. and prices on request. Please contact us with your individual requirements via
fax +49 7150 9209 5135.

Application

The cable is UL 44 listed. The WK DLO is a flexible cable for continuous tower cabling in wind power plants, right up to the topmost tower segment. For the torsion cable through the cable loop to the generator in the nacelle, we recommend the WK 103 or WK 135.

Dimensions and specifications may be changed without prior notice.



Suitable accessories can be found in Chapter X.

• Cable lug

HELUWIND® WK Powerline ALU 105°C 0,6/1kV or 1,8/3kV, also available as a robust version



Technical data

- **Temperature range**
  flexing -20°C to +90°C
  fixed installation -40°C to +105°C
- **Operating temperature at conductor**
  max. +105°C
- **Nominal voltage**
  0,6/1 kV
- **Test voltage**
  2,5 kV
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 4x cable Ø
- **Flame test**
  IEC 60332-1
- **Approvals**
  acc. to DIN VDE 0250-813
  UL/CSA in preparation

Cable structure

- Aluminium conductor, fine stranded wires
- Special insulation black
- Sheath special compound
- black sheath

Properties

- UV resistant
- oil-resistant
- easy to assemble
- recyclable

Note

Please ask for our extended notes/information about the properties and for the necessary connection technology.
Please contact us with your individual requirements via
fax +49 7150 9209 5135.

Application

The WK Powerline ALU is a highly flexible aluminium cable with a finely stranded structure and is designed for use in the power engineering sector; specifically, for power cabling in wind power plants. Thanks to its high degree of flexibility and low tare weight, this cable can be fed into the tower as a single length. This eliminates the need for time-consuming cabling of each individual tower segment. However, its key advantage lies in the process reliability the connection technology offers: using this cable can reduce the number of interruptions between the topmost tower segment and the converter from 90 connection points to just 18 (depending on the number of power cables and tower segments). As a result, the amount of time required for installation can drop from several days to a few hours. For torsion applications, we recommend the WK 103-T, WK 135-T or WK 137-T. The WK Powerline ALU may only be used with certified connection technology from HELUKABEL®: either C8 crimp connections or screwed connections (tested in accordance with IEC 61238-1 Cl. A). See the accessories section of the catalogue. The cable is also available with a halogen-free design, UL/CSA approval or a rated voltage of 1. 8/3 kV.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Dimensions and specifications may be changed without prior notice.

HELUWIND® WK THERMFLEX® 145 halogen-free, +145°C



Technical data

- **Temperature range**
  flexing -20°C to +120°C
  fixed installation -55°C to +145°C
- **Nominal voltage**
  U_0/U 0,6/1 kV
- **Test voltage**
  4000 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Minimum bending radius**
  flexing 12,5x cable Ø
  fixed installation 4x cable Ø
- **Flame test**
  IEC 60332-3-24 Cat. C

Cable structure

- Tinned copper conductors, fine stranded acc. to IEC 60228 cl.5
- Insulation special polyolefin-copolymer, halogen-free, flame retardant
- Sheath colour black

Properties

- Halogen-free, no release of corrosive or toxic gases
- Reduced propagation of fire
- Minimal smoke generation
- Good abrasion-resistance
- Good oil and weathering resistance
- Resistant to UV radiation and ozone
- Thermal class B
- **easy to assemble**
- The materials used are silicone and cadmium-free and free of substances harmful to paint adhesion

Note

Other diameters, part-no. and prices on request. Please contact us with your individual requirements via
fax +49 7150 9209 5135.

Highest permissible Voltage

- DC:
  Conductor/Conductor 1,8 kV
  Conductor/Earth 0,9 kV
- AC: Conductor/Earth 0,7 kV
- Three phase: Conductor/Conductor 1,2 kV

Application

This special cable can be used as a generator connecting cable in wind power plants, for example. Other areas of application: Connecting cable for temperature class B (130°C) in the case of motors, transformers, relays, coils, magnets, and so onUnit connections in the automotive industry. Halogen-free wiring of switchgear and control cabinets. Connecting cable for heating equipment. Supply line for high-power lighting in industry, sports centres and street lighting

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Dimensions and specifications may be changed without prior notice.



Suitable accessories can be found in Chapter X.

- Cable lug

T

HELUWIND® WK (N)A2XH 0,6/1kV, halogen-free



Technical data

- **Temperature range**
  fixed installation -40°C to +90°C
  during assembly -5°C to +50°C
- **Operating temperature at conductor**
  max. +90°C
- **Nominal voltage**
  U_0/U 0,6/1 V
- **Test voltage**
  4 kV
- **Approvals**
  production in according to VDE standards, CE compliant
- **Minimum bending radius**
  15 x cable Ø
- **Flame test**
  acc. to DIN VDE 0482 part 266-2, BS 4066 part 3, EN 50266-2, IEC 60332-3-24 (equivalent DIN VDE 0472 part 804 cat. C)
- **Smoke density**
  acc. to DIN VDE 0482 part 268, HD 606, EN 50268-12, IEC 61034-1-2, BS 7622 Teil 12 (equivalent DIN VDE 0472 Teil 816)
- **Corrosivity of combustion gases**
  acc. to VDE 0482 Teil 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- **Halogen free**
  acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)

Cable structure

- ALU conductors, stranded conductors acc. to IEC 60228 Cl. 2
- core insulation cross-linked PE
- Core identification black
- Sheath thermoplastic polymer
- black sheath

Properties

- Halogen-free
- UV resistant

Note

Other diameters, part-no. and prices on request. Please contact us with your individual requirements via
fax +49 7150 9209 5135.

Application

The HELUWIND® WK series was specifically designed for wind power applications. We supply the leading wind turbine manufacturers with our cables.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Dimensions and specifications may be changed without prior notice.



Suitable accessories can be found in Chapter X.

• Cable lug


HELUKABEL



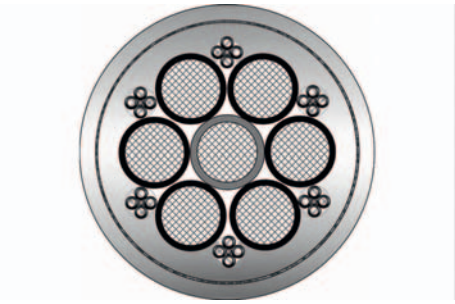
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CABLES FOR AIRCRAFT SUPPLY

Designation	Properties	Page
AIRPORT 400 Hz	easy-to-wind, PUR, halogen-free, flame-retardant	824
AIRPORT 400 Hz	PUR, halogen-free, flame-retardant	825

T

AIRPORT 400 Hz trailing, PUR, halogen-free, flame retardant





Technical data

- **Temperature range**
  -40°C to +90°C
- **Nominal voltage**
  115/200 V
- **Operating voltage**
  U_0/U 0,6/1 kV
- **Test voltage**
  4000 V
- **Minimum bending radius**
  flexing 7x cable Ø
  fixed installation 4x cable Ø

Cable structure

- Fine copper wire in acc. with DIN VDE 0295 and IEC 60228
- Core insulation PP, black with number 1-6 + blue/..., with number 7-30/1 mm²
- 4 cores each 1 mm² twisted to a quad
- Cores and 6 bundles laid-up together
- PUR inner sheath
- Support braiding
- PUR outer sheath, orange (RAL 2003)

Part no. 702801

- Bare copper conductor, 7 strands
- Core insulation cross-linked polyethylene, black with number 1-6 + blue
- Polyethylene inner sheath
- Concentric conductor of plain Cu wires, cross-section 35 mm²
- Black polyehtylene outer sheath

Properties

- Low adhesion, abrasion resistant, halogen-free, resistant to UV-, oil-, hydrolysis and microbial attack

Special feature:

The use of four-core cables to transmit large amounts of power in a 400 Hz grid results in voltage asymmetries and larger inductive voltage losses. These unfavourable cable characteristics can be improved through the employment of seven-core cables. In this case the central core is used as a earth conductor (blue) and six cores with the same cross-section (black with imprint) stranded in a single layer around the central core. Each pair of two opposite cores is connected in parallel to a phase conductor.

Note

- Distribution only over authorised partner

Application

400 Hz cables are used to supply power to aircraft (on-board power), data processing systems, radar stations, radio stations, etc. For safety reasons, 400 Hz cables are used to connect data processing systems, radar systems and communications systems to uninterruptible power supplies. Such power supplies prevent a total failure of power and compensate for frequency and voltage fluctuations. Suitable for installation indoors, outdoors. Applications: Below floor level cable dispensers (drums), attached to jetways and retractable articulated cable carries.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
700573	7 x 25 + 6 x 4 x 1,0	41,0	1910,0	2140,0	4
770009	7 x 35 + 6 x 4 x 1,0	42,5	2625,0	2950,0	2
700574	7 x 50 + 6 x 4 x 1,0	51,0	3590,0	4030,0	1

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
702801	7 G 35	35,8	2746,0	3050,0	2

Dimensions and specifications may be changed without prior notice.

AIRPORT 400 Hz trailing, PUR, halogen-free, flame retardant





Technical data

- **Temperature range**
  -40°C to +90°C
- **Nominal voltage**
  115/200 V
- **Operating voltage**
  U_0/U 0,6/1 kV
- **Test voltage**
  4000 V
- **Minimum bending radius**
  6x cable Ø

Cable structure

Part Nos. 700566-700569

- Fine copper wire in acc. with DIN VDE 0295 and IEC 60228
- Special plastic core insulation
- Sheath colour yellow (RAL 1021)

Part Nos. 700570, 770001-770003

- Fine copper wire in acc. with DIN VDE 0295 and IEC 60228
- Core insulation PP/PUR, grey with number 1-4/1 mm²
- Core 1 mm² stranded with bundle conductor
- Double-sheath PUR/PUR
- Sheath colour yellow (RAL 1021)

Part Nos. 700571, 770005, 770004, 700572

- Each set of 4 parts, 700570, 770001-770003, is stranded

Properties

Part Nos. 700570, 770001-770003

- Low adhesion, abrasion resistant, halogen-free, resistant to UV-, oil-, hydrolysis and microbial attack

Note

- Distribution only over authorised partner

Application

400 Hz cables are used to supply power to aircraft (on-board power), data processing systems, radar stations, radio stations, etc. For safety reasons, 400 Hz cables are used to connect data processing systems, radar systems and communications systems to uninterruptible power supplies. Such power supplies prevent a total failure of power and compensate for frequency and voltage fluctuations. Suitable for installation indoors, outdoors. Highly flexible, and can thus be plugged directly into the connector in the aircraft without an adapter, and without endangering the contacts.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
700566	1 x 35	11,5	336,0	430,0	2
700570	1 x 35 + 4 x 1,0	16,1	375,0	490,0	2
700567	1 x 50	12,6	480,0	665,0	1
770001	1 x 50 + 4 x 1,0	17,0	519,0	600,0	1
700568	1 x 70	14,0	672,0	910,0	2/0
770002	1 x 70 + 4 x 1,0	20,5	711,0	800,0	2/0
700569	1 x 120	23,0	1152,0	1545,0	4/0
770003	1 x 120 + 4 x 1,0	25,0	1191,0	1400,0	4/0

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
700571	4 x 1 x 35 + 4 x 1,0	33,0	1498,0	2600,0	2
770005	4 x 1 x 50 + 4 x 1,0	40,0	2074,0	3900,0	1
770004	4 x 1 x 70 + 4 x 1,0	49,2	2844,0	4300,0	2/0
700572	4 x 1 x 120 + 4 x 1,0	56,0	4765,0	7400,0	4/0

Dimensions and specifications may be changed without prior notice.

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CABLES FOR COMMERCIAL VEHICLES

Designation	Properties	Page
HELUTRUCK® 270	with ADR approval, PVC, low-voltage cable for commercial vehicles	828
HELUTRUCK® 271	with ADR approval, PUR, low-voltage cable for commercial vehicles	829
HELUTRUCK® 272	with ADR approval, ribbon cable for side marker lights	830
HELUTRUCK® 273	Battery cable, battery charging cable, twin cable	831

T

HELUTRUCK® 270 (FLRYY) with ADR-approval, PVC low voltage cable for commercial vehicles





Technical data

- **Temperature range**
  -40°C to +85°C
- **Test voltage**
  2000 V min. 5 minutes
- **Capacitance**
  max. 50 pF/m for the data pair
  max. 100 pF/m between data pair cores and the other cores
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  12x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, IEC 60228 cl.5
- Core insulation of cold-resistant special PVC
- Core identification coloured, see table below
- Outer sheath of special PVC also available with PUR sheath
- Sheath colour black

Properties

- Cold-resistant special PVC sheath, UV-resistant
- Largely resistant to oil, weather, and chemicals; Chemical resistance (see table Technical Information)

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- These cables conform to the national standard ISO 4141 and the international standard DIN/ISO 6722
- Component codes TÜ.EGG.073-03

Special feature:

- Complies with GGVS regulations
- Approved and tested by the TÜV
- Complies with ADR regulations

Note

- Further sizes are available on request.

Application

These low-voltage cables are designed for the wiring of electrical installations in the manufacture of commercial vehicles. Due to the ADR-approval especially suitable for trailers and semitrailers manufactured for the transport of GGVS hazardous substances.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
700016	2 x 0,5	4,8	9,6	40,0	20
700575	2 x 0,75 + 2 x 1,5	7,0	43,2	91,0	18
702179	3 x 0,75	5,3	21,6	52,4	17
700582	7 x 0,75	7,3	50,4	101,0	18
75255	2 x 1	6,0	19,2	56,0	17
75254	2 x 1	6,0	19,2	56,0	17
75256	3 x 1	6,3	28,8	66,0	17
700578	3 x 1	6,6	28,8	66,0	17
75257	4 x 1	6,8	38,4	80,0	17
75258	5 x 1	7,5	48,0	98,0	17
75260	5 x 1 + 1 x 2,5	9,0	72,0	132,0	17
700580	5 x 1 + 1 x 2,5	9,0	72,0	132,0	17
75259	5 x 1 + 1 x 2,5	9,0	72,0	132,0	17
700581	5 x 1 + 1 x 2,5	9,0	72,0	132,0	17
700849	5 x 1 + 1 x 2,5	9,3	65,7	149,5	16
700576	2 x 1,5	6,6	28,8	66,0	16
700577	2 x 1,5	6,6	28,8	66,0	16

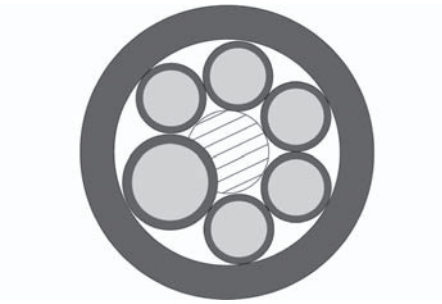
Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
700579	4 x 1,5	7,5	57,6	106,0	16
700407	8 x 1,5 + 1 x 2,5	11,5	139,2	238,0	16
75262	6 x 1,5 + 1 x 2,5	10,3	110,5	187,0	16
700032	7 x 1,5	10,3	100,8	185,0	16
75261	7 x 1,5	8,9	100,2	165,0	16
75263	8 x 1,5 + 1 x 2,5	11,7	139,2	238,0	16
700583	8 x 1,5 + 5 x 2,5	14,8	235,2	360,0	16
75267	9 x 1,5 + 4 x 2,5	14,8	200,0	350,0	16
75265	10 x 1,5 + 3 x 2,5	12,5	168,0	366,0	16
75319	10 x 1,5 + 3 x 2,5 + 2 x 1,5	14,4	244,8	393,0	16
700017	10 x 1,5 + 3 x 2,5 + 2 x 1,5	14,3	244,8	391,0	16
705167	10 x 1,5 + 3 x 2,5 + 2 x 1,5	14,4	244,8	393,0	16
75266	10 x 1,5 + 3 x 2,5	13,0	216,0	345,0	16
700018	11 x 1,5 + 3 x 2,5	13,5	230,4	365,0	16
700142	3 x 2,5 + 4 x 1,5	10,3	129,6	221,0	14
706627	4 x 6 + 1 x 1,5	13,7	244,8	411,0	18

Dimensions and specifications may be changed without prior notice.

Part No.	Core colours
700016	WH, BK
700575	0,75 mm² WH, BN + 1,5 mm² GN, YE
702179	BU, BN, GN-YE
700582	WH, BK, YE, RD, GN, BN, BU
75255	WH, BN
75254	WH, BK
75256	BK, BU, BN
700578	WH, BN, BU
75257	WH, BK, RD, BN
75258	WH, BN, GN, RD, GY
75260	1 mm² YE, BK, RD, BU, VT + 2,5 mm² WH
700580	1 mm² BN, GN, RD, GY, VT + 2,5 mm² WH
75259	1 mm² GN, BN, RD, BU, VT + 2,5 mm² WH
700581	1 mm² BN, YE, RD, GY, VT + 2,5 mm² WH
700849	1 mm² GN-YE, BN/BK, BU, RD, VT + 2,5 mm² WH
700576	WH, BK
700577	WH, BN

Part No.	Core colours
700579	WH, BK, RD, BN
700407	1,5 mm² BK, BU, GN, YE, VT, GY, RD, BN + 2,5 mm² WH
75262	1,5 mm² BK, YE, RD, GN, BN, BU + 2,5 mm² WH
700032	PK, BU, OG, WH/RD, WH/GN, WH/BU, WH/BK
75261	WH, BK, YE, RD, GN, BN, BU
75263	1,5 mm² BK, YE, RD, GN, BN, BU, GY, VT + 2,5 mm² WH
700583	1,5 mm² YE, BU, GN, BN, RD, BK, PK, WH/BU + 2,5 mm² WH, OG, GY, WH/BK, WH/RD
75267	WH with number, 1,5 mm² 2, 4-8, 10-12 + 2,5 mm² 1, 3, 9, 13
75265	WH with number, 1,5 mm² 1-2, 4-8, 10-12 + 2,5 mm² 3, 9, 13
75319	WH with number, 1,5 mm² 1-3, 5-8, 10-12 + 2,5 mm² 4, 9, 13 + 1,5 mm² data pair 14-15
700017	1,5 mm² WH/BU, WH/BK, YE, GN, BU, BK, BN, RD, VT, GY + 2,5 mm² WH, OG, WH/RD + 1,5 mm² WH/BR, WH/GN
705167	1,5 mm² WH/BU, WH/BK, YE, GN, BU, BK, BN, RD, VT, GY + 2,5 mm² WH, OG, WH/RD + 1,5 mm² WH/BR, WH/GN
75266	WH with number, 1,5 mm² 1, 2, 4-8, 10-12 + 2,5 mm² 3, 9, 13
700018	1,5 mm² WH/BN, WH/GN, OG, WH/RD, WH/BU, WH/BK, PK, BU, YE, GN, RD + 2,5 mm² WH, BN, BK
700142	2,5 mm² WH, BN, BK + 1,5 mm² WH/BN, GY, YE, RD
706627	6 mm² BN, RD, BK, BU + 1,5 mm² GY

HELUTRUCK® 271 (FLRYY11Y) with ADR-approval, PUR low voltage cable for commercial vehicles





Technical data

- **Temperature range**
  -40°C to +85°C
- **Test voltage**
  2000 V min. 5 minutes
- **Capacitance**
  max. 50 pF/m for the data pair
  max. 100 pF/m between data pair cores and the other cores
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  12x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, IEC 60228 cl.5
- Core insulation of cold-resistant special PVC
- Core identification see table below
- Inner sheath of special PVC
- Outer sheath of PUR also available with PVC sheath
- Sheath colour black

Properties

- PUR outer sheath, low adhesion, abrasion resistant, halogen-free, resistant to UV-, oil-, hydrolysis and microbial attack
- Largely resistant to oil, weather, and chemicals; Chemical resistance (see table Technical Information)

Tests

- These cables conform to the national standard ISO 4141 and the international standard DIN/ISO 6722
- Component codes TÜ.EGG.074-03

Special feature:

- Complies with GGVS regulations
- Approved and tested by the TÜV
- PUR sheath provides high resistance to abrasion, UV and wear
- Complies with ADR regulations

Note

- Further sizes are available on request.

Application

These low-voltage cables are designed for the wiring of electrical installations in the manufacture of commercial vehicles. Due to the ADR-approval especially suitable for trailers and semitrailers manufactured for the transport of GGVS hazardous substances.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
708090	9 x 0,5 + 4 x 2,5 + 2 x 0,5	12,0	148,0	490,0	16
709556	2 x 0,75	5,4	14,4	45,8	18
700585	2 x 0,75 + 2 x 1,5	7,0	43,2	91,0	18
700592	7 x 0,75	7,9	50,4	100,0	18
75528	2 x 1	6,0	19,0	56,0	17
75529	2 x 1	6,0	19,0	56,0	17
75530	3 x 1	6,3	28,8	66,0	17
700588	3 x 1	6,3	28,8	66,0	17
75531	4 x 1	6,8	38,5	80,0	17
75532	5 x 1	7,5	48,1	98,0	17
700591	5 x 1 + 1 x 2,5	9,0	72,0	132,0	17
75533	5 x 1 + 1 x 2,5	9,0	72,0	132,0	17
700590	5 x 1 + 1 x 2,5	9,0	72,0	132,0	17
75534	5 x 1 + 1 x 2,5	9,0	72,0	132,0	17
705135	7 x 1	8,6	68,0	133,1	17
700586	2 x 1,5	6,6	28,8	67,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
700587	2 x 1,5	6,6	28,8	67,0	16
700589	4 x 1,5	7,5	57,6	105,0	16
75536	6 x 1,5 + 1 x 2,5	10,3	110,4	187,0	16
75535	7 x 1,5	8,9	100,8	165,0	16
75537	8 x 1,5 + 1 x 2,5	11,7	139,2	238,0	16
75539	10 x 1,5 + 3 x 2,5	14,4	214,0	366,0	16
700594	10 x 1,5 + 3 x 2,5	14,4	214,0	366,0	16
75538	10 x 1,5 + 3 x 2,5 + 2 x 1,5	14,4	244,8	393,0	16
700595	18 x 1,5	17,0	259,2	520,0	16
700596	25 x 1,5	19,9	360,0	730,0	16
701045	2 x 2,5	7,6	48,0	104,9	16
701044	2 x 2,5 + 5 x 1,5	10,3	120,0	214,4	16
75932	2 x 4 + 3 x 1,5 + 2 x 1,5	12,0	148,8	230,0	12
75541	2 x 6 + 3 x 1,5 + 2 x 1,5	12,0	187,2	320,0	10
75540	2 x 6 + 3 x 1,5	12,0	158,6	270,0	10

Dimensions and specifications may be changed without prior notice.

Part No.	Core colours
708090	WH with number, 2,5 mm² 1-3 + 0,5 mm² WH 4-14
709556	WH, BK
700585	0,75 mm² WH, BN + 1,5 mm² GN, YE
700592	WH, BK, YE, RD, GN, BN, BU
75528	WH, BK
75529	WH, BN
75530	BK, BU, BN
700588	WH, BN, BU
75531	WH, BK, RD, BN
75532	WH, BN, GN, RD, GY
700591	1 mm² BN, YE, RT, GY, VT + 2,5 mm² WH
75533	1 mm² GN, BN, RT, BU, VT + 2,5 mm² WH
700590	1 mm² BN, GN, RT, GY, VT + 2,5 mm² WH
75534	1 mm² YE, BK, RT, BU, VT + 2,5 mm² WH
705135	WH, BK, YE, RD, GN, BN, BU
700586	WH, BK

Part No.	Core colours
700587	WH, BN
700589	WH, BK, RD, BN
75536	1,5 mm² BK, YE, RD, GN, BN, BU + 2,5 mm² WH
75535	WH, BK, YE, RD, GN, BN, BU
75537	1,5 mm² BK, YE, RD, GN, BN, BU, GY, VT + 2,5 mm² WH
75539	WH with number, 1,5 mm² 1-3, 5-8, 10-12 + 2,5 mm² 4, 9, 13
700594	1,5 mm² YE, GN, BU, BK, BN, RD, PK, GY, WH/BK, WH/BU + 2,5 mm² WH, OG, WH/RD
75538	WH with number, 1,5 mm² 1-3, 5-8, 10-12 + 2,5 mm² 4, 9, 13 + 1,5 mm² data pair 14-15
700595	WH with number
700596	WH with number
701045	WH, BK
701044	2,5 mm² BN, RD + 1,5 mm² BU, BN, YE, RD, GN
75932	4 mm² RD, BN + 1,5 mm² BK, YE, WH + 1,5 mm² data pair WH/GY, WH/BN
75541	6 mm² RD, BN + 1,5 mm² BK, YE, WH + 1,5 mm² data pair WH/GY, WH/BN
75540	6 mm² RD, BN + 1,5 mm² BK, YE, WH

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HELUTRUCK® 272 (FLRYYF) with ADR-approval, flat cable for the sideways lighting



Technical data

- Flat cable for the sideways lighting (FLRYYF)
- **Temperature range** -40°C to +85°C
- **Test voltage** 2000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** fixed installation 5x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, IEC 60228 cl.5
- Core insulation of cold resistant special PVC
- Core identification Art.-Nr. 76706 BK, WH Art.-Nr. 78983 WH, BN Art.-Nr. 700035 BK, WH
- Outer sheath of cold-resistant special PVC also available with PUR sheath
- Sheath colour black

Properties

- Cold resistant, UV-resistant, largely resistant to oil, weather, and chemicals, Chemical resistance see table TechnicalInformation
- Polarity easy to determine by a white line on the sheath above the white core

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Special feature

- Complies with GGVS regulations
- Approved and tested by the TÜV
- Complies with ADR regulations

Note

- Further sizes are available on request.

Application

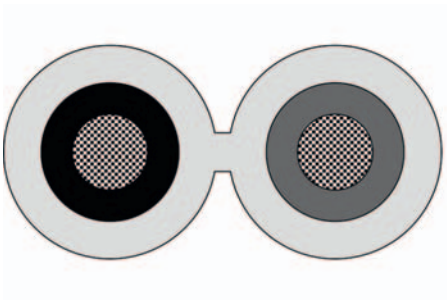
This low-voltage cable is designed for the wiring of electrical installations in the manufacture of commercial vehicles. Especially suitable for trailers and semitrailers. This flat cable can be used for simple and quick contacting of sidelights by means of core penetration. Its flat construction and the special contacting method eliminate the need for time-consuming assembly of cables. This facilitates quick installation, making it possible to save a great deal of time. ADR approval for transport of hazardous substances by trailers and semitrailers.

HELUTRUCK® 272

Part no.	No.cores x cross-sec. mm²	Outer dimension app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
76706	2 x 1,5	4,5 x 6,8	28,8	90,0	16
700035	2 x 1,5	4,5 x 6,8	28,8	90,0	16
78983	2 x 1,5	4,5 x 6,8	28,8	90,0	16

Dimensions and specifications may be changed without prior notice.

HELUTRUCK® 273 battery cable, battery charging cable, twin cable





Technical data

- Battery cable, battery charging cable (twin cable)
- **Temperature range**
  -40°C to +85°C
- **Nominal voltage**
  75 V DC
- **Test voltage**
  3000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  fixed installation 15x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, IEC 60228 cl.5
- Core insulation of cold-resistant special PVC
- Core identification RD, BK
- Outer sheath of cold-resistant special PVC also available with PUR sheath
- Sheath colour transparent

Properties

- Cold restistant, UV-resistant, largely resistant to oil, weather, and chemicals, Chemical resistance see table Technical Information
- The additional sheath means that the cable is very robust, and can be installed without a corrugated conduit
- Installation time is shorter due to twin design
- The special construction of the conductor enables optimal crimping
- Easy mechanical separation of the sheath web

Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- Further sizes are available on request.

Application

This battery cable can be used between the battery and the ultimate consumer (e.g. DC motor of the tail-lift).
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

HELUTRUCK® 273

Part no.	No.cores x cross-sec. mm²	Outer dimension app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
75507	2 x 2,5	5,6 x 28,8	48,0	87,0	14
75508	2 x 4	6,6 x 14,8	77,0	125,0	12
75509	2 x 6	6,8 x 14,6	116,0	175,0	10
75510	2 x 10	8,1 x 17,2	192,0	270,0	8
75511	2 x 16	8,9 x 18,5	308,0	390,0	6
75512	2 x 25	10,7 x 21,7	480,0	575,0	4
75513	2 x 35	12,8 x 26,6	672,0	820,0	2
75514	2 x 50	14,1 x 29,2	960,0	1065,0	1
709043	2 x 70	16,1 x 33,2	1344,0	1475,0	2/0

Dimensions and specifications may be changed without prior notice.

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CABLES FOR TRAIN & TRAFFIC

Designation	Properties	Approvals	Page
HELUTRAIN® 3GKW	train cable, robust special core cable, halogen-free 0.6/1 kV	EAC	834
HELUTRAIN® 4GKW-AXplus	single-core train cable, robust halogen-free, 1.8/3kV meter marking	EAC	835
Vehicle cable FLY	one colour / two color /old type FLK), in accordance with DIN ISO 6722		836
Vehicle cable FLY	one colour / two color /old type FLK), in accordance with DIN ISO 6722		837
Vehicle cable FLY	one colour / two color /old type FLK), in accordance with DIN ISO 6722		838
Vehicle cable FLRY	FLRY-type A (FLK-R)/ -type B (FLK-D)		839

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HELUTRAIN® 3GKW Train-Cable, robust special single core, halogen-free, 0,6/1kV



Technical data

- Temperature resistant special-insulated wire
- **Temperature range**
  flexing -35°C to +90°C
  fixed installation -45°C to +120°C
- **Short-circuit temperature**
  +250°C
- **Nominal voltage**
  U_0/U 0,6/1 kV (AC)
  U_0/U 0,9/1,8 kV (DC)
- **Test voltage**
  3,5 kV
- **Minimum bending radius**
  fixed installation for outer Ø
  up to 10 mm 3x outer Ø
  > 10 mm 4x outer Ø
  flexing for outer Ø
  up to 10 mm 5x outer Ø
  > 10 mm 6x outer Ø

Cable structure

- Tinned copper, fine wire conductors, conform to DIN VDE 0295 cl.5 and IEC 60228 cl.5
- Core insulation from Polyolefin Copyolymer, cross-linked
- Colour grey or green-yellow

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- Resistant to mechanical influences in rough environmental conditions
- Good chemical durability with simultaneous high fire safety
- Reduction of toxic combustion gases and the spread of the fire source in case of fire increases protection against personal injury and property damage

Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- Flame retardant acc. to DIN VDE 0482-331-1-2, DIN EN 60332-1-2, IEC 60332-1
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (equivalent DIN VDE 0472 part 816)
- Oil- and gasoline resistant to EN 50305
- Ozon resistant to EN 50305
- Low fire load (DIN 51900)
- No fluor (EN 60684-2)

Application

HELUTRAIN® 3 GKW train cable are Halogen-free and suitable for fixed and protected installation in rough environmental conditions inside and outside of rail vehicles. For connecting fixed and moving parts. Due to the flexibility and the small outer diameter suitable for fixed installation in small bending radii.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC..

Core colour grey

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
59114	1 x 0,5	2,0	4,8	9,0	-
59115	1 x 0,75	2,2	7,2	12,0	-
59116	1 x 1	2,4	9,6	14,0	-
59117	1 x 1,5	2,7	14,4	21,0	-
59118	1 x 2,5	3,4	24,0	31,0	-
59119	1 x 4	3,9	38,4	46,0	-
59126	1 x 6	4,6	57,6	68,0	-
59127	1 x 10	5,5	96,0	111,0	-
59128	1 x 16	7,1	154,0	166,0	-
59129	1 x 25	8,6	240,0	250,0	-
59130	1 x 35	9,8	336,0	350,0	-
59131	1 x 50	12,0	480,0	500,0	-
59132	1 x 70	14,2	672,0	690,0	-
59133	1 x 95	15,6	912,0	940,0	-
59134	1 x 120	17,6	1152,0	1180,0	-
59135	1 x 150	20,3	1440,0	1460,0	-

Core colour green-yellow

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
53762	1 x 0,5	2,0	4,8	9,0	-
53763	1 x 0,75	2,2	7,2	12,0	-
53764	1 x 1	2,4	9,6	14,0	-
53765	1 x 1,5	2,7	14,4	21,0	-
53766	1 x 2,5	3,4	24,0	31,0	-
53767	1 x 4	3,9	38,4	46,0	-
53768	1 x 6	4,6	57,6	68,0	-
53769	1 x 10	5,5	96,0	111,0	-
53770	1 x 16	7,1	154,0	166,0	-
53771	1 x 25	8,6	240,0	250,0	-
53772	1 x 35	9,8	336,0	350,0	-
53773	1 x 50	12,0	480,0	500,0	-
53774	1 x 70	14,2	672,0	690,0	-
53775	1 x 95	15,6	912,0	940,0	-
53776	1 x 120	17,6	1152,0	1180,0	-
53777	1 x 150	20,3	1440,0	1460,0	-

Dimensions and specifications may be changed without prior notice. (RK01)

HELUTRAIN® 4GKW-AXplus Train-Cable, robust special single core, halogen-free, 1,8/3kV, meter marking



Technical data

- **Temperature range**
  fixed installation: -60°C to +120°C
  flexing: -35°C to +90°C
  short circuit: +200°C
- **Nominal voltage**
  U_0/U 1,8/3 kV (AC)
  U_0/U 2,7/5,4 kV (DC)
- **Test voltage**
  6,5 kV AC
- **Minimum bending radius**
  fixed installation for outer Ø
  up to 10 mm 5x outer Ø
  > 10 mm 6x outer Ø
  flexing for outer Ø
  up to 10 mm 7x outer Ø
  > 10 mm 8x outer Ø

Cable structure

- Tinned copper conductor, fine wire stranded acc. to DIN VDE 0295 cl.5, BS 6360 cl.5 or IEC 60228 cl.5
- Core insulation of cross-linked polyolefin copolymer
- Outer sheath of cross-linked Elastomer
- Sheath colour black

Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- Flame retardant acc. to DIN VDE 0482-331-1-2, DIN EN 60332-1-2, IEC 60332-1
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (equivalent DIN VDE 0472 part 816)
- No toxic gases (EN 50305)
- Oil- and gasoline resistant to
- EN 50305
- Ozon resistant to EN 50305
- Low fire load (DIN 51900)
- No fluor (EN 60684-2)
- High voltage resistance and mechanical influences in rough environmental conditions
- Resistant to mechanical influences in rough environmental conditions
- Good chemical durability with simultaneous high fire safety
- Reduction of toxic combustion gases and the spread of the fire source in case of fire increases protection against personal injury and property damage

Note

- screened analogue type
  part no. 54092
  HELUTRAIN®-C 4GKW 1x35

Application

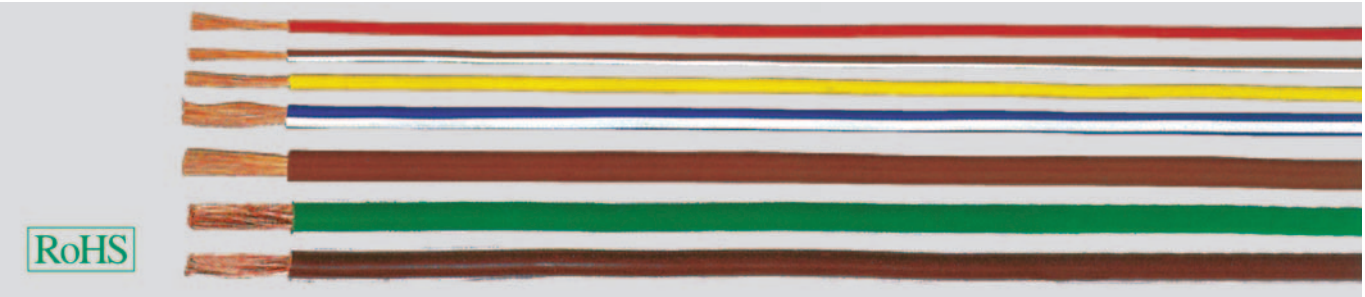
For fixed installation inside and outside of unprotected rail cars and buses. For connecting fixed and moving parts.
Suitable for wiring of switchboards, distribution boards, power converters, electrical panels and blocks, resistor and brake blocks.

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
59262	1 x 1,5	3,6	14,4	24,0	-
59263	1 x 2,5	4,0	24,0	34,0	-
59264	1 x 4	4,9	38,4	53,0	-
59265	1 x 6	5,5	57,6	74,0	-
59266	1 x 10	6,5	96,0	118,0	-
59267	1 x 16	8,7	153,6	182,0	-
59268	1 x 25	10,2	240,0	274,0	-
59269	1 x 35	11,5	336,0	379,0	-

Part no.	No.cores x cross-sec. mm²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
59312	1 x 50	13,6	480,0	536,0	-
59313	1 x 70	16,0	672,0	729,0	-
59314	1 x 95	17,5	912,0	960,0	-
59315	1 x 120	20,0	1152,0	1203,0	-
59316	1 x 150	22,0	1440,0	1464,0	-
59317	1 x 185	24,1	1776,0	1802,0	-
59318	1 x 240	26,8	2304,0	2348,0	-

Dimensions and specifications may be changed without prior notice. (RK01)

Vehicle Cable FLY one colour / two colour (old type FLK), according to DIN ISO 6722



Technical data

- Special PVC core insulation
- **Temperature stability** (3000 h) -25°C to +90°C
- **Nominal voltage** up to 24 V
- **Test voltage** 1 kV (effective value)
- **Breakdown voltage** 5 kV (effective value)
- **Specific volume resistance** min. 10^9 Ohm x mm

Cable structure

- Bare copper conductor, soft annealed electrolytic copper E-Cu58 F21 according to DIN 40500 part 4 (the mechanical requirements valid for unprocessing single wires)
- Copper conductor fine wire stranded as per DIN ISO 6722 part 3
- PVC core insulation
- For three-colour combinations we produce only on request

Properties

- Oil and fuel resistant as per DIN ISO 6722 part 2

Note

- **Minimum quantities**
  Per cross-section and colour combination:
  2-colour
  0,5 to 2,5 mm² = 3 km
  4,0 to 25 mm² = 1 km
  3-colour
  0,5 to 2,5 mm² = 5 km
  4,0 to 25 mm² = 3 km
  Remaining cross-sections on request.

Application

PVC insulated single core cables are used for vehicle constructions.

one colour

Cross-sec. mm²	Outer Ø min. - max.	Cop. weight kg / km	Weight app. kg / km		BK	BU	BN	RD	WH	GY	VT	YE	PK	GN	OG
0,5	2,0 - 2,3	4,8	9,0	Part no.	29800	40217	40243	40282	40204	40321	40269	40308	40295	40256	40230
				-	-	-	-	-	-	-	-	-	-	-	-
0,75	2,2 - 2,5	7,2	12,0	Part no.	29801	40218	40244	40283	40205	40322	40270	40309	40296	40257	40231
				-	-	-	-	-	-	-	-	-	-	-	-
1	2,4 - 2,7	9,6	15,0	Part no.	29802	40219	40245	40284	40206	40323	40271	40310	40297	40258	40232
				-	-	-	-	-	-	-	-	-	-	-	-
1,5	2,7 - 3,0	14,4	20,0	Part no.	29803	40220	40246	40285	40207	40324	40272	40311	40298	40259	40233
				-	-	-	-	-	-	-	-	-	-	-	-
2,5	3,3 - 3,6	24,0	32,0	Part no.	29804	40221	40247	40286	40208	40325	40273	40312	40299	40260	40234
				-	-	-	-	-	-	-	-	-	-	-	-
4	4,0 - 4,4	38,4	48,0	Part no.	29805	40222	40248	40287	40209	40326	40274	40313	40300	40261	40235
				-	-	-	-	-	-	-	-	-	-	-	-
6	4,6 - 5,0	57,6	68,0	Part no.	29806	40223	40249	40288	40210	40327	40275	40314	40301	40262	40236
				-	-	-	-	-	-	-	-	-	-	-	-
10	6,0 - 6,5	96,0	117,0	Part no.	29807	40224	40250	40289	40211	40328	40276	40315	40302	40263	40237
				-	-	-	-	-	-	-	-	-	-	-	-
16	7,0 - 8,3	154,0	189,0	Part no.	29808	40225	40251	40290	40212	40329	40277	40316	40303	40264	40238
				-	-	-	-	-	-	-	-	-	-	-	-
25	9,4 - 10,4	240,0	288,0	Part no.	29809	40226	40252	40291	40213	40330	40278	40317	40304	40265	40239
				-	-	-	-	-	-	-	-	-	-	-	-
35	10,8 - 11,6	336,0	382,0	Part no.	29810	40227	40253	40292	40214	40331	40279	40318	40305	40266	40240
				-	-	-	-	-	-	-	-	-	-	-	-
50	12,5 - 13,5	480,0	540,0	Part no.	29811	40228	40254	40293	40215	40332	40280	40319	40306	40267	40241
				-	-	-	-	-	-	-	-	-	-	-	-
70	14,5 - 15,5	672,0	744,0	Part no.	29812	40229	40255	40294	40216	40333	40281	40320	40307	40268	40242
				-	-	-	-	-	-	-	-	-	-	-	-

Dimensions and specifications may be changed without prior notice. (RK01)

Vehicle Cable FLY one colour / two colour (old type FLK), according to DIN ISO 6722

two colour

Cross-sec. mm²	Outer Ø min. - max.	Cop. weight kg / km	Weight app. kg / km	WH/GY	WH/RD	WH/BN	WH/BU	WH/BK	YE/GY	YE/RD	YE/BN	YE/BU	YE/BK
Part no.				40334	40347	40360	40373	40386	40399	40412	40425	40438	40451
0,5	2,0 - 2,3	4,8	9,0	-	-	-	-	-	-	-	-	-	-
Part no.				40335	40348	40361	40374	40387	40400	40413	40426	40439	40452
0,75	2,2 - 2,5	7,2	12,0	-	-	-	-	-	-	-	-	-	-
Part no.				40336	40349	40362	40375	40388	40401	40414	40427	40440	40453
1	2,4 - 2,7	9,6	15,0	-	-	-	-	-	-	-	-	-	-
Part no.				40337	40350	40363	40376	40389	40402	40415	40428	40441	40454
1,5	2,7 - 3,0	14,4	20,0	-	-	-	-	-	-	-	-	-	-
Part no.				40338	40351	40364	40377	40390	40403	40416	40429	40442	40455
2,5	3,3 - 3,6	24,0	32,0	-	-	-	-	-	-	-	-	-	-
Part no.				40339	40352	40365	40378	40391	40404	40417	40430	40443	40456
4	4,0 - 4,4	38,4	48,0	-	-	-	-	-	-	-	-	-	-
Part no.				40340	40353	40366	40379	40392	40405	40418	40431	40444	40457
6	4,6 - 5,0	57,6	68,0	-	-	-	-	-	-	-	-	-	-
Part no.				40341	40354	40367	40380	40393	40406	40419	40432	40445	40458
10	6,0 - 6,5	96,0	117,0	-	-	-	-	-	-	-	-	-	-
Part no.				40342	40355	40368	40381	40394	40407	40420	40433	40446	40459
16	7,0 - 8,3	154,0	189,0	-	-	-	-	-	-	-	-	-	-
Part no.				40343	40356	40369	40382	40395	40408	40421	40434	40447	40460
25	9,4 - 10,4	240,0	288,0	-	-	-	-	-	-	-	-	-	-
Part no.				40344	40357	40370	40383	40396	40409	40422	40435	40448	40461
35	10,8 - 11,6	336,0	382,0	-	-	-	-	-	-	-	-	-	-
Part no.				40345	40358	40371	40384	40397	40410	40423	40436	40449	40462
50	12,5 - 13,5	480,0	540,0	-	-	-	-	-	-	-	-	-	-
Part no.				40346	40359	40372	40385	40398	40411	40424	40437	40450	40463
70	14,5 - 15,5	672,0	744,0	-	-	-	-	-	-	-	-	-	-

two colour

Cross-sec. mm²	Outer Ø min. - max.	Cop. weight kg / km	Weight app. kg / km	GY/GN	GY/RD	GY/BN	GY/BK	GN/WH	GN/GY	GN/BN	GN/BU	GN/BK
Part no.				40464	40477	40490	40802	40503	40516	40529	40542	40555
0,5	2,0 - 2,3	4,8	9,0	-	-	-	-	-	-	-	-	-
Part no.				40465	40478	40491	40803	40504	40517	40530	40543	40556
0,75	2,2 - 2,5	7,2	12,0	-	-	-	-	-	-	-	-	-
Part no.				40466	40479	40492	40804	40505	40518	40531	40544	40557
1	2,4 - 2,7	9,6	15,0	-	-	-	-	-	-	-	-	-
Part no.				40467	40480	40493	40805	40506	40519	40532	40545	40558
1,5	2,7 - 3,0	14,4	20,0	-	-	-	-	-	-	-	-	-
Part no.				40468	40481	40494	40806	40507	40520	40533	40546	40559
2,5	3,3 - 3,6	24,0	32,0	-	-	-	-	-	-	-	-	-
Part no.				40469	40482	40495	40807	40508	40521	40534	40547	40560
4	4,0 - 4,4	38,4	48,0	-	-	-	-	-	-	-	-	-
Part no.				40470	40483	40496	40808	40509	40522	40535	40548	40561
6	4,6 - 5,0	57,6	68,0	-	-	-	-	-	-	-	-	-
Part no.				40471	40484	40497	40809	40510	40523	40536	40549	40562
10	6,0 - 6,5	96,0	117,0	-	-	-	-	-	-	-	-	-
Part no.				40472	40485	40498	40810	40511	40524	40537	40550	40563
16	7,0 - 8,3	154,0	189,0	-	-	-	-	-	-	-	-	-
Part no.				40473	40486	40499	40811	40512	40525	40538	40551	40564
25	9,4 - 10,4	240,0	288,0	-	-	-	-	-	-	-	-	-
Part no.				40474	40487	40500	40812	40513	40526	40539	40552	40565
35	10,8 - 11,6	336,0	382,0	-	-	-	-	-	-	-	-	-
Part no.				40475	40488	40501	40813	40514	40527	40540	40553	40566
50	12,5 - 13,5	480,0	540,0	-	-	-	-	-	-	-	-	-
Part no.				40476	40489	40502	40814	40515	40528	40541	40554	40567
70	14,5 - 15,5	672,0	744,0	-	-	-	-	-	-	-	-	-

Dimensions and specifications may be changed without prior notice.

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Vehicle Cable FLY one colour / two colour (old type FLK), according to DIN ISO 6722

two colour

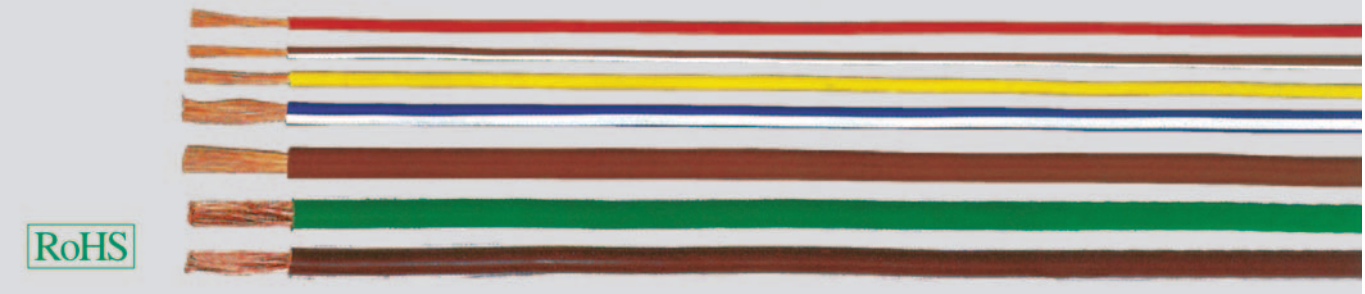
Cross-sec. mm²	Outer Ø min. - max.	Cop. weight kg / km	Weight app. kg / km	RD/WH	RD/YE	RD/GY	RD/GN	RD/BU	RD/BK	BN/WH	BN/YE	BN/GN	BN/BK
Part no.				40568	40581	40594	40607	40620	40633	40646	40659	40672	40685
0,5	2,0 - 2,3	4,8	9,0	-	-	-	-	-	-	-	-	-	-
Part no.				40569	40582	40595	40608	40621	40634	40647	40660	40673	40686
0,75	2,2 - 2,5	7,2	12,0	-	-	-	-	-	-	-	-	-	-
Part no.				40570	40583	40596	40609	40622	40635	40648	40661	40674	40687
1	2,4 - 2,7	9,6	15,0	-	-	-	-	-	-	-	-	-	-
Part no.				40571	40584	40597	40610	40623	40636	40649	40662	40675	40688
1,5	2,7 - 3,0	14,4	20,0	-	-	-	-	-	-	-	-	-	-
Part no.				40572	40585	40598	40611	40624	40637	40650	40663	40676	40689
2,5	3,3 - 3,6	24,0	32,0	-	-	-	-	-	-	-	-	-	-
Part no.				40573	40586	40599	40612	40625	40638	40651	40664	40677	40690
4	4,0 - 4,4	38,4	48,0	-	-	-	-	-	-	-	-	-	-
Part no.				40574	40587	40600	40613	40626	40639	40652	40665	40678	40691
6	4,6 - 5,0	57,6	68,0	-	-	-	-	-	-	-	-	-	-
Part no.				40575	40588	40601	40614	40627	40640	40653	40666	40679	40692
10	6,0 - 6,5	96,0	117,0	-	-	-	-	-	-	-	-	-	-
Part no.				40576	40589	40602	40615	40628	40641	40654	40667	40680	40693
16	7,0 - 8,3	154,0	189,0	-	-	-	-	-	-	-	-	-	-
Part no.				40577	40590	40603	40616	40629	40642	40655	40668	40681	40694
25	9,4 - 10,4	240,0	288,0	-	-	-	-	-	-	-	-	-	-
Part no.				40578	40591	40604	40617	40630	40643	40656	40669	40682	40695
35	10,8 - 11,6	336,0	382,0	-	-	-	-	-	-	-	-	-	-
Part no.				40579	40592	40605	40618	40631	40644	40657	40670	40683	40696
50	12,5 - 13,5	480,0	540,0	-	-	-	-	-	-	-	-	-	-
Part no.				40580	40593	40606	40619	40632	40645	40658	40671	40684	40697
70	14,5 - 15,5	672,0	744,0	-	-	-	-	-	-	-	-	-	-

two colour

Cross-sec. mm²	Outer Ø min. - max.	Cop. weight kg / km	Weight app. kg / km	BU/WH	BU/YE	BU/GN	BU/RD	BK/WH	BK/YE	BK/GN	BK/RD
Part no.				40698	40711	40724	40737	40750	40763	40776	40789
0,5	2,0 - 2,3	4,8	9,0	-	-	-	-	-	-	-	-
Part no.				40699	40712	40725	40738	40751	40764	40777	40790
0,75	2,2 - 2,5	7,2	12,0	-	-	-	-	-	-	-	-
Part no.				40700	40713	40726	40739	40752	40765	40778	40791
1	2,4 - 2,7	9,6	15,0	-	-	-	-	-	-	-	-
Part no.				40701	40714	40727	40740	40753	40766	40779	40792
1,5	2,7 - 3,0	14,4	20,0	-	-	-	-	-	-	-	-
Part no.				40702	40715	40728	40741	40754	40767	40780	40793
2,5	3,3 - 3,6	24,0	32,0	-	-	-	-	-	-	-	-
Part no.				40703	40716	40729	40742	40755	40768	40781	40794
4	4,0 - 4,4	38,4	48,0	-	-	-	-	-	-	-	-
Part no.				40704	40717	40730	40743	40756	40769	40782	40795
6	4,6 - 5,0	57,6	68,0	-	-	-	-	-	-	-	-
Part no.				40705	40718	40731	40744	40757	40770	40783	40796
10	6,0 - 6,5	96,0	117,0	-	-	-	-	-	-	-	-
Part no.				40706	40719	40732	40745	40758	40771	40784	40797
16	7,0 - 8,3	154,0	189,0	-	-	-	-	-	-	-	-
Part no.				40707	40720	40733	40746	40759	40772	40785	40798
25	9,4 - 10,4	240,0	288,0	-	-	-	-	-	-	-	-
Part no.				40708	40721	40734	40747	40760	40773	40786	40799
35	10,8 - 11,6	336,0	382,0	-	-	-	-	-	-	-	-
Part no.				40709	40722	40735	40748	40761	40774	40787	40800
50	12,5 - 13,5	480,0	540,0	-	-	-	-	-	-	-	-
Part no.				40710	40723	40736	40749	40762	40775	40788	40801
70	14,5 - 15,5	672,0	744,0	-	-	-	-	-	-	-	-

Dimensions and specifications may be changed without prior notice.

Vehicle Cable FLRY FLRY-Type A (FLK-R) / -Type B (FLK-D)



Technical data

- Special PVC core insulation
- **Temperature stability** (3000 h) -40°C to +105°C
- **Nominal voltage** up to 24 V
- **Test voltage** 1 kV (effective value)
- **Breakdown voltage** 5 kV (effective value)
- **Specific volume resistance** min. 10^9 Ohm • mm
- **Type A** = Conductor make-up symmetrical (1+6+12), number of single wires are odd number; a single wire laying at the centre of the cross-section.

Cable structure

- Bare copper conductor, soft annealed electrolytic copper E-Cu58 F21 according to DIN 40500 part 4 (the mechanical requirements valid for unprocessing single wires)
- Stranded copper conductor bare, conductor make-up as per DIN 72551
  Type A: Conductor make-up symmetrical
  Type B: Conductor make-up unsymmetrical
- Core insualtion of special PVC

Properties

- Oil and fuel resistant as per DIN ISO 6722 part 2
- **Special characteristics** Place and weight saving by using the reduced insulation wall thickness.
- **Requirements and tests** As per DIN 72551 part 5

Note

- **Indication for order** Please mention the core colour and colour combination **clearly** to your order, because a re-acceptance of false ordered articles is impossible.
- **Minimum quantities** Per cross-section and colour combination:
  2-colour
  0,5 to 2,5 mm² = 3 km
  4,0 to 25 mm² = 1 km
  3-colour
  0,5 to 2,5 mm² = 5 km
  4,0 to 25 mm² = 3 km
  Remaining cross-sections on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

PVC insulated single core cables are used for vehicle constructions.

FLRY - Type A (FLK-R)

Cross-sec. mm²	Outer Ø min. - max.	Cop. weight kg / km	Weight app. kg / km	BK	BU	BN	RD	WH	GY	VT	YE	PK	GN	OG
Part no.				28484	28486	28488	28491	28485	28494	28490	28493	28492	28489	28487
0,35	1,2 - 1,3	3,4	4,5	-	-	-	-	-	-	-	-	-	-	-
Part no.				28495	28497	28499	28502	28496	28505	28501	28504	28503	28500	28498
0,5	1,4 - 1,6	4,8	6,6	-	-	-	-	-	-	-	-	-	-	-

FLRY - Type B (FLK-D)

Cross-sec. mm²	Outer Ø min. - max.	Cop. weight kg / km	Weight app. kg / km	BK	BU	BN	RD	WH	GY	VT	YE	PK	GN	OG
Part no.				28506	28508	28510	28513	28507	28516	28512	28515	28514	28511	28509
0,75	1,7 - 1,9	7,2	9,0	-	-	-	-	-	-	-	-	-	-	-
Part no.				28517	28519	28521	28524	28518	28527	28523	28526	28525	28522	28520
1	1,9 - 2,1	9,6	11,0	-	-	-	-	-	-	-	-	-	-	-
Part no.				28528	28530	28532	28535	28529	28538	28534	28537	28536	28533	28531
1,5	2,2 - 2,4	14,4	16,0	-	-	-	-	-	-	-	-	-	-	-
Part no.				28539	28541	28543	28546	28540	28549	28545	28548	28547	28544	28542
2,5	2,7 - 3,0	24,0	26,0	-	-	-	-	-	-	-	-	-	-	-
Part no.				28550	28552	28554	28557	28551	28560	28556	28559	28558	28555	28553
4	3,4 - 3,7	38,0	42,0	-	-	-	-	-	-	-	-	-	-	-
Part no.				28561	28563	28565	28568	28562	28571	28567	28570	28569	28566	28564
6	4,0 - 4,3	58,0	61,0	-	-	-	5/0	-	-	-	-	-	-	-

Further types of Vehicle Cables on request

FLYW	FLSY	FL6G	FLYZ	FLYDY	FL4G11Y
FLX	FLYY	FL4G	FLYYF	FLRYDY	FL4GYW
FLYK	FLYTL	FL7Y	FZLY	FLRYBDY	
FLRY		FL6Y			

Dimensions and specifications may be changed without prior notice. (RK01)

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=112+A04
-WXS7
=472+A04
-M61
=472+A04
-M61

PRE-ASSEMBLED CABLES

Servo motor, feedback & fan cables	842
ROBOFLEX®-recycle	878
Connecting cables & extensions	898

U



Pre-assembled feedback cables

Pre-assembled adapter cables

Pre-assembled servo motor cables

Pre-assembled fan cables

SERVO MOTOR, FEEDBACK & FAN CABLES

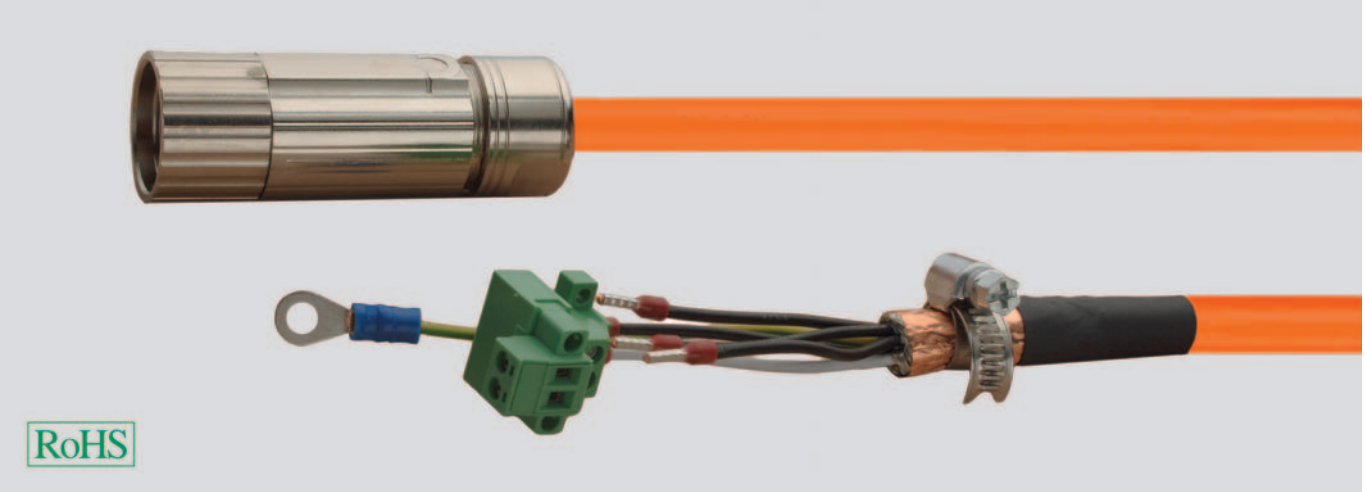
Designation	Properties	Approvals	Page
Base line for use on SIEMENS drive systems			
Pre-assembled servo motor cables	for fixed laying		844
Pre-assembled servo motor cables	for mobile use		845
Pre-assembled feedback cables	for fixed laying		846
Pre-assembled feedback cables	for mobile use		847
Pre-assembled servo motor cables	for fixed laying		848
Pre-assembled servo motor cables	for mobile use		849
Pre-assembled feedback cables	for fixed laying		850
Pre-assembled feedback cables	for mobile use		851
Base line for use on REXROTH drive systems			
Pre-assembled servo motor cables	for mobile use (PVC)		852
Pre-assembled servo motor cables	for mobile use (PUR)		853
Pre-assembled feedback cables	for mobile use (PVC)		855
Pre-assembled feedback cables	for mobile use (PUR)		856
Base line for use on LENZE drive systems			
Pre-assembled servo motor cables	for fixed laying		857
Pre-assembled servo motor cables	for mobile use		858
Pre-assembled feedback cables	for fixed laying		859
Pre-assembled feedback cables	for mobile use		860
Pre-assembled fan cables	for fixed laying		861
Pre-assembled fan cables	for mobile use		862
Pre-assembled servo motor cables	for fixed laying		863
Pre-assembled servo motor cables	for mobile use		864
Pre-assembled feedback cables	for fixed laying		865
Pre-assembled feedback cables	for mobile use		866
Pre-assembled fan cables	for fixed laying		867
Pre-assembled fan cables	for mobile use		868
Base line for use on SEW drive systems			
Pre-assembled servo motor cables	for fixed laying		869
Pre-assembled servo motor cables	for mobile use		870
Pre-assembled feedback cables	for fixed laying		871
Pre-assembled feedback cables	for mobile use		872
Pre-assembled servo motor cables	for fixed laying		873
Pre-assembled servo motor cables	for mobile use		874
For use on HEIDENHAIN measurement systems/hand wheels			
Pre-assembled feedback cables			875
Pre-assembled adapter cable			876

U

Pre-assembled servo motor cables

for fixed laying

Base line for use on SIEMENS drive systems



Technical data

- **Temperature range**
  flexing 0°C to +60°C
  fixed installation -20°C to +80°C
- **Minimum bending radius**
  flexing 20x cable Ø
  fixed installation 5x cable Ø
- **Max. acceleration**
  2 m/s²
- **Bending cycles**
  100,000 for ≥ 20x cable Ø
- **Nominal voltage (UL/CSA)**
  (power + signal) 1000 V
  Nominal voltage (VDE)
  (power) U_0/U 0,6/1 kV
  (signal) 24 V
- **Test voltage**
  power cores 4 kV
  signal cores 2 kV
- **Insulation resistance** ≥ 20 MOhm x km

Approbations

DESINA® (ISO 23570)
VDE
UL/CSA

Cable structure

Power supply cores

- Bare copper, acc. to IEC 60228 cl.6
- PVC core insulation
- Core identification U/L1/C/L+
  V/L2
  W/L3/D/L-
- GN-YE conductor

Signal cores

- Copper conductors, bare
- TPE-E core insulation
- Core identification black, white
- Cores twisted in pairs
- Shield tin-plated copper braiding
- Complete shield of tin-plated copper braiding, coverage approx. 80%
- PVC outer sheath
- Sheath colour orange (RAL 2003)

Application

This high quality pre-assembled motor connection cable is specially manufactured for applications with static installation. The special PVC outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Economical alternatives to the cable carrier compatible cable types which otherwise meet all requirements of the servo drive manufacturers. These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the drive or controller manufacturer's information about maximum permitted cable length. The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH. The data, standards and approvals relate solely to the bulk goods used.

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
6FX5002-5CA01	5CA01 DESINA PVC	**660224**
6FX5002-5CA11	5CA11 DESINA PVC	**660227**
6FX5002-5CA21	5CA21 DESINA PVC	**660230**
6FX5002-5CA31	5CA31 DESINA PVC	**660234**
6FX5002-5CA41	5CA41 DESINA PVC	**660237**
6FX5002-5CA51	5CA51 DESINA PVC	**660238**
6FX5002-5CA61	5CA61 DESINA PVC	**660239**
6FX5002-5CA13	5CA13 DESINA PVC	**660229**
6FX5002-5CA23	5CA23 DESINA PVC	**660232**
6FX5002-5DA01	5DA01 DESINA PVC	**660241**
6FX5002-5DA11	5DA11 DESINA PVC	**660244**

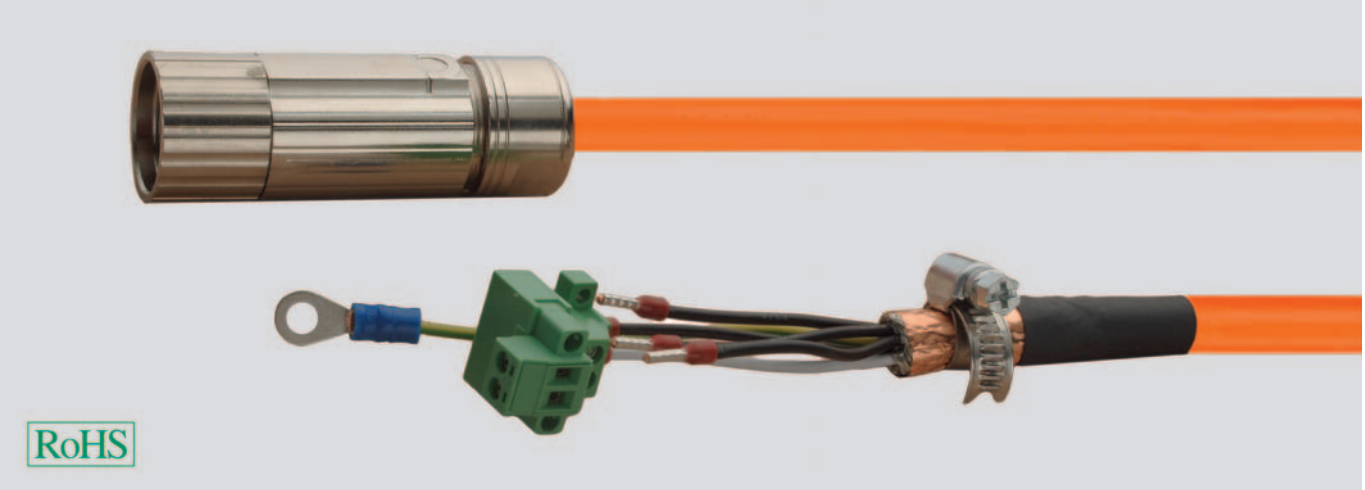
Manufacturer Designation	Helukabel Designation	Helukabel Part no.
6FX5002-5DA21	5DA21 DESINA PVC	**660247**
6FX5002-5DA31	5DA31 DESINA PVC	**660250**
6FX5002-5DA41	5DA41 DESINA PVC	**660254**
6FX5002-5DA51	5DA51 DESINA PVC	**660257**
6FX5002-5DA61	5DA61 DESINA PVC	**660259**
6FX5002-5DA13	5DA13 DESINA PVC	**660666**
6FX5002-5DA23	5DA23 DESINA PVC	**660249**
6FX5002-5DA33	5DA33 DESINA PVC	**660252**
6FX5002-5DA43	5DA43 DESINA PVC	**660255**
6FX5002-5DA53	5DA53 DESINA PVC	**660667**

Dimensions and specifications may be changed without prior notice.

Pre-assembled servo motor cables

for mobile use

Base line for use on SIEMENS drive systems



Technical data

- **Temperature range**
  flexing -20°C to +60°C
  fixed installation -50°C to +80°C
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 7x cable Ø
- **Max. acceleration**
  5 m/s²
- **Bending cycles**
  10 million for ≥ 12x cable Ø
- **Operating voltage**
  VDE U_0/U 600/1000 V
  UL 1000 V
- **Test voltage**
  power cores 4 kV
  control cores 2 kV
- **Insulation resistance** ≥ 500 MOhm x km

Approbations

DESINA® (ISO 23570)
VDE
UL/CSA

Cable structure

Power supply cores

- Bare copper, extra fine wire conductor acc. to DIN VDE 0295 cl.6
- high quality PP core insulation
- Core identification U/L1/C/L+
  V/L2
  W/L3/D/L-
- GN-YE conductor

Signal cores

- Copper conductors, bare
- High quality PP core insulation
- Core identification black
  white
- Cores twisted in pairs
- Shielding screened with tin-plated copper wires
- Complete shield of tin-plated copper braiding, coverage approx. 80%
- PUR outer sheath
- Sheath colour orange (RAL 2003)

Application

This high quality pre-assembled motor connection cable is specially manufactured for applications with mobile use.
The special PUR outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the installation instructions for laying cables in cable carriers and the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
6FX8002-5CA01	5CA01 DESINA PUR	**660053**
6FX8002-5CA11	5CA11 DESINA PUR	**660056**
6FX8002-5CA21	5CA21 DESINA PUR	**660059**
6FX8002-5CA31	5CA31 DESINA PUR	**660063**
6FX8002-5CA41	5CA41 DESINA PUR	**660066**
6FX8002-5CA51	5CA51 DESINA PUR	**660067**
6FX8002-5CA61	5CA61 DESINA PUR	**660068**
6FX8002-5CA13	5CA13 DESINA PUR	**660058**
6FX8002-5CA23	5CA23 DESINA PUR	**660061**
6FX8002-5DA01	5DA01 DESINA PUR	**660070**
6FX8002-5DA11	5DA11 DESINA PUR	**660073**

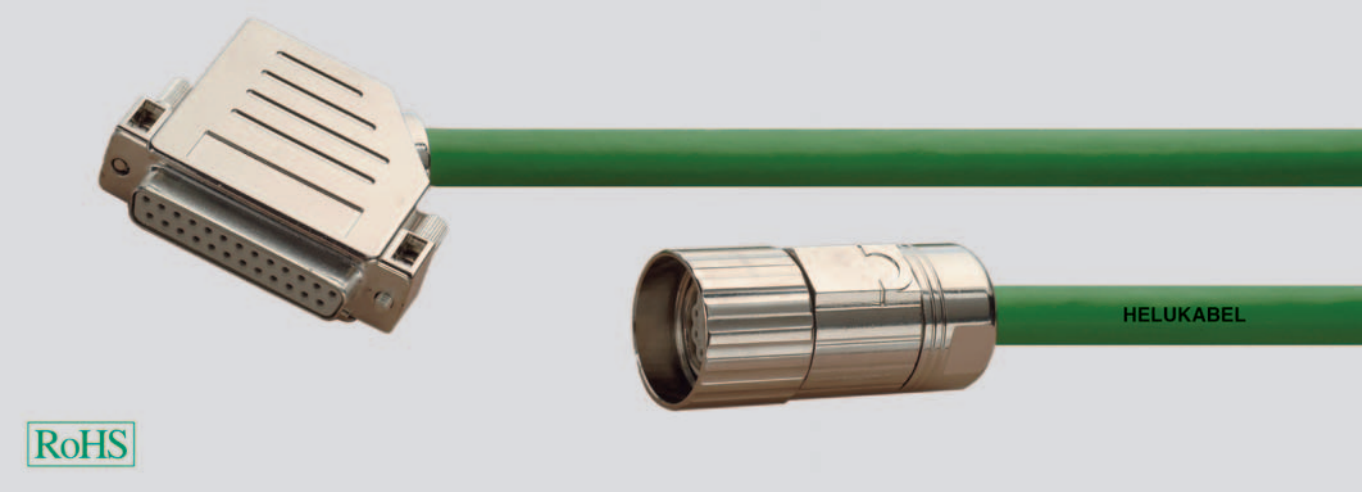
Manufacturer Designation	Helukabel Designation	Helukabel Part no.
6FX8002-5DA21	5DA21 DESINA PUR	**660076**
6FX8002-5DA31	5DA31 DESINA PUR	**660080**
6FX8002-5DA41	5DA41 DESINA PUR	**660084**
6FX8002-5DA51	5DA51 DESINA PUR	**660088**
6FX8002-5DA61	5DA61 DESINA PUR	**660089**
6FX8002-5DA13	5DA13 DESINA PUR	**89800**
6FX8002-5DA23	5DA23 DESINA PUR	**89802**
6FX8002-5DA33	5DA33 DESINA PUR	**660082**
6FX8002-5DA43	5DA43 DESINA PUR	**660085**
6FX8002-5DA53	5DA53 DESINA PUR	**660668**

Dimensions and specifications may be changed without prior notice.

Pre-assembled feedback cables

for fixed laying

Base line for use on SIEMENS drive systems



Technical data

- **Temperature range**
  -20°C to +80°C
- **Minimum bending radius**
  18x cable Ø
- **Max. acceleration**
  2 m/s²
- **Bending cycles**
  100,000
- **Max. operating voltage** 30 V AC
- **Test voltage** 500 V
- **Insulation resistance** ≥ 100 MOhm x km

Approbations

DESINA® (ISO 23570)
UL/CSA

Cable structure

- Tinned copper conductors
- Polyolefin polymer core insulation
- Complete shield of tin-plated copper braiding, coverage approx. 80%
- PVC outer sheath
- Sheath colour green

Structure(3x(2x0,14)+4x0,14+2x0,5)

- 3 pairs with tin-plated copper wires, coverage approx. 90%
- Colour code
  Pair 1: YE+GN
  Pair 2: BK+BN
  Pair 3: RD+OG
  Quad 1: GY+BU+WH/YE+BK/WH
  Pair 4: BN/RD+BN/BU

Structure(3x(2x0,14)+4x0,14+4x0,22+2x0,5)

- 3 pairs with tin-plated copper wires, coverage approx. 90%
- Colour code
  Pair 1: YE+GN
  Pair 2: BK+BN
  Pair 3: RD+OG
  Quad 1: GY+BU+WH/YE+BK/WH
  Quad 2: BN/YE+BN/GY+GN/BK+RD/GN
  Pair 4: BN/RD+BN/BU

Structure(4x2x0,34+4x0,5)

- Colour code
  Pair 1: BU+VT
  Pair 2: BN+BK
  Pair 3: RD+OG
  Pair 4: YE+GN
  Quad: YE/WH+RD/WH+BU/WH+BK/WH

Application

This high quality pre-assembled feedback cable is specially manufactured for applications with static installation. The special PVC outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Economical alternatives to the cable carrier compatible cable types which otherwise meet all requirements of the servo drive manufacturers. These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the drive or controller manufacturer's information about maximum permitted cable length. The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH. The data, standards and approvals relate solely to the bulk goods used.

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
6FX5002-2AD00	2AD00 DESINA PVC	**660207**
6FX5002-2AH00	2AH00 DESINA PVC	**660209**
6FX5002-2CA11	2CA11 DESINA PVC	**660210**
6FX5002-2CA15	2CA15 DESINA PVC	**660211**
6FX5002-2CA31	2CA31 DESINA PVC	**660212**
6FX5002-2CA51	2CA51 DESINA PVC	**660214**
6FX5002-2CA61	2CA61 DESINA PVC	**660215**
6FX5002-2CA72	2CA72 DESINA PVC	**660669**
6FX5002-2CB51	2CB51 DESINA PVC	**660217**

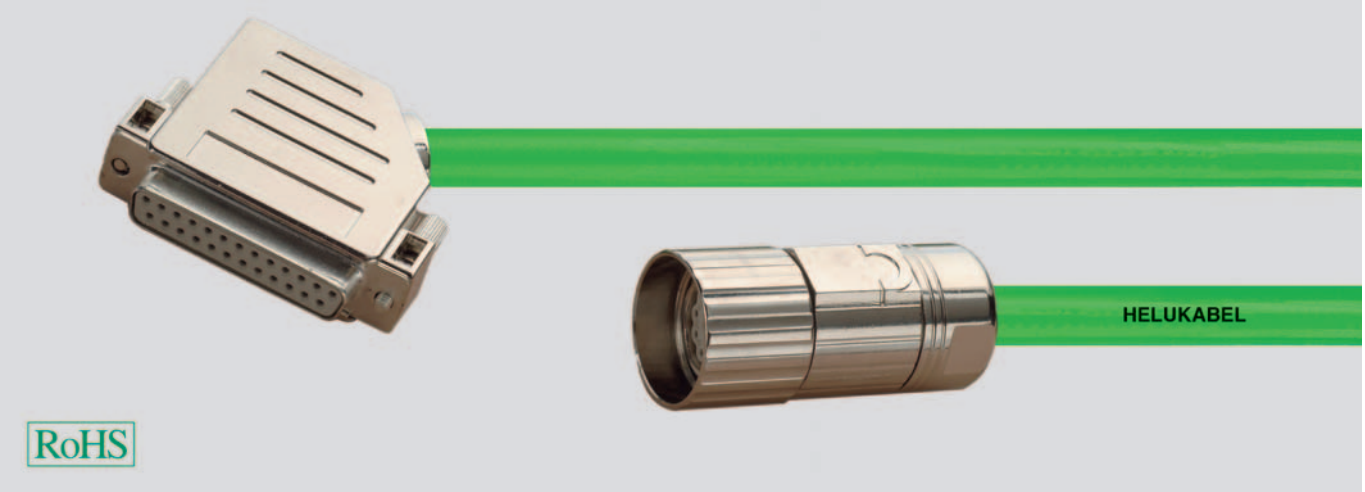
Manufacturer Designation	Helukabel Designation	Helukabel Part no.
6FX5002-2CC11	2CC11 DESINA PVC	**660670**
6FX5002-2CD01	2CD01 DESINA PVC	**660671**
6FX5002-2CF02	2CF02 DESINA PVC	**660219**
6FX5002-2CG00	2CG00 DESINA PVC	**660672**
6FX5002-2CH00	2CH00 DESINA PVC	**660220**
6FX5002-2EQ10	2EQ10 DESINA PVC	**660222**
6FX5002-2CE02	2CE02 DESINA PVC	**660673**
6FX5002-2CM00	2CM00 DESINA PVC	**660674**
6FX5002-2CE07	2CE07 DESINA PVC	**660675**

Dimensions and specifications may be changed without prior notice.

Pre-assembled feedback cables

for mobile use

Base line for use on SIEMENS drive systems



Technical data

- **Temperature range**
  flexing -20°C to +60°C
  fixed installation -50°C to +80°C
- **Minimum bending radius**
  flexing 11x cable Ø
  fixed installation 7x cable Ø
- **Max. acceleration**
  5 m/s²
- **Bending cycles**
  10 million for ≥ 12x cable Ø
- **Operating voltage** 30 V
- **Test voltage** 500 V
- **Insulation resistance** ≥ 10 MOhm x km

Approbations

DESINA® (ISO 23570)
UL/CSA

Cable structure

- Tinned copper conductors
- high quality PP core insulation
- Complete shield of tin-plated copper braiding, coverage approx. 80%
- PUR outer sheath
- Sheath colour green

Structure/colour code

- **(2x2x0,18)**
  BK, BN, RD, OG
- **(4x2x0,18)**
  BK+BN, RD+OG, YE+GN, BU+VT
- **(8x2x0,18)**
  BK+BN, RD+OG, YE+GN, BU+VT, GY+WH, WH/BK+WH/BN, WH/RD+WH/OG, WH/YE+WH/GN
- **(12x0,22)**
  BK, BN, RD, OG, YE, GN, BU, VT, GY, WH, WH/BK, WH/BN
- **(4x2x0,34+4x0,5)**
  RD+OG, YE+GN, BU+VT, BK+BN, WH/RD, WH/YE, WH/BU, WH/BK
- **(3x(2x0,14)+2x(0,5))**
  RD+OG, YE+GN, BK+BN, BK, RD
- **(3x(2x0,14)+2x0,5+4x0,14)**
  RD+OG, YE+GN, BK+BN, BN/RD, BN/BU, GY, BU, WH/YE, WH/BK
- **(3x(2x0,14)+2x0,5+4x0,14+4x0,22)**
  RD+OG, YE+GN, BK+BN, BN/RD, BN/BU, GY, BU, WH/YE, WH/BK, BN/YE, BN/GY/GN/BK, GN/RD

Application

This high quality pre-assembled feedback cable is specially manufactured for applications with mobile use. The special PUR outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the installation instructions for laying cables in cable carriers and the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
6FX8002-2AD00	2AD00 DESINA PUR	**660014**
6FX8002-2AH00	2AH00 DESINA PUR	**87328**
6FX8002-2CA11	2CA11 DESINA PUR	**660018**
6FX8002-2CA15	2CA15 DESINA PUR	**660019**
6FX8002-2CA31	2CA31 DESINA PUR	**660021**
6FX8002-2CA51	2CA51 DESINA PUR	**660023**
6FX8002-2CA61	2CA61 DESINA PUR	**660024**
6FX8002-2CA72	2CA72 DESINA PUR	**660676**
6FX8002-2CB31	2CB31 DESINA PUR	**650122**
6FX8002-2CB51	2CB51 DESINA PUR	**660031**

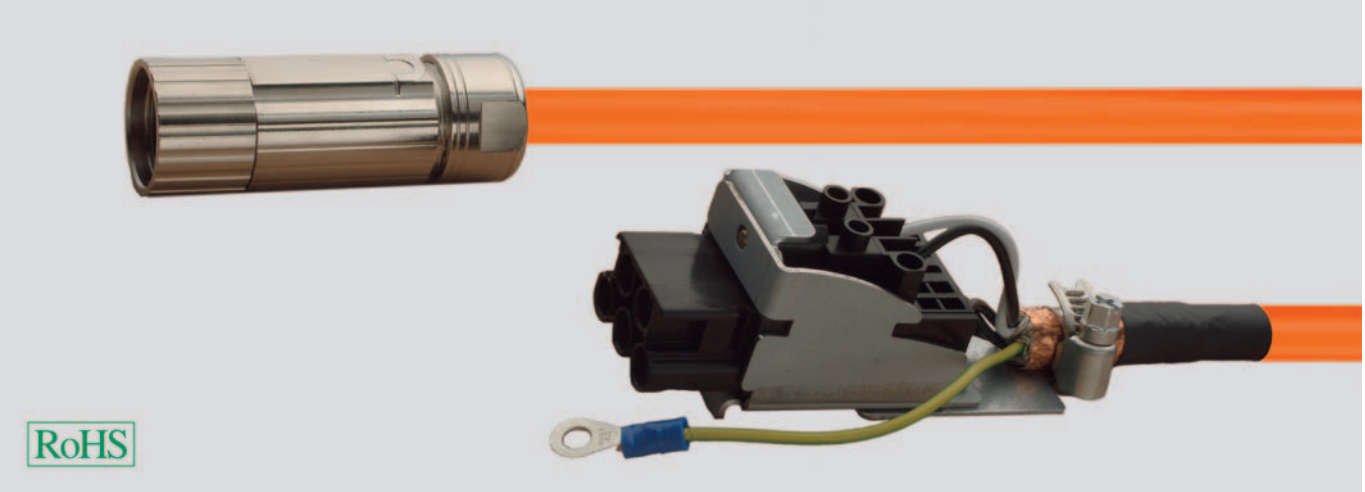
Manufacturer Designation	Helukabel Designation	Helukabel Part no.
6FX8002-2CC11	2CC11 DESINA PUR	**660032**
6FX8002-2CD01	2CD01 DESINA PUR	**660033**
6FX8002-2CF02	2CF02 DESINA PUR	**89293**
6FX8002-2CG00	2CG00 DESINA PUR	**660034**
6FX8002-2CH00	2CH00 DESINA PUR	**660035**
6FX8002-2EQ10	2EQ10 PUR DESINA	**660038**
6FX8002-2CA21	2CA21 DESINA PUR	**660020**
6FX8002-2CE02	2CE02 DESINA PUR	**660677**
6FX8002-2CM00	2CM00 DESINA PUR	**660678**
6FX8002-2CE07	2CE07 DESINA PUR	**660679**

Dimensions and specifications may be changed without prior notice.

Pre-assembled servo motor cables

for fixed laying

Base line for use on SIEMENS drive systems (Drive Cliq*)



Technical data

- **Temperature range**
  flexing 0°C to +60°C
  fixed installation -20°C to +80°C
- **Minimum bending radius**
  flexing 20x cable Ø
  fixed installation 5x cable Ø
- **Max. acceleration**
  2 m/s²
- **Bending cycles**
  100,000 for ≥ 20x cable Ø
- **Nominal voltage VDE**
  (power) U_0/U 0,6/1 kV
  (signal) 24 V
  Nominal voltage UL/CSA
  (power + signal) 1000 V
- **Test voltage**
  power cores 4 kV
  signal cores 1 kV
- **Insulation resistance** ≥ 20 MOhm x km

Approbations

DESINA® (ISO 23570)
VDE
UL/CSA

Cable structure

Power supply cores

- Bare copper, acc. to IEC 60228 cl.6
- PVC core insulation
- Core identification U/L1/C/L+
  V/L2
  W/L3/D/L-
- GN-YE conductor

Signal cores

- Copper conductors, bare
- TPE-E core insulation
- Core identification black, white
- Cores twisted in pairs
- Shield tin-plated copper braiding
- Complete shield of tin-plated copper braiding, coverage approx. 80%
- PVC outer sheath
- Sheath colour orange (RAL 2003)

Application

This high quality pre-assembled motor connection cable is specially manufactured for applications with static installation. The special PVC outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Economical alternatives to the cable carrier compatible cable types which otherwise meet all requirements of the servo drive manufacturers. These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.
* Drive Cliq is registered trademark from Siemens AG.

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
6FX5002-5CS01	5CS01 DESINA PVC	**660855**
6FX5002-5CS11	5CS11 DESINA PVC	**660856**
6FX5002-5CS21	5CS21 DESINA PVC	**660857**
6FX5002-5CS31	5CS31 DESINA PVC	**660858**
6FX5002-5CS41	5CS41 DESINA PVC	**660859**
6FX5002-5CS51	5CS51 DESINA PVC	**660860**
6FX5002-5CS61	5CS61 DESINA PVC	**660861**
6FX5002-5CS13	5CS13 DESINA PVC	**660862**

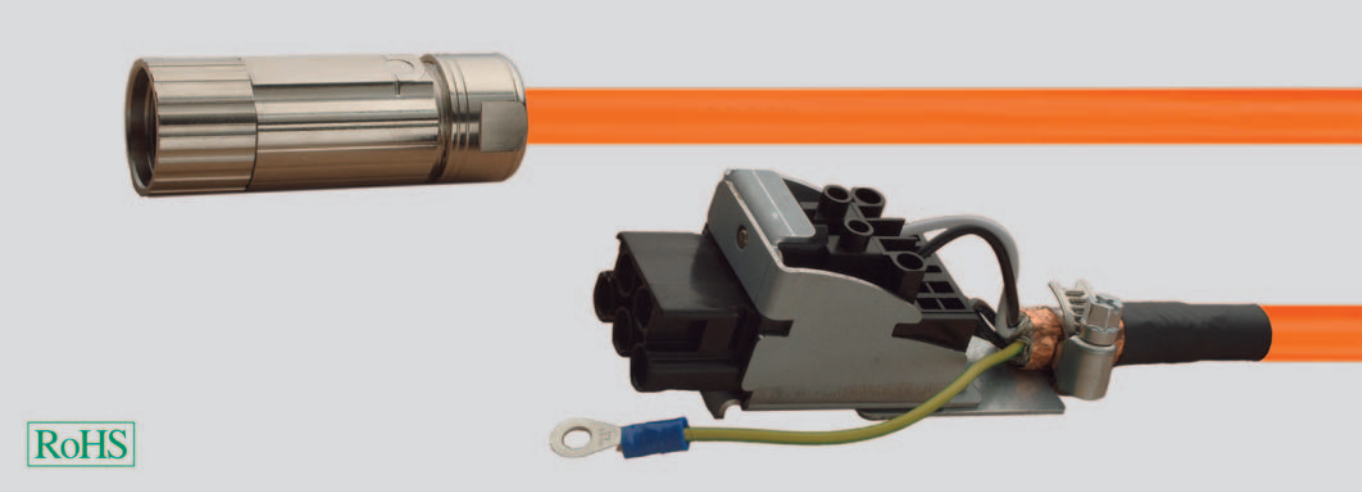
Manufacturer Designation	Helukabel Designation	Helukabel Part no.
6FX5002-5DS01	5DS01 DESINA PVC	**660863**
6FX5002-5DS11	5DS11 DESINA PVC	**660864**
6FX5002-5DS21	5DS21 DESINA PVC	**660865**
6FX5002-5DS31	5DS31 DESINA PVC	**660866**
6FX5002-5DS41	5DS41 DESINA PVC	**660867**
6FX5002-5DS51	5DS51 DESINA PVC	**660868**
6FX5002-5DS61	5DS61 DESINA PVC	**660869**
6FX5002-5DS13	5DS13 DESINA PVC	**660870**

Dimensions and specifications may be changed without prior notice.
* Drive Cliq is registered trademark from Siemens AG.

Pre-assembled servo motor cables

for mobile use

Base line for use on SIEMENS drive systems (Drive Cliq*)



Technical data

- **Temperature range**
  flexing -20°C to +60°C
  fixed installation -50°C to +80°C
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 7x cable Ø
- **Max. acceleration**
  5 m/s²
- **Bending cycles**
  10 million for ≥ 12x cable Ø
- **Operating voltage**
  VDE U_0/U 600/1000 V
  UL 1000 V
- **Test voltage**
  power cores 4 kV
  signal cores 2 kV
- **Insulation resistance** ≥ 500 MOhm x km

Approbations

DESINA® (ISO 23570)
UL/CSA

Cable structure

Power supply cores

- Bare copper, extra fine wire conductor acc. to DIN VDE 0295 cl.6
- high quality PP core insulation
- Core identification U/L1/C/L+
  V/L2
  W/L3/D/L-
- GN-YE conductor

Signal cores

- Copper conductors, bare
- High quality PP core insulation
- Core identification black, white
- Cores twisted in pairs
- Shielding screened with tin-plated copper wires
- Complete shield of tin-plated copper braiding, coverage approx. 80%
- PUR outer sheath
- Sheath colour orange (RAL 2003)

Application

This high quality pre-assembled motor connection cable is specially manufactured for applications with mobile use.
The special PUR outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the installation instructions for laying cables in cable carriers and the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.
* Drive Cliq is registered trademark from Siemens AG.

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
6FX8002-5CS01	5CS01 DESINA PUR	**660871**
6FX8002-5CS11	5CS11 DESINA PUR	**660872**
6FX8002-5CS21	5CS21 DESINA PUR	**660873**
6FX8002-5CS31	5CS31 DESINA PUR	**660874**
6FX8002-5CS41	5CS41 DESINA PUR	**660875**
6FX8002-5CS51	5CS51 DESINA PUR	**660876**
6FX8002-5CS61	5CS61 DESINA PUR	**660877**
6FX8002-5CS13	5CS13 DESINA PUR	**660878**

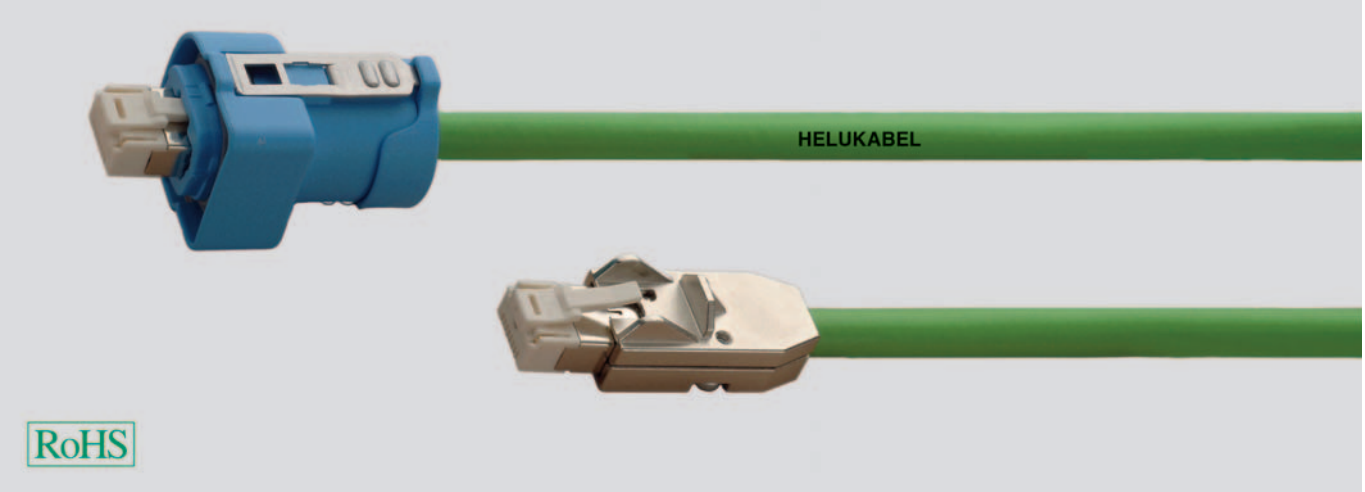
Manufacturer Designation	Helukabel Designation	Helukabel Part no.
6FX8002-5DS01	5DS01 DESINA PUR	**660879**
6FX8002-5DS11	5DS11 DESINA PUR	**660880**
6FX8002-5DS21	5DS21 DESINA PUR	**660881**
6FX8002-5DS31	5DS31 DESINA PUR	**660882**
6FX8002-5DS41	5DS41 DESINA PUR	**660883**
6FX8002-5DS51	5DS51 DESINA PUR	**660884**
6FX8002-5DS61	5DS61 DESINA PUR	**660885**
6FX8002-5DS13	5DS13 DESINA PUR	**660886**

Dimensions and specifications may be changed without prior notice.
* Drive Cliq is registered trademark from Siemens AG.

Pre-assembled feedback cables

for fixed laying

Base line for use on SIEMENS drive systems (Drive Cliq*)



Technical data

- **Temperature range**
  flexing -20°C to +60°C
  fixed installation -20°C to +80°C
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Max. acceleration**
  2 m/s²
- **Bending cycles**
  100.000 for ≥ 10x cable Ø
- **max. operating voltage** 30 V AC (UL)
- **Test voltage** 500 V / 50 Hz / 1min
- **Insulation resistance** ≥ 1 GOhm x km
- **Conductor resistance**
  Core AWG26 ≤ 135 ohms/km
  Core AWG22 ≤ 62 ohms/km
- **Characteristic impedance AWG26 pairs**
  from 1 MHz to 100 MHz 100+/-15 Ohm
- **Operating capacitance AWG26 pairs**
  for 800 Hz rated 50 nF/km

Approbations

UL/CSA

Cable structure

- Bare copper conductor, 7 strands
- Polyolefin core insulation
- Complete shield aluminium foil coated with plastic, braiding of tin-plated copper wires, coverage approx. 85%
- PUR outer sheath
- Sheath colour green

Structure/colour code

- **(2xAWG22+2x2xAWG26)**
  Colour code
  Pair AWG22: RD+BK
  Pair 1 AWG26: YW+GN
  Pair 2 AWG26: PK+BU

Connector data

RJ45 connector CAT5
Material: nickel-plated PBT/brass
Contacts 30u" Au/Ni
Rated voltage: 50 V DC / 35 V AC
Operating temperature: -20°C to + 120°C
Mating cycles: 1000
Cover
zinc die-cast
zinc die-cast / PBT blue
PBT blue
PBT black

Application

This high quality pre-assembled feedback cable is specially manufactured for applications with static installation. The special PVC outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Economical alternatives to the cable carrier compatible cable types which otherwise meet all requirements of the servo drive manufacturers. These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.
* Drive Cliq is registered trademark from Siemens AG.

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
6FX5002-2DC00	2DC00 DESINA PUR	**660887**
6FX5002-2DC10	2DC10 DESINA PUR	**660888**

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
6FX5002-2DC20	2DC20 DESINA PUR	**660889**

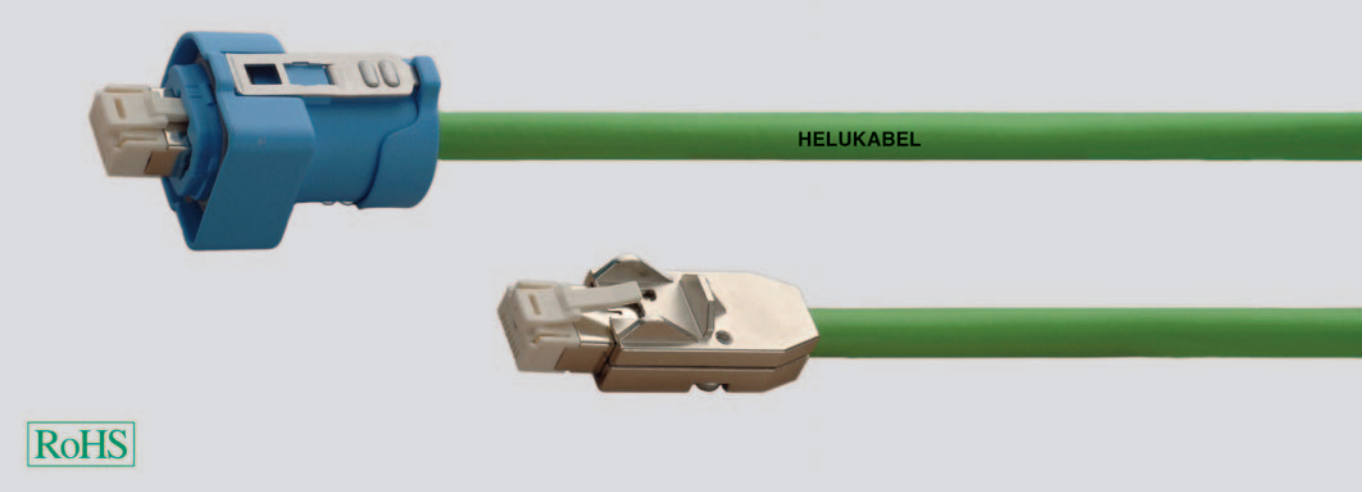
Dimensions and specifications may be changed without prior notice.

* Drive Cliq is registered trademark from Siemens AG.

Pre-assembled feedback cables

for mobile use

Base line for use on SIEMENS drive systems (Drive Cliq*)



Technical data

- **Temperature range**
  flexing -20°C to +60°C
  fixed installation -20°C to +80°C
- **Minimum bending radius**
  flexing 15x cable Ø
  fixed installation 5x cable Ø
- **Max. acceleration**
  5 m/s²
- **Bending cycles**
  2 million for ≥ 15x cable Ø
- **max. operating voltage** 30 V
- **Test voltage** 500 V / 50 Hz / 1min
- **Insulation resistance** ≥ 1 GOhm x km
- **Conductor resistance**
  Core AWG26 ≤ 135 ohms/km
  Core AWG22 ≤ 62 ohms/km
- **Characteristic impedance 0,15 mm² pairs**
  from 1 MHz to 100 MHz 100+/-15 Ohm
- **Operating capacitance 0,15 mm² pairs**
  for 800 Hz rated 50 nF/km

Approbations

UL/CSA

Cable structure

- 0,15 mm² Bare copper conductor, 19 strands
  0,38 mm² Tin-plated copper conductor, 19 strands
- Polyolefin core insulation
- Complete shield aluminium foil coated with plastic, braiding of tin-plated copper wires, coverage approx. 85%
- PUR outer sheath
- Sheath colour green

Structure/colour code

- **(2x0,38mm²)+2x(2x0,15mm²)**
  Colour code
  Pair 0,38 mm²: RD+BK
  Pair 1 0,15 mm²: YE+GN
  Pair 2 0,15 mm²: PK+BU

Connector data

RJ45 connector CAT5
Material: nickel-plated PBT/brass
Contacts 30u" Au/Ni
Rated voltage: 50 V DC / 35 V AC
Operating temperature: -20°C to + 120°C
Mating cycles: 1000
Cover
zinc die-cast
zinc die-cast / PBT blue
PBT blue
PBT black

Application

This high quality pre-assembled feedback cable is specially manufactured for applications with mobile use. The special PUR outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the installation instructions for laying cables in cable carriers and the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.
* Drive Cliq is registered trademark from Siemens AG.

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
6FX8002-2DC00	2DC00 DESINA PUR	**660890**
6FX8002-2DC10	2DC10 DESINA PUR	**660891**

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
6FX8002-2DC20	2DC20 DESINA PUR	**660892**

Dimensions and specifications may be changed without prior notice.

* Drive Cliq is registered trademark from Siemens AG.

Pre-assembled servo motor cables

for mobile use (PVC)

Base line for use on REXROTH drive systems



Technical data

- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -50°C to +90°C
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 7x cable Ø
- **Max. acceleration**
  4 m/s²
- **Bending cycles**
  5 million for ≥ 10x cable Ø
- **Nominal voltage**
  UL/CSA 1000 V
- **Test voltage**
  power cores 4 kV
  signal cores 2 kV
- **Insulation resistance** ≥ 20 MOhm x km

Approbations

DESINA® (ISO 23570)
UL/CSA

Cable structure

Power supply cores

- Bare copper, extra fine wire conductor acc. to DIN VDE 0295 cl.6
- PETP core insulation
- Core identification 1, 2, 3
- GN-YE conductor

Signal cores

- Bare copper, extra fine wire conductor acc. to DIN VDE 0295 cl.6
- Core insulation PETP
- Core identification
  Pair 1: 5. 6
  Pair 2: 7. 8
- Cores twisted in pairs
- Shielding aluminium/polyester foil
  Drain wire
  tin-plated copper braiding
- Complete shield of tin-plated copper braiding, coverage approx. 85%
- PVC outer sheath
- Sheath colour orange (RAL 2003)

Application

This high quality pre-assembled motor connection cable is specially manufactured for applications with high mechanical stress.
The special PVC outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Particularly suitable for use with small bending radii and high acceleration.
These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the installation instructions for laying cables in cable carriers and the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.

Helukabel Designation	Helukabel Part no.
motor cable 4009 PVC	**660680**
motor cable 4017 PVC	**660681**
motor cable 4039 PVC	**660682**
motor cable 4060 PVC	**660683**
motor cable 4055 PVC	**660684**

Helukabel Designation	Helukabel Part no.
motor cable 4020 PVC	**660685**
motor cable 4018 PVC	**660686**
motor cable 4016 PVC	**660687**
motor cable 4119 PVC	**660688**

Dimensions and specifications may be changed without prior notice.

Pre-assembled servo motor cables

for mobile use (PUR)

Base line for use on REXROTH drive systems



Technical data

- **Temperature range**
  flexing -20°C to +60°C
  fixed installation -50°C to +80°C
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 7x cable Ø
- **Max. acceleration**
  5 m/s²
- **Bending cycles**
  5 million for ≥ 10x cable Ø
- **Nominal voltage**
  UL/CSA 1000 V
- **Test voltage**
  power cores 4 kV
  signal cores 2 kV
- **Insulation resistance** ≥ 10 MOhm x km

Approbations

DESINA® (ISO 23570)
UL/CSA

Cable structure

Power supply cores

- Bare copper, extra fine wire conductor acc. to DIN VDE 0295 cl.6
- PETP core insulation or high quality PP core insulation
- Core identification 1, 2, 3
- GN-YE conductor

Signal cores

- Bare copper, extra fine wire conductor acc. to DIN VDE 0295 cl.6
- PETP or high quality PP core insulation
- Core identification
  Pair 1: 5, 6
  Pair 2: 7, 8
- Cores twisted in pairs
- Shielding aluminium/polyester foil
  Drain wire
  tin-plated copper braiding
- Complete shield of tin-plated copper braiding, coverage approx. 80%
- PUR outer sheath
- Sheath colour orange (RAL 2003)

Application

This high quality pre-assembled motor connection cable is specially manufactured for applications with high mechanical stress.
The special PUR outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Particularly suitable for use with small bending radii and high acceleration.
These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the installation instructions for laying cables in cable carriers and the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
IKG4008	motor cable 4008 PUR	**660090**
IKG4009	motor cable 4009 PUR	**660091**
IKG4017	motor cable 4017 PUR	**660092**
IKG4077	motor cable 4077 PUR	**660093**
IKG4029	motor cable 4029 PUR	**660095**
IKG4039	motor cable 4039 PUR	**660096**
IKG4028	motor cable 4028 PUR	**660097**
IKG4073	motor cable 4073 PUR	**660099**
IKG4071	motor cable 4071 PUR	**660100**
IKG4072	motor cable 4072 PUR	**660101**
IKG4053	motor cable 4053 PUR	**660103**
IKG4060	motor cable 4060 PUR	**660104**
IKG4055	motor cable 4055 PUR	**660105**
IKG4063	motor cable 4063 PUR	**660108**
IKG4070	motor cable 4070 PUR	**660109**
IKG4068	motor cable 4068 PUR	**660110**
IKG4067	motor cable 4067 PUR	**660111**
IKG4083	motor cable 4083 PUR	**660114**
IKG4090	motor cable 4090 PUR	**660115**
IKG4087	motor cable 4087 PUR	**660116**
IKG4103	motor cable 4103 PUR	**660119**
IKG4110	motor cable 4110 PUR	**660120**
IKG4107	motor cable 4107 PUR	**660121**
IKG4123	motor cable 4123 PUR	**660124**

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
IKG4130	motor cable 4130 PUR	**660125**
IKG4127	motor cable 4127 PUR	**660126**
IKG4143	motor cable 4143 PUR	**660129**
IKG4150	motor cable 4150 PUR	**660130**
IKG4147	motor cable 4147 PUR	**660131**
IKG4163	motor cable 4163 PUR	**660134**
IKG4170	motor cable 4170 PUR	**660135**
IKG4167	motor cable 4167 PUR	**660136**
IKG4183	motor cable 4183 PUR	**660139**
IKG4200	motor cable 4200 PUR	**660140**
IKG4186	motor cable 4186 PUR	**660141**
IKG4203	motor cable 4203 PUR	**660144**
IKG4210	motor cable 4210 PUR	**660145**
IKG4204	motor cable 4204 PUR	**660146**
IKG4223	motor cable 4223 PUR	**660149**
IKG4224	motor cable 4224 PUR	**660150**
IKG4013	motor cable 4013 PUR	**660153**
IKG4020	motor cable 4020 PUR	**660154**
IKG4018	motor cable 4018 PUR	**660155**
IKG4016	motor cable 4016 PUR	**660156**
IKG4033	motor cable 4033 PUR	**660157**
IKG4050	motor cable 4050 PUR	**660158**
IKG4035	motor cable 4035 PUR	**660159**
IKG4037	motor cable 4037 PUR	**660160**

Continuation ▸

Pre-assembled servo motor cables

for mobile use (PUR)

Base line for use on REXROTH drive systems

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
IKG4136	motor cable 4136 PUR	**660689**
IKG4155	motor cable 4155 PUR	**660690**
IKG4176	motor cable 4176 PUR	**660691**
IKG4186	motor cable 4186 PUR	**660692**
IKG4172	motor cable 4172 PUR	**660693**
IKG4173	motor cable 4173 PUR	**660694**
IKG4174	motor cable 4174 PUR	**660695**
IKG4115	motor cable 4115 PUR	**660696**
IKG4140	motor cable 4140 PUR	**660697**
IKG4116	motor cable 4116 PUR	**660698**
RKL4421	motor cable 4421 PUR	**660699**
IKG4117	motor cable 4117 PUR	**660700**
IKG4177	motor cable 4177 PUR	**660701**
IKG4118	motor cable 4118 PUR	**660702**
IKG4215	motor cable 4215 PUR	**660703**
IKG4175	motor cable 4175 PUR	**660704**
IKG4169	motor cable 4169 PUR	**660705**
IKG4138	motor cable 4138 PUR	**660706**
IKG4134	motor cable 4134 PUR	**660707**
IKG4119	motor cable 4119 PUR	**660708**
IKG4120	motor cable 4120 PUR	**660709**
IKG4137	motor cable 4137 PUR	**660710**
RKL4302	motor cable 4302 PUR	**660627**
RKL4303	motor cable 4303 PUR	**660711**
RKL4300	motor cable 4300 PUR	**660712**
RKL4301	motor cable 4301 PUR	**660713**
RKL4306	motor cable 4306 PUR	**660714**
RKL4307	motor cable 4307 PUR	**660715**
RKL4308	motor cable 4308 PUR	**660716**
RKL4309	motor cable 4309 PUR	**660717**
RKL4310	motor cable 4310 PUR	**660718**

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
RKL4313	motor cable 4313 PUR	**660719**
RKL4314	motor cable 4314 PUR	**660720**
RKL4315	motor cable 4315 PUR	**660721**
RKL4317	motor cable 4317 PUR	**660722**
RKL4318	motor cable 4318 PUR	**660723**
RKL4401	motor cable 4401 PUR	**660724**
RKL4421	motor cable 4421 PUR	**660725**
RKL4431	motor cable 4431 PUR	**660726**
RKL4441	motor cable 4441 PUR	**660727**
RKL4421	motor cable 4421 PUR	**660728**
RKL4421	motor cable 4421 PUR	**660729**
RKL4421	motor cable 4421 PUR	**660730**
RKL4421	motor cable 4421 PUR	**660732**
RKL4421	motor cable 4421 PUR	**660733**
RKL4421	motor cable 4421 PUR	**660734**
RKL4421	motor cable 4421 PUR	**660735**
RKL4421	motor cable 4421 PUR	**660736**
RKL4421	motor cable 4421 PUR	**660737**
RKL4421	motor cable 4421 PUR	**660739**
RKL4421	motor cable 4421 PUR	**660740**
RKL4421	motor cable 4421 PUR	**660741**
RKL4421	motor cable 4421 PUR	**660742**
RKL4421	motor cable 4421 PUR	**660743**
RKL4421	motor cable 4421 PUR	**660744**
RKL4421	motor cable 4421 PUR	**660745**
RKL4421	motor cable 4421 PUR	**660746**
RKL4421	motor cable 4421 PUR	**660747**
RKL4421	motor cable 4421 PUR	**660748**
RKL4421	motor cable 4421 PUR	**660749**
RKL4421	motor cable 4421 PUR	**660750**
RKL4421	motor cable 4421 PUR	**660751**

Dimensions and specifications may be changed without prior notice.

Pre-assembled feedback cables

for mobile use (PVC)

Base line for use on REXROTH drive systems



Technical data

- **Temperature range**
  flexing -10°C to +80°C
  fixed installation -40°C to +80°C
- **Minimum bending radius**
  flexing 12x cable Ø
  fixed installation 8x cable Ø
- **Max. acceleration**
  4 m/s²
- **Bending cycles**
  5 million for ≥ 12x cable Ø
- **Operating voltage** 30 V
- **Test voltage** 1500 V
- **Insulation resistance** ≥ 100 MOhm x km

Approbations

UL/CSA

Cable structure

- Copper conductors
- Polyolefin core insulation
- Complete shield of tin-plated copper braiding, coverage approx. 85%
- PVC outer sheath
- Sheath colour orange

Structure/colour code

- **(2x0,5+4x2x0,25)**
  WH, BN, BN+GN, RD+BL, BU+VT, GY+PK
- **(2x1,0+4x2x0,25)**
  WH, BN, BN+GN, RD+BL, BU+VT, GY+PK

Application

This high quality pre-assembled feedback cable is specially manufactured for applications with mobile use.
The special PVC outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Particularly suitable for use with small bending radii and high acceleration.
These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the installation instructions for laying cables in cable carriers and the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.

Helukabel Designation	Helukabel Part no.
feedback cables 4374 PVC	**660752**
feedback cables 4042 PVC	**660753**
feedback cables 4375 PVC	**660754**

Helukabel Designation	Helukabel Part no.
feedback cables 4103 PVC	**660755**
feedback cables 4200 PVC	**660756**

Dimensions and specifications may be changed without prior notice.

Pre-assembled feedback cables

for mobile use (PUR)

Base line for use on REXROTH drive systems



Technical data

- **Temperature range**
  flexing 0°C to +60°C
  fixed installation -40°C to +60°C
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 8x cable Ø
- **Max. acceleration**
  5 m/s²
- **Bending cycles**
  10 million for ≥ 12x cable Ø
- **Operating voltage**
  VDE 300 V AC
  UL/CSA 30 V
- **Test voltage** 1000 V (0,14 mm² 0,5 kV)
- **Insulation resistance** ≥ 100 MOhm x km

Approbations

UL/CSA

Cable structure

- Copper conductors
- high quality PP core insulation / polyolefin core insulation
- Complete shield of tin-plated copper braiding, coverage approx. 80%
- PUR outer sheath
- Sheath colour orange
  (for (2x0,5+4x2x0,25) green also possible)

Structure/colour code

- **(2x0,5+4x2x0,25)**
  WH, BN, BN+GN, RD+BK, BU+VT, GY+PK
- **(2x1,0+4x2x0,25)**
  WH, BN, BN+GN, RD+BK, BU+VT, GY+PK
- **(4x2x0,14+4x1,0+(4x0,14))**
  GY+PK, YE+VT, GN+BN, RD+BK, BU, WH/GN, BN/GN, WH, GN/BK, BU/BK, YE/BK, RD/BK

Application

This high quality pre-assembled feedback cable is specially manufactured for applications with mobile use.
The special PUR outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Particularly suitable for use with small bending radii and high acceleration.
These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the installation instructions for laying cables in cable carriers and the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
IKS4374	feedback cables 4374 PUR	**660260**
IKS4042	feedback cables 4042 PUR	**660757**
IKS4375	feedback cables 4375 PUR	**660263**
IKS4040	feedback cables 4040 PUR	**660758**
IKS4041	feedback cables 4041 PUR	**660759**
IKS4020	feedback cables 4020 PUR	**660266**
IKS4043	feedback cables 4043 PUR	**660760**
IKS4103	feedback cables 4103 PUR	**660272**

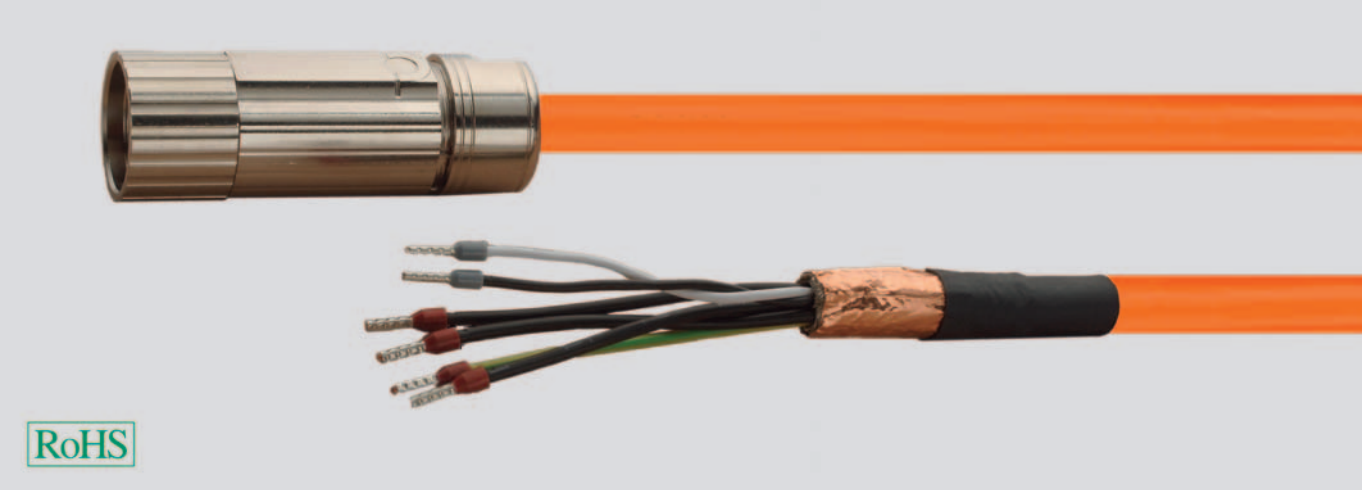
Manufacturer Designation	Helukabel Designation	Helukabel Part no.
IKS0205	feedback cables 0205 PUR	**660275**
IKS0204	feedback cables 0204 PUR	**660276**
IKS0206	feedback cables 0206 PUR	**660277**
IKS4142	feedback cables 4142 PUR	**660283**
IKS4038	feedback cables 4038 PUR	**660761**
IKS4001	feedback cables 4001 PUR	**660313**
IKS4019	feedback cables 4019 PUR	**660314**
RKG4200	feedback cables 4200 PUR	**660628**

Dimensions and specifications may be changed without prior notice.

Pre-assembled servo motor cables

for fixed laying

Base line for use on LENZE drive systems of the type Global Drive



Technical data

- **Temperature range**
  flexing -20°C to +70°C
  fixed installation -20°C to +80°C
- **Minimum bending radius**
  flexing 18x cable Ø
  fixed installation 9x cable Ø
- **Max. acceleration**
  2 m/s²
- **Bending cycles**
  50.000 for ≥ 18x cable Ø
- **Nominal voltage** U_0/U 0,6/1 kV
- **Test voltage** 4 kV
- **Insulation resistance** ≥ 500 MOhm x km

Approbations

DESINA® (ISO 23570)
VDE
UL/CSA

Cable structure

Power supply cores

- Copper conductors, bare
- high quality PP core insulation
- Core identification 1, 2, 3
- GN-YE conductor

Signal cores

- Copper conductors, bare
- High quality PP core insulation
- Core identification black, white
- Shielding aluminium/polyester foil screened with tin-plated copper wires
- Complete shield of tin-plated copper braiding, coverage approx. 80%
- PVC outer sheath
- Sheath colour orange (RAL 2003)

Application

This high quality pre-assembled motor connection cable is specially manufactured for applications with static installation. The special PVC outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Economical alternatives to the cable carrier compatible cable types which otherwise meet all requirements of the servo drive manufacturers. These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the drive or controller manufacturer's information about maximum permitted cable length. The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH. The data, standards and approvals relate solely to the bulk goods used.

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
EWLMxxxGM-015C	motor cable GM 015	**660334**
EWLMxxxGM-015C	motor cable GM 015	**660482**
EWLMxxxGM-040	motor cable GM 040	**660350**
-	motor cable GM 060	**660731**

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
EWLMxxxGM-100	motor cable GM 100	**660738**
EWLMxxxGM-040I	motor cable GM 040I	**660762**
-	motor cable GM 060I	**660763**
EWLMxxxGM-100I	motor cable GM 100I	**660764**

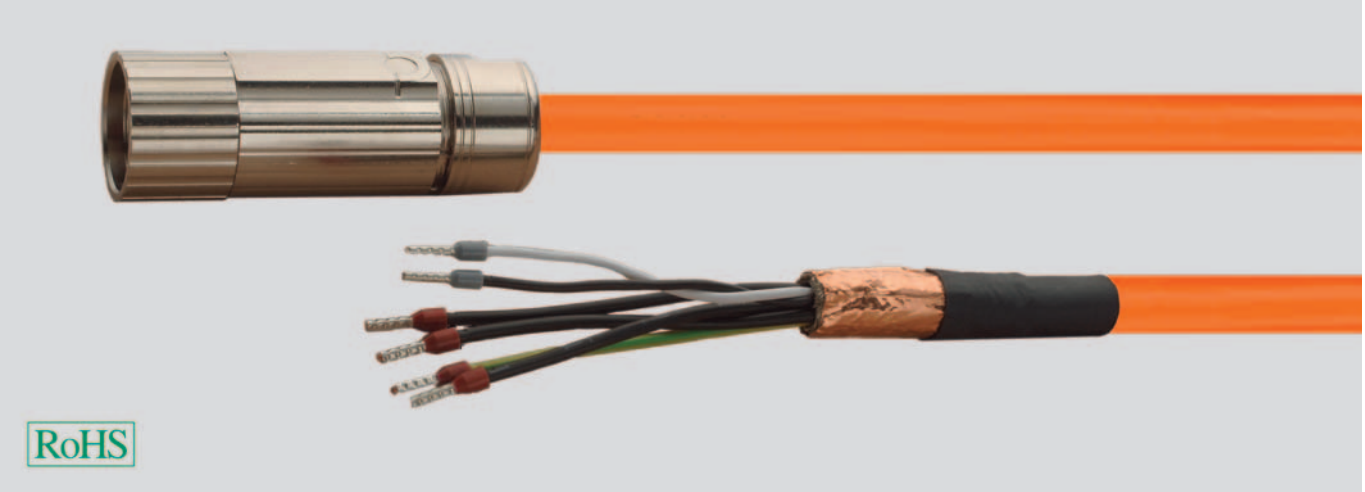
Dimensions and specifications may be changed without prior notice.

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Pre-assembled servo motor cables

for mobile use

Base line for use on LENZE drive systems of the type Global Drive



Technical data

- **Temperature range**
  flexing 0°C to +60°C
  fixed installation -30°C to +80°C
- **Minimum bending radius**
  flexing 12x cable Ø
  fixed installation 7x cable Ø
- **Max. acceleration**
  4 m/s²
- **Bending cycles**
  10 million for ≥ 12x cable Ø
- **Operating voltage** 1000 V
- **Test voltage**
  power cores 3 kV
  control cores 1,5 kV
- **Insulation resistance**
  power cores ≥ 5000 MOhm x km
  signal cores ≥ 20 MOhm x km

Approbations

DESINA® (ISO 23570)
UL/CSA

Cable structure

Power supply cores

- Bare copper conductor
  acc. to DIN VDE 0295 cl.6
- Polyolefin polymer core insulation
- Core identification 1, 2, 3
- GN-YE conductor

Signal cores

- Copper conductors, bare
- Polyolefin/polymer core insulation
- Core identification black, white
- Cores twisted in pairs
- Shield,tin-plated copper braiding
- Complete shield of tin-plated copper braiding, coverage approx. 85%
- PUR outer sheath
- Sheath colour orange (RAL 2003)

Application

This high quality pre-assembled motor connection cable is specially manufactured for applications with mobile use.
The special PUR outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Particularly suitable for use with small bending radii and high acceleration.
These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the installation instructions for laying cables in cable carriers and the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
-	motor cable GMS 015	**660500**
EWLMxxxGMS-025	motor cable GMS 025	**660648**
EWLMxxxGMS-040	motor cable GMS 040	**660766**
-	motor cable GMS 060	**660767**

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
-	motor cable GMS 100	**660768**
-	motor cable GMS 040I	**660769**
-	motor cable GMS 060I	**660770**
-	motor cable GMS 100I	**660771**

Dimensions and specifications may be changed without prior notice.

Pre-assembled feedback cables

for fixed laying

Base line for use on LENZE drive systems of the type Global Drive



Technical data

- **Temperature range**
  fixed installation -25°C to +80°C
- **Minimum bending radius**
  fixed installation 8x cable Ø
- **Operating voltage** 30 V
- **Test voltage** 1000 V
- **Insulation resistance** ≥ 10 MOhm x km

Approbations

DESINA® (ISO 23570)
UL/CSA

Cable structure

- Tinned copper conductors
- PVC or PE core insulation
- Shield of tin-plated copper braiding, coverage approx. 75%
- PVC outer sheath
- Sheath colour green

Structure/colour code

- **(3x(2x0,14)+2x(0,5))**
  YE+BK, GN+BK, RD+BK, WH, BK
- **(4x(2x0,14)+2x(1,0)**
  YE+GN, PK+GY, RD+BU, BK+VT, WH, BN

Application

This high quality pre-assembled feedback cable cable is specially manufactured for applications with static installation. The special PVC outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Economical alternatives to the cable carrier compatible cable types which otherwise meet all requirements of the servo drive manufacturers. These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the drive or controller manufacturer's information about maximum permitted cable length. The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH. The data, standards and approvals relate solely to the bulk goods used.

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
EWLRxxxGM-T	feedback cables GM-T	**660335**
EWLRxxxGM-T	encoder cables GM-T	**660772**

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
EWLDxxxGGBS93	system cable GGBS 93	**660773**

Dimensions and specifications may be changed without prior notice.

Pre-assembled feedback cables

for mobile use

Base line for use on LENZE drive systems of the type Global Drive



Technical data

- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -40°C to +80°C
- **Minimum bending radius**
  flexing 15x cable Ø
  fixed installation 8x cable Ø
- **Max. acceleration**
  3 m/s²
- **Bending cycles**
  2 million for ≥ 15x cable Ø
- **Operating voltage** 30 V
- **Test voltage** 1000 V

Approbations

DESINA® (ISO 23570)
UL/CSA

Cable structure

- Tinned copper conductors
- Polyester/polyolefin core insulation
- Shield of tin-plated copper braiding, coverage approx. 80%
- PUR outer sheath
- Sheath colour green (0-000000-02866 orange)

Structure/colour code

- **(3x(2x0,14)+2x(0,5))**
  YE+BK, GN+BK, RD+BK, WH, BK
- **(3x(2x0,14)+2x(0,5))**
  YE+GN, PK+GY, RD+BU, WH, BN
- **(4x(2x0,14)+2x(1,0)**
  YE+GN, PK+GY, RD+BU, BK+VT, WH, BN
- **(4x(2x0,14)+2x(0,5)**
  YE+GN, PK+GY, RD+BU, BK+VT, WH, BN

Application

This high quality pre-assembled feedback cable is specially manufactured for applications with mobile use. The special PUR outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the installation instructions for laying cables in cable carriers and the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.

Helukabel Designation	Helukabel Part no.
feedback cables GMS-T	**660445**

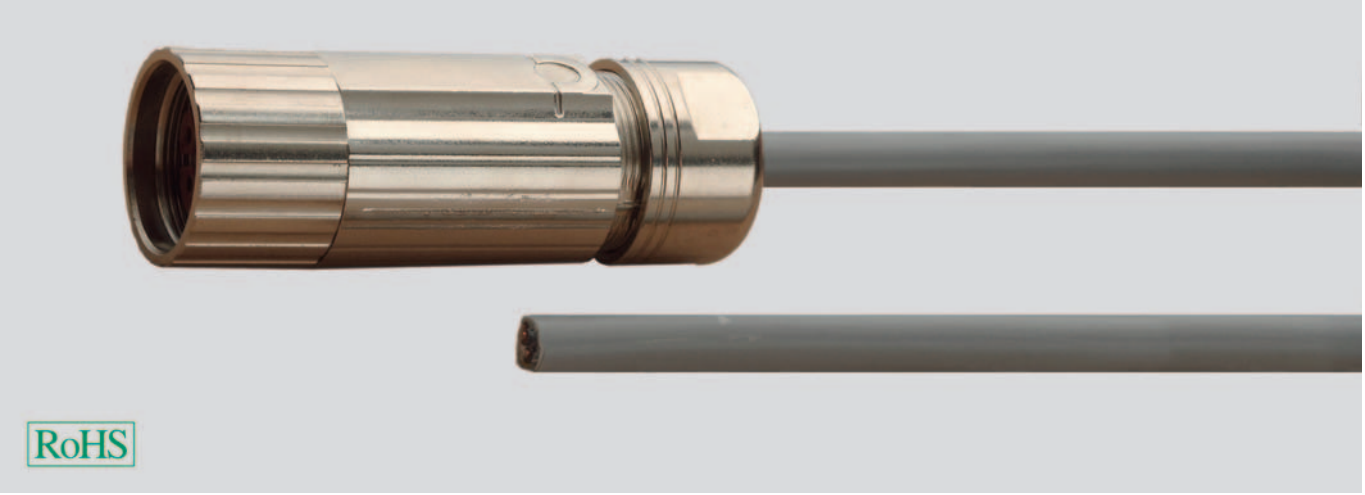
Helukabel Designation	Helukabel Part no.
encoder cables GMS-T	**660774**

Dimensions and specifications may be changed without prior notice.

Pre-assembled fan cables

for fixed laying

Base line for use on LENZE drive systems of the type Global Drive



RoHS

Technical data

- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -40°C to +70°C
- **Minimum bending radius**
  flexing 8x cable Ø
  fixed installation 4x cable Ø
- **Nominal voltage**
  HAR U_0/U 300/500 V
  UL/CSA 600 V
- **Test voltage** power cores 3 kV
- **Insulation resistance** ≥ 20 MOhm x km

Approbations

UL/CSA

Cable structure

- Bare copper conductor, fine wire stranded
- PVC core insulation
- Core identification 1, 2, 3
- GN-YE conductor
- PVC outer sheath
- Sheath colour grey

Application

This high quality pre-assembled fan cable is specially manufactured for applications with static installation. The special PVC outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Economical alternatives to the cable carrier compatible cable types which otherwise meet all requirements of the servo drive manufacturers. These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
EWLLxxxGM	fan cables GM	**660351**

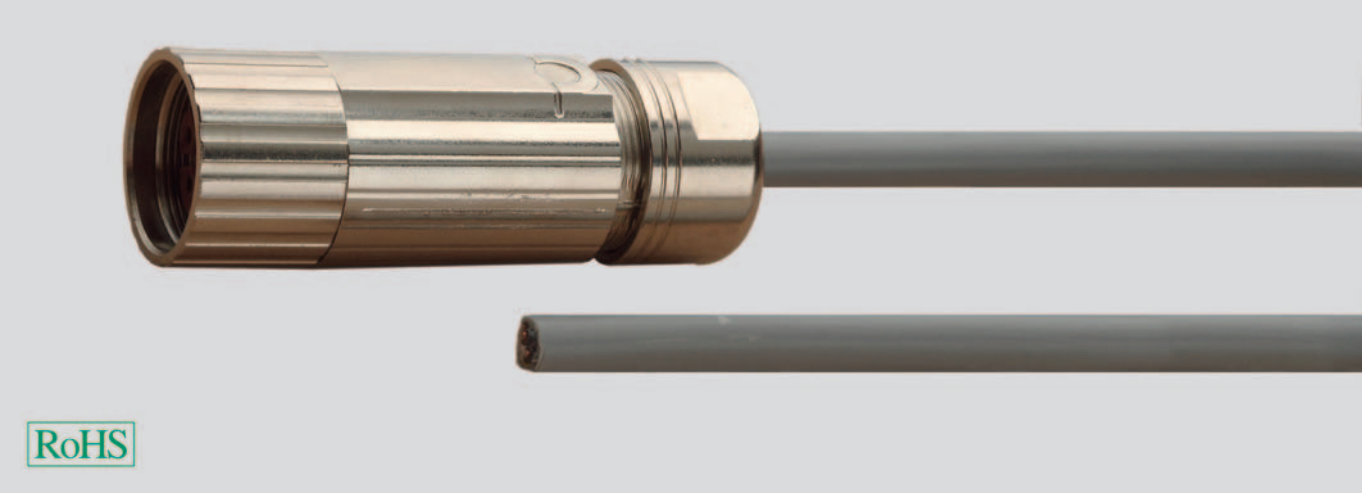
Dimensions and specifications may be changed without prior notice.

U

Pre-assembled fan cables

for mobile use

Base line for use on LENZE drive systems of the type Global Drive



Technical data

- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -40°C to +80°C
- **Minimum bending radius**
  flexing 8x cable Ø
  fixed installation 4x cable Ø
- **Nominal voltage** UL/CSA 600 V
- **Test voltage** power cores 4 kV
- **Insulation resistance** ≥ 20 MOhm x km

Approbations

UL/CSA

Cable structure

- Copper conductors, bare, fine wire stranded
- PVC core insulation
- Core identification 1, 2, 3
- GN-YE conductor
- PUR outer sheath
- Sheath colour grey

Application

This high quality pre-assembled fan cable is specially manufactured for applications with mobile use.
The special PUR outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Particularly suitable for use with small bending radii and high acceleration.
These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the installation instructions for laying cables in cable carriers and the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.

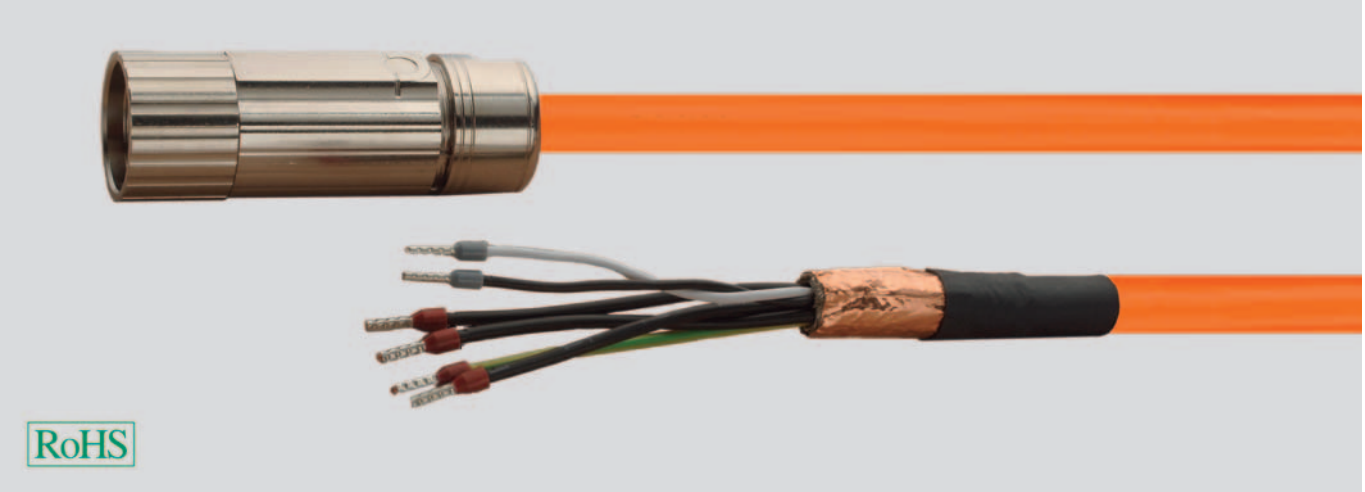
Manufacturer Designation	Helukabel Designation	Helukabel Part no.
EWLLxxxGMS	fan cables GMS	**660850**

Dimensions and specifications may be changed without prior notice.

Pre-assembled servo motor cables

for fixed laying

Base line for use on LENZE drive systems of the type L-force®



Technical data

- **Temperature range**
  flexing -20°C to +70°C
  fixed installation -20°C to +80°C
- **Minimum bending radius**
  flexing 18x cable Ø
  fixed installation 9x cable Ø
- **Max. acceleration**
  2 m/s²
- **Bending cycles**
  50.000 for ≥ 18x cable Ø
- **Operating voltage**
  VDE U_0/U 0,6/1 kV
- **Test voltage** 4 kV
- **Insulation resistance** ≥ 500 MOhm x km

Approbations

DESINA® (ISO 23570)
VDE
UL/CSA

Cable structure

Power supply cores

- Copper conductors, bare
- high quality PP core insulation
- Core identification 1, 2, 3
- GN-YE conductor

Signal cores

- Copper conductors, bare
- High quality PP core insulation
- Core identification black, white
- Shielding aluminium/polyester foil screened with tin-plated copper wires
- Complete shield of tin-plated copper braiding, coverage approx. 80%
- PVC outer sheath
- Sheath colour orange (RAL 2003)

Application

This high quality pre-assembled motor connection cable is specially manufactured for applications with static installation. The special PVC outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Economical alternatives to the cable carrier compatible cable types which otherwise meet all requirements of the servo drive manufacturers. These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the drive or controller manufacturer's information about maximum permitted cable length. The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH. The data, standards and approvals relate solely to the bulk goods used.

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
EYP 0006 A xxxx C01 A00	motor cable 0006AC01A00 PVC	**660776**
EYP 0008 A xxxx C02 A00	motor cable 0008AC02A00 PVC	**660777**
EYP 0005 A xxxx M02 A00	motor cable 0005AM02A00 PVC	**660778**
EYP 0006 A xxxx M02 A00	motor cable 0006AM02A00 PVC	**660779**
EYP 0007 A xxxx M03 A00	motor cable 0007AM03A00 PVC	**660780**

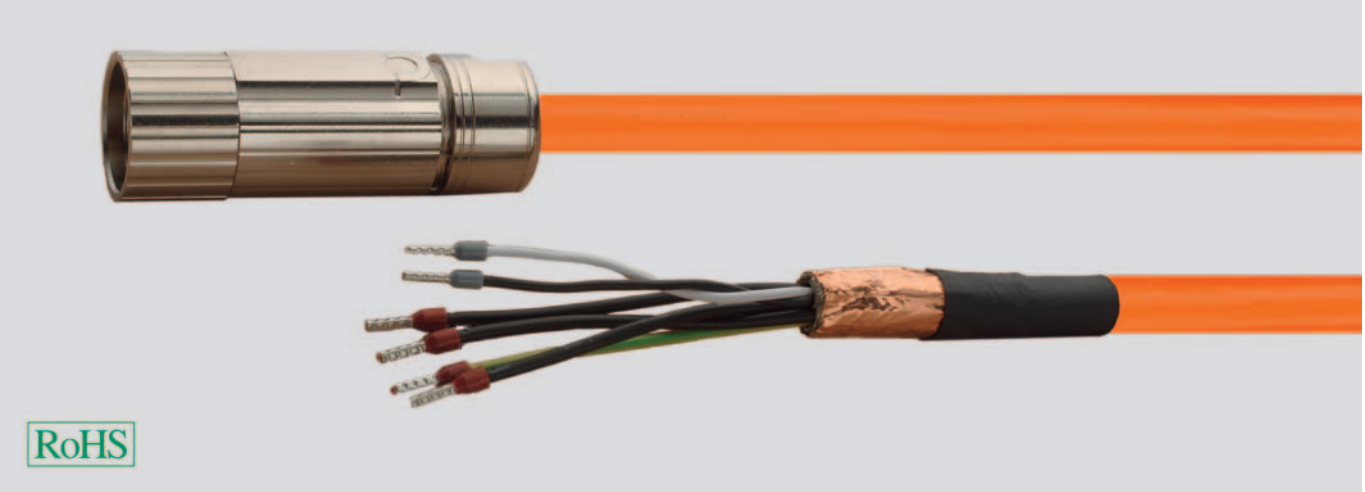
Manufacturer Designation	Helukabel Designation	Helukabel Part no.
EYP 0008 A xxxx M03 A00	motor cable 0008AM03A00 PVC	**660781**
EYP 0009 A xxxx M03 A00	motor cable 0009AM03A00 PVC	**660782**
EYP 0003 A xxxx M01 A00	motor cable 0003AM01A00 PVC	**660783**
EYP 0004 A xxxx M01 A00	motor cable 0004AM01A00 PVC	**660784**
EYP 0005 A xxxx M01 A00	motor cable 0005AM01A00 PVC	**660785**

Dimensions and specifications may be changed without prior notice.

Pre-assembled servo motor cables

for mobile use

Base line for use on LENZE drive systems of the type L-force®



Technical data

- **Temperature range**
  flexing 0°C to +60°C
  fixed installation -30°C to +80°C
- **Minimum bending radius**
  flexing 12x cable Ø
  fixed installation 7x cable Ø
- **Max. acceleration**
  4 m/s²
- **Bending cycles**
  10 million for ≥ 12x cable Ø
- **Operating voltage** 1000 V
- **Test voltage**
  power cores 3 kV
  control cores 1,5 kV
- **Insulation resistance**
  power cores ≥ 5000 MOhm x km
  signal cores ≥ 20 MOhm x km

Approbations

DESINA® (ISO 23570)
UL/CSA

Cable structure

Power supply cores

- Bare copper conductor
  acc. to DIN VDE 0295 cl.6
- Polyolefin polymer core insulation
- Core identification 1, 2, 3
- GN-YE conductor

Signal cores

- Copper conductors, bare
- Polyolefin/polymer core insulation
- Core identification black, white
- Cores twisted in pairs
- Shielding screened with tin-plated copper wires
- Complete shield of tin-plated copper braiding, coverage approx. 85%
- PUR outer sheath
- Sheath colour orange (RAL 2003)

Application

This high quality pre-assembled motor connection cable is specially manufactured for applications with mobile use.
The special PUR outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Particularly suitable for use with small bending radii and high acceleration.
These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the installation instructions for laying cables in cable carriers and the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
EYP 0013 A xxxx C01 A00	motor cable 0013AC01A00 PUR	**660786**
EYP 0015 A xxxx C02 A00	motor cable 0015AC02A00 PUR	**660787**
EYP 0012 A xxxx M02 A00	motor cable 0012AM02A00 PUR	**660788**
EYP 0013 A xxxx M02 A00	motor cable 0013AM02A00 PUR	**660789**
EYP 0014 A xxxx M03 A00	motor cable 0014AM03A00 PUR	**660790**

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
EYP 0015 A xxxx M03 A00	motor cable 0015AM03A00 PUR	**660791**
EYP 0016 A xxxx M03 A00	motor cable 0016AM03A00 PUR	**660792**
EYP 0010 A xxxx M01 A00	motor cable 0010AM01A00 PUR	**660793**
EYP 0011 A xxxx M01 A00	motor cable 0011AM01A00 PUR	**660510**
EYP 0012 A xxxx M01 A00	motor cable 0012AM01A00 PUR	**660794**

Dimensions and specifications may be changed without prior notice.

Pre-assembled feedback cables

for fixed laying

Base line for use on LENZE drive systems of the type L-force®



Technical data

- **Temperature range**
  fixed installation -25°C to +80°C
- **Minimum bending radius**
  fixed installation 8x cable Ø
- **Operating voltage** 30 V
- **Test voltage** 1000 V
- **Insulation resistance** ≥ 10 MOhm x km

Approbations

DESINA® (ISO 23570)
UL/CSA

Cable structure

- Tinned copper conductors
- PVC/polyolefin core insulation
- Shield of tin-plated copper braiding, coverage approx. 75%
- PVC outer sheath
- Sheath colour green

Structure/colour code

- **(3x(2x0,14)+2x(0,5))**
  YE+BK, GN+BK, RS+BK, WH, BK
- **(4x(2x0,14)+2x(1,0)**
  YE+GN, PK+GY, RD+BU, BK+VT, WH, BN

Application

This high quality pre-assembled feedback cable is specially manufactured for applications with static installation. The special PVC outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Economical alternatives to the cable carrier compatible cable types which otherwise meet all requirements of the servo drive manufacturers. These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
EYD 0017 A xxxx W01 S01	feedback cables 0017AW01S01 PVC	**660795**
EYD 0017 A xxxx W01 S02	feedback cables 0017AW01S02 PVC	**660796**
EYD 0017 A xxxx W01 W01	feedback cables 0017AW01W01 PVC	**660797**
EYD 0017 A xxxx W03 S01	feedback cables 0017AW03S01 PVC	**660798**
EYD 0017 A xxxx W03 S02	feedback cables 0017AW03S02 PVC	**660799**
EYD 0017 A xxxx W03 W01	feedback cables 0017AW03W01 PVC	**660800**
EYF 0017 A xxxx A00 S01	feedback cables 0017AA00S01 PVC	**660801**
EYF 0017 A xxxx A00 S02	feedback cables 0017AA00S02 PVC	**660802**
EYF 0017 A xxxx F01 A00	feedback cables 0017AF01A00 PVC	**660803**
EYF 0017 A xxxx F01 S01	feedback cables 0017AF01S01 PVC	**660630**
EYF 0017 A xxxx F01 S02	feedback cables 0017AF01S02 PVC	**660804**

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
EYF 0028 A xxxx A00 G02	feedback cables 0028AA00G02 PVC	**660805**
EYF 0018 A xxxx A00 S03	feedback cables 0018AA00S03 PVC	**660806**
EYF 0018 A xxxx A00 W02	feedback cables 0018AA00W02 PVC	**660807**
EYF 0018 A xxxx F02 A00	feedback cables 0018AF02A00 PVC	**660808**
EYF 0028 A xxxx F02 G02	feedback cables 0028AF02G02 PVC	**660809**
EYF 0018 A xxxx F02 S03	feedback cables 0018AF02S03 PVC	**660810**
EYF 0018 A xxxx F02 W02	feedback cables 0018AF02W02 PVC	**660811**
EYF 0021 A xxxx A00 S03	feedback cables 0021AA00S03 PVC	**660812**
EYF 0021 A xxxx F03 A00	feedback cables 0021AF03A00 PVC	**660813**
EYF 0021 A xxxx F03 S03	feedback cables 0021AF03S03 PVC	**660814**

Dimensions and specifications may be changed without prior notice.

Pre-assembled feedback cables

for mobile use

Base line for use on LENZE drive systems of the type L-force®



Technical data

- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -40°C to +80°C
- **Minimum bending radius**
  flexing 15x cable Ø
  fixed installation 8x cable Ø
- **Max. acceleration**
  3 m/s²
- **Bending cycles**
  2 million for ≥ 15x cable Ø
- **Operating voltage** 30 V
- **Test voltage** 1000 V

Approbations

DESINA® (ISO 23570) (except 0-000000-02866)
UL/CSA

Cable structure

- Tinned copper conductors
- Polyester/polyolefin core insulation
- Shield of tin-plated copper braiding, coverage approx. 80%
- PUR outer sheath
- Sheath colour green

Structure/colour code

- **(3x(2x0,14)+2x(0,5))**
  YE+BK, GN+BK, RD+BK, WH, BK
- **(3x(2x0,14)+2x(0,5))**
  YE+GN, PK+GY, RD+BU, WH, BN
- **(4x(2x0,14)+2x(1,0)**
  YE+GN, PK+GY, RD+BU, BK+VT, WH, BN
- **(4x(2x0,14)+2x(0,5)**
  YE+GN, PK+GY, RD+BU, BK+VT, WH, BN

Application

This high quality pre-assembled feedback cable is specially manufactured for applications with mobile use. The special PUR outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the installation instructions for laying cables in cable carriers and the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
EYD 0019 A xxxx F02 A00	feedback cables 0019AF02A00 PUR	**660815**
EYD 0020 A xxxx A00 S04	feedback cables 0020AA00S04 PUR	**660816**
EYF 0020 A xxxx A00 S05	feedback cables 0020AA00S05 PUR	**660817**
EYF 0020 A xxxx F01 A00	feedback cables 0020AF01A00 PUR	**660818**

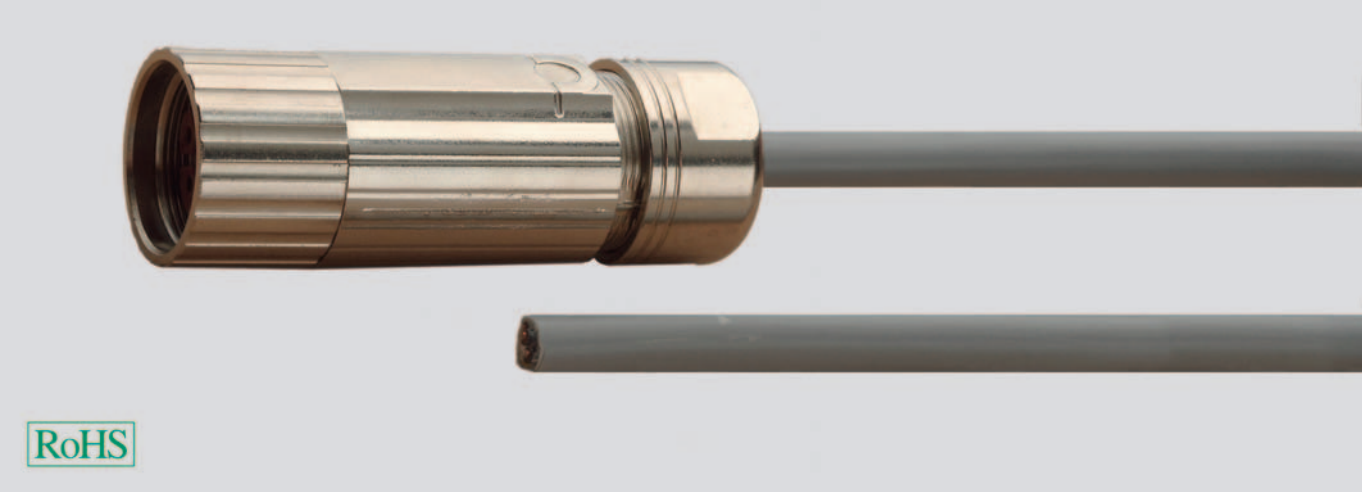
Manufacturer Designation	Helukabel Designation	Helukabel Part no.
EYF 0020 A xxxx F01 S01	feedback cables 0020AF01S01 PUR	**660819**
EYF 0020 A xxxx F01 S02	feedback cables 0020AF01S02 PUR	**660820**
EYF 0022 A xxxx F03 A00	feedback cables 0022AF03A00 PUR	**660821**

Dimensions and specifications may be changed without prior notice.

Pre-assembled fan cables

for fixed laying

Base line for use on LENZE drive systems of the type L-force®



Technical data

- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -40°C to +70°C
- **Minimum bending radius**
  flexing 8x cable Ø
  fixed installation 4x cable Ø
- **Nominal voltage**
  HAR U_0/U 300/500 V
  UL/CSA 600 V
- **Test voltage** power cores 3 kV
- **Insulation resistance** ≥ 20 MOhm x km

Approbations

UL/CSA

Cable structure

Power supply cores

- Bare copper conductor, fine wire stranded
- PVC core insulation
- Core identification numbers
- GN-YE conductor
- PVC outer sheath
- Sheath colour grey

Application

This high quality pre-assembled fan cable is specially manufactured for applications with static installation.
The special PVC outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Economical alternatives to the cable carrier compatible cable types which otherwise meet all requirements of the servo drive manufacturers.
These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
EYL 0001 A xxxx L01 A00	fan cables 0001AL01A00 PVC	**660851**

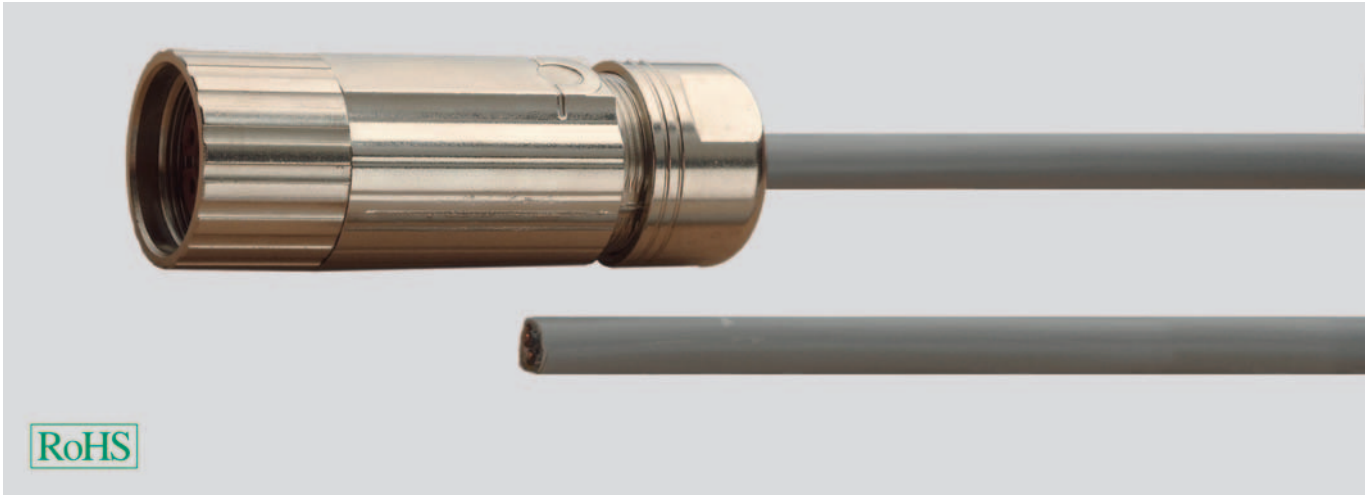
Manufacturer Designation	Helukabel Designation	Helukabel Part no.
EYL 0001 A xxxx L02 A00	fan cables 0001AL02A00 PVC	**660852**

Dimensions and specifications may be changed without prior notice.

Pre-assembled fan cables

for mobile use

Base line for use on LENZE drive systems of the type L-force®



RoHS

Technical data

- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -40°C to +80°C
- **Minimum bending radius**
  flexing 8x cable Ø
  fixed installation 4x cable Ø
- **Nominal voltage** UL/CSA 600 V
- **Test voltage** power cores 4 kV
- **Insulation resistance** ≥ 20 MOhm x km

Approbations

UL/CSA

Cable structure

- Copper conductors, bare, fine wire stranded
- TPE/PVC core insulation
- Core identification 1, 2, 3
- GN-YE conductor
- PUR outer sheath
- Sheath colour grey

Application

This high quality pre-assembled fan cable is specially manufactured for applications with mobile use.
The special PUR outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Particularly suitable for use with small bending radii and high acceleration.
These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the installation instructions for laying cables in cable carriers and the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.

Manufacturer Designation	Helukabel Designation	Helukabel Part no.
EYL 0002 A xxxx L01 A00	fan cables 0001AL01A00 PVC	**660853**

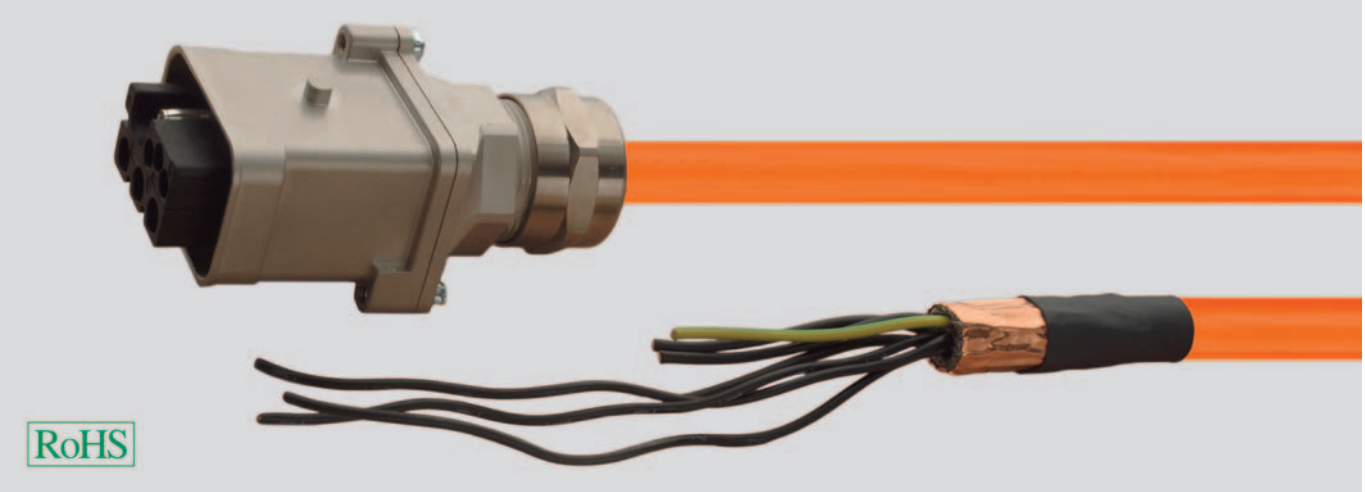
Manufacturer Designation	Helukabel Designation	Helukabel Part no.
EYL 0002 A xxxx L02 A00	fan cables 0002AL02A00 PVC	**660854**

Dimensions and specifications may be changed without prior notice.

Pre-assembled servo motor cables

for fixed laying

Base line for use on SEW drive systems



Technical data

- **Temperature range**
  fixed installation -40°C to +80°C
- **Minimum bending radius**
  fixed installation 20x cable Ø
- **Nominal voltage**
  VDE 0,6/1 kV
  UL 1000 V
- **Test voltage** 4 kV
- **Insulation resistance** ≥ 20 MOhm x km

Approbations

DESINA® (ISO 23570)
UL/CSA

Cable structure

Power supply cores

- Copper conductors, bare
- PP core insulation
- Core identification U1, V2, W3
- GN-YE conductor

Signal cores

- Copper conductors, bare
- PP core insulation
- Core identification 1, 2, 3
- Cores twisted to triple
- Shielding aluminium coated polyester foil with drain wire + copper screen
- Complete shield of tin-plated copper braiding, coverage approx. 85%
- PVC outer sheath
- Sheath colour orange (RAL 2003)

Application

This high quality pre-assembled motor connection cable is specially manufactured for applications with static installation. The special PVC outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Economical alternatives to the cable carrier compatible cable types which otherwise meet all requirements of the servo drive manufacturers. These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the drive or controller manufacturer's information about maximum permitted cable length. The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH. The data, standards and approvals relate solely to the bulk goods used.

Helukabel Designation	Helukabel Part no.
motor cable 1991795 PVC 4x1,5	**660822**
motor cable 1991892 PVC 4x1,5+3x1	**660823**

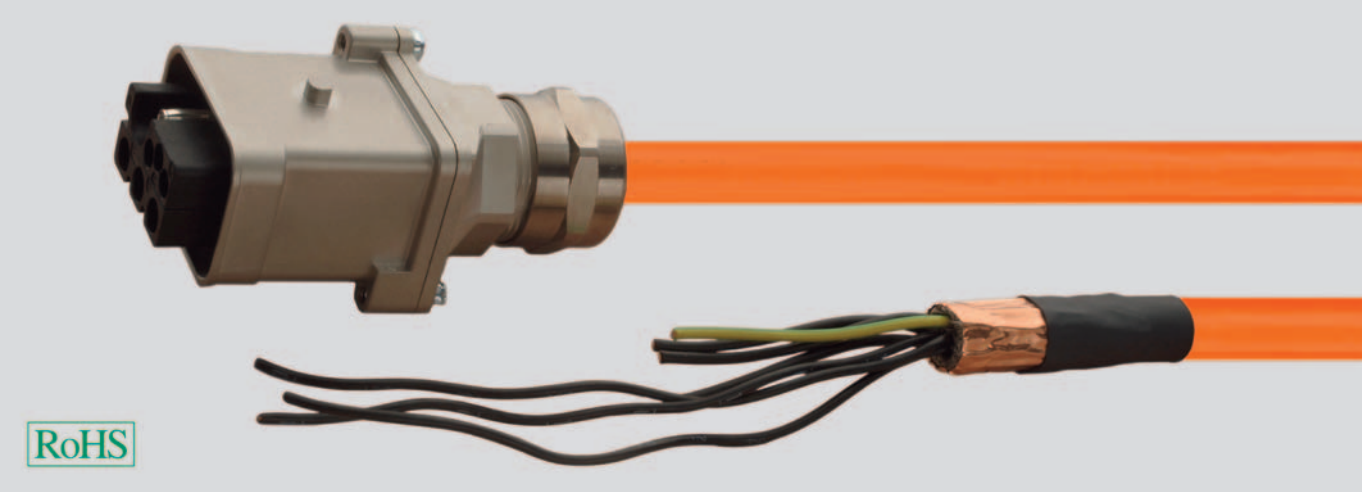
Helukabel Designation	Helukabel Part no.
motor cable 1991914 PVC 4x2,5+3x1	**660897**

Dimensions and specifications may be changed without prior notice.

Pre-assembled servo motor cables

for mobile use

Base line for use on SEW drive systems



Technical data

- **Temperature range**
  flexing -20°C to +60°C
  fixed installation -50°C to +80°C
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 3x cable Ø
- **Max. acceleration**
  20 m/s²
- **Bending cycles**
  5 million for ≥ 10x cable Ø
- **Operating voltage**
  power cores U_0/U 600/1000 V
  control cores 1000 V AC
- **Test voltage**
  power cores 4 kV
  control cores 4 kV
- **Insulation resistance** ≥ 100 MOhm x km

Approbations

DESINA® (ISO 23570)
UL/CSA

Cable structure

Power supply cores

- Bare copper, extra fine wire conductor acc. to DIN VDE 0295 cl.6
- high quality PP core insulation
- Core identification U/L1/C/L+
  V/L2
  W/L3/D/L-
- GN-YE conductor

Signal cores

- Copper conductors, bare, fine wire stranded
- High quality PP core insulation
- Core identification 1, 2, 3
- Cores twisted to triple
- Shield tin-plated copper braiding
- Complete shield of tin-plated copper braiding, coverage approx. 85%
- PUR outer sheath
- Sheath colour orange (RAL 2003)

Application

This high quality pre-assembled motor connection cable is specially manufactured for applications with high mechanical stress.
The special PUR outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Particularly suitable for use with small bending radii and high acceleration.
These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the installation instructions for laying cables in cable carriers and the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.

Helukabel Designation	Helukabel Part no.
motor cable 1991809 PUR 4x1,5	**660824**
motor cable 1991825 PUR 4x2,5	**660825**
motor cable 1991841 PUR 4x4	**660826**
motor cable 1991868 PUR 4x6	**660827**
motor cable 1991884 PUR 4x10	**660828**

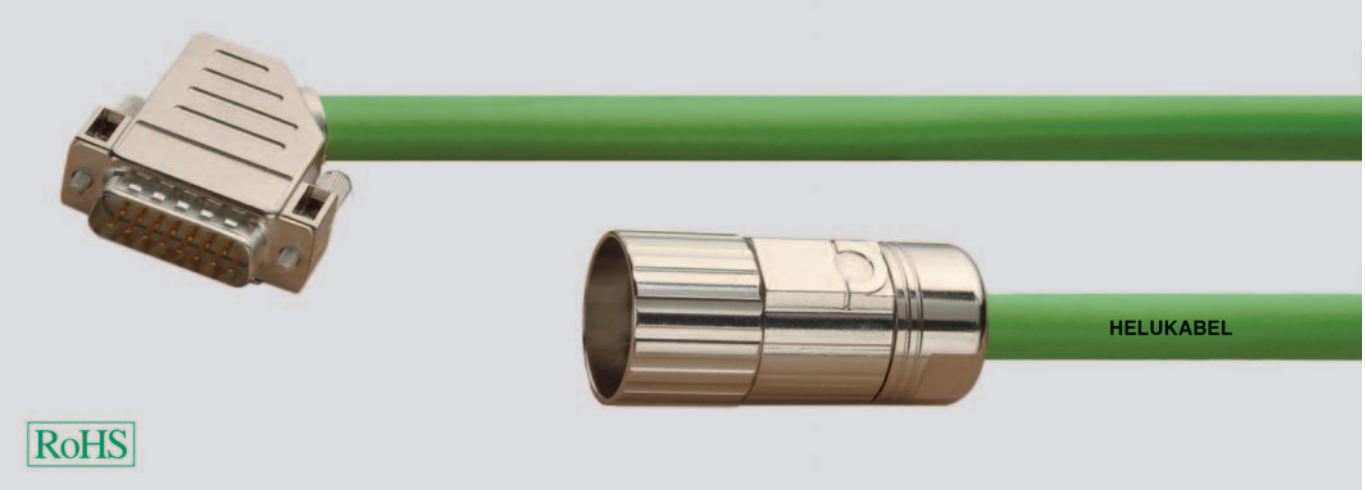
Helukabel Designation	Helukabel Part no.
motor cable 1991906 PUR 4x1,5+3x1	**660829**
motor cable 1991922 PUR 4x2,5+3x1	**660830**
motor cable 1991949 PUR 4x4+3x1	**660831**
motor cable 1991965 PUR 4x6+3x1	**660832**
motor cable 1991981 PUR 4x10+3x1	**660833**

Dimensions and specifications may be changed without prior notice.

Pre-assembled feedback cables

for fixed laying

Base line for use on SEW drive systems



Technical data

- **Temperature range**
  fixed installation -40°C to +80°C
- **Minimum bending radius**
  fixed installation 20x cable Ø
- **Nominal voltage** max. 350 V,
  acc. to UL 300 V
- **Test voltage**
  core/core 1,5 kV
  core/shield 1 kV

Approbations

DESINA® (ISO 23570)
UL/CSA

Cable structure

Power supply cores

- Copper conductors, bare
- PP core insulation
- Core identification acc. to DIN 47100
- Complete shield of tin-plated copper braiding with drain wire, coverage approx. 85%
- PVC outer sheath
- Sheath colour green

Application

This high quality pre-assembled feedback cable is specially manufactured for applications with static installation. The special PVC outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Economical alternatives to the cable carrier compatible cable types which otherwise meet all requirements of the servo drive manufacturers. These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the drive or controller manufacturer's information about maximum permitted cable length. The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH. The data, standards and approvals relate solely to the bulk goods used.

Helukabel Designation	Helukabel Part no.
feedback cables HF 13324535 PVC 6x2x0,25	**660834**
feedback extension HF 1995391 PVC 6x2x0,25	**660835**

Helukabel Designation	Helukabel Part no.
feedback cables 1994875 PVC 5x2x0,25	**660836**
feedback extension 1995421 PVC 5x2x0,25	**660837**

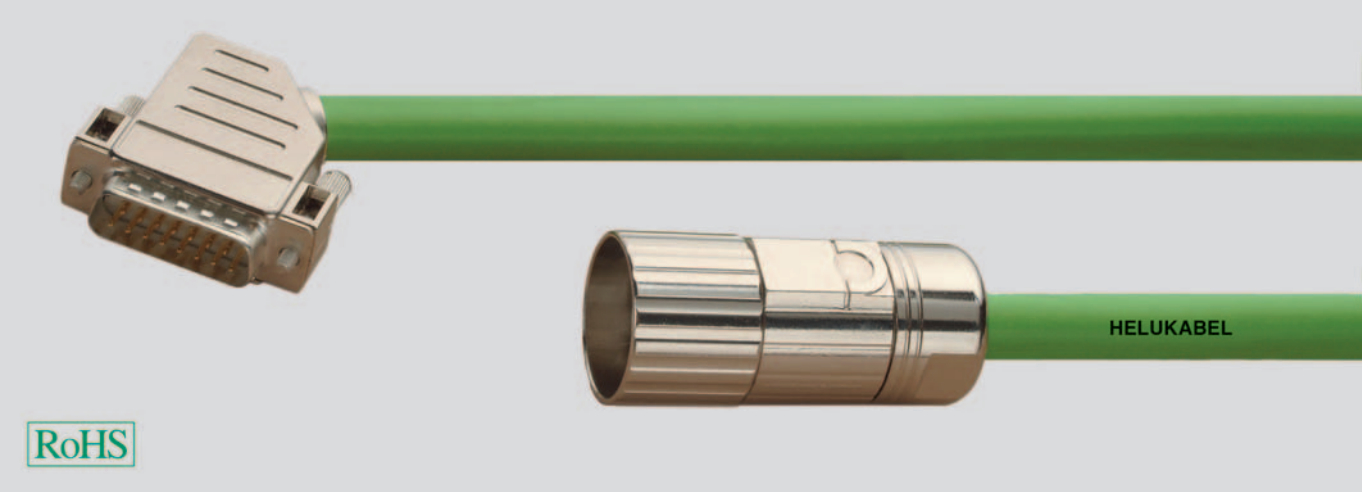
Dimensions and specifications may be changed without prior notice.

U

Pre-assembled feedback cables

for mobile use

Base line for use on SEW drive systems



Technical data

- **Temperature range**
  flexing -20°C to +60°C
  fixed installation -50°C to +80°C
- **Minimum bending radius**
  flexing 10x cable Ø
  fixed installation 5x cable Ø
- **Max. acceleration**
  20 m/s²
- **Bending cycles**
  10 million for ≥ 10x cable Ø
- **Nominal voltage** 300 V
- **Test voltage** 1,5 kV

Approbations

DESINA® (ISO 23570)
UL/CSA

Cable structure

- Copper conductors, bare
- PP core insulation
- TPE inner sheath
- Complete shield of tin-plated copper braiding, coverage approx. 80%
- PUR outer sheath
- Sheath colour green
- Core identification acc. to DIN 47100

Application

This high quality pre-assembled feedback cable is specially manufactured for applications with mobile use.
The special PUR outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Particularly suitable for use with small bending radii and high acceleration.
These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the installation instructions for laying cables in cable carriers and the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.

Helukabel Designation	Helukabel Part no.
feedback cables HF 13324551 PUR 6x2x0,25	**660838**
feedback extension HF 1995405 PUR 6x2x0,25	**660839**

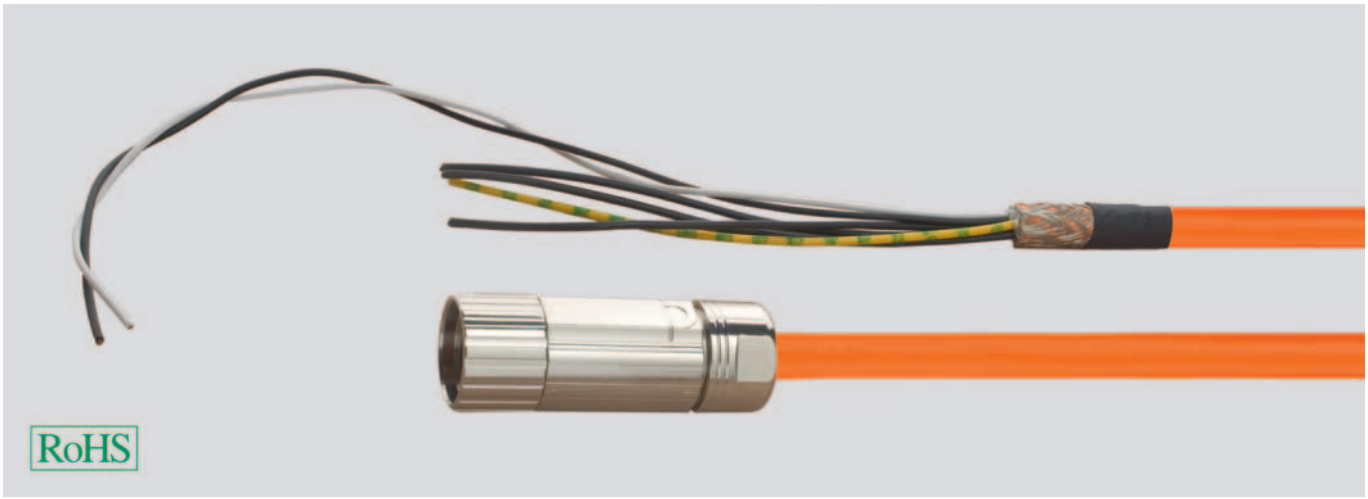
Helukabel Designation	Helukabel Part no.
feedback cables 1994875 PVC 5x2x0,25	**660840**
feedback extension 1995421 PVC 5x2x0,25	**660841**

Dimensions and specifications may be changed without prior notice.

Pre-assembled servo motor cables

for fixed laying

Base line for use on SEW drive systems



Technical data

- **Temperature range**
  flexing 0°C to +60°C
  fixed installation -20°C to +80°C
- **Minimum bending radius**
  flexing 20x cable Ø
  fixed installation 9x cable Ø
- **Max. acceleration**
  2 m/s²
- **Bending cycles**
  50.000 for ≥ 20x cable Ø
- **Operating voltage**
  power supply cores 600/1000 V
- **Test voltage** power cores 4 kV
- **Insulation resistance** ≥ 20 MOhm x km

Approbations

DESINA® (ISO 23570)
UL/CSA

Cable structure

Brake motor cable

Power supply cores

- Bare copper, extra fine wire conductor acc. to DIN VDE 0295 cl.5
- high quality PP core insulation
- Core identification 1, 2, 3
- GN-YE conductor

Brake cores

- Copper conductors, bare
- High quality PP core insulation
- Core identification black, white
- Shielding aluminium/polyester foil, screened with tin-plated copper wires

Motor cable

Power supply cores

- Bare copper, acc. to IEC 60228 cl.6
- Core Insulation PVC
- Core identification U/L1/C/L+
  V/L2
  W/L3/D/L-
- GN-YE conductor
- Complete shield of tin-plated copper braiding, coverage approx. 80%
- PVC outer sheath
- Sheath colour orange (RAL 2003)

Application

This high quality pre-assembled motor connection cable is specially manufactured for applications with static installation. The special PVC outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

Economical alternatives to the cable carrier compatible cable types which otherwise meet all requirements of the servo drive manufacturers. These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the drive or controller manufacturer's information about maximum permitted cable length. The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH. The data, standards and approvals relate solely to the bulk goods used.

Helukabel Designation	Helukabel Part no.
motor cable 1995502 PVC 4x1,5	**660842**
motor cable 05904552 PVC 4x2,5	**660843**

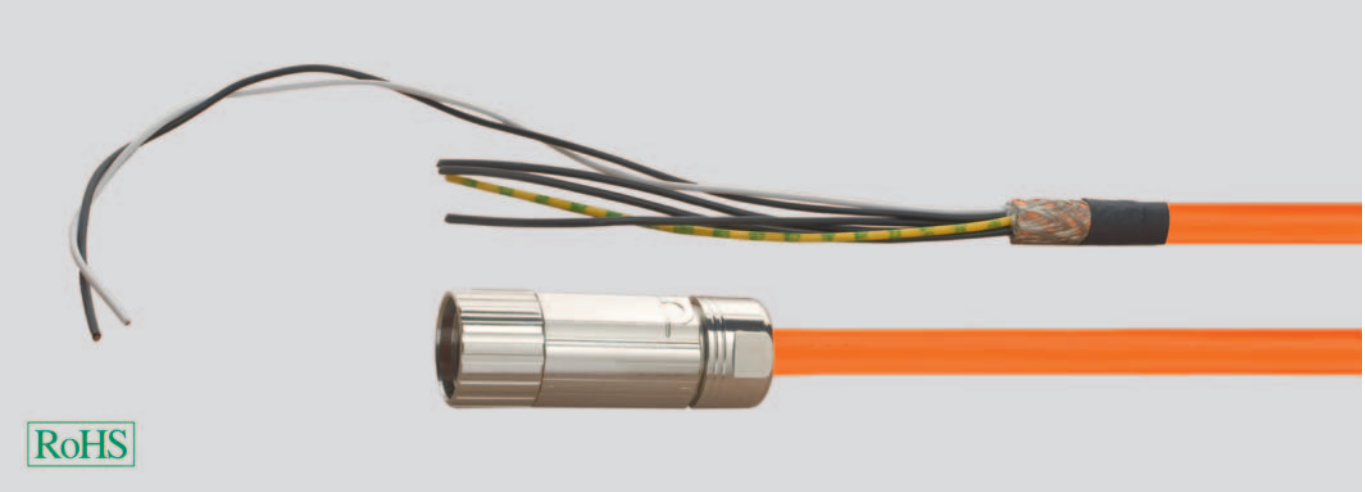
Helukabel Designation	Helukabel Part no.
motor cable 13324853 PVC 4x1,5+2x1	**660844**
motor cable 13332139 PVC 4x2,5+2x1	**660845**

Dimensions and specifications may be changed without prior notice.

Pre-assembled servo motor cables

for mobile use

Base line for use on SEW drive systems



Technical data

- **Temperature range**
  flexing 0°C to +60°C
  fixed installation -30°C to +80°C
- **Minimum bending radius**
  flexing 12x cable Ø
  fixed installation 7x cable Ø
- **Max. acceleration**
  4 m/s²
- **Bending cycles**
  10 million for ≥ 12x cable Ø
- **Operating voltage**
  power supply cores 600/1000 V
- **Test voltage**
  power cores 3 kV
  control cores 1,5 kV
- **Insulation resistance** ≥ 500 MOhm x km

Approbations

DESINA® (ISO 23570)
UL/CSA

Cable structure

Brake motor cables

Power supply cores

- Copper conductors, bare
- Polyolefin polymer core insulation
- Core identification 1, 2, 3
- GN-YE conductor

Brake cores

- Copper conductors, bare, fine wire stranded
- Core insulation polyester
- Core identification black, white
- Shielding screened with tin-plated copper wires

Motor cables

Power supply cores

- Copper conductors, bare, fine wire stranded
- Core insulation polyester
- Core identification U/L1/C/L+
  V/L2
  W/L3/D/L-
- GN-YE conductor
- Complete shield of tin-plated copper braiding, coverage approx. 80%
- PUR outer sheath
- Sheath colour orange (RAL 2003)

Application

This high quality pre-assembled motor connection cable is specially manufactured for applications with high mechanical stress.
The special PUR outer sheath allows use in many industrial environments of general machine and plant construction.

Characteristic

These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the installation instructions for laying cables in cable carriers and the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.

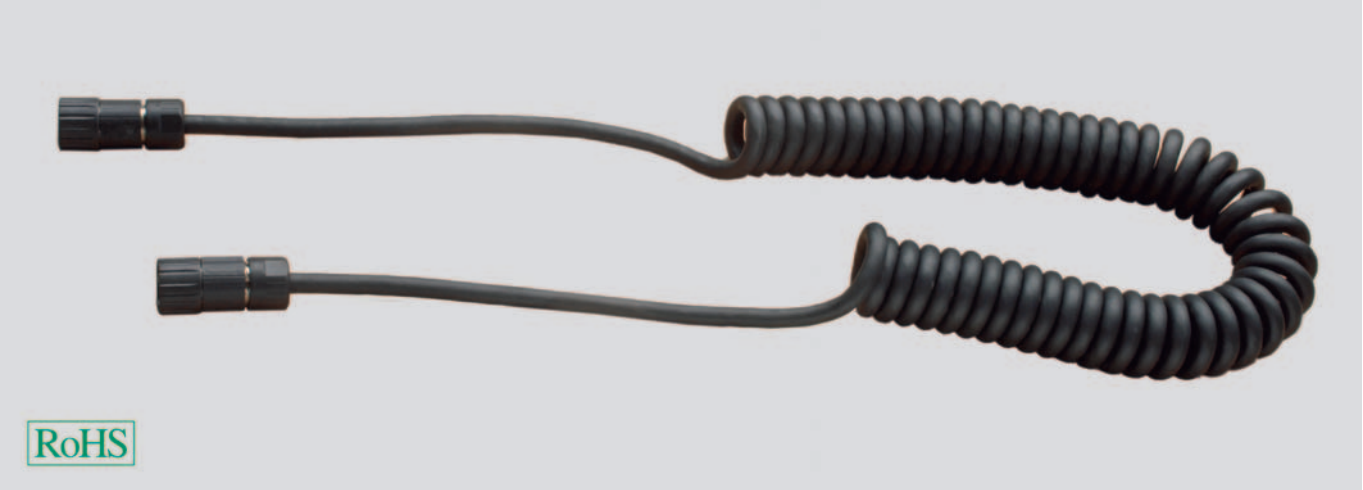
Helukabel Designation	Helukabel Part no.
motor cable 05906245 PUR 4x1,5	**660846**
motor cable 05906253 PUR 4x2,5	**660847**

Helukabel Designation	Helukabel Part no.
motor cable 13331221 PUR 4x1,5+2x1	**660848**
motor cable 13332155 PUR 4x2,5+2x1	**660849**

Dimensions and specifications may be changed without prior notice.

Pre-assembled feedback cables

For use on Heidenhain measurement systems



Technical data

- **Temperature range**
  -20°C to +70°C
- **Max. operating voltage** 50 V

Cable structure

- Tinned copper conductor, fine wire stranded
- PVC/PP core insulation
- Shielding
  Internal shield of tinned copper winding
  External shield of tinned copper winding
- PUR outer sheath
- Sheath colour black

Structure/colour code

- **((5x0,14)+4x0,25+2x0,25+1x0,5)**
  ((WH, BN, GN, YE, GY) BU, BK, RD,
  RD/BU, WH/BU, WH/GN, BN/GN, GY/PK)

Application

This pre-assembled sensor cable is suitable for use on Heidenhain measurement systems (hand wheels).

Characteristic

These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

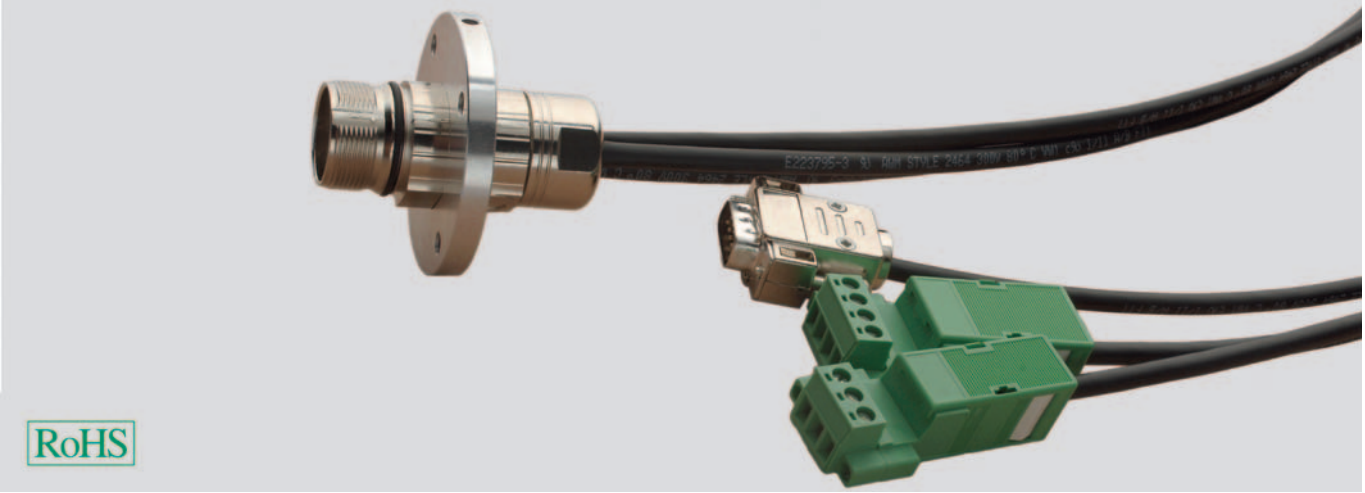
Please observe the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.

Helukabel Designation	Helukabel Part no.
spiral cable 312879 PUR sw	**660893**

Dimensions and specifications may be changed without prior notice.

Pre-assembled adapter cables

For use on Heidenhain measurement systems (hand wheels)



Technical data

- **Temperature range**
  flexing -15°C to +60°C
  fixed installation -30°C to +80°C
- **Minimum bending radius**
  flexing 15x cable Ø
  fixed installation 8x cable Ø
- **Max. operating voltage** 300 V
- **Test voltage** 1,5 kV
- **Insulation resistance** ≥ 100 MOhm x km

Cable structure

- Tinned copper conductors
- SR PVC core insulation
- Complete shield of tin-plated copper braiding
- PVC outer sheath
- Sheath colour black

Structure/colour code

- International code
  for UL/CSA cables
  BK, BN, RD, OG, YE, GN

Application

This pre-assembled sensor cable is suitable for use on Heidenhain measurement systems (hand wheels).

Characteristic

These pre-assembled cables can be produced in any lengths and also with customer-specific modifications.

Note

Please observe the drive or controller manufacturer's information about maximum permitted cable length.
The prefabricated cables listed here are not original parts, but accessories manufactured by the company HELUKABEL® GmbH.
The data, standards and approvals relate solely to the bulk goods used.

Helukabel Designation	Helukabel Part no.
adapter cables 296466 PVC sw	**660894**

Dimensions and specifications may be changed without prior notice.





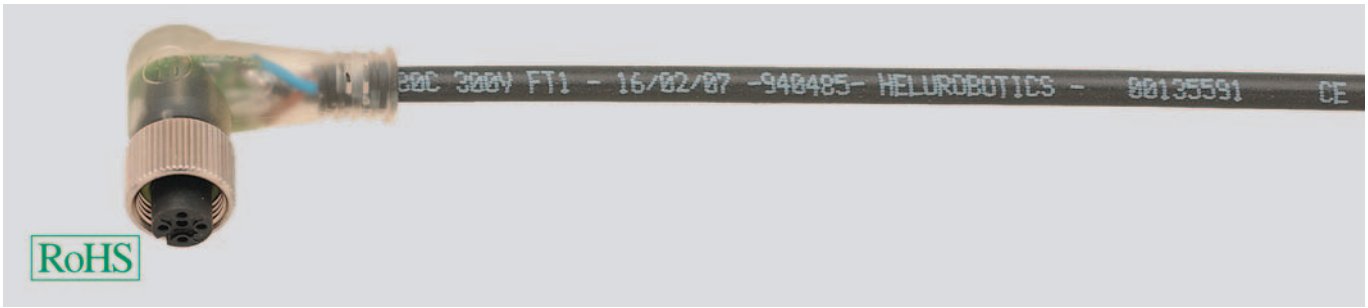
ROBOFLEX®-recycle

CW&A Edition 27 (published 01.04.2015)

ROBOFLEX RECYCLE

Designation	Properties	Approvals	Page
ROBOFLEX®-recycle	M12 female one-end pre-assembled 3-pin, 4-pin, and 5-pin		880
ROBOFLEX®-recycle	M12 sensor cable 4-pin + PE one end preassembled		882
ROBOFLEX®-recycle	M12 both ends pre-assembled		883
ROBOFLEX®-recycle	M12 5-pin + PE both ends pre-assembled		885
ROBOFLEX®-recycle	M12 plug straight or angled one end preassembled 3-pin, 4-pin, and 5-pin		886
ROBOFLEX®-recycle	M8 female one end preassembled		887
ROBOFLEX®-recycle	M8 both ends pre-assembled		888
ROBOFLEX®-recycle	M8 plug straight or angled one end preassembled 3-pin and 4-pin		890
ROBOFLEX®-recycle	M12 sensor cable screened one end pre-assembled		891
ROBOFLEX®-recycle	M12 sensor cable screened both ends pre-assembled		893
ROBOFLEX®-recycle	Twin cables M12 to M12		895
ROBOFLEX®-recycle	Twin cables M12 to M12		896

ROBOFLEX®-recycle M12 femal one end pre-assembled 3-, 4- and 5-pin



Technical data

- **Approval:**
  UL/cUL approved
- **Production**
  in accordance with VDE standards
- **Temperature range:**
  fixed installation -40°C to +105°C
  flexible -30°C to +105°C
- **Nominal voltage:**
  300 V
- **Test voltage:**
  2000 V
- **Minimum bending radius:**
  7.5 x cable diameter (for flexible installation)
- **Traversing speed:**
  max. 3.3 m/s for 5 m of horizontal traverse path length
- **Acceleration:**
  max. 5 m/s²
- **Flexing and torsion cycles:**
  min. 10 million.
- **Torsional stress:**
  +/- 360°/m

Cable structure

- Bare copper litz wire, 42 x 0.10 mm
- Core insulation polyester, black, blue, brown
- Cores stranded in layers
- Sheath, special mix
- weld splatter resistant, dull, low adhesion, flame retardant and self-extinguishing to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1
- Sheath colour: black

Assembly (3-pin)
colour of cores brown, blue, black
AD 4,9 +/-0,2 mm
Assembly (4-pin)
colour of cores brown, blue, black, white
AD 5,2 +/-0,2 mm
Assembly (5-pin)
colour of cores brown, blue, black, white, grey
AD 5,5 +/-0,2 mm

Properties

- very good resistance to oil as per DIN VDE 0473-811-404/DIN EN 60811-404
- good resistance to acids, alkalis and solvents
- not cross-linked
- weld splatter resistant
- recyclable
- halogen-free
- Silicone and cadmium-free
- Free of substances harmful to paint adhesion Substances
- very high mechanical load capacity
- abrasion resistant
- wear-resistant
- Highly flexible
- UV-resistant
- ROHS conformant
- CE conformant

Note

* Design for the standard 2 LEDs in the colours: yellow, green.
3 LEDs in the colours: white, yellow, green - available upon request.
** Sensor cable ROBOFLEX®-recycle M12 socket,
angled, preassembled on one side, 5 pins.
available on request.
IP67
A-coded

socket with LED

Part no.	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	
670742	ROBOFLEX®-recycle 3 x 0,34	1,5	socket angled with 2 LED	14,7	-
670743	ROBOFLEX®-recycle 3 x 0,34	3,0	socket angled with 2 LED	29,4	-
670744	ROBOFLEX®-recycle 3 x 0,34	5,0	socket angled with 2 LED	49,0	-
670745	ROBOFLEX®-recycle 3 x 0,34	10,0	socket angled with 2 LED	98,0	-
670746	ROBOFLEX®-recycle 4 x 0,34	1,5	socket angled with 2 LED	19,7	-
670747	ROBOFLEX®-recycle 4 x 0,34	3,0	socket angled with 2 LED	39,3	-
670748	ROBOFLEX®-recycle 4 x 0,34	5,0	socket angled with 2 LED	65,5	-
670749	ROBOFLEX®-recycle 4 x 0,34	10,0	socket angled with 2 LED	131,0	-
671543	ROBOFLEX®-recycle 3 x 0,34	1,0	socket straight with 2 LED	9,8	-
671544	ROBOFLEX®-recycle 3 x 0,34	1,5	socket straight with 2 LED	14,7	-
671546	ROBOFLEX®-recycle 3 x 0,34	3,0	socket straight with 2 LED	29,4	-
671547	ROBOFLEX®-recycle 3 x 0,34	5,0	socket straight with 2 LED	49,0	-
671548	ROBOFLEX®-recycle 3 x 0,34	10,0	socket straight with 2 LED	98,0	-
671557	ROBOFLEX®-recycle 4 x 0,34	1,0	socket straight with 2 LED	13,1	-
671550	ROBOFLEX®-recycle 4 x 0,34	1,5	socket straight with 2 LED	19,7	-
671551	ROBOFLEX®-recycle 4 x 0,34	3,0	socket straight with 2 LED	39,3	-
671552	ROBOFLEX®-recycle 4 x 0,34	5,0	socket straight with 2 LED	65,5	-
671553	ROBOFLEX®-recycle 4 x 0,34	10,0	socket straight with 2 LED	131,0	-
671473	ROBOFLEX®-recycle 5 x 0,34	1,0	socket straight with 2 LED	16,5	-
671474	ROBOFLEX®-recycle 5 x 0,34	1,5	socket straight with 2 LED	24,8	-
671476	ROBOFLEX®-recycle 5 x 0,34	3,0	socket straight with 2 LED	49,5	-
671477	ROBOFLEX®-recycle 5 x 0,34	5,0	socket straight with 2 LED	82,5	-
671478	ROBOFLEX®-recycle 5 x 0,34	10,0	socket straight with 2 LED	165,0	-

Continuation ▸

ROBOFLEX®-recycle M12 femal one end pre-assembled 3-, 4- and 5-pin socket

Part no.	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	
670722	ROBOFLEX®-recycle 3 x 0,34	1,5	socket angled	14,7	-
670723	ROBOFLEX®-recycle 3 x 0,34	3,0	socket angled	29,4	-
670724	ROBOFLEX®-recycle 3 x 0,34	5,0	socket angled	49,0	-
670725	ROBOFLEX®-recycle 3 x 0,34	10,0	socket angled	98,0	-
670738	ROBOFLEX®-recycle 4 x 0,34	1,5	socket angled	19,7	-
670739	ROBOFLEX®-recycle 4 x 0,34	3,0	socket angled	39,3	-
670740	ROBOFLEX®-recycle 4 x 0,34	5,0	socket angled	65,5	-
670741	ROBOFLEX®-recycle 4 x 0,34	10,0	socket angled	131,0	-
671438	ROBOFLEX®-recycle 5 x 0,34	1,5	socket angled	24,8	-
671439	ROBOFLEX®-recycle 5 x 0,34	3,0	socket angled	49,5	-
671440	ROBOFLEX®-recycle 5 x 0,34	5,0	socket angled	82,5	-
671441	ROBOFLEX®-recycle 5 x 0,34	10,0	socket angled	165,0	-
670718	ROBOFLEX®-recycle 3 x 0,34	1,5	socket straight	14,7	-
670719	ROBOFLEX®-recycle 3 x 0,34	3,0	socket straight	29,4	-
670720	ROBOFLEX®-recycle 3 x 0,34	5,0	socket straight	49,0	-
670721	ROBOFLEX®-recycle 3 x 0,34	5,0	socket straight	49,0	-
670734	ROBOFLEX®-recycle 4 x 0,34	1,5	socket straight	19,7	-
670735	ROBOFLEX®-recycle 4 x 0,34	3,0	socket straight	39,3	-
670736	ROBOFLEX®-recycle 4 x 0,34	5,0	socket straight	65,5	-
670737	ROBOFLEX®-recycle 4 x 0,34	10,0	socket straight	131,0	-
671434	ROBOFLEX®-recycle 5 x 0,34	1,5	socket straight	24,8	-
671435	ROBOFLEX®-recycle 5 x 0,34	3,0	socket straight	49,5	-
671436	ROBOFLEX®-recycle 5 x 0,34	5,0	socket straight	82,5	-
671437	ROBOFLEX®-recycle 5 x 0,34	10,0	socket straight	165,0	-

Dimensions and specifications may be changed without prior notice.

ROBOFLEX®-recycle M12 sensor cable 4-pin + PE one end pre-assembled



Technical data

- **Approval:**
  UL/cUL approved
- **Production**
  in accordance with VDE standards
- **Temperature range:**
  fixed installation -40°C to +105°C
  flexible -30°C to +105°C
- **Nominal voltage:**
  300 V
- **Test voltage:**
  2000 V
- **Minimum bending radius:**
  7.5 x cable diameter (for flexible installation)
- **Traversing speed:**
  max. 3.3 m/s for 5 m of horizontal traverse path length
- **Acceleration:**
  max. 5 m/s²
- **Flexing and torsion cycles:**
  min. 10 million.
- **Torsional stress:**
  +/- 360°/m

Cable structure

- Bare copper litz wire, 42 x 0.10 mm
- Core insulation polyester, black, blue, brown
- Cores stranded in layers
- Sheath, special mix
- weld splatter resistant, dull, low adhesion, flame retardant and self-extinguishing to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1
- Sheath colour: black

Assembly (5-pin)
colour of cores brown, blue, black, white, green/yellow
AD 5,5 +/-0,2 mm

Properties

- very good resistance to oil as per DIN VDE 0473-811-404/DIN EN 60811-404
- good resistance to acids, alkalis and solvents
- not cross-linked
- weld splatter resistant
- recyclable
- halogen-free
- Silicone and cadmium-free
- Free of substances harmful to paint adhesion Substances
- very high mechanical load capacity
- abrasion resistant
- wear-resistant
- Highly flexible
- UV-resistant
- ROHS conformant
- CE conformant

Note

IP67
A-coded

plug or socket one end pre-assembled

Part no.	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	
672393	ROBOFLEX®-recycle 5 G 0,34	1,0	plug, straight	16,5	-
672394	ROBOFLEX®-recycle 5 G 0,34	1,5	plug, straight	24,8	-
672396	ROBOFLEX®-recycle 5 G 0,34	3,0	plug, straight	49,5	-
672397	ROBOFLEX®-recycle 5 G 0,34	5,0	plug, straight	82,5	-
672399	ROBOFLEX®-recycle 5 G 0,34	10,0	plug, straight	165,0	-
672403	ROBOFLEX®-recycle 5 G 0,34	1,0	plug, angled	16,5	-
672404	ROBOFLEX®-recycle 5 G 0,34	1,5	plug, angled	24,8	-
672406	ROBOFLEX®-recycle 5 G 0,34	3,0	plug, angled	49,5	-
672407	ROBOFLEX®-recycle 5 G 0,34	5,0	plug, angled	82,5	-
672409	ROBOFLEX®-recycle 5 G 0,34	10,0	plug, angled	165,0	-
672343	ROBOFLEX®-recycle 5 G 0,34	1,0	socket straight	16,5	-
672344	ROBOFLEX®-recycle 5 G 0,34	1,5	socket straight	24,8	-
672346	ROBOFLEX®-recycle 5 G 0,34	3,0	socket straight	49,5	-
672347	ROBOFLEX®-recycle 5 G 0,34	5,0	socket straight	82,5	-
672349	ROBOFLEX®-recycle 5 G 0,34	10,0	socket straight	165,0	-
672353	ROBOFLEX®-recycle 5 G 0,34	1,0	socket angled	16,5	-
672354	ROBOFLEX®-recycle 5 G 0,34	1,5	socket angled	24,8	-
672356	ROBOFLEX®-recycle 5 G 0,34	3,0	socket angled	49,5	-
672357	ROBOFLEX®-recycle 5 G 0,34	5,0	socket angled	82,5	-
672359	ROBOFLEX®-recycle 5 G 0,34	10,0	socket angled	165,0	-

socket one end pre-assembled, 3 LED (gn, rd, ye)

Part no.	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	
672413	ROBOFLEX®-recycle 5 G 0,34	1,0	socket straight with 3 LED	16,5	-
672414	ROBOFLEX®-recycle 5 G 0,34	1,5	socket straight with LED	24,8	-
672416	ROBOFLEX®-recycle 5 G 0,34	3,0	socket straight with 3 LED	49,5	-
672417	ROBOFLEX®-recycle 5 G 0,34	5,0	socket straight with 3 LED	82,5	-
672419	ROBOFLEX®-recycle 5 G 0,34	10,0	socket straight with 3 LED	165,0	-
672363	ROBOFLEX®-recycle 5 G 0,34	1,0	socket angled with 3 LED	16,5	-
672364	ROBOFLEX®-recycle 5 G 0,34	1,5	socket angled with LED	24,8	-
672366	ROBOFLEX®-recycle 5 G 0,34	3,0	socket angled with 3 LED	49,5	-
672367	ROBOFLEX®-recycle 5 G 0,34	5,0	socket angled with 3 LED	82,5	-
672369	ROBOFLEX®-recycle 5 G 0,34	10,0	socket angled with 3 LED	165,0	-

Dimensions and specifications may be changed without prior notice.

ROBOFLEX®-recycle M12 both ends pre-assembled



Technical data

- **Approval:**
  UL/cUL approved
- **Production**
  in accordance with VDE standards
- **Temperature range:**
  fixed installation -40°C to +105°C
  flexible -30°C to +105°C
- **Nominal voltage:**
  300 V
- **Test voltage:**
  2000 V
- **Minimum bending radius:**
  7.5 x cable diameter (for flexible installation)
- **Traversing speed:**
  max. 3.3 m/s for 5 m of horizontal traverse path length
- **Acceleration:**
  max. 5 m/s²
- **Flexing and torsion cycles:**
  min. 10 million.
- **Torsional stress:**
  +/- 360°/m

Cable structure

- Bare copper litz wire, 42 x 0.10 mm
- Core insulation polyester, black, blue, brown
- Cores stranded in layers
- Sheath, special mix
- weld splatter resistant, dull, low adhesion, flame retardant and self-extinguishing to DIN VDE 0482-332-1-2, IN EN 60332-1-2/ IEC 60332-1
- Sheath colour: black

Assembly (3-pin)
colour in cores brown, blue, black
AD 4,9 +/-0,2 mm

Assembly (4-pin)
colour of cores brown, blue, black, white
AD 5,2 +/-0,2 mm

Assembly (5-pin)
colour of cores brown, blue, black, white, grey
AD 5,5 +/-0,2 mm

Properties

- very good resistance to oil as per DIN VDE 0473-811-404/DIN EN 60811-404
- good resistance to acids, alkalis and solvents
- not cross-linked
- weld splatter resistant
- recyclable
- halogen-free
- Silicone and cadmium-free
- Free of substances harmful to paint adhesion Substances
- very high mechanical load capacity
- abrasion resistant
- wear-resistant
- Highly flexible
- UV-resistant
- ROHS conformant
- CE conformant

Note

*Design for the standard 2 LEDs in the colours: yellow, green.
3 LEDs in the colours: white, yellow ,green - available upon request.
** Sensor cable ROBOFLEX®-recycle M12 plug, straight and socket, angled, pre-assembled on both side, 5-pin. available on request.
IP67
A-coded

plug straight / socket angled with LED

Part no.	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	
670866	ROBOFLEX®-recycle 3 x 0,34	1,0	plug straight / socket, angled with 2 LED	9,8	-
670802	ROBOFLEX®-recycle 3 x 0,34	1,5	plug straight / socket, angled with 2 LED	14,7	-
670803	ROBOFLEX®-recycle 3 x 0,34	3,0	plug straight / socket, angled with 2 LED	29,4	-
670804	ROBOFLEX®-recycle 3 x 0,34	5,0	plug straight / socket, angled with 2 LED	49,0	-
670805	ROBOFLEX®-recycle 3 x 0,34	10,0	plug straight / socket, angled with 2 LED	98,0	-
670867	ROBOFLEX®-recycle 4 x 0,34	1,0	plug straight / socket, angled with 2 LED	13,1	-
670814	ROBOFLEX®-recycle 4 x 0,34	1,5	plug straight / socket, angled with 2 LED	19,7	-
670815	ROBOFLEX®-recycle 4 x 0,34	3,0	plug straight / socket, angled with 2 LED	39,3	-
670816	ROBOFLEX®-recycle 4 x 0,34	5,0	plug straight / socket, angled with 2 LED	65,5	-
670817	ROBOFLEX®-recycle 4 x 0,34	10,0	plug straight / socket, angled with 2 LED	131,0	-

plug straight / socket straight

Part no.	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	
671341	ROBOFLEX®-recycle 3 x 0,34	1,0	plug straight / socket straight	9,8	-
670750	ROBOFLEX®-recycle 3 x 0,34	1,5	plug straight / socket straight	14,7	-
670751	ROBOFLEX®-recycle 3 x 0,34	3,0	plug straight / socket straight	29,4	-
670752	ROBOFLEX®-recycle 3 x 0,34	5,0	plug straight / socket straight	49,0	-
670753	ROBOFLEX®-recycle 3 x 0,34	10,0	plug straight / socket straight	98,0	-
670771	ROBOFLEX®-recycle 4 x 0,34	1,0	plug straight / socket straight	13,1	-
670774	ROBOFLEX®-recycle 4 x 0,34	1,5	plug straight / socket straight	19,7	-
670775	ROBOFLEX®-recycle 4 x 0,34	3,0	plug straight / socket straight	39,3	-
670776	ROBOFLEX®-recycle 4 x 0,34	5,0	plug straight / socket straight	65,5	-
670777	ROBOFLEX®-recycle 4 x 0,34	10,0	plug straight / socket straight	131,0	-
671493	ROBOFLEX®-recycle 5 x 0,34	1,0	plug straight / socket straight	16,5	-
671494	ROBOFLEX®-recycle 5 x 0,34	1,5	plug straight / socket straight	24,8	-
671496	ROBOFLEX®-recycle 5 x 0,34	3,0	plug straight / socket straight	49,5	-
671497	ROBOFLEX®-recycle 5 x 0,34	5,0	plug straight / socket straight	82,5	-
671499	ROBOFLEX®-recycle 5 x 0,34	10,0	plug straight / socket straight	165,0	-

Continuation ▸

ROBOFLEX®-recycle M12 both ends pre-assembled

plug straight / socket angled

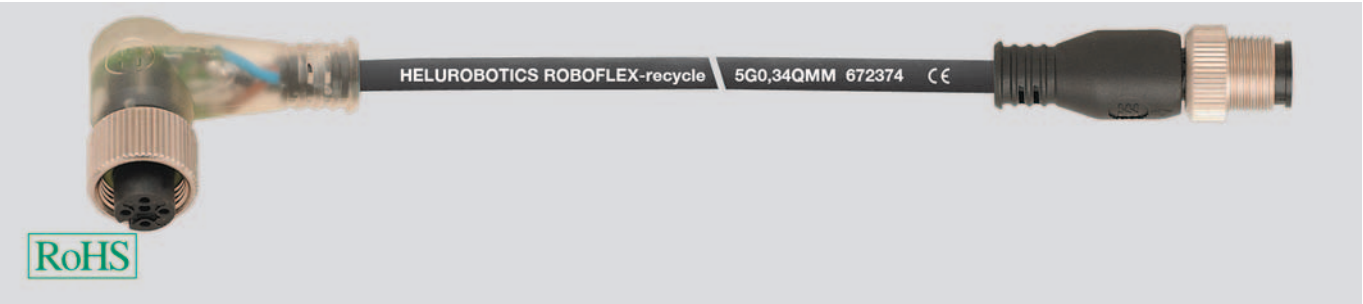
Part no.	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	
670757	ROBOFLEX®-recycle 3 x 0,34	1,0	plug straight / socket angled	9,8	-
670758	ROBOFLEX®-recycle 3 x 0,34	1,5	plug straight / socket angled	14,7	-
670759	ROBOFLEX®-recycle 3 x 0,34	3,0	plug straight / socket angled	29,4	-
670760	ROBOFLEX®-recycle 3 x 0,34	5,0	plug straight / socket angled	49,0	-
670761	ROBOFLEX®-recycle 3 x 0,34	10,0	plug straight / socket angled	98,0	-
670781	ROBOFLEX®-recycle 4 x 0,34	1,0	plug straight / socket angled	13,1	-
670782	ROBOFLEX®-recycle 4 x 0,34	1,5	plug straight / socket angled	19,7	-
670783	ROBOFLEX®-recycle 4 x 0,34	3,0	plug straight / socket angled	39,3	-
670784	ROBOFLEX®-recycle 4 x 0,34	5,0	plug straight / socket angled	65,5	-
670785	ROBOFLEX®-recycle 4 x 0,34	10,0	plug straight / socket angled	131,0	-
671483	ROBOFLEX®-recycle 5 x 0,34	1,0	plug straight / socket angled	16,5	-
671484	ROBOFLEX®-recycle 5 x 0,34	1,5	plug straight / socket angled	24,8	-
671486	ROBOFLEX®-recycle 5 x 0,34	3,0	plug straight / socket angled	49,5	-
671487	ROBOFLEX®-recycle 5 x 0,34	5,0	plug straight / socket angled	82,5	-
671489	ROBOFLEX®-recycle 5 x 0,34	10,0	plug straight / socket angled	165,0	-

plug angled/ socket angled

Part no.	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	
670766	ROBOFLEX®-recycle 3 x 0,34	1,5	plug angled / socket angled	14,7	-
670767	ROBOFLEX®-recycle 3 x 0,34	3,0	plug angled / socket angled	29,4	-
670768	ROBOFLEX®-recycle 3 x 0,34	5,0	plug angled / socket angled	49,0	-
670769	ROBOFLEX®-recycle 3 x 0,34	10,0	plug angled / socket angled	98,0	-
670790	ROBOFLEX®-recycle 4 x 0,34	1,5	plug angled / socket angled	19,7	-
670791	ROBOFLEX®-recycle 4 x 0,34	3,0	plug angled / socket angled	39,3	-
670792	ROBOFLEX®-recycle 4 x 0,34	5,0	plug angled / socket angled	65,5	-
670793	ROBOFLEX®-recycle 4 x 0,34	10,0	plug angled / socket angled	131,0	-
671533	ROBOFLEX®-recycle 5 x 0,34	1,5	plug angled / socket angled	24,8	-
671534	ROBOFLEX®-recycle 5 x 0,34	3,0	plug angled / socket angled	49,5	-
671536	ROBOFLEX®-recycle 5 x 0,34	5,0	plug angled / socket angled	82,5	-
671537	ROBOFLEX®-recycle 5 x 0,34	10,0	plug angled / socket angled	165,0	-

Dimensions and specifications may be changed without prior notice.

ROBOFLEX®-recycle M12 4-pin + PE both ends pre-assembled



Technical data

- **Approval:**
  UL/cUL approved
- **Production**
  in accordance with VDE standards
- **Temperature range:**
  fixed installation -40°C to +105°C
  flexible -30°C to +105°C
- **Nominal voltage:**
  300 V
- **Test voltage:**
  2000 V
- **Minimum bending radius:**
  7.5 x cable diameter (for flexible installation)
- **Traversing speed:**
  max. 3.3 m/s for 5 m of horizontal traverse path length
- **Acceleration:**
  max. 5 m/s²
- **Flexing and torsion cycles:**
  min. 10 million.
- **Torsional stress:**
  +/- 360°/m

Cable structure

- Bare copper litz wire, 42 x 0.10 mm
- Core insulation polyester, black, blue, brown
- Cores stranded in layers
- Sheath, special mix
- weld splatter resistant, dull, low adhesion, flame retardant and self-extinguishing to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1
- Sheath colour: black

Assembly (5-pin)
colour of cores brown, blue, black, white, green/yellow
AD 5,5 +/-0,2 mm

Properties

- very good resistance to oil as per DIN VDE 0473-811-404/DIN EN 60811-404
- good resistance to acids, alkalis and solvents
- not cross-linked
- weld splatter resistant
- recyclable
- halogen-free
- Silicone and cadmium-free
- Free of substances harmful to paint adhesion Substances
- very high mechanical load capacity
- abrasion resistant
- wear-resistant
- Highly flexible
- UV-resistant
- ROHS conformant
- CE conformant

Note

IP67
A-codiert

both ends pre-assembled

Part no.	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	
672303	ROBOFLEX®-recycle 5 G 0,34	1,0	plug straight / socket straight	16,5	-
672304	ROBOFLEX®-recycle 5 G 0,34	1,5	plug straight / socket straight	24,8	-
672306	ROBOFLEX®-recycle 5 G 0,34	3,0	plug straight / socket straight	49,5	-
672307	ROBOFLEX®-recycle 5 G 0,34	5,0	plug straight / socket straight	82,5	-
672309	ROBOFLEX®-recycle 5 G 0,34	10,0	plug straight / socket straight	165,0	-
672443	ROBOFLEX®-recycle 5 G 0,34	1,0	plug angled / socket angled	16,5	-
672444	ROBOFLEX®-recycle 5 G 0,34	1,5	plug angled / socket angled	24,8	-
672446	ROBOFLEX®-recycle 5 G 0,34	3,0	plug angled / socket angled	49,5	-
672447	ROBOFLEX®-recycle 5 G 0,34	5,0	plug angled / socket angled	82,5	-
672449	ROBOFLEX®-recycle 5 G 0,34	10,0	plug angled / socket angled	165,0	-
672313	ROBOFLEX®-recycle 5 G 0,34	1,0	plug straight / socket angled	16,5	-
672314	ROBOFLEX®-recycle 5 G 0,34	1,5	plug straight / socket angled	24,8	-
672316	ROBOFLEX®-recycle 5 G 0,34	3,0	plug straight / socket angled	49,5	-
672317	ROBOFLEX®-recycle 5 G 0,34	5,0	plug straight / socket angled	82,5	-
672319	ROBOFLEX®-recycle 5 G 0,34	10,0	plug straight / socket angled	165,0	-

both ends pre-assembled, 3 LED (gn, rd, ye)

Part no.	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	
672333	ROBOFLEX®-recycle 5 G 0,34	1,0	plug straight / socket straight with 3 LED	16,5	-
672334	ROBOFLEX®-recycle 5 G 0,34	1,5	plug straight / socket straight with 3 LED	24,8	-
672336	ROBOFLEX®-recycle 5 G 0,34	3,0	plug straight / socket straight with 3 LED	49,5	-
672337	ROBOFLEX®-recycle 5 G 0,34	5,0	plug straight / socket straight with 3 LED	82,5	-
672339	ROBOFLEX®-recycle 5 G 0,34	10,0	plug straight / socket straight with 3 LED	165,0	-
672373	ROBOFLEX®-recycle 5 G 0,34	1,0	plug angled / socket angled with 3 LED	16,5	-
672374	ROBOFLEX®-recycle 5 G 0,34	1,5	plug angled / socket angled with 3 LED	24,8	-
672376	ROBOFLEX®-recycle 5 G 0,34	3,0	plug angled / socket angled with 3 LED	49,5	-
672377	ROBOFLEX®-recycle 5 G 0,34	5,0	plug angled / socket angled with 3 LED	82,5	-
672379	ROBOFLEX®-recycle 5 G 0,34	10,0	plug angled / socket angled with 3 LED	165,0	-
672323	ROBOFLEX®-recycle 5 G 0,34	1,0	plug straight / socket angled with 3 LED	16,5	-
672324	ROBOFLEX®-recycle 5 G 0,34	1,5	plug straight / socket angled with 3 LED	24,8	-
672326	ROBOFLEX®-recycle 5 G 0,34	3,0	plug straight / socket angled with 3 LED	49,5	-
672327	ROBOFLEX®-recycle 5 G 0,34	5,0	plug straight / socket angled with 3 LED	82,5	-
672329	ROBOFLEX®-recycle 5 G 0,34	10,0	plug straight / socket angled with 3 LED	165,0	-

Dimensions and specifications may be changed without prior notice.

ROBOFLEX®-recycle M12 plug straight or angled, pre-assembled on one end, 3-pin, 4-pin and 5-pin



Technical data

- **Approval:** UL/cUL approved
- **Production** in accordance with VDE standards
- **Temperature range:** fixed installation -40°C to +105°C flexible -30°C to +105°C
- **Nominal voltage:** 300 V
- **Test voltage:** 2000 V
- **Minimum bending radius:** 7.5 x cable diameter (for flexible installation)
- **Traversing speed:** max. 3.3 m/s for 5 m of horizontal traverse path length
- **Acceleration:** max. 5 m/s²
- **Flexing and torsion cycles:** min. 10 million.
- **Torsional stress:** +/- 360°/m

Cable structure

- Bare copper litz wire, 42 x 0.10 mm
- Core insulation polyester, black, blue, brown
- Cores stranded in layers
- Sheath, special mix
- weld splatter resistant, dull, low adhesion, flame retardant and self-extinguishing to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1
- Sheath colour: black

Assembly (3-pin)
colour of cores brown, blue, black
AD 4,9 +/-0,2mm

Assembly (4-pin)
colour of cores brown, blue, black, white
AD 5,2 +/-0,2mm

Assembly (5-pin)
colour of cores brown, blue, black, white, grey
AD 5,5 +/-0,2mm

Properties

- very good resistance to oil to DIN VDE 0473-811-404/DIN EN 60811-404
- good resistance to acids, alkalis and solvents
- not cross-linked
- weld splatter resistant
- recyclable
- halogen-free
- Silicone and cadmium-free
- Free of substances harmful to paint adhesion Substances
- very high mechanical load capacity
- abrasion resistant
- wear-resistant
- Highly flexible
- UV-resistant
- ROHS conformant
- CE conformant

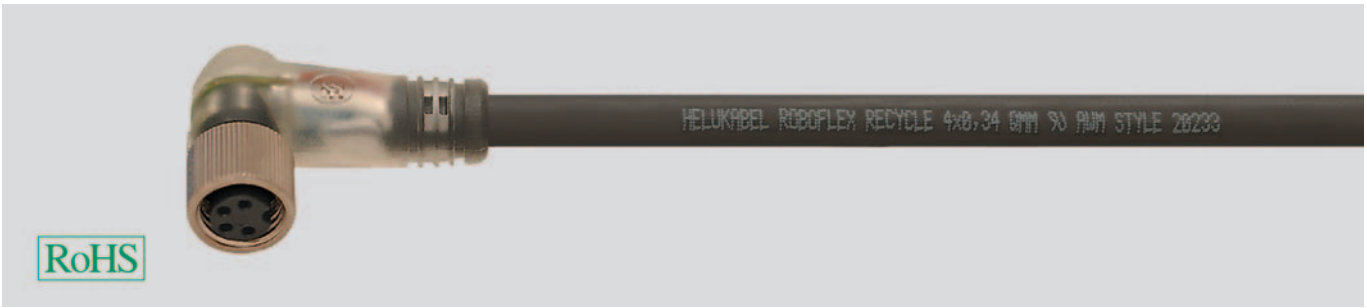
Note

IP67
A-coded

Part no.	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	
670710	ROBOFLEX®-recycle 3 x 0,34	1,5	plug, straight	14,7	-
670711	ROBOFLEX®-recycle 3 x 0,34	3,0	plug, straight	29,4	-
670712	ROBOFLEX®-recycle 3 x 0,34	5,0	plug, straight	49,0	-
670713	ROBOFLEX®-recycle 3 x 0,34	10,0	plug, straight	98,0	-
670714	ROBOFLEX®-recycle 3 x 0,34	1,5	plug, angled	14,7	-
670715	ROBOFLEX®-recycle 3 x 0,34	3,0	plug, angled	29,4	-
670716	ROBOFLEX®-recycle 3 x 0,34	5,0	plug, angled	49,0	-
670717	ROBOFLEX®-recycle 3 x 0,34	10,0	plug, angled	98,0	-
670726	ROBOFLEX®-recycle 4 x 0,34	1,5	plug, straight	19,7	-
670727	ROBOFLEX®-recycle 4 x 0,34	3,0	plug, straight	39,3	-
670728	ROBOFLEX®-recycle 4 x 0,34	5,0	plug, straight	65,5	-
670729	ROBOFLEX®-recycle 4 x 0,34	10,0	plug, straight	131,0	-
670730	ROBOFLEX®-recycle 4 x 0,34	1,5	plug, angled	19,7	-
670731	ROBOFLEX®-recycle 4 x 0,34	3,0	plug, angled	39,3	-
670732	ROBOFLEX®-recycle 4 x 0,34	5,0	plug, angled	65,5	-
670733	ROBOFLEX®-recycle 4 x 0,34	10,0	plug, angled	131,0	-
671426	ROBOFLEX®-recycle 5 x 0,34	1,5	plug, straight	24,8	-
671427	ROBOFLEX®-recycle 5 x 0,34	3,0	plug, straight	49,5	-
671428	ROBOFLEX®-recycle 5 x 0,34	5,0	plug, straight	82,5	-
671429	ROBOFLEX®-recycle 5 x 0,34	10,0	plug, straight	165,0	-
671430	ROBOFLEX®-recycle 5 x 0,34	1,5	plug, angled	24,8	-
671431	ROBOFLEX®-recycle 5 x 0,34	3,0	plug, angled	49,5	-
671432	ROBOFLEX®-recycle 5 x 0,34	5,0	plug, angled	82,5	-
671433	ROBOFLEX®-recycle 5 x 0,34	10,0	plug, angled	165,0	-

Dimensions and specifications may be changed without prior notice.

ROBOFLEX®-recycle M8 femal one end pre-assembled



Technical data

- **Approval:**
  UL/cUL approved
- **Production**
  in accordance with VDE standards
- **Temperature range:**
  fixed installation -40°C to +105°C
  flexible -30°C to +105°C
- **Nominal voltage:**
  300 V
- **Test voltage:**
  2000 V
- **Minimum bending radius:**
  7.5 x cable diameter (for flexible installation)
- **Traversing speed:**
  max. 3.3 m/s for 5 m of horizontal traverse path length
- **Acceleration:**
  max. 5 m/s²
- **Flexing and torsion cycles:**
  min. 10 million.
- **Torsional stress:**
  +/- 360°/m

Cable structure

- Bare copper litz wire, 42 x 0.10 mm
- Core insulation polyester, black, blue, brown
- Cores stranded in layers
- Sheath, special mix
- weld splatter resistant, dull, low adhesion, flame retardant and self-extinguishing to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1
- Sheath colour: black

Assembly (3-pin)
colour of cores brown, blue, black
AD 4,9 +/-0,2 mm

Assembly (4-pin)
colour of cores brown. blue, black, white
AD 5,2 +/-0,2 mm

Properties

- very good resistance to oil to DIN VDE 0473-811-404/DIN EN 60811-404
- good resistance to acids, alkalis and solvents
- not cross-linked
- weld splatter resistant
- recyclable
- halogen-free
- Silicone and cadmium-free
- Free of substances harmful to paint adhesion Substances
- very high mechanical load capacity
- abrasion resistant
- wear-resistant
- Highly flexible
- UV-resistant
- ROHS conformant
- CE conformant

Note

IP67
A-coded

socket angled with 2 LED

Part no.	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	
670672	ROBOFLEX®-recycle 3 x 0,34	1,5	socket angled with 2 LED	14,7	-
670673	ROBOFLEX®-recycle 3 x 0,34	3,0	socket angled with 2 LED	29,4	-
670674	ROBOFLEX®-recycle 3 x 0,34	5,0	socket angled with 2 LED	49,0	-
670675	ROBOFLEX®-recycle 3 x 0,34	10,0	socket angled with 2 LED	98,0	-
670688	ROBOFLEX®-recycle 4 x 0,34	1,5	socket angled with 2 LED	19,7	-
670689	ROBOFLEX®-recycle 4 x 0,34	3,0	socket angled with 2 LED	39,3	-
670690	ROBOFLEX®-recycle 4 x 0,34	5,0	socket angled with 2 LED	65,5	-
670691	ROBOFLEX®-recycle 4 x 0,34	10,0	socket angled with 2 LED	131,0	-

plug straight

Part no.	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	
670668	ROBOFLEX®-recycle 3 x 0,34	1,5	socket straight	14,7	-
670669	ROBOFLEX®-recycle 3 x 0,34	3,0	socket straight	29,4	-
670670	ROBOFLEX®-recycle 3 x 0,34	5,0	socket straight	49,0	-
670671	ROBOFLEX®-recycle 3 x 0,34	10,0	socket straight	98,0	-
670656	ROBOFLEX®-recycle 3 x 0,34	1,5	socket angled	14,7	-
670657	ROBOFLEX®-recycle 3 x 0,34	3,0	socket angled	29,4	-
670658	ROBOFLEX®-recycle 3 x 0,34	5,0	socket angled	49,0	-
670659	ROBOFLEX®-recycle 3 x 0,34	10,0	socket angled	98,0	-
670684	ROBOFLEX®-recycle 4 x 0,34	1,5	socket straight	19,7	-
670685	ROBOFLEX®-recycle 4 x 0,34	3,0	socket straight	39,3	-
670686	ROBOFLEX®-recycle 4 x 0,34	5,0	socket straight	65,5	-
670687	ROBOFLEX®-recycle 4 x 0,34	10,0	socket straight	131,0	-
670693	ROBOFLEX®-recycle 4 x 0,34	1,5	socket angled	19,7	-
670694	ROBOFLEX®-recycle 4 x 0,34	3,0	socket angled	39,3	-
670695	ROBOFLEX®-recycle 4 x 0,34	5,0	socket angled	65,5	-
670696	ROBOFLEX®-recycle 4 x 0,34	10,0	socket angled	131,0	-

Dimensions and specifications may be changed without prior notice.

ROBOFLEX®-recycle M8 pre-assembled on both ends



Technical data

- **Approval:**
  UL/cUL approved
- **Production**
  in accordance with VDE standards
- **Temperature range:**
  fixed installation -40°C to +105°C
  flexible -30°C to +105°C
- **Nominal voltage:**
  300 V
- **Test voltage:**
  2000 V
- **Minimum bending radius:**
  7.5 x cable diameter (for flexible installation)
- **Traversing speed:**
  max. 3.3 m/s for 5 m of horizontal traverse path length
- **Acceleration:**
  max. 5 m/s²
- **Flexing and torsion cycles:**
  min. 10 million.
- **Torsional stress:**
  +/- 360°/m

Cable structure

- Bare copper litz wire, 42 x 0.10 mm
- Cores stranded in layers
- Sheath, special mix
- weld splatter resistant, dull, low adhesion, flame retardant and self-extinguishing to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1
- Sheath colour: black

Assembly (3-pin)
colour of cores brown, blue, black
AD 4,9 +/-0,2mm

Assembly (4-pin)
colour of cores brown, blue, black, white
AD 5,2 +/-0,2mm

Properties

- very good resistance to oil to DIN VDE 0473-811-404/ DIN EN 60811-404
- good resistance to acids, alkalis and solvents
- not cross-linked
- weld splatter resistant
- recyclable
- halogen-free
- Silicone and cadmium-free
- Free of substances harmful to paint adhesion Substances
- very high mechanical load capacity
- abrasion resistant
- wear-resistant
- Highly flexible
- UV-resistant
- ROHS conformant
- CE conformant

Note

* Design for the standard 2 LEDs in the colours: yellow, green.
IP67
A-coded

plug straight / socket angled with 2 LED

Part no.	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	
670849	ROBOFLEX®-recycle 3 x 0,34	1,0	plug straight / socket, angled with 2 LED	9,8	-
670850	ROBOFLEX®-recycle 3 x 0,34	1,5	plug straight / socket, angled with 2 LED	14,7	-
670851	ROBOFLEX®-recycle 3 x 0,34	3,0	plug straight / socket, angled with 2 LED	29,4	-
670852	ROBOFLEX®-recycle 3 x 0,34	5,0	plug straight / socket, angled with 2 LED	49,0	-
670853	ROBOFLEX®-recycle 3 x 0,34	10,0	plug straight / socket, angled with 2 LED	98,0	-
670861	ROBOFLEX®-recycle 4 x 0,34	1,0	plug straight / socket, angled with 2 LED	13,1	-
670862	ROBOFLEX®-recycle 4 x 0,34	1,5	plug straight / socket, angled with 2 LED	19,7	-
670863	ROBOFLEX®-recycle 4 x 0,34	3,0	plug straight / socket, angled with 2 LED	39,3	-
670864	ROBOFLEX®-recycle 4 x 0,34	5,0	plug straight / socket, angled with 2 LED	65,5	-
670865	ROBOFLEX®-recycle 4 x 0,34	10,0	plug straight / socket, angled with 2 LED	131,0	-

plug straight / socket straight

Part no.	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	
671356	ROBOFLEX®-recycle 3 x 0,34	1,0	plug straight / socket straight	9,8	-
670822	ROBOFLEX®-recycle 3 x 0,34	1,5	plug straight / socket straight	14,7	-
670823	ROBOFLEX®-recycle 3 x 0,34	3,0	plug straight / socket straight	29,4	-
670824	ROBOFLEX®-recycle 3 x 0,34	5,0	plug straight / socket straight	49,0	-
670825	ROBOFLEX®-recycle 3 x 0,34	10,0	plug straight / socket straight	98,0	-
671351	ROBOFLEX®-recycle 4 x 0,34	1,0	plug straight / socket straight	13,1	-
670834	ROBOFLEX®-recycle 4 x 0,34	1,5	plug straight / socket straight	19,7	-
670835	ROBOFLEX®-recycle 4 x 0,34	3,0	plug straight / socket straight	39,3	-
670836	ROBOFLEX®-recycle 4 x 0,34	5,0	plug straight / socket straight	65,5	-
670837	ROBOFLEX®-recycle 4 x 0,34	10,0	plug straight / socket straight	131,0	-

Continuation ▸

ROBOFLEX®-recycle M8 pre-assembled on both ends

plug straight / socket angled

Part no.	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	
671332	ROBOFLEX®-recycle 3 x 0,34	1,0	plug straight / socket angled	9,8	-
670826	ROBOFLEX®-recycle 3 x 0,34	1,5	plug straight / socket angled	14,7	-
670827	ROBOFLEX®-recycle 3 x 0,34	3,0	plug straight / socket angled	29,4	-
670828	ROBOFLEX®-recycle 3 x 0,34	5,0	plug straight / socket angled	49,0	-
670829	ROBOFLEX®-recycle 3 x 0,34	10,0	plug straight / socket angled	98,0	-
671333	ROBOFLEX®-recycle 4 x 0,34	1,0	plug straight / socket angled	13,1	-
670838	ROBOFLEX®-recycle 4 x 0,34	1,5	plug straight / socket angled	19,7	-
670839	ROBOFLEX®-recycle 4 x 0,34	3,0	plug straight / socket angled	39,3	-
670840	ROBOFLEX®-recycle 4 x 0,34	5,0	plug straight / socket angled	65,5	-
670841	ROBOFLEX®-recycle 4 x 0,34	10,0	plug straight / socket angled	131,0	-

plug angled / socket angled

Part no.	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	
671334	ROBOFLEX®-recycle 3 x 0,34	1,0	plug angled / socket angled	9,8	-
670830	ROBOFLEX®-recycle 3 x 0,34	1,5	plug angled / socket angled	14,7	-
670831	ROBOFLEX®-recycle 3 x 0,34	3,0	plug angled / socket angled	29,4	-
670832	ROBOFLEX®-recycle 3 x 0,34	5,0	plug angled / socket angled	49,0	-
670833	ROBOFLEX®-recycle 3 x 0,34	10,0	plug angled / socket angled	98,0	-
671335	ROBOFLEX®-recycle 4 x 0,34	1,0	plug angled / socket angled	13,1	-
670842	ROBOFLEX®-recycle 4 x 0,34	1,5	plug angled / socket angled	19,7	-
670843	ROBOFLEX®-recycle 4 x 0,34	3,0	plug angled / socket angled	39,3	-
670844	ROBOFLEX®-recycle 4 x 0,34	5,0	plug angled / socket angled	65,5	-
670845	ROBOFLEX®-recycle 4 x 0,34	10,0	plug angled / socket angled	131,0	-

Dimensions and specifications may be changed without prior notice.

ROBOFLEX®-recycle M8 plug, straight or angled, pre-assembled on one side, 3-pin and 4-pin



Technical data

- **Approval:**
  UL/cUL approved
- **Production**
  in accordance with VDE standards
- **Temperature range:**
  fixed installation -40°C to +105°C
  flexible -30°C to +105°C
- **Nominal voltage:**
  300 V
- **Test voltage:**
  2000 V
- **Minimum bending radius:**
  7.5 x cable diameter (for flexible installation)
- **Traversing speed:**
  max. 3.3 m/s for 5 m of horizontal traverse path length
- **Acceleration:**
  max. 5 m/s²
- **Flexing and torsion cycles:**
  min. 10 million.
- **Torsional stress:**
  +/- 360°/m

Cable structure

- Bare copper litz wire, 42 x 0.10 mm
- Core insulation polyester, black, blue, brown
- Cores stranded in layers
- Sheath, special mix
- weld splatter resistant, dull, low adhesion, flame retardant and self-extinguishing to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1
- Sheath colour: black

Assembly (3-pin)
colour of cores brown, blue, black
AD 4,9 +/-0,2 mm
Assembly (4-pin)
colour of cores brown, blue, black, white
AD 5,2 +/-0,2 mm

Properties

- very good resistance to oil as per DIN VDE 0473-811-404/DIN EN 60811-404
- good resistance to acids, alkalis and solvents
- not cross-linked
- weld splatter resistant
- recyclable
- halogen-free
- Silicone and cadmium-free
- Free of substances harmful to paint adhesion Substances
- very high mechanical load capacity
- abrasion resistant
- wear-resistant
- Highly flexible
- UV-resistant
- ROHS conformant
- CE conformant

Note

IP67
A-coded

Part no.	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	
670660	ROBOFLEX®-recycle 3 x 0,34	1,5	plug, straight	14,7	-
670661	ROBOFLEX®-recycle 3 x 0,34	3,0	plug, straight	29,4	-
670662	ROBOFLEX®-recycle 3 x 0,34	5,0	plug, straight	49,0	-
670663	ROBOFLEX®-recycle 3 x 0,34	10,0	plug, straight	98,0	-
670664	ROBOFLEX®-recycle 3 x 0,34	1,5	plug, angled	14,7	-
670665	ROBOFLEX®-recycle 3 x 0,34	3,0	plug, angled	29,4	-
670666	ROBOFLEX®-recycle 3 x 0,34	5,0	plug, angled	29,4	-
670667	ROBOFLEX®-recycle 3 x 0,34	10,0	plug, angled	98,0	-
670676	ROBOFLEX®-recycle 4 x 0,34	1,5	plug, straight	19,7	-
670677	ROBOFLEX®-recycle 4 x 0,34	3,0	plug, straight	39,3	-
670678	ROBOFLEX®-recycle 4 x 0,34	5,0	plug, straight	65,5	-
670679	ROBOFLEX®-recycle 4 x 0,34	10,0	plug, straight	131,0	-
670680	ROBOFLEX®-recycle 4 x 0,34	1,5	plug, angled	19,7	-
670681	ROBOFLEX®-recycle 4 x 0,34	3,0	plug, angled	39,3	-
670682	ROBOFLEX®-recycle 4 x 0,34	5,0	plug, angled	65,5	-
670683	ROBOFLEX®-recycle 4 x 0,34	10,0	plug, angled	131,0	-

Dimensions and specifications may be changed without prior notice.

ROBOFLEX®-recycle M12 sensor cable screened one end pre-assembled



Technical data

- **Approval:** UL/cUL approved
- **Production** in accordance with VDE standards
- **Temperature range:** fixed installation -40°C to +105°C flexible -30°C to +105°C
- **Nominal voltage:** 300 V
- **Test voltage:** 2000 V
- **Minimum bending radius:** 7.5 x cable diameter (for flexible installation)
- **Traversing speed:** max. 3.3 m/s for 5 m of horizontal traverse path length
- **Acceleration:** max. 5 m/s²
- **Flexing and torsion cycles:** min. 10 million.
- **Torsional stress:** +/- 360°/m

Cable structure

- Bare copper stranded wire, 42 x 0.10 mm
- Cores stranded in layers
- Polyester foil taping
- Screening of tinned copper braid, coverage approx. 85%, D-screen for Robot applications
- Special compound sheath, weld-splatter resistant, recyclable, matt, low-adhesion, flame retardant and self-extinguishing to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1
- Sheath colour: black

Assembly (3-pin)

- Core insulation polyester, black, brown, blue, black
- Outer diameter 5,2 +/-0.2 mm

Assembly (4-pin)

- Core insulation polyester, brown, blue, black, white
- Outer diameter 5.5 +/-0.2 mm

Assembly (5-pin)

- Core insulation polyester, brown, blue, black, white, green
- Outer diameter 6,0+/-0.2 mm

Properties

- very good resistance to oil as per DIN VDE 0473-811-404/DIN EN 60811-404
- good resistance to acids, alkalis and solvents
- not cross-linked
- weld splatter resistant
- recyclable
- halogen-free
- Silicone and cadmium-free
- Free of substances harmful to paint adhesion Substances
- very high mechanical load capacity
- abrasion resistant
- wear-resistant
- Highly flexible
- UV-resistant
- ROHS conformant
- CE conformant

Note

IP67
A-coded

plug straight pre-assembled

Part no.	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	
671893	ROBOFLEX®-recycle 3 x 0,34	1,0	plug, straight	19,6	-
671894	ROBOFLEX®-recycle 3 x 0,34	1,5	plug, straight	29,4	-
671896	ROBOFLEX®-recycle 3 x 0,34	3,0	plug, straight	58,8	-
671897	ROBOFLEX®-recycle 3 x 0,34	5,0	plug, straight	98,0	-
671899	ROBOFLEX®-recycle 3 x 0,34	10,0	plug, straight	196,0	-
671903	ROBOFLEX®-recycle 3 x 0,34	1,0	plug, angled	19,6	-
671904	ROBOFLEX®-recycle 3 x 0,34	1,5	plug, angled	29,4	-
671906	ROBOFLEX®-recycle 3 x 0,34	3,0	plug, angled	58,8	-
671907	ROBOFLEX®-recycle 3 x 0,34	5,0	plug, angled	98,0	-
671909	ROBOFLEX®-recycle 3 x 0,34	10,0	plug, angled	196,0	-
671913	ROBOFLEX®-recycle 4 x 0,34	1,0	plug, straight	24,2	-
671914	ROBOFLEX®-recycle 4 x 0,34	1,5	plug, straight	36,3	-
671916	ROBOFLEX®-recycle 4 x 0,34	3,0	plug, straight	72,6	-
671917	ROBOFLEX®-recycle 4 x 0,34	5,0	plug, straight	121,0	-
671919	ROBOFLEX®-recycle 4 x 0,34	10,0	plug, straight	242,0	-
671923	ROBOFLEX®-recycle 4 x 0,34	1,0	plug, angled	24,2	-
671924	ROBOFLEX®-recycle 4 x 0,34	1,5	plug, angled	36,3	-
671926	ROBOFLEX®-recycle 4 x 0,34	3,0	plug, angled	72,6	-
671927	ROBOFLEX®-recycle 4 x 0,34	5,0	plug, angled	121,0	-
671929	ROBOFLEX®-recycle 4 x 0,34	10,0	plug, angled	242,0	-
671933	ROBOFLEX®-recycle 5 x 0,34	1,0	plug, straight	30,0	-
671934	ROBOFLEX®-recycle 5 x 0,34	1,5	plug, straight	45,0	-
671936	ROBOFLEX®-recycle 5 x 0,34	3,0	plug, straight	90,0	-
671937	ROBOFLEX®-recycle 5 x 0,34	5,0	plug, straight	150,0	-
671939	ROBOFLEX®-recycle 5 x 0,34	10,0	plug, straight	300,0	-
671943	ROBOFLEX®-recycle 5 x 0,34	1,0	plug, angled	30,0	-
671944	ROBOFLEX®-recycle 5 x 0,34	1,5	plug, angled	45,0	-
671946	ROBOFLEX®-recycle 5 x 0,34	3,0	plug, angled	90,0	-
671947	ROBOFLEX®-recycle 5 x 0,34	5,0	plug, angled	150,0	-
671949	ROBOFLEX®-recycle 5 x 0,34	10,0	plug, angled	300,0	-

Continuation ▸

ROBOFLEX®-recycle M12 sensor cable screened one end pre-assembled

socket one end pre-assembled

Part no.	Cable type / cross-sec. mm²		Length m	Plug type	Cop. weight kg / 1000 pcs.	
671873	ROBOFLEX®-recycle	3 x 0,34	1,0	socket straight	19,6	-
671874	ROBOFLEX®-recycle	3 x 0,34	1,5	socket straight	29,4	-
671876	ROBOFLEX®-recycle	3 x 0,34	3,0	socket straight	58,8	-
671877	ROBOFLEX®-recycle	3 x 0,34	5,0	socket straight	98,0	-
671879	ROBOFLEX®-recycle	3 x 0,34	10,0	socket straight	196,0	-
671883	ROBOFLEX®-recycle	3 x 0,34	1,0	socket angled	19,6	-
671884	ROBOFLEX®-recycle	3 x 0,34	1,5	socket angled	29,4	-
671886	ROBOFLEX®-recycle	3 x 0,34	3,0	socket angled	58,8	-
671887	ROBOFLEX®-recycle	3 x 0,34	5,0	socket angled	98,0	-
671889	ROBOFLEX®-recycle	3 x 0,34	10,0	socket angled	196,0	-
671833	ROBOFLEX®-recycle	4 x 0,34	1,0	socket straight	24,2	-
671834	ROBOFLEX®-recycle	4 x 0,34	1,5	socket straight	36,3	-
671836	ROBOFLEX®-recycle	4 x 0,34	3,0	socket straight	72,6	-
671837	ROBOFLEX®-recycle	4 x 0,34	5,0	socket straight	121,0	-
671839	ROBOFLEX®-recycle	4 x 0,34	10,0	socket straight	242,0	-
671843	ROBOFLEX®-recycle	4 x 0,34	1,0	socket angled	24,2	-
671844	ROBOFLEX®-recycle	4 x 0,34	1,5	socket angled	36,3	-
671846	ROBOFLEX®-recycle	4 x 0,34	3,0	socket angled	72,6	-
671847	ROBOFLEX®-recycle	4 x 0,34	5,0	socket angled	121,0	-
671849	ROBOFLEX®-recycle	4 x 0,34	10,0	socket angled	242,0	-
671854	ROBOFLEX®-recycle	5 x 0,34	1,0	socket straight	30,0	-
671850	ROBOFLEX®-recycle	5 x 0,34	1,5	socket straight	45,0	-
671851	ROBOFLEX®-recycle	5 x 0,34	3,0	socket straight	90,0	-
671852	ROBOFLEX®-recycle	5 x 0,34	5,0	socket straight	150,0	-
671853	ROBOFLEX®-recycle	5 x 0,34	10,0	socket straight	300,0	-
671859	ROBOFLEX®-recycle	5 x 0,34	1,0	socket angled	30,0	-
671855	ROBOFLEX®-recycle	5 x 0,34	1,5	socket angled	45,0	-
671856	ROBOFLEX®-recycle	5 x 0,34	3,0	socket angled	90,0	-
671857	ROBOFLEX®-recycle	5 x 0,34	5,0	socket angled	150,0	-
671858	ROBOFLEX®-recycle	5 x 0,34	10,0	socket angled	300,0	-

Dimensions and specifications may be changed without prior notice.

ROBOFLEX®-recycle M12 sensor cable screened both ends pre-assembled



Technical data

- **Approval:** UL/cUL approved
- **Production** in accordance with VDE standards
- **Temperature range:** fixed installation -40°C to +105°C flexible -30°C to +105°C
- **Nominal voltage:** 300 V
- **Test voltage:** 2000 V
- **Minimum bending radius:** 7.5 x cable diameter (for flexible installation)
- **Traversing speed:** max. 3.3 m/s for 5 m of horizontal traverse path length
- **Acceleration:** max. 5 m/s²
- **Flexing and torsion cycles:** min. 10 million.
- **Torsional stress:** +/- 360°/m

Cable structure

- Bare copper stranded wire, 42 x 0.10 mm
- Cores stranded in layers
- Polyester foil taping
- Screening of tinned copper braid, coverage approx. 85%, D-screen for robot applications
- Special compound sheath, weld-splatter resistant, recyclable, matt, low-adhesion, flame retardant and self-extinguishing to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1
- Sheath colour: black

Assembly (3-pin)

- Core insulation polyester, black, brown, blue, black
- Outer diameter 5,2 +/-0.2 mm

Assembly (4-pin)

- Core insulation polyester, brown, blue, black, white
- Outer diameter 5.5 +/-0.2 mm

Assembly (5-pin)

- Core insulation polyester, brown, blue, black, white, green
- Outer diameter 6,0 +/-0.2 mm

Properties

- very good resistance to oil to DIN VDE 0473-811-404/DIN EN 60811-404
- good resistance to acids, alkalis and solvents
- not cross-linked
- weld splatter resistant
- recyclable
- halogen-free
- Silicone and cadmium-free
- Free of substances harmful to paint adhesion Substances
- very high mechanical load capacity
- abrasion resistant
- wear-resistant
- Highly flexible
- UV-resistant
- ROHS conformant
- CE conformant

Note

IP67
A-coded

plug / socket

Part no.	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	
671953	ROBOFLEX®-recycle 3 x 0,34	1,0	plug straight / socket straight	19,6	-
671954	ROBOFLEX®-recycle 3 x 0,34	1,5	plug straight / socket straight	29,4	-
671956	ROBOFLEX®-recycle 3 x 0,34	3,0	plug straight / socket straight	58,8	-
671957	ROBOFLEX®-recycle 3 x 0,34	5,0	plug straight / socket straight	98,0	-
671759	ROBOFLEX®-recycle 3 x 0,34	10,0	plug straight / socket straight	196,0	-
671963	ROBOFLEX®-recycle 4 x 0,34	1,0	plug straight / socket straight	24,2	-
671964	ROBOFLEX®-recycle 4 x 0,34	1,5	plug straight / socket straight	36,3	-
671966	ROBOFLEX®-recycle 4 x 0,34	3,0	plug straight / socket straight	72,6	-
671967	ROBOFLEX®-recycle 4 x 0,34	5,0	plug straight / socket straight	121,0	-
671969	ROBOFLEX®-recycle 4 x 0,34	10,0	plug straight / socket straight	242,0	-
671973	ROBOFLEX®-recycle 5 x 0,34	1,0	plug straight / socket straight	30,0	-
671974	ROBOFLEX®-recycle 5 x 0,34	1,5	plug straight / socket straight	45,0	-
671976	ROBOFLEX®-recycle 5 x 0,34	3,0	plug straight / socket straight	90,0	-
671977	ROBOFLEX®-recycle 5 x 0,34	5,0	plug straight / socket straight	150,0	-
671979	ROBOFLEX®-recycle 5 x 0,34	10,0	plug straight / socket straight	300,0	-
671983	ROBOFLEX®-recycle 3 x 0,34	1,0	plug straight / socket angled	19,6	-
671984	ROBOFLEX®-recycle 3 x 0,34	1,5	plug straight / socket angled	29,4	-
671986	ROBOFLEX®-recycle 3 x 0,34	3,0	plug straight / socket angled	58,8	-
671988	ROBOFLEX®-recycle 3 x 0,34	5,0	plug straight / socket angled	98,0	-
671989	ROBOFLEX®-recycle 3 x 0,34	10,0	plug straight / socket angled	196,0	-
671993	ROBOFLEX®-recycle 4 x 0,34	1,0	plug straight / socket angled	24,2	-
671994	ROBOFLEX®-recycle 4 x 0,34	1,5	plug straight / socket angled	36,3	-
671996	ROBOFLEX®-recycle 4 x 0,34	3,0	plug straight / socket angled	72,6	-
671997	ROBOFLEX®-recycle 4 x 0,34	5,0	plug straight / socket angled	121,0	-
671999	ROBOFLEX®-recycle 4 x 0,34	10,0	plug straight / socket angled	242,0	-
672003	ROBOFLEX®-recycle 5 x 0,34	1,0	plug straight / socket angled	30,0	-
672004	ROBOFLEX®-recycle 5 x 0,34	1,5	plug straight / socket angled	45,0	-
672006	ROBOFLEX®-recycle 5 x 0,34	3,0	plug straight / socket angled	90,0	-
672007	ROBOFLEX®-recycle 5 x 0,34	5,0	plug straight / socket angled	150,0	-
672009	ROBOFLEX®-recycle 5 x 0,34	10,0	plug straight / socket angled	300,0	-
672013	ROBOFLEX®-recycle 3 x 0,34	1,0	plug angled / socket angled	19,6	-
672014	ROBOFLEX®-recycle 3 x 0,34	1,5	plug angled / socket angled	29,4	-
672016	ROBOFLEX®-recycle 3 x 0,34	3,0	plug angled / socket angled	58,8	-
672017	ROBOFLEX®-recycle 3 x 0,34	5,0	plug angled / socket angled	98,0	-
672019	ROBOFLEX®-recycle 3 x 0,34	10,0	plug angled / socket angled	196,0	-

Continuation ▸

ROBOFLEX®-recycle M12 sensor cable screened both ends pre-assembled

plug / socket

Part no.	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	
672023	ROBOFLEX®-recycle 4 x 0,34	1,0	plug angled / socket angled	24,2	-
672024	ROBOFLEX®-recycle 4 x 0,34	1,5	plug angled / socket angled	36,3	-
672026	ROBOFLEX®-recycle 4 x 0,34	3,0	plug angled / socket angled	72,6	-
672027	ROBOFLEX®-recycle 4 x 0,34	5,0	plug angled / socket angled	121,0	-
672029	ROBOFLEX®-recycle 4 x 0,34	10,0	plug angled / socket angled	242,0	-
672033	ROBOFLEX®-recycle 5 x 0,34	1,0	plug angled / socket angled	30,0	-
672034	ROBOFLEX®-recycle 5 x 0,34	1,5	plug angled / socket angled	45,0	-
672036	ROBOFLEX®-recycle 5 x 0,34	3,0	plug angled / socket angled	90,0	-
672037	ROBOFLEX®-recycle 5 x 0,34	5,0	plug angled / socket angled	150,0	-
672039	ROBOFLEX®-recycle 5 x 0,34	10,0	plug angled / socket angled	300,0	-

Dimensions and specifications may be changed without prior notice.

ROBOFLEX®-recycle Twin cables M12 to M12



RoHS

Technical data

- **Approval:**
  UL/cUL approved
- **Production**
  in accordance with VDE standards
- **Temperature range:**
  fixed installation -40°C to +105°C
  flexible -30°C to +105°C
- **Nominal voltage:**
  300 V
- **Test voltage:**
  2000 V
- **Minimum bending radius:**
  7.5 x cable diameter
  (for flexible installation)
- **Traversing speed:**
  max. 3.3 m/s for 5 m of horizontal traverse path length
- **Acceleration:**
  max. 5 m/s²
- **Flexing and torsion cycles:**
  min. 10 million.
- **Torsional stress:**
  +/- 360°/m

Cable structure

Assembly (3-pin)

- Bare copper litz wire, 42 x 0.10 mm
- Core insulation polyester, black, blue, brown
- Cores stranded in layers
- Sheath, special mix
- weld splatter resistant, dull, low adhesion, flame retardant and self-extinguishing to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1
- Sheath colour: black
- Outer diameter 4.9 +/-0.2 mm

Assembly (4-pin)

- Bare copper litz wire, 42 x 0.10 mm
- Core insulation polyester, black, brown, white, blue
- Cores stranded in layers
- Sheath, special mix
- weld splatter resistant, dull, low adhesion, flame retardant and self-extinguishing to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1
- Sheath colour: black
- Outer diameter 5,2 +/-0.2 mm

Properties

- very good resistance to oil to DIN VDE 0473-811-404/DIN EN 60811-404
- good resistance to acids, alkalis and solvents
- not cross-linked
- weld splatter resistant
- recyclable
- halogen-free
- Silicone and cadmium-free
- Free of substances harmful to paint adhesion Substances
- very high mechanical load capacity
- abrasion resistant
- wear-resistant
- Highly flexible
- UV-resistant
- ROHS conformant
- CE conformant

Note

* Twin cables with sensor cable ROBOFLEX® recycle M12 to M8 and other configurations and lengths - available on request.

Dimensions and specifications may be changed without prior notice.

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ROBOFLEX®-recycle Twin cables M12 to M12



Technical data

- **Approval:**
  UL/cUL approved
- **Production**
  in accordance with VDE standards
- **Temperature range:**
  fixed installation -40°C to +105°C
  flexible -30°C to +105°C
- **Nominal voltage:**
  300 V
- **Test voltage:**
  2000 V
- **Minimum bending radius:**
  7.5 x cable diameter (for flexible installation)
- **Traversing speed:**
  max. 3.3 m/s for 5 m of horizontal traverse path length
- **Acceleration:**
  max. 5 m/s²
- **Flexing and torsion cycles:**
  min. 10 million.
- **Torsional stress:**
  +/- 360°/m

Cable structure

Assembly (3-pin)

- Bare copper litz wire, 42 x 0.10 mm
- Core insulation polyester, black, blue, brown
- Cores stranded in layers
- Sheath, special mix
- weld splatter resistant, dull, low adhesion, flame retardant and self-extinguishing to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1
- Sheath colour: black
- Outer diameter 4.9 +/-0.2 mm

Assembly (4-pin)

- Bare copper litz wire, 42 x 0.10 mm
- Core insulation polyester, black, brown, white, blue
- Cores stranded in layers
- Sheath, special mix
- weld splatter resistant, dull, low adhesion, flame retardant and self-extinguishing to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1
- Sheath colour: black
- Outer diameter 5,2 +/-0.2 mm

Properties

- very good resistance to oil to DIN VDE 0473-811-404/DIN EN 60811-404
- good resistance to acids, alkalis and solvents
- not cross-linked
- weld splatter resistant
- recyclable
- halogen-free
- Silicone and cadmium-free
- Free of substances harmful to paint adhesion Substances
- very high mechanical load capacity
- abrasion resistant
- wear-resistant
- Highly flexible
- UV-resistant
- ROHS conformant
- CE conformant

Note

* Design for the Standard
2 LEDs in the colours: yellow, green;
3 LEDs in the colours: white, yellow, green - available upon request.
** Twin cables with sensor cable ROBOFLEX® recycle M12 to M8 and other configurations and lengths - available on request.

Dimensions and specifications may be changed without prior notice.





Extensions

PVC connecting cables

Rubber connecting cables

YELLOWFLEX

PUR connecting cables

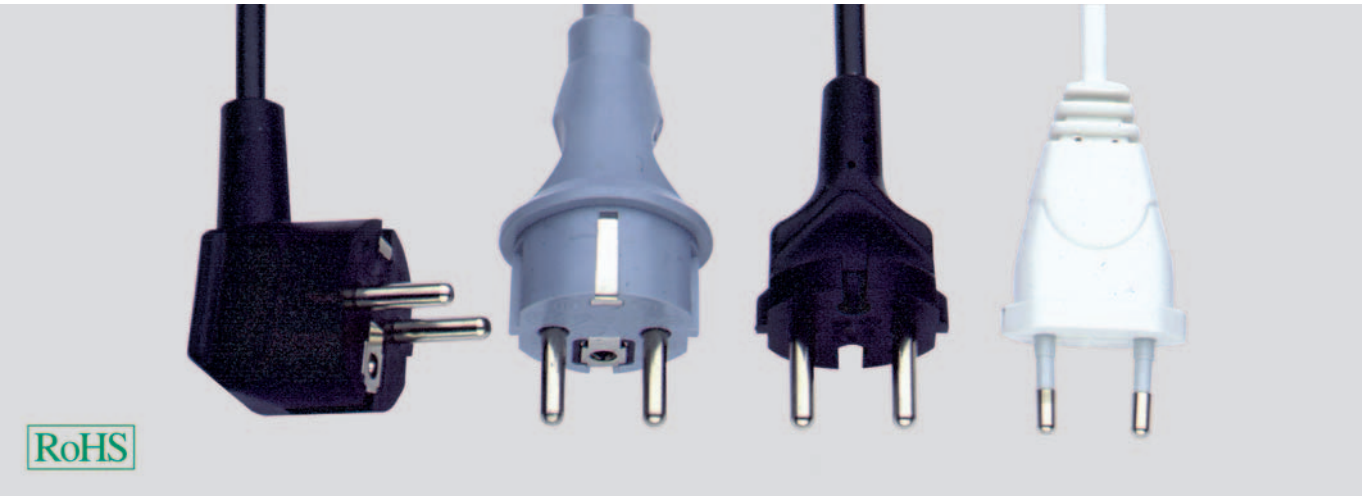
Supply cables

CONNECTING CABLES & EXTENSIONS

Designation	Properties	Approvals	Page
PVC Connecting cables			900
Rubber Connecting cables			901
YELLOWFLEX Connecting cables	meter marking	EAC	902
PUR Connecting cables	meter marking		903
Extensions/supply cables	CEE extensions, cold equipment cables, PVC extensions		904
Front connector cables for Simatic® S7			905

U

PVC connecting cables



Technical data

- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -40°C to +70°C
- **Nominal voltage**
  H03VV-F: U_0/U 300/300 V
  H05VV-F: U_0/U 300/500 V
- **Test voltage** 2000 V
- **Assembly**
  - End 1: Plug
  - End 2: 25 respectively 30 mm stripped with wire end ferrule

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of PVC
- Core identification to DIN VDE 0293-308
- Cores stranded in layers
- GN-YE conductor, 3 cores and above
- Outer sheath of PVC
- Sheath colour see table below

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- On request also with international approval.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

H03VV-F

This cable is highly suitable as a hand tool connection for lightweight applications. It is often used as a connecting cable for household appliances.

H05VV-F

This cable is highly suitable as a hand tool connection for medium-weight applications. It can also be used in wet rooms. As a connecting cable: for machine installation.

Part no. black	white	grey	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	AWG-No.
84412	84416		H03VVH2-F 2 x 0,75	2,0	Euro plug	28,8	19
84413	84417		H03VVH2-F 2 x 0,75	3,0	Euro plug	43,2	19
84420	84421		H03VVH2-F 2 x 0,75	5,0	Euro plug	72,0	19
84414	84418		H03VV-F 2 x 0,75	2,0	Euro plug	28,8	19
84415	84419		H03VV-F 2 x 0,75	3,0	Euro plug	43,2	19
84422	84423		H03VV-F 2 x 0,75	5,0	Euro plug	72,0	19
84424	84425	84428	H03VV-F 2 x 0,75	2,0	Central contour connector	28,8	19
84426	84427	84429	H03VV-F 2 x 0,75	3,0	Central contour connector	43,2	19
86870	84430	84431	H03VV-F 2 x 0,75	5,0	Central contour connector	72,0	19
87127	87128	84432	H05VV-F 2 x 1,0	2,0	Central contour connector	38,0	18
86765	87130	84433	H05VV-F 2 x 1,0	3,0	Central contour connector	57,0	18
86867	84434	84435	H05VV-F 2 x 1,0	5,0	Central contour connector	95,0	18
86764	87575	84436	H03VV-F 3 G 0,75	2,0	PROTECTED PLUG, straight	43,2	19
84437	84438	84439	H03VV-F 3 G 0,75	3,0	PROTECTED PLUG, straight	64,8	19
84440	84441	84442	H03VV-F 3 G 0,75	5,0	PROTECTED PLUG, straight	108,0	19
84400	84406	87725	H03VV-F 3 G 0,75	2,0	PROTECTED PLUG, angled	43,2	19
84401	84407	84446	H03VV-F 3 G 0,75	3,0	PROTECTED PLUG, angled	64,8	19
87748	84447	87277	H03VV-F 3 G 0,75	5,0	PROTECTED PLUG, angled	108,0	19
87137	87139	84451	H05VV-F 3 G 1,0	2,0	PROTECTED PLUG, straight	58,0	18
87138	87140	84452	H05VV-F 3 G 1,0	3,0	PROTECTED PLUG, straight	87,0	18
84453	84454	84455	H05VV-F 3 G 1,0	5,0	PROTECTED PLUG, straight	145,0	18
84402	84408	84459	H05VV-F 3 G 1,0	2,0	PROTECTED PLUG, angled	58,0	18
84403	84409	87410	H05VV-F 3 G 1,0	3,0	PROTECTED PLUG, angled	87,0	18
87074	87141	84460	H05VV-F 3 G 1,0	5,0	PROTECTED PLUG, angled	145,0	18
84464	84465	84466	H05VV-F 3 G 1,5	2,0	PROTECTED PLUG, straight	86,0	16
84467	84468	84469	H05VV-F 3 G 1,5	3,0	PROTECTED PLUG, straight	129,0	16
84470	84471	84472	H05VV-F 3 G 1,5	5,0	PROTECTED PLUG, straight	215,0	16
84404	84410	84475	H05VV-F 3 G 1,5	2,0	PROTECTED PLUG, angled	86,0	16
84405	84411	87503	H05VV-F 3 G 1,5	3,0	PROTECTED PLUG, angled	129,0	16
87142	87143	84476	H05VV-F 3 G 1,5	5,0	PROTECTED PLUG, angled	215,0	16

Dimensions and specifications may be changed without prior notice.

Rubber connecting cables



Technical data

- **Temperature range**
  flexing -30°C to +60°C
- **Nominal voltage**
  H05RR-F / H05RN-F: U_0/U 300/500 V
  H07RN-F: U_0/U 450/750 V
- **Test voltage**
  H05RR-F / H05RN-F: 2000 V
  H07RN-F: 2500 V
- **Assembly**
  - End 1: Plug
  - End 2: 25 respectively 30 mm stripped with wire end ferrule

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insualtion of rubber
- Cores identification to DIN VDE 0293-308
- Cores stranded in layers
- GN-YE conductor, 3 cores and above
- Outer sheath of rubber
- Sheath colour black

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- On request also with international approval.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

H05RR-F
Lightweight rubber-sheathed cable for use as a hand tool connection and lightweight workshop tools for light to medium-weight applications in dry and wet rooms.

H05RN-F
Medium-weight rubber-sheathed cable for use as a hand tool connection and lightweight workshop equipment for light to medium-weight applications in dry rooms, wet rooms outdoors and in industrial water.

H07RN-F
Heavyweight rubber-sheathed cable for use on heavy equipment and tools (agricultural, construction industry). For heavyweight applications in dry rooms, wet rooms, outdoors and in industrial water.

Part no. black	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	AWG-No.
84481	H05RR-F 2 x 0,75	3,0	Central contour connector	43,2	18
84482	H05RR-F 2 x 0,75	5,0	Central contour connector	72,0	18
84483	H05RR-F 2 x 0,75	10,0	Central contour connector	144,0	18
87738	H05RR-F 2 x 1,0	3,0	Central contour connector	57,6	17
86961	H05RR-F 2 x 1,0	5,0	Central contour connector	96,0	17
84485	H05RR-F 2 x 1,0	10,0	Central contour connector	192,0	17
86960	H05RR-F 2 x 1,5	3,0	Central contour connector	86,4	16
87406	H05RR-F 2 x 1,5	5,0	Central contour connector	144,0	16
84487	H05RR-F 2 x 1,5	10,0	Central contour connector	288,0	16
87690	H05RR-F 3 G 0,75	3,0	PROTECTED PLUG, straight	64,8	18
84489	H05RR-F 3 G 0,75	5,0	PROTECTED PLUG, straight	108,0	18
84490	H05RR-F 3 G 0,75	10,0	PROTECTED PLUG, straight	216,0	18
84492	H05RR-F 3 G 0,75	3,0	PROTECTED PLUG, angled	64,8	18
84493	H05RR-F 3 G 0,75	5,0	PROTECTED PLUG, angled	108,0	18
84494	H05RR-F 3 G 0,75	10,0	PROTECTED PLUG, angled	216,0	18
86740	H07RN-F 3 G 1,0	3,0	PROTECTED PLUG, straight	86,4	17
87145	H07RN-F 3 G 1,0	5,0	PROTECTED PLUG, straight	144,0	17
87604	H07RN-F 3 G 1,0	10,0	PROTECTED PLUG, straight	288,0	17
84496	H07RN-F 3 G 1,0	3,0	PROTECTED PLUG, angled	86,4	17
84497	H07RN-F 3 G 1,0	5,0	PROTECTED PLUG, angled	144,0	17
84498	H07RN-F 3 G 1,0	10,0	PROTECTED PLUG, angled	288,0	17
86741	H07RN-F 3 G 1,5	3,0	PROTECTED PLUG, straight	129,6	16
87084	H07RN-F 3 G 1,5	5,0	PROTECTED PLUG, straight	216,0	16
84499	H07RN-F 3 G 1,5	10,0	PROTECTED PLUG, straight	432,0	16
84653	H07RN-F 3 G 1,5	3,0	PROTECTED PLUG, angled	129,6	16
84654	H07RN-F 3 G 1,5	5,0	PROTECTED PLUG, angled	216,0	16
84655	H07RN-F 3 G 1,5	10,0	PROTECTED PLUG, angled	432,0	16

Dimensions and specifications may be changed without prior notice.

YELLOWFLEX - connecting cable meter marking



Technical data

- Rubber sheathed cable adapted to DIN VDE 0285-525-2-21 / DIN EN 50525-2-21
- **Temperature range**
  flexing -25°C to +60°C
  fixed installation -30°C to +60°C
- Permissible **operating temperature** at conductor +60°C
- **Nominal voltage** U_0/U 450/750 V with protected fixed installation U_0/U 600/1000 V
- Highest permissible **operating voltage** in three-phase and one-phase a.c. systems U_0/U 476/825 V in direct current system U_0/U 619/1238 V
- **Test voltage** 2500 V
- **Minimum bending radius**
  for fixed installation 4x cable Ø
  for guiding over roller 7,5x cable Ø
  during winding on drums 5x cable Ø
- **Assembly**
  - End 1: Plug
  - End 2: 30 mm stripped with wire end ferrule

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of rubber, EI4 to DIN VDE 0207-363-1 / DIN EN 50363-1
- Core identification to DIN VDE 0293-308
  - up to 5 cores coloured
  - from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Outer sheath of special EM2 to DIN VDE 0207-363-2-1/DIN EN 50363-2-1
- Sheath colour yellow (RAL 1021)
- with meter marking

Properties

- Increased stability
- Tear-resistant

Resistant to

- Atmospheric influences

Largely resistant to

- Oils and fats

Tests

- **Behaviour in fire**
  to DIN VDE 0482-332-1-2
  DIN EN 60332-2-1, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

Note

- G = with green-yellow conductor
  x = without green-yellow conductor.
- individual marking

Application

These robust rubber sheathed cables can be used where high demands are placed flexibility and mechanical stress. For application in dry, moist and wet rooms and in open air, in steel works and rolling mills in heating and air-conditioning systems, in the bottling industry, in machinery and plant construction, in the chemical industry as well as for the professional and the hobby enthusiast. The choice of yellow as the sheath colour ensures additional safety. Can be used in potentially explosive areas acc. to DIN VDE 0165.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no. orange	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	AWG-No.
650950	YELLOWFLEX 2 x 1,0	2,0	Central contour connector	38,0	17
650951	YELLOWFLEX 2 x 1,0	3,0	Central contour connector	57,0	17
650952	YELLOWFLEX 2 x 1,0	5,0	Central contour connector	95,0	17
650953	YELLOWFLEX 2 x 1,0	10,0	Central contour connector	190,0	17
650958	YELLOWFLEX 2 x 1,5	2,0	Central contour connector	58,0	16
650959	YELLOWFLEX 2 x 1,5	3,0	Central contour connector	87,0	16
650960	YELLOWFLEX 2 x 1,5	5,0	Central contour connector	145,0	16
650961	YELLOWFLEX 2 x 1,5	10,0	Central contour connector	290,0	16
650954	YELLOWFLEX 3 G 1,0	2,0	PROTECTED PLUG, straight	58,0	17
650955	YELLOWFLEX 3 G 1,0	3,0	PROTECTED PLUG, straight	87,0	17
650956	YELLOWFLEX 3 G 1,0	5,0	PROTECTED PLUG, straight	145,0	17
650957	YELLOWFLEX 3 G 1,0	10,0	PROTECTED PLUG, straight	290,0	17
650962	YELLOWFLEX 3 G 1,5	2,0	PROTECTED PLUG, straight	86,0	16
650963	YELLOWFLEX 3 G 1,5	3,0	PROTECTED PLUG, straight	129,0	16
650964	YELLOWFLEX 3 G 1,5	5,0	PROTECTED PLUG, straight	215,0	16
650965	YELLOWFLEX 3 G 1,5	10,0	PROTECTED PLUG, straight	430,0	16

Dimensions and specifications may be changed without prior notice.

PUR connecting cables, orange



Technical data

- **Temperature range**
  -40°C to +80°C
- **Nominal voltage**
  H05BQ-F: U_0/U 300/500 V
  H07BQ-F: U_0/U 450/750 V
- **Test voltage**
  H05BQ-F: 2000 V
  H07BQ-F: 2500 V
- **Assembly**
  - End 1: Plug
  - End 2: 30 mm stripped with wire end ferrule

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insualtion of rubber
- Core identification to DIN VDE 0293-308
- Cores stranded in layers
- GN-YE conductor, 3 cores and above
- Outer sheath of PUR
- Sheath colour orange

Note

- G = with green-yellow conductor
  x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

These cables can be used for medium mechanical loads in dry, damp or wet environments, e. g. for connecting agricultural and commercial equipment and heaters provided there is no danger of contact with the hot parts or by radiation of heat. These robust and flexible cables are used for electrical tools such as drills and hand-held circular saws, as well as for portable motors and machinery in agriculture, at building sites, docks and refrigeration plants.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no. orange	Cable type / cross-sec. mm²	Length m	Plug type	Cop. weight kg / 1000 pcs.	AWG-No.
84656	H05BQ-F 2 x 0,75	2,0	Central contour connector	28,8	18
87802	H05BQ-F 2 x 0,75	3,0	Central contour connector	43,2	18
84657	H05BQ-F 2 x 0,75	5,0	Central contour connector	72,0	18
84658	H05BQ-F 2 x 0,75	10,0	Central contour connector	144,0	18
84663	H05BQ-F 2 x 1,0	2,0	Central contour connector	38,4	17
84664	H05BQ-F 2 x 1,0	3,0	Central contour connector	57,6	17
84665	H05BQ-F 2 x 1,0	5,0	Central contour connector	96,0	17
84666	H05BQ-F 2 x 1,0	10,0	Central contour connector	192,0	17
84669	H07BQ-F 2 x 1,5	2,0	Central contour connector	58,0	16
84670	H07BQ-F 2 x 1,5	3,0	Central contour connector	87,0	16
86989	H07BQ-F 2 x 1,5	5,0	Central contour connector	145,0	16
84671	H07BQ-F 2 x 1,5	10,0	Central contour connector	290,0	16
84659	H05BQ-F 3 G 0,75	2,0	PROTECTED PLUG, straight	43,2	18
84660	H05BQ-F 3 G 0,75	3,0	PROTECTED PLUG, straight	64,8	18
84661	H05BQ-F 3 G 0,75	5,0	PROTECTED PLUG, straight	108,0	18
84662	H05BQ-F 3 G 0,75	10,0	PROTECTED PLUG, straight	216,0	18
84667	H05BQ-F 3 G 1,0	2,0	PROTECTED PLUG, straight	58,0	17
86775	H05BQ-F 3 G 1,0	3,0	PROTECTED PLUG, straight	87,0	17
86774	H05BQ-F 3 G 1,0	5,0	PROTECTED PLUG, straight	145,0	17
84668	H05BQ-F 3 G 1,0	10,0	PROTECTED PLUG, straight	290,0	17
84672	H07BQ-F 3 G 1,5	2,0	PROTECTED PLUG, straight	86,0	16
86782	H07BQ-F 3 G 1,5	3,0	PROTECTED PLUG, straight	129,0	16
87548	H07BQ-F 3 G 1,5	5,0	PROTECTED PLUG, straight	215,0	16
84673	H07BQ-F 3 G 1,5	10,0	PROTECTED PLUG, straight	430,0	16

Dimensions and specifications may be changed without prior notice.

Extensions / Supply cables CEE-Extensions / Cold equipment / PVC-Extensions



CEE-Extensions

Part no.	Cable type / cross-sec. mm²	Length m	Cable colour	Plug 1	Plug 2	AWG-No.
84688	H07RN-F 5 G 1,5	5,0	black	CEE connector 16A	CEE coupling 16A	16
84689	H07RN-F 5 G 1,5	10,0	black	CEE connector 16A	CEE coupling 16A	16
87164	H07RN-F 5 G 1,5	25,0	black	CEE connector 16A	CEE coupling 16A	16
84690	H07RN-F 5 G 2,5	5,0	black	CEE connector 32A	CEE coupling 32A	14
84691	H07RN-F 5 G 2,5	10,0	black	CEE connector 32A	CEE coupling 32A	14
87416	H07RN-F 5 G 2,5	25,0	black	CEE connector 32A	CEE coupling 32A	14

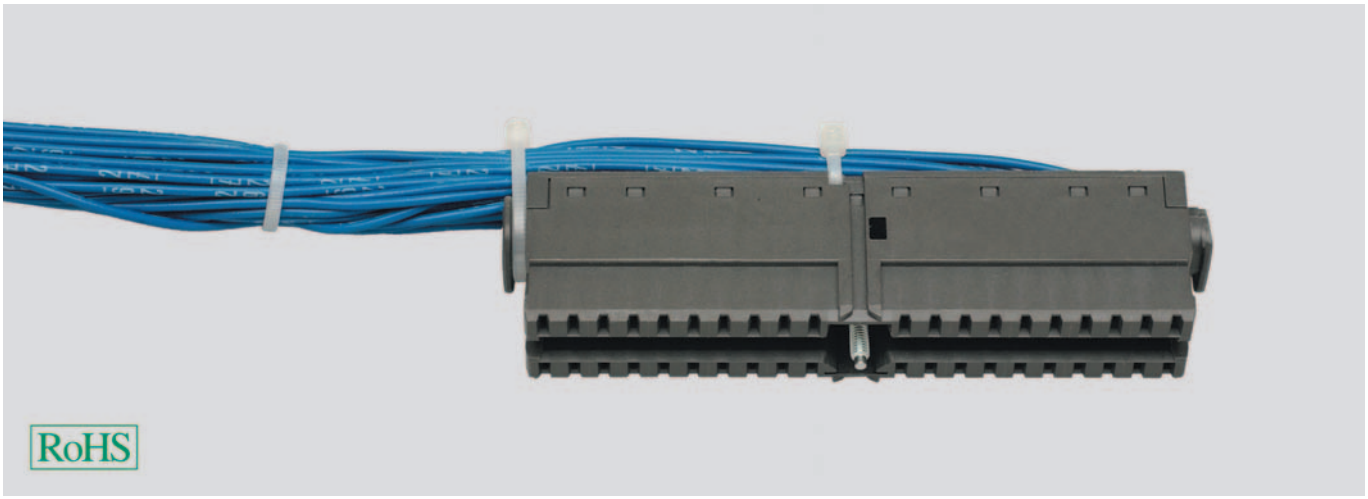


Part no.	Cable type / cross-sec. mm²	Length m	Cable colour	Plug 1	Plug 2	AWG-No.
87476	H05VV-F 3 G 0,75	2,0	black	PROTECTED PLUG, angled	Cold device socket	19
86762	H05VV-F 3 G 0,75	2,0	grey	PROTECTED PLUG, angled	Cold device socket	19
84674	H05VV-F 3 G 0,75	3,0	black	PROTECTED PLUG, angled	Cold device socket	19
87845	H05VV-F 3 G 0,75	3,0	grey	PROTECTED PLUG, angled	Cold device socket	19
84675	H05VV-F 3 G 1,0	2,0	grey	PROTECTED PLUG, angled	Cold device socket	17
87196	H05VV-F 3 G 1,0	2,0	black	PROTECTED PLUG, angled	Cold device socket	17
84676	H05VV-F 3 G 1,0	3,0	grey	PROTECTED PLUG, angled	Cold device socket	17
87549	H05VV-F 3 G 1,0	3,0	black	PROTECTED PLUG, angled	Cold device socket	17

Part no.	Cable type / cross-sec. mm²	Length m	Cable colour	Plug 1	Plug 2	AWG-No.
87445	H05VV-F 3 G 1,5	2,0	white	PROTECTED PLUG, straight	PROTECTED PLUG coupling	16
87919	H05VV-F 3 G 1,5	3,0	white	PROTECTED PLUG, straight	PROTECTED PLUG coupling	16
84178	H05VV-F 3 G 1,5	5,0	white	PROTECTED PLUG, straight	PROTECTED PLUG coupling	16

Dimensions and specifications may be changed without prior notice.

Front connecting cables for Simatic® S7



Cable structure

- Cable cores 0,75 mm² in dark blue (RAL 5010)
- Printed characters in white
- Numbers acc. to allocation in the plug
- Original front connector can be completely allocated
- Cores cut flush
- Customised pre-assembly possible

Properties

Advantages

- Tremendous time savings
- Quick wiring
- Considerably easier troubleshooting
- Customised pre-assembled cable

Note

- Other lengths, dimensions, colours and specials conditions possible on request

Application

These pre-assembled cables with pre-wired front connectors are highly suitable for Simatic® S7 programmable logic controllers (PLC).
As opposed to past days when you had to cut to length, strip, crimp, screw in and mark, pre-wired front connectors offer the customer a host of advantages for the Simatic® S7 system.

Part no.	Connection type	Length m	Cop. weight kg / 1000 pcs.	AWG-No.
Front connector, 20-pole				
650091	Screw fitting version	2,0	324,0	19
650200	Screw fitting version	3,0	468,0	19
650201	Screw fitting version	5,0	756,0	19
84867	Spring version	2,0	324,0	19
84868	Spring version	3,0	468,0	19
84869	Spring version	5,0	756,0	19
650202	Crimp version	2,0	324,0	19
650203	Crimp version	3,0	468,0	19
650088	Crimp version	5,0	756,0	19
Front connector, 40-pole				
650092	Screw fitting version	2,0	648,0	19
650204	Screw fitting version	3,0	936,0	19
650205	Screw fitting version	5,0	1512,0	19
84870	Spring version	2,0	648,0	19
84871	Spring version	3,0	936,0	19
84872	Spring version	5,0	1512,0	19
650206	Crimp version	2,0	648,0	19
650207	Crimp version	3,0	936,0	19
650086	Crimp version	5,0	1512,0	18
Front connector, 48-pole				
650208	Screw fitting version	2,0	746,0	19
650209	Screw fitting version	3,0	1077,0	19
650210	Screw fitting version	5,0	1739,0	19
650211	Spring version	2,0	746,0	19
650212	Spring version	3,0	1077,0	19
650213	Spring version	5,0	1739,0	19
84873	Crimp version	2,0	746,0	19
84874	Crimp version	3,0	1077,0	19
84875	Crimp version	5,0	1739,0	19

Dimensions and specifications may be changed without prior notice.

PUR electronic spiral cables screened

PUR spiral cables

PVC spiral cables

PUR electronic spiral cables unscreened

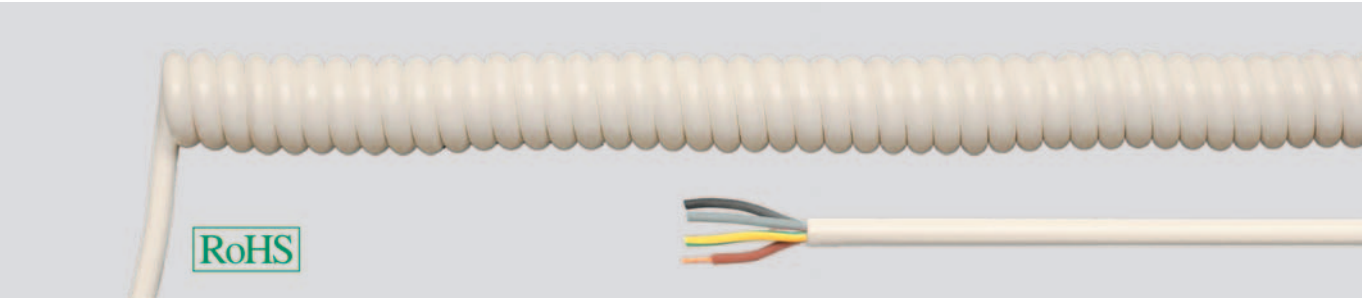
PUR spiral cables orange



SPIRAL CABLES

Designation	Page
PVC spiral cable	908
PUR spiral cable, black	909
PUR spiral cable, orange	911
PUR electronics spiral cable, unscreened	913
PUR electronics spiral cable, screened	915

PVC spiral cables



Technical data

- **Temperature range**
  flexing -5°C to +70°C
- **Nominal voltage**
  H03VV-F: U_0/U 300/300 V
  H05VV-F: U_0/U 300/500 V
- **Test voltage** 2000 V
- **Expansion ratio** 1:3
- **straight ends**
  in each case 200 mm

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of PVC
- Core identification to DIN VDE 0293-308
- GN-YE conductor, 3 cores and above
- Cores stranded in layers
- Outer sheath of PVC
- Sheath colour see table below

Note

- On request closed spiral lengths up to max. 5000 mm possible.
- As well in axial construction
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

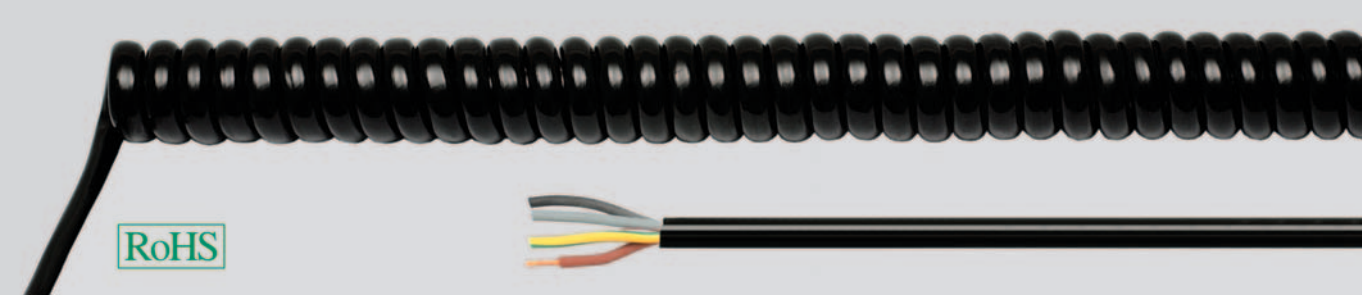
Application

- Lighting industry
- Data installations
- Shops
- Telecommunication

Part no. black	white	Cross-section mm²	Spiral length unexpanded (WL in mm)	Cable Ø approx. mm	Spiral-outer Ø approx. mm	Cop. weight kg / 1000 pcs.	AWG-No.
84500	84700	2 x 0,75	200	6,2	21,4	34,6	18
84502	84702	2 x 0,75	400	6,2	21,4	63,4	18
84504	84704	2 x 0,75	600	6,2	21,4	92,2	18
84506	84706	2 x 0,75	800	6,2	21,4	121,0	18
84508	84708	2 x 0,75	1000	6,2	21,4	149,8	18
84509	84709	2 x 0,75	1200	6,2	21,4	178,6	18
84510	84710	2 x 0,75	1400	6,2	21,4	207,4	18
84517	84717	3 G 0,75	200	6,6	22,2	51,9	18
84519	84719	3 G 0,75	400	6,6	22,2	95,1	18
84521	84721	3 G 0,75	600	6,6	22,2	138,3	18
84523	84723	3 G 0,75	800	6,6	22,2	181,5	18
84525	84725	3 G 0,75	1000	6,6	22,2	224,7	18
84526	84726	3 G 0,75	1200	6,6	22,2	267,8	18
84527	84727	3 G 0,75	1400	6,6	22,2	311,1	18
84534	84734	2 x 1,0	200	6,6	22,2	43,2	17
84536	84736	2 x 1,0	400	6,6	22,2	65,3	17
84538	84738	2 x 1,0	600	6,6	22,2	122,8	17
84540	84740	2 x 1,0	800	6,6	22,2	161,3	17
84542	84742	2 x 1,0	1000	6,6	22,2	199,7	17
84543	84743	2 x 1,0	1200	6,6	22,2	238,1	17
84544	84744	2 x 1,0	1400	6,6	22,2	276,5	17
84585	84785	2 x 1,5	200	7,7	26,4	69,6	16
84587	84787	2 x 1,5	400	7,7	26,4	127,0	16
84589	84789	2 x 1,5	600	7,7	26,4	185,6	16
84591	84791	2 x 1,5	800	7,7	26,4	243,6	16
84593	84793	2 x 1,5	1000	7,7	26,4	301,6	16
84594	84794	2 x 1,5	1200	7,7	26,4	359,6	16
84595	84795	2 x 1,5	1400	7,7	26,4	417,6	16
84602	84802	3 G 1,5	200	8,5	29,0	103,2	16
84604	84804	3 G 1,5	400	8,5	29,0	189,2	16
84606	84806	3 G 1,5	600	8,5	29,0	275,2	16
84608	84808	3 G 1,5	800	8,5	29,0	361,2	16
84610	84810	3 G 1,5	1000	8,5	29,0	447,2	16
84611	84811	3 G 1,5	1200	8,5	29,0	533,2	16
84612	84812	3 G 1,5	1400	8,5	29,0	619,2	16

Dimensions and specifications may be changed without prior notice.

PUR spiral cables black



Technical data

- **Temperature range**
  -25°C to +70°C
- **Nominal voltage**
  H05BQ-F: U_0/U 300/500 V
  H07BQ-F: U_0/U 450/750 V
- **Test voltage**
  H05BQ-F: 2000 V
  H07BQ-F: 2500 V
- **Expansion ratio** 1:4
- **straight ends**
  in each case 200 mm

Application

- Machine Construction
- Electrical Tools
- Building Industry
- Handling Equipment
- Entertainment Equipment
- Medical devices
- Measurement instruments
- Rolling doors

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of rubber
- Core identification to DIN VDE 0293-308
- GN-YE conductor, 3 cores and above
- Outer sheath of PUR
- Sheath colour black

Note

- On request closed spiral lengths up to max. 5000 mm possible.
- As well in axial constructio
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Part no. black	Cross-section mm²	Spiral length unexpanded (WL in mm)	Cable Ø approx. mm	Spiral-outer Ø approx. mm	Cop. weight kg / 1000 pcs.	AWG-No.
86303	2 x 0,75	500	6,5	23,0	77,8	18
86306	2 x 0,75	1000	6,5	23,0	149,8	18
86308	2 x 0,75	1400	6,5	23,0	207,4	18
86311	2 x 0,75	2000	6,5	23,0	293,8	18
86315	2 x 0,75	3000	6,5	23,0	437,8	18
86319	3 G 0,75	500	7,1	25,2	116,7	18
86322	3 G 0,75	1000	7,1	25,2	224,7	18
86324	3 G 0,75	1400	7,1	25,2	311,1	18
86327	3 G 0,75	2000	7,1	25,2	440,6	18
86331	3 G 0,75	3000	7,1	25,2	656,6	18
86335	4 G 0,75	500	7,9	28,8	156,6	18
86338	4 G 0,75	1000	7,9	28,8	301,6	18
86340	4 G 0,75	1400	7,9	28,8	417,6	18
86343	4 G 0,75	2000	7,9	28,8	591,6	18
86347	4 G 0,75	3000	7,9	28,8	881,6	18
86351	5 G 0,75	500	8,6	31,2	194,4	18
86354	5 G 0,75	1000	8,6	31,2	374,4	18
86356	5 G 0,75	1400	8,6	31,2	518,4	18
86359	5 G 0,75	2000	8,6	31,2	734,4	18
86363	5 G 0,75	3000	8,6	31,2	1094,4	18
86367	2 x 1,0	500	6,8	24,6	103,7	17
86370	2 x 1,0	1000	6,8	24,6	199,7	17
86372	2 x 1,0	1400	6,8	24,6	276,5	17
86375	2 x 1,0	2000	6,8	24,6	391,7	17
86379	2 x 1,0	3000	6,8	24,6	583,7	17
84903	3 G 1,0	500	7,2	26,4	156,6	17
84906	3 G 1,0	1000	7,2	26,4	301,6	17
84908	3 G 1,0	1400	7,2	26,4	417,6	17
84911	3 G 1,0	2000	7,2	26,4	591,6	17
84915	3 G 1,0	3000	7,2	26,4	881,6	17
86383	4 G 1,0	500	7,8	28,6	207,4	17
86386	4 G 1,0	1000	7,8	28,6	399,4	17
86388	4 G 1,0	1400	7,8	28,6	553,0	17
86391	4 G 1,0	2000	7,8	28,6	783,4	17
86395	4 G 1,0	3000	7,8	28,6	1167,4	17
86399	5 G 1,0	500	9,0	32,0	259,2	17
86402	5 G 1,0	1000	9,0	32,0	499,2	17
86404	5 G 1,0	1400	9,0	32,0	691,2	17
86407	5 G 1,0	2000	9,0	32,0	979,2	17
86411	5 G 1,0	3000	9,0	32,0	1459,2	17

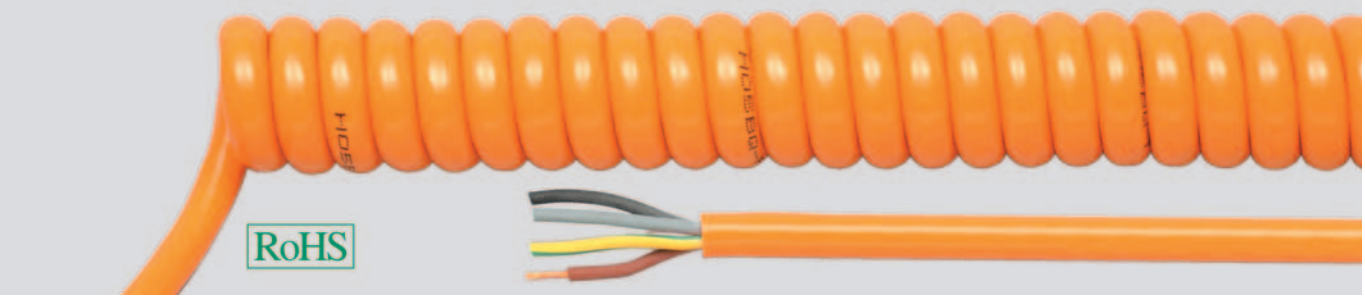
Continuation ▸

PUR spiral cables black

Part no. black	Cross-section mm²	Spiral length unexpanded (WL in mm)	Cable Ø approx. mm	Spiral-outer Ø approx. mm	Cop. weight kg / 1000 pcs.	AWG-No.
86415	7 G 1,0	500	11,1	39,0	361,8	17
86418	7 G 1,0	1000	11,1	39,0	696,8	17
86420	7 G 1,0	1400	11,1	39,0	964,8	17
86423	7 G 1,0	2000	11,1	39,0	1366,8	17
86427	7 G 1,0	3000	11,1	39,0	2036,8	17
86463	2 x 1,5	500	8,5	30,0	156,6	16
86466	2 x 1,5	1000	8,5	30,0	301,6	16
86468	2 x 1,5	1400	8,5	30,0	417,6	16
86471	2 x 1,5	2000	8,5	30,0	591,6	16
86475	2 x 1,5	3000	8,5	30,0	881,6	16
84919	3 G 1,5	500	8,9	32,8	232,2	16
84922	3 G 1,5	1000	8,9	32,8	447,2	16
84924	3 G 1,5	1400	8,9	32,8	619,2	16
84927	3 G 1,5	2000	8,9	32,8	877,2	16
84931	3 G 1,5	3000	8,9	32,8	1307,2	16
84951	5 G 1,5	500	10,9	38,8	388,8	16
84954	5 G 1,5	1000	10,9	38,8	748,8	16
84956	5 G 1,5	1400	10,9	38,8	1036,8	16
84959	5 G 1,5	2000	10,9	38,8	1468,8	16
84963	5 G 1,5	3000	10,9	38,8	2188,8	16
84967	7 G 1,5	500	12,2	46,4	545,4	16
84970	7 G 1,5	1000	12,2	46,4	1050,4	16
84972	7 G 1,5	1400	12,2	46,4	1454,1	16
84975	7 G 1,5	2000	12,2	46,4	2060,4	16
84979	7 G 1,5	3000	12,2	46,4	3070,4	16
86479	3 G 2,5	500	10,6	38,2	388,8	14
86482	3 G 2,5	1000	10,6	38,2	748,8	14
86484	3 G 2,5	1400	10,6	38,2	1036,8	14
86487	3 G 2,5	2000	10,6	38,2	1468,8	14
86491	3 G 2,5	3000	10,6	38,2	2188,8	14

Dimensions and specifications may be changed without prior notice.

PUR spiral cables orange



Technical data

- **Temperature range**
  -25°C to +70°C
- **Nominal voltage**
  H05BQ-F: 300/500 V
  H07BQ-F: 450/750 V
- **Test voltage**
  2000/2500 V
- **Expansion ratio** 1:4
- **straight ends**
  in each case 200 mm

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of rubber
- Core identification to DIN VDE 0293-308
- GN-YE conductor, 3 cores and above
- Outer sheath of PUR
- Sheath colour orange

Note

- On request closed spiral lengths up to max. 5000 mm possible.
- As well in axial constructionon
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

- Machine Construction
- Electrical Tools
- Building Industry
- Handling Equipment
- Entertainment Equipment
- Medical devices
- Measurement instruments
- Rolling doors

Part no. orange	Cross-section mm²	Spiral length unexpanded (WL in mm)	Cable Ø approx. mm	Spiral-outer Ø approx. mm	Cop. weight kg / 1000 pcs.	AWG-No.
85221	2 x 0,75	300	6,5	23,0	59,0	18
85223	2 x 0,75	500	6,5	23,0	77,8	18
85226	2 x 0,75	1000	6,5	23,0	149,8	18
85229	2 x 0,75	1500	6,5	23,0	221,8	18
85236	2 x 0,75	3000	6,5	23,0	437,8	18
85238	3 G 0,75	300	7,1	25,2	73,5	18
85240	3 G 0,75	500	7,1	25,2	116,7	18
85243	3 G 0,75	1000	7,1	25,2	224,7	18
85246	3 G 0,75	1500	7,1	25,2	332,6	18
85253	3 G 0,75	3000	7,1	25,2	656,6	18
85255	4 G 0,75	300	7,9	28,8	98,6	18
85257	4 G 0,75	500	7,9	28,8	156,6	18
85260	4 G 0,75	1000	7,9	28,8	301,6	18
85263	4 G 0,75	1500	7,9	28,8	446,6	18
85270	4 G 0,75	3000	7,9	28,8	881,6	18
85272	5 G 0,75	300	8,6	31,2	122,4	18
85274	5 G 0,75	500	8,6	31,2	194,4	18
85277	5 G 0,75	1000	8,6	31,2	374,4	18
85280	5 G 0,75	1500	8,6	31,2	554,4	18
85287	5 G 0,75	3000	8,6	31,2	1094,4	18
85289	2 x 1,0	300	6,8	24,6	65,3	17
85291	2 x 1,0	500	6,8	24,6	103,7	17
85294	2 x 1,0	1000	6,8	24,6	199,7	17
85297	2 x 1,0	1500	6,8	24,6	295,7	17
85304	2 x 1,0	3000	6,8	24,6	583,7	17
85306	3 G 1,0	300	7,2	26,4	98,6	17
85308	3 G 1,0	500	7,2	26,4	156,6	17
85311	3 G 1,0	1000	7,2	26,4	301,6	17
85314	3 G 1,0	1500	7,2	26,4	446,6	17
85321	3 G 1,0	3000	7,2	26,4	881,6	17
85323	4 G 1,0	300	7,8	28,6	130,6	17
85325	4 G 1,0	500	7,8	28,6	207,4	17
85328	4 G 1,0	1000	7,8	28,6	399,4	17
85331	4 G 1,0	1500	7,8	28,6	591,4	17
85338	4 G 1,0	3000	7,8	28,6	1167,4	17
85340	5 G 1,0	300	9,0	32,0	163,2	17
85342	5 G 1,0	500	9,0	32,0	259,2	17
85345	5 G 1,0	1000	9,0	32,0	499,2	17
85348	5 G 1,0	1500	9,0	32,0	739,2	17
85355	5 G 1,0	3000	9,0	32,0	1459,2	17

Continuation ▸

PUR spiral cables orange

Part no. orange	Cross-section mm²	Spiral length unexpanded (WL in mm)	Cable Ø approx. mm	Spiral-outer Ø approx. mm	Cop. weight kg / 1000 pcs.	AWG-No.
85357	2 x 1,5	300	8,5	30,0	98,6	16
85359	2 x 1,5	500	8,5	30,0	156,6	16
85362	2 x 1,5	1000	8,5	30,0	301,6	16
85365	2 x 1,5	1500	8,5	30,0	446,6	16
85372	2 x 1,5	3000	8,5	30,0	881,6	16
85374	3 G 1,5	300	8,9	32,8	146,2	16
85376	3 G 1,5	500	8,9	32,8	232,2	16
85379	3 G 1,5	1000	8,9	32,8	447,2	16
85382	3 G 1,5	1500	8,9	32,8	662,2	16
85389	3 G 1,5	3000	8,9	32,8	1307,2	16
85408	5 G 1,5	300	10,9	38,8	244,8	16
85410	5 G 1,5	500	10,9	38,8	388,8	16
85413	5 G 1,5	1000	10,9	38,8	748,8	16
85416	5 G 1,5	1500	10,9	38,8	1108,8	16
85423	5 G 1,5	3000	10,9	38,8	2188,8	16
85425	7 G 1,5	300	12,6	46,4	343,4	16
85427	7 G 1,5	500	12,6	46,4	545,4	16
85430	7 G 1,5	1000	12,6	46,4	1050,4	16
85433	7 G 1,5	1500	12,6	46,4	1555,4	16
85440	7 G 1,5	3000	12,6	46,4	3070,4	16
85442	12 G 1,5	300	16,6	65,2	588,2	16
85444	12 G 1,5	500	16,6	65,2	934,2	16
85447	12 G 1,5	1000	16,6	65,2	1799,2	16
85450	12 G 1,5	1500	16,6	65,2	2664,2	16
85457	12 G 1,5	3000	16,6	65,2	5259,2	16
85459	3 G 2,5	300	10,6	38,2	244,8	14
85461	3 G 2,5	500	10,6	38,2	388,8	14
85464	3 G 2,5	1000	10,6	38,2	748,8	14
85467	3 G 2,5	1500	10,6	38,2	1108,8	14
85474	3 G 2,5	3000	10,6	38,2	2188,8	14
85493	5 G 2,5	300	13,2	48,4	408,0	14
85495	5 G 2,5	500	13,2	48,4	648,0	14
85498	5 G 2,5	1000	13,2	48,4	1248,0	14
85501	5 G 2,5	1500	13,2	48,4	1848,0	14
85508	5 G 2,5	3000	13,2	48,4	3648,0	14

Dimensions and specifications may be changed without prior notice.

PUR electronic spiral cables unscreened



Technical data

- **Temperature range**
  -25°C to +70°C
- **Nominal voltage**
  up tp 0,14 mm² 300 V
  from 0,25 mm² 500 V
- **Test voltage**
  1000 V
- **Expansion ratio** 1:4
- **straight ends**
  in each case 200 mm

Application

- Handling Equipment
- Entertainment Equipment
- Medical devices
- Measurement instruments
- Rolling doors
- In all fields in which low-current cables are used

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insulation of TPE-E
- Core identification to DIN 47100
- Cores stranded in layers
- Outer sheath of PUR
- Colour black

Note

- On request closed spiral lengths up to max. 5000 mm possible.
- As well in axial construction
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Part no. black	Cross-section mm²	Spiral length unexpanded (WL in mm)	Cable Ø approx. mm	Spiral-outer Ø approx. mm	Cop. weight kg / 1000 pcs.	AWG-No.
85550	2 x 0,14	300	3,5	13,0	9,2	26
85551	2 x 0,14	400	3,5	13,0	11,9	26
85552	2 x 0,14	500	3,5	13,0	15,6	26
85555	2 x 0,14	1000	3,5	13,0	28,1	26
85566	4 x 0,14	300	4,0	14,0	18,4	26
85567	4 x 0,14	400	4,0	14,0	23,8	26
85568	4 x 0,14	500	4,0	14,0	29,2	26
85571	4 x 0,14	1000	4,0	14,0	56,2	26
85574	5 x 0,14	300	4,4	15,8	22,8	26
85575	5 x 0,14	400	4,4	15,8	29,5	26
85576	5 x 0,14	500	4,4	15,8	36,2	26
85579	5 x 0,14	1000	4,4	15,8	69,7	26
85582	6 x 0,14	300	4,9	17,8	27,5	26
85583	6 x 0,14	400	4,9	17,8	36,7	26
85584	6 x 0,14	500	4,9	17,8	43,8	26
85587	6 x 0,14	1000	4,9	17,8	84,2	26
85590	7 x 0,14	300	5,2	18,4	32,0	26
85591	7 x 0,14	400	5,2	18,4	42,4	26
85592	7 x 0,14	500	5,2	18,4	50,8	26
85595	7 x 0,14	1000	5,2	18,4	97,8	26
85598	8 x 0,14	300	5,4	19,8	36,7	26
85599	8 x 0,14	400	5,4	19,8	47,5	26
85600	8 x 0,14	500	5,4	19,8	58,3	26
85603	8 x 0,14	1000	5,4	19,8	112,3	26
85638	2 x 0,25	300	3,9	13,8	16,3	24
85639	2 x 0,25	400	3,9	13,8	21,1	24
85640	2 x 0,25	500	3,9	13,8	25,9	24
85643	2 x 0,25	1000	3,9	13,8	49,9	24
85654	4 x 0,25	300	4,6	17,2	36,7	24
85655	4 x 0,25	400	4,6	17,2	42,2	24
85656	4 x 0,25	500	4,6	17,2	51,8	24
85659	4 x 0,25	1000	4,6	17,2	99,8	24
85662	5 x 0,25	300	5,4	19,8	40,8	24
85663	5 x 0,25	400	5,4	19,8	52,8	24
85664	5 x 0,25	500	5,4	19,8	64,8	24
85667	5 x 0,25	1000	5,4	19,8	124,8	24
85670	6 x 0,25	300	5,5	20,0	48,9	24
85671	6 x 0,25	400	5,5	20,0	63,4	24
85672	6 x 0,25	500	5,5	20,0	77,8	24
85675	6 x 0,25	1000	5,5	20,0	149,8	24

Continuation ▸

PUR electronic spiral cables unscreened

Part no. black	Cross-section mm²	Spiral length unexpanded (WL in mm)	Cable Ø approx. mm	Spiral-outer Ø approx. mm	Cop. weight kg / 1000 pcs.	AWG-No.
85686	8 x 0,25	300	6,4	23,8	65,3	24
85687	8 x 0,25	400	6,4	23,8	84,5	24
85688	8 x 0,25	500	6,4	23,8	103,7	24
85691	8 x 0,25	1000	6,4	23,8	199,7	24
85702	12 x 0,25	300	6,9	24,8	97,9	24
85703	12 x 0,25	400	6,9	24,8	126,7	24
85704	12 x 0,25	500	6,9	24,8	155,5	24
85707	12 x 0,25	1000	6,9	24,8	299,5	24
85726	2 x 0,5	300	4,6	16,2	32,6	20
85727	2 x 0,5	400	4,6	16,2	42,3	20
85728	2 x 0,5	500	4,6	16,2	51,8	20
85731	2 x 0,5	1000	4,6	16,2	99,8	20
85742	4 x 0,5	300	5,0	18,0	65,3	20
85743	4 x 0,5	400	5,0	18,0	84,5	20
85744	4 x 0,5	500	5,0	18,0	103,7	20
85747	4 x 0,5	1000	5,0	18,0	201,8	20
85758	6 x 0,5	300	6,2	22,4	97,9	20
85759	6 x 0,5	400	6,2	22,4	126,7	20
85760	6 x 0,5	500	6,2	22,4	155,5	20
85763	6 x 0,5	1000	6,2	22,4	299,5	20
85774	8 x 0,5	300	7,4	26,8	130,6	20
85775	8 x 0,5	400	7,4	26,8	169,0	20
85776	8 x 0,5	500	7,4	26,8	207,4	20
85779	8 x 0,5	1000	7,4	26,8	399,4	20
85790	12 x 0,5	300	8,2	29,4	195,8	20
85791	12 x 0,5	400	8,2	29,4	254,3	20
85792	12 x 0,5	500	8,2	29,4	311,1	20
85795	12 x 0,5	1000	8,2	29,4	599,1	20

Dimensions and specifications may be changed without prior notice.

PUR electronic spiral cables screened



Technical data

- **Temperature range**
  -25°C to +70°C
- **Nominal voltage**
  up to 0,14 mm² 300 V
  from 0,25 mm² 500 V
- **Test voltage**
  2000 V
- **Expansion ratio** 1:4
- **straight ends**
  in each case 200 mm

Application

- Handling Equipment
- Entertainment Equipment
- Medical devices
- Measurement instruments
- Rolling doors
- In all fields in which low-current cables are used

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insualtion of TPE-E
- Core identification to DIN 47100
- Cores stranded in layers
- Overall screening
- Outer sheath of PUR
- Sheath colour black

Note

- On request closed spiral lengths up to max. 5000 mm possible.
- As well in axial construction
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Part no. black	Cross-section mm²	Spiral length unexpanded (WL in mm)	Cable Ø approx. mm	Spiral-outer Ø approx. mm	Cop. weight kg / 1000 pcs.	AWG-No.
85900	2 x 0,14	300	3,8	13,6	30,6	26
85901	2 x 0,14	400	3,8	13,6	39,6	26
85902	2 x 0,14	500	3,8	13,6	48,6	26
85905	2 x 0,14	1000	3,8	13,6	93,6	26
600154	3 x 0,14	300	4,1	15,2	44,2	26
600155	3 x 0,14	400	4,1	15,2	55,8	26
600156	3 x 0,14	500	4,1	15,2	67,5	26
600157	3 x 0,14	1000	4,1	15,2	135,0	26
85916	4 x 0,14	300	4,6	16,2	47,6	26
85917	4 x 0,14	400	4,6	16,2	61,6	26
85918	4 x 0,14	500	4,6	16,2	75,6	26
85921	4 x 0,14	1000	4,6	16,2	145,6	26
85924	5 x 0,14	300	4,6	17,2	54,4	26
85925	5 x 0,14	400	4,6	17,2	70,4	26
85926	5 x 0,14	500	4,6	17,2	86,4	26
85929	5 x 0,14	1000	4,6	17,2	166,4	26
85932	6 x 0,14	300	5,2	19,4	64,6	26
85933	6 x 0,14	400	5,2	19,4	83,6	26
85934	6 x 0,14	500	5,2	19,4	102,6	26
85937	6 x 0,14	1000	5,2	19,4	197,6	26
85940	7 x 0,14	300	5,5	20,0	68,0	26
85941	7 x 0,14	400	5,5	20,0	88,0	26
85942	7 x 0,14	500	5,5	20,0	108,0	26
85945	7 x 0,14	1000	5,5	20,0	208,0	26
85948	8 x 0,14	300	5,6	20,2	74,8	26
85949	8 x 0,14	400	5,6	20,2	96,8	26
85950	8 x 0,14	500	5,6	20,2	118,8	26
85953	8 x 0,14	1000	5,6	20,2	228,8	26
85980	2 x 0,25	300	4,5	16,0	51,0	24
85981	2 x 0,25	400	4,5	16,0	66,0	24
85982	2 x 0,25	500	4,5	16,0	81,0	24
85985	2 x 0,25	1000	4,5	16,0	156,0	24
85988	4 x 0,25	300	5,0	18,0	74,8	24
85989	4 x 0,25	400	5,0	18,0	96,8	24
85990	4 x 0,25	500	5,0	18,0	118,8	24
85993	4 x 0,25	1000	5,0	18,0	228,8	24
85996	5 x 0,25	300	5,4	19,8	85,0	24
85997	5 x 0,25	400	5,4	19,8	110,0	24
85998	5 x 0,25	500	5,4	19,8	135,0	24
86001	5 x 0,25	1000	5,4	19,8	260,0	24

Continuation ▸

PUR electronic spiral cables screened

Part no. black	Cross-section mm²	Spiral length unexpanded (WL in mm)	Cable Ø approx. mm	Spiral-outer Ø approx. mm	Cop. weight kg / 1000 pcs.	AWG-No.
86004	6 x 0,25	300	5,7	20,4	102,0	24
86005	6 x 0,25	400	5,7	20,4	132,0	24
86006	6 x 0,25	500	5,7	20,4	162,0	24
86009	6 x 0,25	1000	5,7	20,4	312,0	24
86012	8 x 0,25	300	6,5	23,0	119,0	24
86013	8 x 0,25	400	6,5	23,0	154,0	24
86014	8 x 0,25	500	6,5	23,0	189,0	24
86017	8 x 0,25	1000	6,5	23,0	364,0	24
86020	12 x 0,25	300	7,1	26,2	170,0	24
86021	12 x 0,25	400	7,1	26,2	220,0	24
86022	12 x 0,25	500	7,1	26,2	270,0	24
86025	12 x 0,25	1000	7,1	26,2	520,0	24
86036	2 x 0,5	300	5,5	20,0	78,2	20
86037	2 x 0,5	400	5,5	20,0	101,2	20
86038	2 x 0,5	500	5,5	20,0	124,2	20
86041	2 x 0,5	1000	5,5	20,0	239,2	20
86044	4 x 0,5	300	5,8	21,6	153,0	20
86045	4 x 0,5	400	5,8	21,6	198,0	20
86046	4 x 0,5	500	5,8	21,6	243,0	20
86049	4 x 0,5	1000	5,8	21,6	648,0	20
86052	6 x 0,5	300	7,0	26,0	231,2	20
86053	6 x 0,5	400	7,0	26,0	299,2	20
86054	6 x 0,5	500	7,0	26,0	367,2	20
86057	6 x 0,5	1000	7,0	26,0	707,2	20
86060	8 x 0,5	300	8,0	29,0	289,0	20
86061	8 x 0,5	400	8,0	29,0	374,0	20
86062	8 x 0,5	500	8,0	29,0	459,0	20
86065	8 x 0,5	1000	8,0	29,0	884,0	20
86068	12 x 0,5	300	8,8	31,6	380,8	20
86069	12 x 0,5	400	8,8	31,6	492,8	20
86070	12 x 0,5	500	8,8	31,6	604,8	20
86073	12 x 0,5	1000	8,8	31,6	1164,8	20

Dimensions and specifications may be changed without prior notice.


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CAUTION
ACHTUNG
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CW&A Edition 27 (published 01.04.2015)

SHIPWIRING & MARINE CABLES

Designation	Properties	Approvals	Page
Ships Power Cables MGSGO	halogen-free, with Cu-screen		921
Light Marine Power Cables XLFMKK	with Cu-screen		922
Marine Power Cables LMGSGO	halogen-free, with Cu-screen		923
Ships Telephone Cables FMGCH 250 V (FMGCG*)	halogen-free in accordance with DIN 89 159/98		924
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Marine Telecommunication Cables FMSGSGO 250 V	with single screen high cross-talk attenuation, halogen-free		926
Light Marine Telecommunication Cables LFMGSSGO	halogen-free, 2xCu-screen		927
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SHIPFLEX® 512	Drag chain cable, halogen-free, EMC-preferred type, meter marking		933
SHIPFLEX® 330	Drag chain cable, halogen-free, EMC-preferred type, meter marking		934
SHIPFLEX® 340	Drag chain cable, halogen-free, EMC-preferred type, meter marking		935
SHIPFLEX® 109	Cable drag chain, single core, halogen-free. EMC-preferred type (-C-type) meter marked		936
SHIPFLEX® 109	Drag chain cable, halogen-free, EMC-preferred type, meter marking		937
SHIPFLEX® 113	Drag chain cable, halogen-free, EMC-preferred type, meter marking		938
SHIPFLEX® 121	Drag chain cable, halogen-free, EMC-preferred type, meter marking		939

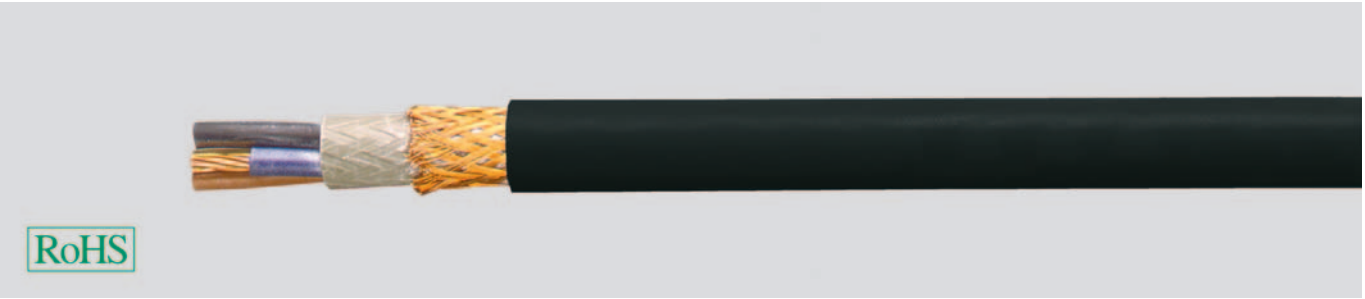
SELECTION TABLE - DRAG CHAIN CABLES

	Max. movement distance in m (10 m up to 25-cores)	Min. bending radius - flexing (D=outerØ)	Max. speed (m/s)	Max. acceleration (m/s²)	Max. cycles	Material	Nominal voltage U_0/U / Operating voltage	Temperature (°C) - flexing	Approvals	Page	UL/CSA equivalent
Drag chain cables for ship & offshore applications											
SHIPFLEX® 512	100	7.5 x D	4	10	11 Mio	TPE/CU/PUR	1000V	-40° to +80°	UL/CSA	**933**	-
SHIPFLEX® 330	100	7.5 x D	4	10	11 Mio	TPE/CU/PUR	300V	-40° to +80°	UL/CSA	**934**	-
SHIPFLEX® 340	100	7.5 x D	4	10	11 Mio	TPE/CU/PUR	300V	-40° to +80°	UL/CSA	**935**	-
SHIPFLEX® 109	100	7.5 x D	4	10	11 Mio	TPE/CU/PUR	1000V	-40° to +80°	UL/CSA	**936**	-
SHIPFLEX® 109	100	7.5 x D	4	10	11 Mio	TPE/CU/PUR	1000V	-40° to +80°	UL/CSA	**937**	-
SHIPFLEX® 113	100	7.5 x D	4	10	11 Mio	TPE/CU/PUR	1000V	-40° to +80°	UL/CSA	**938**	-
SHIPFLEX® 121	100	7.5 x D	4	10	11 Mio	TPE/CU/PUR	1000V	-40° to +80°	UL/CSA	**939**	-

A cycle is a double lift: a representative sample has been tested and measurot in our Test Workshop. The cycle count is only valid when appropriatel and professionally installed (see the installation manual: cable installation in drag chains, see pages 1036 and 1037).

The selection table is intended as an initial orientation.
Please see the relevant page of the catalogue for detailed information on the product properties and the selection tables cables in drag chains, see pages 1030 and 1031.

Ships Power Cables MGSGO halogen-free, copper screened



RoHS

Technical data

- acc. to VG 95218 part 60, with screen and natural insulation integrity in case of fire without a flame retardant barrier
- **Operating temperature**
  at conductor max. +85°C
- **Nominal voltage**
  U_0/U 0,6/1 kV
- **Minimum bending radius**
  5x cable Ø

Cable structure

- Stranded copper conductors
- Heat-resistant EPR-insulation 3GI3 to DIN VDE 0207 part 20
- Cores stranded in layers with optimal lay-length
- Filling compound covering all cores
- Foil wrapping
- Bare copper braided screen
- Polyester tape
- Outer sheath of elastomer compound to olefin based copolymer
- Sheath colour black

Properties

- halogen-free and flame retardant
- **Colour code**
  1 core: BK
  2 cores: BN, BU
  3 cores: BN, BK, GY
  4 cores: BU, BN, BK, GY
- **Approved by**
  BWB (Bundesamt für Wehrtechnik und Beschaffung), i.e. German Federal Office for Defense and Procurement)

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Halogen-free power cables for marine craft are used for fixed installation on ships in all rooms and open decks as control and power cables.

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
59270	1 x 4	7,5 - 8,5	81,0	155,0	12
59271	1 x 6	8,4 - 9,4	104,0	185,0	10
59272	1 x 10	9,5 - 10,5	149,0	245,0	8
59273	1 x 16	10,0 - 11,0	214,0	260,0	6
59274	1 x 25	12,0 - 13,0	311,0	420,0	4
59275	1 x 35	13,0 - 14,0	416,0	530,0	2
59276	1 x 50	15,0 - 16,0	572,0	680,0	1
59277	1 x 70	17,0 - 18,0	779,0	890,0	2/0
59278	1 x 95	19,5 - 20,5	1034,0	1200,0	3/0
59279	1 x 120	21,0 - 22,4	1316,0	1340,0	4/0
59280	1 x 150	23,0 - 24,4	1615,0	1770,0	300 kcmil
59281	1 x 185	25,5 - 27,0	1968,0	2180,0	350 kcmil
59282	1 x 240	29,0 - 30,5	2506,0	2610,0	500 kcmil
59283	1 x 300	31,5 - 33,5	3345,0	3250,0	600 kcmil
59284	2 x 1,5	11,5 - 12,5	105,0	240,0	16
59285	2 x 2,5	12,4 - 13,4	132,0	290,0	14
59286	2 x 4	13,4 - 14,7	170,0	350,0	12
59287	2 x 6	14,7 - 16,0	217,0	440,0	10
59288	2 x 10	16,2 - 17,7	307,0	570,0	8
59289	2 x 16	19,0 - 20,3	471,0	780,0	6
59290	2 x 25	22,5 - 24,0	670,0	1070,0	4

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
59291	3 x 1,5	12,0 - 13,0	125,0	260,0	16
59292	3 x 2,5	13,0 - 14,2	161,0	330,0	14
59293	3 x 4	14,0 - 15,2	215,0	420,0	12
59294	3 x 6	15,5 - 16,8	282,0	530,0	10
59295	3 x 10	17,6 - 18,9	417,0	740,0	8
59296	3 x 16	20,0 - 21,4	636,0	1090,0	6
59297	3 x 25	24,0 - 25,4	924,0	1340,0	4
59298	3 x 35	26,0 - 28,2	1233,0	1790,0	2
59299	3 x 50	30,0 - 32,2	1703,0	2190,0	1
59300	3 x 70	34,5 - 36,7	2413,0	2990,0	2/0
59301	3 x 95	39,7 - 42,2	3191,0	4220,0	3/0
59302	3 x 120	43,0 - 45,7	3975,0	5090,0	4/0
59303	4 x 4	15,2 - 16,5	284,0	480,0	12
59304	4 x 6	17,0 - 18,3	371,0	670,0	10
59305	4 x 10	19,4 - 20,9	545,0	910,0	8
59306	4 x 16	22,0 - 23,5	796,0	1160,0	6
59307	4 x 25	26,4 - 28,0	1170,0	1680,0	4
59308	4 x 35	29,2 - 31,0	1578,0	2160,0	2
59309	4 x 50	33,5 - 35,8	2278,0	2760,0	1
59310	4 x 70	38,2 - 40,7	3090,0	3750,0	2/0
59311	4 x 95	44,2 - 46,7	4110,0	4990,0	3/0

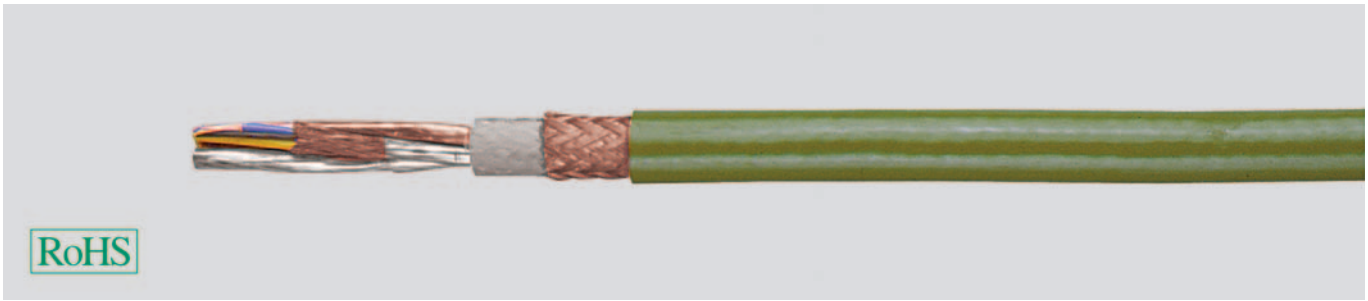
Dimensions and specifications may be changed without prior notice. (RW01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HSK-PVDF

Light Marine Power Cables XLFMKK Cu-screened



Technical data

- acc. to VG 88778/66
- **Operating temperature** at conductor max. +85°C
- Min. **installation temperature** -10°C
- **Nominal voltage** 250 V
- **Minimum bending radius** 5x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2 longitudinally watertight
- PVC core insulation with polyamid coating
- Cores laid up in pairs
- Pairs copper screened
- Foil wrapping
- PVC inner sheath
- Bare copper braided screen, waterproofed
- PVC outer sheath
- Sheath colour green

Properties

- **Colour code** All sizes are colour coded
- **Approved by** BWB (Bundesamt für Wehrtechnik und Beschaffung), i.e. German Federal Office for Defense and Procurement)

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

For fixed installation on marine craft above and below deck.

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
59336	2 x 2 x 0,75	16,0	160,0	370,0	18
59337	4 x 2 x 0,75	18,1	277,0	490,0	18
59338	11 x 2 x 0,75	26,2	658,0	1080,0	18

Dimensions and specifications may be changed without prior notice. (RW01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HSK-PVDF

Marine Power Cables LMGSGO halogen-free, Cu-screened



RoHS

Technical data

- acc. to VG 95218 part 61, with screen and natural insulation integrity in case of fire without a flame retardant barrier
- **Operating temperature** at conductor max. +85°C
- **Nominal voltage** 500 V
- **Minimum bending radius** 5x cable Ø

Cable structure

- Stranded copper conductor
- Heat resistant EPR-insulation 3GI3, to DIN VDE 0207 part 20
- Core stranded in layers with optimal lay-length
- Halogen-free inner filling sheath
- Copper braided screening
- Foil wrapping
- Outer sheath of elastomer compound to olefin based copolymer
- Sheath colour black

Properties

- Halogen-free and flame retardant
- **Colour code**
  2 cores: BN, BU
  3 cores: BN, BK, GY
  4 cores: BU, BN, BK, GY
  5 cores: BU, BN, BK, GY, BK
  7-33 cores: all cores black, number coded, core 1 placed centrally.
- **Approved by**
  BWB (Bundesamt für Wehrtechnik und Beschaffung), i.e. German Federal Office for Defense and Procurement)

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

For fixed installation on marine craft above and below deck.

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
59360	2 x 1,5	7,0 - 7,8	89,0	100,0	16
59361	3 x 1,5	7,2 - 8,2	105,0	120,0	16
59362	4 x 1,5	7,8 - 9,2	131,0	145,0	16
59363	5 x 1,5	8,3 - 9,3	146,0	165,0	16
59364	7 x 1,5	9,3 - 10,3	180,0	215,0	16
59365	10 x 1,5	10,8 - 12,2	244,0	285,0	16
59366	12 x 1,5	12,0 - 13,3	276,0	320,0	16
59367	14 x 1,5	12,7 - 14,0	310,0	375,0	16
59368	16 x 1,5	13,2 - 14,6	342,0	400,0	16
59369	19 x 1,5	13,9 - 14,7	401,0	475,0	16
59370	24 x 1,5	15,5 - 17,2	494,0	595,0	16
59371	27 x 1,5	16,6 - 18,1	539,0	645,0	16
59372	33 x 1,5	17,5 - 19,5	633,0	790,0	16

Part no.	No.cores x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
59373	2 x 2,5	7,7 - 8,6	114,0	130,0	14
59374	3 x 2,5	8,0 - 9,2	144,0	150,0	14
59375	4 x 2,5	8,7 - 10,2	171,0	200,0	14
59376	6 x 2,5	10,3 - 11,7	242,0	275,0	14
59377	7 x 2,5	10,3 - 11,7	266,0	295,0	14

Dimensions and specifications may be changed without prior notice. (RW01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HSK-PVDF

Ships Telephone Cables FMGCH 250 V

halogen-free according to DIN 89 159/99



Technical data

- acc.to DIN 89159/ edition 1998 and IEC 60092-375
- **Operating temperature** at conductor max. +85°C
- **Nominal voltage** 250 V
- **Insulation resistance** 1400 MOhm x km
- **Minimum bending radius** 5x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- HEPR core insulation (Hard grade EPR)
- Cores per pair blue/white, printed with numbers, starting in center with number 1
- Cores stranded in pairs with optimal lay-length
- Pairs stranded in layers with optimal lay-length
- Common sheath with foil wrapping
- Bare copper braided screen
- Foil wrapping
- Outher sheath of Polyolefin basis-compound
- Sheath colour green

Properties

- Flame retardant according to SOLAS definition (according to IEC 60332-3 category A)
- **Approved by**
  Association of German Electrical Engineer
  Germanischer Lloyd
  Lloyds Register of Shipping
  American Bureau of Shipping
  Det Norske Veritas
  Bureau Veritas, Russian
  Maritime Register of Shipping
  and Registro Italiano Navale are in preparation

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

For measurement, control, regulation, control and alarm systems; radio, positioning and messaging systems. For fixed installation on ships in rooms and on open decks.

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
59138	1 x 2 x 0,75	8,5	62,0	90,0	18
59139	2 x 2 x 0,75	9,0	87,0	130,0	18
59140	4 x 2 x 0,75	13,0	153,0	230,0	18
59141	7 x 2 x 0,75	15,5	230,0	340,0	18

Part no.	No.pairs x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
59142	10 x 2 x 0,75	18,5	319,0	470,0	18
59143	14 x 2 x 0,75	21,0	445,0	610,0	18
59144	19 x 2 x 0,75	24,0	525,0	770,0	18
59145	24 x 2 x 0,75	27,0	663,0	950,0	18

Dimensions and specifications may be changed without prior notice. (RW01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HSK-PVDF

Marine Telecommunication Cables FMGSGO

halogen-free, Cu-screened



RoHS

Technical data

- acc. to VG 95218 part 62, with screen and natural insulation integrity in case of fire without a flame retardant barrier
- **Operating temperature** at conductor max. +85°C
- **Nominal voltage** 250 V
- **Minimum bending radius** 5x cable Ø

Cable structure

- Bare copper conductor, stranded
- Heat resistant EPR-insulation 3GI3, to DIN VDE 0207 part 20
- To four wires twisted
- Filling compound covering all cores, halogen-free
- Screening of copper braid
- Foil wrapping
- Outer sheath of elastomer compound to olefin based copolymer
- Sheath colour black

Properties

- Halogen-free and flame retardant
- **Colour code** All sizes and dimensions are colour coded
- **Approved by** BWB (Bundesamt für Wehrtechnik und Beschaffung), i.e. German Federal Office for Defense and Procurement)

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

For fixed installation on Navy ships in locations and on open decks.

Part no.	No.pairs x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
59380	2 x 2 x 0,75	6,7 - 7,8	89,0	100,0	18
59381	4 x 2 x 0,75	9,6 - 11,0	142,0	190,0	18
59382	6 x 2 x 0,75	10,8 - 12,3	189,0	235,0	18
59383	8 x 2 x 0,75	11,9 - 13,4	225,0	295,0	18

Part no.	No.pairs x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
59384	10 x 2 x 0,75	13,7 - 15,2	272,0	335,0	18
59385	14 x 2 x 0,75	14,9 - 16,5	338,0	475,0	18
59386	16 x 2 x 0,75	16,1 - 17,9	373,0	520,0	18

Dimensions and specifications may be changed without prior notice. (RW01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HSK-PVDF

Marine Telecommunication Cables FMSGSGO 250 V with a single screen, higher cross-talk atttenuation, halogen-free



RoHS

Technical data

- acc. to VG 95218 part 63
- **Operating temperature** at conductor max. +85°C
- Min. **installation temperature** -10°C
- **Nominal voltage** 250 V
- **Minimum bending radius** 5x cable Ø

Cable structure

- Bare copper conductor, stranded
- Cross-linked polyolefin-insulation
- Cores laid up in pairs
- Foil wrapping
- Each pair with bare copper wire screen
- Each pair with foil wrapping
- Pairs laid up concentrically
- Foil wrapping
- Overall foil wrap
- Bare copper wire braided screen
- Foil wrapping
- Outer sheath of elastomer compound
- Sheath colour black

Properties

- Oil resistant and flame retardant
- **Colour code for cores**
  Pair/counting pair: BK/BU
  Pair/counting direction pair: BK/BN
  Subsequent pairs: BK/GY
- **Approved by**
  BWB (Bundesamt für Wehrtechnik und Beschaffung), i.e. German Federal Office for Defense and Procurement)

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

For fixed installation on marine craft above and below deck.

Part no.	No.pairs x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
59150	2 x 2 x 0,75	11,1 - 12,5	149,0	220,0	18
59151	4 x 2 x 0,75	12,9 - 14,5	277,0	332,0	18
59152	7 x 2 x 0,75	14,9 - 16,4	489,0	475,0	18
59153	11 x 2 x 0,75	19,6 - 21,4	658,0	705,0	18

Part no.	No.pairs x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
59154	14 x 2 x 0,75	20,8 - 22,8	731,0	900,0	18
59155	19 x 2 x 0,75	23,4 - 25,4	951,0	1130,0	18
59156	24 x 2 x 0,75	26,4 - 28,4	1181,0	1430,0	18

Dimensions and specifications may be changed without prior notice. (RW01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HSK-PVDF

Light Marine Telecommunication cables LFMGSSGO

halogen-free, 2x Cu-screened



Technical data

- acc. to VG 95218 part 64, 2x copper screen with natural insulation integrity in case of fire without a flame retardant barrier
- **Operating temperature** at conductor max. +85°C
- Min. **installation temperature** -10°C
- **Nominal voltage** 250 V
- **Minimum bending radius** 6x cable Ø

Cable structure

- Stranded (7) tinned copper conductor to DIN VDE 0295 cl.2, BS 6360 cl.2 and IEC 60228 cl.2
- Cross-linked polyolefin-insulation
- Core stranded to pairs with optimal lay-length
- Overall halogen-free inner filling
- Tinned copper braided double screen, separated by halogen-free foil
- Foil wrapping
- Outer sheath of elastomer compound
- Sheath colour black

Properties

- Oil resistant and flame retardant
- **Colour code for cores**
  2-pair (Quad)
  BK/BU/GY/BN
  as of 4-pair
  Pair/counting pair: BK/BU
  Pair/counting direction pair: BK/BN
  Subsequent pairs: BK/GY
- **Approved by**
  BWB (Bundesamt für Wehrtechnik und Beschaffung), i.e. German Federal Office for Defense and Procurement)

Application

For fixed installation on marine craft above and below decks.

Part no.	No.pairs x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	
59390	2 x 2 x 0,4	5,8 - 6,8	60,0	83,0	-
59391	4 x 2 x 0,4	7,7 - 8,8	95,0	132,0	-
59392	7 x 2 x 0,4	9,4 - 10,8	146,0	212,0	-

Part no.	No.pairs x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	
59393	12 x 2 x 0,4	12,8 - 14,5	235,0	320,0	-
59394	19 x 2 x 0,4	13,8 - 15,5	320,0	425,0	-
59395	27 x 2 x 0,4	15,5 - 17,3	414,0	515,0	-

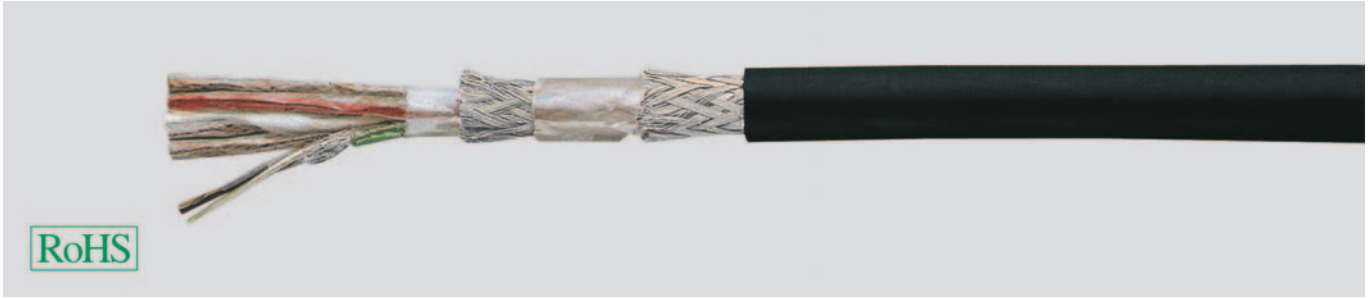
Dimensions and specifications may be changed without prior notice. (RW01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HSK-PVDF

Light Marine Telecommunication Cables LFMSGSSGO halogen-free, 2x Cu-screened



Technical data

- acc. to VG 95218 part 66, 2x copper screen with high cross-talk attenuation and natural insulation integrity in case of fire without a flame retardant barrier
- **Operating temperature** at conductor max. +85°C
- Min. **installation temperature** -10°C
- **Nominal voltage** 250 V
- **Minimum bending radius** 6x cable Ø

Cable structure

- Stranded (7) tinned copper conductor
- Cross-linked polyolefin-insulation
- Core stranded to triple with optimal lay-length
- Tinned copper braided screen over each triple
- Overall polyester taped inner covering
- Screened triple stranded in layers with optimal lay-length
- Foil wrapping
- Tinned copper braided overall screen
- Halogen-free insulating layer
- Screen of tinned copper braid
- Foil wrapping
- Outer sheath of elastomere compound
- Sheath colour black

Properties

- Oil resistant and flame retardant
- **Colour code** All sizes and dimensions are colour coded
- **Approved by** BWB (Bundesamt für Wehrtechnik und Beschaffung), i.e. German Federal Office for Defense and Procurement)

Application

For fixed installation on marine craft above and below decks.

Part no.	No.pairs x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	
59396	5 x 3 x 0,4	12,2 - 13,9	248,0	335,0	-

Part no.	No.pairs x cross-sec. mm²	Outer Ø min. - max. mm	Cop. weight kg / km	Weight approx. kg / km	
59397	12 x 3 x 0,4	16,9 - 18,9	500,0	620,0	-

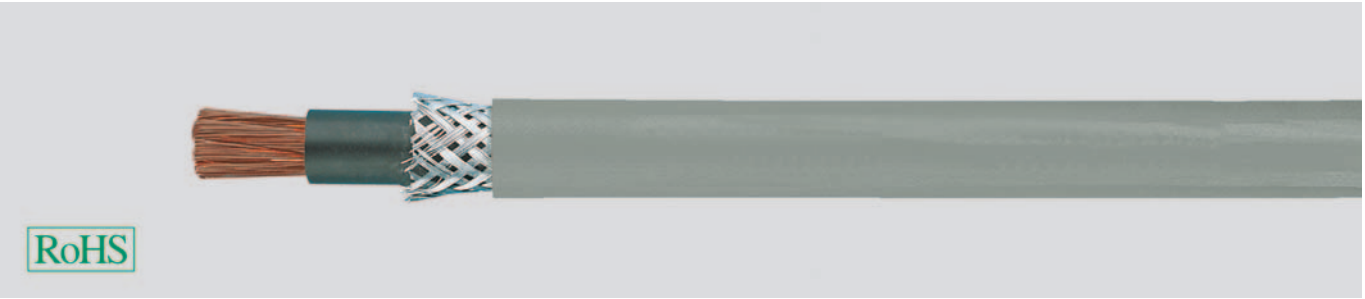
Dimensions and specifications may be changed without prior notice. (RW01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HSK-PVDF

Ships Wiring Cables-SY single cores



Technical data

- Special PVC single cores acc. to DIN VDE 0250
- **Temperature range**
  flexing +5°C to +70°C
  fixed installation -40°C to +70°C
- **Nominal voltage** 250 V
- **Test voltage** 1500 V
- **Minimum bending radius**
  7,5x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- PVC core insulation
- Tinned steel-wire braided screening
- PVC outer sheath
- Sheath colour grey (RAL 7001)

Properties

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Oil resistant according DIN VDE 0250
- **Approved by**
  Germanischer Lloyd

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

A connection and a connection cable for measuring and control devices for communication systems, production lines, conveyor systems for fixed and variable connection in humid, wet and dry areas.
These PVC single cores are also suitable for use in ship building.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
59450	1 x 6	8,3	57,4	148,0	10
59451	1 x 10	10,3	95,8	221,0	8
59452	1 x 16	10,3	153,4	293,0	6
59453	1 x 25	13,7	239,5	447,0	4

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
59454	1 x 35	15,2	335,0	565,0	2
59455	1 x 50	18,1	479,5	788,0	1
59456	1 x 70	21,1	671,0	1061,0	2/0
59457	1 x 95	22,8	910,0	1355,0	3/0

Dimensions and specifications may be changed without prior notice. (RW01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HSK-PVDF

Ships Wiring Cables-SY stranded type



Technical data

- Special PVC cables
- **Temperature range**
  flexing +5°C to +70°C
  fixed installation -40°C to +70°C
- **Nominal voltage** 250 V
- **Test voltage** 3000 V
- **Minimum bending radius**
  7,5x cable Ø

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of PVC compound type YI2 acc. to DIN VDE 0207 part 4
- Cores colour coded to DIN VDE 0293 or black cores with continuous white numbering
- Core stranded in layers with optimal lay-length
- Inner sheath of PVC
- Galvanized steel-wire braided overall screening
- Outer sheath of PVC compound type YM2 acc. to DIN VDE 0207 part 5
- Sheath colour grey (RAL 7001)

Properties

- Extensively oil resistant.
  Chemical Resistance - see table Technical Informations
- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- **Approved by**
  Germanischer Lloyd

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

Ideally suitedn for for fixed installation but also for the variable use of manufacturing lines, machine tools, conveyor systems and robotic assembly lines. A line that can also be used in shipbuilding.The galvanized steel braid protects against mechanical stress and simultaneously effective against electrical interference.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
59460	2 x 1,5	9,7	28,7	146,0	16
59461	3 x 1,5	10,1	43,1	166,0	16
59462	4 x 1,5	10,8	57,5	198,0	16
59463	5 x 1,5	11,6	71,9	230,0	16
59464	7 x 1,5	13,3	100,6	299,0	16
59465	3 x 2,5	11,6	72,1	231,0	14

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
59466	4 x 2,5	13,3	95,8	298,0	14
59467	5 x 2,5	14,3	120,0	355,0	14
59468	4 x 4	16,2	153,5	358,0	12
59469	5 x 4	17,5	193,0	535,0	12
59470	4 x 6	18,4	230,3	595,0	10
59471	5 x 6	19,7	288,0	714,0	10

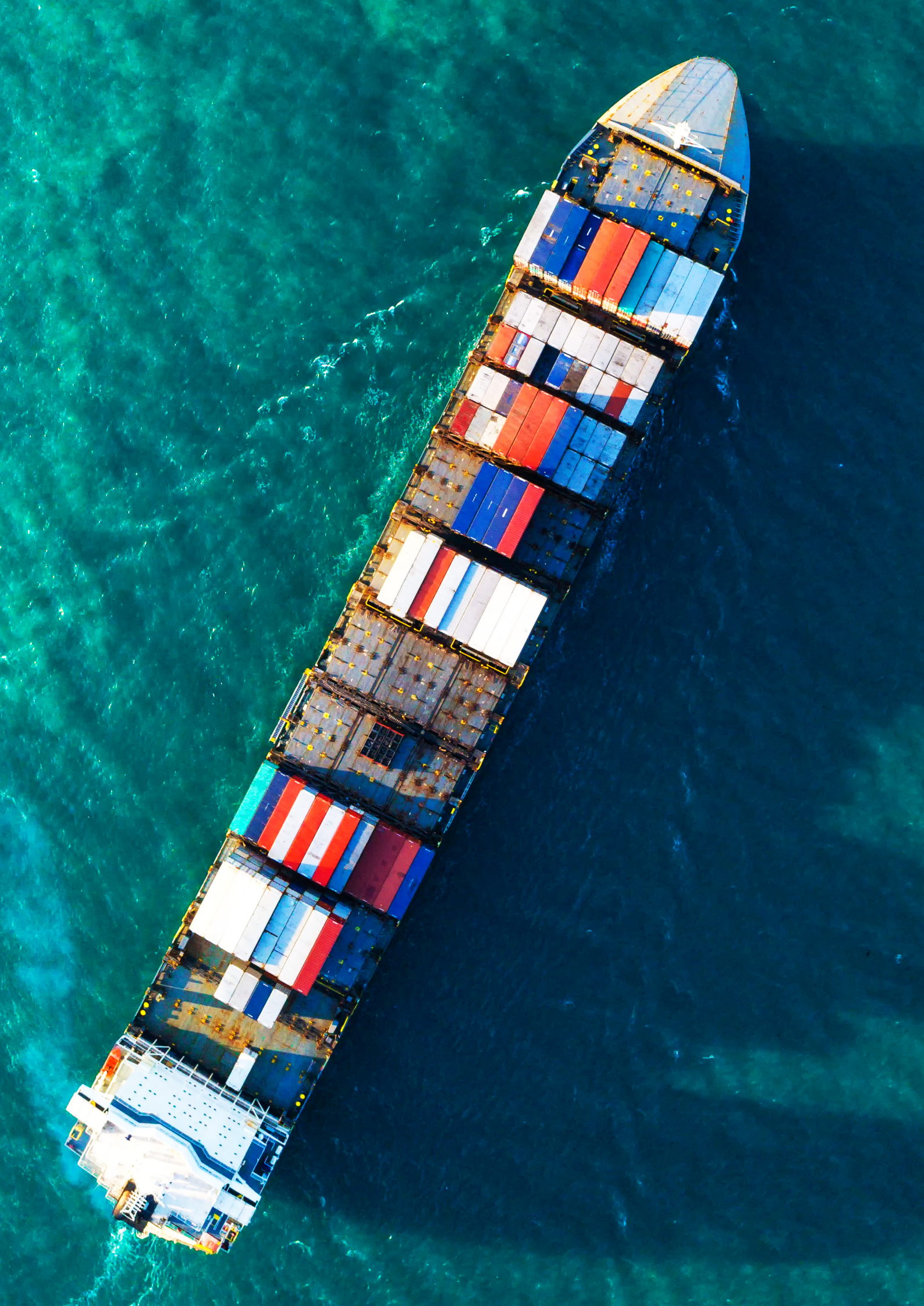
Dimensions and specifications may be changed without prior notice. (RW01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HSK-PVDF


PORT AUTHORITY OF THAILAND No.
LIEBHERR



SHIPFLEX® 512 cable for drag chain, halogen-free, EMC prefered type, meter marking



Technical data

- Special screened drag chain cable
- UL-Style 20234
- **Temperature range**
  flexing -40°C to +80°C
  fixed installation -40°C to +80°C
- **Installation temperature**
  min. -25°C
- **Nominal voltage** UL 1000 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Minimum bending radius**
  7,5x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Special core insulation
- Black cores with continuous white numbering to DIN VDE 0293
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal selected lay-length
- Braided screen of tinned copper wires, coverage approx. 85 %, optional aluminium foil under the braid
- **Full polyurethane** outer sheath to UL std. 1581 Tab. 50227
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Flame retardant to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1(equivalent DIN VDE 0472 part 804 test method B)
- Halogen-free to DIN VDE 0482 part 267/ DIN EN 50267-2-1/IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Oil resistant to IEC 60092-350, appendix F
- Behaviour at low temperature at -40°C to IEC 60092-350, appendix E
- Weather, ozon and UV-resistant
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

HELUKABEL® SHIPFLEX® 512 is a new developed and successfully tested screened special drag chain cable which meets the requirements of the strict standards for application in offshore-areas. For this two - line standard there is a **Lloyds Register approval** . The outer sheath insulation of non-adhesive Polyurethan allows the application in extremely oily and rough environmental conditions. For applications which go beyond standard solutions we recommend that you fill out our especially developed questionnaire for drag chains. Before installation in cable drag chains please read the installation instructions.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
19864	2 x 0,5	20	6,3	35,0	50,0
19865	3 G 0,5	20	6,5	42,0	60,0
19866	4 G 0,5	20	7,0	47,0	64,0
19867	5 G 0,5	20	7,5	56,0	79,0
19868	7 G 0,5	20	8,5	69,0	101,0
19869	12 G 0,5	20	10,0	108,0	164,0
19870	18 G 0,5	20	11,5	145,0	227,0
19871	25 G 0,5	20	13,5	240,0	331,0
19872	36 G 0,5	20	15,2	318,0	457,0
19873	2 x 0,75	19	7,0	40,0	65,0
19874	3 G 0,75	19	7,2	52,0	71,0
19875	4 G 0,75	19	7,8	60,0	82,0
19876	5 G 0,75	19	8,5	71,0	97,0
19877	7 G 0,75	19	9,6	91,0	141,0
19878	12 G 0,75	19	11,5	142,0	217,0
19879	18 G 0,75	19	13,0	212,0	304,0
19880	25 G 0,75	19	15,8	281,0	420,0
19881	36 G 0,75	19	17,5	350,0	535,0
19882	2 x 1	18	7,4	50,0	69,0
19883	3 G 1	18	7,7	60,0	84,0
19884	4 G 1	18	8,5	71,0	104,0
19885	5 G 1	18	9,0	88,0	130,0
19886	7 G 1	18	10,4	111,0	160,0
19887	12 G 1	18	12,4	184,0	270,0
19888	18 G 1	18	14,3	260,0	391,0
19889	25 G 1	18	17,0	349,0	547,0
19890	36 G 1	18	19,0	510,0	790,0
19891	2 x 1,5	16	8,0	63,0	90,0
19892	3 G 1,5	16	8,3	80,0	109,0
19893	4 G 1,5	16	9,2	97,0	132,0
19894	5 G 1,5	16	10,0	119,0	169,0
19895	7 G 1,5	16	11,6	147,0	219,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
19896	12 G 1,5	16	13,8	267,0	363,0
19897	18 G 1,5	16	16,2	374,0	496,0
19898	25 G 1,5	16	19,0	526,0	724,0
19899	36 G 1,5	16	21,5	702,0	1190,0
19900	2 x 2,5	14	9,5	96,0	136,0
19901	3 G 2,5	14	10,3	144,0	179,0
19902	4 G 2,5	14	11,3	149,0	201,0
19903	5 G 2,5	14	12,4	181,0	232,0
19904	7 G 2,5	14	14,4	255,0	357,0
19905	12 G 2,5	14	17,5	441,0	586,0
19906	18 G 2,5	14	20,3	604,0	1064,0
19907	25 G 2,5	14	24,2	793,0	1411,0
19908	36 G 2,5	14	27,2	1034,0	1623,0
19909	3 G 4	12	11,5	174,0	257,0
19910	4 G 4	12	12,4	230,0	324,0
19911	5 G 4	12	13,5	274,0	401,0
19912	6 G 4	12	15,2	295,0	456,0
19913	7 G 4	12	16,3	316,0	511,0
19914	3 G 6	10	13,5	240,0	343,0
19915	4 G 6	10	15,2	305,0	427,0
19916	5 G 6	10	16,5	442,0	562,0
19917	6 G 6	10	17,8	471,0	628,0
19918	7 G 6	10	19,5	505,0	692,0
19919	3 G 10	8	17,1	367,0	731,0
19920	4 G 10	8	19,0	549,0	992,0
19921	5 G 10	8	20,7	607,0	1014,0
19922	6 G 10	8	22,0	711,0	1241,0
19923	7 G 10	8	24,0	820,0	1491,0
19924	3 G 16	6	19,8	692,0	1004,0
19925	4 G 16	6	21,8	840,0	1296,0
19926	5 G 16	6	24,0	1050,0	1658,0

Dimensions and specifications may be changed without prior notice. (RW01)

SHIPFLEX® 330 cable for drag chain, halogen-free, EMC prefered type, meter marking



Technical data

- Special screened drag chain cable
- UL-Style 20233
- **Temperature range**
  flexing -40°C to +80°C
  fixed installation -40°C to +80°C
- **Installation temperature**
  min. -25°C
- **Nominal voltage**
  VDE U_0/U 300/500 V
- UL 300 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Minimum bending radius**
  7,5x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Special core insulation
- coloured cores to DIN 47100
- Cores stranded in layers with optimal selected lay-length
- Core wrapping between the layers of stranding
- Braided screen of tinned copper wires, coverage approx. 85 %, optional aluminium foil under the screen
- **Full polyurethane** outer sheath to UL std. 1581 Tab. 50227
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Flame retardant to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Halogen-free to DIN VDE 0482 part 267/ DIN EN 50267-2-1/IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Oil resistant to IEC 60092-350, appendix F
- Behaviour at low temperature at -40° to IEC 60092-350, appendix E
- Weather, ozon and UV-resistant
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

HELUKABEL® SHIPFLEX® 330 is a new developed and successfully tested special drag chain cable with overall screening which meets the requirements of the strict standards for application in offshore-areas. For this two-line standard there is a **Lloyds Register approval**. The outer sheath insulation of non-adhesive Polyurethan allows the application in extremely oily and rough environmental conditions. For applications which go beyond standard solutions we recommend that you fill out our especially developed questionnaire for drag chains. Before installation in cable drag chains please read the installation instructions.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
19846	2 x 0,25	24	5,0	14,9	38,0
19847	3 x 0,25	24	5,2	18,8	44,0
19848	4 x 0,25	24	5,5	21,3	51,0
19849	5 x 0,25	24	5,8	31,0	68,0
19850	7 x 0,25	24	6,7	39,6	82,0
19851	12 x 0,25	24	8,0	59,1	124,0
19852	18 x 0,25	24	9,0	78,4	150,0
19853	25 x 0,25	24	10,8	101,0	204,0
19854	36 x 0,25	24	11,5	126,4	230,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
19855	2 x 0,34	22	5,2	18,1	45,0
19856	3 x 0,34	22	5,5	28,7	60,0
19857	4 x 0,34	22	5,8	35,7	76,0
19858	5 x 0,34	22	6,5	39,1	82,0
19859	7 x 0,34	22	7,2	52,7	110,0
19860	12 x 0,34	22	8,5	76,4	166,0
19861	18 x 0,34	22	10,0	99,7	216,0
19862	25 x 0,34	22	12,0	155,0	305,0
19863	36 x 0,34	22	13,0	188,0	340,0

Dimensions and specifications may be changed without prior notice. (RW01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HELUTOP® HT-E

SHIPFLEX® 340 cable for drag chain, halogen-free, EMC prefered type, meter marking



Technical data

- Special screened drag chain cable, stranded in pairs
- UL-Style 20233
- **Temperature range**
  flexing -40°C to +80°C
  fixed installation -40°C to +80°C
- **Installation temperature**
  min. -25°C
- **Nominal voltage**
  VDE U_0/U 300/500 V
  UL 300 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Minimum bending radius**
  7,5x cable Ø
  Coupling resistance
  max. 250 Ohm/km
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Special coreinsulation
- Colour coded to DIN 47100
- Cores stranded in pairs, pairs stranded torsion-free in layers with optimal lay-length
- Core wrapping between the layers of stranding
- Braided screen of tinned copper wires, coverage approx. 85 %, optional aluminium foil under the screen
- **Full polyurethane** outer sheath to UL std. 1581 Tab. 50227
- Sheath colour grey (RAL 7001)
- with meter marking

Properties

- Flame retardant to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Halogen-free to DIN VDE 0482 part 267/ DIN EN 50267-2-1/IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Oil resistant to IEC 60092-350, appendix F
- Behaviour at low temperature at -40°C to IEC 60092-350, appendix E
- Weather, ozon and UV-resistant
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

HELUKABEL® SHIPFLEX® 340 is a new developed and successfully tested special drag chain cable with overall screening which meets the requirements of the strict standards for application in offshore-areas. For this two - line standard there is a **Lloyds Register approval**. The outer sheath insulation of non-adhesive Polyurethan allows the application in extremely oily and rough environmental conditions. For applications which go beyond standard solutions we recommend that you fill out our especially developed questionnaire for drag chains. Before installation in cable drag chains please read the installation instructions.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x no.cores x cross-sec. mm²	AWG-No.	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
19927	2 x 2 x 0,25	24	6,8	32,0	60,0
19928	3 x 2 x 0,25	24	7,1	38,0	70,0
19929	4 x 2 x 0,25	24	7,5	43,0	82,0
19930	5 x 2 x 0,25	24	8,0	51,0	99,0
19931	6 x 2 x 0,25	24	8,5	72,0	126,0
19932	7 x 2 x 0,25	24	9,2	75,0	135,0
19933	12 x 2 x 0,25	24	11,4	117,0	189,0
19934	18 x 2 x 0,25	24	13,5	148,0	248,0
19935	25 x 2 x 0,25	24	15,0	233,0	343,0
19936	2 x 2 x 0,34	22	7,4	41,0	81,0
19937	3 x 2 x 0,34	22	7,7	52,0	100,0
19938	4 x 2 x 0,34	22	8,4	59,0	119,0
19939	5 x 2 x 0,34	22	9,1	67,0	135,0
19940	6 x 2 x 0,34	22	10,0	86,0	163,0
19941	7 x 2 x 0,34	22	10,5	94,0	170,0
19942	12 x 2 x 0,34	22	12,2	122,0	220,0
19943	18 x 2 x 0,34	22	14,4	197,0	277,0
19944	25 x 2 x 0,34	22	16,5	238,0	400,0
19945	2 x 2 x 0,5	20	8,0	53,0	100,0
19946	3 x 2 x 0,5	20	8,4	73,0	131,0
19947	4 x 2 x 0,5	20	9,0	77,0	149,0

Part no.	No.pairs x no.cores x cross-sec. mm²	AWG-No.	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
19948	5 x 2 x 0,5	20	9,7	86,0	160,0
19949	6 x 2 x 0,5	20	10,6	103,0	170,0
19950	7 x 2 x 0,5	20	11,5	117,0	191,0
19951	12 x 2 x 0,5	20	13,5	199,0	361,0
19952	18 x 2 x 0,5	20	15,7	265,0	427,0
19953	25 x 2 x 0,5	20	18,2	344,0	740,0
19954	2 x 2 x 0,75	19	9,0	61,0	102,0
19955	3 x 2 x 0,75	19	9,5	87,0	144,0
19956	4 x 2 x 0,75	19	10,3	95,0	160,0
19957	5 x 2 x 0,75	19	11,2	115,0	193,0
19958	6 x 2 x 0,75	19	12,1	137,0	218,0
19959	7 x 2 x 0,75	19	13,0	153,0	298,0
19960	12 x 2 x 0,75	19	16,0	261,0	406,0
19961	18 x 2 x 0,75	19	18,0	374,0	519,0
19962	2 x 2 x 1	18	10,0	73,0	120,0
19963	3 x 2 x 1	18	10,4	94,0	161,0
19964	4 x 2 x 1	18	11,8	118,0	184,0
19965	5 x 2 x 1	18	12,6	139,0	217,0
19966	6 x 2 x 1	18	13,6	188,0	295,0
19967	7 x 2 x 1	18	14,8	204,0	311,0
19968	12 x 2 x 1	18	18,0	324,0	602,0

Dimensions and specifications may be changed without prior notice. (RW01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HELUTOP® HT-E

SHIPFLEX® 109 cable for drag chain, halogen-free, EMC prefered type (-C-Type) , meter marking





Technical data

- Special drag chain cable
- UL-Style 20234
- **Temperature range**
  flexing -40°C to +80°C
  fixed installation -40°C to +80°C
- **Installation temperature**
  min. -25°C
- **Nominal voltage**
  to VDE U_0/U 0,6/1 kV
  UL 1000 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Minimum bending radius**
  7,5x cable Ø
- **Coupling resistance**
  (for -C-type)
  max. 250 Ohm/km
- **Radiation resistance**
  up to 100x10⁶ cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Special core insulation
- Colour black or green-yellow
- Screened type with braided screen of tinned copper wires, coverage approx. 85 %
- **Full polyurethane** outer sheath to UL std. 1581 Tab. 50227
- Sheath colour orange (RAL 2003)
- with meter marking

Properties

- Flame retardant to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Halogen-free to DIN VDE 0482 part 267/ DIN EN 50267-2-1/IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Oil resistant to IEC 60092-350, appendix F
- Behaviour at low temperature at -40°C to IEC 60092-350, appendix E
- Weather, ozon and UV-resistant
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

HELUKABEL® SHIPFLEX® 109 Single is a new developed and successfully tested special drag chain cable which meets the requirements of the strict standards for application in offshore-areas. For this two - line standard there is a **Lloyds Register approval** . The outer sheath insulation of non-adhesive Polyurethan allows the application in extremely oily and rough environmental conditions. For applications which go beyond standard solutions we recommend that you fill out our especially developed questionnaire for drag chains. Before installation in cable drag chains please read the installation instructions.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

SHIPFLEX® 109 unscreened

Part no.	No.cores x cross-sec. mm²	AWG-No.	Core colour	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
21388	1 x 6	10	black	6,9	58,0	108,0
21374	1 G 6	10	Green-yellow	6,9	58,0	108,0
21389	1 x 10	8	black	8,3	96,0	170,0
21375	1 G 10	8	Green-yellow	8,3	96,0	170,0
21390	1 x 16	6	black	9,5	154,0	240,0
21376	1 G 16	6	Green-yellow	9,5	154,0	240,0
21391	1 x 25	4	black	11,3	240,0	370,0
21377	1 G 25	4	Green-yellow	11,3	240,0	370,0
21392	1 x 35	2	black	12,7	336,0	490,0
21378	1 G 35	2	Green-yellow	12,7	336,0	490,0
21393	1 x 50	1	black	15,0	480,0	665,0
21379	1 G 50	1	Green-yellow	15,0	480,0	665,0
21394	1 x 70	2/0	black	16,3	672,0	910,0
21380	1 G 70	2/0	Green-yellow	16,3	672,0	910,0
21395	1 x 95	3/0	black	18,8	912,0	1190,0
21381	1 G 95	3/0	Green-yellow	18,8	912,0	1190,0
21396	1 x 120	4/0	black	20,9	1152,0	1530,0
21382	1 G 120	4/0	Green-yellow	20,9	1152,0	1530,0
21397	1 x 150	300 kcmil	black	23,2	1440,0	1720,0
21383	1 G 150	300 kcmil	Green-yellow	23,2	1440,0	1720,0
21398	1 x 185	350 kcmil	black	25,7	1776,0	2280,0
21384	1 G 185	350 kcmil	Green-yellow	25,7	1776,0	2280,0
21399	1 x 240	500 kcmil	black	28,2	2304,0	2895,0
21404	1 G 240	500 kcmil	Green-yellow	28,2	2304,0	2895,0

SHIPFLEX® 109 screened

Part no.	No.cores x cross-sec. mm²	AWG-No.	Core colour	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
19798	1 x 6	10	black	7,6	72,0	140,0
21330	1 G 6	10	Green-yellow	7,6	72,0	140,0
19799	1 x 10	8	black	9,1	130,0	225,0
21331	1 G 10	8	Green-yellow	9,1	130,0	225,0
19800	1 x 16	6	black	10,2	190,0	295,0
21332	1 G 16	6	Green-yellow	10,2	190,0	295,0
19801	1 x 25	4	black	12,1	260,0	415,0
21333	1 G 25	4	Green-yellow	12,1	260,0	415,0
19802	1 x 35	2	black	13,5	405,0	610,0
21334	1 G 35	2	Green-yellow	13,5	405,0	610,0
19803	1 x 50	1	black	15,9	560,0	817,0
21335	1 G 50	1	Green-yellow	15,9	560,0	817,0
19804	1 x 70	2/0	black	17,3	780,0	1065,0
21336	1 G 70	2/0	Green-yellow	17,3	780,0	1065,0
19805	1 x 95	3/0	black	19,5	1030,0	1340,0
21337	1 G 95	3/0	Green-yellow	19,5	1030,0	1340,0
19806	1 x 120	4/0	black	21,8	1285,0	1735,0
21338	1 G 120	4/0	Green-yellow	21,8	1285,0	1735,0
19807	1 x 150	300 kcmil	black	24,1	1430,0	1910,0
21339	1 G 150	300 kcmil	Green-yellow	24,1	1430,0	1910,0
19808	1 x 185	350 kcmil	black	26,5	1940,0	2610,0
21406	1 G 185	350 kcmil	Green-yellow	26,5	1940,0	2610,0
19809	1 x 240	500 kcmil	black	29,2	2530,0	3274,0
21410	1 G 240	500 kcmil	Green-yellow	29,2	2530,0	3274,0

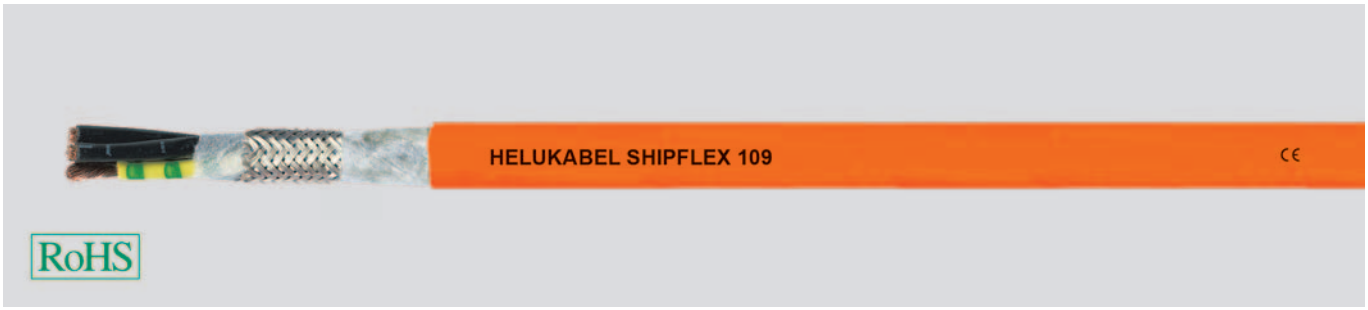
Dimensions and specifications may be changed without prior notice. (RW01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HELUTOP® HT-E

SHIPFLEX® 109 cable for drag chain, halogen-free, EMC prefered type, meter marking



Technical data

- Special screened drag chain cable
- UL-Style 20234
- **Temperature range**
  flexing -40°C to +80°C
  fixed installation -40°C to +80°C
- **Installation temperature**
  min. -25°C
- **Nominal voltage**
  to VDE U_0/U 0,6/1 kV
  UL 1000 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Minimum bending radius**
  7,5x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km
- **Radiation resistance**
  up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Special core insulation
- Black cores imprinted with U1, V2, W3
- GN-YE conductor depends on conductor cross-section may cut into thirds
- Cores stranded together with optimal lay-length
- Core wrapping between the layers of stranding
- Braided screening of tinned copper wires, coverage approx. 85%
- **Full polyurethane** outer sheath to UL std. 1581 Tab. 50227
- Sheath colour orange (RAL 2003)
- with meter marking

Properties

- Flame retardant to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Halogen-free to DIN VDE 0482 part 267/ DIN EN 50267-2-1/IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Oil resistant to IEC 60092-350, appendix F
- Behaviour at low temperature at -40°C to IEC 60092-350, appendix E
- Weather, ozon and UV-resistant
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

Application

HELUKABEL® SHIPFLEX® 109 is a new developed and successfully tested special drag chain cable with overall screening which meets the requirements of the strict standards for application in offshore-areas. For this two-line standard there is a **Lloyds Register approval**. The outer sheath insulation of non-adhesive Polyurethan allows the application in extremely oily and rough environmental conditions. For applications which go beyond standard solutions we recommend that you fill out our especially developed questionnaire for drag chains. Before installation in cable drag chains please read the installation instructions.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
19810	4 G 1	18	9,0	84,0	124,0
19811	4 G 1,5	16	10,5	105,0	175,0
19812	4 G 2,5	14	11,7	157,0	265,0
19813	4 G 4	12	13,4	231,0	390,0
19814	4 G 6	10	15,6	332,0	570,0
19815	4 G 10	8	19,2	527,0	804,0
19816	4 G 16	6	23,9	794,0	1450,0

Part no.	No.cores x cross-sec. mm²	AWG-No.	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km
19817	4 G 25	4	27,6	1180,0	1660,0
19818	4 G 35	2	32,7	1600,0	2400,0
19819	4 G 50	1	37,0	2165,0	2600,0
19820	4 G 70	2/0	43,0	3196,0	4600,0
19969	3 G 95	3/0	41,0	3090,0	4480,0
19821	4 G 95	3/0	48,0	4606,0	5350,0

Dimensions and specifications may be changed without prior notice. (RW01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HELUTOP® HT-E

SHIPFLEX® 113 cable for drag chain, halogen-free, EMC prefered type, meter marking



Technical data

- Special screened drag chain cable
- UL-Style 20234
- **Temperature range**
  flexing -40°C to +80°C
  fixed istallation -40°C to +80°C
- **Installation temperature**
  min. -25°C
  Nominal voltage
  to VDE U_0/U 0,6/1 kV
  UL 1000 V
- **Insulation resistance**
  min. 20 MOhm x km
  Minimum bending radius
  7,5x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km
- **Radiation resistance**
  up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Special core insulation
- Black power supply cores with imprint U1, V2, W3
- GN-YE conductor, depends of the diameter of the conductor
- Black control cores with white numbers 5,6
- Screening of the control cores in pairs wrapped with plastic aluminium foil, and tinned copper braided screening, approx. coverage 85%
- Control cores stranded in pairs and laid up in layers together with the power supply cores with optimal lay length and stabilising filler
- Core wrapping between the layers of stranding
- Braided screening of tinned copper wires, optimal coverage approx. 85 %
- **Full polyurethane** outer sheath to UL std. 1581 Tab. 50227
- Sheath colour orange (RAL 2003)
- with meter marking

Properties

- Flame retardant to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Halogen-free to DIN VDE 0482 part 267/ DIN EN 50267-2-1/IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Oil resistant to IEC 60092-350, appendix F
- Behaviour at low temperature at -40°C to IEC 60092-350, appendix E
- Weather, ozon and UV-resistant
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Application

HELUKABEL® SHIPFLEX® 113 is a new developed and successfully tested screened special drag chain cable which meets the requirements of the strict standards for application in offshore-areas. This kind of cable combines the feeding cores with the control cores. For this two-line standard there is a **Lloyds Register approval**. The outer sheath insulation of non-adhesive Polyurethan allows the application in extremely oily and rough environmental conditions. For applications which go beyond standard solutions we recommend that you fill out our especially developed questionnaire for drag chains. Before installation in cable drag chains please read the installation instructions.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
19822	(4 G 1,5 + (2 x 1,0))	11,5	138,0	254,0	-
19827	(4 G 1,5 + (2 x 1,5))	12,0	148,0	265,0	-
19823	(4 G 2,5 + (2 x 1,0))	13,0	176,0	328,0	-
19828	(4 G 2,5 + (2 x 1,5))	14,0	187,0	339,0	-
19824	(4 G 4 + (2 x 1,0))	14,5	258,0	460,0	-
19829	(4 G 4 + (2 x 1,5))	15,0	268,0	475,0	-
19825	(4 G 6 + (2 x 1,0))	17,0	348,0	596,0	-

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
19830	(4 G 6 + (2 x 1,5))	17,0	358,0	607,0	-
19826	(4 G 10 + (2 x 1,0))	20,0	574,0	912,0	-
19831	(4 G 10 + (2 x 1,5))	20,5	584,0	924,0	-
19832	(4 G 16 + (2 x 1,5))	24,0	825,0	1205,0	-
19833	(4 G 25 + (2 x 1,5))	28,5	1283,0	1510,0	-
19834	(4 G 35 + (2 x 1,5))	32,0	1850,0	2005,0	-
19835	(4 G 50 + (2 x 1,5))	37,0	2540,0	2890,0	-

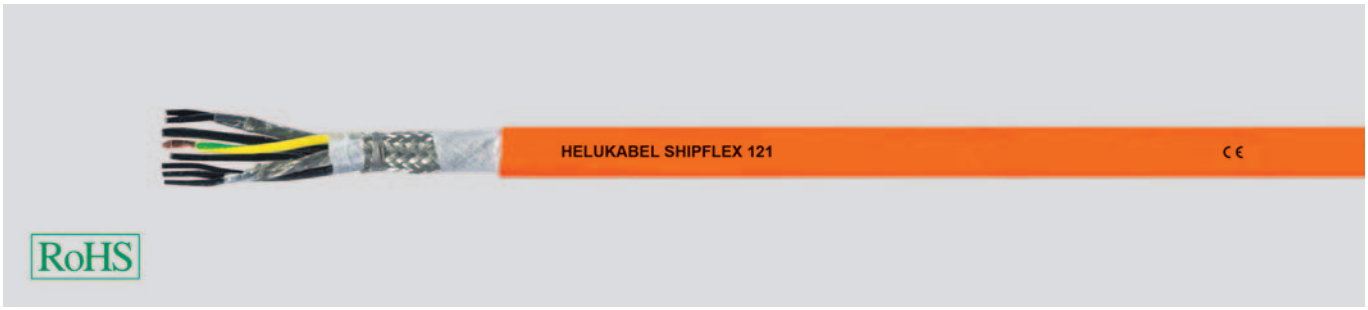
Dimensions and specifications may be changed without prior notice. (RW01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HELUTOP® HT-E

SHIPFLEX® 121 cable for drag chain, halogen-free, EMC prefered type, meter marking



Technical data

- Special screened drag chain cable
- UL-Style 20234
- **Temperature range**
  flexing -40°C to +80°C
  fixed installation -40°C to +80°C
- **Installation temperature**
  min. -25°C
- **Nominal voltage**
  to VDE U_0/U 0,6/1 kV
  UL 1000 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Minimum bending radius**
  7,5x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km
- **Radiation resistance**
  up to 100x10^6 cJ/kg (up to 100 Mrad)

Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Special core insulation
- Black power supply cores with imprint U1, V2, W3
- GN-YE conductor, depends of the diameter of the conductor
- Black control cores with white numbers 5,6 and 7,8
- Screening of the control cores in pairs wrapped with plastic aluminium foil, and tinned copper braided screening, coverage approx. 85%
- Control cores stranded in pairs and laid up in layers together with the power supply cores with optimal lay length and stabilising filler
- Core wrapping between the layers of stranding
- Braided screening of tinned copper wires, coverage approx. 85 %
- **Full polyurethane** outer sheath to UL std. 1581 Tab. 50227
- Sheath colour orange (RAL 2003)
- with meter marking

Properties

- Flame retardant to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Halogen-free to DIN VDE 0482 part 267/ DIN EN 50267-2-1/IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Oil resistant to IEC 60092-350, appendix F
- Behaviour at low temperature at-40°C to IEC 60092-350, appendix E
- Weather, ozon and UV-resistant
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

Application

HELUKABEL® SHIPFLEX® 121 is a new developed and successfully tested screened special drag chain cable which meets the requirements of the strict standards for application in offshore-areas. This kind of cable combines the feeding cores with the control cores. For this two - line standard there is a **Lloyds Register approval**. The outer sheath insulation of non-adhesive Polyurethan allows the application in extremely oily and rough environmental conditions. For applications which go beyond standard solutions we recommend that you fill out our especially developed questionnaire for drag chains. Before installation in cable drag chains please read the installation instructions.

EMC = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
19836	(4 G 1 + 2 x (2 x 0,75))	12,5	148,0	254,0	-
19837	(4 G 1,5 + 2 x (2 x 0,75))	13,0	170,0	290,0	-
19838	(4 G 2,5 + 2 x (2 x 1,0))	15,0	229,0	336,0	-
19839	(4 G 4 + (2 x 1,5) + (2 x 1,0))	17,0	318,0	485,0	-
19840	(4 G 6 + (2 x 1,5) + (2 x 1,0))	18,5	445,0	615,0	-

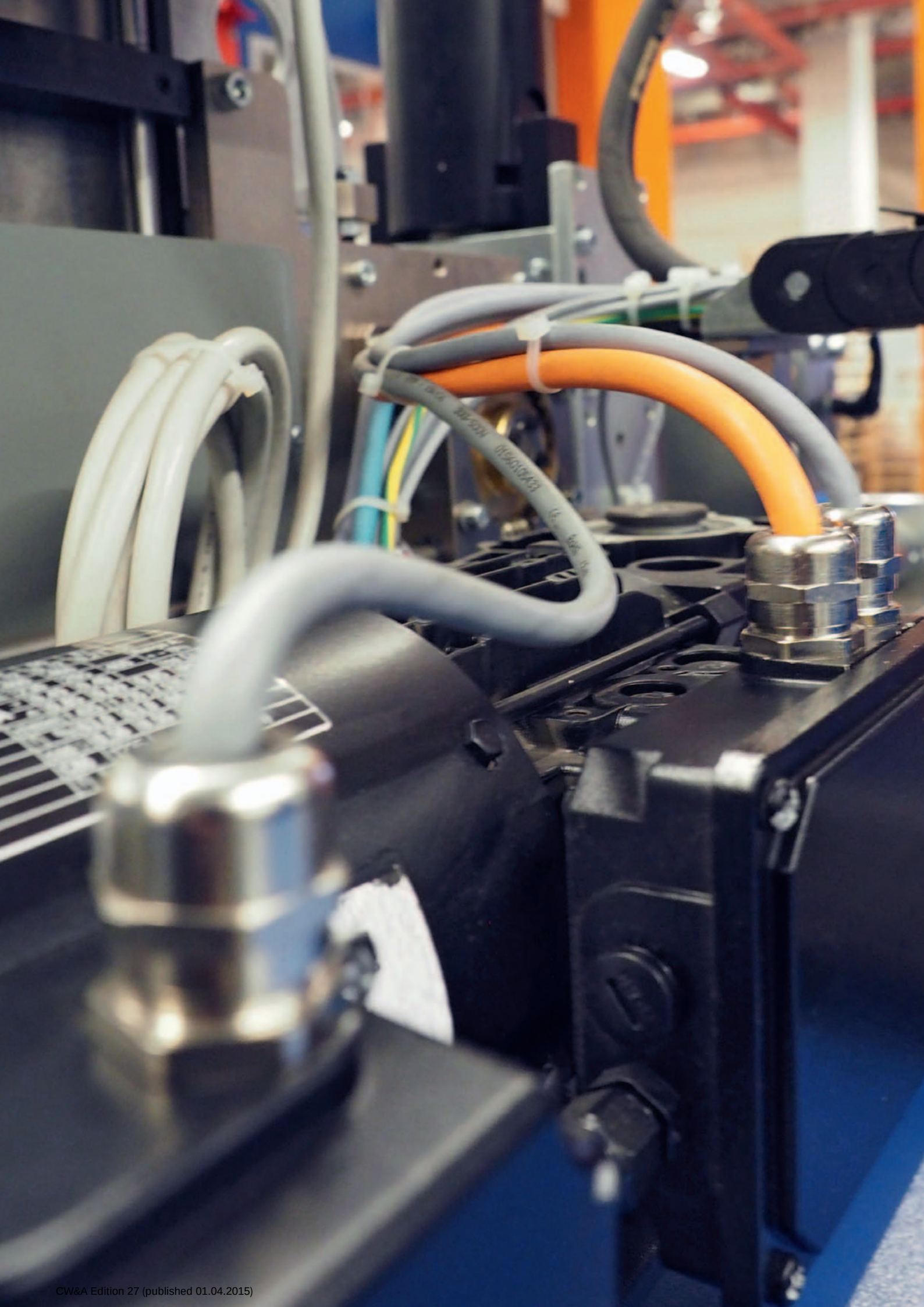
Part no.	No.cores x cross-sec. mm²	Outer Ø approx. mm	Cop. weight kg / km	Weight approx. kg / km	AWG-No.
19841	(4 G 10 + (2 x 1,5) + (2 x 1,0))	22,0	610,0	915,0	-
19842	(4 G 16 + 2 x (2 x 1,5))	25,0	904,0	1226,0	-
19843	(4 G 25 + 2 x (2 x 1,5))	29,0	1323,0	1595,0	-
19844	(4 G 35 + 2 x (2 x 1,5))	33,0	1621,0	2196,0	-
19845	(4 G 50 + 2 x (2 x 1,5))	37,0	2585,0	2995,0	-

Dimensions and specifications may be changed without prior notice. (RW01)



Suitable accessories can be found in Chapter X.

• Cable Gland - HELUTOP® HT-E



CABLE ACCESSORIES

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HSK-PVDF

HELUTOP® HT

HELUTOP® MS-EP4

KVA-XXL-MS

HELUTOP® HT-Clean

CW&A Edition 27 (published 01.04.2015)

CABLE GLANDS

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HELUTOP® HT cable gland



HELUTOP® HT

The plastic cable gland with vibration protection.

Application

- Plant and machine construction
- Robot construction
- Automation technology
- Vehicle construction and shipbuilding
- Rail technology
- Installation technology
- Control cabinet construction

Material

Polyamide PA 6
Seal: Chloroprene-rubber (CR)

- halogen-free
- phosphor-free
- silicone-free
- cadmium-free

Properties

- Optimum strain relief through clamping plates
- Easy to assemble
- Large clamping areas

Note

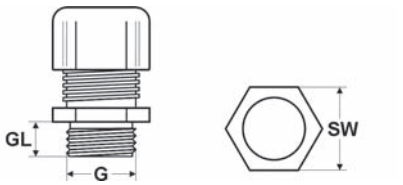
Details on the individual tests appear in section Technical Information.

Technical data

Protection class: IP 68 - 5 bar / IP 69K

Temperature range: -20°C up to +100°C

Test standard: EN50262



Dimensions

G	Thread size
GL	Thread length
SW	Spanner size

metric thread

Part no. light grey RAL 7035	Part no. dark grey RAL 7001	Part no. black RAL 9005	Size Metr.	Cable Ø from / to mm	Thread length mm	Spanner size mm	Unit	
93908	93923	93937	M12 x 1,5	3,0 - 6,5	6,0	15	100	-
93909	93924	93938	M16 x 1,5	4,0 - 8,0	8,0	19	50	-
907275	907276	907277	M16 x 1,5	5,0 - 10,0	8,0	19	50	-
92667	92668	92669	M16 x 1,5	5,0 - 10,0	10,0	22	50	-
93910	93925	93939	M20 x 1,5	6,0 - 12,0	10,0	24	50	-
93911	93926	93940	M25 x 1,5	11,0 - 17,0	8,0	29	50	-
93912	93927	93941	M32 x 1,5	15,0 - 21,0	10,0	36	25	-
93913	93928	93942	M40 x 1,5	19,0 - 28,0	10,0	46	20	-
93914	93929	93943	M50 x 1,5	30,0 - 38,0	18,0	60	10	-
93915	93930	93944	M63 x 1,5	34,0 - 44,0	18,0	65	10	-

metric thread - with reducing seal

Part no. light grey RAL 7035	Part no. dark grey RAL 7001	Part no. black RAL 9005	Size Metr.	Cable Ø from / to mm	Thread length mm	Spanner size mm	Unit	
903532	903542	903552	M12 x 1,5	2,0 - 5,0	8,0	15	100	-
903533	903543	903553	M16 x 1,5	2,0 - 6,0	8,0	19	50	-
903534	903544	903554	M20 x 1,5	5,0 - 9,0	10,0	24	50	-
903535	903545	903555	M25 x 1,5	9,0 - 13,0	8,0	29	50	-
903536	903546	903556	M32 x 1,5	11,0 - 15,0	10,0	36	25	-
903537	903547	903557	M40 x 1,5	16,0 - 23,0	10,0	46	20	-
903538	903548	903558	M50 x 1,5	25,0 - 31,0	18,0	60	10	-
903539	903549	903559	M63 x 1,5	29,0 - 35,0	18,0	65	10	-

Continuation ▸

HELUTOP® HT cable gland

PG thread

Part no. light grey RAL 7035	Part no. dark grey RAL 7001	Part no. black RAL 9005	Size PG	Cable Ø from / to mm	Thread length mm	Spanner size mm	Unit	
99300	99310	99320	7	3,0 - 6,5	8,0	15	100	-
99301	99311	99321	9	4,0 - 8,0	8,0	19	50	-
99302	99312	99322	11	5,0 - 10,0	8,0	22	50	-
99303	99313	99323	13,5	6,0 - 12,0	9,0	24	50	-
99304	99314	99324	16	10,0 - 14,0	10,0	27	50	-
99305	99315	99325	21	13,0 - 18,0	11,0	33	25	-
99306	99316	99326	29	18,0 - 25,0	11,0	42	20	-
99307	99317	99327	36	22,0 - 32,0	13,0	53	10	-
99308	99318	99328	42	30,0 - 38,0	13,0	60	10	-
99309	99319	99329	48	34,0 - 44,0	14,0	65	10	-

NPT thread

Part no. light grey RAL 7035	Part no. dark grey RAL 7001	Part no. black RAL 9005	Size NPT	Cable Ø from / to mm	Thread length mm	Spanner size mm	Unit	
92780	92790	92800	3/8"	5,0 - 10,0	15,0	22	50	-
92781	92791	92801	1/2"	6,0 - 12,0	15,0	24	50	-
92782	92792	92802	1/2"	10,0 - 14,0	15,0	27	50	-
92783	92793	92803	3/4"	13,0 - 18,0	15,0	33	25	-
92784	92794	92804	1"	18,0 - 25,0	18,0	42	20	-

Dimensions and specifications may be changed without prior notice.

HELUTOP® HT-MS cable gland



HELUTOP® HT-MS

The nickel-coated brass cable gland.

Application

- Plant and machine construction
- Robot construction
- Automation technology
- Vehicle construction and shipbuilding
- Rail technology
- Installation technology
- Control cabinet construction

Material

Brass, nickel plated
Clamp: Polyamide PA 6
Seal: Chloroprene-rubber (CR)
O-ring: NBR

Properties

- Optimum strain relief through clamping plates
- Easy to assemble
- Large clamping areas

Note

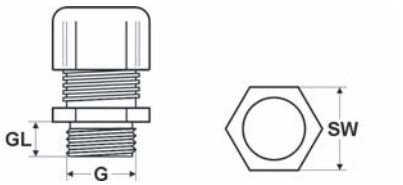
Details on the individual tests appear in section "Technical Information".

Technical data

Protection class: IP 68 - 5 bar / IP 69K

Temperature range: -40°C up to +100°C

Test standard: EN50262



Dimensions

G	Thread size
GL	Thread length
SW	Spanner size

metric thread

Part no.	Size Metr.	Cable Ø from / to mm	Thread length mm	Spanner size mm	Unit	
90760	M12 x 1,5	3,0 - 6,5	6,0	14	50	-
99960	M16 x 1,5	5,0 - 10,0	7,0	20	50	-
90762	M20 x 1,5	6,0 - 12,0	8,0	22	50	-
99961	M25 x 1,5	11,0 - 17,0	8,0	27	25	-
94624	M32 x 1,5	15,0 - 21,0	8,0	34	20	-
99962	M40 x 1,5	19,0 - 28,0	9,0	43	5	-
99963	M50 x 1,5	30,0 - 38,0	9,0	58	5	-
90767	M63 x 1,5	34,0 - 44,0	14,0	64 / 68	5	-
906199	M63 x 1,5	44,0 - 55,0	10,0	75	5	-

metric thread - with reducing seal

Part no.	Size Metr.	Cable Ø from / to mm	Thread length mm	Spanner size mm	Unit	
903560	M12 x 1,5	2,0 - 5,0	6,0	14	50	-
903561	M16 x 1,5	3,0 - 7,0	7,0	20	50	-
903562	M20 x 1,5	5,0 - 9,0	8,0	22	50	-
903563	M25 x 1,5	9,0 - 13,0	8,0	27	25	-
903564	M32 x 1,5	11,0 - 15,5	8,0	34	20	-
903565	M40 x 1,5	16,0 - 23,0	9,0	43	5	-
903566	M50 x 1,5	25,0 - 31,0	9,0	58	5	-
903567	M63 x 1,5	29,0 - 35,0	14,0	64 / 68	5	-

Continuation ▸

HELUTOP® HT-MS cable gland

PG thread

Part no.	Size PG	Cable Ø from / to mm	Thread length mm	Spanner size mm	Unit	
90750	7	3,0 - 6,5	5,0	14	50	-
90751	9	4,0 - 8,0	6,0	17	50	-
90752	11	5,0 - 10,0	6,0	20	50	-
90753	13,5	6,0 - 12,0	6,5	22	50	-
90754	16	10,0 - 14,0	6,5	24	25	-
90755	21	13,0 - 18,0	7,0	30	25	-
90756	29	18,0 - 25,0	8,0	40	20	-
90757	36	22,0 - 32,0	9,0	50	5	-
90758	42	32,0 - 38,0	14,0	58	5	-
90759	48	37,0 - 44,0	14,0	64	5	-

NPT thread

Part no.	Size NPT	Cable Ø from / to mm	Thread length mm	Spanner size mm	Unit	
99965	3/8"	5,0 - 10,0	15,0	20	50	-
99966	1/2"	6,0 - 12,0	15,0	22	50	-
99967	3/4"	13,0 - 18,0	15,0	27	25	-
99968	1"	18,0 - 25,0	17,0	34	10	-

Dimensions and specifications may be changed without prior notice.

HT-E cable gland

stainless steel



HELUTOP® HT-E

The stainless steel cable gland for heavy load.

Application

- Plant and machine construction
- Robot construction
- Automation technology
- Vehicle construction and shipbuilding
- Rail technology
- Installation technology
- Control cabinet construction

Material

Stainless steel 1.4305 / AISI 303
Clamp: Polyamide PA 6
Seal: Chloroprene-rubber (CR)
O-ring: NBR

Properties

- Optimum strain relief through clamping plates
- Highly corrosion-resistant
- Highly durable
- Easy to assemble
- Large clamping areas

Note

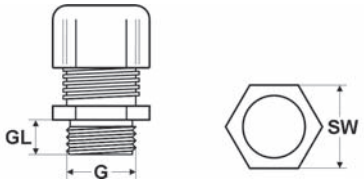
Details on the individual tests appear in section "Technical Information".

Technical data

Protection class: IP 68 - 5 bar

Temperature range: -40°C up to +100°C

Test standard: EN50262



Dimensions

G	Thread size
GL	Thread length
SW	Spanner size

metric thread

Part no.	Size Metr.	Cable Ø from / to mm	Thread length mm	Spanner size mm	Unit	
99980	M12 x 1,5	3,0 - 6,5	6,0	14	50	-
99981	M16 x 1,5	5,0 - 10,0	7,0	22	50	-
99982	M20 x 1,5	6,0 - 12,0	8,0	22	50	-
99983	M25 x 1,5	11,0 - 17,0	8,0	27	25	-
99984	M32 x 1,5	15,0 - 21,0	8,0	36	25	-
99985	M40 x 1,5	19,0 - 28,0	9,0	46	20	-
99986	M50 x 1,5	30,0 - 38,0	9,0	60	12	-
99987	M63 x 1,5	34,0 - 44,0	14,0	65 / 68	12	-

PG thread

Part no.	Size PG	Cable Ø from / to mm	Thread length mm	Spanner size mm	Unit	
99970	7	3,0 - 6,5	6,0	14	50	-
99971	9	4,0 - 8,0	6,0	17	50	-
99972	11	5,0 - 10,0	6,0	22	50	-
99973	13,5	6,0 - 12,0	6,5	22	50	-
99974	16	10,0 - 14,0	6,5	24	25	-
99975	21	13,0 - 18,0	7,2	30	25	-
99976	29	18,0 - 25,0	8,0	41	20	-
99977	36	22,0 - 32,0	9,0	50	15	-
99978	42	30,0 - 38,0	12,0	60	12	-
99979	48	34,0 - 44,0	14,0	65	12	-

NPT thread

Part no.	Size NPT	Cable Ø from / to mm	Thread length mm	Spanner size mm	Unit	
99800	3/8"	5,0 - 10,0	11,5	20	50	-
99801	1/2"	6,0 - 12,0	13,0	22	50	-
99802	3/4"	13,0 - 18,0	13,0	30	25	-
99803	1"	18,0 - 25,0	13,0	40 / 43	10	-

Dimensions and specifications may be changed without prior notice.

HELUTOP® MS-EP EMC cable gland



HELUTOP® MS-EP

The EMC- and earthing gland with integrated contact system for safe, quick assembly and contacting.

Application

- Plant and machine construction
- Robot construction
- Automation technology
- Vehicle construction and shipbuilding
- Rail technology
- Installation technology
- Control cabinet construction

Material

Brass, nickel plated
Contact system: Copper-Beryllium
Clamp: Polyamide PA 6
Seal: Chloroprene-rubber (CR)
O-ring: NBR

Properties

- Optimum strain relief through clamping plates
- No damage of shield during assembly or disassembly by moving contact ring
- Contact made automatically when the gland is closed
- Excellent shield damping and current deflection
- High savings achieved in time and assembly costs

Note

Details on the individual tests appear in section "Technical Information".

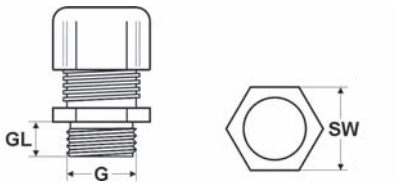
Technical data

Protection class: IP 68 - 5 bar

Temperature range: -40°C up to +100°C

Test standard: EN50262

Contact system: patented



Dimensions

G	Thread size
GL	Thread length
SW	Spanner size

metric thread

Part no.	Size Metr.	Cable Ø from / to mm	Thread length mm	Spanner size mm	Unit	
99950	M12 x 1,5	3,0 - 6,5	6,0	14	50	-
99951	M16 x 1,5	5,0 - 10,0	7,0	20	50	-
99952	M20 x 1,5	6,0 - 12,0	8,0	22	50	-
99953	M25 x 1,5	11,0 - 17,0	8,0	27	25	-
99954	M32 x 1,5	15,0 - 21,0	8,0	34	25	-
99955	M40 x 1,5	19,0 - 28,0	9,0	43	20	-
99956	M50 x 1,5	27,0 - 38,0	9,0	58	5	-
99957	M63 x 1,5	34,0 - 44,0	14,0	64 / 68	5	-

Dimensions and specifications may be changed without prior notice.

HELUTOP® MS-EP4 EMC cable gland



HELUTOP® MS-EP4

The EMC- cable gland with integrated contact system.

Application

- Plant and machine construction
- Robot construction
- Automation technology
- Vehicle construction and shipbuilding
- Rail technology
- Installation technology
- Control cabinet construction

Material

Brass, nickel plated
Contact system: Copper-Beryllium
Clamp: Polyamide PA 6
Seal: Chloroprene-rubber (CR)
O-ring: NBR

Properties

- Easy installation
- Secure contact
- High vibration resistance

Note

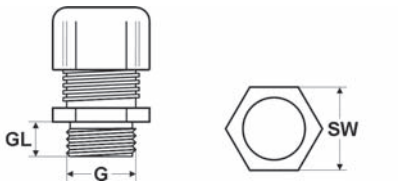
Details on the individual tests appear in section "Technical Information".

Technical data

Protection class: IP 68 - 5 bar

Temperature range: -40°C up to +100°C

Contact system: patented



Dimensions

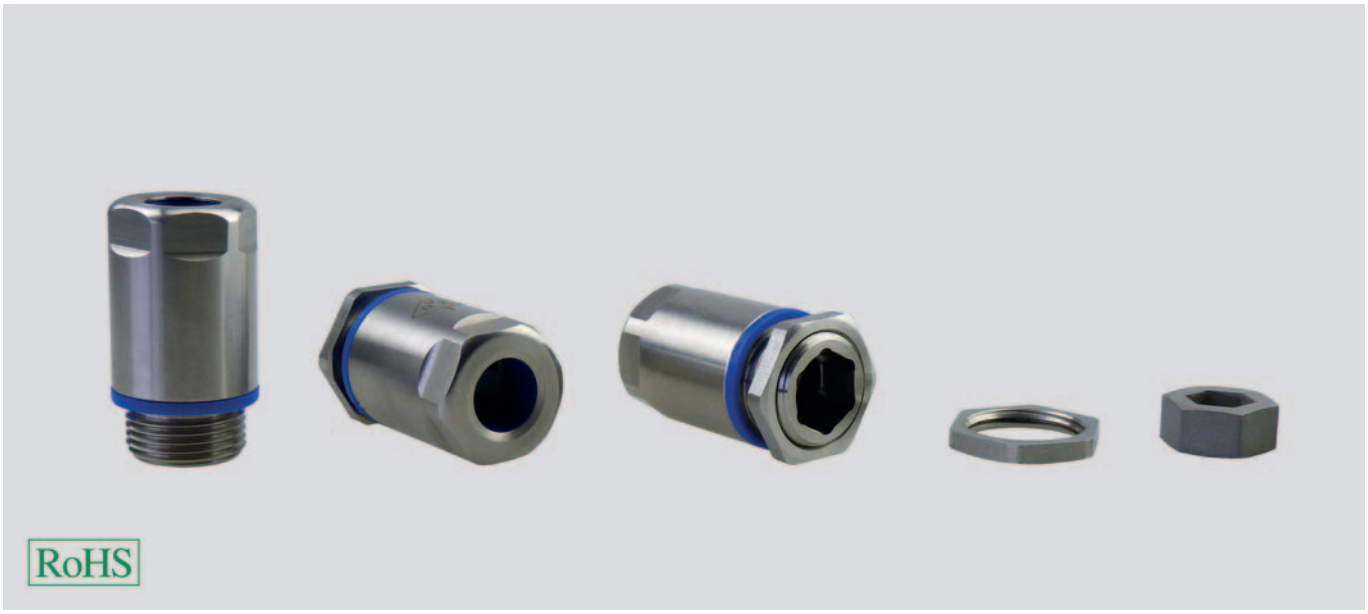
G	Thread size
GL	Thread length
SW	Spanner size

metric thread

Part no.	Size Metr.	Cable Ø from / to mm	Thread length mm	Spanner size mm	Unit	
905181	M12 x 1,5	3,0 - 6,5	6,0	14	50	-
905182	M16 x 1,5	5,0 - 10,0	6,0	20	50	-
905183	M20 x 1,5	6,0 - 12,0	6,0	22	50	-
905184	M20 x 1,5	7,5 - 14,0	8,0	24	50	-
905185	M25 x 1,5	10,0 - 18,0	8,0	30	25	-
905186	M32 x 1,5	16,0 - 25,0	9,0	40	20	-
905187	M40 x 1,5	22,0 - 32,0	9,0	50	20	-
905188	M50 x 1,5	30,0 - 38,0	9,0	58	10	-
905189	M63 x 1,5	34,0 - 44,0	14,0	64 / 68	5	-
905248	M63 x 1,5	37,0 - 53,0	10,0	75	5	-

Dimensions and specifications may be changed without prior notice.

HELUTOP® HT-Clean Stainless steel cable gland



HELUTOP® HT-Clean

Highest requirements to cleanliness and cleaning.

Application

- Food industry - milk and meat products
- Packaging of food machines
- Beverage industry
- Pharmaceutical industry
- Clean room technology
- Biotechnology
- Chemical industry

Material

Stainless steel 1.4305 / AISI 303
Strain relief: POM
Grommet: **TPE according to FDA 21 CFR 177.2600**

Properties

- the smooth surface prevents to adhere harmfull micro organisms
- easy, fast and less expensive cleaning because of the smooth surface
- suitable for high pressure steam cleanin
- resistent against chemical cleaning supplies
- no threads are exposed
- high tightness
- no enter from water and dirt from outside
- reliable strain relief due to strain relief element separated from grommet

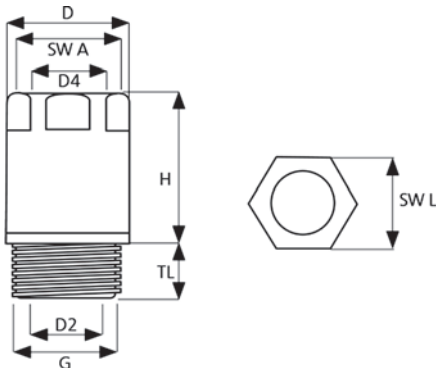
Note

- For tightening from outside you have to use the listed tightening tool
- The cable gland can be assembled with a commercial socket wrench
- **Delivery including counternut**

Technical data

Protection class: IP 68-5 bar, 30 min. according to EN 60529;
IP 69K according to DIN 40050-9

Temperature range: -20°C up to +100°C
Temperature range temporary: -40°C up to +150°C



Dimensions

D	Outer diameter of upper part
D2	Inner diameter of thread
D4	Inner diameter of upper part
H	Hight without thread
TL	Thread length
SW	Spanner size

HELUTOP® Clean

Part no.	Size Metr.	Cable Ø from / to mm	Thread length mm	Spanner size mm	Outer Ø of upper part mm	Inner Ø of upper part mm	Inner Ø of thread mm	Hight without thread mm	Recommended Cap Counternut Nm	Unit
906914	M12 x 1,5	3,0 - 6,5	6,0	14	15,6	6,8	7	21,5	2,5	1
906915	M16 x 1,5	5,0 - 10,0	7,0	18	20,2	10,3	10	23	4	1
906916	M20 x 1,5	6,0 - 12,0	10,0	22	24,1	12,3	13	27	5	1
906917	M25 x 1,5	12,0 - 17,0	14,0	28	30,1	17,3	17	30	6	1

Counternut

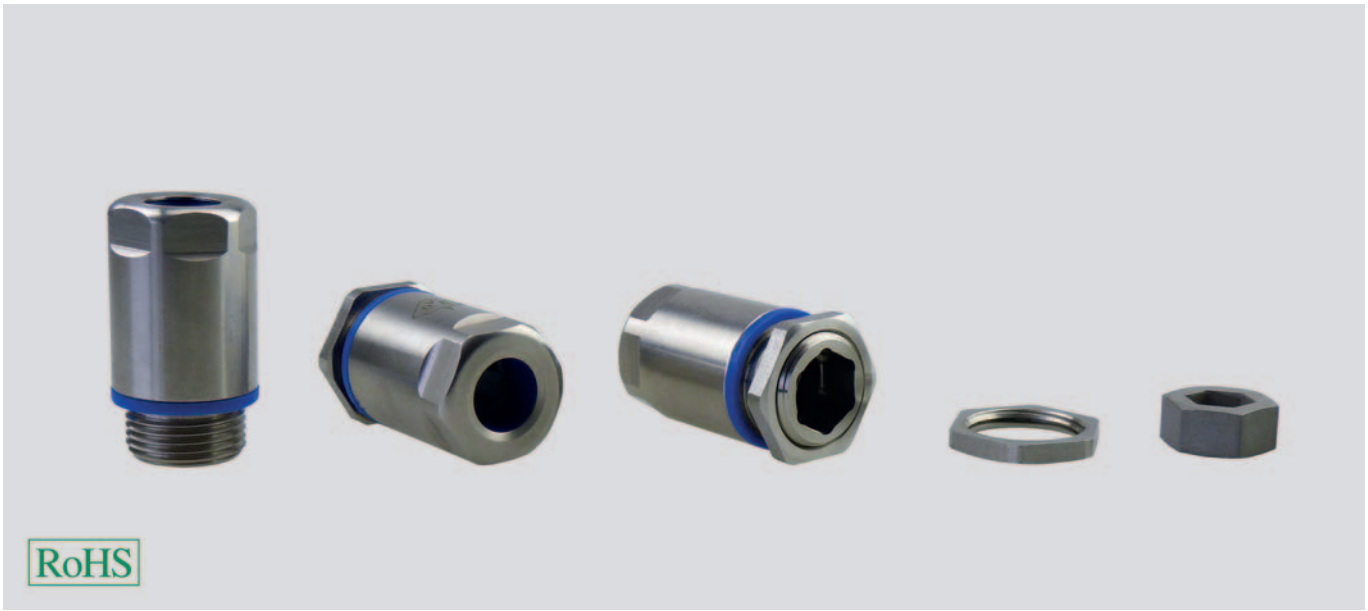
Spanner size mm	Hight without thread mm	Recommended Cap Counternut Nm
15	2,8	6
19	3	9
24	3,5	12
30	4	14

Tightening Tool

Part no.	Size Metr.	Spanner size mm	Height mm	Unit
906921	M12 x 1,5	5 / 7	5	1
906922	M16 x 1,5	6 / 10	5	1
906923	M20 x 1,5	8 / 13	8	1
906924	M25 x 1,5	10 / 17	8	1

Dimensions and specifications may be changed without prior notice.

HELUTOP® HT-Clean-EMV (EMC) Stainless steel cable gland



HELUTOP® HT-Clean EMC

Highest requirements to cleanliness and cleaning.

Application

- Food industry - milk and meat products
- Packaging of food machines
- Beverage industry
- Pharmaceutical industry
- Clean room technology
- Biotechnology
- Chemical industry

Material

Stainless steel 1.4305 / AISI 303
Strain relief: POM
Grommet: **TPE according to FDA 21 CFR 177.2600**

Properties

- the smooth surface prevents to adhere harmfull micro organisms
- easy, fast and less expensive cleaning because of the smooth surface
- suitable for high pressure steam cleanin
- resistent against chemical cleaning supplies
- no threads are exposed
- high tightness
- no enter from water and dirt from outside
- reliable strain relief due to strain relief element separated from grommet

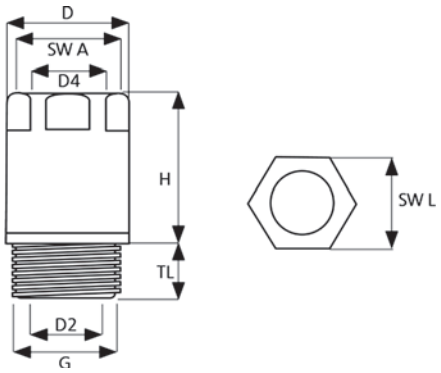
Note

- For tightening from outside you have to use the listed tightening tool
- The cable gland can be assembled with a commercial socket wrench
- **Delivery including Counternut**

Technical data

Protection class: IP 68-5 bar, 30 min. according to EN 60529;
IP 69K according to DIN 40050-9

Temperature range: -20°C up to +100°C
Temperature range temporary: -40°C up to +150°C



Dimensions

D	Outer diameter of upper part
D2	Inner diameter of thread
D4	Inner diameter of upper part
H	Hight without thread
TL	Thread length
SW	Spanner size

HELUTOP® Clean-EMV (EMC)

Part no.	Size Metr.	Cable Ø from / to mm	Thread length mm	Spanner size mm	Outer Ø of upper part mm	Inner Ø of upper part mm	Inner Ø of thread mm	Hight without thread mm	Recommended Cap Counternut Nm	Unit
906918	M16 x 1,5	5,0 - 10,0	7,0	18	20,2	10,3	10	28,5	4	1
906919	M20 x 1,5	6,0 - 12,0	10,0	22	24,1	12,3	13	33	5	1
906920	M25 x 1,5	12,0 - 17,0	14,0	28	30,1	17,3	17	38	6	1

Counternut Clean-EMV (EMC)

Spanner size mm	Hight without thread mm	Recommended Cap Counternut Nm
19	3	9
24	3,5	12
30	4	14

Tightening Tool

Part no.	Size Metr.	Spanner size mm	Height mm	Unit
906921	M12 x 1,5	5 / 7	5	1
906922	M16 x 1,5	6 / 10	5	1
906923	M20 x 1,5	8 / 13	8	1
906924	M25 x 1,5	10 / 17	8	1

Dimensions and specifications may be changed without prior notice.

HELUTOP® HT-PA-EX explosive area

ATEX



HELUTOP® HT-PA-EX

For use in explosive areas.

Application

- Zone 1, Zone 2, Zone 21, Zone 22, IIA, IIB, IIC

Material

Polyamide PA 6
Seal: NBR
O-ring: NBR

- halogen-free
- phosphor-free
- silicone-free
- cadmium-free

Note

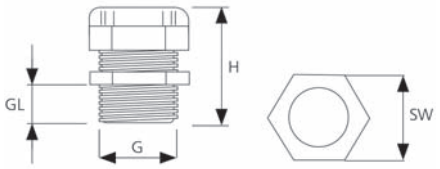
Certificate of Conformity:
IMQ 08 ATEX 012 X
Marking: EX II 2GD Ex e II, Ex tD A21
For intrinsically safe area type "i", in blue on request.

Technical data

Protection class: IP 66 / IP 68 (EN 60529)

Temperature range: -20°C up to +80°C

Test standard: EN60079-0:2006 / EN60079-7:2007 / EN60079-11:2007 / EN61241-0:2006 / EN61241-1:2004



Dimensions

G	Thread size
GL	Thread length
SW	Spanner size

Part no. black	Size Metr.	Cable Ø from / to mm	Thread length mm	Spanner size mm	Height mm	Unit
906689	M12 x 1,5	3,0 - 6,5	8,0	15	31	100
906936	M12 x 1,5	3,0 - 6,5	15,0	15	31	100
906690	M16 x 1,5	4,5 - 10,0	10,0	19	38	50
906937	M16 x 1,5	4,5 - 10,0	15,0	19	43	50
906691	M20 x 1,5	6,0 - 12,0	10,0	24	41	50
906938	M20 x 1,5	6,0 - 12,0	15,0	24	46	50
906692	M20 x 1,5	10,0 - 14,0	10,0	27	42	50
906939	M20 x 1,5	10,0 - 14,0	15,0	27	46,5	50
906693	M25 x 1,5	13,0 - 18,0	10,0	33	47	25
906940	M25 x 1,5	13,0 - 18,0	15,0	33	47	25
906694	M25 x 1,5	11,0 - 17,0	8,0	29	42,5	50
906695	M32 x 1,5	15,0 - 21,0	10,0	36	50	25
906696	M32 x 1,5	18,0 - 25,0	15,0	42	58,5	25
906697	M40 x 1,5	19,0 - 28,0	10,0	46	55	20
906698	M40 x 1,5	22,0 - 32,0	18,0	53	68	10
906699	M50 x 1,5	30,0 - 38,0	18,0	60	69	10
906700	M63 x 1,5	34,0 - 44,0	18,0	65	71	10

Dimensions and specifications may be changed without prior notice.

HELUTOP® HT-MS-EX-d cable gland

ATEX

Brass, explosive area, pressure resistant



RoHS

HELUTOP® HT-MS-EX-d

For use in explosive areas

Application

- Zone 1, Zone 2, Zone 21, Zone 22, IIA, IIB, IIC

Material

Brass, nickel plated
Clamp: Polyamide PA 6
Seal: Chloroprene-rubber (CR)
O-ring: NBR

Note

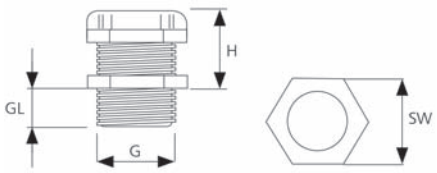
Certificate of Conformity:
IMQ 11 ATEX 038X
Marking:
Ex-d, Ex-e, EX II 2GD, Exd IIC Gb, Exe IIC Gb, Ex t IIIC DB
Stainless steel 1.4404 and other temperature ranges available on request.
Unit: 1 pcs

Technical data

Protection class: IP 66 / IP 68 (EN 60529)

Temperature range: -30°C up to +120°C

Test standard: EN60079-0:2009 / EN60079-1:2007 / EN60079-7:2007 / EN60079-11:2010 / EN60079-31:2009



Dimensions

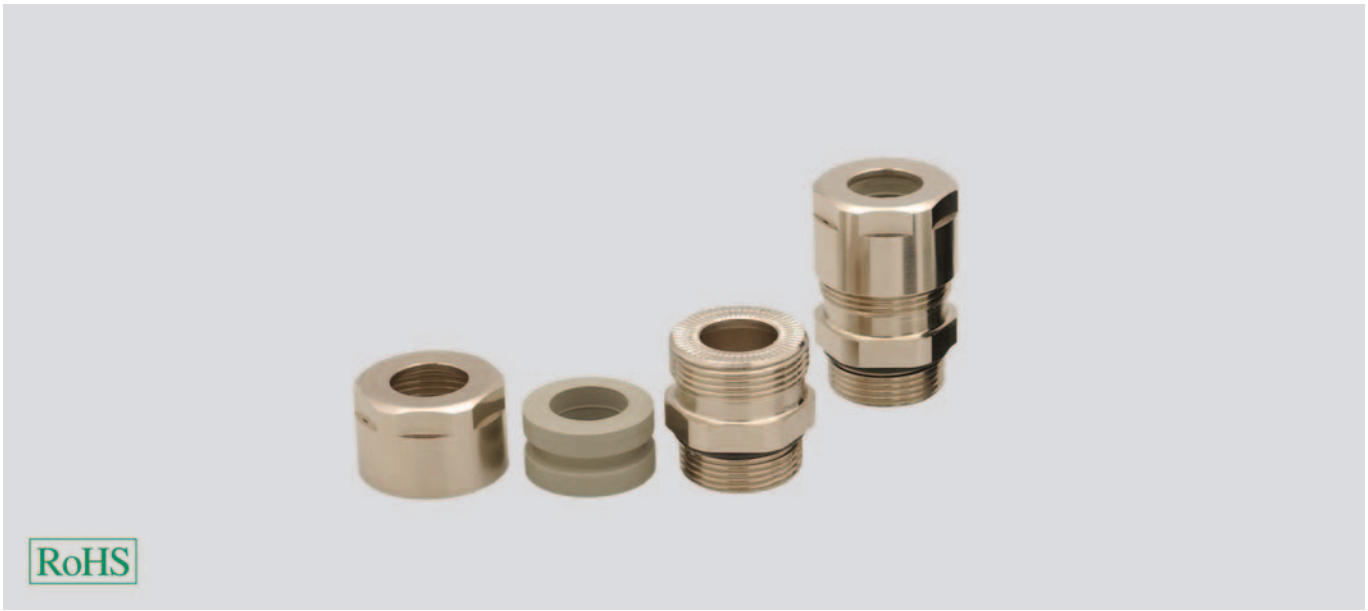
G	Thread size
GL	Thread length
SW	Spanner size

Part no.	Size Metr.	Cable Ø from / to mm	Thread length mm	Spanner size mm	Height mm
906941	M16 x 1,5	3,0 - 12,0	16,0	22	24
906942	M20 x 1,5	3,0 - 12,0	16,0	22	24
906943	M20 x 1,5	10,0 - 16,0	16,0	28	29
906944	M25 x 1,5	10,0 - 18,0	16,0	28	24
906945	M25 x 1,5	14,0 - 20,0	16,0	35	34
906946	M32 x 1,5	14,0 - 24,0	16,0	35	27
906947	M32 x 1,5	22,0 - 28,0	16,0	45	37
906948	M40 x 1,5	22,0 - 32,0	18,0	45	27
906949	M40 x 1,5	26,0 - 34,0	18,0	50	37
906950	M50 x 1,5	26,0 - 35,0	18,0	55 / 50	28
906951	M50 x 1,5	35,0 - 44,0	18,0	55 / 58	45
906952	M63 x 1,5	35,0 - 45,0	18,0	68 / 58	35
906953	M63 x 1,5	45,0 - 57,0	18,0	75 / 80	44
906954	M75 x 1,5	46,0 - 62,0	20,0	80	44
906955	M75 x 1,5	60,0 - 70,0	20,0	95	55
906956	M90 x 1,5	60,0 - 75,0	20,0	95	55
906957	M90 x 1,5	75,0 - 85,0	20,0	105	57
906958	M100 x 1,5	75,0 - 85,0	20,0	105	57
906982	M110 x 1,5	85,0 - 95,0	20,0	115	57

Dimensions and specifications may be changed without prior notice.

HELUTOP® HT-MS Plus cable gland

for increased strain relief



HELUTOP® HT-MS Plus

The nickel-coated brass cable gland for very high density and strain relief.

Application

- Plant and machine construction
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction

Material

Brass, nickel plated
Seal: NBR
O-ring: NBR

Properties

- Optimum strain relief through clamping plates (strain relief B to EN 50262 over the entire clamping region)
- Easy to assemble
- Large clamping areas

Note

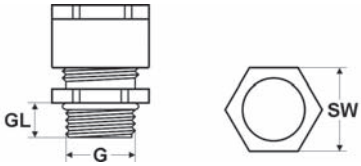
For rotating the cap nut use tool. Note tightening torque!
Details on the individual tests appear in section "Technical Information".

Technical data

Protection class: IP 68 - 40 bar / IP 69K

Temperature range: -40°C up to +120°C

Test standard: EN50262



Dimensions

G	Thread size
GL	Thread length
SW	Spanner size

metric thread

Part no.	Size Metr.	Sealing insert colour	Cable Ø from / to mm	Thread length mm	Spanner size mm	Unit	
905720	M16 x 1,5	grey	4,0 - 11,0	8,0	21	100	-
905721	M20 x 1,5	grey	5,0 - 13,0	10,0	24	100	-
905722	M25 x 1,5	grey	6,5 - 15,5	10,0	28	50	-
905723	M25 x 1,5	grey	10,0 - 20,0	10,0	30	50	-

Dimensions and specifications may be changed without prior notice.

HSK-PVDF cable gland

Polyvinylidene fluoride



HSK-PVDF

Polyvinylidene fluoride for use in the chemical industry, at high temperatures, under long-term UV exposure.
The cable gland to meet stringent requirements in technology.

Material

PVDF
Clamp: PVDF
Seal: FKM

- phosphor-free
- silicone-free
- cadmium-free

Properties

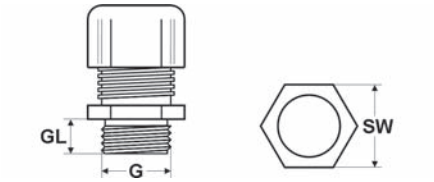
- Easy to assemble
- Completely water-tight
- Optimum strain relief
- Large clamping areas

Technical data

Protection class: IP 68 - 10 bar / IP 69K (within the specific clamping range with additional o-ring)

Temperature range: -35°C up to +150°C

Test standard: EN50262



Dimensions

G	Thread size
GL	Thread length
SW	Spanner size

metric thread

Part no. natural	Size Metr.	Cable Ø from / to mm	Thread length mm	Spanner size mm	Unit	
97527	M12 x 1,5	3,0 - 6,5	8,0	15	50	-
97528	M16 x 1,5	4,0 - 8,0	8,0	19	50	-
97529	M20 x 1,5	6,0 - 12,0	9,0	24	50	-
97530	M25 x 1,5	13,0 - 18,0	11,0	33	50	-
97531	M32 x 1,5	18,0 - 25,0	11,0	42	25	-

metric thread - with reducing seal

Part no. natural	Size Metr.	Cable Ø from / to mm	Thread length mm	Spanner size mm	Unit	
99630	M12 x 1,5	2,0 - 5,0	8,0	15	50	-
99631	M16 x 1,5	2,0 - 6,0	8,0	19	50	-
99632	M20 x 1,5	5,0 - 9,0	9,0	24	50	-
99633	M25 x 1,5	9,0 - 16,0	11,0	33	50	-
99634	M32 x 1,5	13,0 - 20,0	11,0	42	25	-

Continuation ▸

HSK-PVDF cable gland

Polyvinylidene fluoride

PG thread

Part no. natural	Size PG	Cable Ø from / to mm	Thread length mm	Spanner size mm	Unit	
97184	7	3,0 - 6,5	8,0	15	50	-
96748	9	4,0 - 8,0	8,0	19	50	-
97185	11	5,0 - 10,0	8,0	22	50	-
97186	13,5	6,0 - 12,0	9,0	24	50	-
97187	16	10,0 - 14,0	10,0	27	50	-
97188	21	13,0 - 18,0	11,0	33	50	-
97189	29	18,0 - 25,0	11,0	42	25	-
97190	36	22,0 - 32,0	13,0	53	10	-
97191	42	32,0 - 38,0	13,0	60	5	-
97192	48	37,0 - 44,0	14,0	65	5	-

NPT thread

Part no. natural	Size NPT	Cable Ø from / to mm	Thread length mm	Spanner size mm	Unit	
91675	3/8"	4,0 - 8,0	15,0	19 / 22	50	-
91676	1/2"	6,0 - 12,0	13,0	24	50	-
91677	1/2"	10,0 - 14,0	13,0	27	50	-
91678	3/4"	13,0 - 18,0	14,0	33	50	-

Dimensions and specifications may be changed without prior notice.

KVA-XXL-MS cable gland

for particularly large cable diameters



RoHS

KVA-XXL-MS

Cable gland made of brass for very large cable diameters.

Application

- Plant and machine construction
- Robot construction
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction

Material

Brass, nickel plated
Seal: TPE-V
O-ring: NBR

Properties

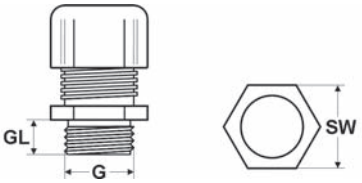
- Large-area cable sealing
- Easy to assemble
- Large clamping range

Technical data

Protection class: IP 68 - 10 bar

Temperature range: -40°C up to +135°C

Test standard: EN50262



Dimensions

G	Thread size
GL	Thread length
SW	Spanner size

metric thread

Part no.	Size Metr.	Cable Ø from / to mm	Thread length mm	Spanner size mm	Unit	
905957	M63 x 1,5	42,0 - 48,0	10,0	70	1	-
93569	M63 x 1,5	45,0 - 51,0	10,0	70	1	-
92779	M72 x 2,0	46,0 - 52,0	15,0	80	1	-
93727	M72 x 2,0	51,0 - 55,0	15,0	80	1	-
905958	M75 x 1,5	51,0 - 55,0	15,0	80	1	-
905959	M75 x 1,5	54,0 - 58,0	15,0	80	1	-
93105	M80 x 2,0	58,0 - 64,0	15,0	95	1	-
905960	M80 x 2,0	63,0 - 70,0	15,0	95	1	-
905961	M90 x 2,0	69,0 - 75,0	20,0	110	1	-
905962	M90 x 2,0	74,0 - 80,0	20,0	110	1	-
905963	M100 x 2,0	79,0 - 85,0	20,0	110	1	-
905964	M105 x 2,0	84,0 - 90,0	20,0	120	1	-
905965	M110 x 2,0	89,0 - 95,0	20,0	120	1	-
905966	M115 x 2,0	89,0 - 95,0	20,0	120	1	-

Dimensions and specifications may be changed without prior notice.

KVA-XXL-MS-E EMC cable gland

for particularly large diameters



KVA-XXL-MS-E

EMC and sealing cable gland made by brass for particularly large cable diameters.

Application

- Plant and machine construction
- Robot construction
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction

Material

Brass, nickel plated
Contact system: stainless steel 1.4310

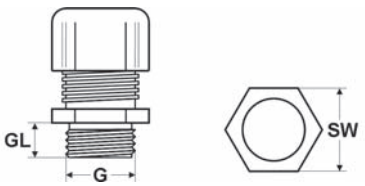
Properties

- Large-area cable sealing
- Easy to assemble
- Large clamping range

Technical data

Protection class: IP 68 - 10 bar

Temperature range: -40°C up to +135°C



Dimensions

G	Thread size
GL	Thread length
SW	Spanner size

metric thread

Part no.	Size Metr.	Cable Ø from / to mm	Outer Ø Shielding from / up to mm	Thread length mm	Spanner size mm	Unit	
98257	M63 x 1,5	40,0 - 45,0	36,0 - 41,0	10,0	65	1	-
96560	M63 x 1,5	45,0 - 51,0	36,0 - 45,0	10,0	70	1	-
94218	M63 x 1,5	45,0 - 51,0	40,0 - 48,0	10,0	70	1	-
98725	M63 x 1,5	51,0 - 55,0	40,0 - 48,0	10,0	80	1	-
94189	M72 x 2,0	40,0 - 45,0	36,0 - 41,0	15,0	70	1	-
94847	M72 x 2,0	45,0 - 51,0	40,0 - 48,0	15,0	70	1	-
905498	M72 x 2,0	51,0 - 55,0	40,0 - 48,5	15,0	80	1	-
94208	M72 x 2,0	51,0 - 55,0	46,0 - 54,0	15,0	80	1	-
94188	M72 x 2,0	54,0 - 58,0	40,0 - 48,0	15,0	80	1	-
93728	M75 x 1,5	42,0 - 48,0	40,0 - 48,0	15,0	70	1	-
91600	M75 x 1,5	45,0 - 51,0	40,0 - 48,0	15,0	70	1	-
90068	M75 x 1,5	54,0 - 58,0	46,0 - 54,0	15,0	80	1	-
97066	M80 x 2,0	58,0 - 64,0	46,0 - 54,0	15,0	95	1	-
98908	M80 x 2,0	63,0 - 70,0	46,0 - 54,0	15,0	95	1	-
905303	M80 x 2,0	63,0 - 70,0	46,0 - 58,0	15,0	95	1	-

Dimensions and specifications may be changed without prior notice.

STK-F flat cable gland



STK-F
The plastic flat cable gland.

Application
- Plant and machine construction
- Robot construction
- Automation technology
- Vehicle construction and shipbuilding
- Rail technology
- Installation technology
- Control cabinet construction

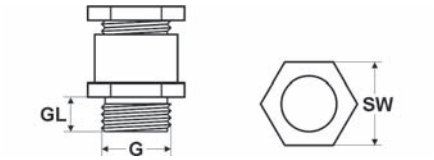
Material
Polyamide
Seal: SBR
Thrust washers: Galvanised steel

- halogen-free
- phosphor-free
- silicone-free
- cadmium-free

Note
Protection classification IP 65 with an additional O-ring on the external thread.

Technical data
Protection class: IP 54

Temperature range: -30°C up to +80°C



Dimensions

G	Thread size
GL	Thread length
SW	Spanner size

metric thread

Part no. light grey RAL 7035	Size Metr.	Cable thickness from / to mm	Cable width from / to mm	Thread length mm	Spanner size mm	Unit	
904996	M25 x 1,5	3,0 - 8,0	9,0 - 21,0	11,0	32	50	-
904997	M32 x 1,5	4,0 - 11,5	14,0 - 30,0	11,0	42	50	-
905067	M40 x 1,5	4,0 - 11,5	14,0 - 30,0	11,0	42	20	-
904998	M50 x 1,5	4,0 - 11,5	24,0 - 40,0	11,0	60	20	-
905068	M63 x 1,5	5,0 - 12,0	34,0 - 50,0	11,0	65	5	-

Dimensions and specifications may be changed without prior notice.

STS-F flat cable gland



STS-F
The brass flat cable gland.

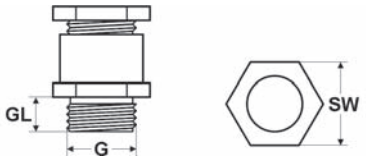
Application
- Plant and machine construction
- Robot construction
- Automation technology
- Vehicle construction and shipbuilding
- Rail technology
- Installation technology
- Control cabinet construction

Material
Brass, nickel plated
Seal: SBR
Thrust rings: Galvanised steel
Thrust washers: Galvanised steel

Note
Protection classification IP 65 with an additional O-ring on the external thread.

Technical data
Protection class: IP 54

Temperature range: -30°C up to +80°C



Dimensions

G	Thread size
GL	Thread length
SW	Spanner size

metric thread

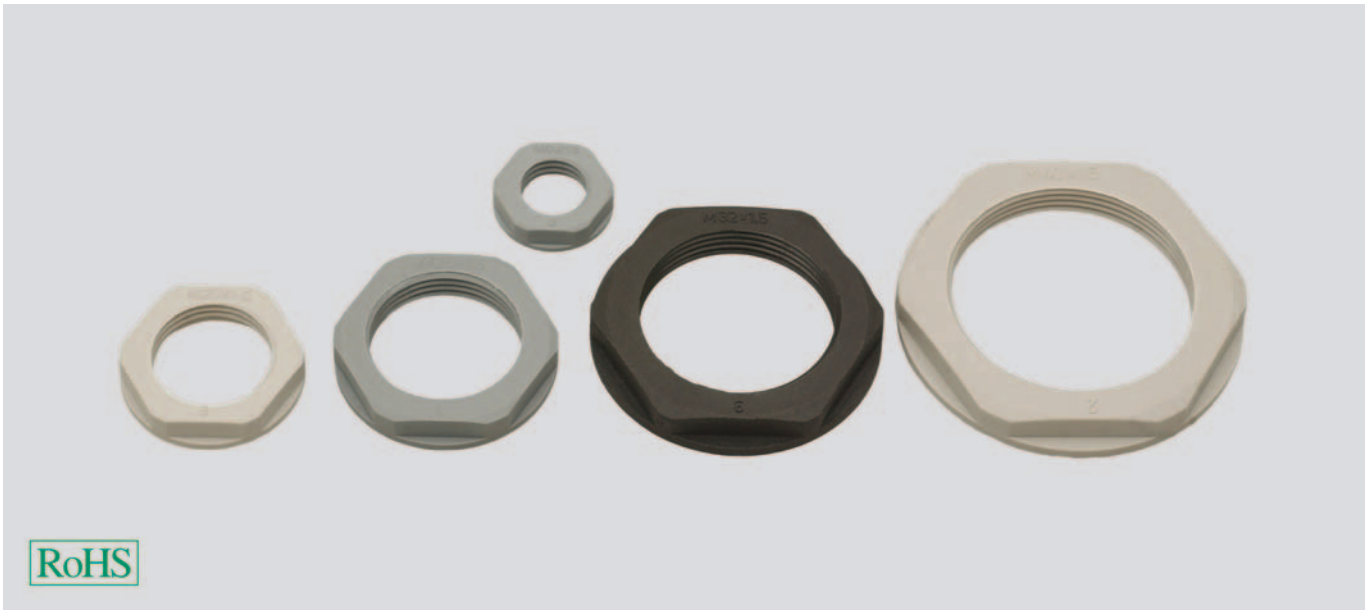
Part no.	Size Metr.	Cable thickness from / to mm	Cable width from / to mm	Thread length mm	Spanner size mm	Unit	
94484	M20 x 1,5	1,0 - 5,0	3,0 - 16,0	6,0	24 / 22	50	-
94485	M25 x 1,5	3,0 - 8,0	9,0 - 21,0	7,0	30 / 28	50	-
94486	M32 x 1,5	4,0 - 11,5	14,0 - 30,0	8,0	39 / 37	25	-
94487	M40 x 1,5	4,0 - 11,5	24,0 - 40,0	8,0	50 / 47	10	-
94488	M50 x 1,5	5,0 - 12,0	29,0 - 45,0	9,0	57 / 54	5	-
94489	M63 x 1,5	5,0 - 12,0	34,0 - 50,0	10,0	66 / 60	5	-

PG thread

Part no.	Size PG	Cable thickness from / to mm	Cable width from / to mm	Thread length mm	Spanner size mm	Unit	
90100	16	1,0 - 5,0	3,0 - 16,0	6,5	24 / 22	50	-
90101	21	3,0 - 8,0	9,0 - 21,0	7,0	30 / 28	50	-
90102	29	4,0 - 11,5	14,0 - 30,0	8,0	40 / 37	25	-
90103	36	4,0 - 11,5	24,0 - 40,0	9,0	50 / 47	20	-
90104	42	5,0 - 12,0	29,0 - 45,0	10,0	57 / 54	10	-
90105	48	5,0 - 12,0	34,0 - 50,0	10,0	64 / 60	5	-

Dimensions and specifications may be changed without prior notice.

KMK-PA-MB counternut with collar



KMK-PA-MB

The counternut made of polyamide.
The counternut with collar has a bigger sealing area - sealing with an additional O-ring will be simplified.

Application

- Plant and machine construction
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction

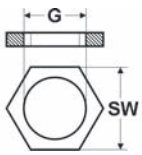
Material

Polyamide PA 6

- halogen-free
- phosphor-free
- silicone-free
- cadmium-free

Technical data

Temperature range: -40°C up to +100°C



Dimensions

G Thread size inside
SW Spanner size

metric thread – female

Part no. light grey RAL 7035	Part no. dark grey RAL 7001	Part no. black RAL 9005	Size Metr.	Spanner size mm	Unit	
97816	94260	98163	M12 x 1,5	18	100	-
97817	94261	98164	M16 x 1,5	22	100	-
97818	94262	98165	M20 x 1,5	26	100	-
97819	94263	98166	M25 x 1,5	32	100	-
97820	94264	98167	M32 x 1,5	41	100	-
97821	94265	98168	M40 x 1,5	50	50	-
97822	94266	98169	M50 x 1,5	60	50	-
97823	94267	98170	M63 x 1,5	75	25	-

PG thread – female

Part no. light grey RAL 7035	Part no. dark grey RAL 7001	Part no. black RAL 9005	Size PG	Spanner size mm	Unit	
90710	94250	96458	7	19	100	-
90711	94251	96228	9	22	100	-
90712	94252	96459	11	24	100	-
90713	94253	96460	13,5	27	100	-
90714	94254	96461	16	30	100	-
90715	94255	96176	21	36	100	-
90716	94256	96177	29	46	50	-
90717	94257	96462	36	60	25	-
90718	94258	96463	42	65	25	-
90719	94259	96464	48	70	25	-

NPT thread – female

Part no. light grey RAL 7035	Part no. dark grey RAL 7001	Part no. black RAL 9005	Size NPT	Spanner size mm	Unit	
97317	90870	90875	3/8"	22	100	-
97316	90871	90876	1/2"	27	100	-
97315	90872	90877	3/4"	33	100	-
98366	90873	90878	1"	47	50	-

Dimensions and specifications may be changed without prior notice.

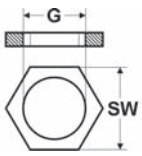
KM counternut



KM
The counternut from galvanic nickel-coated brass.

Material
Brass, nickel plated

Technical data
Temperature range: up to +200°C



Dimensions

G	Thread size inside
SW	Spanner size

metric thread - female

Part no.	Size Metr.	Spanner size mm	Unit	
90175	M12 x 1,5	15,0	100	-
90176	M16 x 1,5	19,0	100	-
90177	M20 x 1,5	24,0	100	-
90178	M25 x 1,5	30,0	100	-
90179	M32 x 1,5	36,0	100	-
90180	M40 x 1,5	46,0	50	-
90181	M50 x 1,5	60,0	25	-
90182	M63 x 1,5	70,0	25	-

metric thread - female - KM-XXL - for large cable diameters

Part no.	Size Metr.	Spanner size mm	Unit	
98314	M72 x 2,0	80,0	1	-
90067	M75 x 1,5	80,0	1	-
90489	M80 x 2,0	95,0	1	-

PG thread - female

Part no.	Size PG	Spanner size mm	Unit	
90610	7	15,0	100	-
90611	9	18,0	100	-
90612	11	21,0	100	-
90613	13,5	23,0	100	-
90614	16	26,0	100	-
90615	21	32,0	100	-
90616	29	41,0	100	-
90617	36	51,0	50	-
90618	42	60,0	50	-
90619	48	64,0	50	-

NPT thread - female

Part no.	Size Inches	Spanner size mm	Unit	
905870	1/2"	27,0	50	-
905871	3/4"	32,0	50	-
905872	1"	36,0	25	-
905873	1 1/4"	46,0	25	-
905874	1 1/2"	54,0	10	-
905875	2"	70,0	10	-

Continuation ▸

KM counternut

BSP thread - female

Part no.	Size BSP	Spanner size mm	Unit	
90186	G 3/8"	19,0	100	-
90187	G 1/2"	24,0	100	-
90189	G 3/4"	30,0	100	-
90190	G 1"	38,0	100	-
90193	G 1 1/2"	51,0	50	-
90195	G 2"	66,0	50	-

BSP thread - female - KM-XXL - for large cable diameters

Part no.	Size BSP	Spanner size mm	Unit	
90197	G 2 1/2"	80,0	1	-
90198	G 3"	95,0	1	-
90199	G 4"	125,0	1	-
97785	G 5"	150,0	1	-

Dimensions and specifications may be changed without prior notice.

KM-INOX counternut

stainless steel



RoHS

KM-INOX

The counternut made of stainless steel.

Material

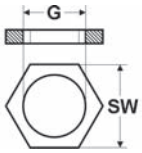
Stainless steel 1.4305 / AISI 303

Technical data

Temperature range: up to +200°C

Application

- Plant and machine construction
- Robot construction
- Automation technology
- Vehicle construction and shipbuilding
- Rail technology
- Installation technology
- Control cabinet construction



Dimensions

G Thread size inside
SW Spanner size

metric thread - female

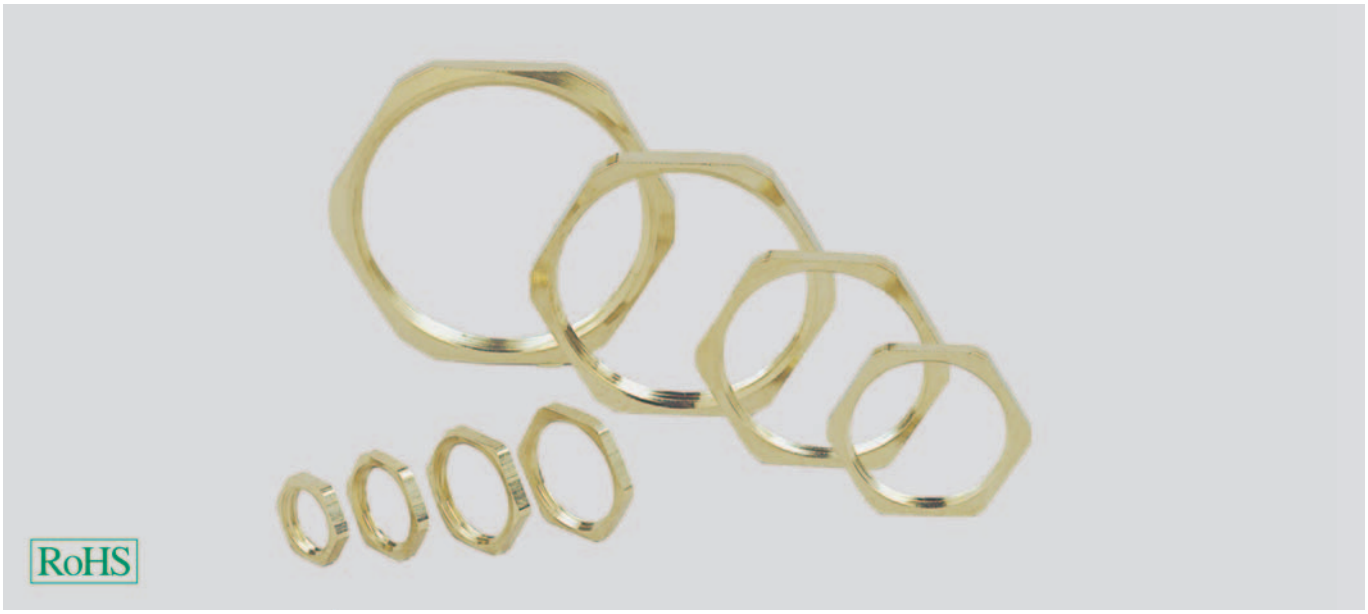
Part no.	Size Metr.	Spanner size mm	Unit	
920605	M12 x 1,5	15,0	100	-
920606	M16 x 1,5	19,0	100	-
920607	M20 x 1,5	24,0	100	-
920608	M25 x 1,5	30,0	100	-
920609	M32 x 1,5	36,0	50	-
920610	M40 x 1,5	46,0	50	-
920611	M50 x 1,5	60,0	10	-
920612	M63 x 1,5	70,0	10	-

PG thread - female

Part no.	Size PG	Spanner size mm	Unit	
92970	7	17,0	100	-
92971	9	19,0	100	-
92972	11	22,0	100	-
92973	13,5	24,0	100	-
92974	16	27,0	100	-
92975	21	32,0	100	-
92976	29	41,0	50	-
92977	36	60,0	25	-

Dimensions and specifications may be changed without prior notice.

KM-EMV EMC-counternut



KM-EMV

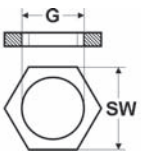
- The counternut with cutting edges for secure fixing of EMC cable glands
- for cutting through painted surfaces to ensure optimum contact with equipotential bonding
- increased vibration resistance

Material

Brass, nickel plated

Technical data

Temperature range: up to +200°C



Dimensions

G Thread size inside
SW Spanner size

metric thread - female

Part no.	Size Metr.	Spanner size mm	Unit	
90165	M12 x 1,5	15,0	100	-
90166	M16 x 1,5	19,0	100	-
90167	M20 x 1,5	24,0	100	-
90168	M25 x 1,5	30,0	100	-
90169	M32 x 1,5	36,0	100	-
90170	M40 x 1,5	46,0	50	-
90171	M50 x 1,5	60,0	50	-
90172	M63 x 1,5	70,0	25	-

metric thread - female - KM-EMV-XXL - for large cable diameteres

Part no.	Size Metr.	Spanner size mm	Unit	
99875	M72 x 2,0	80,0	1	-
93209	M75 x 1,5	80,0	1	-
98698	M80 x 2,0	95,0	1	-

PG thread - female

Part no.	Size PG	Spanner size mm	Unit	
97243	7	15,0	100	-
97244	9	18,0	100	-
97166	11	21,0	100	-
97167	13,5	23,0	100	-
97168	16	26,0	100	-
97169	21	32,0	100	-
97170	29	41,0	50	-
97171	36	51,0	25	-
97245	42	60,0	25	-
97246	48	64,0	25	-

Dimensions and specifications may be changed without prior notice.





HTP

Anaconda Sealtite® EF

HELUcond PA6 UL

CW&A Edition 27 (published 01.04.2015)

CABLE PROTECTION TUBE SYSTEMS

Designation	Properties	Approvals	Page
HELUcond PA6-L	Polyamide corrugated tube		970
HELUcond PA6 UL	Polyamide corrugated tube		971
Type S	Steel spring with PVC jacket		972
Anaconda Sealtite® EF	for standard applications		973
Anaconda Sealtite® HTDL	hot and cold		974
HTP	hose		975

HELUcond PA6-L corrugated tubes, polyamide

weak stress



HELUcond PA6-L

Cable protection tube for weak to medium stress applications.
Capacity/100mm NW 17: approx. 250 N

Application

- Plant and machine construction
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction

Material

Mod. Polyamide PA 6

Flammability acc. to UL 94: V2

- halogen-free
- phosphor-free

Properties

resistant to a multitude of

- fuels
- mineral oils
- greases
- weak bases
- weak acids

Note

Suitable connection glands:
HELUquick, HSSV.

Technical data

Temperature range: -40°C up to +120°C
Temperature range temporary up to +150°C

fine profile

Part no. grey	Part no. black	trade size mm	Inner Ø mm	Outer Ø mm	Per metres	
99610	99620	7,5	6,8	10,0	50	-
99611	99621	10,0	10,0	12,8	50	-
99612	99622	12,0	12,5	15,7	50	-
99613	99623	14,0	14,4	18,5	50	-
99614	99624	17,0	16,8	21,1	50	-
99615	99625	23,0	23,4	28,4	50	-
99616	99626	29,0	29,2	34,5	25	-
99617	99627	37,0	34,0	41,8	25	-
99618	99628	50,0	46,0	53,8	25	-

Dimensions and specifications may be changed without prior notice.

HELUcond PA6-UL corrugated tubes, polyamide

for heavy duty applications



HELUcond PA6-UL-F/B

Heavy-duty cable protection tube for heavy-duty mechanical applications.

Capacity/100mm NW 16/17: approx. 750 N

Application

- Plant and machine construction
- Robot construction
- Automation technology
- Vehicle construction and shipbuilding
- Rail technology
- Installation technology
- Control cabinet construction

Material

Mod. Polyamide PA 6

Flammability acc. to UL 94: V0

- halogen-free
- cadmium-free

Properties

resistant to a multitude of

- fuels
- mineral oils
- greases
- weak bases
- weak acids

Note

UL recognized / UR
Suitable connection glands:
HELUquick, HSSV.

Technical data

Temperature range: -40°C up to +140°C
Temperature range temporary up to +160°C

fine profile / PA6-UL-F

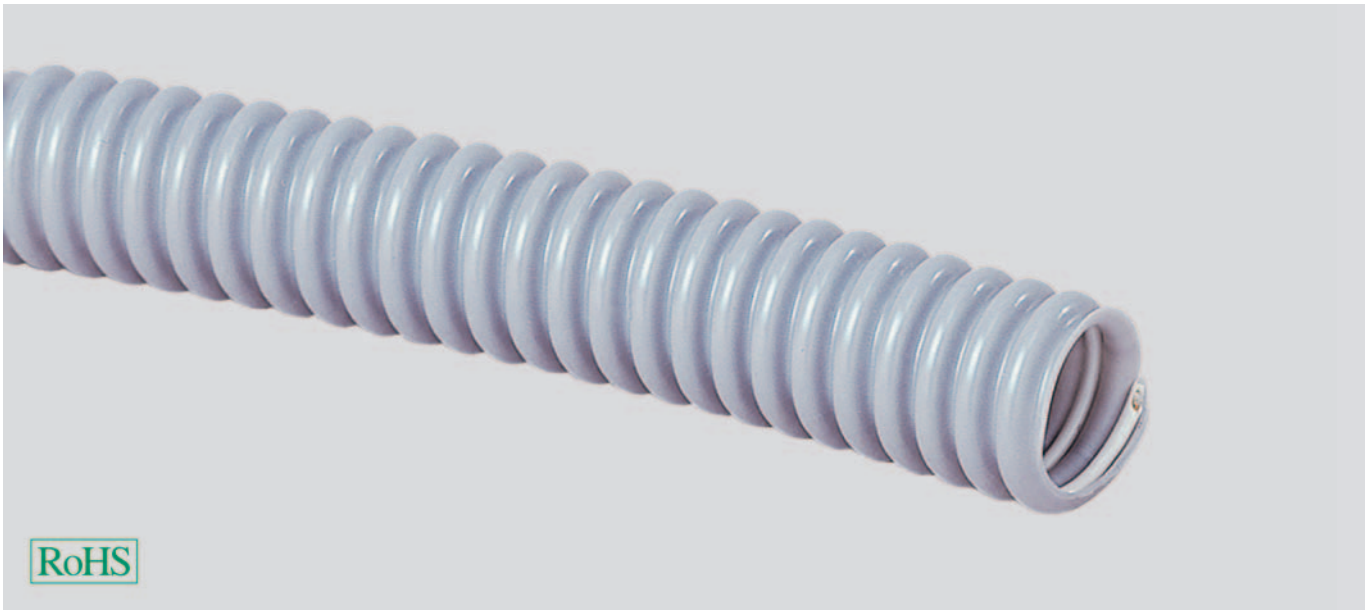
Part no. grey	Part no. black	trade size mm	Inner Ø mm	Outer Ø mm	Per metres	
920384	920394	7,5	6,4	10,0	50	-
920385	920395	10,0	9,0	13,0	50	-
920386	920396	12,0	11,0	15,8	50	-
920387	920397	17,0	16,6	21,0	50	-
920388	920398	23,0	21,6	28,5	50	-

coarse profile / PA6-UL-B

Part no. grey	Part no. black	trade size mm	Inner Ø mm	Outer Ø mm	Per metres	
920389	920399	16,0	15,3	21,0	50	-
920390	920400	21,0	21,6	28,5	50	-
920391	920401	29,0	27,5	34,5	25	-
920392	920402	36,0	35,0	42,5	25	-
920393	920403	48,0	45,5	54,5	25	-

Dimensions and specifications may be changed without prior notice.

Type S spiral spring by steel with outer sheath by PVC



Type S

Cable protection tube type S with integrated spring steel wire, extremely flexible, expandable and compressible.

Application

- Plant and machine construction
- Automation technology
- Installation technology
- Control cabinet construction

Material

PVC

- silicone-free
- cadmium-free

Note

Suitable connection glands:
USK, LK-I, US and LI

Technical data

Temperature range: -25°C up to +80°C
Temperature range temporary up to +100°C

Part no. grey	Inner Ø mm	Outer Ø mm	Per metres	
91219	7,0	10,0	50	-
91220	10,0	14,0	50	-
91221	13,0	17,0	50	-
91222	15,0	19,0	50	-
91223	16,0	21,0	50	-
91224	22,0	27,0	50	-
91225	29,0	36,0	25	-
91226	38,0	45,0	25	-
91228	48,0	56,0	25	-

small package

Part no. grey	Inner Ø mm	Outer Ø mm	Per metres	
91270	7,0	10,0	10	-
91271	10,0	14,0	10	-
91272	13,0	17,0	10	-
91273	15,0	19,0	10	-
91274	16,0	21,0	10	-
91275	22,0	27,0	10	-
91276	29,0	36,0	10	-
91277	38,0	45,0	10	-
91279	48,0	56,0	10	-

Dimensions and specifications may be changed without prior notice.

Anaconda Sealtite® EF for standard applications



EF

Universal applications.
Protection tube from reinforced, galvanised steel band with spiral wound, latched profile, a continuous cord seal and extruded plastic sheath. This complex construction method keeps the plastic sheath and the internal tube flush together.

Material

Galvanised steel

Outer sheath material: PVC

Note

Suitable connection glands:
LT straight, LT angled, T&B straight, T&B angled.
Dimensions 2 1/2", 3", 4", 5" and 6" available on request.

Technical data

Protection class: IP 67

Temperature range: -25°C up to +70°C
Temperature range temporary up to +90°C

Part no. grey	Part no. black	Trade size inch	Inner Ø mm	Outer Ø mm	Per metres	
91229	96939	1/4"	6,4	11,5	50	-
91230	96248	5/16"	10,1	14,4	50	-
91231	96249	3/8"	12,6	17,8	75	-
91232	97153	1/2"	16,0	21,1	60	-
91233	96718	3/4"	21,0	26,4	50	-
91234	96250	1"	26,5	33,1	30	-
91235	96251	1 1/4"	35,1	41,8	30	-
91236	97175	1 1/2"	40,3	47,8	15	-
91237	96252	2"	51,6	59,9	15	-

small package

Part no. grey	Part no. black	Trade size inch	Inner Ø mm	Outer Ø mm	Per metres	
94915	94930	5/16"	10,1	14,4	10	-
94916	94931	3/8"	12,6	17,8	10	-
94917	94932	1/2"	16,0	21,1	10	-
94918	94933	3/4"	21,0	26,4	10	-

Dimensions and specifications may be changed without prior notice.

Anaconda Sealtite® HTDL hot or cold



HTDL

UL/CSA approval, good EMC properties.
Protection tube from reinforced, galvanised steel band with spiral wound, latched profile, a continuous copper conductor and extruded plastic sheath.
This complex construction method keeps the plastic sheath and the internal tube flush together.

Material

Galvanised steel
UV-resistant

Outer sheath material: PVC

Note

Suitable connection glands:
LT straight, LT angled, T&B straight, T&B angled.
Up to 1 1/4" with copper conductor.

Technical data

Protection class: IP 67

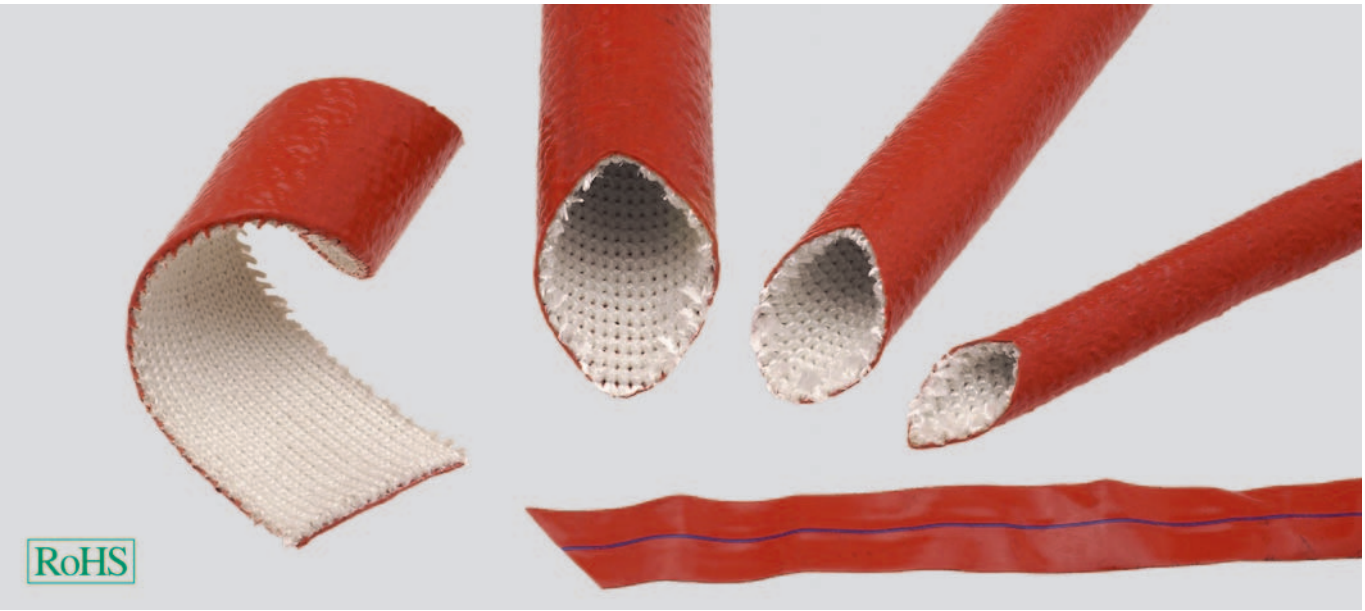
Temperature range: -45°C up to +105°C
Temperature range temporary up to +120°C

Part no. black	Trade size inch	Inner Ø mm	Outer Ø mm	Per metres	
98149	3/8"	12,6	17,8	60	-
98150	1/2"	16,1	21,1	60	-
98151	3/4"	21,1	26,4	45	-
98152	1"	26,8	33,1	30	-
98153	1 1/4"	35,4	41,8	15	-
98154	1 1/2"	40,3	47,8	15	-
98155	2"	51,6	59,9	15	-

Dimensions and specifications may be changed without prior notice.

HTP protection tube

high temperature protection



HTP

This product is extremely heat resistant.
HTP has a high insulation factor and, due to the iron oxide containing silicone sheath, is resistant to small quantities of liquid steel.
HTP also protects against burn injuries from steam tubes, hot air or hot water lines.

Material

Interior sheath of knitted glass-fibre braid

Silicone sheath (contains iron oxide)

Colour: orange

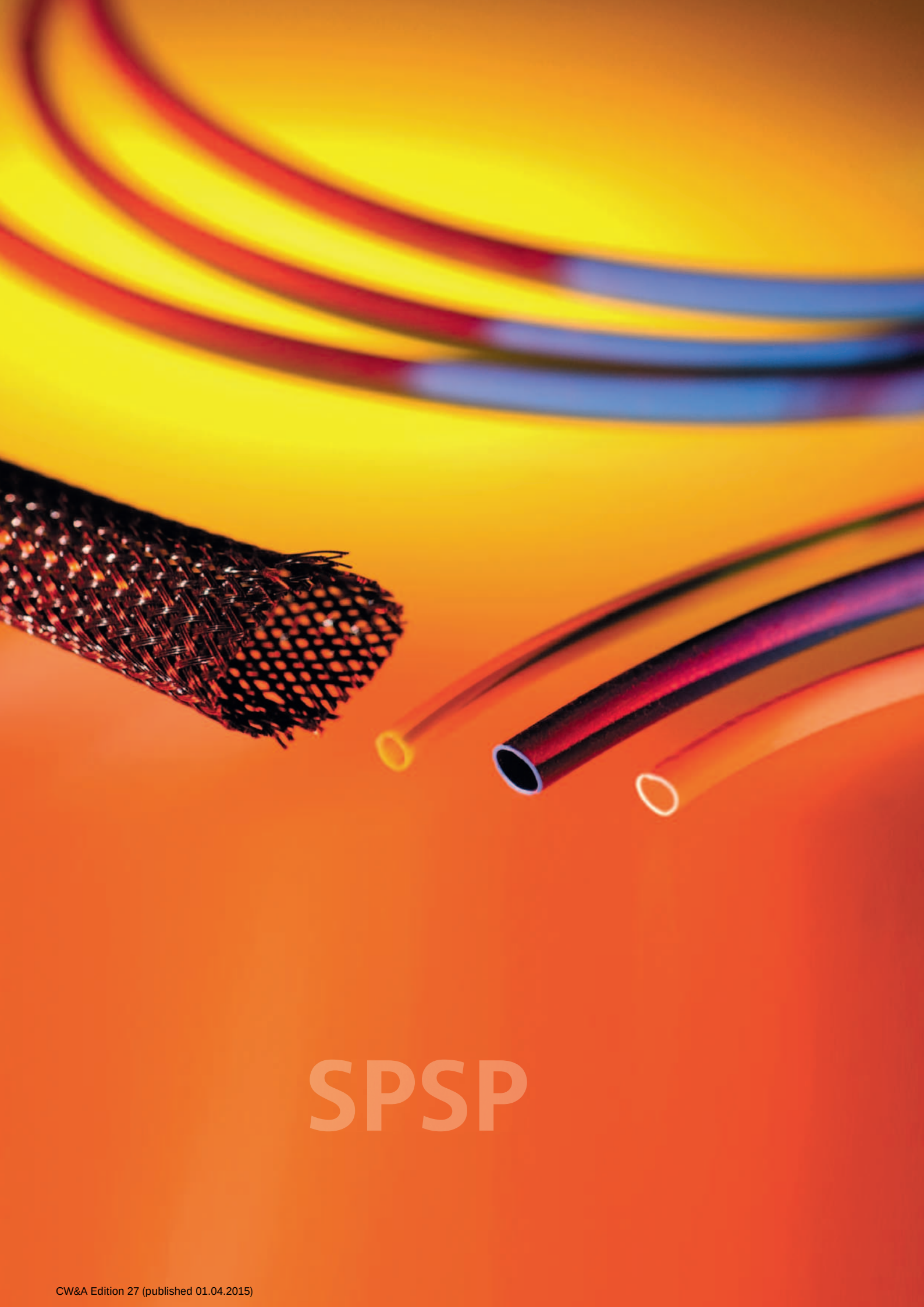
Technical data

Permanent load: +260°C
Short-time load: +1090°C
(up to approx. 20 minutes)
Loading moment: +1640°C
(approx. 15-30 seconds)

protection tube

Part no.	Inner Ø mm	Width mm	Per metres	
93630	6,0	-	15,0	-
93632	10,0	-	15,0	-
904924	13,0	-	15,0	-
93634	19,0	-	15,0	-
93635	22,0	-	15,0	-
93636	25,0	-	15,0	-
93637	32,0	-	15,0	-
93638	38,0	-	15,0	-
93639	44,0	-	15,0	-
93640	57,0	-	15,0	-
93641	64,0	-	15,0	-
93642	76,0	-	15,0	-
93643	89,0	-	15,0	-
93644	102,0	-	15,0	-

Dimensions and specifications may be changed without prior notice.



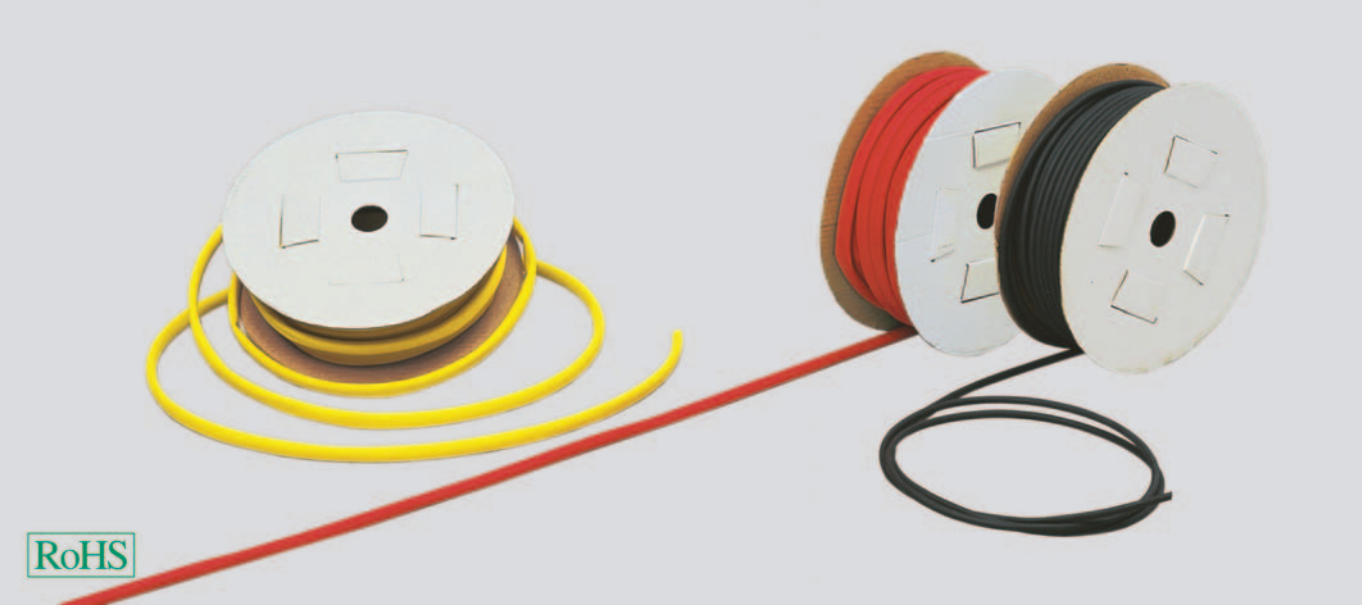
CW&A Edition 27 (published 01.04.2015)

SHRINK TUBES

Designation	Properties	Approvals	Page
SPSP	Heat-shrink tube 2:1		978

SPSP - spools heat shrink 2:1

polyolefine



SPSP spools

Polyolefine shrunk tube for repairing insulation and sealing electrical components.

Application

- Plant and machine construction
- Robot construction
- Automation technology
- Vehicle construction and shipbuilding
- Rail technology
- Installation technology
- Control cabinet construction

Material

PO (Polyolefine)

Note

Replace the "x" in the table with the following figures to obtain the product number of your required colour.
Colour code:
0=white
1=blue
2=yellow
3=red
4=transparent
6=brown
7=orange
8=grey
9=green

Technical data

Temperature range: -55°C up to +135°C

black

Part no.	Inner Ø before shrinkage mm	Wall thickness mm	Inner Ø after shrinkage mm	Content m	Unit	
91777	1,2	0,4	0,6	20,0	1	-
91778	1,6	0,4	0,8	20,0	1	-
91779	2,4	0,5	1,2	20,0	1	-
91780	3,2	0,5	1,6	20,0	1	-
91781	4,8	0,5	2,4	20,0	1	-
91782	6,4	0,6	3,2	10,0	1	-
91783	9,5	0,6	4,7	10,0	1	-
91784	12,7	0,6	6,4	10,0	1	-
91785	19,1	0,8	9,5	10,0	1	-
91786	25,4	0,9	12,7	10,0	1	-

green/yellow

Part no.	Inner Ø before shrinkage mm	Wall thickness mm	Inner Ø after shrinkage mm	Content m	Unit	
92335	2,4	0,5	1,2	20,0	1	-
92345	3,2	0,5	1,6	20,0	1	-
92355	4,8	0,5	2,4	20,0	1	-
92365	6,4	0,6	3,2	10,0	1	-
92375	9,5	0,6	4,7	10,0	1	-
92385	12,7	0,6	6,4	10,0	1	-
92395	19,1	0,8	9,5	10,0	1	-
92405	25,4	0,9	12,7	10,0	1	-

Continuation ▸

SPSP - spools heat shrink 2:1

polyolefine

coloured

Part no.	Inner Ø before shrinkage mm	Wall thickness mm	Inner Ø after shrinkage mm	Content m	Unit	
9231x	1,2	0,4	0,6	20,0	1	-
9232x	1,6	0,4	0,8	20,0	1	-
9233x	2,4	0,5	1,2	20,0	1	-
9234x	3,2	0,5	1,6	20,0	1	-
9235x	4,8	0,5	2,4	20,0	1	-
9236x	6,4	0,6	3,2	10,0	1	-
9237x	9,5	0,6	4,7	10,0	1	-
9238x	12,7	0,6	6,4	10,0	1	-
9239x	19,1	0,8	9,5	10,0	1	-
9240x	25,4	0,9	12,7	10,0	1	-

Dimensions and specifications may be changed without prior notice.



T-WS

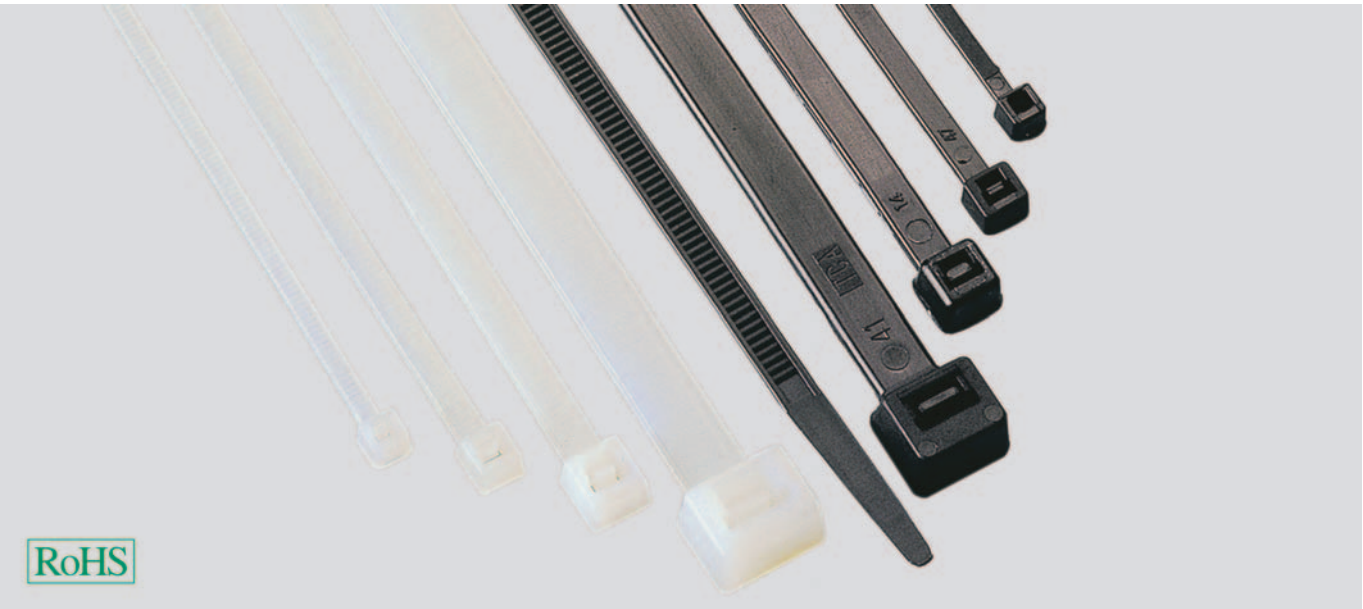
T

T-SK/SKU

CABLE TIES

Designation	Properties	Page
T	Cable tie	982
T-SK/SKU	Cable tie with steel lug lock	983
T-WS	Cable tie	984

T cable tie



Cable binders

Cable ties with plastic lug for directionality and mounting cables and lines.

Application

- Plant and machine construction
- Robot construction
- Automation technology
- Vehicle construction and shipbuilding
- Rail technology
- Installation technology
- Control cabinet construction

Material

Polyamide 6.6

- halogen-free
- silicone-free

Technical data

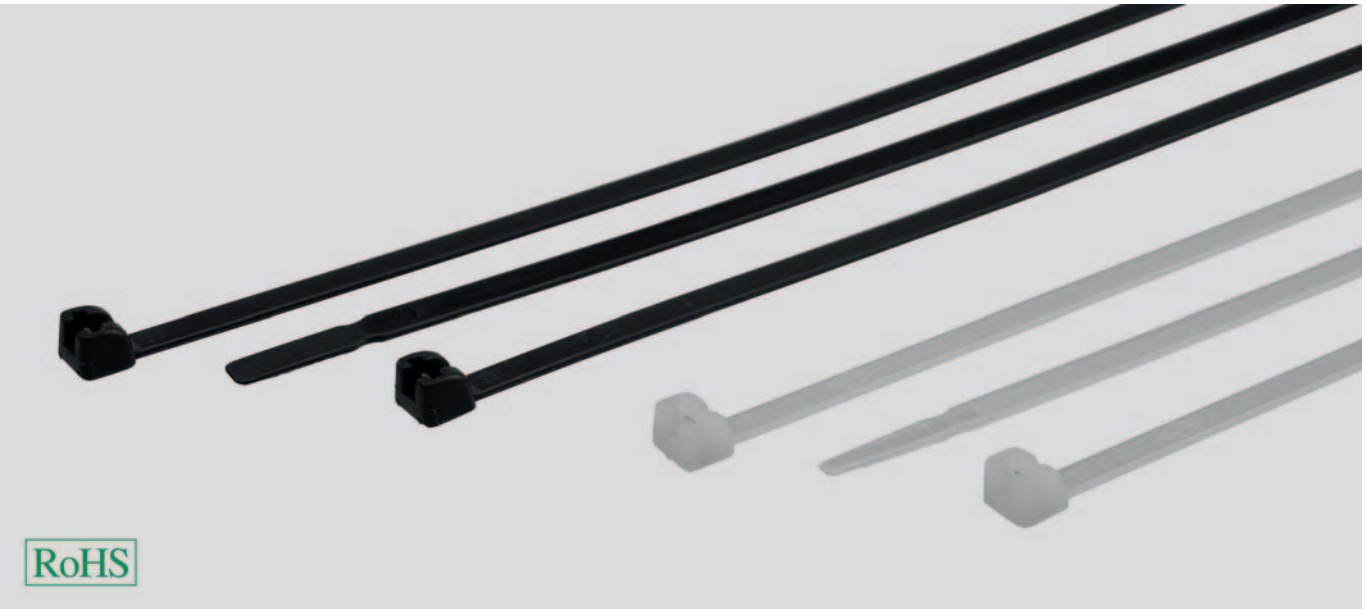
Temperature range: -40°C up to +80°C

Flammability acc. to UL 94: V2

Part no. transparent	Part no. black	Type	Length mm	Width mm	Bundle Ø mm	Capacity N	Unit	
90150	90140	T 2-20	100,0	2,5	20,0	80,0	100	-
90151	90141	T 2-50	200,0	2,5	50,0	80,0	100	-
90152	90142	T 3-35	140,0	3,5	35,0	130,0	100	-
90153	90143	T 3-50	200,0	3,5	55,0	130,0	100	-
90154	90144	T 3-75	280,0	3,5	76,0	130,0	100	-
90157	90147	T 5-85	200,0	4,5	47,0	220,0	100	-
90156	90146	T 5-75	280,0	4,5	76,0	220,0	100	-
90158	90148	T 5-100	360,0	4,5	109,0	220,0	100	-
90159	90149	T 8-100	360,0	7,5	100,0	530,0	100	-
96491	96492	T 9-165	550,0	8,9	155,0	790,0	100	-
97219	97223	T 9-230	775,0	8,9	230,0	790,0	100	-

Dimensions and specifications may be changed without prior notice.

T-SK/SKU cable tie with steel lug lock



T-SK/SKU

Cable tie with steel lug made of corrosion resistant, non-magnetic steel for bundling and mounting cables and lines etc.

Material

Polyamide 6.6

- halogen-free
- silicone-free
- self-extinguishing

Technical data

Temperature range: -40°C up to +85°C

Flammability acc. to UL 94: V2

Properties

- high requirements to flexibility and resistance, also at low temperatures and dry clime
- high tension dut to extra wide steel lugs

T-SK

Part no. transparent	Type	Length mm	Width mm	Bundle Ø mm	Capacity	Unit
907016	T-SK 2-24	100	2,5	24	180	1000
907017	T-SK 2-55	200	2,5	55	180	1000
907018	T-SK 3-36	140	3,5	36	280	1000
907019	T-SK 3-55	200	3,5	55	280	1000
907020	T-SK 3-80	280	3,5	80	280	1000
907021	T-SK 4-51	186	4,5	51	400	1000
907022	T-SK 4-76	290	4,5	76	400	1000
907023	T-SK 4-101	360	4,5	101	400	1000
907037	T-SK 7-95	340	7,0	95	700	500

T-SKU UV-stabilized

Part no. black	Type	Length mm	Width mm	Bundle Ø mm	Capacity	Unit
907024	T-SKU 2-24	100	2,5	24	180	1000
907025	T-SKU 2-55	200	2,5	55	180	1000
907026	T-SK 3-36	140	3,5	36	280	1000
907027	T-SKU 3-55	200	3,5	55	280	1000
907028	T-SKU 3-80	280	3,5	80	280	1000
907029	T-SKU 4-51	186	4,5	51	400	1000
907030	T-SKU 4-76	290	4,5	76	400	1000
907031	T-SKU 4-101	360	4,5	101	400	1000
907038	T-SKU 7-95	340	7,0	95	700	500

Dimensions and specifications may be changed without prior notice.

T-WS cable tie

weather-proof



RoHS

Cable tie T-WS

Cable tie with plastic lug for bundling and mounting cables and lines.

Application

- Outdoor use

Material

Polyamide 6.6
UV-resistant

- halogen-free

Properties

- weather- stabilised

Technical data

Temperature range: -40°C up to +85°C
Temperature range temporary up to +105°C

Flammability acc. to UL 94: V2

Part no. black	Type	Length mm	Width mm	Bundle Ø mm	Capacity N	Unit	
905525	T-WS 25/100 BK	100,0	2,5	22,0	80,0	100	-
905527	T-WS 25/140 BK	145,0	2,5	35,0	80,0	100	-
905526	T-WS 25/205 BK	205,0	2,5	55,0	80,0	100	-
905528	T-WS 28/330 BK	330,0	2,8	95,0	110,0	100	-
905529	T-WS 35/150 BK	150,0	3,5	35,0	135,0	100	-
905530	T-WS 35/190 BK	190,0	3,5	50,0	135,0	100	-
905531	T-WS 35/290 BK	285,0	3,5	80,0	135,0	100	-
905532	T-WS 40/175 BK	175,0	4,0	40,0	180,0	100	-
905535	T-WS 46/150 BK	150,0	4,6	35,0	225,0	100	-
905533	T-WS 46/200 BK	210,0	4,7	55,0	355,0	100	-
905536	T-WS 46/245 BK	245,0	4,6	65,0	225,0	100	-
906682	T-WS 46/390 BK	390,0	4,7	110,0	355,0	100	-
905537	T-WS 47/300 BK	300,0	4,7	85,0	355,0	100	-
905542	T-WS 76/225 BK	225,0	7,6	55,0	535,0	100	-
905539	T-WS 76/300 BK	300,0	7,6	80,0	535,0	100	-
905543	T-WS 76/365 BK	365,0	7,6	100,0	670,0	100	-
906683	T-WS 76/380 BK	387,0	7,6	100,0	535,0	100	-
905541	T-WS 76/460 BK	460,0	7,6	130,0	535,0	100	-
906684	T-WS 76/760 BK	760,0	7,6	225,0	535,0	100	-
906685	T-WS 88/820 BK	820,0	8,8	245,0	780,0	100	-
906686	T-WS 89/530 BK	525,0	8,9	150,0	780,0	100	-
905546	T-WS 132/535 BK	535,0	13,2	150,0	1115,0	100	-

Dimensions and specifications may be changed without prior notice.



HELU-S-RK-CU

HELU-S-RK-F-CU

HELU-S-PK-AL-DIN



CW&A Edition 27 (published 01.04.2015)

CORE END SLEEVES & CABLE LUGS

Designation	Properties	Approvals	Page
HELU-S-RK-CU			988
HELU-S-RK-CU-UL			989
HELU-S-RK-F-CU			991
HELU-S-PK-CU-DIN			993
HELU-S-PK-AL-DIN	Aluminum compression cable lug - straight, strain-relieved, uninsulated		995
ADI	Core end sleeves		996
ADU	Core end sleeves		998
AV	Core connectors for telecommunications cables and signal cables		999

HELU-S-RK-CU Tubular cable lug - straight

uninsulated



RoHS

Tubular cable lug HELU-S-RK-CU

Uninsulated tubular cable lugs in eye type design.

Material

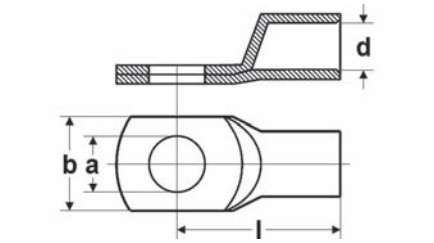
Socket: Copper according to DIN EN 13600
Surface: tin plated

Note

Also available in angulated version (45° and 90°).

Technical data

Temperature range: up to +120°C



Dimensions

a	Diameter of the boring
d	Inner diameter of the cable insertion
b	Flange width
l	Length till middle of the boring

Part no.	Type	Cross-section mm²	a mm	d mm	b mm	l mm	Code type	Weight kg / 1000 items	Unit	
907303	HELU-S-RK-CU 0,75-3	0,75	3,2	1,4	6,5	12,5	-	0,7	100	-
907304	HELU-S-RK-CU 0,75-4	0,75	4,3	1,4	8,5	14,0	-	0,8	100	-
907305	HELU-S-RK-CU 0,75-5	0,75	5,3	1,4	10,0	15,0	-	1,0	100	-
907306	HELU-S-RK-CU 1,5-3	1,5	3,2	1,9	6,5	14,0	-	1,2	100	-
907307	HELU-S-RK-CU 1,5-4	1,5	4,3	1,9	8,5	15,0	-	1,4	100	-
907308	HELU-S-RK-CU 1,5-5	1,5	5,3	1,9	10,0	16,0	-	1,5	100	-
907309	HELU-S-RK-CU 1,5-6	1,5	6,4	1,9	11,0	18,0	-	1,7	100	-
907310	HELU-S-RK-CU 2,5-4	2,5	4,3	2,4	8,5	15,0	-	1,6	100	-
907311	HELU-S-RK-CU 2,5-5	2,5	5,3	2,4	10,0	16,0	-	1,8	100	-
907312	HELU-S-RK-CU 2,5-6	2,5	6,4	2,4	11,0	18,0	-	1,9	100	-
907313	HELU-S-RK-CU 2,5-8	2,5	8,4	2,4	13,0	20,0	-	2,2	100	-
907314	HELU-S-RK-CU 4-4	4,0	4,3	3,0	8,5	17,0	-	2,2	100	-
907315	HELU-S-RK-CU 4-5	4,0	5,3	3,0	10,0	18,0	-	2,4	100	-
907316	HELU-S-RK-CU 4-6	4,0	6,3	3,0	11,0	20,0	-	2,6	100	-
907317	HELU-S-RK-CU 4-8	4,0	8,4	3,0	14,0	22,0	-	3,0	100	-

Dimensions and specifications may be changed without prior notice.

HELU-S-RK-CU-UL Tubular cable lug - straight

uninsulated



RoHS

Tubular cable lug straight
HELU-S-RK-CU-UL

Uninsulated tubular cable lugs in eye type design.

Material

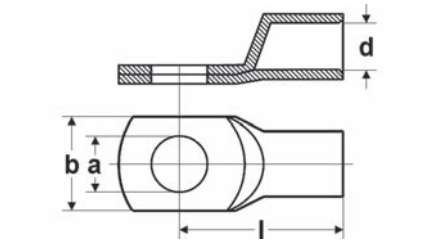
Socket: Copper according to DIN EN 13600
Surface: tin plated

Note

Also available in angulated version (45° and 90°).

Technical data

Temperature range: up to +120°C



Dimensions

a	Diameter of the boring
d	Inner diameter of the cable insertion
b	Flange width
l	Length till middle of the boring

Part no.	Type	Cross-section mm²	a mm	d mm	b mm	l mm	Code type	Weight kg / 1000 items	Unit	
907318	HELU-S-RK-CU-UL 6-4	6,0	4,3	3,5	10,0	19,0	-	4,6	100	-
907319	HELU-S-RK-CU-UL 6-5	6,0	5,3	3,5	10,0	20,0	-	4,7	100	-
907320	HELU-S-RK-CU-UL 6-6	6,0	6,4	3,5	11,0	21,5	-	5,4	100	-
907321	HELU-S-RK-CU-UL 6-8	6,0	8,4	3,5	15,0	24,0	-	5,9	100	-
907322	HELU-S-RK-CU-UL 6-10	6,0	10,5	3,5	18,0	26,0	-	6,4	100	-
907323	HELU-S-RK-CU-UL 6-12	6,0	13,0	3,5	19,0	27,5	-	6,4	100	-
907324	HELU-S-RK-CU-UL 10-4	10,0	4,3	4,5	12,0	20,0	-	4,3	100	-
907325	HELU-S-RK-CU-UL 10-5	10,0	5,3	4,5	12,0	21,0	-	4,8	100	-
907326	HELU-S-RK-CU-UL 10-6	10,0	6,4	4,5	12,0	22,5	-	5,1	100	-
907327	HELU-S-RK-CU-UL 10-8	10,0	8,4	4,5	15,0	25,0	-	5,8	100	-
907328	HELU-S-RK-CU-UL 10-10	10,0	10,5	4,4	18,0	27,0	-	6,3	100	-
907329	HELU-S-RK-CU-UL 10-12	10,0	13,0	4,5	20,0	28,5	-	6,3	100	-
907330	HELU-S-RK-CU-UL 16-4	16,0	4,3	5,5	12,0	24,0	-	8,2	100	-
907331	HELU-S-RK-CU-UL 16-5	16,0	5,3	5,5	12,0	25,0	-	8,9	100	-
907332	HELU-S-RK-CU-UL 16-6	16,0	6,4	5,5	12,0	26,5	-	9,6	100	-
907333	HELU-S-RK-CU-UL 16-8	16,0	8,4	5,5	15,0	29,0	-	10,3	100	-
907334	HELU-S-RK-CU-UL 16-10	16,0	10,5	5,5	18,0	31,0	-	11,0	100	-
907335	HELU-S-RK-CU-UL 16-12	16,0	13,0	5,5	19,0	32,0	-	10,8	100	-
907336	HELU-S-RK-CU-UL 25-5	25,0	5,3	7,0	15,0	33,5	-	13,5	100	-
907337	HELU-S-RK-CU-UL 25-6	25,0	6,4	7,0	15,0	31,5	-	13,1	100	-
907338	HELU-S-RK-CU-UL 25-8	25,0	8,4	7,0	16,0	33,0	-	12,9	100	-
907339	HELU-S-RK-CU-UL 25-10	25,0	10,5	7,0	18,0	34,5	-	14,6	100	-
907340	HELU-S-RK-CU-UL 25-12	25,0	13,0	7,0	20,0	36,0	-	15,5	100	-
907341	HELU-S-RK-CU-UL 25-14	25,0	15,0	7,0	22,0	39,0	-	16,6	100	-
907342	HELU-S-RK-CU-UL 25-16	25,0	17,0	7,0	24,0	42,0	-	17,3	100	-
907343	HELU-S-RK-CU-UL 35-6	35,0	6,4	8,5	17,0	33,0	-	20,7	100	-
907344	HELU-S-RK-CU-UL 35-8	35,0	8,4	8,5	17,0	34,0	-	21,8	100	-
907345	HELU-S-RK-CU-UL 35-10	35,0	10,5	8,5	20,0	36,5	-	21,9	100	-
907346	HELU-S-RK-CU-UL 35-12	35,0	13,0	8,5	22,0	37,5	-	23,3	100	-
907347	HELU-S-RK-CU-UL 35-14	35,0	15,0	8,5	23,0	40,0	-	24,4	100	-

Continuation ▸

HELU-S-RK-CU-UL Tubular cable lug - straight

uninsulated

Part no.	Type	Cross-section mm²	a mm	d mm	b mm	l mm	Code type	Weight kg / 1000 items	Unit	
907348	HELU-S-RK-CU-UL 35-16	35,0	17,0	8,5	28,0	44,0	-	26,0	100	-
907349	HELU-S-RK-CU-UL 50-6	50,0	6,4	10,0	20,0	37,0	-	30,1	100	-
907350	HELU-S-RK-CU-UL 50-8	50,0	8,4	10,0	20,0	39,0	-	30,4	100	-
907351	HELU-S-RK-CU-UL 50-10	50,0	10,5	10,0	20,0	40,5	-	31,3	100	-
907352	HELU-S-RK-CU-UL 50-12	50,0	13,0	10,0	23,0	42,0	-	31,3	100	-
907353	HELU-S-RK-CU-UL 50-14	50,0	15,0	10,0	23,0	44,0	-	35,1	100	-
907354	HELU-S-RK-CU-UL 50-16	50,0	17,0	10,0	27,0	46,0	-	35,5	100	-
907355	HELU-S-RK-CU-UL 50-20	50,0	21,0	10,0	30,5	52,5	-	38,9	100	-
907356	HELU-S-RK-CU-UL 70-6	70,0	6,4	12,0	24,0	40,5	-	41,1	25	-
907357	HELU-S-RK-CU-UL 70-8	70,0	8,4	12,0	24,0	42,5	-	44,6	25	-
907358	HELU-S-RK-CU-UL 70-10	70,0	10,5	12,0	24,0	43,5	-	46,4	25	-
907359	HELU-S-RK-CU-UL 70-12	70,0	13,0	12,0	24,0	45,0	-	47,3	25	-
907360	HELU-S-RK-CU-UL 70-14	70,0	15,0	12,0	25,0	46,0	-	49,1	25	-
907361	HELU-S-RK-CU-UL 70-16	70,0	17,0	12,0	28,0	48,5	-	49,6	25	-
907362	HELU-S-RK-CU-UL 70-20	70,0	21,0	12,0	29,0	52,0	-	52,9	25	-
907363	HELU-S-RK-CU-UL 95-6	95,0	6,4	13,5	26,0	43,0	-	49,5	25	-
907364	HELU-S-RK-CU-UL 95-8	95,0	8,4	13,5	26,0	46,0	-	53,6	25	-
907365	HELU-S-RK-CU-UL 95-10	95,0	10,5	13,5	26,0	47,0	-	55,1	25	-
907366	HELU-S-RK-CU-UL 95-12	95,0	13,0	13,5	26,0	48,0	-	55,1	25	-
907367	HELU-S-RK-CU-UL 95-14	95,0	15,0	13,5	26,0	51,5	-	58,9	25	-
907368	HELU-S-RK-CU-UL 95-16	95,0	17,0	13,5	28,0	51,0	-	58,5	25	-
907369	HELU-S-RK-CU-UL 95-20	95,0	21,0	13,5	30,0	55,0	-	61,3	25	-
907370	HELU-S-RK-CU-UL 120-8	120,0	8,4	15,0	29,0	49,5	-	68,8	25	-
907371	HELU-S-RK-CU-UL 120-10	120,0	10,5	15,0	29,0	52,0	-	79,9	25	-
907372	HELU-S-RK-CU-UL 120-12	120,0	13,0	15,0	29,0	51,5	-	78,4	25	-
907373	HELU-S-RK-CU-UL 120-14	120,0	15,0	15,0	30,0	53,0	-	78,6	25	-
907374	HELU-S-RK-CU-UL 120-16	120,0	17,0	15,0	30,0	55,0	-	80,7	25	-
907375	HELU-S-RK-CU-UL 120-20	120,0	21,0	15,0	35,0	60,0	-	89,0	25	-
907376	HELU-S-RK-CU-UL 150-8	150,0	8,4	16,8	31,0	55,5	-	78,9	25	-
907377	HELU-S-RK-CU-UL 150-10	150,0	10,5	16,8	31,0	56,5	-	83,7	25	-
907378	HELU-S-RK-CU-UL 150-12	150,0	13,0	16,8	31,0	56,0	-	80,7	25	-
907379	HELU-S-RK-CU-UL 150-14	150,0	15,0	16,8	31,0	57,0	-	83,0	25	-
907380	HELU-S-RK-CU-UL 150-16	150,0	17,0	16,8	31,0	58,0	-	83,6	25	-
907381	HELU-S-RK-CU-UL 150-20	150,0	21,0	16,8	35,0	63,0	-	87,5	25	-
907382	HELU-S-RK-CU-UL 185-8	185,0	8,4	19,0	35,0	58,0	-	103,7	25	-
907383	HELU-S-RK-CU-UL 185-10	185,0	10,5	19,0	35,0	59,0	-	106,1	25	-
907384	HELU-S-RK-CU-UL 185-12	185,0	13,0	19,0	35,0	58,5	-	106,0	25	-
907385	HELU-S-RK-CU-UL 185-14	185,0	15,0	19,0	35,0	61,0	-	107,2	25	-
907386	HELU-S-RK-CU-UL 185-16	185,0	17,0	19,0	35,0	63,0	-	108,6	25	-
907387	HELU-S-RK-CU-UL 185-20	185,0	21,0	19,0	35,0	66,0	-	113,3	25	-
907388	HELU-S-RK-CU-UL 240-8	240,0	8,4	21,0	38,0	67,0	-	124,0	25	-
907389	HELU-S-RK-CU-UL 240-10	240,0	10,5	21,0	38,0	67,0	-	129,7	25	-
907390	HELU-S-RK-CU-UL 240-12	240,0	13,0	21,0	38,0	67,0	-	130,2	25	-
907391	HELU-S-RK-CU-UL 240-14	240,0	15,0	21,0	38,0	69,0	-	133,6	25	-
907392	HELU-S-RK-CU-UL 240-16	240,0	17,0	21,0	38,0	69,5	-	135,6	20	-
907393	HELU-S-RK-CU-UL 240-20	240,0	21,0	21,0	38,0	71,0	-	138,0	25	-
907394	HELU-S-RK-CU-UL 300-10	300,0	10,5	24,0	44,0	79,5	-	204,5	20	-
907395	HELU-S-RK-CU-UL 300-12	300,0	13,0	24,0	44,0	82,0	-	211,8	20	-
907396	HELU-S-RK-CU-UL 300-14	300,0	15,0	24,0	44,0	84,0	-	221,9	20	-
907397	HELU-S-RK-CU-UL 300-16	300,0	17,0	24,0	44,0	85,0	-	219,4	20	-
907398	HELU-S-RK-CU-UL 300-20	300,0	21,0	24,0	44,0	85,0	-	224,0	20	-
907399	HELU-S-RK-CU-UL 400-10	400,0	10,5	27,5	49,0	92,0	-	279,0	15	-
907400	HELU-S-RK-CU-UL 400-12	400,0	13,0	27,5	49,0	92,0	-	278,5	15	-
907401	HELU-S-RK-CU-UL 400-16	400,0	17,0	27,5	49,0	92,0	-	276,5	15	-
907402	HELU-S-RK-CU-UL 400-20	400,0	21,0	27,5	49,0	92,0	-	266,1	15	-
907403	HELU-S-RK-CU-UL 500-12	500,0	13,0	31,0	55,5	113,0	-	493,8	5	-
907404	HELU-S-RK-CU-UL 500-16	500,0	17,0	31,0	55,5	113,0	-	493,8	5	-
907405	HELU-S-RK-CU-UL 500-20	500,0	21,0	31,0	55,5	113,0	-	485,6	5	-
907406	HELU-S-RK-CU-UL 600-16	630,0	17,0	34,0	60,0	115,0	-	513,5	5	-
907407	HELU-S-RK-CU-UL 600-20	630,0	21,0	34,0	60,0	115,0	-	506,0	5	-

Dimensions and specifications may be changed without prior notice.

HELU-S-RK-F-CU Tubular cable lugs for fine stranded wires - straight

uninsulated



RoHS

Tubular cable lug HELU-S-RK-F-CU

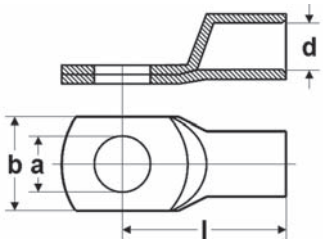
Uninsulated, straight tubular cable lugs in eye type design for fine stranded wires. The expanded sleeve facilitates cable inlet.

Material

Socket: Copper according to DIN EN 13600
Surface: tin plated

Technical data

Temperature range: up to +120°C



Dimensions

a	Diameter of the boring
d	Inner diameter of the cable insertion
b	Flange width
l	Length till middle of the boring

Part no.	Type	Cross-section mm²	a mm	d mm	b mm	l mm	Code type	Weight kg / 1000 items	Unit	
907409	HELU-S-RK-F-CU 10-5	10,0	5,3	5,0	12,0	23,0	-	7,0	100	-
907410	HELU-S-RK-F-CU 10-6	10,0	6,4	5,0	12,0	25,0	-	7,6	100	-
907411	HELU-S-RK-F-CU 10-8	10,0	8,4	5,0	15,0	28,0	-	8,9	100	-
907412	HELU-S-RK-F-CU 10-10	10,0	10,5	5,0	18,0	31,0	-	9,8	100	-
907413	HELU-S-RK-F-CU 10-12	10,0	13,0	5,0	20,0	32,0	-	10,0	100	-
907414	HELU-S-RK-F-CU 16-5	16,0	5,3	6,0	14,0	25,5	-	9,4	100	-
907415	HELU-S-RK-F-CU 16-6,4	16,0	6,4	6,0	14,0	27,0	-	10,0	100	-
907416	HELU-S-RK-F-CU 16-8	16,0	8,4	6,0	15,0	29,5	-	11,2	100	-
907417	HELU-S-RK-F-CU 16-10	16,0	10,5	6,0	18,0	32,0	-	11,2	100	-
907418	HELU-S-RK-F-CU 16-12	16,0	13,0	6,0	20,0	33,0	-	11,8	100	-
907419	HELU-S-RK-F-CU 25-6	25,0	6,4	7,7	16,0	32,0	-	14,7	100	-
907420	HELU-S-RK-F-CU 25-8	25,0	8,4	7,7	16,0	34,0	-	14,3	100	-
907421	HELU-S-RK-F-CU 25-10	25,0	10,5	7,7	18,0	35,0	-	15,3	100	-
907422	HELU-S-RK-F-CU 25-12	25,0	13,0	7,7	20,0	36,0	-	16,1	100	-
907423	HELU-S-RK-F-CU 25-16	25,0	17,0	7,7	26,0	40,5	-	19,1	100	-
907424	HELU-S-RK-F-CU 35-6	35,0	6,4	9,2	18,0	36,0	-	20,7	100	-
907425	HELU-S-RK-F-CU 35-8	35,0	8,4	9,2	18,0	36,0	-	20,7	100	-
907426	HELU-S-RK-F-CU 35-10	35,0	10,5	9,2	18,0	38,0	-	21,4	100	-
907427	HELU-S-RK-F-CU 35-12	35,0	13,0	9,2	23,0	40,0	-	22,2	100	-
907428	HELU-S-RK-F-CU 35-16	35,0	17,0	9,2	26,0	45,0	-	24,2	100	-
907429	HELU-S-RK-F-CU 50-6	50,0	6,4	11,2	22,0	42,0	-	32,5	100	-
907430	HELU-S-RK-F-CU 50-8	50,0	8,4	11,2	22,0	42,0	-	32,2	100	-
907431	HELU-S-RK-F-CU 50-10	50,0	10,5	11,2	22,0	43,0	-	33,3	100	-
907432	HELU-S-RK-F-CU 50-12	50,0	13,0	11,2	23,0	44,0	-	33,9	100	-
907433	HELU-S-RK-F-CU 50-14	50,0	15,0	11,2	25,0	45,5	-	36,0	100	-
907434	HELU-S-RK-F-CU 15-16	50,0	17,0	11,2	28,0	48,5	-	36,5	100	-

Continuation ▸

HELU-S-RK-F-CU Tubular cable lugs for fine stranded wires - straight

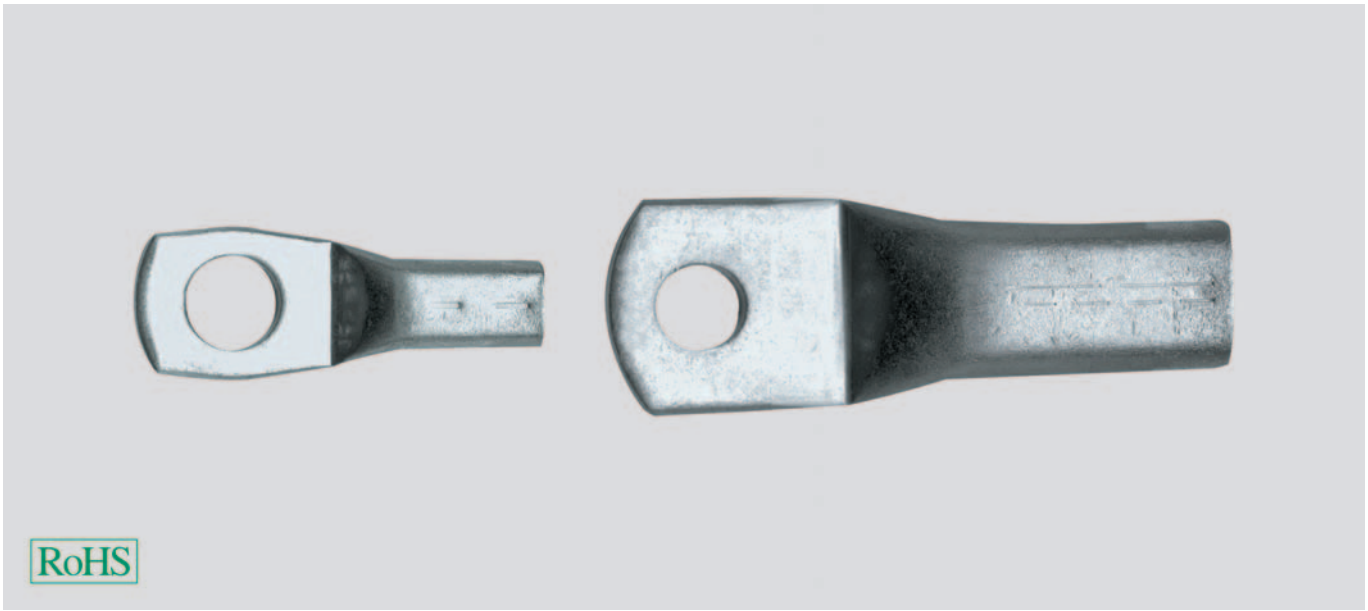
uninsulated

Part no.	Type	Cross-section mm²	a mm	d mm	b mm	l mm	Code type	Weight kg / 1000 items	Unit	
907435	HELU-S-RK-F-CU 70-6	70,0	6,4	13,5	25,0	46,0	-	44,3	50	-
907436	HELU-S-RK-F-CU 70-8	70,0	8,4	13,5	25,0	45,5	-	48,0	50	-
907437	HELU-S-RK-F-CU 70-10	70,0	10,5	13,5	25,0	47,0	-	48,4	50	-
907438	HELU-S-RK-F-CU 70-12	70,0	13,0	13,5	26,0	47,0	-	48,4	50	-
907439	HELU-S-RK-F-CU 70-16	70,0	17,0	13,5	28,0	50,0	-	50,5	50	-
907440	HELU-S-RK-F-CU 70-20	70,0	21,0	13,5	31,0	54,5	-	55,2	50	-
907441	HELU-S-RK-F-CU 95-6	95,0	6,4	15,5	29,0	50,5	-	65,0	50	-
907442	HELU-S-RK-F-CU 95-8	95,0	8,4	15,5	29,0	50,5	-	66,2	50	-
907443	HELU-S-RK-F-CU 95-10	95,0	10,5	15,5	29,0	53,0	-	71,5	50	-
907444	HELU-S-RK-F-CU 95-12	95,0	13,0	15,5	29,0	52,5	-	71,1	50	-
907445	HELU-S-RK-F-CU 95-16	95,0	17,0	15,5	29,0	55,0	-	71,9	50	-
907446	HELU-S-RK-F-CU 95-20	95,0	21,0	15,5	35,0	60,0	-	76,1	50	-
907447	HELU-S-RK-F-CU 120-10	120,0	10,5	16,8	31,0	56,5	-	80,7	50	-
907448	HELU-S-RK-F-CU 120-12	120,0	13,0	16,8	31,0	56,0	-	80,7	50	-
907449	HELU-S-RK-F-CU 120-16	120,0	17,0	16,8	31,0	58,0	-	83,6	50	-
907450	HELU-S-RK-F-CU 120-20	120,0	21,0	16,8	35,0	63,0	-	87,5	50	-
907451	HELU-S-RK-F-CU 150-10	150,0	10,5	19,0	35,0	59,0	-	104,0	25	-
907452	HELU-S-RK-F-CU 150-12	150,0	13,0	19,0	35,0	58,5	-	106,2	25	-
907453	HELU-S-RK-F-CU 150-16	150,0	17,0	19,0	35,0	63,0	-	111,9	25	-
907454	HELU-S-RK-F-CU 150-20	150,0	21,0	19,0	35,0	66,0	-	116,1	25	-
907455	HELU-S-RK-F-CU 185-10	185,0	10,5	21,0	38,0	67,0	-	130,3	25	-
907456	HELU-S-RK-F-CU 185-13	185,0	13,0	21,0	38,0	67,0	-	121,5	25	-
907457	HELU-S-RK-F-CU 185-16	185,0	17,0	21,0	38,0	69,5	-	128,8	25	-
907458	HELU-S-RK-F-CU 185-20	185,0	21,0	21,0	38,0	71,0	-	139,5	25	-
907459	HELU-S-RK-F-CU 240-12	240,0	13,0	24,0	44,0	82,0	-	214,0	20	-
907460	HELU-S-RK-F-CU 240-16	240,0	17,0	24,0	44,0	85,0	-	219,4	20	-
907461	HELU-S-RK-F-CU 240-20	240,0	21,0	24,0	44,0	85,0	-	222,0	20	-

Dimensions and specifications may be changed without prior notice.

HELU-S-PK-CU-DIN Tubular compression cable lugs - straight

uninsulated



Tubular cable lugs HELU-S-PK-CU-DIN

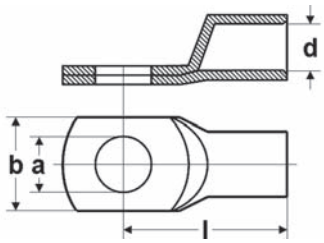
Uninsulated tubular cable lugs in eye type design for conductor arrangement RM, to DIN 46235.

Material

Socket: Copper according to DIN EN 13600
Surface: tin plated or optionally uncoated

Note

- Code type indicates the required hexagonal clamping insert.



Diameter

a	Diameter of the boring
d	Inner diameter of the canle insertion
b	Flange width
l	Length till middle of the boring

Part no.	Type	Cross-section mm²	a mm	d mm	b mm	l mm	Code type	Weight kg / 1000 items	Unit	
907677	HELU-S-PK-CU-DIN 6-5	6,0	5,3	3,7	8,5	24,0	5	3,1	100	-
907678	HELU-S-PK-CU-DIN 6-6	6,0	6,4	3,7	3,7	24,0	5	3,4	100	-
907680	HELU-S-PK-CU-DIN 10-5	10,0	5,3	4,4	10,0	27,0	6	3,5	100	-
907681	HELU-S-PK-CU-DIN 10-6	10,0	6,4	4,4	10,0	27,0	6	3,7	100	-
907685	HELU-S-PK-CU-DIN 16-6	16,0	6,4	5,5	13,0	36,0	8	12,7	100	-
907686	HELU-S-PK-CU-DIN 16-8	16,0	8,4	5,5	13,0	37,0	8	13,0	100	-
907687	HELU-S-PK-CU-DIN 16-10	16,0	10,5	5,5	16,5	38,0	8	13,2	100	-
907689	HELU-S-PK-CU-DIN 25-6	25,0	6,4	7,0	14,0	39,0	10	16,2	100	-
907690	HELU-S-PK-CU-DIN 25-8	25,0	8,4	7,0	17,0	39,0	10	17,3	100	-
907691	HELU-S-PK-CU-DIN 25-10	25,0	10,5	7,0	17,0	40,5	10	17,7	100	-
907692	HELU-S-PK-CU-DIN 25-12	25,0	13,0	7,0	18,0	40,5	10	17,2	100	-
907695	HELU-S-PK-CU-DIN 35-8	35,0	8,4	8,2	18,0	42,0	12	31,9	100	-
907696	HELU-S-PK-CU-DIN 35-10	35,0	10,5	8,2	20,0	42,5	12	31,7	100	-
907697	HELU-S-PK-CU-DIN 35-12	35,0	13,0	8,2	21,0	44,0	12	31,1	100	-
907701	HELU-S-PK-CU-DIN 50-8	50,0	8,4	9,8	20,0	52,0	14	50,0	100	-
907702	HELU-S-PK-CU-DIN 50-10	50,0	10,5	9,8	22,0	52,0	14	49,4	100	-
907703	HELU-S-PK-CU-DIN 50-12	50,0	13,0	9,8	23,0	52,0	14	49,1	100	-
907705	HELU-S-PK-CU-DIN 50-16	50,0	17,0	9,8	28,0	55,5	14	50,4	100	-
907707	HELU-S-PK-CU-DIN 70-8	70,0	8,4	11,3	24,0	56,0	16	65,4	50	-
907708	HELU-S-PK-CU-DIN 70-10	70,0	10,5	11,3	24,0	56,0	16	65,4	50	-
907709	HELU-S-PK-CU-DIN 70-12	70,0	13,0	11,3	24,0	56,5	16	65,7	50	-
907711	HELU-S-PK-CU-DIN 70-16	70,0	17,0	11,3	29,0	57,0	16	69,2	50	-
906524	HELU-S-PK-CU-DIN 95-10	95,0	10,5	13,5	28,0	65,5	18	95,5	50	-
906525	HELU-S-PK-CU-DIN 95-12	95,0	13,0	13,5	28,0	65,5	18	94,5	50	-
907715	HELU-S-PK-CU-DIN 95-12	95,0	17,0	13,5	30,0	65,5	18	94,4	50	-
907716	HELU-S-PK-CU-DIN 95-14	95,0	21,0	13,5	33,0	71,0	18	98,6	50	-
906526	HELU-S-PK-CU-DIN 120-10	120,0	10,5	15,5	31,0	70,0	20	114,0	50	-
906527	HELU-S-PK-CU-DIN 120-12	120,0	13,0	15,5	31,0	70,5	20	114,3	50	-
907719	HELU-S-PK-CU-DIN 120-8	120,0	17,0	15,5	31,5	70,0	20	113,6	50	-
907720	HELU-S-PK-CU-DIN 120-10	120,0	21,0	15,5	36,0	72,0	20	115,1	50	-
907722	HELU-S-PK-CU-DIN 120-14	150,0	10,5	17,0	34,0	79,0	22	164,6	25	-
906528	HELU-S-PK-CU-DIN 150-12	150,0	13,0	17,0	34,0	78,5	22	165,3	25	-
906529	HELU-S-PK-CU-DIN 150-16	150,0	17,0	17,0	34,0	78,0	22	163,5	25	-
907724	HELU-S-PK-CU-DIN 120-20	150,0	21,0	17,0	38,0	78,0	22	163,4	25	-
907726	HELU-S-PK-CU-DIN 150-10	185,0	10,5	19,0	37,0	83,0	25	185,0	25	-
906530	HELU-S-PK-CU-DIN 185-12	185,0	13,0	19,0	37,0	82,5	25	189,5	25	-
906531	HELU-S-PK-CU-DIN 185-16	185,0	17,0	19,0	37,0	82,0	25	194,1	25	-

Continuation ▸

HELU-S-PK-CU-DIN Tubular compression cable lugs - straight

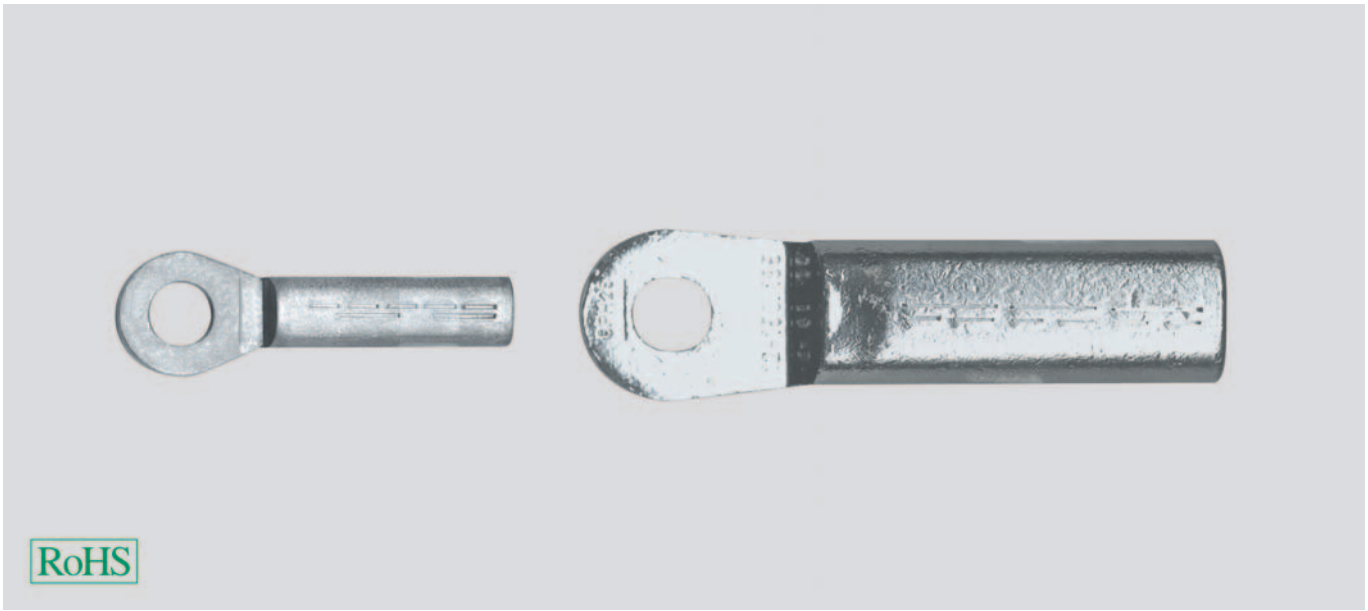
uninsulated

Part no.	Type	Cross-section mm²	a mm	d mm	b mm	l mm	Code type	Weight kg / 1000 items	Unit	
907728	HELU-S-PK-CU-DIN 150-14	185,0	21,0	19,0	40,0	83,0	25	190,1	25	-
906532	HELU-S-PK-CU-DIN 240-12	240,0	13,0	21,5	42,5	92,0	28	266,5	20	-
906533	HELU-S-PK-CU-DIN 240-16	240,0	17,0	21,5	42,5	92,0	28	274,5	20	-
907731	HELU-S-PK-CU-DIN 185-8	240,0	21,0	21,5	45,0	92,0	28	276,7	20	-
906534	HELU-S-PK-CU-DIN 300-16	300,0	17,0	24,5	48,5	100,0	32	341,6	10	-
906535	HELU-S-PK-CU-DIN 300-20	300,0	21,0	24,5	48,5	100,0	32	344,6	10	-
906536	HELU-S-PK-CU-DIN 400-16	400,0	17,0	27,5	55,0	117,0	38	717,5	5	-
906537	HELU-S-PK-CU-DIN 400-20	400,0	21,0	27,5	55,0	117,0	38	706,4	5	-
906538	HELU-S-PK-CU-DIN 500-20	500,0	21,0	31,0	60,0	130,0	42	876,6	5	-
907744	HELU-S-PK-CU-DIN 300-14	625,0	21,0	34,5	63,0	135,0	44	820,5	5	-
907747	HELU-S-PK-CU-DIN 400-10	800,0	21,0	40,0	75,0	165,0	100	1455,5	2	-
907749	HELU-S-PK-CU-DIN 400-14	1000,0	21,0	44,0	83,0	167,0	58	1890,0	2	-

Dimensions and specifications may be changed without prior notice.

HELU-S-PK-AL-DIN Tubular compression cable lugs

uninsulated



RoHS

Tubular cable lug HELU-S-PK-AL-DIN

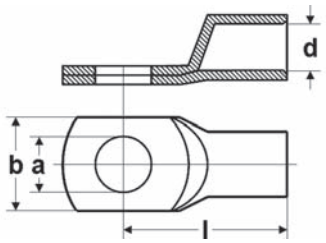
Uninsulated, straight tubular cable lugs in eye type design made by aluminum. High definition version for reliable crimping. Designed for conductor type RM acc. to DIN 48201 and circulary reshaped conductors.

Material

AL 99,5
Surface: bare

Note

- Code type indicates the required hexagonal clamping insert.
- Sleeves are prefilled with compound and sealedwith plastic plugs



Dimensions

a	Diameter of the boring
d	Inner diameter of the cable inclusion
b	Flange width
l	Length till middle of the boring

Part no.	Type	Cross-section RM/SM - SE mm²	a mm	d mm	b mm	l mm	Code type	Weight kg / 1000 items	Unit	
907865	HELU-S-PK-AL-DIN 16-8	16,0 - 25,0	8,4	5,6	16,0	52,0	12	9,6	50	-
907866	HELU-S-PK-AL-DIN 16-10	16,0 - 25,0	10,5	5,6	18,0	52,0	12	9,7	50	-
907867	HELU-S-PK-AL-DIN 25-8	25,0 - 35,0	8,4	6,8	16,0	60,0	12	14,8	50	-
907868	HELU-S-PK-AL-DIN 25-10	25,0 - 35,0	10,5	6,8	18,0	60,0	12	15,3	50	-
907869	HELU-S-PK-AL-DIN 35-8	35,0 - 50,0	8,4	8,0	20,0	67,0	14	24,5	50	-
907870	HELU-S-PK-AL-DIN 35-10	35,0 - 50,0	10,5	8,0	20,0	67,0	14	24,5	50	-
907871	HELU-S-PK-AL-DIN 35-12	35,0 - 50,0	13,0	8,0	20,0	67,0	14	23,5	50	-
907872	HELU-S-PK-AL-DIN 50-8	50,0 - 70,0	8,4	10,0	23,0	74,0	16	32,9	25	-
907873	HELU-S-PK-AL-DIN 50-10	50,0 - 70,0	10,5	10,0	23,0	74,0	16	28,8	25	-
907874	HELU-S-PK-AL-DIN 50-12	50,0 - 70,0	13,0	10,0	23,0	74,0	16	33,8	25	-
907875	HELU-S-PK-AL-DIN 70-10	70,0 - 95,0	10,5	11,5	28,0	84,0	18	47,7	25	-
907876	HELU-S-PK-AL-DIN 70-12	70,0 - 95,0	13,0	11,5	28,0	87,0	18	47,3	25	-
907877	HELU-S-PK-AL-DIN 95-10	95,0 - 120,0	10,5	13,2	32,0	90,0	22	70,1	10	-
907878	HELU-S-PK-AL-DIN 95-12	95,0 - 120,0	13,0	13,2	32,0	90,0	22	78,2	10	-
907879	HELU-S-PK-AL-DIN 95-16	95,0 - 120,0	17,0	13,2	32,0	90,0	22	76,2	10	-
907880	HELU-S-PK-AL-DIN 120-10	120,0 - 150,0	10,5	14,7	32,0	98,0	22	83,8	10	-
907881	HELU-S-PK-AL-DIN 120-12	120,0 - 150,0	13,0	14,7	32,0	98,0	22	87,9	10	-
907882	HELU-S-PK-AL-DIN 120-16	120,0 - 150,0	17,0	14,7	32,0	98,0	22	86,4	10	-
906459	HELU-S-PK-AL-DIN 150-10	150,0 - 185,0	10,5	16,3	35,0	104,0	25	99,8	10	-
906436	HELU-S-PK-AL-DIN 150-12	150,0 - 185,0	13,0	16,3	35,0	104,0	25	102,3	10	-
906461	HELU-S-PK-AL-DIN 150-16	150,0 - 185,0	13,0	16,3	35,0	104,0	25	100,8	10	-
906462	HELU-S-PK-AL-DIN 150-20	150,0 - 185,0	21,0	16,3	35,0	104,0	25	100,2	10	-
907883	HELU-S-PK-AL-DIN 185-10	185,0 - 240,0	10,5	18,5	40,0	109,0	28	133,9	10	-
906463	HELU-S-PK-AL-DIN 185-12	185,0 - 240,0	13,0	18,5	40,0	109,0	28	133,9	10	-
906464	HELU-S-PK-AL-DIN 185-16	185,0 - 240,0	17,0	18,5	40,0	109,0	28	137,5	10	-
906465	HELU-S-PK-AL-DIN 185-20	185,0 - 240,0	21,0	18,5	40,0	109,0	28	137,5	10	-
907884	HELU-S-PK-AL-DIN 240-10	240,0 - 300,0	10,5	21,0	46,0	119,0	32	182,8	10	-
906466	HELU-S-PK-AL-DIN 240-12	240,0 - 300,0	13,0	21,0	46,0	119,0	32	179,4	10	-
906467	HELU-S-PK-AL-DIN 240-16	240,0 - 300,0	17,0	21,0	46,0	119,0	32	176,2	10	-
906468	HELU-S-PK-AL-DIN 240-20	240,0 - 300,0	21,0	21,0	46,0	119,0	32	179,0	10	-
906469	HELU-S-PK-AL-DIN 300-12	300,0 - 25,0	13,0	23,3	50,0	125,0	38	205,4	5	-
906470	HELU-S-PK-AL-DIN 300-16	300,0 - 25,0	17,0	23,3	50,0	125,0	38	201,4	5	-
906471	HELU-S-PK-AL-DIN 300-20	300,0 - 25,0	21,0	23,3	50,0	125,0	38	194,3	5	-
906472	HELU-S-PK-AL-DIN 400-12	400,0 - 25,0	13,0	26,0	55,0	120,0	38	283,0	5	-
906473	HELU-S-PK-AL-DIN 400-16	400,0 - 25,0	17,0	26,0	55,0	120,0	38	273,3	5	-
906474	HELU-S-PK-AL-DIN 400-20	400,0 - 25,0	21,0	26,0	55,0	120,0	38	240,0	5	-
906475	HELU-S-PK-AL-DIN 500-12	500,0 - 25,0	13,0	29,0	63,0	140,0	44	380,0	5	-
906476	HELU-S-PK-AL-DIN 500-16	500,0 - 25,0	17,0	29,0	63,0	140,0	44	378,0	5	-
906477	HELU-S-PK-AL-DIN 500-20	500,0 - 25,0	21,0	29,0	63,0	140,0	44	373,5	5	-

Dimensions and specifications may be changed without prior notice.

ADI core end sleeves

insulated



ADI

Insulated core end sleeves prevent stripped wires from fanning.
The hopper-shaped plastic collar enables them to be pushed easily onto the wires.
To DIN, ZF, and Telemecanique colour code.

Material

Socket: copper
Surface: tinned

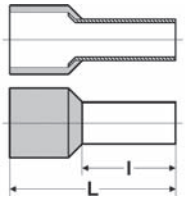
Insulating shroud: polypropylene

Note

Assignment to cable cross section according to DIN 46228: up to 50mm² to nominal size an DIN color code - over 50mm² no specification; Assignment to suitable size possible.

Technical data

Temperature range: up to +105°C
Temperature range temporary up to +120°C



Dimensions

L	Total length
l	Stick length

Part no.	Size mm²	Colour	Colour code	Total length mm	Stick length mm	Unit	
91850	0,14 / normal	brown	Telemecanique	10,4	6,0	500	-
91851	0,14 / long	brown	Telemecanique	12,4	8,0	500	-
91852	0,25 / normal	violet	Telemecanique	10,4	6,0	500	-
91853	0,25 / normal	light blue	Z+F	10,4	6,0	500	-
91854	0,25 / long	violet	Telemecanique	12,4	8,0	500	-
91855	0,25 / long	light blue	Z+F	12,4	8,0	500	-
91856	0,34 / normal	pink	Telemecanique	10,4	6,0	500	-
91857	0,34 / normal	turquoise	Z+F	10,4	6,0	500	-
91858	0,34 / long	pink	Telemecanique	12,4	8,0	500	-
91859	0,34 / long	turquoise	Z+F	12,4	8,0	500	-
91860	0,5 / short	white	DIN	12,0	6,0	500	-
91861	0,5 / short	orange	Z+F	12,0	6,0	500	-
91350	0,5 / normal	white	DIN	14,0	8,0	500	-
91383	0,5 / normal	orange	Z+F	14,0	8,0	500	-
91862	0,5 / semi-long	white	DIN	16,0	10,0	500	-
91863	0,5 / semi-long	orange	Z+F	16,0	10,0	500	-
91864	0,75 / short	light blue	Telemecanique	12,4	6,0	500	-
91865	0,75 / short	white	Z+F	12,4	6,0	500	-
94023	0,75 / short	grey	DIN	12,4	6,0	500	-
91351	0,75 / normal	light blue	Telemecanique	14,6	8,0	500	-
91384	0,75 / normal	white	Z+F	14,6	8,0	500	-
93030	0,75 / normal	grey	DIN	14,6	8,0	500	-
91866	0,75 / semi-long	light blue	Telemecanique	16,4	10,0	500	-
91867	0,75 / semi-long	white	Z+F	16,4	10,0	500	-
91868	0,75 / semi-long	grey	DIN	16,4	10,0	500	-
91869	0,75 / long	light blue	Telemecanique	18,4	12,0	500	-
91870	0,75 / long	white	Z+F	18,4	12,0	500	-

Continuation ▸

ADI core end sleeves

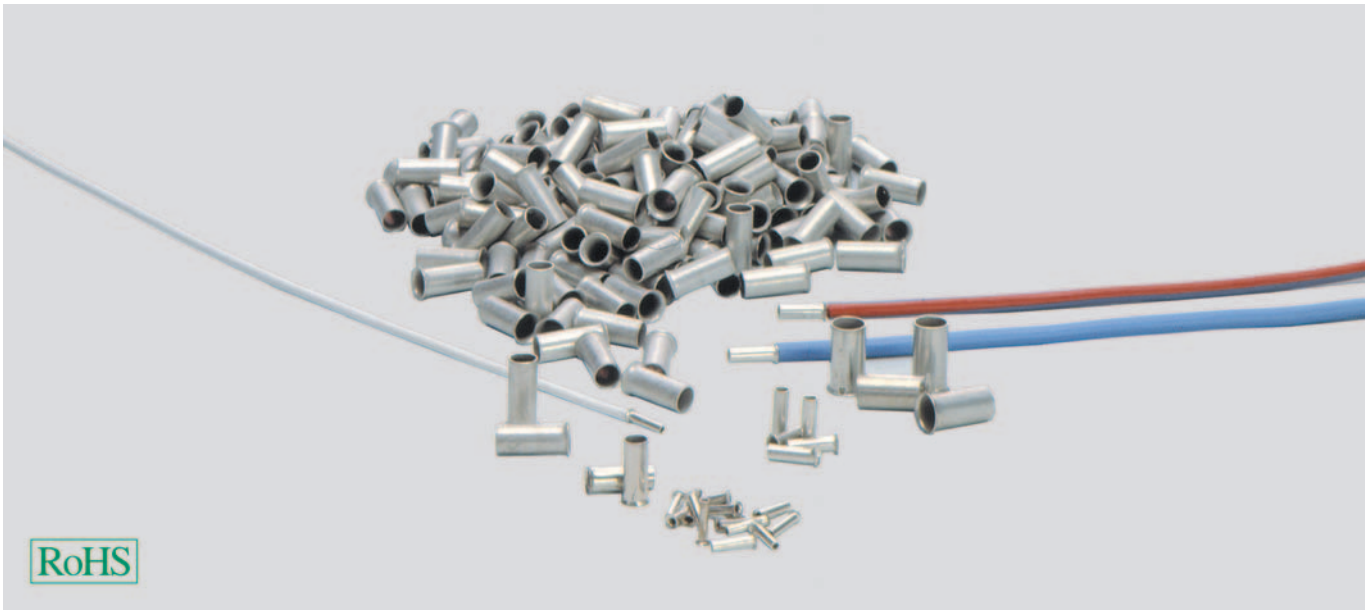
insulated

Part no.	Size mm²	Colour	Colour code	Total length mm	Stick length mm	Unit	
91871	0,75 / long	grey	DIN	18,4	12,0	500	-
91872	1,0 / short	red	DIN	12,4	6,0	500	-
91873	1,0 / short	yellow	Z+F	12,4	6,0	500	-
91352	1,0 / normal	red	DIN	14,6	8,0	500	-
91385	1,0 / normal	yellow	Z+F	14,6	8,0	500	-
91874	1,0 / semi-long	red	DIN	16,4	10,0	500	-
91875	1,0 / semi-long	yellow	Z+F	16,4	10,0	500	-
91876	1,0 / long	red	DIN	18,4	12,0	500	-
91877	1,0 / long	yellow	Z+F	18,4	12,0	500	-
91353	1,5 / normal	black	DIN	14,6	8,0	500	-
91386	1,5 / normal	red	Z+F	14,6	8,0	500	-
91878	1,5 / semi-long	black	DIN	16,4	10,0	500	-
91879	1,5 / semi-long	red	Z+F	16,4	10,0	500	-
91880	1,5 / long	black	DIN	24,4	18,0	500	-
91881	1,5 / long	red	Z+F	24,4	18,0	500	-
91354	2,5 / normal	grey	Telemecanique	15,2	8,0	500	-
91387	2,5 / normal	blue	DIN	15,2	8,0	500	-
91882	2,5 / semi-long	grey	Telemecanique	19,0	12,0	500	-
91883	2,5 / semi-long	blue	DIN	19,0	12,0	500	-
91884	2,5 / long	grey	Telemecanique	25,0	18,0	500	-
91885	2,5 / long	blue	DIN	25,0	18,0	500	-
91355	4,0 / normal	orange	Telemecanique	16,5	10,0	500	-
91388	4,0 / normal	grey	DIN	16,5	10,0	500	-
91886	4,0 / semi-long	orange	Telemecanique	19,5	12,0	500	-
91887	4,0 / semi-long	grey	DIN	19,5	12,0	500	-
91888	4,0 / long	orange	Telemecanique	25,5	18,0	500	-
91889	4,0 / long	grey	DIN	25,5	18,0	500	-
91356	6,0 / normal	green	Telemecanique	20,0	12,0	100	-
91389	6,0 / normal	black	Z+F	20,0	12,0	100	-
93031	6,0 / normal	yellow	DIN	20,0	12,0	100	-
91890	6,0 / long	green	Telemecanique	26,0	18,0	100	-
91891	6,0 / long	black	Z+F	26,0	18,0	100	-
91892	6,0 / long	yellow	DIN	26,0	18,0	100	-
91357	10,0 / normal	brown	Telemecanique	21,5	12,0	100	-
91390	10,0 / normal	ivory	Z+F	21,5	12,0	100	-
93032	10,0 / normal	red	DIN	21,5	12,0	100	-
91893	10,0 / long	brown	Telemecanique	27,5	18,0	100	-
91894	10,0 / long	ivory	Z+F	27,5	18,0	100	-
94024	10,0 / long	red	DIN	27,5	18,0	100	-
91895	16,0 / normal	ivory	Telemecanique	22,2	12,0	100	-
91896	16,0 / normal	green	Z+F	22,2	12,0	100	-
91897	16,0 / normal	blue	DIN	22,2	12,0	100	-
91898	16,0 / long	ivory	Telemecanique	28,2	18,0	100	-
91899	16,0 / long	green	Z+F	28,2	18,0	100	-
91900	16,0 / long	blue	DIN	28,2	18,0	100	-
91359	25,0 / normal	black	Telemecanique	29,0	16,0	50	-
91392	25,0 / normal	brown	Z+F	29,0	16,0	50	-
93034	25,0 / normal	yellow	DIN	29,0	16,0	50	-
91901	25,0 / long	black	Telemecanique	35,0	22,0	50	-
91902	25,0 / long	brown	Z+F	35,0	22,0	50	-
91903	25,0 / long	yellow	DIN	35,0	22,0	50	-
91393	35,0 / normal	red	DIN	30,0	16,0	50	-
91394	35,0 / normal	beige	Z+F	30,0	16,0	50	-
91904	35,0 / long	red	DIN	39,0	25,0	50	-
91905	35,0 / long	beige	Z+F	39,0	25,0	50	-
91395	50,0 / normal	blue	DIN	36,4	20,0	50	-
91396	50,0 / normal	oliv	Z+F	36,4	20,0	50	-
91906	50,0 / long	blue	DIN	41,0	25,0	50	-
91907	50,0 / long	oliv	Z+F	41,0	25,0	50	-
91908	70,0 / normal	yellow	DIN	37,0	21,0	25	-
91397	70,0 / long	yellow	DIN	43,0	27,0	25	-
91909	95,0 / normal	red	DIN	44,0	25,0	25	-
91910	120,0 / normal	blue	DIN	48,0	27,0	25	-
91911	150,0 / normal	yellow	DIN	58,0	32,0	25	-

Dimensions and specifications may be changed without prior notice.

ADU core end sleeves

non insulated



ADU

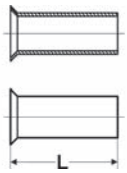
Non-insulated core end sleeves prevent stripped wires from fanning. The hopper-shaped socket enables them to be pushed easily onto the wires.

Material

Socket: copper

Note

Assignment to cable cross section according to DIN 46228: up to 50mm² to nominal size - over 50mm² no specificatin; Assignment to suitable size possible.



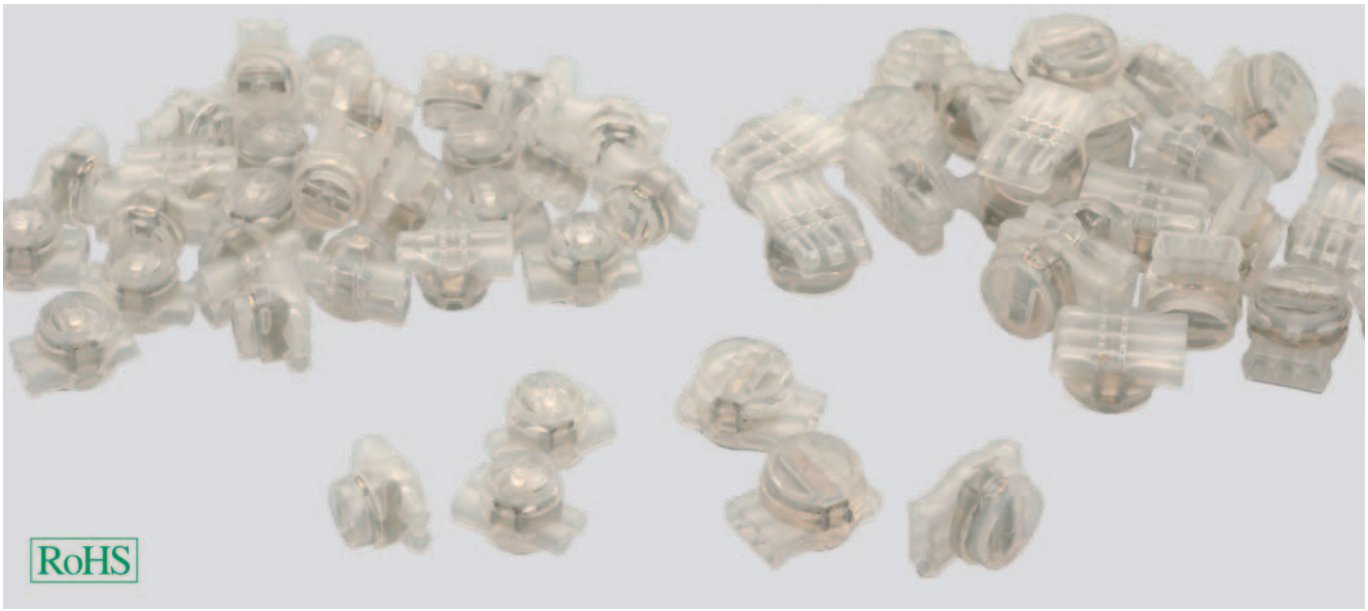
Dimensions

L Total length

Part no.	Size mm²	Length mm	Unit	
91368	0,5	6,0	1000	-
91370	0,5	10,0	1000	-
91371	0,75	6,0	1000	-
91372	0,75	8,0	1000	-
91373	1,0	6,0	1000	-
91374	1,0	10,0	1000	-
91375	1,5	7,0	1000	-
91376	1,5	10,0	1000	-
93096	2,5	7,0	1000	-
93097	2,5	10,0	1000	-
93099	4,0	9,0	1000	-
94000	4,0	12,0	1000	-
94001	6,0	10,0	250	-
94002	6,0	12,0	250	-
94003	6,0	15,0	250	-
94004	10,0	12,0	250	-
94005	10,0	15,0	250	-
94006	10,0	18,0	250	-
94007	16,0	12,0	250	-
94008	16,0	15,0	250	-
94009	16,0	18,0	250	-
94010	25,0	12,0	100	-
94011	25,0	15,0	100	-
94012	25,0	18,0	100	-
94013	25,0	25,0	100	-
94014	25,0	32,0	100	-
94015	35,0	18,0	100	-
94016	35,0	25,0	100	-
94018	35,0	32,0	100	-
94019	50,0	18,0	100	-
94020	50,0	22,0	100	-
94021	70,0	25,0	100	-
94022	70,0	32,0	100	-
91030	95,0	25,0	50	-
91031	95,0	32,0	50	-
96841	120,0	32,0	50	-

Dimensions and specifications may be changed without prior notice.

AV core connectors for communication and signal cables



AV core connectors

Core connectors type **AV** connect plastic-insulated telecommunication and signal cable cores. They are characterised by their space-saving and assembly-friendly structure. Satisfy the requirements of DIN 47627 (solder-free core connections in sleeves for telecommunication cables).
When clamping with the **AVZ** tool, the vertical forces are transferred evenly to the core connectors, thus guaranteeing reliable contacting of the copper lines to be processed.

Properties

- high electrical insulation values
- high mechanical and thermal strength
- impact-proof plastic housing
- corrosion protection through grease charge
- improved contacting through U-contact principle
- core diameters up to 2.0 mm possible
- larger application range from 0.4 - 0.9 mm conductor diameter
- stripping, connection and insulation in one action

Note

The parallel-clamping core binding pliers or equivalent are suitable for flush clamping core connectors.
Use core connection pliers AVZ or equal tool.

Scope of delivery

Colour: transparent

AV core connectors

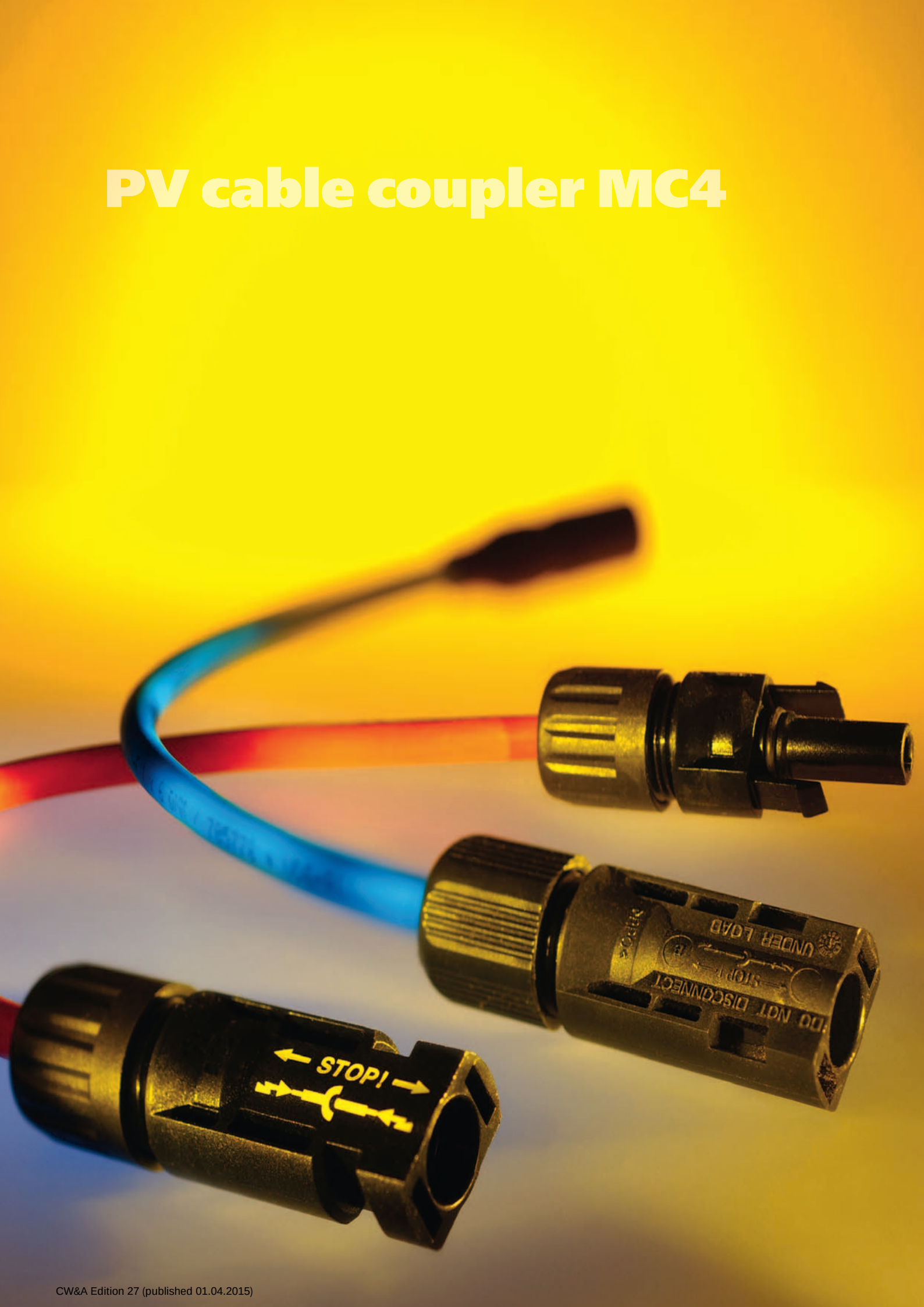
Part no.	Type	No. cores	Conductor Ø from - to mm	Unit	
93147	AV2	2	0,4 - 0,9	100	-
93148	AV3	3	0,4 - 0,9	100	-
93149	AVT3	3	0,4 - 0,9	100	-

AVZ core connecting pliers

Part no.	Type	No. cores	Conductor Ø from - to mm	Unit	
93150	AVZ	-	-	1	-

Dimensions and specifications may be changed without prior notice.

PV cable coupler MC4



CW&A Edition 27 (published 01.04.2015)

PV-male and female cable coupler MC4



PV- male and female cable coupler MC4

With Snap-in lock

Material

Polyamide
Contact:Cu, tinned, rotated

Technical data

Protection classification:IP 67
Safety class: II
Temperature range: -40°C up to +90°C
Rated voltage:1000 V (IEC)
Rated current:22A (2,5 mm²), 30A (4mm², 6mm²)
Contact resistance of plug connectors:0.35 mOhm

MC4 male cable coupler

Part no.	Designation	Cross section mm²	Cable Ø mm	Unit
905206	PV-male cable coupler MC4	2,5	3 - 6	50
905208	PV-male cable coupler MC4	2,5	5,5 - 9	50
905210	PV-male cable coupler MC4	4 - 6	3 - 6	50
904963	PV-male cable coupler MC4	4 - 6	5,5 - 9	50
905863	PV-male cable coupler MC4	10	5,5 - 9	50

MC4 female cable coupler

Part no.	Designation	Cross section mm²	Cable Ø mm	Unit
905207	PV-female cable coupler MC4	2,5	3 - 6	50
905209	PV-female cable coupler MC4	2,5	5,5 - 9	50
905211	PV-female cable coupler MC4	4 - 6	3 - 6	50
904964	PV-female cable coupler MC4	4 - 6	5,5 - 9	50
905864	PV-female cable coupler MC4	10	5,5 - 9	50

Dimensions and specifications may be changed without prior notice.



HELUTOOL 250 pocket

Multistrip 10

Outside cleaning cutter HAMX

Chamfer cutter HUFS

Cable stripping Knife HKM 1

TOOLS

Designation	Properties	Page
Multistrip 10	Stripper	1004
DUO Stripper 200	Peeling and stripping	1005
Skinning tool HAM 1		1006
HELUTOOL 250 pocket, 190	Drum unwinder	1007
HELUTOOL MZ	Circlip pliers	1008
Outside cleading cutter HAMX		1009
Cable stripper for vulcanized semi conductive layer HFBS		1010
Inside cleading cutter (universal) HIMS II		1011
Chamfer cutter HUFS		1012
Cable stripping knife HKM1		1013
MS-Skinning-Complete-Set		1014

Multistrip 10 stripper



Stripper Multistrip 10

- Self adjusting
- For single and multi-core lines made of PVC, rubber etc.
- Adjustable stripping length up to 18mm
- Robust metal clamps
- Ergonomic two-component handle
- Length 195 mm
- Weight 200 g

Stripper

Part no.	Type	Cross-section min. - max. mm²	Unit	
904731	Multistrip 10	0,03 - 10,0	1	-

Dimensions and specifications may be changed without prior notice.

DUO Stripper 200 peeling and stripping



Duo Stripper 200

The Duo Stripper 200, one tool with 2 functions:
Peeling and stripping.

- Peels all standard round cables from 4-28mm, with adjustable cutting depth and rotating knife for automatic conversion from round to longitudinal sections.
- Stripping from 0.5 to 6.0mm².

peeling and stripping

Part no.	Type	Unit	
91924	DUO 200	1	-

Dimensions and specifications may be changed without prior notice.

Skinning tool HAM1

for round cables



RoHS

Skinning tool HAM 1

- For PVC-insulated round cables and a pluralityof PUR-insulated cables up to 25mmØ.
- Suitable for longitudinal and round section. The depth of the cut is adjustable from 0 to 5mm. The cutting blade can be used double-sided.
- Length: 50 mm
- Weight: 0,16 kg

Note

Replacement cutting blade for HAM 1, Part 906234

Scope of delivery

HAM 1 incl. plastic box

Skinning tool HAM 1

Part no.	Type	Cross-section mm²	Unit	
906233	HAM1	-	1	-

Spare blade for skinning tool HAM 1

Part no.	Type	Cross-section mm²	Unit	
906234	-	-	1	-

Dimensions and specifications may be changed without prior notice.

HELUTOOL 250 pocket, 190 drum unwinder



Drum unwinder HELUTOOL

For simple reeling of cable drums.

- Dynamic brake for constant traction: retarding effect corresponds to the weight bearing on.
- Small weight
- Small size
- Can be used with broken drums

drum unwinder

Part no.	Type	Weight app. kg	Load capacity kg	Diameter app. mm	Reel width mm	Unit	
903716	HELUTOOL 250 pocket	1,0	190	250	-	1	-
93529	HELUTOOL 190	7,0	380	500	-	1	-

Dimensions and specifications may be changed without prior notice.

HELUTOOL MZ circlip pliers



HELUTOOL MZ

assembly pliers for cable glands

- fast and reliable installation of cable glands
- automatic progressively adjustable size of the jaw
- ratchet-like function with pivoting angle 60°
- with fixed adjustment for continous working
- good aplicable even in constricted working areas
- stable for professional use
- extremely handy
- two-components-plastic handles

circlip pliers

Part no.	Type	Unit	
904892	MZ 13/23	1	-
904893	MZ 24/36	1	-

Dimensions and specifications may be changed without prior notice.

Outside cleading cutter HAMX

with rapid clamoing system for low voltage- and medium voltage conductors



Outside cleading cutter HAMX

The outside cleading cutter with rapid clamping system can be used to strip the outer sheath from low voltage and medium voltage conductors with an outside diameter of 16 up to 54 mm.
A switch lever between longitudinal section and round cut as well as an additional claw for breaking the insulation are available.The positioning on the cable is made by a clamping system. The cut depth is adjustable from 0-5 mm in steps of 0,1 mm. The feed rate is made by a ratchet wrench. The maximum rotation diameter is 300 mm.
The components are produced from aluminium and stainless steel. The moldings are made of impact-resistant plastic material. The blades are from alloyed steel according to EN 10020 with a hardness of least 58 HRC.
Weight: 1,32 kg

Note

Spare blade with screw and hex-wrench for HAMX, part no. 906236

Scope of delivery

HAMX-device, ratchet wrench and nylon case

Outside cleading cutter HAMX

Part no.	Type	Cross-section mm²	Unit	
906235	HAMX	-	1	-

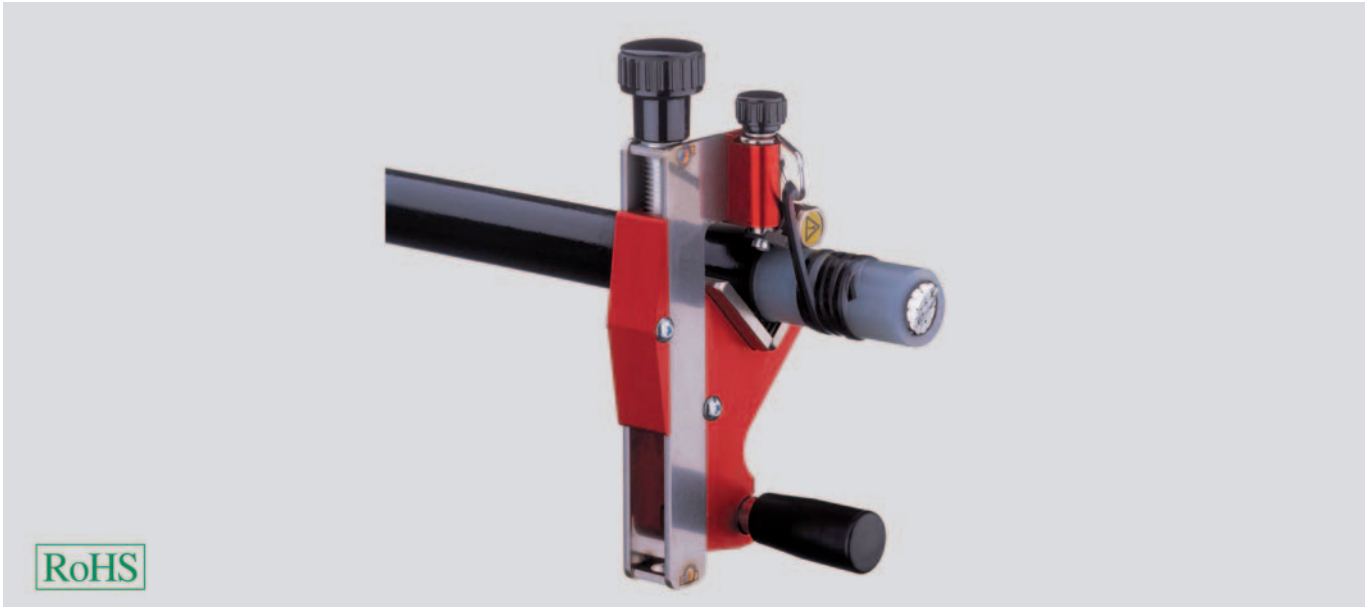
Spare blade for skinning tool HAMX

Part no.	Type	Cross-section mm²	Unit	
906236	-	-	1	-

Dimensions and specifications may be changed without prior notice.

Cable stripper for vulcanized semi conductive layer HFBS

for stripping the vulcanized semi conductive layer



Cable stripper for vulcanized semi conductive layer HFBS

The device is for stripping the vulcanized semi conductive layer of low voltage and medium voltage conductors. The maximum layer thickness is 1,5 mm. The stripper can be used for insulation diameter of 10 up to 52 mm. The positioning on the cable is made by a clamping system. The stripping process can be started and stopped in every position of the cable. A switch lever to activate/inactivate the axial traverse speed is available. The device has optimum gliding properties through coated contact surfaces. The maximum rotation diameter is 200 mm.
The components are made of aluminium, steel and brass, with anodized, chromium-plated and nickel-plated surfaces. The form parts are of impact resistant plastic. The blades are from alloyed steel with a hardness of least 55 HRC.
Length: 170 mm
Weight: 0,79 kg

Note

- Spare blade 17° for HFBS, part no. 906238
- Spare tube silocone paste 100ml, part no. 906239

Scope of delivery

HFBS-device, silicone paste, allen wrench 2,5 mm, plastic case

Cable stripper for HFBS

Part no.	Type	Cross-section mm²	Unit	
906237	HFBS	-	1	-

Spare blade for HFBS

Part no.	Type	Cross-section mm²	Unit	
906238	-	-	1	-

Spare tube silicone paste

Part no.	Type	Cross-section mm²	Unit	
906239	-	-	1	-

Dimensions and specifications may be changed without prior notice.

Inside cleading cutter (universal) HIMS II

for medium voltage conductors



RoHS

Inside cleading cutter (universal) HIMS II

- The inside cleading cutter HIMS II can be used for stripping-off the primary insulation on the ends of medium voltage conductors of 6 up to 45 kV with outside diameters of 15 up to 52 mm and a maximum insulation thickness of 15 mm.
- The positioning on the cable is made by a clamping System. Spiral and circle cuts are possible. The cut depth is adjustable of 0 up to 15 mm and the feed rate is selectable in 5 steps. The stripping can be stopped in every Position of the cable. The stripping length is unlimited. The device has optimum gliding properties through coated contacts surfaces. The maximum rotation diameter is 220 mm.
- The components are made of aluminium, steel and brass, with anodized, chromium-plated and nickel-plated surfaces. The blades are from alloyed steel with a hardness of least 55 HRC.
- Length: 170 mm
- Weight: 1 kg

Note

- Spare blade for HIMS, part no. 906241
- Spare tube silicone paste 100ml, part no. 906239

Scope of delivery

HIMS II device, silicone paste, allen wrench 2,5 mm, plastic case

Inside cleading cutter HIMS II

Part no.	Type	Cross-section mm²	Unit	
906240	HIMS II	-	1	-

Spare blade for HIMS II

Part no.	Type	Cross-section mm²	Unit	
906241	-	-	1	-

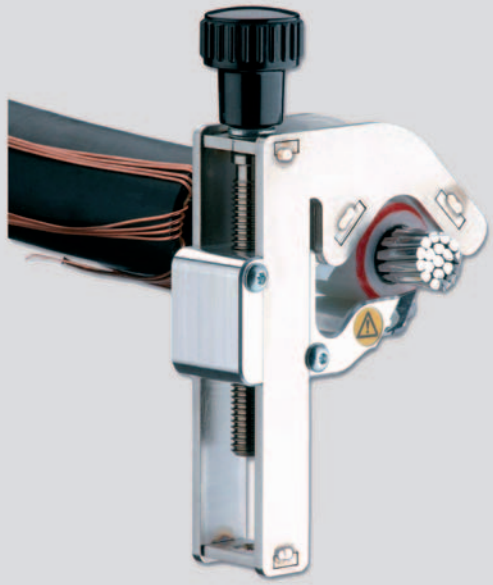
Spare tube silicone paste

Part no.	Type	Cross-section mm²	Unit	
906239	-	-	1	-

Dimensions and specifications may be changed without prior notice.

Chamfer cutter HUFS

for medium voltage conductors



RoHS

Inside cleading cutter (universal) HUFS

- chamfer cutter HUFS is for chamfering the primary insulation of medium voltage conductors with outside diameter from 15 up to 60 mm.
- positioning on the cable is made by a clamping system. The device has PTFE-plates for optional gliding properties on the cable. A silicone paste is not necessary.
- size of the chamfer: 2 mm x 60°
- maximum totation diameter is 220 mm
- the device is light and has a robust construction form. The components are made of aluminium and steel. The blades are from alloyed steel with a hardness of least 55 HRC.
- Length: 145 mm
- Weight: 0,39 kg

Note

Spare blade for HIMS, part no. 906243

Scope of delivery

HUFS-device, allen wrench 2,5 mm, nylon case

Chamfer cutter HUFS

Part no.	Type	Cross-section mm²	Unit	
906242	HUFS	-	1	-

Spare blade for HUFS

Part no.	Type	Cross-section mm²	Unit	
906243	-	-	1	-

Dimensions and specifications may be changed without prior notice.

Cable stripping knife HKM1



RoHS

Cable stripping knife HKM 1

- Cable stripping knife with special grinding. The special blade prevented a damage of th conductor. The knife has blade protection, sinking into the handle
- changeable blade is made of stainless steel according to DIN EN 10020, hardness minimum 50 HRC
- high-quality, ergonomically formed handle is out of impact plastic (PA)
- admission of the VDE up to 1000 volt according to EN/IEC 60900:2004 and GS-sign
- Length: 200 mm
- Weight: 0,1 kg

Note

Spare blade with moulded plastic insert for HKM 1, part no. 906246

Cable stripping knife HKM 1

Part no.	Type	Cross-section mm²	Unit	
906245	HKM 1	-	1	-

Spare blade for HKM 1

Part no.	Type	Cross-section mm²	Unit	
906246	-	-	1	-

Dimensions and specifications may be changed without prior notice.

MS-Skinning-Complete-Set



RoHS

MS-Skinning-Complete-Set

Skinning-Complete-Set for medium voltage cables contains everything youneedfor stripping.

- Skinning tool HAM1
- Outside cleading cutter HAMX
- Cable stripper for vulcanized semi conductive layer HFBS
- Inside cleading cutter (universal) HIMS II
- Chamfer cutter HUFS
- Spare tube silicone paste
- Dimensions: 38 x 31 x 9 cm
- Weight: 3,73 kg

Part no.	Type	Unit	
906244	-	1	-

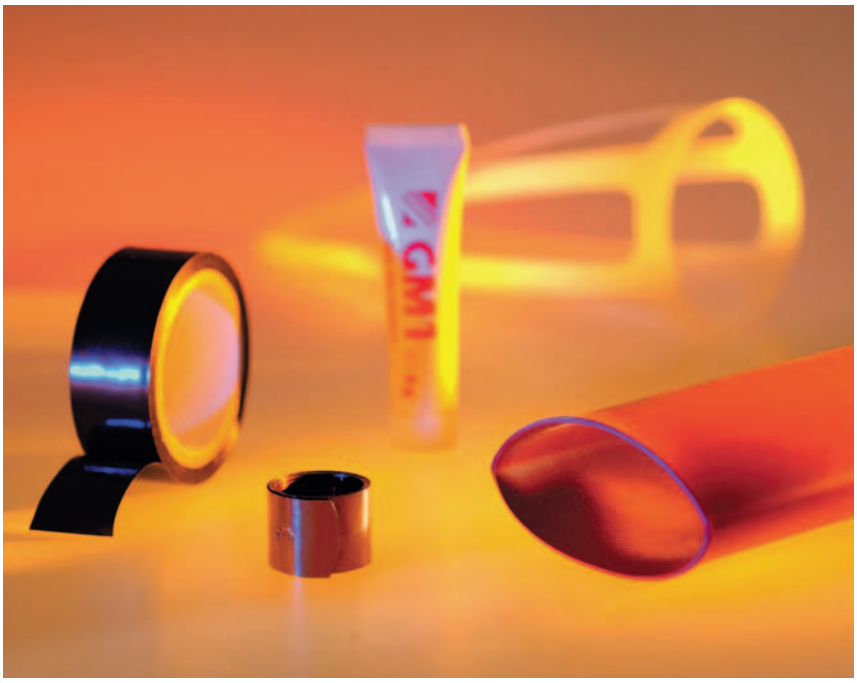
Dimensions and specifications may be changed without prior notice.

TERMINATION & CONNECTION SLEEVES

Termination & connection sleeves:

- Telecommunication cables
- Low-voltage
- Medium-voltage
- Accessories/component parts

YOU WILL FIND ADDITIONAL ACCESSORIES IN THE CABLE ACCESSORIES CATALOG!



HELUTEC SIGNAL & POWER CONNECTORS

HELUTEC signal & power connectors

- Helutec® Series 617/623/627
- Helutec® Series 917/923/932/940/958
- Helutec® Series 723
- Helutec® Series 615/915
- Helutec® Series 926
- Tools and accessories

YOU WILL FIND ADDITIONAL ACCESSORIES IN OUR HELUTEC BROCHURE!

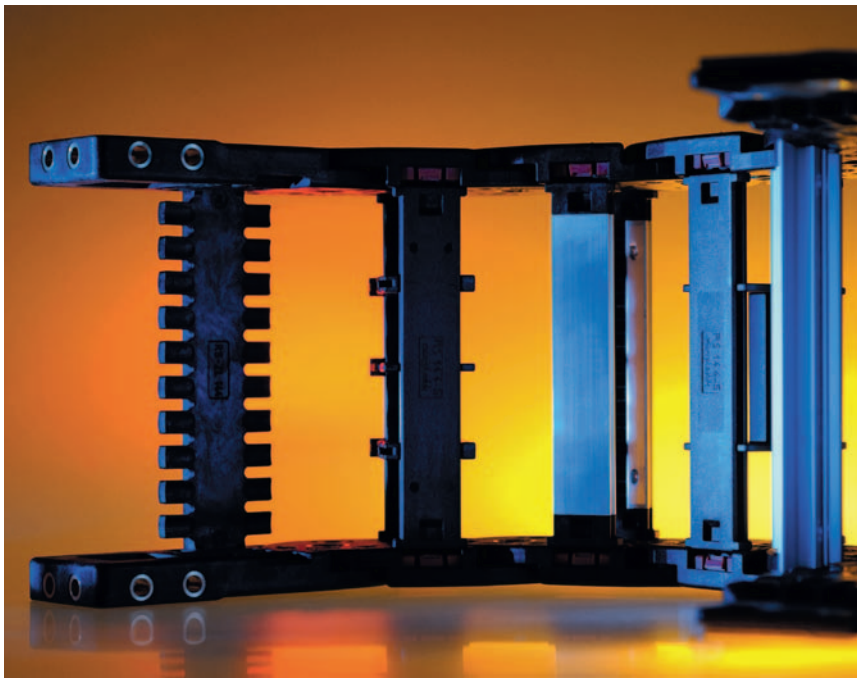


CABLE DRAG CHAINS

Cable drag chains:

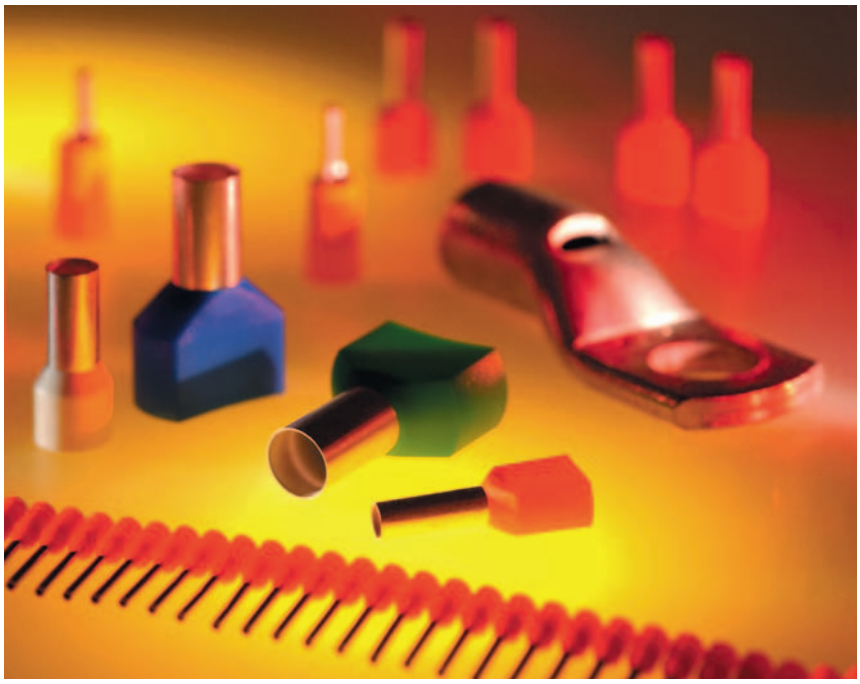
- Open chains
- Closed chains
- Accessories
- Installation instructions
- Selection tables

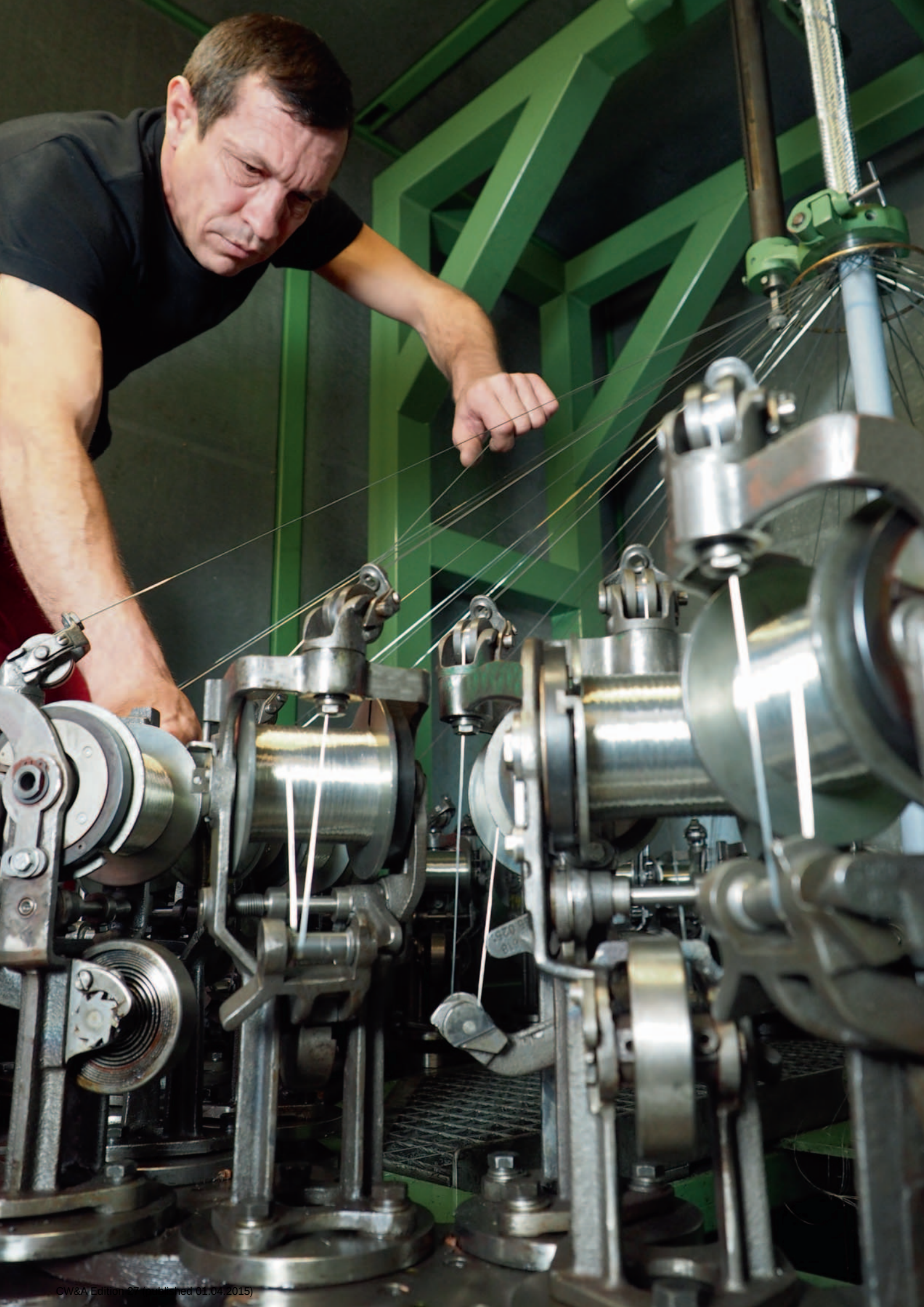
YOU WILL FIND ADDITIONAL ACCESSORIES IN THE CABLE ACCESSORIES CATALOG!

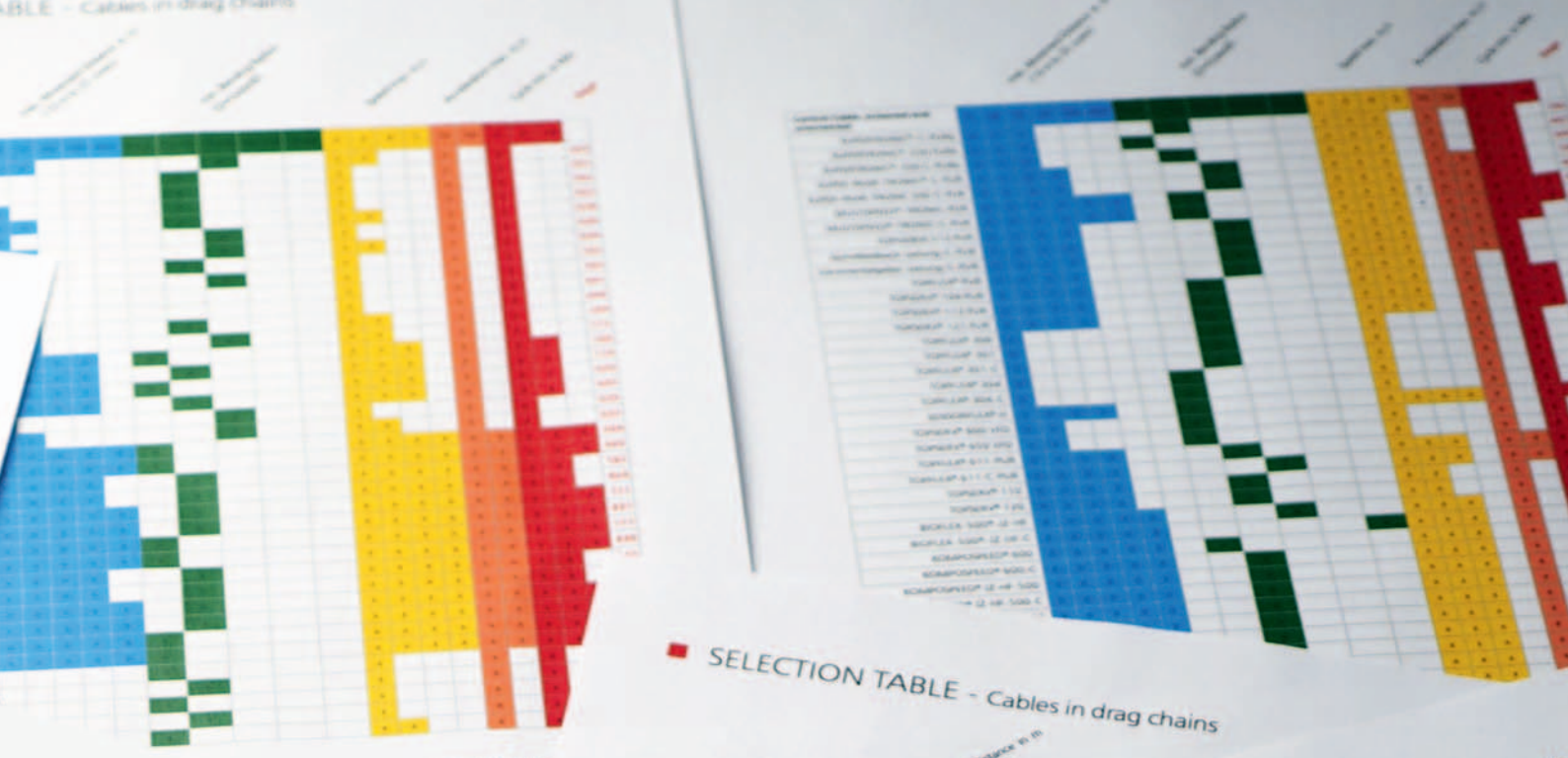


CABLE LUGS

YOU WILL FIND OUR SPECIAL WIND TURBINE COMPRESSION CABLE LUGS IN THE CATALOG FOR WIND TURBINES!

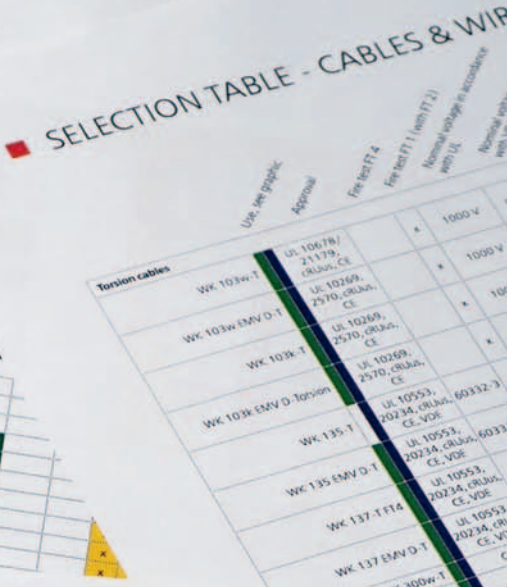












HELUKABEL®

Questionnaire for energy drag chains

Company
First name, Name
Street, No.
Postal Code, Place
Phone / Fax
E-Mail

Installation site
Kind of machine
In operation since

Sender

1. Drag Chain-Parameter

1. Chain length/chain width	m/mm	
2. Chain pitch	mm	
3. Bending radius	mm	
4. Guide stays existing		[ ] yes [ ] no
5. Frame stays existing		[ ] yes [ ] no
6. Layout/installation		[ ] horizontal [ ] vertical

2. Installation and Movement-Parameter

1. Movement distance (max.)	m	
2. Speeds	m/s	
3. Acceleration	m/s²	
4. Frequency per time unit	x/h	
5. Average movement distance/cycle	m	
6. Daily working duration	h	
7. Feeding at mid of moving distance		[ ] yes [ ] no
8. Addtional weight/chain	kg	

3. Cable-Parameter

1. Cable length (total)

Enquiry Special Cable

Phone +49 7150 9209-0
Fax +49 7150 81786
E-Mail: anfrage-spezialkabel@helukabel.de

Enquiry
yearly requirement approx. ____ m
Delivery required
Size:
Make-up
Type of Cable

Application
a) [ ] indoor [ ] outdoor
b) [ ] stationary [ ] for flexing
c) [ ] Drag chain: speed ____ m/s
load
ambient ____ °C
[ ] with reversed bending
Acceleration ____ m/s²
[ ] cyclic [ ] non-cyclic
continuous ____ %

Temperatures

Construction

TECHNICAL INFORMATION

Selection tables	1020
Assembly instructions	1036
Questionnaire	1040
Technical explanations	1047
Glossary of therms	1151
Part number index	1158

SELECTION TABLE - flexible control cable

Operational criteria			Cable and conductor description																												
△ fixed installation ◮ fixed installation/flexing ▲ flexing			JZ-500	JZ-500 COLD	JZ-500 black	Single 600-J/-O	Single 600-CY-J/-O	JZ-600	JZ-500-C black	JZ-600-Y-CY	JZ-600 UL/CSA	JZ-600-Y-CY UL/CSA	JZ-750	JB-500	JB-750	JZ-500 orange	JB-750 yellow	SY-JZ	SY-JB	JZ-602	JZ-602-CY	JZ-602 PUR DC / AC	JZ-602-PUR	JZ-602-C-PUR	JZ-603	JZ-603-CY	JZ-500 PUR	JZ-500-FC-PUR	PURö-JZ	F-C-PURö-JZ
		Page	30	34	32	498	499	40	32	60	362	378	38	42	43	33	44	55	64	356	373	386	384	389	358	375	67	76	68	78
Technical Data	Standards	according to DIN / VDE		●	●			●	●	●			●		●		●										●	●	●	●
		adapted with VDR Reg No.	●											●		●		●	●												
		adapted with HAR approbation																							●	●					
		adapted with UL approbation				●	●				●	●								●	●	●	●	●	●	●					
		adapted with CSA approbation				●	●				●	●								●	●	●	●	●	●	●					
	Temperature range	+ 100 °C																													
		+ 90 °C																		◮	◮				◮	◮					
		+ 80 °C	◮	◮	◮	◮	◮	◮	◮	◮	◮	◮	◮	◮	◮	◮	◮	◮	◮			◮	◮	◮			◮	◮	◮	◮	◮
		+ 75 °C																													
		+ 70 °C																							◮	◮					
		+ 60 °C																													
		- 5 °C				▲	▲		▲		▲	▲								▲	▲	▲	▲	▲	▲	▲		▲			
		- 15 °C	▲		▲			▲		▲			▲	▲	▲	▲	▲	▲	▲								▲				
		- 20 °C																											▲	▲	
		- 25 °C																													
		- 30 °C		▲																											
		- 40 °C	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
		- 50 °C																													
	Nominal voltage	250 V																													
		300 / 300 V																													
		300 / 500 V	●	●	●				●					●		●		●	●						●	●	●	●	●	●	●
		600 V acc. UL/CSA																		●	●	●	●	●	●	●					
		450 / 750 V											●		●		●		●												
		600 / 1000 V				●	●	●		●	●	●																			
Cable structure	Core insulation	PVC / special PVC	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		PUR																													
		special material																													
		rubber																													
	Core identification	numbering according to DIN VDE 0293	●	●	●			●	●	●	●	●	●			●		●		●	●	●	●	●	●	●	●	●	●	●	●
		colour code according to DIN VDE 0293															●														
		JB colour code (varicoloured cores)				●	●							●	●				●												
	Screening	Cu-braiding					●			●		●									●			●		●		●		●	
		steel wire braiding																●	●												
	Outer sheath	PVC / special PVC	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				●	●					
		PUR																				●	●	●			●	●	●	●	●
		special material																													
	Sheath colour	grey	●										●	●	●					●	●	●	●	●	●	●	●	●	●	●	●
		black		●	●	●	●	●	●	●	●	●																			
		orange														●															
		yellow															●														
		green																													
		blue																													
		transparent																●	●												
Application		Application in drag chains	see selection table cable in drag chains on page 1030 to 1031																												
		for intrinsic safety power circuit																													
		warning indication															●														
		interlocking purposes														●															
		open air		●	●	●	●	●	●	●	●	●										●	●	●			●	●	●	●	●
Properties		halogen-free	see selection table flexible control cable halogen-free on page 1022																												
		chemicals consistant	see selection table chemical resistance on page 1100 and 1101																												
		EMV-preferred type					●			●		●									●			●		●		●		●	
		resistant to weathering effects		●	●	●	●	●	●	●	●	●										●	●	●			●	●	●	●	●
		abrasion resistance																				●	●	●			●	●	●	●	●

SELECTION TABLE - flexible control cable

Cable and conductor description																													Operational criteria		
Yö-C-PURö-JZ	JZ-600 PUR	JZ-600-YC-PUR	PUR-750	PUR-C-PUR	PUR-ORANGE	PUR-YELLOW	H05BQ-F / H07 BQ-F	UNIPUR®	UNIPUR®-CP	BIOFLEX®-500-JZ	BIOFLEX®-500-JZ-C	KOMPOFLEX® JZ-500	KOMPOFLEX® JZ-500-C	OZ-BL	OZ-BL-CY	H05VV5-F	(H)05VV5-F	H05VVC4V5-K	(H)05VVC4V5-K	F-CY-OZ (LiY-CY)	F-CY-JZ	Y-CY-JZ	Y-CY-JB	JZ 604 TC TRAY CABLE	JZ 604-FCY TC TRAY CABLE	JZ 604 -YCY TC TRAY CABLE	TRAYCONTROL® 500	TRAYCONTROL® 500-C	TRAYCONTROL® 600	TRAYCONTROL® 600-C	△ fixed installation ◭ fixed installation/flexing ▲ flexing		
80	387	390	75	84	70	71	72	73	82	109	110	112	113	105	106	35	37	57	59	48	50	53	62	364	380	381	359	376	366	382	Page		
●			●	●	●	●			●	●	●	●	●		●															according to DIN / VDE	Standards	Technical Data
								●						●			●		●	●	●	●	●								adapted with VDR Reg No.		
							●									●		●													adapted with HAR approbation		
	●	●																						●	●	●	●	●	●	●	adapted with UL approbation		
	●	●																						●	●	●	●	●	●	●	adapted with CSA approbation		
												▽	▽																		+ 100 °C	Temperature range	
							▽	▼	▼			▼	▼											▽	▽	▽	◥	◥	◥	◥	+ 90 °C		
◥	◥	◥	◥	◥	◥	◥	▼			◥	◥			◥	◥					◥	◥	◥	◥								+ 80 °C		
																								▼	▼	▼					+ 75 °C		
																◥	◥	◥	◥												+ 70 °C		
																															+ 60 °C		
	▲	▲		▲											▲	▲	▲	▲	▲	▲	▲			▲	▲	▲	▲	▲			- 5 °C		
					▲	▲								▲								▲	▲								-15 °c		
▲										▲	▲																				- 20 °C		
																								△	△	△					- 25 °C		
												▲	▲																		- 30 °C		
△	△	△	▲	△	△	△	▲	▲	▲	△	△	△	△	△	△	△	△	△	△	△	△	△	△				△	△	◭	◭	- 40 °C		
							△																								- 50 °C		
																															250 V	Nominal voltage	
																															300 / 300 V		
●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●								300 / 500 V		
																								●	●	●	●	●	●	●	600 V acc. UL/CSA		
			●	●			●	●	●														●								450 / 750 V		
	●	●																													600 / 1000 V		
●	●	●			●	●								●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	PVC / special PVC	Core insulation	Cable structure
			●	●																											PUR		
								●	●	●	●	●	●														●	●	●	●	special material		
							●																								rubber		
●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	numbering according to DIN VDE 0293	Core identi-fication	
			●	●	●	●	●	●	●																						colour code according to DIN VDE 0293		
																							●								JB colour code (varicoloured cores)		
●		●		●					●		●		●		●			●	●	●	●	●	●		●	●		●		●	Cu-braiding	Scree-ning	
																															steel wire braiding		
														●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	PVC / special PVC	Outer sheath	
●	●	●	●	●	●	●	●	●	●																						PUR		
										●	●	●	●																		special material		
●				●				●	●							●	●	●	●	●	●						●	●			grey	Sheath colour	
	●	●										●	●											●	●	●			●	●	black		
			●		●		●	●	●																						orange		
						●		●	●																						yellow		
								●	●	●	●																				green		
								●	●					●	●																blue		
																						●	●								transparent		
see selection table cable in drag chains on page 1030 to 1031																															Application in drag chains		Application
														●	●																for intrinsic safety power circuit		
						●																									warning indication		
																															interlocking purposes		
●	●	●	●	●	●	●	●	●	●	●	●	●	●											●	●	●					open air		
see selection table flexible control cable halogen-free on page 1022																															halogen-free		Properties
see selection table chemical resistance on page 1100 and 1101																															chemicals consistant		
●		●		●					●		●		●		●			●	●	●	●	●	●		●	●		●		●	EMV-preferred type		
●	●	●	●	●	●	●	●	●	●	●	●	●	●											●	●	●			●	●	resistant to weathering effects		
●	●	●	●	●	●	●	●	●	●																						abrasion resistance		

SELECTION TABLE - flexible control cable halogen-free

Operational criteria			Cable and conductor description																																		
△ fixed installation ◮ fixed installation / flexing ▲ flexing			MEGAFLEX® 500	MEGAFLEX® 500-C	MEGAFLEX® 600	MEGAFLEX® 600-C	PUR 750	PUR-C-PUR	UNIPUR®	UNIPUR® CP	KOMPOFLEX® JZ-500	KOMPOFLEX® JZ-500-C	SiHF	SiHF/GL-P	SiHF-C-Si	SiHF UL/CSA	SiHF-C-Si UL/CSA	THERMFLEX® 180 EWKF	THERMFLEX® 180 EWKF-C	H05SS-F / H05SST-F	HELUTHERM® 145 MULTI	HELUTHERM® 145 MULTI-C	JZ 500 HMH	JZ 500 HMH-C	JB 750 HMH	JB 750 HMH-C	JZ 600 HMH	JZ 600 HMH-C	DATAFLAMM®	DATAFLAMM®-C	DATAFLAMM®-C-PAAR	(H)03 Z1Z1-F	(H)05 Z1Z1-F				
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Technical Data	Standards	according to DIN / VDE	●	●	●	●	●	●		●	●	●	●	●	●			●	●		●	●	●	●	●	●	●	●	●	●						
		adapted with VDR Reg No.							●																												
		adapted with HAR approbation																		●												●	●				
		adapted with UL approbation	●	●	●	●										●	●																			
		adapted with CSA approbation	●	●	●	●										●	●																			
	Temperature range	+ 180 °C											▼	▼	▼	▼	▼	◮	◮	▼																
		+ 150 °C after UL/CSA														▼	▼																			
		+ 145 °C																			▽	▽														
		+ 120 °C																			▼	▼														
		+ 90 °C							▼	▼	▼	▼																								
		+ 80 °C	◮	◮	◮	◮	◮	◮																												
		+ 70 °C																					◮	◮	◮	◮	◮	◮	◮	◮	◮	◮	◮			
		+ 5 °C																											▲	▲	▲						
		- 5 °C						▲																								▲	▲				
		- 15 °C																					▲	▲	▲	▲	▲	▲								
		- 20 °C																																			
		- 25 °C																▲	▲																		
		- 30 °C	▲	▲	▲	▲					▲	▲																								
		- 35 °C																			▲	▲														
		- 40 °C	△	△	△	△	▲	△	▲	▲	△	△											△	△	△	△	△	△	△	△	△	△	△			
		- 50 °C after UL/CSA														▲	▲																			
		- 55 °C																			△	△														
		- 60 °C											▲	▲	▲	▲	▲	△	△	▲																
	Nominal voltage	Operating peak voltage																											●	●	●						
		300 / 300 V																														●					
		300 / 500 V	●	●			●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●												●
		600 V acc. UL/CSA														●	●																			
		450 / 750 V					●		●	●											●	●			●	●										
		600 / 1000 V			●	●																					●	●								
Cable strucutre	core insulation	Special Elastomer							●	●																										
		PUR					●	●																												
		Silicon											●	●	●	●	●	●	●	●																
		PE																											●	●	●					
		Special Polymer	●	●	●	●					●	●									●	●	●	●	●	●	●	●				●	●			
	Core identification	numbering according to DIN VDE 0293	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●		●	●	●	●			●	●								
		colour code according to DIN VDE 0293					●	●	●	●			●	●	●	●	●	●	●	●	●											●	●			
		colour code according to DIN 47100																											●	●	●					
		JB colour code (varicoloured cores)																							●	●										
	Scree-ning	Cu-braiding		●		●		●		●		●			●		●		●			●		●		●		●	●	●	●					
		steel wire braiding												●																							
	Outer sheath	Silicon											●	●	●	●	●	●	●	●																
		Special Polymer	●	●	●	●					●	●									●	●	●	●	●	●	●	●	●	●	●	●	●			
		PUR					●	●	●	●																											
	Sheath colour	grey	●	●				●	●	●													●	●	●	●			●	●	●	●	●			
		black			●	●					●	●				●	●	●	●	●	●	●					●	●				●	●			
		yellow							●	●																						●	●			
		orange					●		●	●																						●	●			
		red-brown											●	●	●																					
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		open air	●	●	●	●	●	●	●	●	●	●						●	●		●	●					●									
Properties		chemicals consistant	●	●	●	●	see selection table chemical resistance on page 1100 and 1101																															
		EMV-preferred type		●		●		●		●		●			●		●		●			●		●		●		●			●	●				
		resistant to weathering effects	●	●	●	●	●	●	●	●	●	●						●	●		●	●					●	●								
		abrasion resistance	●	●	●	●	●	●	●	●	●	●									●	●														

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MULTISPEED® 500-TPE		177
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SiHF/GL-P		235
SiHF-C-Si		232
SiHF-C-Si UL/CSA	478	
Single 600-CY -J/-O	499	499
Single 600-J/-O	498	498
Single 602-RC -J/O	501	501
Single 602-RC-CY -J/O	502	502
SOLARFLEX®-X PV1-F		798
Command Cable UL (LiYY)	403, 404	
Command Cable UL (LiYY-TP)	407	
Command Cable UL (LiYCY)	413, 415	
Command Cable UL (LiYCY-TP)	418	
SUPER-PAAR-TRONIC 340-C-PUR	451	
SUPER-PAAR-TRONIC-C-PUR®		191
SUPERTRONIC®-310-PVC	445	
SUPERTRONIC®-310-C-PVC	446	
SUPERTRONIC®-330 PURö	447	
SUPERTRONIC®-330 C-PURö	449	
SUPERTRONIC®-C-PURö		190
SUPERTRONIC®-C-PVC		188
SUPERTRONIC®-PURö		189
SUPERTRONIC®-PVC		187
SY-JB		64
SY-JZ		55
T		
Tauchflex-FL		271
Tauchflex-R		270

CABLES ACCORDING TO INTERNATIONAL APPROVALS

Type	UL/CSA	EAC
THERMFLEX® 180 EWKF		225
THERMFLEX® 180 EWKF-C		234
THHN/THWN	493	
THREENORM	488	488
TOPFLEX® 301/301-C	506	
TOPFLEX® 302/302-UL	500	
TOPFLEX® 304/304-C	503	
TOPFLEX® - EMV-2YSLCY-J		204
TOPFLEX® - EMV-3 PLUS 2YSLCY-J		205
TOPFLEX® - EMV-UV-2YSLCYK-J		206
TOPFLEX® - EMV-UV-2YSLCYK-J UL/CSA	453	
TOPFLEX® - EMV-UV-2YSLC11Y-J UL/CSA	461	
TOPFLEX® - EMV-UV-3 PLUS 2YSLCYK-J		207
TOPFLEX® - EMV-UV-3 PLUS 2YSLCYK-J UL/CSA	455	
TOPFLEX® 600 VFD	458	458
TOPFLEX® 600-C-PVC		198
TOPFLEX® 600-PVC		197
TOPFLEX® 611-C-PUR		200
TOPFLEX® 611-PUR		199
TOPFLEX® 650 VFD	459	459
TOPFLEX® 1000 VFD	460	
TOPFLEX® MOTOR-EMV 1/1	462	
TOPFLEX® MOTOR-EMV 3/3	463	
TOPFLEX® MOTOR-EMV 103	457	
TOPGEBER 511 PVC	467	467
TOPGEBER 512 PUR	470	470
TOPSERV® 110 / 120		201
TOPSERV® 600 VFD	472	472
TOPSERV® 650 VFD	473	473
TOPSERV® Hybrid	474	
TOPSERV® PVC	465	
TOPSERV® PUR	468	468
TRAGO / Lift-2S		248
TRAYCONTROL® 300	405	405
TRAYCONTROL® 300 TP	409	409
TRAYCONTROL® 300-C	416	416
TRAYCONTROL® 300-C TP	420	420
TRAYCONTROL® 500	359	359
TRAYCONTROL® 500-C	376	376
TRAYCONTROL® 530	361	
TRAYCONTROL® 600	366	366
TRAYCONTROL® 600-C	382	382
TRAYCONTROL® 670 HDP/670-C HDP	392	
TROMMPUR®		254
TROMMPUR®-H	483	483
TRONIC (LiYY)		124
TRONIC-CY (LiY-CY)		131
U		
UL-Style 1007, CSA TR 64	485	485
UL-Style 1015	487	487
UL-Style 1569, CSA TR 64	486	486
UL-Style 3135	497	497
UNIPUR®		73
UNIPUR®-CP		82

Type	UL/CSA	EAC
Y		
Y-CY-JB		62
Y-CY-JZ		53
YELLOWFLEX		240
YELLOWFLEX - connecting cable		902
Yö-C-PURö-JZ		80

HELUKABEL UL-LISTED CABLES

	Standard	USA: Flame Tested	USA: Voltage (V)	USA: Temperature °C	CANADA: Flame Test	CANADA: Class/Group	CANADA: Voltage (V)	CANADA: Temperature °C	USA + CANADA: Oil Res	USA + CANADA: Sun Res	USA + CANADA: Chemical Res	USA + CANADA: Flexible = F, High Flexible = HF	Page
Multi Core					**Technical Properties**								
TRAYCONTROL® 300	CM	x	300	105	FT 4	I / II	300	105	x (II)		x	F	405
TRAYCONTROL® 500	2277	x	1000	90	FT 4	I / II	1000	90	x (II)		x	F	359
TRAYCONTROL® 530	2277	x	1000	90	FT 4	I / II	1000	90	x (II)		x	F	361
TRAYCONTROL® 600	2277	x	1000	90	FT 4	I / II	1000	90	x (I)	x	x	F	366
TRAYCONTROL® 670 HDP	2277	x	1000	105	FT 4	I / II	1000	105	x (II)	x	x	F	392
JZ-604 TC	1277	x	600	90	FT 4	I / II	600	90	x (II)	x	x	F	364
MULTIFLEX® 600	2277	x	1000	90	FT 4	I / II	1000	90	x (II)	x	x	HF	441
TOPFLEX® 600 VFD	2277	x	1000	90	FT 4	I / II	1000	90	x (II)	x	x	F	458
TOPFLEX® 650 VFD	2277	x	1000	105	FT 4	I / II	1000	105	x (II)	x	x	F	459
TOPFLEX® 1000 VFD	2277	x	1000	90	FT 4	I / II	1000	90	x (II)	x	x	F	460
TOPSERV® 600 VFD	2277	x	1000	105	FT 4	I / II	1000	105	x (II)		x	HF	472
TOPSERV® 650 VFD	2277	x	1000	105	FT 4	I / II	1000	105	x (II)		x	HF	473
HELUKAT® 155 UL	444			75	FT 1			75					655
HELUKAT® 200 UL	444			75	FT 1			75				F	661
HELUKAT® 300 UL	444			75	FT 1			75				F	665
PROFInet Type A	CMG*		600*	75	FT 4		600*	75*	x	x			699
PROFInet Type B	CMG*			75	FT 4		600*	75*	x	x		F	701
PROFInet Type C	CMX*	x		75	FT 1			75	x		x	HF	704
Profibus L2 Torsion + Festoon	444*			75*	FT 4*			75*	x*	x*		F+HF*	713
Profibus SK	CMG*		600*	75*	FT 4*		600*	75*	x*	x*		F+HF*	717
DeviceNet	CMG*			75*	FT 4*			75*	x*	x*		F+HF*	753
Single Core													
UL-Style 1015	1015	x	600	105	FT 1	I	600	105				F	487
FIVENORM	1063	x	600	105	FT 1	I	600	105				F	490
THHN/THWN	1408	x	600	90	FT 1	I	600	90	x	x	x		493

* - Construction Dependent

X - Passes Test; X (I) - Oil Res I; X (II) - Oil Res II

UL–listed Cables:

UL-listed cables are suitable to the factory wiring of electrical equipment and machinery, as well as for "field wiring" on site. UL-listed cables already have approval for use, i.e. confirmed compliance with applicable safety regulations by UL standards. The construction must no longer be verified in the field.

HELUKABEL UL-LISTED CABLES

	USA						USA + CANADA				CANADA					
	TC-ER	ITC/PLTC	DIR BUR	Flexing	MTW	AWM	HAZ LOC	CMX	CM	CMG	TC	TEW	CIC	AWM	CE	Seite
Multi Core								**Ratings**								
TRAYCONTROL® 300		x				x	x**		x	x	x			x	x	405
TRAYCONTROL® 500	x	x**	x	x	x	x	x				x		x	x	x	359
TRAYCONTROL® 530	x	x**	x	x	x	x	x				x		x	x	x	361
TRAYCONTROL® 600	x	x**	x	x	x	x	x				x		x	x	x	366
TRAYCONTROL® 670 HDP	x	x**	x	x	x	x	x				x		x	x	x	392
JZ-604 TC	x		x	x	x	x					x			x	x	364
MULTIFLEX® 600	x	x**	x	x	x	x	x				x		x	x	x	441
TOPFLEX® 600 VFD	x	x**	x	x	x	x	x				x		x	x	x	458
TOPFLEX® 650 VFD	x	x**	x	x	x	x	x				x		x	x	x	459
TOPFLEX® 1000 VFD	x	x**	x	x	x	x	x				x		x	x	x	460
TOPSERV® 600 VFD	x	x**	x	x	x	x	x				x		x	x	x	472
TOPSERV® 650 VFD	x	x**	x	x	x	x	x				x		x	x	x	473
HELUKAT® 155 UL								x								655
HELUKAT® 200 UL								x								661
HELUKAT® 300 UL								x								665
PROFInet Type A		x*				x				x*						699
PROFInet Type B		x*		x		x		x*		x*				x*		701
PROFInet Type C				x				x								704
Profibus L2 Torsion + Festoon				x		x		x*		x*						713
Profibus SK				x		x		x		x				x*		717
DeviceNet		x*		x				x		x						753
Single Core																
UL-Style 1015				x	x	x						x		x	x	487
FIVENORM				x	x	x						x		x	x	490
THHN/THWN					x	x								x	x	493

X - Passes Test
* - Construction Dependent
** - Location Dependent

SELECTION TABLE - Cables in drag chains

Control Cable, screened and unscreened	max. Movement Distance in m (10 m to 25-cores)						min. Bending Radius (D=OuterØ)				Speed max. m/s				Accelaration max. m/s²		Cycle max. in Mio			Page
	5	10	15	30	100	450	5 x D	7,5 x D	10 x D	15 x D	2	3	4	5	10	50	9	10	11	
JZ-602 RC-C-PUR	x	x	x						x		x	x			x		x			436
Single 602-RC-J /-O	x							x			x				x		x			501
Single 602-RC-CY-J /-O	x							x			x				x		x			502
JZ-602 RC	x	x						x			x				x		x			423
JZ-602 RC-PUR	x	x	x					x			x	x			x		x			430
JZ-602 RC-CY	x	x							x		x				x		x			427
JZ-602 RC-C-PUR	x	x	x						x		x	x			x		x			436
JZ-HF	x	x						x			x				x		x			160
JZ-HF-CY	x	x							x		x				x		x			163
MULTIFLEX 600	x	x						x			x				x		x			424
MULTIFLEX 600-C	x	x							x		x				x		x			428
PURö-JZ-HF	x	x	x					x			x	x			x		x	x		167
PURö-JZ-HF-YCP	x	x	x						x		x	x			x		x	x		172
MULTIFLEX 512®-PUR	x	x	x	x	x		x				x	x	x		x		x	x	x	169
MULTIFLEX 512®-C-PUR	x	x	x	x	x			x			x	x	x		x		x	x	x	174
MULTIFLEX 512®-PUR UL/CSA	x	x	x	x	x		x				x	x	x		x		x	x	x	431
MULTIFLEX 512®-C-PUR UL/CSA	x	x	x	x	x			x			x	x	x		x		x	x	x	439
JZ-HF-FCY	x	x							x		x				x		x			426
PURö-JZ-HF-FCP	x	x	x						x		x	x			x		x			435
MULTISPEED® 600-PUR-J /-O	x	x	x	x	x	x	x				x	x	x	x	x	x	x	x	x	504
MULTISPEED® 600-C-PUR-J /-O	x	x	x	x	x	x	x				x	x	x	x	x	x	x	x	x	505
MULTISPEED® 500-PVC	x	x	x	x	x			x			x	x	x	x	x	x	x			162
MULTISPEED® 500-PVC UL/CSA	x	x	x	x	x			x			x	x	x	x	x	x	x			425
MULTISPEED® 500-PUR	x	x	x	x	x	x		x			x	x	x	x	x	x	x	x	x	171
MULTISPEED® 500-PUR UL/CSA	x	x	x	x	x	x		x			x	x	x	x	x	x	x	x	x	433
MULTISPEED® 500-TPE	x	x	x	x	x	x	x				x	x	x	x	x	x	x	x	x	177
MULTISPEED® 500-TPE UL/CSA	x	x	x	x	x	x	x				x	x	x	x	x	x	x	x	x	441
MULTISPEED® 500-C-PVC	x	x	x	x	x			x			x	x	x	x	x	x	x			165
MULTISPEED® 500-C-PVC UL/CSA	x	x	x	x	x			x			x	x	x	x	x	x	x			429
MULTISPEED® 500-C-PUR	x	x	x	x	x	x		x			x	x	x	x	x	x	x	x	x	176
MULTISPEED® 500-C-PUR UL/CSA	x	x	x	x	x	x		x			x	x	x	x	x	x	x	x	x	439
MULTISPEED® 500-C-TPE	x	x	x	x	x	x	x				x	x	x	x	x	x	x	x	x	179
MULTISPEED® 500-C-TPE UL/CSA	x	x	x	x	x	x	x				x	x	x	x	x	x	x	x	x	443
SUPERTRONIC®-PVC	x						x				x				x		x			187
SUPERTRONIC®-C-PVC	x							x			x				x		x			188
SUPERTRONIC®-310-PVC	x						x				x				x		x			445
SUPERTRONIC®-310-C-PVC	x							x			x				x		x			446
SUPERTRONIC®-PURö	x						x				x	x			x		x			189

Other Technical Details can be found in the Product Pages of our Catalogue. The table indicates the main application. In case of moving cables at higher speeds, over longer distances or higher cycling rates please contact our Technical Support. Phone +49 7150 9209-0 or techsupport@helukabel.de. A cycle is a double lift: a representative sample has been tested and measurot in our Test Workshop. The cycle count is only valid when appropriatel and professionally installed (see the installation manual: cable installation in drag chains).

Control Cable, screened and unscreened	max. Movement Distance in m (10 m to 25-cores)						min. Bending Radius (D=OuterØ)				Speed max. m/s				Accelaration max. m/s²		Cycle max. in Mio			Page
	5	10	15	30	100	450	5 x D	7,5 x D	10 x D	15 x D	2	3	4	5	10	50	9	10	11	
SUPERTRONIC®-C-PURö	x	x	x					x			x	x	x		x		x			190
SUPERTRONIC®-330 PURö	x	x	x				x				x	x	x		x		x	x	x	447
SUPERTRONIC®-330 C-PURö	x	x	x					x			x	x	x		x		x	x	x	449
SUPER-PAAR-TRONIC®-C-PUR	x	x	x	x					x		x	x	x		x	x	x			191
SUPER-PAAR-TRONIC 340-C-PUR	x	x	x	x					x		x	x	x		x	x	x	x	x	451
MULTISPEED®-TRONIC-PUR	x	x	x	x	x	x		x			x	x	x	x	x	x	x	x	x	448
MULTISPEED®-TRONIC-C-PUR	x	x	x	x	x	x		x			x	x	x	x	x	x	x	x	x	450
TOPGEBER 512 PUR	x	x	x	x					x		x	x	x		x	x	x	x	x	470
Tachofeedback-Leitung-C-PUR	x	x	x	x					x		x	x	x		x	x	x			203
Inkrementalgeber-Leitung-C-PUR	x	x	x	x					x		x	x	x		x	x	x			203
TOPFLEX® PUR	x	x	x	x					x		x	x	x		x		x			203
TOPSERV® 109 PUR	x	x	x	x				x			x	x	x		x		x	x	x	468
TOPSERV® 113 PUR	x	x	x	x				x			x	x	x		x		x	x	x	468
TOPSERV® 121 PUR	x	x	x	x				x			x	x	x		x		x	x	x	468
TOPFLEX® 300	x							x			x				x		x			321
TOPFLEX® 301	x							x			x				x		x	x		506
TOPFLEX® 301-C	x							x			x				x		x	x		506
TOPFLEX® 304	x						x				x				x		x			503
TOPFLEX® 304-C	x						x				x				x		x			503
SENSORFLEX® H	x	x	x	x				x			x	x	x	x	x		x	x	x	192
TOPSERV® 600 VFD	x	x						x			x				x		x			472
TOPSERV® 650 VFD	x	x						x			x				x		x			473
TOPFLEX® 611-PUR	x	x	x	x				x			x	x	x		x	x	x	x	x	199
TOPFLEX® 611-C-PUR	x	x	x	x					x		x	x	x		x	x	x	x	x	200
TOPSERV® 110	x	x	x	x				x			x	x			x		x	x	x	201
TOPSERV® 120	x	x	x	x				x			x	x			x		x	x	x	201
BIOFLEX-500®-JZ-HF	x	x	x	x	x				x		x	x	x		x		x	x	x	181
BIOFLEX-500®-JZ-HF-C	x	x	x	x	x					x	x	x	x		x		x	x	x	182
KOMPOSPEED® 600	x	x	x	x	x		x				x	x	x		x		x	x	x	322
KOMPOSPEED® 600-C	x	x	x	x	x			x			x	x	x		x		x	x	x	322
KOMPOSPEED® JZ-HF-500	x	x	x	x	x			x			x	x	x		x		x	x		184
KOMPOSPEED® JZ-HF-500-C	x	x	x	x	x			x			x	x	x		x		x	x		185
SHIPFLEX® 512	x	x	x	x	x			x			x	x	x		x		x	x	x	933
SHIPFLEX® 330	x	x	x	x	x			x			x	x	x		x		x	x	x	934
SHIPFLEX® 340	x	x	x	x	x			x			x	x	x		x		x	x	x	935
SHIPFLEX® 109	x	x	x	x	x			x			x	x	x		x		x	x	x	936
SHIPFLEX® 113	x	x	x	x	x			x			x	x	x		x		x	x	x	938
SHIPFLEX® 121	x	x	x	x	x			x			x	x	x		x		x	x	x	939

Other Technical Details can be found in the Product Pages of our Catalogue. The table indicates the main application. In case of moving cables at higher speeds, over longer distances or higher cycling rates please contact our Technical Support. Phone +49 7150 9209-0 or techsupport@helukabel.de. A cycle is a double lift: a representative sample has been tested and measurot in our Test Workshop. The cycle count is only valid when appropriatel and professionally installed (see the installation manual: cable installation in drag chains).

SELECTION TABLE - low voltage joints

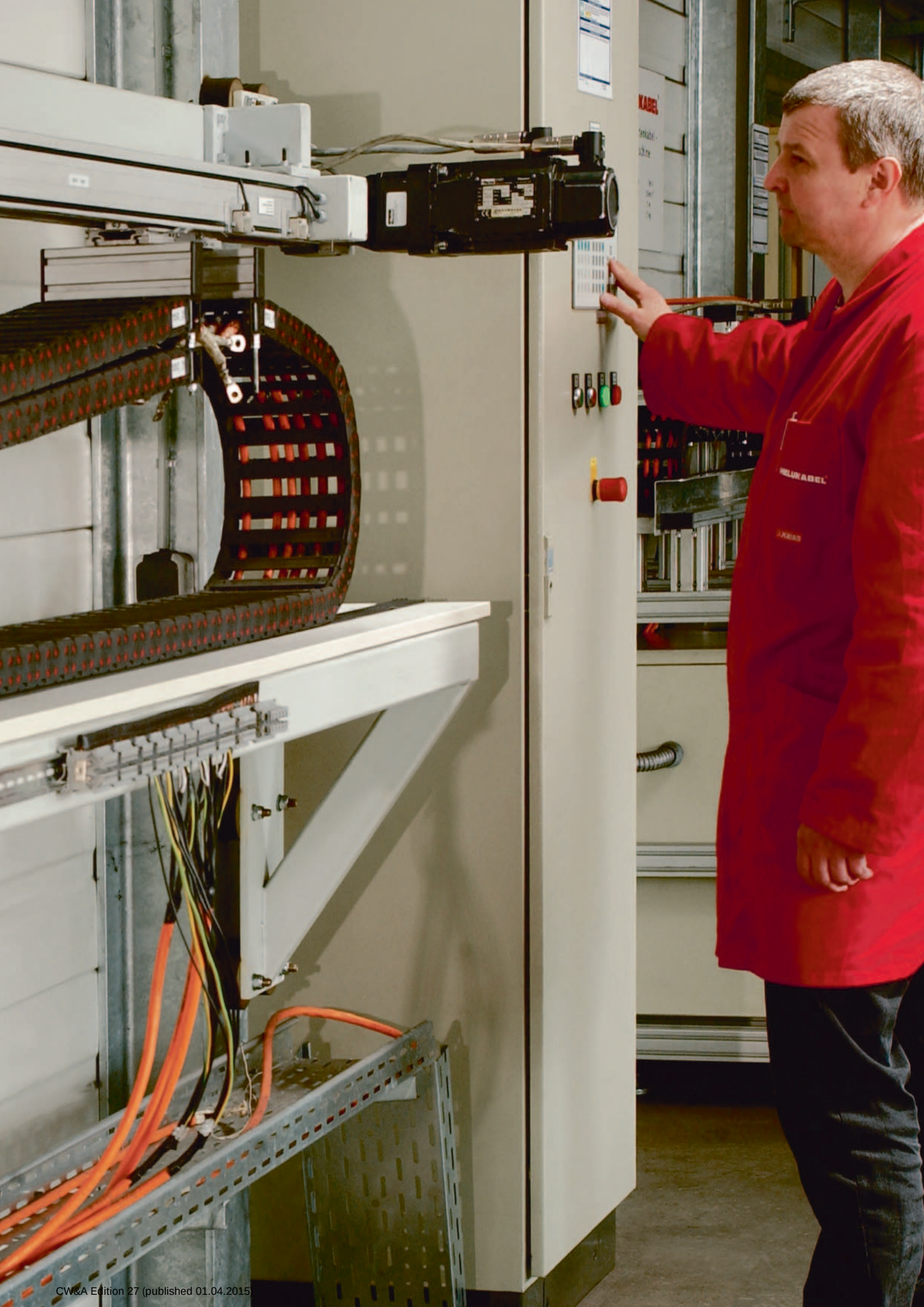
Cable	joints																									
	NSVM-S 3x1,5-10	NSVM-S 4x1,5-10	NSVM-S 5x1,5-6	NSVM-S 3x6-25	NSVM-S 4x6-25	NSVM-S 5x6-16	NSVM-S 1x16-35	NSVM-S 3x16-50	NSVM-S 4x16-50	NSVM-S 5x16-35	NSVM-S 1x35-95	NSVM-S 3x35-150	NSVM-S 4x35-150	NSVM-S 3x70-150	NSVM-S 1x95-100	NSVM-S 1x95-300	NSVM-S 3x95-300	NSVM-S 4x95-300	NSVM-S 4x16/16-4x35/16	NSVM-S 4x50/25-4x95/50	NSVM-S 4x95/50-4x240/120	NSVM-SVK 7x1,5-2,5	NSVM-SVK 14x1,5-2,5	NSVM-SVK 21x1,5-2,5	NSVM-SVK 40x1,5-2,5	NSVM-SVK 75x1,5-2,5
NYY-J 1X16RE							●																			
NYY-J 1X25RM							●																			
NYY-J 1X35RM							●																			
NYY-J 1X50RM											●															
NYY-J 1X70RM											●															
NYY-J 1X95RM											●															
NYY-J 1X120RM																●										
NYY-J 1X150RM																●										
NYY-J 1X185RM																●										
NYY-J 1X240RM																●										
NYY-J 1X300RM																●										
NYY-J 3X1,5RE		●																								
NYY-J 3X2,5RE		●																								
NYY-J 3X4RE		●																								
NYY-J 3X6RE		●																								
NYY-J 3X10RE		●																								
NYY-J 3X16RE				●																						
NYY-J 3X25RM				●																						
NYY-J 3X50SM												●														
NYY-J 3X70SM												●														
NYY-J 3X95SM												●														
NYY-J 3X120SM												●														
NYY-J 3X25RM/16RE									●																	
NYY-J 3X35SM/16RE									●																	
NYY-J 3X50SM/25RM									●																	
NYY-J 3X70/35SM													●													
NYY-J 3X95/50SM													●													
NYY-J 3X120/70SM													●													
NYY-J 3X150/70SM													●													
NYY-J 3X185/95SM																		●								
NYY-J 3X240/120SM																		●								
NYY-J 4X1,5RE		●																								
NYY-J 4X2,5RE		●																								
NYY-J 4X4RE		●																								
NYY-J 4X6RE		●																								
NYY-J 4X10RE		●																								
NYY-J 4X16RE					●																					
NYY-J 4X25RM					●																					
NYY-J 4X35SM									●																	
NYY-J 4X50SM									●																	
NYY-J 4X70SM													●													
NYY-J 4X95SM													●													
NYY-J 4X120SM													●													
NYY-J 4X150SM													●													
NYY-J 4X185SM																		●								
NYY-J 4X240SM																		●								
NYY-J 5X1,5RE			●																							
NYY-J 5X2,5RE			●																							
NYY-J 5X4RE			●																							
NYY-J 5X6RE			●																							
NYY-J 5X10RE						●																				
NYY-J 5X16RE						●																				
NYY-J 5X25RM										●																
NYY-J 7X1,5RE																							●			
NYY-J 10X1,5RE																								●		
NYY-J 12X1,5RE																								●		
NYY-J 14X1,5RE																								●		
NYY-J 16X1,5RE																									●	
NYY-J 19X1,5RE																									●	
NYY-J 21X1,5RE																									●	
NYY-J 24X1,5RE																										●

SELECTION TABLE - low voltage joints

Cable	joints																								
	NSVM-S 3x1,5-10	NSVM-S 4x1,5-10	NSVM-S 5x1,5-6	NSVM-S 3x6-25	NSVM-S 4x6-25	NSVM-S 5x6-16	NSVM-S 1x16-35	NSVM-S 3x16-50	NSVM-S 4x16-50	NSVM-S 5x16-35	NSVM-S 1x35-95	NSVM-S 3x35-150	NSVM-S 4x35-150	NSVM-S 3x70-150	NSVM-S 1x95-100	NSVM-S 1x95-300	NSVM-S 3x95-300	NSVM-S 4x95-300	NSVM-S 4x16/16-4x35/16	NSVM-S 4x50/25-4x95/50	NSVM-S 4x95/50-4x240/120	NSVM-SVK 7x1,5-2,5	NSVM-SVK 14x1,5-2,5	NSVM-SVK 21x1,5-2,5	NSVM-SVK 40x1,5-2,5	NSVM-SVK 75x1,5-2,5
NYY-J 30X1,5RE																									•	
NYY-J 40X1,5 QMM																									•	
NYY-J 7X2,5RE																						•				
NYY-J 10X2,5RE																							•			
NYY-J 12X2,5RE																							•			
NYY-J 14X2,5RE																							•			
NYY-J 16X2,5RE																								•		
NYY-J 19X2,5RE																								•		
NYY-J 21X2,5RE																								•		
NYY-J 24X2,5RE																									•	
NYY-J 30X2,5RE																									•	
NYY-J 40X2,5RE																									•	
NYY-O 1X16RE							•																			
NYY-O 1X25RM							•																			
NYY-O 1X35RM							•																			
NYY-O 1X50RM											•															
NYY-O 1X70RM											•															
NYY-O 1X95RM											•															
NYY-O 1X120RM																•										
NYY-O 1X150RM																•										
NYY-O 1X185RM																•										
NYY-O 1X240RM																•										
NYY-O 1X300RM																•										
NYY-O 1X400RM																•										
NYY-O 3X1,5RE		•																								
NYY-O 4X1,5RE		•																								
NYY-O 4X2,5RE		•																								
NYY-O 4X4RE		•																								
NYY-O 4X6RE		•																								
NYY-0 4X10RE		•																								
NYY-O 4X16RE					•																					
NYY-O 4X25RM					•																					
NYY-O 4X35SM									•																	
NYY-O 4X50SM									•																	
NYY-O 4X70SM													•													
NYY-O 4X95SM													•													
NYY-O 4X120SM													•													
NYY-0 4X150SM													•													
NYY-O 4X185SM																		•								
NYY-O 4X240SM																		•								
NYY-O 5X1,5RE			•																							
NYY-O 5X2,5RE			•																							
NYY-O 5X4RE			•																							
NYY-O 7X1,5RE																						•				
NYY-O 14X1,5RE																							•			
NYY-O 7X2,5RE																						•				
NYY-O 10X2,5RE																							•			
NYY-O 12X2,5RE																							•			
NYY-O 14X2,5RE																							•			
NYY-O 16X2,5RE																								•		
NYY-O 19X2,5RE																								•		
NYY-J 52X2,5RE																										•
NYY-O 24X2,5RE																									•	
NYY-O 30X2,5RE																									•	
NYY-O 40X2,5RE																									•	
NYY-J 61X1,5RE																										•
NYCY 0,6/1KV 3X1,5	•																									
NYCY 0.6/KV 3X2,5 RE	•																									
NYCY 0,6/1KV 3X4RE	•																									
NYCY 0,6/1KV 3X6RE	•																									
NYCY 0,6/1KV 3X10RE	•																									

SELECTION TABLE - low voltage joints

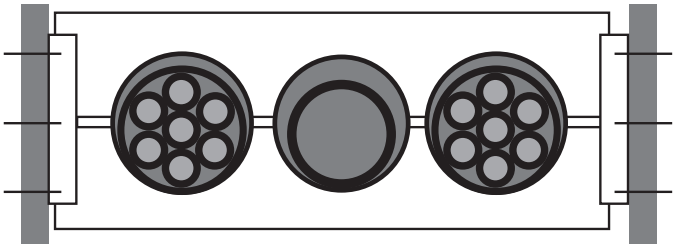
Cable	joints																										
	NSVM-S 3x1,5-10	NSVM-S 4x1,5-10	NSVM-S 5x1,5-6	NSVM-S 3x6-25	NSVM-S 4x6-25	NSVM-S 5x6-16	NSVM-S 1x16-35	NSVM-S 3x16-50	NSVM-S 4x16-50	NSVM-S 5x16-35	NSVM-S 1x35-95	NSVM-S 3x35-150	NSVM-S 4x35-150	NSVM-S 3x70-150	NSVM-S 1x95-100	NSVM-S 1x95-300	NSVM-S 3x95-300	NSVM-S 4x95-300	NSVM-S 4x16/16-4x35/16	NSVM-S 4x50/25-4x95/50	NSVM-S 4x95/50-4x240/120	NSVM-SVK 7x1,5-2,5	NSVM-SVK 14x1,5-2,5	NSVM-SVK 21x1,5-2,5	NSVM-SVK 40x1,5-2,5	NSVM-SVK 75x1,5-2,5
NYCY 0,6/1KV 3X16RE								●																			
NYCY 0,6/1KV 4X1,5RE		●																									
NYCY 0,6/1KV 4X2,5RE		●																									
NYCY 0,6/1KV 4X4RE		●																									
NYCY 0,6/1KV 4X6RE		●																									
NYCY 0,6/1KV 4X10RE		●																									
NYCY 0,6/1KV 4X16RE																			●								
NYCY 0,6/1KV 5X1,5RE			●																								
NYCY 0,6/1KV 5X2,5RE			●																								
NYCY 0,6/1KV 5X4RE			●																								
NYCY 0,6/1KV 5X6RE			●																								
NYCY 0,6/1KV 5X10/RE						●																					
NYY-J 3X300/150SM																		●									
NYCWY 0.6/1KV 3X10	●																										
NYCWY 0,6/1KV 3X16								●																			
NYCWY 0,6/1KV 3X25RM								●																			
NYCWY 0,6/1KV 3X35SM								●																			
NYCWY 0,6/1KV 3X50SM								●																			
NYCWY 0,6/1KV 3X70SM														●													
NYCWY 0,6/1KV 3X95SM														●													
NYCWY 0,6/1KV 3X120S														●													
NYCWY 0,6/1KV 3X150S														●													
NYCWY 0,6/1KV 3X185S																	●										
NYCWY 0,6/1KV 3X240S																	●										
NYCWY 0,6/1KV 3X25R								●																			
NYCWY 0,6/1KV 3X35SM								●																			
NYCWY 0,6/1KV 3X50SM								●																			
NYCWY 0,6/1KV 3X70SM														●													
NYCWY 0,6/1KV 3X95 S														●													
NYCWY 0,6/1KV 3X120														●													
NYCWY 0,6/1KV 3X150														●													
NYCWY 0,6/1KV 3X185																	●										
NYCWY 0,6/1KV 4X10RE					●																						
NYCWY 0,6/1KV 4X16RE																			●								
NYCWY 0,6/1KV 4X25RM																			●								
NYCWY 0,6/1KV 4X35SM																			●								
NYCWY 0,6/1KV 4X50SM																				●							
NYCWY 0,6/1KV 4X70SM																				●							
NYCWY 0,6/1KV 4X95SM																				●							
NYCWY 0,6/1KV 4X120S																					●						
NYCWY 0,6/1KV 4X150S																					●						
NYCWY 0,6/1KV 4X185S																					●						
NYCWY 0,6/1KV 4X240S																					●						
NYY-J 3X150SM												●															
NYY-J 3X185SM																		●									
NYY-J 3X240SM																		●									
NYY-O 3X150SM												●															
NYY-O 3X185SM																		●									
NYY-O 3X240SM																		●									
NYCWY 0,6/1KV 3X240																	●										
NYY-J 5 X 35 QMM										●																	
NAYY-J 4 X 16 QMM									●																		
NAYY-J 4 X 25 QMM									●																		
NAYY-J 4 X 35 QMM									●																		
NAYY-J 4 X 5O QMM									●																		
NAYY-J 4 X 70 QMM													●														
NAYY-J 4 X 95 QMM													●														
NAYY-J 4 X 120 QMM													●														
NAYY-J 4 X 150 QMM													●														
NAYY-J 4 X 185 QMM																		●									
NAYY-J 4 X 240 QMM																		●									



INSTALLATION MANUAL

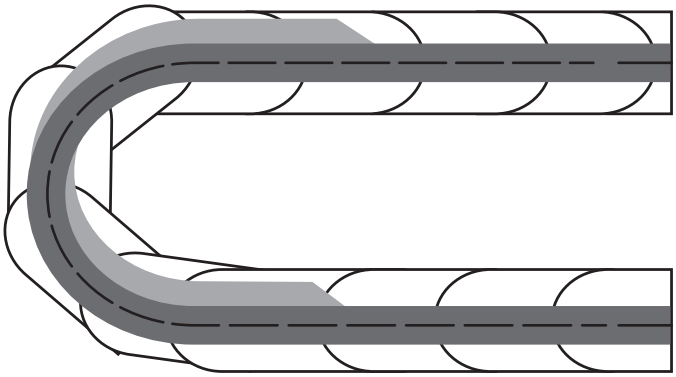
Cable installation in drag chains

The control cables in drag chains undertake an important task for the controlling and power technique, must be good synchronized with each other in the power chain systems. Further the installation of the cables and predection tubes in the power drag chains must be conducted with great care. An efficient usage upon accurate and exact cable installation. The following basic points should be noticed:



1. Where flat and round cables are mixed in one drag tray, then these should be installed loosely next to one another. The guide stays should be installed between the cables laid side by side. Try and avoid placing different sizes of round cables next to one another. Due to the limited space relationship cables arranged one above the other, frame stays are to be installed.

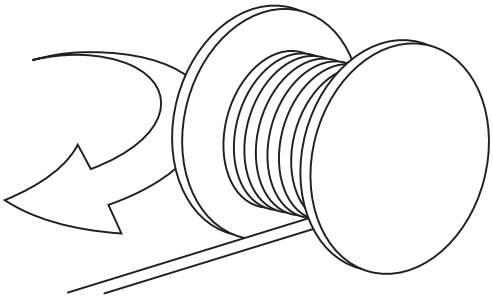
2. The cables must be installed with guide stays, dividers or in separate hole stays so as to move freely in the drag tray guides. As free space for the cables in the guide stay should be at least 10% of the cable Ø.



3. Always ensure that the cable can follow the drag trays motions without appearing to be forced.

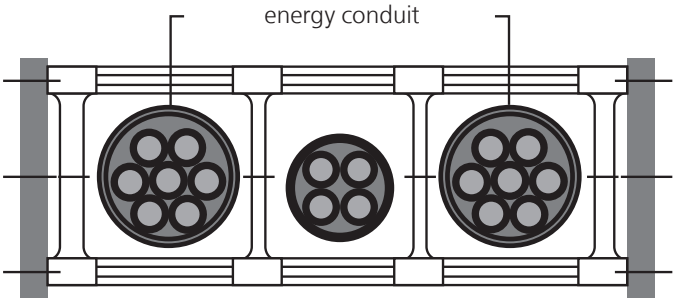
4. If the cables are to be installed in the drag tray in layers then it is important to check upon installation that the cables are laid in such a way that they do not block eachother when the drag tray alters direction.

5. Cables should always be installed in nonkinking and nontwisting flat position into the dray trays. The cables must be reeled down tangential from the reels or drums; the cables should not be lifted up in twisted or looping form over head. Before the installation, the cables must be laid in straight and non-twisted form on plane surface. The cables must have an additional length of at least 10% of the whole length so that these can be laid freely without twisting in drag chains.



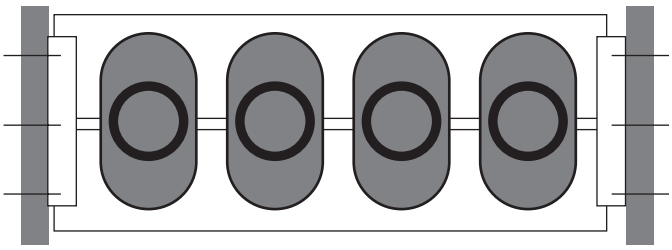


Download Questionnaire for Energy Drag Chain Systems:
You can dowmload the Questionnaire for Energy Drag Chain Systems simply under: www.helukabel.de/Questionnaire-Energy.pdf

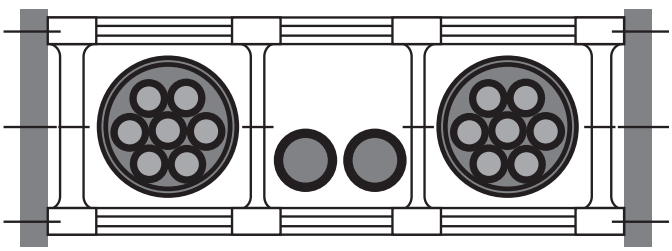


6. In case that is not possible to lay the cables as described under â, in order to lay several multi core high flexible cables with an outer diameter < 10 mm, we recommend the use of a guiding tube, in which these cables should losely laied. This tube is than integrated into the drag system. The cross section of this tube has to be much larger as the sum of the cross sections of the cables. For the free movement of the flexible energy conduits, the guide or divider stays must be installed.

7. In case that pressure- or hydraulic tubes are integrated in a power drag system, those should be able to expand and to shrink under alternating charges without interrupting the functionability of the drag system.



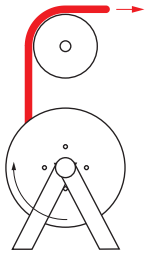
8. In order to maintain a balanced running of the drag chain it is necessary to ensure that the weight of the cables inside is divided up evenly, with the heavier cables installed on the edges and the lighter types in the middle. All cables must be securely fixed at one end of the drag chain. Thus assuring that the cores are securely fastened to one side with the other, open, side allowing enough slack to take up the drag chain's motion. Generally it is recommended, if possible, not to use cables with a multi layer construction, e.g. >25 cores, but to split the necessary number of conductors over several cables.



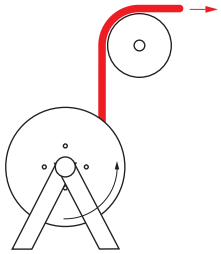
ASSEMBLY INSTRUCTION

Laying reel cables - NSHTÖU / (N)SHTÖU

Correct



Incorrect

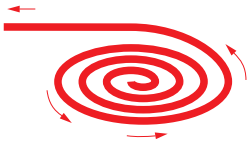


1. The cables are to be pulled from the reeling drum without twisting, using a drawing cable and cable grip. Deflecting or pulling the cable over edges should be avoided.

2. The cables must always be attached to the equipment drum without torsion.

3. Select the largest possible distance between the reeling drum and operating drum.

Correct

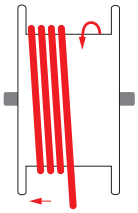


Incorrect

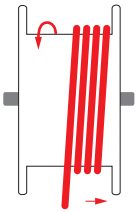


4. In the case of rings, the cable should be unwound tangential.

Correct

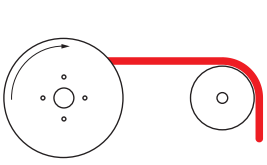


Incorrect

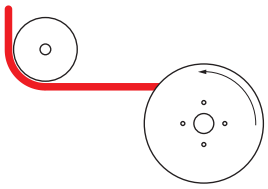


5. The cables are to be rolled onto the operating drums so that the cable moves to the left when started.

Correct

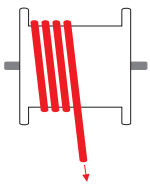


Incorrect



6. The S-shaped deflection of cables is to be avoided.

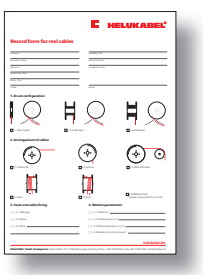
Correct



7. 2-3 windings on the operating drum must remain when the cable is extended.

8. In order to avoid crushing when fixing the cable to the end, a cable grip is to be used.

Download Questionnaire for reel cables:
You can dowmload the Questionnaire for reel cables simply under:
www.helukabel.de/Questionnaire-Reel-Cables.pdf




NSHTOU
NSHTOU
NSHTOU

Questionnaire for energy drag chains

Company

First name, Name

Street, No.

Postal Code, Place

Phone / Fax

E-Mail

Installation site

Kind of machine

In operation since

Sender

1. Drag Chain-Parameter

1. Chain length/chain width	m/mm	
2. Chain pitch	mm	
3. Bending radius	mm	
4. Guide stays existing	[ ] yes	[ ] no
5. Frame stays existing	[ ] yes	[ ] no
6. Layout/Installation	[ ] horizontal	[ ] vertical

2. Installation and Movement-Parameter

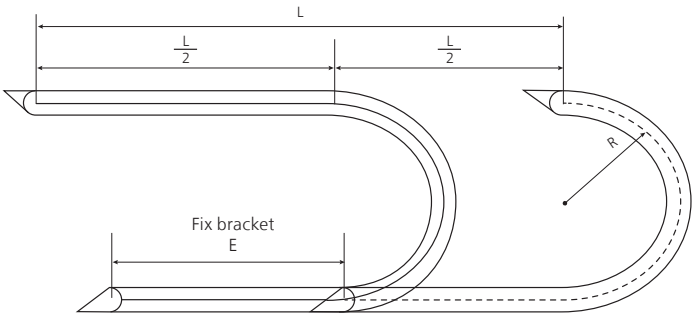
1. Movement distance (max.)	m	
2. Speeds	m/s	
3. Acceleration	m/s^2	
4. Frequency per time unit	x/h	
5. Average movement distance/cycle	m	
6. Daily working duration	h	
7. Feeding at mid of moving distance	[ ] yes	[ ] no
8. Addtional weight/chain	kg	

3. Cable-Parameter

1. Cable length (total)	m	
2. Cable length (mobile)	m	
3. Number of cables	n	
4. Cable clamping without strain	[ ] yes	[ ] no
5. Number of cores per cable	n	
6. Cable screened	[ ] yes	[ ] no
7. Cable halogen-free	[ ] yes	[ ] no

4. Environmental-Parameter

1. Operating temprature °C
2. Kind of chemical influences
3. Other environmental influences



L = Movement distance
R = Radius
E = Distance between cable entrance and mid of moving distance

No.	Part-No.	Cable type	No. cores/cross-sec.	Notes
1.				
2.				
3.				
4.				

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CW&A Edition 27 (published 01.04.2015)

Record form for reel cables

Company

First name, Name

Street, No.

Postal Code, Place

Phone / Fax

E-Mail

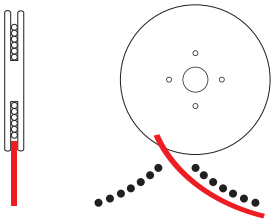
Installation site

Kind of machine

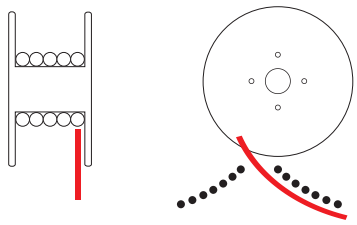
In operation since

Sender

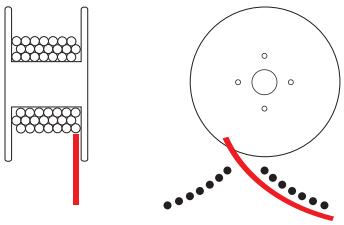
1. Drum configuration



☐ 1.1 Monospiral

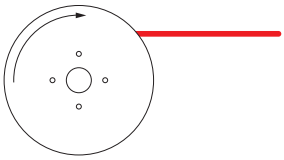


☐ 1.2 Single layer

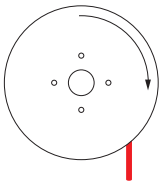


☐ 1.3 Multi layer

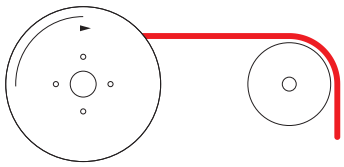
2. Arrangement of cables



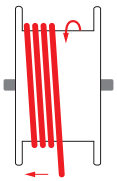
☐ 2.1 Horizontal



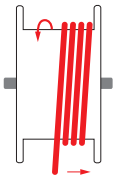
☐ 2.2 Vertical



☐ 2.3 With deflection



☐ 2.4 Feed



☐ 2.5 Feed

☐ 2.6 Different feed
(please enclose sketch or photo)

3. Track end cable fixing

[ ] 3.1 Cable grip

[ ] 3.2 Clamp

[ ] 3.3 Other _____

_____

4. Motion parameters

[ ] 4.1 Travel (m) _____

[ ] 4.2 Travel speed (m/s) _____

[ ] 4.3 Travel acceleration (m/s²) _____

[ ] 4.4 Number of cycles/time unit _____

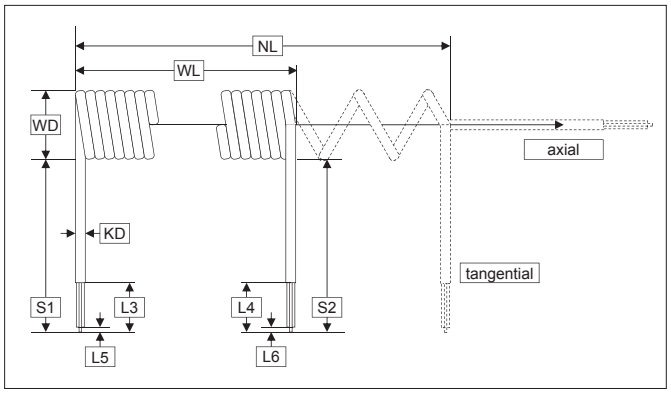
Enquiry Spiral Cable

Phone +49 7150 9209-176 / -785 / -355
Fax +49 7150 959225
E-Mail: spiralkabel@helukabel. de

Sender (stamp)

Enquiry No. _____ Requirement _____ pcs [ ] once [ ] continuous

Date _____ yearly requirement approx. _____ pcs



... also available with ready moulded or mounted plugs



If you should require a special design please enclose a sketch

1. Sheath type [ ] PVC [ ] PUR [ ] _____

2. Outer sheath colour _____

3. Type No. of cores x cross section _____ x _____ mm²

4. Screen [ ] yes: _____

5. Spiral length (WL closed) _____

6. Max. elongation (extended spiral) _____

7. Spiral outer diameter WD _____

8. Internal diameter KD _____

9. End lengths (axial or tangential) _____

S1 _____ mm² S2 _____ mm²

Comments _____

Characteristics PVC (Polyvinylchlorid)
PVC spiral cables offer a high degree of economy. They are suitable for installation wherever a light duty cable is required.

Characteristics PUR (Polyurethan)
Good resistance to chemicals and cold conditions. Good performance characteristics in all weather conditions, excellent mechanical properties such as tear and abrasion resistance, excellent oil resistance.

Enquiry Special Cable

Phone +49 7150 9209-0
Fax +49 7150 81786
E-Mail: anfrage-spezialkabel@helukabel.de

Sender (stamp)

Enquiry

yearly requirement approx. _____ m [ ] once [ ] continuous
Delivery required _____ Make-up [ ] Coil _____ m [ ] Drum
Size _____ Type of Cable _____

Application

a) [ ] indoor [ ] outdoor
b) [ ] stationary [ ] for flexing [ ] with reversed bending [ ] with torsion
c) [ ] Drag chain: speed ____ m/s Acceleration ____ m/s² Tracing range ____ m
load [ ] cyclic [ ] non-cyclic
Temperatures ambient ____ °C continuous ____ °C intermitted ____ °C Min/Std _____

Construction

1. Conductor

[ ] Copper [ ] Aluminium [ ] bare [ ] tinned [ ] silvered [ ] nickel-plated
[ ] solid [ ] flexible [ ] highly flexible [ ] (Stranded wire _____ ø mm for single wire)
No. of cores x cross section ___ x ___ mm² No. of wires x diam. ___ x ___ mm
No. of cores x cross section ___ x ___ mm² No. of wires x diam. ___ x ___ mm

2. Insulation

[ ] PVC [ ] PE [ ] Cell-PE [ ] PUR [ ] TPE-E [ ] Silicone
[ ] PP [ ] ETFE [ ] FEP [ ] PTFE [ ] halogen free [ ] Rubber
[ ] thermopl. rubber [ ] _____

3. Colourcode

[ ] black with white numbers [ ] with protected conductor green-yellow [ ] colours acc. to DIN 47100
[ ] colours acc. to VDE [ ] colourful [ ] _____

4. Screening

[ ] Single core [ ] Pairs [ ] which core/pair _____
[ ] Cu-bare [ ] Cu-tinned [ ] Cu-silvered [ ] Cu-nickel-plated
as [ ] Braiding (C) [ ] Alu-Foile (St) [ ] Serving (D) Covering approx. _____ %
Drain wire bare/tinned _____ mm ø Stranded drain wire bare/tinned _____ mm ø
with/without protection against elec. shock, hazard under screen with/without foil/insulation over screen

5. Support Element

[ ] Hemp [ ] Polypropylen [ ] galv. Steel [ ] Kevlar [ ] _____
Tensile load _____N

6. Centre

_____ mm Ø [ ] PVC [ ] Polypropylen [ ] _____

7. Stranding Cores

[ ] twisted in pair [ ] layer stranding [ ] all [ ] (which) _____

8. Inner sheath

[ ] PVC [ ] Rubber [ ] Silicone [ ] Fleece [ ] Foil [ ] halogen-free
[ ] _____

9. Overall Screen

[ ] Cu-bare [ ] Cu-tinned [ ] Cu-silvered [ ] Cu-nickel-plated [ ] Braiding [ ] Serving
[ ] Alu-Foil Covering _____ % with/without drain wire/stranded drain wire ____ mm ø/mm²

10. Armouring

[ ] Steel wire galv. [ ] SWA [ ] SWB

11. Outer sheath

[ ] PVC [ ] PUR [ ] PE [ ] Rubber [ ] ETFE [ ] FEP
[ ] PTFE [ ] Silicone [ ] Neoprene [ ] halogen-free
[ ] thermopl. rubber [ ] _____ Outer-ø _____ mm Colour _____
[ ] Outerprinting/text _____

Electrical Characters

Operating voltage _____ V Test voltage _____ V
Capacity Cond./Cond. _____ pF/m Capacity Cond./shield _____ pF/m

Standards

[ ] VDE [ ] UL [ ] CSA [ ] BS [ ] CCC [ ] _____

Enquiry Fibre optic special cables

Phone +49 7150 9209 181
Fax +49 7150 970819
E-Mail: dnb@helukabel.de

Sender (stamp)

Enquiry

Quantity approx. _____ m [ ] one time [ ] Continuous
Needed delivery date _____
Dimensions _____ Cable type _____

Application

a) [ ] indoor [ ] outdoor [ ] indoor/outdoor
b) [ ] fixed installation [ ] mobil use
c) Temperature ambient ____ °C constant load ____ °C shorttime ____ °C

Fibre type

[ ] G 50/125 [ ] G 62,5/125 [ ] E 9/125 [ ] S 200/230 [ ] 980/1000 POF

Fibre spec.

attenuation _____ specification _____ bandwidth _____

Cable structure

a) [ ] Tight buffer [ ] Loose tube filled [ ] Bundle core filled
[ ] Compact fiber [ ] Loose tube unfilled [ ] Bundle core unfilled
b) Metal element [ ] yes [ ] no
c) [ ] Centrale bundle core [ ] Stranded bundle core
d) Filler _____
e) Armouring _____
f) Outer jacket [ ] PVC [ ] PE [ ] PA [ ] PUR [ ] FRNC
g) Laminated jacket [ ] yes [ ] no

Properties

Min. bending radius _____ Max. tensile load _____
Max. transverse pressure _____ Caloric load _____

Fibre colour

[ ] acc. DIN [ ] acc. your demands

Tube colour

[ ] acc. DIN [ ] acc. your demands

Jacket printing

_____

Remarks

_____
_____
_____

Project planning sheet for pre-assembled cables

Phone +49 7150 9209 355
Fax +49 7150 5355
E-Mail: konfektion@helukabel.de

Sender (stamp)

Customer data

Company name _____

Address _____ Fon _____

Post code, City _____ Fax _____

Contact _____ Email _____

Data for the pre-assembled cable

Designation _____ Batch sizes/scale quantities _____

Annual requirement _____ Date of delivery _____

Sold by the metre

Designation/description _____ Usage conditions _____

Sheath material _____ Lengths _____

Sheath colour _____ Supplier _____

Approvals _____ Supplier article number _____

Side A

[ ] Male connector

Designation/description _____

Quality class _____

Supplier _____

Supplier article number _____

[ ] Machined open end

Designation/description _____

Stripping dimensions/ core lengths _____

Contacts/Male connector _____

Supplier _____

Supplier article number _____

[ ] cut flush **[ ] labelled** **[ ] not labelled**

Lettering system _____

Supplier _____

Supplier article number _____

Special test parameters _____

Packaging _____

Side B

[ ] Male connector

Designation/description _____

Quality class _____

Supplier _____

Supplier article number _____

[ ] Machined open end

Designation/description _____

Stripping dimensions/ core lengths _____

Contacts/Male connector _____

Supplier _____

Supplier article number _____

[ ] cut flush **[ ] labelled** **[ ] not labelled**

Lettering system _____

Supplier _____

Supplier article number _____

Special test parameters _____

Packaging _____

Project planning sheet for pre-assembled cables

Phone +49 7150 9209 355
Fax +49 7150 5355
E-Mail: konfektion@helukabel.de

Sender (stamp)

Male connector description

Connection diagram

[ ] Mating face view

[ ] Working side view

Cores not used

[ ] insulate

[ ] cut off

Cable outlet

[ ] straight

[ ] angled in PIN direction

Coding setting

[ ] in direction

Screen machining

outer	inner	
[ ]	[ ]	cut off
[ ]	[ ]	on case
[ ]	[ ]	on PIN
[ ]	[ ]	implement with core

[ ] insulate outer screen against inner screen

[ ] connect inner screens

[ ] insulate inner screens against each other

[ ] cut off outer screen, encase with sheath

[ ] screen window

Width

Position

Special features

Assignment			
PIN	Core No./ colour	PIN	Core No./ colour

TECHNICAL INFORMATION

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COPPER AND ALU-PRICE CALCULATION

The material price for cables and wires is usually based on a copper price of 150,00 EUR/100 kg.
For invoicing, as copper surcharge – the difference to the daily copper rate will be calculated.

The **Formula for calculating** the copper surcharge:

Copper surcharge in EUR/km = Copper value (kg/km) x $\frac{\text{(DEL+1\% delivery charge)} - \text{copper basis}}{100}$

DEL

The DEL (German electrolytic copper for guiding purpose) is the Stock Exchange Quotation for 99,5% pure copper. The value is given per EUR/100 kg in the economic part of daily newspapers.

Example: DEL quotation = 500,00 i. e.,
100 kg copper cost 500,00 EUR and
1% delivery charge is added to the daily quotation for cables and wires.

Copper basis

In our catalogue, for almost all cables and wires, a certain portion of copper price is already included.

- Standard cables – copper basis = EUR 150,0/100 kg
- Telephone cables – copper basis = EUR 100,0/100 kg
- Power cables – copper basis = EUR 0, – /100 kg (copper base = 0)

Copper value

The copper number, which is a factor in calculating cost, can be taken from our data sheets.

Example: JZ-500 8 x 0,75 mm², Part-No. 10040
Copper value 58 kg/km

Calculation example: for

JZ-500	8 x 0,75 mm²
DEL	500,00 EUR/100 kg (assuming value)
Copper basis	150,0 EUR/100 kg
Copper value	58 kg/km

Copper surcharge = $\frac{(500{,}00 + 5{,}00) - 150{,}0}{100}$ x 58 kg/km (calculated value 5,00 = 1% of 500,00)

= 205,90 EUR/km

The net price including copper is calculated as follows:

Gross price
. /. individual discount
+ Copper surcharge

Note: The copper surcharge is indicated separately in our invoices.

Continuation ▶

COPPER AND ALU-PRICE CALCULATION

Calculation examples:

Assumption:
- DEL-Quotation 500,00 EUR/100 kg for copper
- Daily rate 200,00 EUR/100 kg for aluminium
- Individual discount, e. g. 20%

1. NYY-J 3 x 70/35 sm, 0,6/1 kV, Part no. 32038

Quantity ordered 1000 m

Copper base = 0	13360,00 EUR/km
minus 20% (discount)	2672,00 EUR/km
	10688,00 EUR/km
+ Copper surcharge:	
$\frac{(500{,}00 + 5{,}00) - 0}{100}$ x Copper value	
equal, 5,00 EUR/kg x 2352 kg/km =	11877,60 EUR/km
	22565,60 EUR/km

2. NYCWY 3 x 70/35 sm, 0,6/1 kV, Part No. 32268

Quantity ordered 1000 m

Copper base = 0	21220,00 EUR/km
minus 20% (discount)	4244,00 EUR/km
	16976,00 EUR/km
+ Copper surcharge (Conductor + screen):	
$\frac{(500{,}00 + 5{,}00) - 0}{100}$ x Copper value	
equal, 5,05 EUR/kg x 2410 kg/km =	12170,50 EUR/km
	29146,50 EUR/km

3. NA2XSY 1 x 70 sm/16, 12/20 kV, Part No. 32454

Quantity ordered 1000 m

− Aluminium conductor
− Copper screen

Copper base = 0	9500,00 EUR/km
minus 20% (discount)	1900,00 EUR/km
	7600,00 EUR/km
+ Copper surcharge (screen):	
$\frac{(500{,}00 + 5{,}00) - 0}{100}$ x Copper value	
equal, 5,05 EUR/kg x 182 kg/km =	919,10 EUR/km
+ Aluminium (Conductor):	
Aluminium value x daily rate	
203 kg/km x 2,00 EUR/kg	406,00 EUR/km
	8925,10 EUR/km

HELUKABEL®

REFERENCE TO DIN VDE STANDARDS

Power Installations

• DIN VDE 0100	– Erection of power installations with rated voltages below 1000
• DIN VDE 0100 part 100	– General requirements, scope
• DIN VDE 0100 part 410	– Protective measures and protection against electric shock
• DIN VDE 0100 part 430	– Protection of cables against overcurrent
• DIN VDE 0100 part 482	– Choice of protective measures, protection against fire
• DIN VDE 0100 part 520/part 530	– Selection and erection of equipment – cable, wires and wiring systems – Erection electrical equipment – switch- and controlgear
• DIN VDE 0100 part 559	– Luminiaries and lighting equipment
• DIN VDE 0100 part 701 to part 705	– Rooms containing a bath tub or shower basin – Roofed swimming pools (swimming baths) and open air swimming baths – Rooms containing electrical sauna-heaters – Installations site – Agricultural and horticultural premises
• DIN VDE 0100 - 710	– Electrical installations in hospitals and locations for medical use outside hospitals
• DIN VDE 0100 - 718	– Power installations and safety power supply in comunal facilities, stores and shops and exhibition rooms, multi-storey buildings, Restaurants, closed car parks and working or business premises
• DIN VDE 0100 part 720	– Fire-hazards locations
• DIN VDE 0100 part 726 up to 0 part 737	– Lifting and hoisting devices – Laying of cables in hollow walls and in buildings made up mainly flammable building materials – Cable entries into buildings in public cable network – Humid and wet areas, outdoor installation
• DIN VDE 0101	– Erection of power installations with rated voltages above 1 kV
• DIN VDE 0105	– Operation of power installations
• DIN VDE 0113	– Electrical equipment of industrial machines
• DIN VDE 0118	– Erection of electrical installations in mines
• DIN VDE 0165	– Installation of electrical apparatus in hazardous areas
• DIN VDE 0166	– Electrical installations and apparatus thereof for use in atmospheres potentially endangered by explosive material
• DIN VDE 0168	– Erection of electrical installation in open cast mines quarries and similar plants
• DIN VDE 0170/0171	– Electrical apparaturs for potentially explosive atmospheres
• DIN VDE 0185	– Lightning protection system, protection of structures against lightning
• DIN VDE 0207 part 1 up to part 24	– Insulating and sheathing compounds for cables and flexible cords
• DIN VDE 0250 part 1 up to part 819	– Cables, wires and flexible cords for power installation
• DIN VDE 0253	– Heating – cables

Power guides

• DIN VDE 0262	– XLPE (cross linked PE) insulated and PVC sheathed installationscable up to 0,6/1 kV
• DIN VDE 0265	– Cables with plastic-insulated lead-sheat for power installation
• DIN VDE 0266 part 3 and part 4	– Halogen-free cables with improved characteristics in the case of fire, with reduced fire propagation and continuance of isolation for use in the containment of nuclear power plants

REFERENCE TO DIN VDE STANDARDS

Power guides

- DIN VDE 0271 – PVC-insulated cables and sheathed power cables for rated voltages up to and including 3,6/6 (7,2) kV
- DIN VDE 0276 part 603 – Distribution cables of nominal voltages U_0 /U 0,6/1 kV
- DIN VDE 0276 part 604 – Power cables of nominal voltages U_0 /U 0,6/1 kV with special fire performance for use in power stations
- DIN VDE 0276 part 604/605 – Additional test methods
- DIN VDE 0276 part 620 – Distribution cables of nominal voltages U_0 /U 3,6 kV to 20,8/36 kV
- DIN VDE 0276 part 1000 – Current-carrying capacity, general; conversion factors
- DIN VDE 0285 - 525 - x-xx – PVC-cables, wires and flexible cords for power installation
- DIN VDE 0285 - 525 - x-xx – Rubber cables and flexible cords for power installation, heat-resistant silicon rubber insulated cable, halogen-free insulated cable arc welding cable, rubber insulated lift cable, rubber-sheathed flexible cables
- DIN VDE 0284 – Mineral insulated cables with a rated voltages not exeeding 750 V
- DIN VDE 0289 part 1 to part 101 – Defination for cables, wires and flexible cords for power installation
- DIN VDE 0292 – Code designation for harmonized cables and flexible cords for power installations
- DIN VDE 0293 – Core identification for cables and flexible cords used in power installation
- DIN VDE 0295 – Conductors of cables, wires and flexible cords for power installation
- DIN VDE 0298 part 1 to part 300 – Application of cables and flexible cords in power installations

Testing, measurement

- DIN VDE 0472 part 1 to part 818 – Testing of cables, wires and flexible cords
- DIN VDE 0473 up to part 811 – Insulating and sheating materials of electric cables; Common test methods
- DIN VDE 0482 up to part 268 – Measurement of smoke density of cables

Telecommunications, Switchboard and Installations-cable

- DIN VDE 0800 part 1 to part 10 – Telecommunications
- DIN VDE 0811 – Ribbon cables with round conductors, with a pitch of 1,27 mm
- DIN VDE 0812 – Equipment wires and stranded equipment wires of telecommunications system
- DIN VDE 0813 – Switchboard cables for telecommunications system
- DIN VDE 0814 – Cords for telecommunications system
- DIN VDE 0815 – Wiring cables for telecommunications system (indoor cable)
- DIN VDE 0816 part 1 to part 3 – Outdoor cables for telecommunications system
- DIN VDE 0817 – Cables with stranded conductors for increased mechanical stress for telecommunications system
- DIN VDE 0818 – Self-supporting telecommunication aerial cables on overhead power lines above 1 kV
- DIN VDE 0839 – Electromagnetic compatibility
- DIN VDE 0881 – Equipment wires and flexible equipment wires with extended temperature
- DIN VDE 0891 part 1 to part 10 – Special directions and guidings principles of cables and insulated wires
- DIN VDE 0899 part 1 up to part 5 – Special specification for optical fiber, single cores, indoor and outdoor cables

HELUKABEL®

HARMONIZED IDENTIFICATION

The harmonized identifications for cables and wires come to an agreement with the CENELEC-structure (HAR-agreement) are determined by the certification institute. These identifications conform the harmonized standards. The harmonized identification must be visible on the core or the sheath in form of an imprint or embossing, or contained with a three-coloured black-red-yellow protected identification thread of different colour lengths (dimension in cm).

Harmonized identification

Kind of imprint or embossing	Colour of identification thread black red yellow (dimension in cm)			Country	Certification institute	
					Name	Designation
CEBEC <HAR>	1	3	1	Belgium	Comite´ Electrotechnique Belge	CEBEC
<VDE> <HAR>	3	1	1	Germany	Verband Deutscher Elektrotechniker e.V. VDE Prüf- und Zertifizierungsinstitut	VDE
USE <HAR>	3	3	1	France	Union Technique de l'Electricité	UTE
IEMMEQU <HAR>	1	3	5	Italy	Instituto Italiano de Marchio Qualitá	IMQ
BASEC <HAR>	1	1	3	Great Britain and North Ireland	British Approvals Service for Cables	BASEC
KEMA-KEUR <HAR>	1	3	3	Netherlands	N.V. tot Keuring van Elektrotechnische Materialien	KEMA
SEMKO <HAR>	1	1	5	Sweden	Svenska Elektriska Materielkontrollanstalten	SEMKO
<ÖVE> <HAR>	3	1	5	Austria	Österreichischer Verband für Elektrotechnik	ÖVE
<DEMKO> <HAR>	3	1	3	Denmark	Danmarks Elektriske Materialkontroll	DEMKO
<NSAI> <HAR> <IIRS> <HAR>	3	3	5	Ireland	National Standards Authority of Ireland old: Institute for Industrial Research and Standards	NSAI (IIRS)
NEMKO <HAR>	1	1	7	Norway	Norges Elektriske Materiellkontroll	NEMKO
<>UNE<> <HAR> ((<>UNE<>))	3	1	7	Spain	up to 31. 12. 1992: Asociación Electrotécnica y Electrónica Española	AEE
AENOR <HAR>	3	1	9		from 01.01.1993: Asociación Española de Normalización y Certificación	AENOR
ELOT <HAR>	3	3	7	Greece	Hellenic Organization for Standardization	ELOT
<IPQ> <HAR>	1	1	9	Portugal	Instituto Portugués da Qualidade	IPQ
SEV <HAR>	1	3	9	Switzerland	Schweizerischer Elektrotechnischer Verein	SEV
FIMKO	1	3	7	Finnland	FIMKO LTD	FIMKO
MEEI <HAR>	3	3	9	Hungarian	Magyar Elektrotechnikai Ellenörzö Intézet	MEEI

DESIGNATION CODE FOR HARMONIZED CABLES

Construction reference

H	05	V		V5		–	F		25	G	0,75

Identifications of destignation
A authorised national standards
H harmonized standards

Nominal voltage U
01 100 V
03 300/300 V
05 300/500 V
07 450/750 V

Insulation material
B (EPR) Ethylene-propylene-rubber
G (EVA) Ethylene-Vinylacetat-Copolymer
N2 (CR) Chloroprene rubber for welding cables
R (EPR) Ethylene propylene rubber
S (SiR) Silicone rubber
V (PVC) Polyvinyl chloride
V2 (PVC) Polyvinyl chloride heat-resistant
V3 (PVC) Polyvinyl chloride low-temperature
V4 (PVC) Polyvinyl chloride cross-linked
Z (PE) Polyethylene cross-linked

Structural elements
C4 Cooper-Screen braiding over laid-up cores
Q4 (PA) Additional polyimide core jacket
T Additional textile braiding over laid-up cores
T6 Additional textile braiding over individual cores

Sheath/jacket material
B (EPR) Ethylene-propylene-rubber
J Glass fibre braid
N (CR) Chloroprene rubber
N2 (CR) Chloroprene rubber for welding cables
N4 (CR) Chloroprene rubber heat-resistant
Q (PUR) Polyurethane
R (NR a./o. SR) Natural- a./o. synthetic rubber
T Textile braid
T2 Textile braid with flame retardant compound
V (PVC) Polyvinyl chloride
V2 (PVC) Polyvinyl chloride heat-resistant
V3 (PVC) Polyvinyl chloride low-temperature
V4 (PVC) Polyvinyl chloride cross-linked
V5 (PVC) Polyvinyl chloride oil resistant

Special structural features
D3 Stress-relieving elements (support wire)
D5 Centre core (no supporting element)
FM Telecommunications cores integrated in power cables
H Flat, separable cable (twin cable)
H2 Flat, non-separable cable (two-core sheathed cable)
H6 Flat, non-separable cable (multi- and multiple sheathed cable)
H7 Two-layer insulating jacket
H8 Spiral cables

Conductor type
D Finely stranded, for welding cables
E (very) finely stranded, for welding cables
F Finely stranded, for cables for flexible installation
H (Very) finely stranded, for flexible cables
K Finely stranded, for cables for fixed installation
R Multiple-wire, round, class 2
U Single-wire, round, class 1
Y Tinsel wire, DIN 47104

Number of cores

Earth core
G With earth core
X Without earth core

Conductor nominal cross section in mm²

Examples:
H07V-U 2,5 black
Harmonized PVC-insulated single-core sheathed cable, 2,5 mm² single-core, nominal voltage 750 V

H07RN-F 3G 1,5
Harmonized rubber-sheathed-cable for medium tensile loads, three-core 1,5 mm², finely stranded, green-yellow earth core, nominal voltage 750 V

HELUKABEL®

CODE-DESIGNATION FOR HARMONIZED CABLES AND FLEXIBLE CORDS

Kind of Standards

Code-designation	Classified to Standards
H	cables and wires to harmonized documents
A	authorised national standards

Conductor material

without designation	Copper
– A	Aluminium
– Z	Conductor of special material and/or special shape

Type and shape of conductor

– D	fine wire stranded conductor for welding cables
– E	extra fine wire stranded conductor for welding cables
– F	fine wire stranded conductor for flexible cables according to DIN VDE 0295, class 5
– H	extra fine wire stranded conductor for flexible cables according to DIN VDE 0295, class 6
– K	fine wire stranded conductor for fixed installation (if not specified, equivalent to DIN VDE 0295, classe 5)
– M	Milliken conductor
– R	conductor of multistranded wires
– S	sector-shaped conductor of multistranded wires
– U	round conductor of single wire
– W	sector-shaped conductor of single wire
– Y	tinsel conductor
– Z	conductor of special material and/or special shape

Core numbers and cross-section of conductor

Number	number of cores n
X	Multiplication sign without green-yellow core
G	Multiplication sign for green-yellow core
Y	tinsel conductor, whereby the cross-section is not specified

Insulation and sheath materials

B	Ethylene-propylene-rubber for Temp. of +90°C
B2	Ethylene-propylene rubber, hardend
B3	Butyl rubber (isobutylene-isoprene rubber)
E	Polyethelene
E2	Polyethelene, high density
E4	Polytetrafluorethylene
E5	Perfluor (Ethylene-propylene – copolymers)
E6	Ethylene-tetrafluorethylene – copolymers
E7	Polypropylene

Insulation and sheath materials

Code-designation	Materials
G	Ethylene-vinylacetate – copolymers
J	braiding of glass fibre
J2	wrapping of glass fibre
M	mineral insulation
N	chloroprene-rubber (or equivalent material)
N2	special compound of chloroprene-rubber
N4	Sulfonated chlor or chlorinated polyethelene
N5	Nitril-rubber
N6	Florinated rubber
N7	PVC-Nitril-rubber compound
N8	Special-polychloroprene-rubber, water resistant
P	Cables with impregnated paper insulation for multicore belted cable
Q	Polyurethane
Q2	Polyethyleneterephthalate
Q3	Polystyrole
Q4	Polyamide
Q5	Polyimide
Q6	Polyvinylidene fluoride
R	Ethylene-propylene rubber or equivalent synthetic elastomer for +60°C temperature of +60°C, for permanent temperature of +60°C
S	Silicon-rubber
T	textile braiding over twisted cores, impregnated/unimpregnated
T2	textile braiding with flamme retardant impregnated composition
T3	layer of textile as core wrapping or tape
T4	layer of textile as core wrapping or tape with flame retardant impregnated composition
T5	corrosion protection
T6	textile braiding over individual core or multicore cable, impregnated/unimpregnated
V	PVC soft
V2	PVC soft, resistant to increased temperature, +90°C
V3	PVC soft, for low temperatures
V4	PVC soft, cross-linked
V5	PVC soft, oil resistant
X	cross-linked polyethylene
Z	cross-linked compound to a basis of polyolefine, for low corrosiv gas and low smoke emission in case of fire
Z1	Thermoplastic compound to a basis of polyole-fine, for low corrosiv gas and low smoke emission in case of fire

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CODE-DESIGNATION FOR HARMONIZED CABLES AND FLEXIBLE CORDS

Metal sheath, concentric conductor and screens

Code-designation	Metal sheath
A2	Aluminium sheath, pressed or welded, smooth
A3	Aluminium sheath, pressed or welded, corrugated
A4	Aluminium sheath over individual core
A5	Aluminium sheath of Band
C2	Copper sheath
C3	Copper sheath, corrugated
F	Steel sheath
F3	Steel sheath, corrugated
K	Zinc sheath
L	Alloyed lead sheath for general use
L2	non-alloyed lead sheath, normal pure lead
L4	alloyed lead sheath over individual core
L5	non-alloyed lead sheath over individual core
L6	alloyed lead sheath, but other composition than above

Concentric conductors

A	concentric aluminium conductor
A6	concentric aluminium conductor, meander-shaped
C	concentric copper-conductor
C6	concentric copper-conductor, meander-shaped
C9	divided concentric copper conductor

Screens

A7	Aluminium screen
A8	Aluminium screen of individual core
C4	Copper screen as braid over the stranded cores
C5	Copper screen braiding over individual core
C7	Copper screen of tape, round or profile-wires over twisted cores
C8	Copper screen as C7, over individual core
D	screen of one or more thin steel tapes, laying direkt over twisted cores, in contact with a stranded plain conductor

Armouring

Code-designation	Armouring
Z2	Armouring of round steel wires, galvanized/ ungalvanized
Z3	Armouring of flat steel wires, galvanized/ ungalvanized
Z4	Armouring of steel tape, galvanized/ ungalvanized
Z5	Braiding of steel wires, galvanized, ungalvanized
Z6	Supporting braid of steel wires
Z7	Armouring of sectional steel wires
Y2	Armouring of round aluminium wires
Y3	Armouring of flat aluminium wires
Y5	Armouring of special materials
Y6	Armouring of steel wires and/or steel tape and copper wires

Special constructive supporting elements

D2	Supporting elements of textile or steel wires over cable core
D3	Textil supporting elements of one or more elements, stranded in the core of circular cable or placed in a flat cable
D4	self-supporting cables and wires, where the conductor permits the strain-relieving function
D5	central core element (not as supporting element), used for lift cable
D7	as D3, the supporting element however is connected externally
D8	as D7, however a section horizontal to the axis of the cable forming the number "8"

Special versions

without designation	
	round cable construction
H	flat type as seperable cables with or without sheath
H2	flat type of cables unseperable
H3	building cable, flat webbed
H4	multicore flat cable with one plain conductor
H5	two or more single core stranded, non-sheathed cables
H6	flat cables according to HD 359 or EN 50214 with 3 or more cores
H7	Cable with two-sheathed extruded insulation
H8	Coiled conductor

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COMPARISON OF HARMONIZED CABLES WITH IEC AND DIN VDE

PVC-insulated powercables according to DIN VDE 0285-525 in comparison with IEC

Designation	according to VDE	short designation new	short designation old VDE 0250	nominal cross-section (mm²)	nominal voltage U_0/U (V)	comparative design to IEC
PVC-wiring cables single wire fine wires	0285-525-2-31	 H05V-U H05V-K	 NYFA, NYA NYFAF, NYAF	 0,5 to 1	300/500	 227 IEC 05 227 IEC 06
PVC-insulated cables single wire multi-stranded wires fine wires	0285-525-2-31	 H07V-U H07V-R H07V-K	 NYA NYA NYAF	 1,5 to 10 1,5 to 400 1,5 to 240	450/750	 227 IEC 01 227 IEC 01 227 IEC 02
PVC-sheated cables 03VV round flat	0285-525-2-11	 H03VV-F H03VVH2-F	 NYLHY round NYLHY flat	 0,5+0,75 0,5+0,75	300/300	 227 IEC 43 227 IEC 43
PVC-sheated cables 05VV round flat	0285-525-2-11	 H05VV-F H05VVH2-F	 NYMHY round NYMHY flat	 0,75 to 2,5 0,75	300/500	 227 IEC 53 227 IEC 53
PVC-control cable	0285-525-2-51	H05VV5-F H05VVC4V5-K	NYSLYÖ NYSLYCYÖ	0,5 to 2,5 0,5 to 2,5	300/500	227 IEC 75 227 IEC 74
PVC-Flat-cable 05VVH6 PVC-Flat-cable 07VVH6	0283-2	H05VVH6-F H07VVH6-F	NYFLY NYFLY	0,75 to 1 1,5 to 25	300/500 450/750	- -

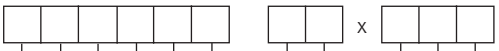
Rubber-insulated power cables according to DIN VDE 0285-525 in comparison with IEC

Designation	according to VDE	short designation new	short designation old VDE 0250	nominal cross-section (mm²)	nominal voltage U_0/U (V)	comparative design to IEC
Heat-resistant rubberinsulated cable	0285-525-2-42	H07G-U H07G-K	N4GA N4GAF	1,5+2,5 0,5 to 95	450/750	- -
Heat-resistant siliconrubber cable	0285-525-2-41	H05SJ-K	N2GAFU	0,5 to 95	300/500	245 IEC 03
Rubber sheathed flexible cord 05RR	0285-525-2-21	H05RR-F	NLH, NMH	0,75 to 2,5	300/500	245 IEC 53
Rubber sheathed flexible cord 05RN	0285-525-2-21	H05RN-F	NYMHöu	0,75+1	300/500	245 IEC 57
Rubber sheathed flexible cord 07RN	0285-525-2-21	H07RN-F	NMHöu NSHöu	1 to 400	450/750	245 IEC 65 245 IEC 66

IEC-definition
IEC 227: Polyvinylchloride insulated flexible cables and cords with circular conductors and a rated voltage not exceeding 750 V
IEC 245: Rubber insulated flexible cables and cords with circular conductors and a rated voltage not exceeding 750 V

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DESIGNATION CODE FOR POWER CABLES



Construction reference

Identifications of designation

N	DIN VDE standard
(N)	similar to DIN VDE standard

Conductor material

A	aluminium conductor
–	copper conductor

Insulating materials

Y	PVC
2X	cross-linked PE (XLPE)
–	impregnated paper

Concentric conductor (screen)

C	concentric conductor of copper
CW	concentric conductor of copper in waveconal formation
CE	concentric conductor of copper over each individual core
S	screen of copper wires
SE	screen of copper wires over each individual core
H	conductive layers
(F)	longitudinally water-proof screen

Armouring

B	steel tape armouring
F	armour of galvanized flat steel wires
G	counter helix of galvanized steel tape
R	armour of galvanized round steel wires

Sheath Material

A	oversheath made of fibrous material	**Y**	PVC
K	ead sheath	**2Y**	PE
KL	aluminium sheath		

Protective Conductor

I	with protective conductor
O	without protective conductor

Number of cores

Conductor cross section in mm²

Conductor type

r ...	circular conductor	**..m**	stranded conductor
s ...	sector conductor	**..h**	hollow circular conductor
o ...	oval conductor	**/V**	compact conductor
e ...	circular, solid conductor		

Rating Voltage

0,6/1 kV
3,6/6 kV
6,0/10 kV
12/20 kV
18/30 kV

Examples

NA2XS2Y 1x 35 RM/16 6/10 kV
Single core XLPE-insulated cable with PE-sheath according to standard, circular, stranded aluminium conductor with nominal crosssection 35 mm², covered with copper-screen 16 mm² and rating voltage (U_0 /U) 6/10 kV

NYY-J 12x 1,5 RE 0,6/1 kV
Cable according to standard, PVC-insulated, sheath PVC, with green-yellow marked core, 12 cores with nominal cross-section 1,5 mm², circular conductor, solid, rating voltage 0,6/1 kV

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DESIGNATION CODE FOR TELEPHONE CABLES, JUMPER WIRES AND STRANDED HOOK-UP WIRES

Construction reference



Basic cable type with additional information

A	outdoor cable	**IE**	installation cable for industrial electronic
AB	outdoor cable with lightning protection requirements	**IE-H**	installation cable for industrial electronic, halogen-free
AJ	outdoor cable with induction protection requirements	**S**	switchboard cable
G	mining cable	**T**	distribution cable
I	installation cable	**YV/Li...**	jumper wires/hook-up wires

Insulation

P	dry paper	**3Y**	Styroflex
Y	PVC (Polyvinylchloride)	**5Y**	PTFE
2Y	PE (Polyethylene)	**6Y**	FEP
02Y	foamed PE (cellular)	**7Y**	ETFE
02YS	foam-skin insulation		

Screening

C	screen of braided copper wires	**(ms)**	magnetic screen steel tape
D	copper screen, helically stranded	**(St)**	screen of plastic coated metallic foil
F	filling of cable core with petrol-jelly	**(Z)**	high tensile steel wire braiding
(K)	screen of copper tape with PE-inner sheath		
(L)	aluminium tape		

Sheath Material

L	smooth aluminium sheath	**M**	lead sheath
(L)2Y	copolymer coated aluminium moisture barrier sheath	**Mz**	lead alloy sheath
LD	corrugated aluminium sheath	**W**	corrugated steel sheath

Protective coating

Y	PVC sheath	**2Y**	PE sheath
Yv	reinforced protective sheath of PVC	**2Yv**	reinforced protective PE sheath
Yw	PVC sheath heat-resistant	**E**	compound with embeded plastic tape
Yu	PVC flame resistant (non-flammable)	**C**	protective covering of jute and compound

Number of stranding elements

.. x1x	single core	**.. x4x**	quad
.. x2x	pair (double cores)	**.. x5x**	five-core
.. x3x	triple		

Conductor diameter in mm

Type of stranding components

F	star quad with phantom circuit in railway cables	**St V**	star quad for transmission of f = 550 kHz
S	signal core in railway signal cable	**St VI**	star quad for transmission of f = 17 MHz
StO	star quad general	**DM**	Dieselhorst-Martin quad
St	star quad with phantom circuit for long distance	**TF**	carrier frequency star quad
St I	star quad without phantom circuit	**P**	twisted pair
St II	star quad like St III, but with increased capacitance unbalances	**PiMF**	pair in metal foil
St III	star quad in local (Subscriber) cable	**ViMF**	quad in metal foil
St IV	star quad for transmission of f = 120 kHz	**BdiMF**	unit in metal foil
		Kx	coaxial cable

Stranding layout

Lg	ayer stranding concentric
Bd	unit stranding

Armouring wire

A	layer of Al-wires for inductive protection	**2B 0,5**	2 layers steel tape, thickness 0,5 mm
b	armouring	**D**	layer of copper wires for inductive protection
B	armouring of steel band for inductive protection	**(T)**	strain bearing of steel wires for aerial cable
1B 0,3	1 layer steel tape, thickness 0,3 mm		

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CODE-DESIGNATION-EXPLANATIONS FOR CABLES AND INSULATED WIRE

A-	Outdoor cable
A	approved national design
AB	Outdoor cable with lighting protection
AD	Outdoor cable with differential protection
AJ-	Outdoor cable with induction protection
ASLH	self-supporting communication cables for high voltage overhead lines
B	armouring
B	spinning of textile yarn
b	armouring
(1B...)	one layer of steel tape... thickness of the steel tape in mm
(2B...)	two layers of steel tape... thickness of the steel tape in mm
BD	unit-type stranding
BLK	bare copper-conductor without insulation
BZ	bronze conductor
C	screen of copper wire braiding
C	screen of copper wire spinning
C	outer protection of jute and viscous compound
Cu	copper wire
(-Cu)	total cross-section of copper screens (mm^2)
D	screen of copper wires
(D)	screen of helically applied copper wires
DM	Dieselhorst-Martin quad
Dreier	three cores in triple stranded
E	copper drain wire
E(e)	protective covering of viscous compound with embedded layer of plastic tape
e	single wire, solid
F	cable cores assembly with petrol-jelly
F	foil wrapping
F	flat cable
F	star quad for railway cable
F	star quad for phantom circuits
(F...)	flat wire armouring... thickness in mm
OF	jelly filled cable core, filling compound of hard substances
FR	flame retardant
f	flexible, fine wire stranding
ff	extra fine wire stranding
G	insulation or sheath material of rubber (NR) or (SBR)
G-	Mining cable
GJ	Mining cable with induction protection
GS	glass fibre whipping or braiding
2G	insulation or jacket of silicone rubber, (SIR)
3G	insulation or jacket of ethylene propylene rubber, (EPR)
4G	insulation or jacket of ethylene vinylacetate rubber (EVA)
5G	insulation or jacket of chloroprene rubber (CR)
6G	insulation or jacket of chlorosulphonated polyethylene (CSM), Hypalon
7G	insulation or jacket of Flouroelastomer (FKM)
8G	insulation or jacket of Nitrile rubber (NBR)
9G	PE-C rubber (CM)
53G	CM, chlorinated Polyethylene
H	insulation or jacket of halogen-free compound
H	Harmonized Documents
(H...)	maximal value of mutual capacitance (nF /km)
(HS)	semi-conducting tape of layer
HX	cross-linked, halogen-free polymer compound
...IMF	individual stranding element (pairs or single cores etc.) in metal foil and drain wire
IMF	several stranding elements in metalfoil and drain wire
-J	cable with green-yellow earth core
-JZ	cable with green-yellow earth core and cores with inprinted numbers
K	copper-tape
(K)	inner sheath and longitudinally folded copper tape
LA	tinsel conductor (flat copper wire stranded over the thread of synthetic fibres)
LD	corrugated aluminium sheath
Lg	in layers stranding
Li	stranded wires conductor
(L)Y	laminated sheath Al-tape and PVC-jacket
(L)2Y	laminated sheath Al-tape and PE-jacketl
2L	double enamel coating as insulation
M	plastic-sheath cable
M	lead sheath
Mz	alloyed lead sheath
(mS)	magnetic shield
N	VDE standard
(N)	in adapted to VDE standard
NC	non-corrosiv, smoke-gase
NF	natural colour
-O	cable without green-yellow earth core
-OZ	cable without green-yellow earth core and cores with imprinted numbers
ö	oil-resistant
02Y	Foam-PE, insulation (cellular PE)
Q	Steel wire braiding
(R...)	round wire, diameter in mm
RAGL-	Compensating cable for thermocoupling
RD-	Rhenomatic cable
RE	Computer cable
RG-	Coaxial cable according MIL specification
re	round, single wire
rm	round, multiwire
RS-	computer switchboard cable
S	silk whipping
S	signal cables for railways
(S...)	nominal value of mutual capacitance (nF /km)
-S	signal cable for German Railway
S-	Switchboard cable
SL	flexible sheathed cable
2S	two layers of silk whipping
St	star quad for phantom circuits
St I	star quad in telephone cables for lager distance
St III	star quad in local cables
(St)	static screen
Staku	copper clad steel wire
Staku-Li	copper clad steel stranded wires
...t	termite protection
T	supporting element for overhead cable
T-	fan out cable
TF	carrier frequency of pairs or quads triple
TiC	triple in copper wire braid
TiMF	triple in metal foil
U	braiding of textile fibres
VGD	gold-plated
VN	ickel-plated; VS silver-plated
VZK	galvanized; VZN tinned
W	corrugated steel sheath
W	high heat resistant
W	corrugated steel sheath
X	cross-linked polyvinylchlorid (X-PVC) or other materials
XPE	cross-linked polyethylene (X-PE)
2X	cross-linked polyethylene
7X	cross-linked Ethylentetrafluorethylen (X-ETFE)
10X	cross-linked Polyvinylidenfluorid (X-PVDF)
Y	PVC, polyvinylchloride
Yu	PVC, polyvinylchloride, non-flammable, flame-retardant
Yv	PVC, polyvinylchloride, with reinforced sheath
YV	Equipment wires with tinned conductor
Yw	PVC, polyvinylchlorid, heat resistant upto 90°C
2Y	Polyethylene (PE)
2Yv	Polyethylene, reinforced sheath
02Y	Cellular polyethylene
02YS	insulation of cellular polyethylene with outer PE-skin
2YHO	insulation of air-spaced polyethylene
3Y	insulation polystyrene (PS), Styroflex
4Y	insulation or jacket of polyamide (PA)
5Y	insulation or jacket of polytetrafluorethylene (PTFE), HELUFLON®
5YX	Perfluoralkoxy (PFA)
6Y	Perfluoroethylene-propylene (FEP), HELUFLON®
7Y	insulation or jacket of ethylentetrafluorethylen (ETFE)
8Y	insulation of polyimid (PI), Kapton®
9Y	polypropylen (PP)
10Y	PVDF, Polyvinylidene fluoride
11Y	polyurethan (PUR)
12Y	TPE-E, TPE
13Y	TPE-EE, TPE on base of Polyester-Ester
31Y	TPE-S, TPE on base of Polystyrol
41Y	TPE-A, TPE on base of Polyamide
51Y	PFA, Perfluor-Alkoxylalkane
71Y	ECTFE, Monochlortrifluorethylene
91Y	TPE-O, TPE on base of Polyester-Ester
-Z	core imprinted with numbers
Z	twin cable
(Z)	high-tensile braid of steel wires
(ZG)	high-tensile element of glass fibre yarn
(ZN)	high-tensile of non-metallic elements

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NOMINAL VOLTAGE AND OPERATING VOLTAGE

Nominal voltage

Voltage of cables and wires, by which the construction and the tests in respect of electrical characteristics are to be refered.
According to DIN VDE 0298 and IEC 183 the cables are specified **U_0/U**, where

U_0 = cable nominal voltage between the conductor and the metal covering or earth and
U = cable nominal voltage between the phase conductors, for 3-phase **$U = \sqrt{3}\ U_0$**.

According to IEC regulations, the maximum permissible voltage **U_m** is given in brackets.
The identification is: **$U_0/U\ (U_m)$**.
As the insulation of plastic insulated cables are measured with a nominal voltage U_0/U = 0,6/1 kV and all radial field cables for the voltage U_0, these cables are suitable for installation:

- in single phase systems, in which the both phase conductors are insulated, with nominal voltage **$U_N = 2\ U_0$**
- in single phase systems, in which one phase conductor is earthed, with the nominal voltage **$U_N = U_0$**

Operating voltage

Voltage between conductors of a power system or between a conductor and earth under specified condition in a given time during an undisturbed operation.

Coordination of cable **Nominal voltages**

Nominal-voltages U_0/U kV	for 3-phase system kV	for 1-phase alternating current	
		both phase conductors insulated kV	one phase conductor earthed kV
0,6/1	1	1,2	0,6
3,6/6	6	7,2	3,6
6/10	10	12	6
12/20	20	24	12
18/30	30	36	18

Coordination of maximum permissible **Operating voltages**

Nominal voltages U_0/U kV	maximum voltage for 3-phase system kV	maximum voltage for 1-phase alternating current	
		both phase conductors insulated kV	one phase conductor earthed kV
0,6/1	1,2	1,4	0,7
3,6/6	7,2	8,3	4,1
6/10	12	14	7
12/20	24	28	14
18/30	36	42	21

Note:
Cable with U_0/U 0,6/1 kV is allowed for **Direct Current Systems**, of those the maximum operating voltage conductor/conductor 1,8 kV or conductor/earth 0,9 kV not to be exceeded.

CURRENT CARRYING CAPACITY AND INDICATIONS FOR CALCULATION OF POWER CABLES AND WIRES

The guidelines for current carrying capacities of copper and aluminium are valid DIN VDE 0298 part 4 as well as DIN VDE 0276 part 603 and for the conversion factors DIN VDE 0276 part 1000.

The current carrying capacity of a cable should limited in such a degree that at all locations in a cable system which causes the generated heats under given proportions to lead safely in the environment.
The heat flow depends on the inner heat-resistance between conductor and outer surface of the cable and as well as from the heat emission to the surroundings.

The following recommended values are the current carrying capacity of cables for laying in earth and in air at normal operating conditions. Hints for the deviated operating conditions, see DIN VDE 0298 table 4 and DIN VDE 0276 part 603 and part 1000.

Indications for Calculation

- **For laying in earth**

– Deviating operating conditions with both conversion factors are to be considered, as these depend on both of specific heat-resistance and the grade of load.
– EVU-load (load grade) is the maximum load factor of 0,7. The conversion factors for the load grades 0,5, 0,6, 0,85 and 1,0 are to be taken in tables DIN VDE 0276 part 603 and part 1000. Intermediate values can be interpolate (1,0 used for permanent load).
– Laying depth 0,7 m. The load capacity decreases with increasing of the laying depth. Usual depth of laying is 0,7 to 1,2 m.
– As normal value of the specific ground thermal resistivity in moist areas is selected with 1,0 K • m/W . For dry areas the choiced value is 2,5 K • m/W, under consideration of the applied usual bedding materials of sands.
– For favourable ground conditions or with thermal resisted bedding materials, lower value under well consolidation can be achieved. For individual case, the values and upon that the resulted current carrying loads are to be determined.

- **For laying in air**

– The values stated in the tables for outdoor laying in the air are defined for permanent operation.
– The arrangement of the cables is corresponded the presentation in table 3, DIN VDE 0276 part 1000.
– Conversion factors for other laying conditions and the heaping of cables are shown in table 10 and 11, DIN VDE 0276 part 1000.
– The current carrying capacities of multi-core cables can be calculated by using the current load value for 3-core cables according to table 13 with help of the conversion factors.
– By using the cable channels or cable board underlays etc. the air temperature will be increased. In this case the conversion factors according to table 12 for deviating air temperature should be used.
– For outdoor installation in air, the ambient temperature is based on 30° C.

- Radiation of heats and solar influence must be taken into consideration, where a good air circulation is needed.

- A sufficient large distance is to retain between the cables and the heating elements, because badly insulated heating elements often raise additionally the temperature of the cable.

- Distance between the cable from the wall, floor or ceiling = 2 cm
- Distance between the cables being laid one above the other = 2 x D
- Distance between the cable systems being laid one above the other = 20 cm
- Distance between the cables being laid side by side = 2 x D

- **Specific ground thermal resistivity**
  – very moist area = 0,7 K • m/W
  – moist area = 1,0 K • m/W
  – dry area = 2,0 K • m/W
  – very dry area = 3,0 K • m/W

INSTALLATION METHODS AND OPERATING CONDITIONS

– Power cables and insulated wires for fixed installation –

Installation method type A1

- Single core cables in insulation tube in a thermally insulated wall.

Installation method A2

- Multicore cables or multicore plastic sheathed cables in the insulation tube in a thermally insulated wall, whereby the walls for the methods of installation employed comprise an outer weatherproof board, thermal insulation and an inner board of wood or materials similar to wood, having a temperature lag of 0,1 $m^2 \cdot K/W$. The plastic or metal insulation tube is mounted such that this is very close to the inner wall without actually being in conduct with the wall.

Installation method B1

- Single core cables in insulation tube on a wooden wall.

Installation method B2

- Multicore cables or multicore plastic-sheathed cables in insulation tube on a wooden wall.

For both installation methods, the insulation tube must be secured such that the space between conduit and the wall surface is less than 0,3 times the diameter of the insulation tube. The plastic or metal insulation tube can be installed directly on the masonry construction or plastered surface, whereby the current carrying capacity of the cables or wires can then be higher.
This problem is still being investigated by CENELEC.

Installation method C

- Single core or multicore cables, or single core or multicore plastic-sheathed cables, on a wooden wall.

  The cables or insulated wires shall be mounted such that the space from the wall surface is less than 0,3 times the outer diameter of the cable or insulated wire. The current carrying capacity can be increased when installed directly on or in the masonry construction as well as underneath the plaster.
  This problem is still being investigated by CENELEC.

Installation methods E, F and G

- Single core or multicore cables, or single core or multicore plastic-sheathed cables, installed in the open air.

  The cable or insulated wire shall be installed such that the dissipation of heat is not impeded, whereby allowance shall be made for heating by other sources and for irradiation by sunshine. Natural convection shall not be obstructed. The space from the cable or insulated wire by each bordering surface shall be 0,3 times that of the outside diameter. A space equal to that of the outside diameter is sufficient for single core cables and plastic-sheathed wires in order to meet the current carrying requirements for an installation in the open-air.

HELUKABEL®

LAYING CONDITIONS FOR POWER CABLES

As laying depth, the mathematical distance to the cable axis – for tringular bunched laying the distance of the bundle axis to the earth surface with 70 cm is choised. With increased laying depth the load ratings will be mathematically reduced. Hereby the same temperature and the same thermal earth resistances are to be presumed.
Normal operation conditions and indications for deviating operation conditions.

Normal operation conditions

Laid in **Earth**	Laid in **Air**	Indications
1 Multicore cable 	1 Multicore cable 	Conversions factors see the following tables
1 Single core cable in direct current-system 	1 Single core cable in direct current system 	as of collective laying conditions see the following tables
3 Single core cables in 3-phase system, side by side, with a space of 7cm 	3 Single core cables in 3-phase system, side by side, with a space of a cable ø 	
3 Single core cables in 3-phase system, in bundle form[1)] 	3 Single core cables in 3-phase system in bundle form[1)] 	
Bedding in sand or earth shove and if necessary covering with bricks, cement plates or with flat to light curved thin covering of plastic 	– Laid in open air, i.e. unhindered heat radiation will be ensured at: Distance of cable from wall, floor or ceiling ≧ 2 cm – For cables laying side by side: Space at least two times of the cable ø – For cables laying one above the other: Vertical space of the cable atleast two times of the cable ø cable length at least 30 cm – Consideration of thermal loss in cable, the increased air temperature of sufficient big and ventilated rooms – Protection against direct heatradiation of sunlight etc. – Air temperature 30°C Adequate big or ventilated rooms, due to that the power loss of the cable not be noticeable increased	● Conversion factors for laying in earth: – covering hood with air cavat y = 0,9 laid in conduit = 0,85 ● Conversion factors for laying in air: – alternating ambient temperatures – as of collecting laying conditions – for laying in conduits – see tables and indications according to DIN VDE 0298
Ambient conditions – Ground temperature at installation depth: 20°C – Soil-thermal resistivity of moist area: 1,0 K • m/W – Soil-thermal resistivity of dry area: 2,5 K • m/W		
Connecting and **earthing** of metal sheaths or screens on both ends	**Connecting** and **earthing** of metal sheaths or screens on both sides	

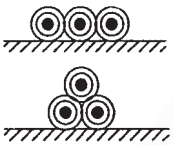
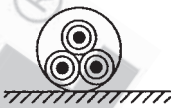
[1)] in "bunched" or triangle touching arrangement

CW&A Edition 27 (published 01.04.2015)

CURRENT RATINGS FOR HELUTHERM® 145

Operting temperature at conductor 120° C

For permanent operating to the ambient temperature of 30° C. Conversion factors for the deviating site operation conditions – see tables below.
Sufficiently large or ventilated rooms in which the ambient temperature is not noticeably increased by the heat losses from the cables. Protection should be taken from the solar radiation etc.

Installation	 in open air	 on face without inter-contact	 on surface with inter-contact	 in tubes, conduites, cabinets
Conversion factors for grouping	–	to table 1	to table 2	to table 3
Cross-section, mm²	Current ratings in Ampere (A) up to 30° C ambient temperature			
0,25	13	12	9	7
0,33	17	15´	11	9
0,50	19	18	12	10
0,75	24	23	17	13
1,0	31	30	20	17
1,5	39	36	25	20
2,5	51	48	33	26
4	68	65	45	36
6	88	84	58	46
10	121	116	80	64
16	160	152	106	85
25	211	200	140	111
35	261	248	172	138
50	320	304	211	169
70	411	391	272	217
95	502	476	331	265
120	587	558	387	310
150	680	646	449	359
185	781	743	516	413
240	931	884	614	492

Conversion factors for grouping

Number of single core cables for 2-phase or 3-phase systems		1	2	3	4	5	6	7	8	9	10	12
Table 1	Factor	1,00	0,94	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90
Table 2	Factor	1,00	0,85	0,79	0,75	0,73	0,72	0,72	0,71	0,70	–	–
Table 3	Factor	1,00	0,80	0,70	0,65	0,60	0,57	0,54	0,52	0,50	0,48	0,45

Conversion factors for deviating ambient temperatures

Temperature in °C	20	30	40	50	60	70	80	90	95	100	105	110	115
Factor	1,05	1,00	0,94	0,88	0,82	0,75	0,67	0,58	0,53	0,47	0,41	0,33	0,24

HELUKABEL®

CURRENT RATINGS FOR SILICONE CABLES AND WIRES

The indicated values stated in the following table are considered as guiding values. These are to be selected each particularly for the individual application.

Heat-resistance at an ambient **temperature up to 150°C**

	Group 1	**Group 2**	**Group 3**
Nominal-cross-section	current-carrying capacity A	current-carrying capacity A	current-carrying capacity A
0,25	2,8	–	5
0,5	6	7	10
0,75	9	12	15
1,0	12	15	19
1,5	16	18	24
2,5	21	26	32
4	28	34	42
6	36	44	54
10	49	61	73
16	65	82	98
25	85	108	129
35	105	135	158
50	140	168	198
70	175	207	245
95	210	250	292
120	250	292	344
150	–	335	391
185	–	382	448
240	–	453	528
300	–	523	608

Group 1: One or more single core cables laid in duct.
Group 2: Multicore cables, flexible cables laid in open or ventilated conduits.
Group 3: Single core cables laid in open air with a spacing at least equal to cable diameter.

Power ratings for
ambient temperature over 150°C
The following conversion factors are valid:

Temperature °C	current-carrying capacity values in %
up to 150	100
over 150 to 155	91
over 155 to 160	82
over 160 to 165	71
over 165 to 170	58
over 170 to 175	41

ELECTRICAL CHARACTERISTICS OF XLPE-INSULATED MEDIUM VOLTAGE POWER CABLES, 6 – 30 kV

Conductor resistance 20°C

cross-section mm²	maximum value Cu-conductor Ohm/km	Alu-conductor Ohm/km
25	0,727	1,20
35	0,524	0,868
50	0,387	0,641
70	0,268	0,443
95	0,193	0,320
120	0,153	0,253
150	0,124	0,206
185	0,0991	0,164
240	0,0754	0,125
300	0,0601	0,100
400	0,0470	0,0778
500	0,0366	0,0605

Conversion factors for the conductor temperatures

Temperature at °C	60	65	70	80	90
Cu-conductor	1,157	1,177	1,196	1,236	1,275
Alu-conductor	1,161	1,181	1,202	1,242	1,282

Conversion formula:

$$R\delta = R_{20} \cdot \frac{234{,}5 + \delta}{254{,}5}$$ for Cu-conductor

$$R\delta = R_{20} \cdot \frac{228 + \delta}{248}$$ for Alu-conductor

Conductor temperature at °C $= \delta$
Conductor resistance at δ °C in Ohm/km $= R\delta$
Conductor resistance at 20 °C in Ohm/km $= R_{20}$

ELECTRICAL CHARACTERISTICS OF XLPE-INSULATED MEDIUM VOLTAGE POWER CABLES, 6 – 30 kV

Effective resistance at 50 Hz (Alternating-current resistance)

Copper conductor

Nominal voltage	6/10 kV		12/20 kV		18/30 kV	
Cross-section	approx Ohm/km					
mm²						
35	0,671	0,673	0,671	0,672	–	–
50	0,497	0,498	0,496	0,498	0,496	0,497
70	0,345	0,346	0,345	0,346	0,344	0,346
95	0,249	0,251	0,249	0,250	0,249	0,250
120	0,198	0,200	0,198	0,200	0,198	0,199
150	0,163	0,165	0,163	0,165	0,162	0,164
185	0,132	0,134	0,131	0,133	0,131	0,133
240	0,102	0,104	0,101	0,103	0,101	0,103
300	0,082	0,085	0,082	0,084	0,082	0,084
400	0,068	0,071	0,067	0,070	0,067	0,069
500	0,055	0,058	0,055	0,058	0,054	0,057

Aluminium conductor

Nominal voltage	6/10 kV		12/20 kV		18/30 kV	
Cross-section	approx Ohm/km					
mm²						
35	1,12	1,12	1,12	1,12	–	–
50	0,825	0,826	0,825	0,826	0,824	0,826
70	0,571	0,572	0,571	0,572	0,571	0,572
95	0,413	0,415	0,413	0,414	0,413	0,414
120	0,327	0,329	0,327	0,329	0,327	0,328
150	0,269	0,271	0,268	0,270	0,268	0,270
185	0,215	0,217	0,215	0,217	0,214	0,216
240	0,165	0,167	0,165	0,167	0,164	0,166
300	0,133	0,135	0,133	0,135	0,133	0,135
400	0,106	0,109	0,106	0,109	0,106	0,108
500	0,085	0,088	0,084	0,087	0,084	0,087

Inductive resistance at 50 Hz

Nominal voltage	6/10 kV		12/20 kV		18/30 kV	
Cross-section	Ohm/km					
mm²						
35	0,144	0,158	0,153	0,168	–	–
50	0,136	0,150	0,145	0,159	0,154	0,169
70	0,129	0,143	0,138	0,152	0,147	0,161
95	0,123	0,137	0,131	0,145	0,139	0,154
120	0,118	0,132	0,126	0,140	0,134	0,148
150	0,114	0,128	0,121	0,135	0,129	0,143
185	0,110	0,124	0,117	0,131	0,125	0,139
240	0,105	0,120	0,112	0,126	0,120	0,134
300	0,102	0,116	0,108	0,123	0,115	0,130
400	0,097	0,111	0,103	0,117	0,110	0,124
500	0,094	0,108	0,100	0,114	0,106	0,120

HELUKABEL®

ELECTRICAL CHARACTERISTICS OF XLPE-INSULATED MEDIUM VOLTAGE POWER CABLES, 6 – 30 kV

Mutual capacitance

Nominal voltage	6/10 kV	12/20 kV	18/30 kV
Cross-section mm²	µF/km	µF/km	µF/km
35	0,22	0,16	–
50	0,25	0,18	0,14
70	0,28	0,20	0,15
95	0,31	0,22	0,17
120	0,34	0,23	0,18
150	0,37	0,25	0,19
185	0,40	0,27	0,20
240	0,44	0,30	0,22
300	0,48	0,32	0,24
400	0,55	0,36	0,27
500	0,60	0,40	0,29

Inductance

Nominal voltage	6/10 kV		12/20 kV		18/30 kV	
Cross-section mm²	 mH/km	 mH/km	 mH/km	 mH/km	 mH/km	 mH/km
35	0,45	0,76	0,48	0,76	–	–
50	0,42	0,73	0,45	0,74	0,48	0,75
70	0,39	0,70	0,43	0,70	0,45	0,71
95	0,38	0,67	0,41	0,68	0,43	0,68
120	0,36	0,65	0,39	0,65	0,42	0,66
150	0,35	0,63	0,38	0,63	0,41	0,64
185	0,34	0,61	0,36	0,62	0,39	0,63
240	0,32	0,59	0,35	0,59	0,37	0,60
300	0,31	0,57	0,33	0,58	0,36	0,59
400	0,30	0,55	0,33	0,55	0,34	0,56
500	0,29	0,53	0,31	0,53	0,33	0,54

ELECTRICAL CHARACTERISTICS OF XLPE-INSULATED MEDIUM VOLTAGE POWER CABLES, 6 – 30 kV

Short-circuit current carrying capacity up to 30 kV

Conductor temperature: 90° C

Short-circuit temperature: 250° C

Cable with Cu-conductors

Cross-section	short-circuit time in s (seconds)														
	0,1	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9	1,0	1,5	2,0	3,0	4,0	5,0
mm²	permissible short-circuit in kA														
25	11,3	8,0	6,5	5,7	5,1	4,6	4,3	4,0	3,8	3,6	2,9	2,5	2,1	1,8	1,6
35	15,8	11,2	9,1	7,9	7,1	6,5	6,0	5,6	5,3	5,0	4,1	3,5	2,9	2,5	2,2
50	22,6	16,0	13,1	11,3	10,1	9,2	8,5	8,0	7,5	7,2	5,8	5,1	4,1	3,6	3,2
70	31,7	22,4	18,3	15,8	14,2	12,9	12,0	11,2	10,6	10,0	8,2	7,1	5,8	5,0	4,5
95	43,0	30,4	24,8	21,5	19,2	17,5	16,2	15,2	14,3	13,6	11,1	9,6	7,8	6,8	6,1
120	54,3	38,4	31,3	27,1	24,3	22,2	20,5	19,2	18,1	17,2	14,0	12,1	9,9	8,6	7,7
150	67,8	48,0	39,2	33,9	30,3	27,7	25,6	24,0	22,6	21,5	17,5	15,2	12,4	10,7	9,6
185	83,7	59,2	48,3	41,8	37,4	34,2	31,6	29,6	27,9	26,5	21,6	18,7	15,3	13,2	11,8
240	108,5	76,7	62,7	54,3	48,5	44,3	41,0	38,4	36,2	34,3	28,0	24,3	19,8	17,2	15,3
300	135,7	95,9	78,3	67,8	60,7	55,4	51,3	48,0	45,2	42,9	35,0	30,3	24,8	21,5	19,2
400	180,9	127,9	104,4	90,4	80,9	73,8	68,4	64,0	60,3	57,2	46,7	40,4	33,0	28,6	25,6
500	226,1	159,9	130,5	113,1	101,1	92,3	85,5	79,9	75,4	71,5	58,4	50,6	41,3	35,8	32,0

Cable with Alu-conductors

Cross-section	short-circuit time in s (seconds)														
	0,1	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9	1,0	1,5	2,0	3,0	4,0	5,0
mm²	permissible short-circuit in kA														
25	7,4	5,3	4,3	3,7	3,3	3,0	2,8	2,6	2,5	2,4	1,9	1,7	1,4	1,2	1,1
35	10,4	7,4	6,0	5,2	4,7	4,2	3,9	3,7	3,5	3,3	2,7	2,3	1,9	1,6	1,5
50	14,9	10,5	8,6	7,4	6,6	6,1	5,6	5,3	5,0	4,7	3,8	3,3	2,7	2,4	2,1
70	20,8	14,7	12,0	10,4	9,3	8,5	7,9	7,4	6,9	6,6	5,4	4,7	3,8	3,3	2,9
95	28,2	20,0	16,3	14,1	12,6	11,5	10,7	10,0	9,4	8,9	7,3	6,3	5,2	4,5	4,0
120	35,7	25,2	20,6	17,8	16,0	14,6	13,5	12,6	11,9	11,3	9,2	8,0	6,5	5,6	5,0
150	44,6	31,5	25,7	22,3	19,9	18,2	16,9	15,8	14,9	14,1	11,5	10,0	8,1	7,1	6,3
185	55,0	38,9	31,7	27,5	24,6	22,5	20,8	19,4	18,3	17,4	14,2	12,3	10,0	8,7	7,8
240	71,3	50,4	41,2	35,7	31,9	29,1	27,0	25,2	23,8	22,6	18,4	16,0	13,0	11,3	10,1
300	89,2	63,1	51,5	44,6	39,9	36,4	33,7	31,5	29,7	28,2	23,0	19,9	16,3	14,1	12,6
400	118,9	84,1	68,6	59,5	53,2	48,5	44,9	42,0	39,6	37,6	30,7	26,6	21,7	18,8	16,8
500	148,6	105,1	85,8	74,3	66,5	60,7	56,2	52,5	49,5	47,0	38,4	33,2	27,1	23,5	21,0

HELUKABEL®

ELECTRICAL CHARACTERISTICS OF XLPE-INSULATED MEDIUM VOLTAGE POWER CABLES, 6 – 30 kV

Short-circuit to ground

Nominal voltage	6/10 kV	12/20 kV	18/30 kV
cross-section mm²	A/km	A/km	A/km
35	1,2	1,7	–
50	1,4	1,9	2,3
70	1,5	2,1	2,5
95	1,7	2,4	2,7
120	1,9	2,6	2,9
150	2,0	2,7	3,1
185	2,2	3,0	3,3
240	2,4	3,3	3,7
300	2,6	3,5	4,0
400	3,0	4,0	4,4
500	3,3	4,3	4,8

Short-circuit current carrying capacity of copper screens Short-circuit temperature: 350°C

short-circuit time in seconds	load of short-circuit current in kA		
	up to 16 mm²	25 mm²	35 mm²
s	kA	kA	kA
0,1	9,7	15,1	21,2
0,2	6,9	10,7	15,1
0,3	5,7	8,9	12,5
0,4	5,0	7,7	10,9
0,5	4,5	7,0	9,8
0,6	4,2	6,4	9,0
0,7	3,9	6,0	8,4
0,8	3,5	5,6	7,9
0,9	3,4	5,3	7,5
1,0	3,3	5,1	7,2
1,5	2,7	4,2	5,9
2,0	2,3	3,6	5,1
3,0	1,9	2,9	4,2
4,0	1,7	2,6	3,6
5,0	1,5	2,3	3,2

Coordination of screen-cross-section

conductor cross-section mm²	screen-cross-section mm²
35 to 120	16
150 to 300	25
400 and 500	35

HELUKABEL®

CONVERSION FACTOR FOR MEDIUM VOLTAGE POWER CABLES, 6 – 30 kV

Load rating for cables laid in ground
Load factor 0,7 and 1,0

Fundamental conditions*

Ground temperature	20° C
Thermal resistivity	1,0 K • m/W
Distance between cables or systems	7 cm

Single core cables laid in trefoil touching arrangement

Load factor 0,7

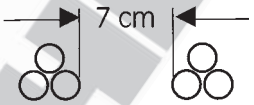
Type of insulation	Cable design	Nominal voltage	Number of cables or systems 2	4	6	8	10
PVC	Multicore cables	0,6/1 to 3,6/6 kV	0,86	0,71	0,64	0,60	0,57
Three-core cables		to 6/10 kV	0,87	0,71	0,63	0,59	0,54
	Single core cables	0,6/1 to 3,6/6 kV	0,85	0,70	0,63	0,59	0,56
	Single core cables	to 6/10 kV	0,83	0,66	0,57	0,53	0,49
VPE	Multicore cables	0,6/1 to 18/30 kV	0,85	0,70	0,63	0,59	0,56
Three-core cables	0,6/1	to 18/30 kV	0,85	0,70	0,63	0,58	0,56

Load factor 1,0

Type of insulation	Cable design	Nominal voltage	Number of cables or systems 1	2	4	6	8	10
PVC	Multicore cables	0,6/1 to 3,6/6 kV	0,81	0,66	0,52	0,46	0,43	0,40
	Three-core cables	to 6/10 kV	0,82	0,67	0,51	0,45	0,41	0,37
	Single core cables	0,6/1 to 3,6/6 kV	0,79	0,65	0,51	0,46	0,42	0,40
	Single core cables	to 6/10 kV	0,78	0,62	0,47	0,40	0,36	0,33
VPE	Multicore cables	0,6/1 to 18/30 kV	0,83	0,67	0,53	0,47	0,44	0,41
	Single core cables	0,6/1 to 18/30 kV	0,81	0,66	0,52	0,47	0,43	0,41

Build-up of systems:

• for single core cables



• for multicore cables



HELUKABEL®

COLOUR CODE ACCORDING TO DIN 47100

with colour repetition from core no. 45 and above

Electronic control and computer cable: **single cores** stranding

The insulation of the conductor gives the first basic colour. The codes of the multi-coloured identification are combined with a basic colour and colour rings. The second and third colour is printed on the basic colour as a form of ring.

The ring width is 2–3 mm. A less unsharpness on the edge of the identification colour and a minor pledging of both half-rings are permitted.

The cores are to be counted continuously through all layers at the same direction, beginning with the outer layer towards inside.

No.	Basic-Ring-colours	No.	Basic-Ring-colours	No.	Basic-Ring-colours	No.	Basic-Ring-colours
1	white	17	white-grey	33	green-red	45	white
2	brown	18	grey-brown	34	yellow-red	46	brown
3	green	19	white-pink	35	green-black	47	green
4	yellow	20	pink-brown	36	yellow-black	48	yellow
5	grey	21	white-blue	37	grey-blue	49	grey
6	pink	22	brown-blue	38	pink-blue	50	pink
7	blue	23	white-red	39	grey-red	51	blue
8	red	24	brown-red	40	pink-red	52	red
9	black	25	white-black	41	grey-black	53	black
10	violet	26	brown-black	42	pink-black	54	violet
11	grey-pink	27	grey-green	43	blue-black	55	grey-pink
12	red-blue	28	yellow-grey	44	red-black	56	red-blue
13	white-green	29	pink-green			57	white-green
14	brown-green	30	yellow-pink			58	brown-green
15	white-yellow	31	green-blue			59	white-yellow
16	yellow-brown	32	yellow-blue			60	yellow-brown
						61	white-grey

COLOUR CODE ADAPTED* TO DIN 47100

without colour repetition

No.	Basic-Ring-colours	No.	Basic-Ring-colours	No.	Basic-Ring-colours	No.	Basic-Ring-colours
1	white	17	white-grey	33	green-red	45	white-brown-black
2	brown	18	grey-brown	34	yellow-red	46	yellow-green-black
3	green	19	white-pink	35	green-black	47	grey-pink-black
4	yellow	20	pink-brown	36	yellow-black	48	red-blue-black
5	grey	21	white-blue	37	grey-blue	49	white-green-black
6	pink	22	brown-blue	38	pink-blue	50	brown-green-black
7	blue	23	white-red	39	grey-red	51	white-yellow-black
8	red	24	brown-red	40	pink-red	52	yellow-brown-black
9	black	25	white-black	41	grey-black	53	white-grey-black
10	violet	26	brown-black	42	pink-black	54	grey-brown-black
11	grey-pink	27	grey-green	43	blue-black	55	white-pink-black
12	red-blue	28	yellow-grey	44	red-black	56	pink-brown-black
13	white-green	29	pink-green			57	white-blue-black
14	brown-green	30	yellow-pink			58	brown-blue-black
15	white-yellow	31	green-blue			59	white-red-black
16	yellow-brown	32	yellow-blue			60	brown-red-black
						61	black-white

* deviation to DIN, without colour repetition, from core no. 45 and above

PAIR-COLOUR CODE ACCORDING TO DIN 47100

with colour repetition

Electronic control and computer cable: **pair** stranding

The insulation of the conductor gives the first basic colour. The codes of the multi-coloured identification are combined with a basic colour and colour rings. The second colour is printed on the basic colour as a form of ring. The ring width is 2–3 mm. A less unsharpness on the edge of the identification colour and a minor pledging of both half-rings are permitted.
The cores are to be counted continuously through all layers at the same direction, beginning with the outer layer towards inside.

Pair-stranding Pair-no.			core	colour
1	23	45	a	white
			b	brown
2	24	46	a	green
			b	yellow
3	25	47	a	grey
			b	pink
4	26	48	a	blue
			b	red
5	27	49	a	black
			b	violet
6	28	50	a	grey-pink
			b	red-blue
7	29	51	a	white-green
			b	brown-green
8	30	52	a	white-yellow
			b	yellow-brown
9	31	53	a	white-grey
			b	grey-brown
10	32	54	a	white-pink
			b	pink-brown
11	33	55	a	white-blue
			b	brown-blue

Pair-stranding Pair-no.			core	colour
12	34	56	a	white-red
			b	brown-red
13	35	57	a	white-black
			b	brown-black
14	36	58	a	grey-green
			b	yellow-grey
15	37	59	a	pink-green
			b	yellow-pink
16	38	60	a	green-blue
			b	yellow-blue
17	39	61	a	green-red
			b	yellow-red
18	40	62	a	green-black
			b	yellow-black
19	41	63	a	grey-blue
			b	pink-blue
20	42	64	a	grey-red
			b	pink-red
21	43	65	a	grey-black
			b	pink-black
22	44	66	a	blue-black
			b	red-black

Colour code as per DIN 47002

YV-Equipment wires
(for twin colour cables, the base colour is underlined)

ws	white	br	brown
gn	green	ge	yellow
gr	grey	rs	pink
bl	blue	rt	red
sw	black	vi	violet
wsbr	white-brown	wsgn	white-green
wsge	white-yellow	wsbl	white-blue
wsrt	white-red	wssw	white-black
brgn	brown-green	brge	brown-yellow
brbl	brown-blue	brsw	brown-black
gnge	green-yellow	gnrt	green-red
gnsw	green-black	gebl	yellow-blue
gert	yellow-red	gesw	yellow-black
grrt	grey-red	grsw	grey-black
rssw	pink-black	rsvi	pink-violet
blrt	blue-red	rtsw	red-black
virt	violet-red		

Colour code for YR-Bell Sheathed Cables

2 x 0,8: bk, bu
3 x 0,8: bk, bu, bn
4 x 0,8: bk, bu, bn, ye
5 x 0,8: bk, bu, bn, ye, gn
6 x 0,8: bk, bu, bn, ye, gn, vt
8 x 0,8: bk, bu, bn, ye, gn, vt, wh, og
10 x 0,8: bk, bu, bn, ye, gn, vt, wh, og, tr, gy
12 x 0,8: bk, bu, bn, ye, gn, vt, wh, og, tr, gy, rd, lbu
14 x 0,8: bk, bu, bn, ye, gn, vt, wh, og, tr, gy, rd, lbu, cog, lgn
16 x 0,8: bk, bu, bn, ye, gn, vt, wh, og, tr, gy, rd, lbu, cog, lgn, lrd, lye

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COLOUR CODE ACCORDING TO INTERNATIONAL STANDARD

Electronic control UL-version: **single cores** stranding

The insulation of the conductor gives the first basic colour. The codes of the multi-coloured identification are combined with a basic colour and colour rings. The second colour is printed on the basic colour as a form of ring.

The ring width is 2–3 mm. A less unsharpness on the edge of the identification colour and a minor pledging of both half-rings are permitted.

The cores are to be counted continuously through all layers at the same direction, beginning with the inside layer towards outer.

No.	Basic-Ring-colours	No.	Basic-Ring-colours	No.	Basic-Ring-colours	No.	Basic-Ring-colours
1	black	16	white-green	31	green-red	46	grey-brown
2	brown	17	white-blue	32	green-orange	47	grey-red
3	red	18	white-violet	33	green-blue	48	grey-orange
4	orange	19	white-grey	34	green-violet	49	grey-yellow
5	yellow	20	brown-black	35	green-grey	50	grey-green
6	green	21	brown-red	36	green-white	51	grey-blue
7	blue	22	brown-orange	37	yellow-black	52	grey-violet
8	violet	23	brown-yellow	38	yellow-brown	53	grey-white
9	grey	24	brown-green	39	yellow-red	54	orange-black
10	white	25	brown-blue	40	yellow-orange	55	orange-brown
11	white-black	26	brown-violet	41	yellow-blue	56	orange-red
12	white-brown	27	brown-grey	42	yellow-violet	57	orange-yellow
13	white-red	28	brown-white	43	yellow-grey	58	orange-green
14	white-orange	29	green-black	44	yellow-white	59	orange-blue
15	white-yellow	30	green-brown	45	grey-black	60	orange-violet

PAIR-COLOUR CODE ACCORDING TO INTERNATIONAL STANDARD

Electronic control UL-version: **pair** stranding

The insulation of the conductor gives the first basic colour. The codes of the multi-coloured identification are combined with a basic colour and colour rings. The second colour is printed on the basic colour as a form of ring.
The ring width is 2–3 mm. A less unsharpness on the edge of the identification colour and a minor pledging of both half-rings are permitted.
The cores are to be counted continuously through all layers at the same direction, beginning with the inside layer towards outer.

Pair-stranding Pair-no.	core	colour	Pair-stranding Pair-no.	core	colour	Pair-stranding Pair-no.	core	colour
1	a b	black brown	9	a b	black white	17	a b	brown white
2	a b	black red	10	a b	brown red	18	a b	red orange
3	a b	black orange	11	a b	brown orange	19	a b	red yellowz
4	a b	black yellow	12	a b	brown yellow	20	a b	red green
5	a b	black green	13	a b	brown green	21	a b	red blue
6	a b	black blue	14	a b	brown blue	22	a b	red violet
7	a b	black violet	15	a b	brown violet	23	a b	red grey
8	a b	black grey	16	a b	brown grey	24	a b	red white

COLOUR CODES ACCORDING TO INTERNATIONAL STANDARDS

TRAYCONTROL 300 / TRAYCONTROL 300-C (AWG 28-22)

No.	Basic-ring-colour	No.	Basic-ring-colour	No.	Basic-ring-colour
1	black	18	white/violet	35	white/red/orange
2	brown	19	white/grey	36	white/red/yellow
3	red	20	white/black/brown	37	white/red/green
4	orange	21	white/black/red	38	white/red/blue
5	yellow	22	white/black/orange	39	white/red/violet
6	green	23	white/black/yellow	40	white/red/grey
7	blue	24	white/black/green	41	white/orange/yellow
8	violet	25	white/black/blue	42	white/orange/green
9	grey	26	white/black/violet	43	white/orange/blue
10	white	27	white/black/grey	44	white/orange/violet
11	white/black	28	white/brown/red	45	white/orange/grey
12	white/brown	29	white/brown/orange	46	white/yellow/green
13	white/red	30	white/brown/yellow	47	white/yellow/blue
14	white/orange	31	white/brown/green	48	white/yellow/violet
15	white/yellow	32	white/brown/blue	49	white/yellow/grey
16	white/green	33	white/brown/violet	50	white/green/blue
17	white/blue	34	white/brown/grey		

TRAYCONTROL 300 / TRAYCONTROL 300-C (AWG 20-16)

No.	Basic-ring-colour	No.	Basic-ring-colour	No.	Basic-ring-colour
1	black	18	white/green	35	white/red/red
2	red	19	white/yellow	36	white/red/green
3	white	20	white/blue	37	white/red/blue
4	green	21	white/brown	38	white/red/brown
5	orange	22	white/orange	39	white/red/violet
6	blue	23	white/grey	40	white/green/black
7	brown	24	white/violet	41	white/green/red
8	yellow	25	white/black/red	42	white/green/green
9	violet	26	white/black/green	43	white/green/blue
10	grey	27	white/black/yellow	44	white/green/brown
11	pink	28	white/black/blue	45	white/green/violet
12	hellbrown	29	white/black/brown	46	white/blue/black
13	red/green	30	white/black/orange	47	white/blue/red
14	red/yellow	31	white/black/grey	48	white/blue/green
15	red/black	32	white/black/violet	49	white/blue/blue
16	white/black	33	white/black/black	50	white/blue/brown
17	white/red	34	white/red/black		

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PAIR-COLOUR CODES ACCORDING TO INTERNATIONAL STANDARDS

TRAYCONTROL 300 TP / TRAYCONTROL 300 TP-C (AWG 20-18)

Pair-stranding Pair-no.	core	colour	Pair-stranding Pair-no.	core	colour	Pair-stranding Pair-no.	core	colour
1	a	black	10	a	red	19	a	white
	b	red		b	blue		b	blue
2	a	black	11	a	red	20	a	white
	b	white		b	yellow		b	brown
3	a	black	12	a	red	21	a	white
	b	green		b	brown		b	orange
4	a	black	13	a	red	22	a	white
	b	blue		b	orange		b	yellow
5	a	black	14	a	green	23	a	blue
	b	brown		b	blue		b	brown
6	a	black	15	a	green	24	a	blue
	b	yellow		b	white		b	orange
7	a	black	16	a	green	25	a	blue
	b	orange		b	brown		b	yellow
8	a	red	17	a	green			
	b	green		b	orange			
9	a	red	18	a	green			
	b	white		b	yellow			

TRAYCONTROL 300 TP / TRAYCONTROL 300 TP-C (AWG 26-22)

Pair-stranding Pair-no.	core	colour	Pair-stranding Pair-no.	core	colour	Pair-stranding Pair-no.	core	colour
1	a	white	10	a	black	19	a	brown
	b	black		b	brown		b	orange
2	a	white	11	a	black	20	a	brown
	b	brown		b	red		b	yellow
3	a	white	12	a	black	21	a	brown
	b	red		b	orange		b	green
4	a	white	13	a	black	22	a	brown
	b	orange		b	yellow		b	blue
5	a	white	14	a	black	23	a	brown
	b	yellow		b	green		b	violet
6	a	white	15	a	black	24	a	brown
	b	green		b	blue		b	grey
7	a	white	16	a	black	25	a	red
	b	blue		b	violet		b	orange
8	a	white	17	a	black			
	b	violet		b	grey			
9	a	white	18	a	brown			
	b	grey		b	red			

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COLOUR CODE FOR SINGLE WIRE VEHICLE CABLES

one-colour

black, white, blue, orange, brown, green, violet, red, pink, yellow, grey

two-colours

● preferred colours

base colour	marking colour longitudinal stripe	base colour	marking colour longitudinal stripe
white	grey	red	white
white	red	red	yellow
white	brown	red	grey
white	blue	red	green
white	black	red	blue
		red	black
yellow	grey		
yellow	red	brown	white
yellow	brown	brown	yellow
yellow	blue	brown	green
yellow	black	brown	black
grey	green	blue	white
grey	red	blue	yellow
grey	brown	blue	green
		blue	red
green	white		
green	grey	black	white
green	brown	black	yellow
green	blue	black	green
green	black	black	red

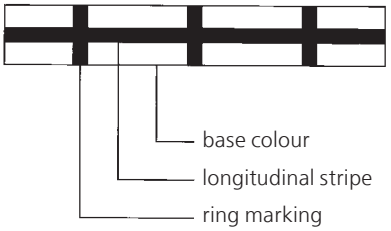
three-colours

● preferred colours

base colour	1. marking colour longitudinal stripe	2. marking colour longitudinal stripe
grey	green	yellow
grey	red	yellow
grey	brown	yellow
red	white	yellow
red	yellow	yellow
red	grey	yellow
red	green	yellow
red	blue	yellow
red	black	yellow
brown	white	yellow
brown	yellow	yellow
brown	green	yellow
brown	black	yellow
blue	white	yellow
blue	yellow	yellow
blue	green	yellow
blue	red	yellow
black	white	yellow
black	yellow	yellow
black	green	yellow
black	red	yellow

Minimum quantities for one or two-coloured combinations per cross-section and colour combination:
0,5 to 2,5 mm² = 3 km
4,0 to 25,0 mm² = 1 km. Remaining cross-sections on request

For three-coloured combination we manufacture **only** on request.
Minimum quantities per cross-sections and colour combinations:
0,5 to 2,5 mm² = 5 km
4,0 to 25,0 mm² = 3 km. Remaining cross-sections on request.



● further colour combinations

base colour	marking colour longitudinal stripe	base colour	marking colour longitudinal stripe
white	yellow	brown	grey
white	green	brown	violet
white	violet	brown	blue
yellow	white	blue	grey
yellow	green	blue	violet
yellow	violet	blue	brown
grey	white	black	grey
grey	yellow	black	violet
grey	violet	black	brown
green	yellow	orange	white
green	red	orange	yellow
green	violet	orange	grey
		orange	green
red	brown	orange	violet
		orange	blue
violet	white	orange	black
violet	yellow		
violet	grey		
violet	green		
violet	brown		
violet	blue		
violet	black		

● further colour combinations

base colour	1. marking colour longitudinal stripe	2. marking colour longitudinal stripe
grey	white	yellow
grey	yellow	yellow
grey	violet	yellow
red	brown	yellow
violet	white	yellow
violet	yellow	yellow
violet	grey	yellow
violet	green	yellow
violet	brown	yellow
violet	blue	yellow
violet	black	yellow
brown	grey	yellow
brown	violet	yellow
brown	blue	yellow
blue	grey	yellow
blue	violet	yellow
blue	brown	yellow
black	grey	yellow
black	violet	yellow
black	brown	yellow
orange	white	yellow
orange	yellow	yellow
orange	grey	yellow
orange	green	yellow
orange	violet	yellow
orange	blue	yellow
orange	black	yellow

HELUKABEL®

COLOUR CODE HELUKABEL®-JB

Colour coded Control Cables **JB** and **SY-JB** with green-yellow protective conductor

The combination of colour identification up to 102 cores consists of 11 basic colours. For core-no. 12 and more, one or two additional colour rings or longitudinal stripes are printed on the basic colour. The ring width is approximately 2 mm.

3- to 5-core cables

Colour identification according to VDE 0293 for flexible cables

3 cores = green-yellow/brown/blue
4 cores = green-yellow/brown/black/grey
5 cores = green-yellow/blue/brown/black/grey

6- and more core cables

Colour identification as per following table.
The insulation of the conductor gives the first basic colour. The second and the third colour is printed on the basic colour as a form of ring or longitudinal stripe. The cores are to be counted continuously through all layers at the same direction, beginning with inner layer towards outside. Green-yellow conductor has to be arranged in the outer layer as the last core.

No.	Basic-Ring-Colour
0	green-yellow
1	white
2	black
3	blue
4	brown
5	grey
6	red
7	violet
8	pink
9	orange
10	transparent
11	beige
12	black-white
13	blue-white
14	brown-white
15	grey-white
16	red-white
17	violet-white
18	pink-white
19	orange-white
20	transparent-white
21	beige-white
22	blue-black
23	brown-black
24	grey-black
25	red-black
26	violet-black
27	pink-black
28	orange-black
29	transparent-black
30	beige-black
31	brown-blue
32	grey-blue
33	red-blue
34	pink-blue
35	orange-blue

No.	Basic-Ring-Colour
36	transparent-blue
37	beige-blue
38	grey-brown
39	red-brown
40	violet-brown
41	pink-brown
42	orange-brown
43	transparent-brown
44	beige-brown
45	red-grey
46	violet-grey
47	pink-grey
48	orange-grey
49	transparent-grey
50	beige-grey
51	orange-red
52	transparent-red
53	beige-red
54	pink-violet
55	orange-violet
56	transparent-violet
57	beige-violet
58	transparent-pink
59	beige-pink
60	transparent-orange
61	beige-orange
62	blue-white-black
63	brown-white-black
64	grey-white-black
65	red-white-black
66	violet-white-black
67	pink-white-black
68	orange-white-black

No.	Basic-Ring-Colour
69	transparent-white-black
70	beige-white-black
71	brown-white-blue
72	grey-white-blue
73	red-white-blue
74	violet-white-blue
75	pink-white-blue
76	orange-white-blue
77	transparent-white-blue
78	beige-white-blue
79	grey-white-brown
80	red-white-brown
81	violet-white-brown
82	pink-white-brown
83	orange-white-brown
84	transparent-white-brown
85	beige-white-brown
86	red-white-grey
87	violet-white-grey
88	pink-white-grey
89	orange-white-grey
90	transparent-white-grey
91	beige-white-grey
92	blue-white-red
93	brown-white-red
94	violet-white-red
95	pink-white-red
96	orange-white-red
97	brown-white-violet
98	orange-white-violet
99	brown-black-blue
100	grey-black-blue
101	red-black-blue

COLOUR CODE HELUKABEL®-OB

Colour coded Control Cables **OB** and **SY-OB** without green-yellow protective conductor

The combination of colour identification up to 101 cores consists of 11 basic colours. For core-no. 12 and more, one or two additional colour rings or longitudinal stripes are printed on the basic colour. The ring width is approximately 2 mm.

2- to 5-core cables

Colour identification according to VDE 0293 for flexible cables

2 cores = brown/blue
3 cores = brown/black/grey
4 cores = blue/brown/black/grey
5 cores = blue/brown/black/grey/black

6- and more core cables

Colour identification as per following table. The insulation of the conductor gives the first basic colour. The second and the third colour is printed on the basic colour as a form of ring or longitudinal stripe.
The cores are to be counted continuously through all layers at the same direction, beginning with inner layer towards outside.

No.	Basic-Ring-colour
1	white
2	black
3	blue
4	brown
5	grey
6	red
7	violet
8	pink
9	orange
10	transparent
11	beige
12	black-white
13	blue-white
14	brown-white
15	grey-white
16	red-white
17	violet-white
18	pink-white
19	orange-white
20	transparent-white
21	beige-white
22	blue-black
23	brown-black
24	grey-black
25	red-black
26	violet-black
27	pink-black
28	orange-black
29	transparent-black
30	beige-black
31	brown-blue
32	grey-blue
33	red-blue
34	pink-blue
35	orange-blue

No.	Basic-Ring-colour
36	transparent-blue
37	beige-blue
38	grey-brown
39	red-brown
40	violet-brown
41	pink-brown
42	orange-brown
43	transparent-brown
44	beige-brown
45	red-grey
46	violet-grey
47	pink-grey
48	orange-grey
49	transparent-grey
50	beige-grey
51	orange-red
52	tranparent-red
53	beige-red
54	pink-violet
55	orange-violet
56	tranparent-violet
57	beige-violet
58	transparent-pink
59	beige-pink
60	transparent-orange
61	beige-orange
62	blue-white-black
63	brown-white-black
64	grey-white-black
65	red-white-black
66	violet-white-black
67	pink-white-black
68	orange-white-black

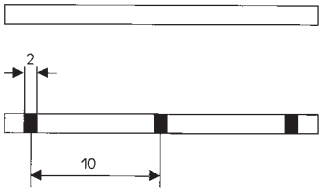
No.	Basic-Ring-colour
69	transparent-white-black
70	beige-white-black
71	brown-white-blue
72	grey-white-blue
73	red-white-blue
74	violet-white-blue
75	pink-white-blue
76	orange-white-blue
77	transparent-white-blue
78	beige-white-blue
79	grey-white-brown
80	red-white-brown
81	violet-white-brown
82	pink-white-brown
83	orange-white-brown
84	transparent-white-brown
85	beige-white-brown
86	red-white-grey
87	violet-white-grey
88	pink-white-grey
89	orange-white-grey
90	transparent-white-grey
91	beige-white-grey
92	blue-white-red
93	brown-white-red
94	violet-white-red
95	pink-white-red
96	orange-white-red
97	brown-white-violet
98	orange-white-violet
99	brown-black-blue
100	grey-black-blue
101	red-black-blue

COLOUR CODE SWITCHBOARD CABLE

S-YY Lg

Core identification

Dimensions in mm



single coloured
no ring marking

with ring marking,
ring width and ring
distance

The cores are identified in colour-groups with each 4, 5, 6, 10 different core colour combinations which is repeate continuously according to the following scheme:

No. of cores in each colour-group	Core colours
4	blue, red, grey, green
5	blue, red, grey, green, brown
6	blue, red, grey, green, brown, black
10	blue, red, grey, green, brown, black, yellow, white, pink, violet

Example

S-YY 30 (5 x6) x1x 0,6 Lg
= 5x colour-groups with 6 different core colours.

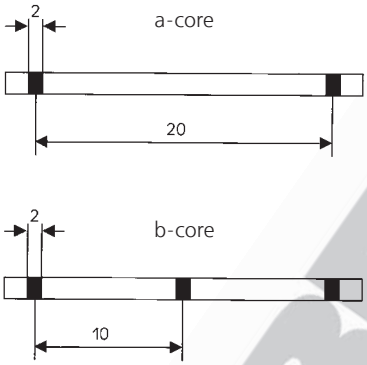
The colour-groups of same identification codes are only permitted to apply in a cable. In each layer, the blue core of the first completed colour-group is identified with red colour ring markings.
The remaining cores of the previous colour-group are laying before the blue cores with red markings.

Counting: from outside towards inside.
The cores of the switchboard cable are stranded in layers. The cores are to be counted continuously through all layers at the same direction, beginning with outer layer towards inside.

S-Y(St)Y Bd

Core identification

Dimensions in mm



The colour identifications of the a- and b-cores of switchboard cables are coded with a basic colour and colour rings.

Identification of ring- and basic colours

No. of Unit	Serial no. of Ring-colours twistet elementsa-core					Basic colour a- and b-core	
1	1	2	3	4	5	blue	
2	6	7	8	9	10	yellow	
3	11	12	13	14	15	green	white
4	16	17	18	19	20	brown	
5	21	22	23	24	25	black	
6	26	27	28	29	30	blue	
7	31	32	33	34	35	yellow	
8	36	37	38	39	40	green	grey
9	41	42	43	44	45	brown	
10	46	47	48	49	50	black	
	blue	yellow	green	brown	black		
	Ring-colours b-core						

all c-cores: red;
all d-cores: pink;
all e-cores: black

Cables with more than 50 twisted elements, the identifications code of 51 and above elements are to be counted again from serial no. 1.

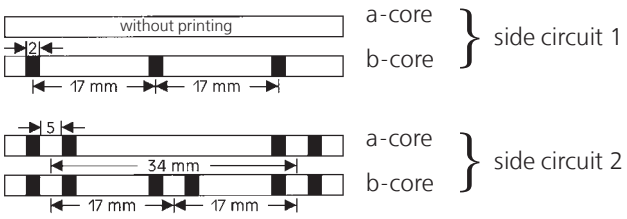
The twisted elements are pairs, triples, five-core units
Pairs a- and b-cores
triple a-, b- and c-cores
five-core units a-, b-, c-, d- and e-cores
The cores of 5 twisted elements with same ring markings of a-cores are bunched to a unit.

Counting: from outside towards inside.
The units are to be counted continuously through all layers at the same direction with correct colour countings, beginning with outer layer towards inside.

COLOUR CODE INSTALLATION CABLE

J-YY . . . Bd, J-HH . . . Bd, J-Y(St)Y . . . Bd, J-H(St)H . . . Bd and **J-2Y(St)Y . . . Bd**

The Insulating coverings of single cores of a star quad are marked with black rings:



The cores of 5 star quads of a sub unit are counted according to the sequence of basic colours:

Quad 1: basic colour of all cores red
Quad 2: basic colour of all cores green
Quad 3: basic colour of all cores grey
Quad 4: basic colour of all cores yellow
Quad 5: basic colour of all cores white

The marker of units are identified with a red helix, the others with white or uncoloured.
The quads of sub units are counted according to the sequence of basic colours. The units are counted continuously through all layers beginning in the inner layer.

J-Y(St)Y . . . Lg

2-paired installation cables are stranded to a star quad.

circuit 1 a-core red, b-core black
circuit 2 a-core white, b-core yellow

3- and multi-paired installation cables

a-core of 1. pair in each layer is red
other pairs are white

b-core blue, yellow, green, brown, black in continuous repeat

Counting: from outside to inside

JE-Y(St)Y . . . Bd, JE-LiYCY . . . Bd, JE-H(St) . . . and **JE-HCH...Bd**

Pair-colour-identification

The insulating cores are identified with different basic colours which are repeated sequencely in each unit.

Basic colours of pairs

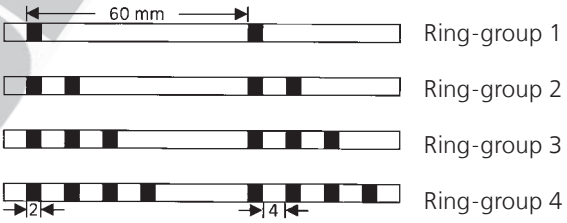
Pair	1	2	3	4
a-core b-core	blue red	grey yellow	green brown	white black

2-paired cables: the cores are stranded to a star quad:
circuit 1: a-core blue, b-core red
circuit 2: a-core grey, b-core yellow

Each unit is assigned to one group of ring. All cores in each unit are marked with coloured rings and ring-groups.

Counting direction in all units is from inside to outside.

Ring-colour and Ring-group



Unit-identification

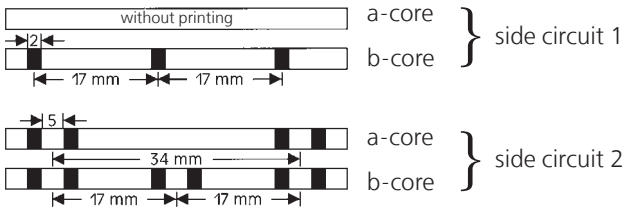
Unit-No.	Ring-colour	Ring-group	Colour-identification tape
1 2 3 4	pink	I II III IIII	–
5 6 7 8	orange	I II III IIII	–
9 10 11 12	violet	I II III IIII	–
13 14 15 16	pink	I II III IIII	blue
17 18 19 20	orange	I II III IIII	red

Cables with more than 12 units contain coloured plastic helix in addition to ring code.

COLOUR CODE TELEPHONE OUTDOOR CABLE

A-2Y(L)2Y...Bd and **A-2YF(L)2Y...Bd**

The Insulating coverings of single cores of a quad are to be marked with black rings:

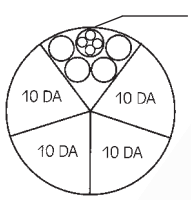


The insulating cores of five star quads of a sub-unit must have the following colours:

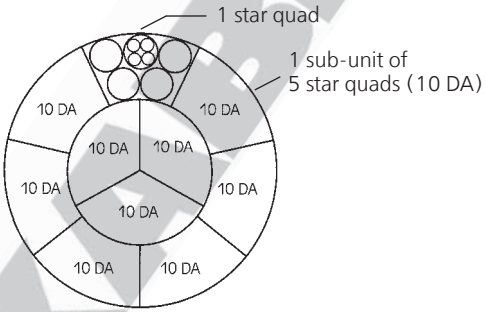
Quad 1: basic colours of all conductors red
Quad 2: basic colours of all conductors green
Quad 3: basic colours of all conductors grey
Quad 4: basic colours of all conductors yellow
Quad 5: basic colours of all conductors white

The first sub- or main-unit in each layer is to be marked by an open helix of plastic tape of red (marker). All other sub- or main-units must be whipped with an open helix of white or uncoloured plastic tape.
The quads of a sub-unit are to be counted according to the sequence of basic colours.
In cables with more than 5 star quads, the sub- and main-units must be counted continuously beginning with maker-unit at inner layer towards outside.

Design of a main-unit:
Consist of 5 sub-units = 50 pairs (DA)



Design of a main-unit:
Consist of 10 sub-units = 100 pairs (DA)



COLOUR ABBREVIATIONS ACCORDING TO VDE AND IEC

It is planned to use in future an uniform common colour abbreviations according to IEC 60757 (identical to CENELEC-harmonized document HD 457).
The following table shows the comparison of German and IEC colour abbreviations:

colour	German abbreviation		Abbreviation
	new	old	according to IEC 60757
black	SW	sw	BK
brown	BR	br	BN
red	RT	rt	RD
orange	OR	or	OG
yellow	GE	ge	YE
green	GN	gn	GN
blue	BL	bl	BU
violet	VI	vi	VT
grey	GR	gr	GY
white	WS	ws	WH
pink	RS	rs	PK
turquoise	TK	tk	TQ

IEC = International Electredechnical Commission

Chemical Resistance

Substance
Inorganic chemicals

Substance	Concentration (%)	Temperature up to ... °C	PVC: JZ-500/600/750, JB, OZ-BL, PVC-flat, TRONIC (LiYY), SUPERTRONIC-PVC	PVC: Li-TPC-Y, PAAR-CY-OZ, CEI 20-22, Bus cables PVC, RD-Y(St)Y, RE-2Y(St)Yv, Data cables PVC	PVC: JZ-HF, JZ-HF-CY, JZ-603, JZ-603-CY, N05W5-F, H05W5-F, H 05WC4V5-K	PVC: Trago, Lift-2S, JZ 604 TC, JZ 604-FCY TC, JZ 604-YCY TC	PVC: JZ-602, JZ-602-CY, TRONIC-CY, LiYCY, JZ-602 RC, PAAR-TRONIC-CY, SY-JZ, SY-JB, JZ-602 RC-CY	PVC: F-CY-JZ, Y-CY-JZ, JZ-HF-CY, J-Y(St)Y, J-YY, JE-Y(St)Y S-YY, S-Y(St)Y, TOPFLEX-PVC	PVC: ESUY, LifY, PVC-Single cores, EDV-PiMF-CY ESY, LiFDY, TUBEFLEX/-CY	PVC: H 05 V-K, H 07 V-K, H 03 W-F, H05 W-F	PVC: HELUTHERM 120, HELUTHERM 105, H05V2-K, H07V2-K, FIVENORM	PE: Coaxial-cable (PE), L2-BUS-cable (PE) A-2Y(L)2Y, A-2YF(L)2Y, HELUCOM®... 2Y	PUR: PURö-JZ, PURö-JZ-HF, TOPFLEX-PUR, ROBOFLEX, SUPERTRONIC-PUR, MULTIFLEX-PUR, TOPSERV®	H: J-H(St)H, Security Cable ..E 30/E 90, HELUCOM-H JZ-500-HMH /MXMHX, N2XH, RG-H	Silicone: SiHF, SiHF/GL-P, SiF, SiD, SiFF, SiF/GL, SiD/GL, SiHF-C-Si, FZ-LS, FZ-LSi	Neoprene Rubber: Neoprene-Round/Flat, NSHTÖU, AIRPORT 400 Hz H01N2-D/E, H 05/H 07-, A 05/A 07 RN-F	HELUFLON®: FEP-6Y, PTFE-5Y, Compensating cables-FEP
Alums	colts.	20	●	●	●	●	●	●	●	●	●		○	◑	○	●	●
Aluminium salts	each	20	●	●	●	●	●	●	●	●	●			◑			●
Ammonia, wat.	10	20	●	●	●	●	●	●	●	●	●		●	○	●	●	●
Ammonium acetate, wat.	each	20	●	●	●	●	●	●	●	●	●				●		●
Ammonium carbonate, wat.	each	20	●	●	●	●	●	●	●	●	●		○			●	●
Ammonium chloride, wat.	each	20	●	●	●	●	●	●	●	●	●		●			●	●
Barium salts	each	20	●	●	●	●	●	●	●	●	●	●	●	◑	●	●	●
Boric acid	100	20	●	●	●	●	●	●	●	●	●	●	◑	◑	●	●	●
Calcium chloride, wat.	colts.	20	●	●	●	●	●	●	●	●	●	●	◑	◑		●	●
Calcium chloride, wat.	10 – 40	20											●				
Calcium nitrate, wat	colts.	20	●	●	●	●	●	●	●	●	●	●		◑		●	●
Chromium salts, wat.	colts.	20	●	●	●	●	●	●	●	●	●						●
Potassium carbonate, wat.		20	●	●	●	●	●	●	●	●	●	●			●	●	●
Potassium chlorate, wat.	colts.	20	●	●	●	●	●	●	●	●	●	◑		◑		●	●
Potassium chloride, wat.	colts.	20	●	●	●	●	●	●	●	●	●	●	○		●		●
Potassium dicromate, wat.		20	●	●	●	●	●	●	●	●	●				●	●	●
Potassium iodie, wat.		20	●	●	●	●	●	●	●	●	●	●		◑	●	●	●
Potassium nitrate, wat.	colts.	20	●	●	●	●	●	●	●	●	●	●	●	◑	●	●	●
Potassium permanganate, wat.		20	◑	◑	◑	◑	◑	◑	◑	◑	◑	●	○			●	●
Potassium sulphate, wat.		20	●	●	●	●	●	●	●	●	●	●	●	◑	●	●	●
Copper salts	colts.	20	●	●	●	●	●	●	●	●	●	●	●	◑	●	●	●
Megnesium salts	colts.	20	●	●	●	●	●	●	●	●	●	●	◑	◑			●
Sodium bicarbonate (Natron), wat.		20	●	●	●	●	●	●	●	●	●		◑		●	●	●
Sodium bisulphite (Soda), wat.		20	●	●	●	●	●	●	●	●	●	●	○		●	●	●
Sodium chloride (Cook salt), wat.		20	●	●	●	●	●	●	●	●	●	●	●	◑	●	●	●
Sodium thiosulfat, wat.		20	●	●	●	●	●	●	●	●	●	●	◑		●	●	●
Soda Lye	50	20	◑	◑	◑	◑	◑	◑	◑	◑	◑						●
Nickel salts, wat.	colts.	20	●	●	●	●	●	●	●	●	●	●	●	◑	●	●	●
Nitrobenzene	100	50	○	○	○	○	○	○	○	○	○		○				
Phosphoric acid	50	20	●	●	●	●	●	●	●	●	●	●	○		◑		●
Mercury	100	20	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Mercury salts	colts.	20	●	●	●	●	●	●	●	●	●	●	●	◑	●	●	●
Nitric acid	30	20	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●
Hydrochlorid acid	conc.	20	○	○	○	○	○	○	○	○	○	●	○	○	○	○	●
Sulfur dioxide		20	●	●	●	●	●	●	●	●	●	◑	○		○	○	●
Carbon disulfide		20	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●
Sulfuric acid	50	50	●	●	●	●	●	●	●	●	●						●
Hydrogen sulfide		20	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑				●	●
Sea water		20	●	●	●	●	●	●	●	●	●	●	●	◑	●	●	●
Silver salts, wat.		20	●	●	●	●	●	●	●	●	●	●	●	◑	●	●	●
Cleaning fluid lye	2	100	○	○	○	○	○	○	○	○	○		○		○		
Water (dest.)		20	●	●	●	●	●	●	●	●	●						
Hydrogen peroxide, wat.		20	●	●	●	●	●	●	●	●	●		◑		●	●	●
Zinc salts, wat.		20	●	●	●	●	●	●	●	●	●		○	◑		●	●
Stannous chloride		20	●	●	●	●	●	●	●	●	●			◑	●	●	●

● resistant
◑ conditionally resistant
○ not resistant
*** for individual case, please verify**

each = each concentration
colts. = cold saturated
wat. = watery, liquid

The information mentioned in this summary is given to the best of our own knowledge and based upon our long standing experience. But we would like to direct your attention to the fact, that the information is given without obligation. A final judgement can only be made in practice.

HELUKABEL®

Chemical Resistance

Substance
Organic chemicals

	Concentration (%)	Temperature up to ... °C	PVC: JZ-500/600/750, JB, OZ-BL, PVC-flat, TRONIC (LiYY), SUPERTRONIC-PVC	PVC: Li-TPC-Y, PAAR-CY-OZ, CEI 20-22, Bus cables PVC, RD-Y(St)Y, RE-2Y(St)Yv, Data cables PVC	PVC: JZ-HF, JZ-HF-CY, JZ-603, JZ-603-CY, N05W5-F, H05W5-F, H 05WC4V5-K	PVC: Trago, Lift-2S, JZ 604 TC, JZ 604-FCY TC, JZ 604-YCY TC	PVC: JZ-602, JZ-602-CY, TRONIC-CY, LiYCY, JZ-602 RC, PAAR-TRONIC-CY, SY-JZ, SY-JB, JZ-602 RC-CY	PVC: F-CY-JZ, Y-CY-JZ, JZ-HF-CY, J-Y(St)Y, J-YY, JE-Y(St)Y S-YY, S-Y(St)Y, TOPFLEX-PVC	PVC: ESUY, LifY, PVC-Single cores, EDV-PIMF-CY ESY, LiFDY, TUBEFLEX/-CY	PVC: H 05 V-K, H 07 V-K, H 03 W-F, H05 W-F	PVC: HELUTHERM 120, HELUTHERM 105, H05V2-K, H07V2-K, FIVENORM	PE: Coaxial-cable (PE), L2-BUS-cable (PE) A-2Y(L)2Y, A-2YF(L)2Y, HELUCOM®... 2Y	PUR: PURö-JZ, PURö-JZ-HF, TOPFLEX-PUR, ROBOFLEX, SUPERTRONIC-PUR, MULTIFLEX-PUR, TOPSERV®	H: J-H(St)H, Security Cable ..E 30/E 90, HELUCOM-H JZ-500-HMH/MXMHX, N2XH, RG-H	Silicone: SiHF, SiHF/GL-P, SiF, SiD, SiFF, SiF/GL, SiD/GL, SiHF-C-Si, FZ-LS, FZ-LSi	Neoprene Rubber: Neoprene-Round/Flat, NSHTÖU, AIRPORT 400 Hz H01N2-D/E, H 05/H 07-, A 05/A 07 RN-F	HELUFLON®: FEP-6Y, PTFE-5Y, Compensating cables-FEP
Aceton		20	○	○	○	○	○	○	○	○	○		○		◑		●
Formic acid	30	20	○	○	○	○	○	○	○	○	○	●	○			●	●
Aniline		50	○	○	○	○	○	○	○	○	○		○				●
Petrol		20	○	○	○	○	○	○	○	○	○	○	◑[1)]	○	◑	○	●
Benzene		50	○	○	○	○	○	○	○	○	○		○		○		
Succinic acid, wat.	colds.	20	●	●	●	●	●	●	●	●	●						●
Brake fluid		100	◑	◑	◑	◑	◑	◑	◑	◑	◑		○				
Butane		20	●	●	●	●	●	●	●	●	●				◑		
Butter		50	●	●	●	●	●	●	●	●	●		◑		●		●
Chlorobenze		30	○	○	○	○	○	○	○	○	○		○		○		●
Chloroprene		20	○	○	○	○	○	○	○	○	○		○		○		●
Diethylether		20	◑	◑	◑	◑	◑	◑	◑	◑	◑		●		○		
Diethylprestone		50	●	●	●	●	●	●	●	●	●		●		●		
Diesel oil			○	○	○	○	○	○	○	○	○		◑	○	◑		●
Glacial acetic acid	20	50	○	○	○	○	○	○	○	○	○		○		●		●
Acetic acid	20		◑	◑	◑	◑	◑	◑	◑	◑	◑	◑		○			●
Ethyl alcohol	100	20	○	○	○	○	○	○	○	○	○	●	◑	○	●	●	●
Ethyl chloride		50	○	○	○	○	○	○	○	○	○		○		◑		
Ethylene glycol		100	◑	◑	◑	◑	◑	◑	◑	◑	◑		○		●		●
Freon		20	○	○	○	○	○	○	○	○	○		◑		○		
Gear oil		100	●	●	●	●	●	●	●	●	●		◑		◑		
Glycerin	each	50	●	●	●	●	●	●	●	●	●		●		●		
Hydraulic oil		20	○	○	○	○	○	○	○	○	○		◑*	○	○		●
Isopropyl alcohol	100	20	○	○	○	○	○	○	○	○	○	●	◑*		◑	◑	●
Kerosene		20											◑				●
Machine oil		20	◑	◑	●	◑	◑	◑	◑	◑	◑		◑	○	●	◑	●
Methanol		20	○	○	○	○	○	○	○	○	○		○		●		
Methyl alcohol	100		◑	◑	◑	◑	◑	◑	◑	◑	◑	●	◑	◑		◑	●
Methylen chloride		20	○	○	○	○	○	○	○	○	○		○		○		●
Lactic acid	10		○	○	○	○	○	○	○	○	○		○		○		●
Mineral oil													◑*				
Motor oil		120	○	○	●	○	○	○	○	○	○		○		●		
Olive oil		50	●	●	●	●	●	●	●		●	●	●		●		●
Oxal acid	colds.	20	●	●	●	●	●	●	●	●	●	◑		◑		◑	●
Paraffin oil													●				
Vegetable oils			●	●	●	●	●	●	●	●	●	●	●	○		◑	●
Vegetable fats			●	●	●	●	●	●	●	●	●	●	●	○		◑	●
Cutting oil			◑	◑	◑	◑	◑	◑	◑	◑	◑		●*	○	●	◑	●
Tar acid		20	●	●	●	●	●	●	●	●	●		○				
Carbon tetrachloride	100	20	●	●	●	●	●	●	●	●	●		○		○		
Toluene															○		●
Trichloroethylene	100	20	○	○	○	○	○	○	○	○	○				○		●
Tartaric acid, wat.			●	●	●	●	●	●	●	●	●			◑	●	●	●
Citric acid			●	●	●	●	●	●	●	●	●			◑	●	●	●

● resistant
◑ conditionally resistant
○ not resistant
* **for individual case, please verify**
[1)] PUR-material is resitant

each = each concentration
colds. = cold saturated
wat. = watery, liquid

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HELUKABEL®

CHEMICAL RESISTANCE OF PUR (POLYURETHANE)

Substance	Concen-tration (%)	Classification of requirement
Aceton		○
Alums		○
Aluminium chloride	10	◕
Formic acid	30	○
Ammonia	10	●
Ammonium carbonate		○
Ammonium chloride		◕
Aniline		○
ASTM-Oil I		●
ASTM-Oil II		●
ASTM-Oil III		●
ASTM-Fuel No. I		●
ASTM-Fuel No. II		◑
ASTM-Fuel No. III		◑
Benzene		○
Brake fluid ATE		○
Butanol		○
Butyl acetate		○
Calcium chloride	40	◕
Chlorobenzene		○
Chloroform		○
Chloroprene		○
Chromic acid		○
Cyclohexan		◑
Cyclohexanon		○
Diethylether		●
Diethylprestone		●
Diesel oil		◕
Dimethylformamide		○
Ferric-III-chloride	10	◕
Acetic acid 20–80	10	◑
Ethanol	100	◑
Ethyl ether		◑
Ethylacetate		○
Ethylencloride		◕
Freon 12		◑
Freon 22		◑
Hydraulic oil SAE 90		◑*
Glycerin		●
Glycol		●
Isopropanol		○
Potash lye	10	●
Bichromate of potash		◕
Potassium nitrate		◕
Potassium permanganate		○
Kerosene		◑

Substance	Concen-tration (%)	Classification of requirement
Magnesium chloride	30	◕
Methanol	< 5	◑
Mythyl acetate		○
Mythyl chloride		○
Methylethylketon		◑
Mythylglycol		○
Mythylglycolacetate		○
Lactic acid	10	○
Mineral oil		◑*
Motor oil		○
Sodium chloride	10	◕
Sodium perchlorate solut.		○
Soda lye	10	●
Olive oil		●
Ozone		●
Paraffin oil		●
Perchlore ethylene		○
Petroleum ether		●
Petroleum		◕
Vegetable oils		●
Vegetable fats		●
Phosphoric acid	50	○
Nitric acid	30	○
Hydrochlorid acid, concen.		○
Cutting oil		◑*
Carbon disulfide		○
Sulfuric acid		○
Sea water		●
Silver salts	20	●
Tetrachloroethylene		○
Carbon tetrachloride	100	○
Tetrahydrofuran		○
Toluene		○
Trichlorethylene		○
Tataric acid	< 10	●
Xylon		○

resistant ●
vastly resistant ◕
conditionally resistant ◑
not resistant ○

*for individual case, please verify

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HELUKABEL®

CHEMICAL RESISTANCE OF FLUORINATED POLYMERIC MATERIALS

● The **Fluorinated polymeric** is resistent against following chemical materials

Abietin acid
Acetone
Acetone phenon
Acetic anhydride
Acetic acid
Acryl hydride
Allylic acetate
Allylic metacrylacid
Aluminium chloride
Ammonia, liquid
Ammonium chloride
Aniline

Benzene chloride
Benzonitrile
Benzyl alcohol
Borax
Bromine
Butyl acetate
Butyl

Calcium chloride
Carbon bisulfide
Cetane
Chlorine
Chlorobenze
Chloroform
Chloroprene
Chlorosulfonic acid
Chromic acid
Cyclohexan
Cyclohexanon

Diethyl Carbonate
Dibutyl-Phthalide
Dibutyl-Sebacat
Di-isobutyl Adipt
Dimethyl ether
Dimethyl Formamide
Dimethyl hydrazine
Dioxane

Esachloroethane
Ethyl Exoate
Ethyl ether
Ethyl alcohol
Ethyl acetate
Ethylene bromide
Ethylene glycol

Ferric chloride
Fluoride naphthalene
Fluoride nitrobenzene
Fomaldehyde
Formic acid
Furan

Hexane hydrazine
Hydrochlorid acid
Hydrogen superoxide

Iron phosphide

Lead

Magnesium chloride
Mercury
Metacryl acid
Methanol
Methyl ethyl keton
Methyl metacryl acid
Methylenchloride

Naphtalene
Naphthole
N-Butylamine
Nitric acid
Nitromethane
Nitrogen tetroxyde
not synthetic nitrobenze
N-octadecyal alcohol
2-Nitro butanol
2-Nitro-Methyl propanol

Oils, from vegetables
Oils, from animals
Ozone

Pentachloro benzamide
Perchloro ethylene
Permanganate
Petrol Phenol
Phosphorus pentachloride
Phosphoric acid
Phthalic acid
Pinene
Piperidine
Potassium
Potassium acetate
Potassium hydroxide
Polyacryonitril
Pyridine

Stannous chloride
Sodium hydroxide
Sodium hydochloride
Sodium peroxide
Solvents
Soaps
Sulfur
Sulfuric acid

Tetra bromothane
Tetrachlorethane
Triethanolamine
Trichloracetic acid
Trichloroethylene
Tricresylic phosphate
Toluene

Vinylmetracrylate

Washing mediums
Water

Xylol

Zinc chloride

● The following chemical substance attack no **Fluorinated polymeric**

Ethyl alcohol
Vapour
Hydrofluoric acid
Aviation gasoline
Hydraulic liquid-Skydrol
Isopropyl alcohol
Carbon chlorid

Soda
Crude petroleum
Nitric acid concentr.
Sea water
Sulfuric acid (30%)
Transformer Oil
Turbine fuel JP 4

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FLUORINATED POLYMERIC MATERIALS: PTFE, FEP, PFA, ETFE

The chemical resistance of polymers with a high fluorine content is exceptionally high. The electrical insulating and dielectric properties of these materials are also very good.

Fluorpolymere Werkstoffe sind: HELUFLON®-PTFE, HELUFLON®-FEP, HELUFLON®-PFA, HELUFLON®-ETFE

- HELUFLON®-PTFE – Polytetrafluoroethylene (5Y)
- HELUFLON®-FEP – Tetrafluoroethylene –perfluoropropylene –copolymer (6Y)
- HELUFLON®-PFA – Tetrafluoroethylene –perfluoroalkoxy –copolymer (51Y)
- HELUFLON®-ETFE – Ethylene–tetrafluoroethylene –copolymer (7Y)

Fluorpolymere is resistant against nearly all known chemical compounds.
Fluorpolymere has a smooth surface of extremely low surface tension which is why virtually nothing adheres to this material.
Fluorpolymere is moisture rejecting, doesn't swell and is not be damaged by welding.
Fluorpolymere is used, where conventional material wouldn't resist the environmental conditions. Fluorpolymere is applied in the civil and military sector as well as in the aviation- and astronautics technology.
Fluorcarbonresins have following important characteristics::

- high heat-resistance during permanent operation
  - HELUFLON®-FEP up to 205 °C
  - HELUFLON®-PTFE up to 260 °C
- outstanding resistant against dielectric strength
- constant dielectric characteristics
- no moisture absorption
- resistant against nearly all chemical products
- insensitive to environmental influences, weatherproof and resistant to irradiation from the sun and temperature fluctuations
- good mechanical characteristics, no formation of cracks, wear-resistant
- low coefficient of friction
- no action of light (also uv)

Characteristics

Insulation material	Material initial code	Nominal temperature permanent (°C) approx. 25000 h	Nominal temperature temporary (°C) (hours)	Break-down temperature, melting point (°C)	Dielectric number at 60 Hz (20°C)	Density 10^3 kg/ m^3 (20°C)	Specific resistance Ohm • cm (20°C)	Break-down resistance kV/ mm (20°C)	Tension MPa (20°C)	Breaking point %(20°C)	Porosity %(20°C)	Environmental resistance	Flammability	Resistance to chemicals	Radiation resistance [1] x10^4 GY
ETFE	7Y	–100 +150	+180	+270	2,6	1,70	10^{16}	36	45	150 – 300	0,02	very good	n.e.f.	very good	200
FEP	6Y	–100 +205	+230	+290	2,1	2,15	10^{18}	25	20 – 25	250 – 300	0,01	very good	n.e.f.	very good	0,02
PTFE	5Y	–190 +260	+300	+327	2,0	2,18	10^{18}	20	35 – 45	350 – 400	0,01	very good	n.e.f.	very good	0,02
PFA	51Y	–190 +260	+280	+310	2,1	2,20	10^{16}	25	30	300	0,01	very good	n.e.f.	very good	0,02

[1] Values shown include high dosage and ca. 50% rest smoldering values

n.e.f. = no flammable

Insulation and jacket type abbreviations

DIN/VDE	Material
7Y	ETFE
6Y	FEP
5Y	PTFE
51Y	PFA

CHEMICAL RESISTANCE OF SILICONE

Substance	Test period 7 days Temperature °C	Classification of requirement
Acetamide	150	●
Acetone	20	◑
Aniline	100	●
Petrol	20	◑
Brake fluid AT	100	●
Butanol	117	◑
Butylacetate	20	◑
Calcium hydroxide, (saturated)	20	●
Chlorbenzene	20	◑
Cloroform	20	○
Clophene	150	●
Vapour up to 2,5 atü	138	●
Diphenyl	150	◑
Diesel oil	20	◑
Dinamo oil	150	◑
Mineral oil	20	◑
Acetic acid	20	●
Hydrofluor acid 5%	20	○
Gear oil DTE BB	150	●
Gear oil DTE HH	150	●
Gear oil DTE extra heavy	150	●
Gear oil Type SEA 90	150	●
Prestone	20	●
Glycerin	100	●
Hexa ethoxydisiloxane	20	◑
High pressure compressor oil	150	●
Isopropyl alcohol	82	◑
Potassium 20%	20	●
Potassium hydroxide 50%	20	●
Potassium permanganate solution	20	●
Carbolineum	20	●
Cooking salt solution 10%	20	●
Carbon tetrachloride	20	◑
Compressor oil, light	150	●
Ball bearing fat	150	●
Linseed oil	100	●

Substance	Test period 7 days Temperature °C	Classification of requirement
Methanol	65	◑
Methylen chloride	20	○
Mineral oil ASTM No. 1	150	●
Mineral oil ASTM No. 3	150	◑
Mineral oil SEA 10	150	●
Mineral oil SEA 20	150	●
Mineral oil SEA 30	150	●
Motor oil viscose static	150	●
Sodium 20%	20	●
Soda 50%	20	●
Nitrobenzene	20	●
Oleic acid	150	○
Olive oil	150	●
Perchlor	20	○
Petroleum ether	20	○
Petroleum	20	◑
Phenol	60	●
Phosphoric acid 30%	20	●
Pyridine	20	◑
Regulator oil	150	○
Castor oil	150	●
Hydrochlorid acid 10%	20	●
Nitric acid conc.	20	○
Nitric acid 10%	20	◑
Sulfuric acid, conc.	20	○
Sulfuric acid, 10%	20	●
Shock absorber oil	20	●
Styrol	20	◑
Turbentine oil	20	◑
Toluene	20	○
Transformer oil	150	◑
Tri	20	○
Tri glycol	20	●
Vaseline	150	●
Water	100	●

● Iresistant
◑ conditionally resistant
○ not resistant

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RESISTANCE OF SUBSTANCES AGAINST SOLVENTS, OILS AND FATS

Substance	PVC Y	PA 4 Y	PTFE 5 Y	FEP 6 Y	ETFE 7 Y
Alcohol, methylated spirit	○	◑	●	●	●
Brake fluid for vehicles	○	◑	●	●	●
Bromide chloridfluormethane	○	○	●	●	●
Jet gasoline IP4	○	◑	●	●	●
de-icing and icing protective agent	○	◑	●	●	●
Aircraft lubricating grease	◑	◑	●	●	◑
Hydraulic oil on bas of mineral oil	◑	●	●	●	◑
Hydraulic liquid (chlor-free silicone liquid)	○	○	●	●	●
Hydraulic liquid (synthetic)	○	◑	●	●	●
Methylethylketon	○	○	●	●	●
Otto-gasoline, diesel gasoline	○	◑	●	●	●
Lubricating oil for recebrocating engine SAE 10 W	◑	◑	●	●	◑
Lubricating oil for jet engine (synthetic)	◑	◑	●	●	◑
Toluene-Isooctane (Toluene 30%, Isooctane 70%)	○	◑	●	●	●
Trichlorethane	○	○	●	●	●
Urine	●	●	●	●	●

● Iresistant
◑ conditionally resistant
○ not resistant

PVC = Polyvinylchloride Y
PA = Polyamid 4 Y
PTFE = Polytetrafluorethylene 5 Y
FEP = Fluorethylenepropylene 6 Y
ETFE = Tetrafluorethylene 7 Y

HALOGEN-FREE SECURITY CABLES AND WIRES

What are halogens?

Halogens "formation of salt" are the elements as fluorine, chlorine, bromine and iodine.
Fluorine and chlorine are important for cables and wires as atoms in the plastic molecules, for example fluorine plastics or PVC (polyvinyl chloride) are of significance; and bromine as component of flame protection additives.

When is a cable halogen-free ?

The burning behaviour of cables and wires is very important for the installation in buildings and also in control plants.

Thereby the following points are very important:

- Behaviour under flame influence i. e. the inflammability as well as the propagation of fire
- Subsequent damage by formation of corrosive and toxic gases
- Development of smoke density (darkening of emergency exits hindered the fire extinguishing works)

Cables produced of not halogen-free (halogenated) materials such as mainly the materials with chlorine in the molecule-chain: Polyvinyl chloride (PVC), chloroprene rubber (CR), chlorinated polyethylene (CM), chlorsulfonated polyethylene (CSM) and fluorhydro-carbons.

Polytetrafluorethylene (PTFE)
Fluorethylenepropylene (FEP)
Perfluoralkoxypolymeric (PFA)

These materials have a better behaviour in case of fire.

These are hardly combustible or not flammable and vastly self-extinguishing. Due to this effect and in case of fire the released molecules constituents chlorine and fluorine, which hinder the admittance of oxygen to the fire location and suffocate the flame.

The remarkable disadvantages of these materials are existing in the fact that the released chlorine and florine atoms composite themselves with hydrogen which is decomposed from plastic material as well as with hydraulic acid or hydrofloric acid from the existing air.

These compositions are extremely corrosive and also toxic. In consequence the damages by corrosion are often higher than the actual damage caused by fire.

Halogen-free cables contain no halogens, i. e. the insulation and sheath materials of these cables are composed with polymers on the basis of pure hydrocarbons. By burning such kind of materials, produce no corrosive and toxic gases but only water vapour and carbondioxide.

Polymers like polyethelene (PE) or polypropylene (PP) are halogen-free. These materials are easy flammable and not self-extinguishing.

Halogen-free cables for the security requirements must be hardly flammable and self-extinguishing. This happens by using the special polymer compounds, containing the considerable percentage of flame protective materials.

Such kind of protective materials consist for example, of an aluminium hydroxide which on one side cools the fire location by setting free of crystal water and on the other side the released water vapour hinders the admittance of oxygen and thereby this suffocates the flame. By using of additional supporting tapes and filling yarns of glass web, mica and similar materials the functionallity for example of E 90 can be realised with the suitable cable accessories.

Application

The application of halogen-free security cables and wires are specified more and more with increasing numbers for the buildings where people gather or everywhere, where safety conciousness to protect the human life and valuable materials take a special significance. For example,

- Hospitals, airports, in multi-storey buildings, stores and shops, hotels, theaters, cinemas, schools etc.
- Fire warning plants, alarm systems, ventilation systems, escalators, lifts, safety lights, operation and intensive stations, maintenance equipment
- Underground railways and other railway plants
- Data processing installations
- Power stations and industrial plants with high valuable machines and materials or risky potentials
- Mining works
- Shipbuilding and offshore plants
- Emergency power supply works

HELUKABEL-Security Cables and Wires and the advantages

- Flame retardant and hardly combustibility so that no flame propagation in case of fire can be resulted
- Halogen-free; no evolution of corrosive gases
- In case of burning, the halogen-free cables emits low smoke

- The danger of toxic gases caused by fire is far inferior
- Low caloric load
- Remarkable longer electrical functionallity and flame influence
- Insulation integrity for at least 30 minutes as well as 180 minutes at 800°C under fire condition
- Suitable for emergency service up to 180 minutes
- Radiation resistance up to 200 x 10^6 cJ/kg (up to 200 Mrad)

These characteristics are obtained by using of a flexible halogen-free basis material – aluminium hydroxide Al $(OH)_3$.

Caloric load values (heat of combustion)

For designing a building the criterions of the caloric load values are very important. The caloric load values of the modern halogen-free cables are reduced by corresponding additives.

The specific heating values of the non-metallic raw materials for cables are specified to DIN 51900. The values of the caloric load or heat of combustion for electrical cables are given per running meter in the following tables.

Combustible cable insulations or open building materials of class B1 are regarded as harmless so far as the resulted caloric load is distributed as proportionale as possible and is valid ≦ 7 kWh/m²

The conversion of the values:

1 MJ/m² ≙ 0,278 kWh/m²
1 kWh/m² ≙ 3,6 MJ/m²

Regulations

According to DIN VDE 0108 supplement 1:

- The total caloric load of the cables are allowed up to 14 kWh per m² of the field areas if only halogen-free cables with improved characteristics in the case of fire are used.

If you use PVC cables the total caloric load is only up to 7 kWh per m²

Tests

The characteristics of the security cables are tested according to DIN VDE specifications:

Behaviour in fire

According to IEC 60332-1, IEC 60332-2, IEC 60332-3.

- **Test method A – test on single cable ≙IEC 60332-2**
- Test sample of 600 mm cable length shall be in a position vertically hanging. A propane gas burner (Ø 8 mm) shall be at an angle of 45° to the axis and the flame of approx. 100 mm below the lower edge of the sample. Flame influence max. 20 s.
- The test is passed, if the sample has not burned or the flame extinguished by itselfs and the damage by fire doesnt reach the remotest upper side of the sample.
- **PVC self-extinguishing and flame retardant according to VDE 0482-332-1-2 DIN EN 60332-1-2 / IEC 60332-1 (equivalent to DIN VDE 0472 Teil 804 test method B).**
- Test sample of 600 mm cable length shall be in a position vertically hanging. A propane gas burner (ø 8 mm) shall be at an angle of 45° to the axis and the flame of approx. 100 mm below the lower edge of the sample. Flame influence, depending on cable weight, 1 to 2 minutes.
- The test is passed, if the sample has not burned or the flame extinguished by itselfs and the damage by fire doesnt reach the remotest upper side of the sample.
- **Test method C – test on bunched cables similar IEC 60332-3, HD 405.3, DIN EN 60332-3, VDE 0482-332-3**
- Test samples of 360 cm cable length are laying parallel side-by-side attached to a test-ladder, which is hanging vertically with a distance of 150 mm to the furnace. The sample should be flamed with a flame length of 60 cm on the test sample at approx. temperature 800°C by a burner width of approx. 250 mm. The test duration should be 20 minutes.
- The test is passed, if the sample has not burnedor the flame extinguished by itself and the damage by fire does not reach the remotest upper side of the sample.

Corrosivity of cumbustion gases

According to VDE 0482 part 267/DIN EN 50267-2-2 / IEC 60754-2 (is equivalent to DIN VDE 0472 part 813). For the performance of the test procedure the insulation and sheath materials are to be put in the moveable furnace, preheated to 750 to 800°C. The burning gas is conducted through two gas-washing bottles.

- The test shall be regarded as passed when the measured pH-value is ≧ 4,3 and the electrical conductivity ≦ 100 µS.cm^{-1}.
- During this test all the not desired components of the materials are precipitated such as all halogens, sulphur and nitrogen.

HALOGEN-FREE SECURITY CABLES AND WIRES

Continuance of insulation effect under direct fire conditions

According to DIN VDE 0472 partl 814 ΔIEC 60331

Test sample of 1200 mm cable length is fixed in a horizontal position, 75 mm over the gas brenner. The rated voltage of 3 A fuse is fixed between the core groups. The burner flame is so to regulate that the temperature on cable should be 800±50°C. The measuring can be effected until the fuse is blown.
Test voltage 400 V for power cables and wires
Test voltage 110 V for telecommunication cables

- The test shall be regarded as passed when no 3 A fuse has blown during the test period between 20 to 180 minutes.

Non-Halogen verification

According to VDE 0482 part 267/DIN EN 50267-2-1/ IEC 60754-1 (is equivalent to DIN VDE 0472 part 815).

The corrosion test of gases caused by fire is carried out to the test materials, not of complete cable samples. The proof of halogen is effected by chemical analysis.
Materials with a content of:
≦ 0,2% chlorine and
≦ 0,1% fluorine
are regarded as halogen-free.

Smoke density

According to VDE 0482 part 1034-1+2 / IEC 61034-1+2 / DIN EN 61034-1+2 / BS 7622 Teil 1+2 (is equivalent to DIN VDE 0472 part 816).

The test of smoke density is effected to a single cable, laid in a horizontal position within a room of 3 meter cube. The photometrically measured absorption of light is a measuring unit (in %) of light transmittance for the smoke density.

The test is regarded as passed when the light absorbtion appears within 40 minutes and the following values shall be obtained for light transmission.

Cable Ø	Transmission of Light
> 3– 5 mm	40%
> 5–10 mm	50%
> 10–20 mm	60%
> 20–40 mm	60%
> 40	70%

Functionality of electric cable systems

According to DIN 4102 part 12 (system test)
DIN 4102 part 12 describes the requirements and measurements necessary in achieving circuit integrity of a complete electric cable system in case of fire.

Cable systems

Regarded as cable systems are power cables, insulated power cables and wires, telecommunication installation cables for telephone and data transmission and rail-distributors including their corresponding connecting devices such as the necessary ducts and conduits, coatings and coverings, connecting elements, supporting devices, cable trays and clamps.

Functionality

According to DIN VDE 4102 part 12

The functionality is given, when during the test under fire no short circuit and no interruption of current flow occure in the tested electrical cable system.

According to this standard, the security cables are always to be tested together with the corresponding supporting devices, clamps, holder and mounting accessories.

Note: The above defined functionality has no relawtion-ship with the continuance of insulation effect under fire conditions according to DIN VDE 0472 part 814.

Test

During this test under fire a complete cable installation will be tested in a large combustion chamber, i. e. cables and wires including clamps, supporting devices, holders, dowels etc.

Test voltage for power cables:	380 V
Test voltage for telecommunication cables:	110 V
Current load:	3 A

The combustion chamber is to be heated up according to ETK (Standard temperature curve).

The test period is distinguished in 3 classes:
- E30 for the functionality ≧ 30 minutes
- E60 for the functionality ≧ 60 minutes
- E90 for the functionality ≧ 90 minutes

Raise of temperature in combustion chamber:
- For E30 to approx. 820°C
- For E60 to approx. 870°C
- For E90 to approx. 980°C

After passing the functionality test, this will be certified with the class identification as E30, E60 or E90.

Note: At the moment the class E60, which is specified in DIN-VDE standards, is not applied for economical and technical reasons.

HEAT-RESISTANCE CLASSES

Class	Insulating material	Impregnation material	max. continuous temperature	Cable type
Y	Cotton, Synthetic and natural silk, Polyamide fibres, Paper, Polyvinylchloride (PVC), Polyethylene (PE), Vulkanised rubber	–	90°C	HELUKABEL® PVC + Neoprene cables
A	Cotton, Synthetic and natural silk, Polyamide, Paper, heat-resistant impregnated textiles, Polyester resin	Bitumous varnish Synthetic resin varnish Insulating oil and synthetic dielectrical fluids	105°C	HELUTHERM® single cores, control cables UL + CSA-approved
(E)	Special wire enamel, Special synthetic foils, Compressed material with cellulose fillers, Paper and cotton tapes	Synthetic resin varnish and Polyester resin, both with a permissible continuous withstand temperature of > 120°C	105°C (short time operation 120°C)	HELUTHERM® 120
B	Glass fibre, Micaproducts, Special synthetic foils, Compressed materials with mineral fillers	As under E but with a permissible continuous withstand temperature of > 130°C	145°C	HELUTHERM® 145
F	Glass fibre, Micaproducts, Aromatic polyamides, Impregnated glass fibre braides	Resins with a permissible continuous withstand temperature of > 155°C	155°C	HELUTHERM® 145
H	Glass fibre, Micaproducts, Aromatic polyamides, Silicone rubber, Polyamide foils, PTFE	Silicone resins with a permissible continuous withstand temperature of > 180°C	180°C	Silicone + HELUFLON® tinned conductors
C	Mica, Porcelain, Glass, Quartz, and similar fire resistant materials	As under H but with a permissible continuous withstand temperature of > 225°C	> 180°C	HELUFLON® PTFE+FEP with tinned or nickel plated conductors, HELUTHERM® 400/600/800/1200

CALORIC LOAD VALUES (HEAT OF COMBUSTION)

For designing a building the criterions of the caloric load values are very important. The caloric load values of the modern halogen-free cables are reduced by corresponding additives.
The specific heating values of the non-metallic raw materials for cables are specified to DIN 51900. The values of the caloric load or heat of combustion for electrical cables are given per running meter in the following tables.
The tables are subdivided according to the different cable designs, with halogen-free or halogenated insulation, number of cores with different cross-sections.
With these tables of the caloric load values of our cables we will give you the possibility to accomodate your calculations for the application of these cables.

Regulations:
The total caloric load of the cables are allowed up to 14 kWh per m^2 of the field areas if only halogen-free cables with improved characteristics in the case of fire are used. If you use PVC cables the total caloric load is only up to 7 kWh per m^2.

– The caloric load values – Hu (calculated value):

PVC-core insulation	Hu	6,3 kWh/kg
PVC-sheath material	Hu	5,7 kWh/kg
PVC (lower limint)	Hu	5,6 kWh/kg
H-core insulation	Hu	4,8 kWh/kg
H-sheath material	Hu	4,2 kWh/kg
PE in general	Hu	12,2 kWh/kg
PP in general	Hu	12,8 kWh/kg

The conversion of the values:
1 MJ/m^2 ≙ 0,278 kWh/m^2, 1 kWh/m^2 ≙ 3,6 MJ/m^2

CALORIC LOAD VALUES OF HALOGEN-FREE SECURITY CABLES AND INSULATED WIRES

Type	dimension n x mm²	caloric load kWh/m
NHXAF	1 x 0,75	0,031
	1 x 1,0	0,033
	1 x 1,5	0,049
	1 x 2,5	0,059
	1 x 4	0,074
	1 x 6	0,090
	1 x 10	0,112
	1 x 16	0,137
	1 x 25	0,204
	1 x 35	0,235
	1 x 50	0,323
	1 x 70	0,381
	1 x 95	0,504
NHXMH	2 x 1,5 re	0,30
	2 x 2,5 re	0,35
	3 x 1,5 re	0,33
	3 x 2,5 re	0,38
	3 x 4 re	0,49
	3 x 6 re	0,60
	3 x 10 re	0,78
	4 x 1,5 re	0,37
	4 x 2,5 re	0,42
	4 x 4 re	0,49
	4 x 6 re	0,68
	4 x 10 re	0,90
	5 x 1,5 re	0,42
	5 x 2,5 re	0,49
	5 x 4 re	0,70
	5 x 6 re	0,79
	5 x 10 re	1,04
	7 x 1,5 re	0,48
	7 x 2,5 re	0,64
	10 x 1,5 re	0,61
	12 x 1,5 re	0,69
	24 x 1,5 re	1,14
N2XH	1 x 2,5 re	0,14
	1x 4 re	0,17
	1x 6 re	0,18
	1 x 10 re	0,21
	1 x 16 rm	0,29
	1 x 25 rm	0,39
	2 x 35 rm	0,46
	1 x 50 rm	0,53
	1 x 70 rm	0,55
	1 x 95 rm	0,63
	1 x 120 rm	0,72
	1 x 150 rm	0,90
	1 x 185 rm	1,08
	1 x 240 rm	1,22
	1 x 300 rm	1,32
	2 x 1,5 re	0,45
	2 x 2,5 re	0,50
	2 x 4 re	0,59
	2 x 6 re	0,67
	2 x 10 re	0,81
	2 x 16 rm	1,19
	2 x 25 rm	1,53
	2 x 35 rm	1,79
	2 x 50 rm	2,13

Type	dimension n x mm²	caloric load kWh/m
N2XH	3 x 1,5 re	0,48
	3 x 2,5 re	0,56
	3 x 4 re	0,65
	3 x 6 re	0,73
	3 x 10 re	0,86
	3 x 16 rm	1,19
	3 x 25 rm	1,65
	3 x 35 rm	1,95
	3 x 50 rm	2,31
	4 x 1,5 re	0,54
	4 x 2,5 re	0,63
	4 x 4 re	0,73
	4 x 6 re	0,82
	4 x 10 re	0,99
	4 x 16 rm	1,43
	4 x 25 rm	1,97
	4 x 35 rm	2,31
	4 x 50 rm	2,89
	4 x 70 rm	3,00
	4 x 95 rm	3,90
	4 x 120 rm	4,77
	4 x 150 rm	6,81
	5 x 1,5 re	0,62
	5 x 2,5 re	0,70
	5 x 4 re	0,82
	5 x 6 re	0,91
	5 x 10 re	1,11
	5 x 16 rm	1,68
	5 x 25 rm	2,35
	5 x 35 rm	2,81
	5 x 50 rm	3,42
	7 x 1,5 re	0,51
	7 x 2,5 re	0,58
	10 x 1,5 re	0,68
	10 x 2,5 re	0,78
	12 x 1,5 re	0,76
	12 x 2,5 re	0,88
	14 x 1,5 re	0,84
	14 x 2,5 re	0,97
	19 x 1,5 re	1,05
	19 x 2,5 re	1,21
	24 x 1,5 re	1,31
	24 x 2,5 re	1,53
	30 x 1,5 re	1,54
	30 x 2,5 re	1,80
N2XCH	2 x 1,5/re 1,5	0,44
	2 x 2,5/re 2,5	0,49
	2 x 4/re 4	0,59
	2 x 6/re 6	0,66
	2 x 10/re 10	0,80
	3 x 1,5/re 1,5	0,48
	3 x 2,5/re 2,5	0,55
	3 x 4/re 4	0,64
	3 x 6/re 6	0,72
	3 x 10/re 10	0,85
	3 x 16/rm 16	1,18
	3 x 25/rm 16	1,59
	3 x 35/rm 16	1,91
	3 x 50/rm 25	2,27
	4 x 1,5/re 1,5	0,54
	4 x 2,5/re 2,5	0,62
	4 x 4/re 4	0,72
	4 x 6/re 6	0,82
	4 x 10/re 10	1,00
	4 x 16/rm 16	1,37

Type	dimension n x mm²	Brandlast- kWh/m
N2XCH	4 x 25/rm 16	1,94
	4 x 35/rm 16	2,27
	4 x 50/rm 25	2,77
	7 x 1,5/re 1,5	0,50
	7 x 2,5/re 2,5	0,57
	10 x 1,5/re 2,5	0,66
	10 x 2,5/re 4	0,77
	12 x 1,5/re 2,5	0,74
	12 x 2,5/re 4	0,86
	14 x 1,5/re 2,5	0,81
	14 x 2,5/re 4	0,95
	19 x 1,5/re 4	1,02
	19 x 2,5/re 6	1,19
	24 x 1,5/re 6	1,25
	24 x 2,5/re 10	1,47
	30 x 1,5/re 6	1,47
	30 x 2,5/re 10	1,77
	40 x 1,5/re 10	1,90
	40 x 2,5/re 10	2,23
(N)HXH-E30 orange	1 x 2,5 re	0,22
	1 x 4 re	0,35
	1 x 6 re	0,38
	1 x 10 re	0,43
	1 x 16 rm	0,50
	1 x 25 rm	0,68
	1 x 35 rm	0,76
	1 x 50 rm	0,90
	1 x 70 rm	1,09
	1 x 95 rm	1,29
	1 x 120 rm	1,49
	1 x 150 rm	1,84
	1 x 185 rm	2,24
	1 x 240 rm	2,67
	1 x 300 rm	3,67
	2 x 1,5 re	0,68
	2 x 2,5 re	0,74
	2 x 4 re	0,84
	2 x 6 re	0,95
	2 x 10 re	1,13
	2 x 16 rm	1,34
	2 x 25 rm	1,94
	2 x 35 rm	2,16
	3 x 1,5 re	0,72
	3 x 2,5 re	0,79
	3 x 4 re	0,90
	3 x 6 re	1,03
	3 x 10 re	1,23
	3 x 16 rm	1,47
	3 x 25 rm	1,92
	3 x 35 rm	2,47
	3 x 50 rm	3,03
	3 x 70 rm	3,90
	3 x 95 rm	4,76
	3 x 120 rm	4,63
	3 x 150 rm	5,67
	3 x 185 rm	6,94
	3 x 240 rm	8,84
	4 x 1,5 re	0,85
	4 x 2,5 re	0,94
	4 x 4 re	1,07
	4 x 6 re	1,22
	4 x 10 re	1,46
	4 x 16 rm	1,74
	4 x 25 rm	2,57
	4 x 35 rm	2,96
	4 x 50 rm	3,72
	4 x 70 rm	4,85
	4 x 95 rm	5,83

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CALORIC LOAD VALUES OF HALOGEN-FREE SECURITY CABLES AND INSULATED WIRES

Type	dimension n x mm²	caloric load kWh/m
(N)HXH-E 30 orange	4 x 120 rm	7,26
	4 x 150 rm	8,92
	4 x 185 rm	10,38
	4 x 240 rm	11,76
	5 x 1,5 re	0,99
	5 x 2,5 re	1,09
	5 x 4 re	1,25
	5 x 6 re	1,43
	5 x 10 re	1,72
	5 x 16 rm	2,05
	5 x 25 rm	3,05
	7 x 1,5 re	1,16
	7 x 2,5 re	1,29
	10 x 1,5 re	1,47
	10 x 2,5 re	1,63
	12 x 1,5 re	1,84
	12 x 2,5 re	2,05
	14 x 1,5 re	2,09
	14 x 2,5 re	2,42
	19 x 1,5 re	2,52
	19 x 2,5 re	2,79
	24 x 1,5 re	3,30
	24 x 2,5 re	3,66
	30 x 1,5 re	3,77
	30 x 2,5 re	4,19
(N)HXCH-E 30 orange	2 x 1,5/ 1,5 re	0,58
	2 x 2,5/ 2,5 re	0,64
	2 x 4 / 4 re	0,75
	2 x 6 / 6 re	0,85
	2 x 10 /10 re	1,00
	3 x 1,5/ 1,5 re	0,63
	3 x 2,5/ 2,5 re	0,71
	3 x 4 / 4 re	0,84
	3 x 6 / 6 re	0,95
	3 x 10 / 10 re	1,12
	3 x 16 / 16 re	1,35
	3 x 25 / 16 rm	2,09
	3 x 35 / 16 rm	2,74
	3 x 50 / 25 rm	3,04
	3 x 70 / 35 rm	3,90
	3 x 95 / 50 rm	4,62
	3 x 120 / 70 rm	5,66
	3 x 150 / 70 rm	7,19
	3 x 185 / 95 rm	8,71
	3 x 240 /120 rm	10,57
	4 x 1,5/ 1,5 re	0,78
	4 x 2,5/ 2,5 re	0,82
	4 x 4 / 4 re	0,96
	4 x 6 / 6 re	1,09
	4 x 10 / 10 re	1,30
	4 x 16 / 16 rm	1,56
	4 x 25 / 16 rm	2,40
	4 x 35 / 16 rm	2,74
	4 x 50 / 25 rm	3,50
	4 x 70 / 35 rm	4,49
	4 x 95 / 50 rm	5,35
	4 x 120 / 70 rm	6,51
	4 x 150 / 70 rm	8,35
	4 x 185 / 95 rm	10,13
	4 X 240 /120 rm	12,32

Type	dimension n x mm²	caloric load kWh/m
(N)HXCH-E 30 orange	7 x 1,5/ 2,5 re	1,04
	7 x 2,5/ 2,5 re	1,33
	7 x 4 / 4 re	1,49
	10 x 1,5/ 2,5 re	1,55
	10 x 2,5/ 4 re	1,71
	10 x 4 / 6 re	1,92
	12 x 1,5/ 2,5 re	1,72
	12 x 2,5/ 4 re	1,90
	12 x 4 / 6 re	2,14
	16 x 1,5/ 4 re	2,22
	16 x 2,5/ 6 re	2,41
	21 x 1,5/ 6 re	2,58
	21 x 2,5/ 6 re	2,74
	24 x 1,5/ 6 re	2,80
	24 x 2,5/10 re	3,19
	30 x 1,5/ 6 re	3,26
	30 x 2,5/10 re	3,69
	40 x 1,5/10 re	4,17
	40 x 2,5/10 re	4,68
(N)HXH-E 90 orange	3 x 1,5 re	0,55
	3 x 2,5 re	0,61
	3 x 4 re	0,67
	3 x 6 re	0,85
	3 x 10 re	0,99
	3 x 16 rm	1,23
	3 x 25 rm	1,60
	3 x 35 rm	1,83
	3 x 50 rm	2,30
	3 x 70 rm	3,03
	3 x 95 rm	3,98
	3 x 120 rm	4,70
	3 x 150 rm	5,63
	3 x 185 rm	6,95
	3 x 240 rm	8,44
	4 x 1,5 re	0,67
	4 x 2,5 re	0,73
	4 x 4 re	0,82
	4 x 6 re	0,91
	4 x 10 re	1,06
	4 x 16 rm	1,49
	4 x 25 rm	1,95
	4 x 35 rm	2,30
	4 x 50 rm	2,88
	4 x 70 rm	3,80
	4 x 95 rm	4,96
	4 x 120 rm	5,74
	4 x 150 rm	6,97
	4 x 185 rm	8,58
	5 x 1,5 re	0,79
	5 x 2,5 re	0,88
	5 x 4 re	0,99
	5 x 6 re	1,10
	5 x 10 re	1,29
	5 x 16 rm	1,59
	5 x 25 rm	2,42
	5 x 35 rm	2,84
	7 x 1,5 re	0,92
	10 x 1,5 re	1,25
	12 x 1,5 re	1,40
	19 x 1,5 re	1,96
	24 x 1,5 re	2,47
	27 x 1,5 re	2,69

Type	dimension n x mm²	caloric load kWh/m
(N)HXCH-E 90 orange	3 x 1,5/re 1,5	0,86
	3 x 2,5/re	0,95
	3 x 4 /re 4	1,06
	3 x 6 /re	1,17
	3 x 10 /re 10	1,36
	3 x 16 /rm 16	1,68
	3 x 25 /rm 16	2,18
	3 x 35 /rm 16	2,53
	3 x 50 /rm 25	3,19
	3 x 70 /rm 35	4,04
	3 x 95 /rm 50	4,73
	3 x 120 /rm 70	5,69
	3 x 150 /rm 70	6,80
	3 x 185 /rm 95	8,44
	3 x 240 /rm 120	10,04
	4 x 1,5/ 1,5 re	0,99
	4 x 2,5/ 2,5 re	1,08
	4 x 4 / 4 re	1,22
	4 x 6 / 6 re	1,36
	4 x 10 / 10 re	1,58
	4 x 16 / 16 rm	1,96
	4 x 25 / 16 rm	2,60
	4 x 35 / 16 rm	3,11
	4 x 50 / 25 rm	3,81
	4 x 70 / 35 rm	4,92
	4 x 95 / 50 rm	6,02
	4 x 120 / 70 rm	6,90
	4 x 150 / 70 rm	8,39
	4 x 185 / 95 rm	10,20
	4 x 240 /120 rm	13,00
	7 x 1,5/1,5	1,29
	10 x 1,5/2,5	1,71
	12 x 1,5/2,5	1,86
	16 x 1,5/4	2,26
	21 x 1,5/6	2,74
	24 x 1,5/6	3,42
NYSEY 6/10 kV	3 x 35/16	10,56
	3 x 50/16	11,67
	3 x 70/16	12,78
	3 x 95/16	14,72
	3 x 120/16	16,12
NA2XSEY6/10 kV	3 x 35/16	10,28
	3 x 50/16	11,67
	3 x 70/16	13,06
	3 x 95/16	14,72
	3 x 120/16	16,68

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CALORIC LOAD VALUES OF HALOGEN-FREE SECURITY CABLES AND INSULATED WIRES

Type	dimension n x mm²	caloric load kWh/m
NHXHX black	1 x 2,5	0,22
	1 x 4	0,28
	1x 6	0,28
	1 x 10	0,28
	1 x 16	0,39
	1 x 25	0,53
	1 x 35	0,58
	1 x 50	0,69
	1 x 70	0,81
	1 x 95	1,03
	1 x 120	1,14
	1 x 150	1,39
	2 x 1,5	0,69
	2 x 2,5	0,78
	2 x 4	0,89
	2 x 6	1,00
	2 x 10	1,19
	3 x 1,5	0,78
	3 x 2,5	0,86
	3 x 4	1,00
	3 x 6	1,08
	3 x 10	1,28
	3 x 16	1,53
	3 x 25	2,25
	3 x 35	2,56
	3 x 50	3,19
	3 x 70	3,94
	3 x 95	5,14
	3 x 120	5,89
	3 x 150	7,25
	4 x 1,5	0,89
	4 x 2,5	1,00
	4 x 4	1,14
	4 x 6	1,28
	4 x 10	1,50
	4 x 16	1,86
	4 x 25	2,64
	4 x 35	3,00
	4 x 50	3,92
	4 x 70	4,81
	4 x 95	6,25
	4 x 120	7,14
	4 x 150	7,14
	5 x 1,5	1,03
	5 x 2,5	1,14
	5 x 4	1,31
	5 x 6	1,47
	5 x 10	1,83
	5 x 16	2,17
	5 x 25	3,14
	7 x 1,5	1,17
	7 x 2,5	1,31
	7 x 4	1,50
	12 x 1,5	1,69
	12 x 2,5	2,00
	12 x 4	2,31
	19 x 1,5	2,36
	19 x 2,5	2,69
	19 x 4	3,14
	24 x 1,5	2,86
	24 x 2,5	3,28
	24 x 4	3,97

Type	dimension n x mm²	caloric load kWh/m
NHXHX black	37 x 1,5	3,92
	37 x 2,5	4,69
	37 x 4	5,53
NHXCHX black	3 x 1,5/ 1,5	0,78
	3 x 4 / 4	1,00
	3 x 6 / 6	1,11
	3 x 10 / 10	1,33
	3 x 16 / 10	1,58
	3 x 16 / 16	1,58
	3 x 25 / 16	2,31
	3 x 25 / 25	2,31
	3 x 35 / 16	2,61
	3 x 35 / 35	2,61
	3 x 50 / 25	3,33
	3 x 50 / 50	3,33
	3 x 70 / 35	4,11
	3 x 70 / 70	4,11
	3 x 95 / 50	5,33
	3 x 95 / 95	5,33
	3 x 120 / 70	6,11
	3 x 120 /120	6,11
	3 x 150 / 70	7,50
	3 x 150 /150	7,50
	4 x 1,5/ 1,5	0,89
	4 x 2,5/ 2,5	1,03
	4 x 4 / 4	1,17
	4 x 6 / 6	1,31
	4 x 10 /10	1,53
	4 x 16 /16	1,89
	4 x 25 /16	2,69
	4 x 35 /16	3,06
	4 x 50 /25	4,00
	4 x 70 /35	4,89
	4 x 95 /50	6,44
	4 x 120 /70	7,36
	4 x 150 /70	8,97
NHMH	1 x 1,5	0,16
	1 x 2,5	0,19
	1 x 4	0,23
	1 x 6	0,26
	1 x 10	0,33
	1 x 16	0,41
	2 x 1,5	0,30
	2 x 2,5	0,34
	2 x 4	0,43
	2 x 6	0,51
	2 x 10	0,74
	3 x 1,5	0,33
	3 x 2,5	0,40
	3 x 4	0,52
	3 x 6	0,64
	3 x 10	0,87
	4 x 1,5	0,41
	4 x 2,5	0,48
	4 x 4	0,67
	4 x 6	0,77
	4 x 10	1,02
	4 x 16	1,37
	4 x 25	1,98
	4 x 35	2,35

Type	dimension n x mm²	caloric load kWh/m
NHMH	5 x 1,5	0,45
	5 x 2,5	0,52
	5 x 4	0,77
	5 x 6	0,89
	5 x 10	1,15
	5 x 16	1,67
	5 x 25	2,40
	7 x 1,5	0,55
	7 x 2,5	0,68

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CALORIC LOAD VALUES OF HALOGENATED CABLES AND INSULATED WIRES

Type	dimension n x mm²	caloric load kWh/m
NYY	1 x 2,5	0,22
	1 x 4	0,33
	1x 6	0,33
	1 x 10	0,33
	1 x 16	0,42
	1 x 25	0,58
	1 x 35	0,67
	1 x 50	0,81
	1 x 70	0,92
	1 x 95	1,17
	1 x 120	1,31
	1 x 150	1,58
	2 x 1,5	0,69
	2 x 2,5	0,78
	2 x 4	1,00
	2 x 6	1,11
	2 x 10	1,31
	3 x 1,5	0,75
	3 x 2,5	0,83
	3 x 4	1,08
	3 x 6	1,22
	3 x 10	1,42
	3 x 16	1,69
	3 x 25	2,14
	3 x 35	2,47
	3 x 50	2,60
	3 x 70	3,08
	3 x 95	4,06
	3 x 120	4,47
	3 x 150	5,42
	4 x 1,5	0,83
	4 x 2,5	0,94
	4 x 4	1,25
	4 x 6	1,42
	4 x 10	1,67
	4 x 16	2,03
	4 x 25	2,89
	4 x 35	2,61
	4 x 50	3,31
	4 x 70	4,08
	4 x 95	5,11
	4 x 120	5,69
	4 x 150	6,97
	5 x 1,5	0,94
	5 x 2,5	1,08
	5 x 4	1,44
	5 x 6	1,64
	5 x 10	2,00
	5 x 16	2,39
	5 x 25	3,42
	7x 1,5	1,08
	7x 2,5	1,22
	7x 4	1,67
	12 x 1,5	1,56
	12 x 2,5	1,78
	12 x 4	2,53
	19 x 1,5	2,06
	19 x 2,5	2,44
	19 x 4	3,42
	24 x 1,5	2,56
	24 x 2,5	2,94
	24 x 4	4,33
	37 x 1,5	3,39
	37 x 2,5	4,00
	37 x 4	6,03

Type	dimension n x mm²	caloric load kWh/m
NYCY, NYCWY	3 x 1,5/ 1,5	0,78
	3 x 2,5/ 2,5	0,86
	3 x 4 / 4	1,11
	3 x 6 / 6	1,25
	3 x 10 / 10	1,47
	3 x 16 / 10	1,75
	3 x 16 / 16	1,75
	3 x 25 / 16	2,53
	3 x 25 / 25	2,53
	3 x 35 / 16	2,22
	3 x 35 / 35	2,22
	3 x 50 / 25	2,78
	3 x 50 / 50	2,78
	3 x 70 / 35	3,28
	3 x 70 / 70	3,28
	3 x 95 / 50	4,28
	3 x 95 / 95	4,28
	3 x 120 / 70	4,72
	3 x 120 /120	4,72
	3 x 150 / 70	5,72
	3 x 150 /150	5,72
	4 x 1,5/ 1,5	0,86
	4 x 2,5/ 2,5	0,97
	4 x 4 / 4	1,28
	4 x 6 / 6	1,44
	4 x 10 / 10	1,69
	4 x 16 / 16	2,08
	4 x 25 / 16	2,92
	4 x 35 / 16	2,67
	4 x 50 / 25	3,44
	4 x 70 / 35	4,17
	4 x 95 / 50	5,33
	4 x 120 / 70	5,94
	4 x 150 / 70	7,22
A-2Y(L)2Y Bd	2 x 2 x 0,6	0,84
	4 x 2 x 0,6	1,17
	6 x 2 x 0,6	1,25
	10 x 2 x 0,6	1,38
	20 x 2 x 0,6	1,92
	30 x 2 x 0,6	2,32
	40 x 2 x 0,6	2,62
	50 x 2 x 0,6	3,02
	100 x 2 x 0,6	4,71
	150 x 2 x 0,6	6,17
	200 x 2 x 0,6	7,69
	250 x 2 x 0,6	8,88
	300 x 2 x 0,6	10,20
	350 x 2 x 0,6	11,88
	400 x 2 x 0,6	13,19
	500 x 2 x 0,6	15,45
	600 x 2 x 0,6	18,57
	700 x 2 x 0,6	20,82
	800 x 2 x 0,6	24,18
	1000 x 2 x 0,6	28,33

Type	dimension n x mm²	caloric load kWh/m
NYM	1 x 1,5	0,17
	1 x 2,5	0,22
	1 x 4	0,25
	1 x 6	0,28
	1 x 10	0,36
	1 x 16	0,42
	1 x 25	0,58
	2 x 1,5	0,42
	2 x 2,5	0,53
	2 x 4	0,67
	2 x 6	0,75
	2 x 10	1,17
	3 x 1,5	0,44
	3 x 2,5	0,58
	3 x 4	0,72
	3 x 6	0,92
	3 x 10	1,28
	3 x 16	1,53
	3 x 25	2,39
	3 x 35	2,78
	4 x 1,5	0,53
	4 x 2,5	0,67
	4 x 4	0,92
	4 x 6	1,08
	4 x 10	1,50
	4 x 16	1,86
	4 x 25	2,89
	4 x 35	3,28
	5 x 1,5	0,58
	5 x 2,5	0,75
	5 x 4	1,11
	5 x 6	1,28
	5 x 10	1,83
	5 x 16	2,31
	5 x 25	3,42
	6 x 1,5	0,67
	7x 1,5	0,67

HELUKABEL®

CALORIC LOAD VALUES OF HALOGEN-FREE AND HALOGENATED CABLES AND INSULATED WIRES

Type	dimension n x mm²	caloric load kWh/m
JE-H (St) H Bd	2 x 2 x 0,6	0,12
	4 x 2 x 0,6	0,18
	6 x 2 x 0,6	0,23
	10 x 2 x 0,6	0,33
	20 x 2 x 0,6	0,64
	30 x 2 x 0,6	0,81
	40 x 2 x 0,6	1,05
	50 x 2 x 0,6	1,34
	60 x 2 x 0,6	1,50
	80 x 2 x 0,6	2,01
	100 x 2 x 0,6	2,53
JE-H (St) H Bd	2 x 2 x 0,8	0,28
	4 x 2 x 0,8	0,39
	8 x 2 x 0,8	0,58
	12 x 2 x 0,8	0,86
	20 x 2 x 0,8	1,17
	32 x 2 x 0,8	1,78
	40 x 2 x 0,8	2,08
J-H(St)H Bd	2 x 2 x 0,6	0,12
	4 x 2 x 0,6	0,18
	6 x 2 x 0,6	0,23
	10 x 2 x 0,6	0,33
	20 x 2 x 0,6	0,72
	30 x 2 x 0,6	0,81
	40 x 2 x 0,6	1,05
	50 x 2 x 0,6	1,34
	60 x 2 x 0,6	1,50
	80 x 2 x 0,6	2,01
	100 x 2 x 0,6	2,53
J-H (St) H Bd	2 x 2 x 0,8	0,16
	4 x 2 x 0,8	0,29
	6 x 2 x 0,8	0,35
	10 x 2 x 0,8	0,55
	20 x 2 x 0,8	1,21
	30 x 2 x 0,8	1,36
	40 x 2 x 0,8	1,67
	50 x 2 x 0,8	2,19
	60 x 2 x 0,8	2,44
	80 x 2 x 0,8	3,18
	100 x 2 x 0,8	4,07
J-HLiHCH Bd	2 x 2 x 0,5 mm²	1,0
	4 x 2 x 0,5 mm²	1,4
	8 x 2 x 0,5 mm²	2,1
	12 x 2 x 0,5 mm²	3,1
	20 x 2 x 0,5 mm²	4,2
	32 x 2 x 0,5 mm²	6,4
	40 x 2 x 0,5 mm²	7,5
J-H (St) H Bd E 30 bis E 90 red Fire warning installation cable	2 x 2 x 0,8	0,20
	4 x 2 x 0,8	0,34
	8 x 2 x 0,8	0,72
	12 x 2 x 0,8	0,89
	16 x 2 x 0,8	1,08
	20 x 2 x 0,8	1,36
	32 x 2 x 0,8	2,03
	40 x 2 x 0,8	2,59
	52 x 2 x 0,8	3,06
J-H (St) HRH Bd E 30 bis E 90 red Fire warning installation cable	2 x 2 x 0,8	0,39
	4 x 2 x 0,8	0,66
	8 x 2 x 0,8	1,27
	12 x 2 x 0,8	1,56
	16 x 2 x 0,8	1,81
	20 x 2 x 0,8	2,26
	32 x 2 x 0,8	3,23
	40 x 2 x 0,8	4,15
	52 x 2 x 0,8	4,68

Type	dimension n x mm²	caloric load kWh/m
J-HH Bd	2 x 2 x 0,6	0,22
	4 x 2 x 0,6	0,33
	6 x 2 x 0,6	0,39
	10 x 2 x 0,6	0,53
	16 x 2 x 0,6	0,81
	20 x 2 x 0,6	0,97
	24 x 2 x 0,6	1,11
	30 x 2 x 0,6	1,36
	40 x 2 x 0,6	1,72
	50 x 2 x 0,6	2,00
	60 x 2 x 0,6	2,39
	80 x 2 x 0,6	3,06
	100 x 2 x 0,6	3,72
JE-LiHH Bd	4 x 1 x 0,5 mm²	0,28
	8 x 1 x 0,5 mm²	0,45
	16 x 1 x 0,5 mm²	0,78
	24 x 1 x 0,5 mm²	1,08
	32 x 1 x 0,5 mm²	1,36
	40 x 1 x 0,5 mm²	1,64
I-YY Bd	2 x 2 x 0,6	0,11
	4 x 2 x 0,6	0,17
	6 x 2 x 0,6	0,22
	10 x 2 x 0,6	0,28
	16 x 2 x 0,6	0,39
	20 x 2 x 0,6	0,44
	24 x 2 x 0,6	0,50
	30 x 2 x 0,6	0,67
	40 x 2 x 0,6	0,81
	50 x 2 x 0,6	0,94
	60 x 2 x 0,6	1,17
	80 x 2 x 0,6	1,42
	100 x 2 x 0,6	1,69
JE-Y (St) Y Bd	2 x 2 x 0,8	0,19
	4 x 2 x 0,8	0,28
	8 x 2 x 0,8	0,42
	12 x 2 x 0,8	0,58
	16 x 2 x 0,8	0,72
	20 x 2 x 0,8	0,83
	24 x 2 x 0,8	0,94
	28 x 2 x 0,8	1,17
	32 x 2 x 0,8	1,28
	36 x 2 x 0,8	1,39
	40 x 2 x 0,8	1,50
	44 x 2 x 0,8	1,61
	48 x 2 x 0,8	1,83
	52 x 2 x 0,8	1,94
	56 x 2 x 0,8	2,06
	60 x 2 x 0,8	2,14
	64 x 2 x 0,8	2,25
	68 x 2 x 0,8	2,36
	72 x 2 x 0,8	2,47
	76 x 2 x 0,8	2,72
	80 x 2 x 0,8	2,83

Type	dimension n x mm²	caloric load kWh/m
J-YY Bd	2 x 2 x 0,6	0,11
	4 x 2 x 0,6	0,17
	6 x 2 x 0,6	0,22
	10 x 2 x 0,6	0,28
	16 x 2 x 0,6	0,39
	20 x 2 x 0,6	0,44
	24 x 2 x 0,6	0,50
	30 x 2 x 0,6	0,67
	40 x 2 x 0,6	0,81
	50 x 2 x 0,6	0,94
	60 x 2 x 0,6	1,17
	80 x 2 x 0,6	1,42
	100 x 2 x 0,6	1,69
J-Y(St)Y, JE-Y(St)Y	1 x 2 x 0,6	0,15
	2 x 2 x 0,6	0,17
	3 x 2 x 0,6	0,20
	4 x 2 x 0,6	0,23
	5 x 2 x 0,6	0,26
	6 x 2 x 0,6	0,28
	8 x 2 x 0,6	0,29
	10 x 2 x 0,6	0,33
	12 x 2 x 0,6	0,38
	14 x 2 x 0,6	0,40
	16 x 2 x 0,6	0,43
	20 x 2 x 0,6	0,47
	24 x 2 x 0,6	0,52
	30 x 2 x 0,6	0,69
	40 x 2 x 0,6	0,77
	50 x 2 x 0,6	0,92
	60 x 2 x 0,6	1,20
	80 x 2 x 0,6	1,41
	100 x 2 x 0,6	1,83
J-Y(St)Y, JE-Y(St)Y	1 x 2 x 0,8	0,19
	2 x 2 x 0,8	0,25
	3 x 2 x 0,8	0,31
	4 x 2 x 0,8	0,38
	5 x 2 x 0,8	0,43
	6 x 2 x 0,8	0,50
	8 x 2 x 0,8	0,56
	10 x 2 x 0,8	0,75
	12 x 2 x 0,8	0,81
	14 x 2 x 0,8	0,87
	16 x 2 x 0,8	1,00
	20 x 2 x 0,8	1,13
	24 x 2 x 0,8	1,45
	30 x 2 x 0,8	1,70
	40 x 2 x 0,8	2,08
	50 x 2 x 0,8	2,65
	60 x 2 x 0,8	2,84
	80 x 2 x 0,8	3,92
	100 x 2 x 0,8	4,94

HELUKABEL

CALORIC LOAD VALUES OF HALOGEN-FREE SECURITY CABLES AND INSULATED WIRES

Type	dimension n x mm²	caloric load kWh/m
HELUTHERM® 145	1 x 0,25	0,00884
	1 x 0,33	0,00973
	1 x 0,50	0,01231
	1 x 0,75	0,01600
	1 x 1,0	0,01958
	1 x 1,5	0,02931
	1 x 2,5	0,04157
	1 x 4	0,05014
	1 x 6	0,05952
	1 x 10	0,10655
	1 x 16	0,13120
	1 x 25	0,21506
	1 x 35	0,25086
	1 x 50	0,33443
	1 x 70	0,40502
	1 x 95	0,53553
	1 x 120	0,61629
	1 x 150	0,77025
	1 x 185	0,94133
	1 x 240	1,18313
HELUTHERM® MULTI 145	1 x 0,50	0,04
	2 x 0,50	0,08
	3 x 0,50	0,09
	4 x 0,50	0,11
	5 x 0,50	0,14
	6 x 0,50	0,16
	7 x 0,50	0,19
	8 x 0,50	0,24
	10 x 0,50	0,27
	12 x 0,50	0,25
	14 x 0,50	0,28
	16 x 0,50	0,32
	19 x 0,50	0,41
	21 x 0,50	0,45
	24 x 0,50	0,48
	25 x 0,50	0,48
	27 x 0,50	0,46
	30 x 0,50	0,51
	33 x 0,50	0,57
	37 x 0,50	0,68
	1 x 0,75	0,05
	2 x 0,75	0,09
	3 x 0,75	0,11
	4 x 0,75	0,13
	5 x 0,75	0,17
	6 x 0,75	0,20
	7 x 0,75	0,22
	8 x 0,75	0,29
	10 x 0,75	0,32
	12 x 0,75	0,30
	14 x 0,75	0,34
	16 x 0,75	0,38
	19 x 0,75	0,48
	21 x 0,75	0,54
	24 x 0,75	0,59
	25 x 0,75	0,58
	27 x 0,75	0,55
	30 x 0,75	0,61
	33 x 0,75	0,66
	37 x 0,75	0,85

Type	dimension n x mm²	caloric load kWh/m
HELUTHERM® MULTI 145	1 x 1	0,05
	2 x 1	0,11
	3 x 1	0,13
	4 x 1	0,16
	5 x 1	0,19
	6 x 1	0,23
	7 x 1	0,29
	8 x 1	0,34
	10 x 1	0,38
	12 x 1	0,35
	14 x 1	0,40
	16 x 1	0,44
	19 x 1	0,59
	21 x 1	0,66
	24 x 1	0,70
	25 x 1	0,69
	27 x 1	0,66
	30 x 1	0,70
	33 x 1	0,83
	37 x 1	1,03
	1 x 1,5	0,06
	2 x 1,5	0,14
	3 x 1,5	0,16
	4 x 1,5	0,20
	5 x 1,5	0,25
	6 x 1,5	0,32
	7 x 1,5	0,38
	8 x 1,5	0,47
	10 x 1,5	0,51
	12 x 1,5	0,46
	14 x 1,5	0,52
	16 x 1,5	0,60
	19 x 1,5	0,83
	21 x 1,5	0,92
	24 x 1,5	1,01
	25 x 1,5	0,98
	27 x 1,5	0,93
	30 x 1,5	1,00
	33 x 1,5	1,12
	37 x 1,5	1,37
	1 x 2,5	0,07
	2 x 2,5	0,17
	3 x 2,5	0,21
	4 x 2,5	0,27
	5 x 2,5	0,34
	6 x 2,5	0,41
	7 x 2,5	0,51
	8 x 2,5	0,63
	10 x 2,5	0,65
	12 x 2,5	0,59
	14 x 2,5	0,72
	16 x 2,5	0,80
	19 x 2,5	1,04
	21 x 2,5	1,24
	24 x 2,5	1,32
	25 x 2,5	1,29
	27 x 2,5	1,22
	30 x 2,5	1,31
	33 x 2,5	1,47
	37 x 2,5	1,88

Type	dimension n x mm²	caloric load kWh/m
HELUTHERM® MULTI 145	1 x 4	0,10
	2 x 4	0,29
	3 x 4	0,27
	4 x 4	0,35
	5 x 4	0,45
	6 x 4	0,54
	7 x 4	0,68
	8 x 4	0,80
	10 x 4	0,90
	12 x 4	0,81
	14 x 4	0,94
	1 x 6	0,16
	2 x 6	0,46
	3 x 6	0,52
	4 x 6	0,57
	5 x 6	0,71
	6 x 6	0,88
	7 x 6	1,02
	1 x 10	0,15
	2 x 10	0,53
	3 x 10	0,58
	4 x 10	0,74
	5 x 10	0,87
	6 x 10	1,00
	7 x 10	1,25
	1 x 16	0,17
	2 x 16	0,64
	3 x 16	0,73
	4 x 16	0,89
	5 x 16	1,07
	6 x 16	1,23
	7 x 16	1,58
	1 x 25	0,24
	2 x 25	1,01
	3 x 25	1,08
	4 x 25	1,30
	5 x 25	1,64
	6 x 25	2,04
	7 x 25	2,46
	1 x 35	0,29
	2 x 35	1,28
	3 x 35	1,32
	4 x 35	1,64
	5 x 35	2,04
	1 x 50	0,36
	2 x 50	1,76
	3 x 50	1,81
	4 x 50	2,15
	5 x 50	2,53
	1 x 70	0,42
	2 x 70	2,28
	3 x 70	2,25
	4 x 70	2,77
	5 x 70	3,36
	1 x 95	0,55
	2 x 95	2,72
	3 x 95	2,81
	4 x 95	3,42
	5 x 95	4,11

HELUKABEL

CALORIC LOAD VALUES OF HALOGEN-FREE SECURITY CABLES AND INSULATED WIRES

Type	dimension n x mm²	caloric load kWh/m
HELUTHERM® MULTI-C 145	1 x 0,50	0,05
	2 x 0,50	0,12
	3 x 0,50	0,12
	4 x 0,50	0,15
	5 x 0,50	0,18
	6 x 0,50	0,21
	7 x 0,50	0,24
	8 x 0,50	0,27
	10 x 0,50	0,31
	12 x 0,50	0,30
	14 x 0,50	0,35
	16 x 0,50	0,39
	19 x 0,50	0,48
	21 x 0,50	0,54
	1 x 0,75	0,05
	2 x 0,75	0,14
	3 x 0,75	0,15
	4 x 0,75	0,18
	5 x 0,75	0,21
	6 x 0,75	0,25
	7 x 0,75	0,31
	8 x 0,75	0,35
	10 x 0,75	0,39
	12 x 0,75	0,38
	14 x 0,75	0,43
	16 x 0,75	0,49
	19 x 0,75	0,62
	21 x 0,75	0,69
	1 x 1	0,07
	2 x 1	0,16
	3 x 1	0,17
	4 x 1	0,20
	5 x 1	0,24
	6 x 1	0,30
	7 x 1	0,36
	8 x 1	0,41
	10 x 1	0,46
	12 x 1	0,44
	14 x 1	0,50
	16 x 1	0,57
	19 x 1	0,74
	21 x 1	0,82
	1 x 1,5	0,08
	2 x 1,5	0,22
	3 x 1,5	0,21
	4 x 1,5	0,28
	5 x 1,5	0,33
	6 x 1,5	0,41
	7 x 1,5	0,48
	8 x 1,5	0,58
	10 x 1,5	0,66
	12 x 1,5	0,63
	14 x 1,5	0,72
	16 x 1,5	0,80
	19 x 1,5	1,08
	21 x 1,5	1,19
	24 x 1,5	1,32
	25 x 1,5	1,30
	27 x 1,5	1,27
	30 x 1,5	1,37
	33 x 1,5	1,53
	36 x 1,5	1,71
	37 x 1,5	1,85

Type	dimension n x mm²	caloric load kWh/m
HELUTHERM® MULTI-C 145	1 x 2,5	0,11
	2 x 2,5	0,29
	3 x 2,5	0,32
	4 x 2,5	0,36
	5 x 2,5	0,45
	6 x 2,5	0,55
	7 x 2,5	0,69
	8 x 2,5	0,82
	10 x 2,5	0,87
	12 x 2,5	0,83
	14 x 2,5	1,01
	16 x 2,5	1,17
	19 x 2,5	1,47
	21 x 2,5	1,61
	1 x 4	0,13
	2 x 4	0,36
	3 x 4	0,39
	4 x 4	0,49
	5 x 4	0,56
	6 x 4	0,66
	7 x 4	0,84
	8 x 4	1,04
	10 x 4	1,16
	12 x 4	1,10
	14 x 4	1,23
	16 x 4	1,42
	1 x 6	0,15
	2 x 6	0,43
	3 x 6	0,48
	4 x 6	0,60
	5 x 6	0,71
	6 x 6	0,82
	7 x 6	1,06
	1 x 10	0,22
	2 x 10	0,67
	3 x 10	0,77
	4 x 10	0,99
	5 x 10	1,21
	6 x 10	1,41
	7 x 10	1,68
	1 x 16	0,28
	1 x 25	0,35

HELUKABEL®

INFORMATION AND INSTALLATION INSTRUCTIONS
for UL and CSA cables

UL/CSA cables must be protected against mechanical, thermal and chemical damages.

Installation in switchboards and control boards

- Inside switchboards, flexible single core cables must be installed in cable channels of plastics
- As american cables are not so flexible, the minimum bending radius must be taken into consideration during flexible installation.

For connections on machinery and equipment

- Permissible tube and conduit ø:
  minimum-Ø = 1/2" (inch)
  maximum-Ø = 4" (inch)
  Minimum wall-thickness of the conduit = 1,9 mm
- Normal steel armoured tubes with transition socket PG-NPT is used. Further metal cable channels must also be used.
- The cables are permitted to be filled with only max. 50% cross-section of the cable channel.
- Flexible single cores must be installed in PVC tubes inside the conduits.
- If connectors are used, both the main and the control cables should be installed separately.

Delivery program:

- PVC tubes
- Metal tubes and glands
- Fixing material
- Steel armoured tubes.

Cable Channels

- Cable channels in switchboards must be made out of a flame resistant PVC and must have enough spare space.
- Cable channels on machineries and equipment must be made out of metal. They must also be closed and oil resistant.

Cable identification

- Cable identification is achieved through continuous numbers, letters or number/letter combination. The beginning and end of the cable have the same identification system.

Cable connections to apparatus

- **Main and Control cables**

  It is depending on the type of connection to the apparatus if screw or press clamps are used.
- In USA, it is normal to install cables without using cable lugs or cable crushing socket. The connection is only possible with the UL-wires sizes. These sizes are not designed with fine wire stranding make-up.

Conductor cross-section

General rules	minimum cross-section for
• Motor Cables	AWG 14
• Control Cables	
– in switchboards	AWG 18
– in the installed system	AWG 16

This rule does not apply to electronic devices and systems.

In case, the electronic cables and other circuits are installed together, all cables must be set for maximum voltage.

Colour identification

- **Black**
  For main circuits, control- and subcircuits, direct connected to main voltage.
- **Blue**
  For direct voltage- (d. c.), control- and subcircuits, which are connected to the main circuit.
- **Red**
  For alternating voltage (a. c.), control and subcircuits.
- **Yellow or brown**
  For interlock circuits from an external power source.
- **White or grey**
  For current conveying earthed conductors at main, control and subcircuits.
- **Green or green-yellow**
  For insulated earth-connectors as protective conductor.

Motor-driving voltages
200 / 230 / 460 / 575 V, 60 Hz

Driving voltage
Normally the driving voltage is 120 V, 60 Hz or lower. Transformers must be operated with separate windings.

HELUKABEL®

AWG-WIRES AND AWG-STRANDED CONDUCTORS

Conductor make-up, cross-section, resistance and weight

AWG No.	AWG-make-up n x AWG	conductor make-up mm	cross-section mm^2	conductor outer-Ø mm	conductor resistance Ohm/km	conductor weight kg/km
36	solid	solid	0,013	0,127	1460,0	0,116
36	7/44	7 x 0,05	0,014	0,152	1271,0	0,125
34	solid	solid	0,020	0,160	918,0	0,178
34	7/42	7 x 0,064	0,022	0,192	777,0	0,196
32	solid	solid	0,032	0,203	571,0	0,284
32	7/40	7 x 0,078	0,034	0,203	538,0	0,302
32	19/44	19 x 0,05	0,037	0,229	448,0	0,329
30	solid	solid	0,051	0,254	365,0	0,45
30	7/38	7 x 0,102	0,057	0,305	339,0	0,507
30	19/42	19 x 0,064	0,061	0,305	286,7	0,543
28	solid	solid	0,080	0,330	232,0	0,71
28	7/36	7 x 0,127	0,087	0,381	213,0	0,774
28	19/40	19 x 0,078	0,091	0,406	186,0	0,81
27	7/35	7 x 0,142	0,111	0,457	179,0	0,988
26	solid	solid	0,128	0,409	143,0	1,14
26	10/36	10 x 0,127	0,127	0,533	137,0	1,13
26	19/38	19 x 0,102	0,155	0,508	113,0	1,38
26	7/34	7 x 0,160	0,141	0,483	122,0	1,25
24	solid	solid	0,205	0,511	89,4	1,82
24	7/32	7 x 0,203	0,227	0,610	76,4	2,02
24	10/34	10 x 0,160	0,201	0,582	85,6	1,79
24	19/36	19 x 0,127	0,241	0,610	69,2	2,14
24	41/40	41 x 0,078	0,196	0,582	84,0	1,74
22	solid	solid	0,324	0,643	55,3	2,88
22	7/30	7 x 0,254	0,355	0,762	48,4	3,16
22	19/34	19 x 0,160	0,382	0,787	45,1	3,4
22	26/36	26 x 0,127	0,330	0,762	52,3	2,94
20	solid	solid	0,519	0,813	34,6	4,61
20	7/28	7 x 0,320	0,562	0,965	33,8	5,0
20	10/30	10 x 0,254	0,507	0,889	33,9	4,51
20	19/32	19 x 0,203	0,615	0,940	28,3	5,47
20	26/34	26 x 0,160	0,523	0,914	33,0	4,65
20	41/36	41 x 0,127	0,520	0,914	32,9	4,63
18	solid	solid	0,823	1,020	21,8	7,32
18	7/26	7 x 0,404	0,897	1,219	19,2	7,98
18	16/30	16 x 0,254	0,811	1,194	21,3	7,22
18	19/30	19 x 0,254	0,963	1,245	17,9	8,57
18	41/34	41 x 0,160	0,824	1,194	20,9	7,33
18	65/36	65 x 0,127	0,823	1,194	21,0	7,32
16	solid	solid	1,310	1,290	13,7	11,66
16	7/24	7 x 0,511	1,440	1,524	12,0	12,81
16	65/34	65 x 0,160	1,310	1,499	13,2	11,65
16	26/30	26 x 0,254	1,317	1,499	13,1	11,72
16	19/29	19 x 0,287	1,229	1,473	14,0	10,94
16	105/36	105 x 0,127	1,330	1,499	13,1	11,84
14	solid	solid	2,080	1,630	8,6	18,51
14	7/22	7 x 0,643	2,238	1,854	7,6	19,92
14	19/27	19 x 0,361	1,945	1,854	8,9	17,31
14	41/30	41 x 0,254	2,078	1,854	8,3	18,49
14	105/34	105 x 0,160	2,111	1,854	8,2	18,79

Continuation ▶

AWG-WIRES AND AWG-STRANDED CONDUCTORS

Conductor make-up, cross-section, resistance and weight

AWG No.	AWG-make-up n x AWG	conductor make-up mm	cross-section mm^2	conductor outer-Ø mm	conductor resistance Ohm/km	conductor weight kg/km
12	solid	solid	3,31	2,05	5,4	29,46
12	7/20	7 x 0,813	3,63	2,438	4,8	32,30
12	19/25	19 x 0,455	3,09	2,369	5,6	27,50
12	65/30	65 x 0,254	3,292	2,413	5,7	29,29
12	165/34	165 x 0,160	3,316	2,413	5,2	29,51
10	solid	solid	5,26	2,59	3,4	46,81
10	37/26	37 x 0,404	4,74	2,921	3,6	42,18
10	49/27	49 x 0,363	5,068	2,946	3,6	45,10
10	105/30	105 x 0,254	5,317	2,946	3,2	47,32
8	49/25	49 x 0,455	7,963	3,734	2,2	70,87
8	133/29	133 x 0,287	8,604	3,734	2,0	76,57
8	655/36	655 x 0,127	8,297	3,734	2,0	73,84
6	133/27	133 x 0,363	13,764	4,676	1,5	122,49
6	259/30	259 x 0,254	13,123	4,674	1,3	116,79
6	1050/36	1050 x 0,127	13,316	4,674	1,3	118,51
4	133/25	133 x 0,455	21,625	5,898	0,80	192,46
4	259/27	259 x 0,363	26,804	5,898	0,66	238,55
4	1666/36	1666 x 0,127	21,104	5,898	0,82	187,82
2	133/23	133 x 0,574	34,416	7,417	0,50	306,30
2	259/26	259 x 0,404	33,201	7,417	0,52	295,49
2	665/30	665 x 0,254	33,696	7,417	0,52	299,89
2	2646/36	2646 x 0,127	33,518	7,417	0,52	298,31
1	133/22	133 x 0,643	43,187	8,331	0,40	384,37
1	259/25	259 x 0,455	42,112	8,331	0,41	374,80
1	817/30	817 x 0,254	41,397	8,331	0,42	368,43
1	2109/34	2109 x 0,160	42,403	8,331	0,41	377,39
1/0	133/21	133 x 0,724	54,75	9,347	0,31	487,28
1/0	259/24	259 x 0,511	53,116	9,347	0,32	472,73
2/0	133/20	133 x 0,813	69,043	10,516	0,25	614,48
2/0	259/23	259 x 0,574	67,021	10,516	0,25	596,49
3/0	259/22	259 x 0,643	84,102	11,786	0,20	748,51
3/0	427/24	427 x 0,511	87,570	11,786	0,19	779,37
4/0	259/21	259 x 0,724	106,626	13,259	0,16	948,97
4/0	427/23	427 x 0,574	110,494	13,259	0,15	983,39

AWG-WIRES (SOLID-CONDUCTOR)

AWG No.	Wire-Ø mm
44	0,050
41	0,070
40	0,079
39	0,089
38	0,102
37	0,114
36	0,127
35	0,142
34	0,160
33	0,180
32	0,203
31	0,226
30	0,254
29	0,287

AWG No.	Wire-Ø mm
28	0,320
27	0,363
26	0,404
25	0,455
24	0,511
23	0,574
22	0,643
21	0,724
20	0,813
19	0,912
18	1,024
17	1,151
16	1,290
15	1,450

AWG No.	Wire-Ø mm
14	1,628
13	1,829
12	2,052
11	2,304
10	2,588
9	2,906
8	3,268
7	3,665
6	4,115
5	4,620
4	5,189
3	5,827
2	6,543
1	7,348

AWG No.	Wire-Ø mm
1/0	8,252
2/0	9,266
3/0	10,404
4/0	11,684

HELUKABEL®

US-AMERICAN AND BRITISH UNITS

Conversion of usual measuring units

Units for cables and wires

In the US the measurements are mainly used in AWG-numbers (AWG = American Wire Gauge).
The AWG-numbers conform the british B&S-numbers (B&S = Brown & Sharp)

AWG No.	Cross-section mm²	Dia-meter mm	Conductor resistance Ohm/km
1000 MCM*	507	25,4	0,035
750	380	22,0	0,047
600	304	19,7	0,059
500	254	20,7	0,07
400	203	18,9	0,09
350	178	17,3	0,10
300	152	16,0	0,12
250	127	14,6	0,14
4/0	107,20	11,68	0,18
3/0	85,00	10,40	0,23
2/0	67,50	9,27	0,29
0	53,40	8,25	0,37
1	42,40	7,35	0,47
2	33,60	6,54	0,57
3	26,70	5,83	0,71
4	21,20	5,19	0,91
5	16,80	4,62	1,12
6	13,30	4,11	1,44
7	10,60	3,67	1,78
8	8,366	3,26	2,36
9	6,63	2,91	2,77
10	5,26	2,59	3,64
11	4,15	2,30	4,44
12	3,30	2,05	5,41
13	2,62	1,83	7,02
14	2,08	1,63	8,79
15	1,65	1,45	11,20
16	1,31	1,29	14,70
17	1,04	1,15	17,80
18	0,8230	1,0240	23,0
19	0,6530	0,9120	28,3
20	0,5190	0,8120	34,5
21	0,4120	0,7230	44,0
22	0,3250	0,6440	54,8
23	0,2590	0,5730	70,1
24	0,2050	0,5110	89,2
25	0,1630	0,4550	111,0
26	0,1280	0,4050	146,0
27	0,1020	0,3610	176,0
28	0,0804	0,3210	232,0
29	0,0646	0,2860	282,0
30	0,0503	0,2550	350,0
31	0,0400	0,2270	446,0
32	0,0320	0,2020	578,0
33	0,0252	0,1800	710,0
34	0,0200	0,1600	899,0
35	0,0161	0,1430	1125,0
36	0,0123	0,1270	1426,0
37	0,0100	0,1130	1800,0
38	0,00795	0,1010	2255,0
39	0,00632	0,0897	2860,0

4/0 is also stated: 0000; 1 mil = 0,001 inch = 0,0254 mm
* for bigger cross-section the sizes in MCM (circular mils)

1 CM = 1 Circ. mil. = 0,0005067 mm²
1 MCM = 1000 Circ. mils = 0,5067 mm²

General measuring units

Length

1 mil	= 0,0254 mm
1 in (inch)	= 25,4 mm
1 ft (foot)	= 0,3048 m
1 yd (yard)	= 0,9144 m
1 ch (chain)	= 20,1 m
1 mile (land mile)	= 1,609 km
	= 1760 yards
1 mile (nautic mile)	= 1,852 km
1 mm	= 0,039370 inches
1 m	= 39,370079 inches

Area

1 CM (circ. mil)	= 0,507 • 10^{-3} mm²
1 MCM	= 0,5067 mm²
1 sq. inch (sq. inch)	= 645,16 mm²
1 sq. ft. (sq. foot)	= 0,0929 m²
1 square yard	= 0,836 m²
1 acre	= 4047 m²
1 square mile	= 2,59 km²

Density

1 cu. in. (cubic inch)	= 16,39 cm³
1 cu. ft. (cubic foot)	= 0,0283 m³
1 cu. yd. (cubic yard)	= 0,7646 m³
1 gal. (US gallon)	= 3,785 l
1 gal. (brit gallon)	= 4,546 l
1 US pint	= 0,473 l
1 US quart	= 0,946 l
1 US barrel	= 158,8 l

Temperature

F (Fahrenheit)	= (1,8 • C) + 3°
C (Celsius)	= 0,5556 • (F–32°)

Weight

1 grain	= 64,8 mg
1 dram	= 1,77 g
1 oz (ounce)	= 28,35 g
1 lb (pound)	= 0,4536 Kp
1 stone	= 6,35 Kp
1 qu (quarter)	= 12,7 Kp
1 US-cwt (hundred-weight)	= 45,36 Kp
1 US ton (short ton)	= 0,907 t
1 brit. ton (long ton)	= 1,016 t

Force

1 lb	= 4,448 N
1 brit. ton	= 9954 N
1 pdl (Poundal)	= 0,1383 N
1 kp	= 9,81 N
1 N	= 0,102 kp

Velocity

1 mile/h	= 1,609 km/h
1 Knoten	= 1,852 km/h
1 ft/s	= 0,305 m/s
1 ft/min	= 5,08 • 10^{-3} m/s

Energy

1 lb/mile	= 0,282 kg/m
1 lb/yard	= 0,496 kg/m
1 lb/foot	= 1,488 kg/m

Radiation absorbed dose

1 Gray	= 1 J/kg
1 rad	= 10^{-2} J/kg = 1 Centi Gy
	= 0,01 Gy
1 Centi	= 100 Joule
1 rad	= cJ/kg = 0,01Gy
1 Mrad	= 1 • 10^{6} cJ/kg

Pressure

1 psi (lb/sq.)	= 68,95 mbar
	= 6,895 • 10^{-3} Nmm²
1 lb/sq. ft.	= 0,478 mbar
1 pdl/sq. ft.	= 1,489 N/m²
1 in Hg	= 33,86 mbar
1 ft H_2 O	= 29,89 mbar
1 in H_2 O	= 2,491 mbar
1 N/mm²	= 145 psi
	= 10 bar
1 kp/mm²	= 1422 psi
1 at	= 736 Torr
	= 1 kp/cm²
1 Torr	= 1 mm Hg
1 bar	= 0,1 H Pa
1 Pa	= 1 N/m²

Density

1 lb/cu. ft.	= 16,02 kg/m³
1 lb/cu. in.	= 27,68 t/m³

Horse power

1 hp • h	= 1,0139 PS • h
	= 2,684 • 10^{6} Joule
	= 746 W • h
1 BTU (brit. therm. unit)	= 1055 Joule

Electrical units

1 ohm/1000 yd	= 1,0936 Ω/km
1 ohm/1000 ft	= 3,28 Ω/km
1 µF/mile	= 0,62 µF/km
1 megohm/mile	= 1,61 MΩ/km
1 µµf/foot	= 3,28 pF/m
1 decibel/mile	= 71,5 mN/m

Power rate

1 PS	= 0,736 kW
1 kW	= 1,36 PS
1 hp	= 0,7457 kW
1 kW	= 1,31 hp

CURRENT RATINGS FOR UL-CSA CABLES

Ambient temperature 30 °C

Abstract of NEC Tabelle 310.15(B)(17)

Allowable ampacity (in Ampere) of **conductors**, rated 0 – 2000 Volts, in free air.

Conductor size	Temperature Rating of Conductor		
AWG or kcmil (MCM)	60 °C (140 °F)	75 °C (167 °F)	90 °C (194 °F)
18	–	–	18
16	–	–	24
14*	25	30	35
12*	30	35	40
10*	40	50	55
8	60	70	80
6	80	95	105
4	105	125	140
3	120	145	165
2	140	170	190
1	165	195	220
1/0	195	230	260
2/0	225	265	300
3/0	260	310	350
4/0	300	360	405
250	340	405	455
300	375	445	500
350	420	505	570
400	455	545	615
500	515	620	700
600	575	690	780

Abstract of NEC Tabelle 310.15(B)(16)

Allowable ampacity (in Ampere) of insulated conductors, rated 0 – 2000 Volts. NOT MORE THAN **three Conductors** in **raceway** or cable ore Earth (direct burial).

Conductor size	Temperature Rating of Conductor		
AWG or kcmil (MCM)	60 °C (140 °F)	75 °C (167 °F)	90 °C (194 °F)
18	–	–	14
16	–	–	18
14*	15	20	25
12*	20	25	30
10*	30	35	40
8	40	50	55
6	55	65	75
4	70	85	95
3	85	100	115
2	95	115	130
1	110	130	145
1/0	125	150	170
2/0	145	175	195
3/0	165	200	225
4/0	195	230	260
250	215	255	290
300	240	285	320
350	260	310	350
400	280	355	380
500	320	380	430
600	350	420	475

* **Note** Unless otherwise specifically permitted elsewhere in the NEC, the overcurrent protection for conductor types market with an * shall not exceed 15 amperes for AWG 14, 20 amperes for AWG 12 and 30 amperes for AWG 10, after any correction factors for ambient temperature and numbers of conductros have been applied.

Correction factors for ambient temperatures other than 30 °C				Correction factors for more than three current-carrying conductors in a raceway or cable.	
Ambient temperature in °C	60 °C (140 °F)	75 °C (167 °F)	90 °C (194 °F)	Number of current-carrying conductors	Correction factor
21 – 25	1,08	1,05	1,04	4 up to 6	0,80
26 – 30	1,00	1,00	1,00	7 up to 9	0,70
31 – 35	0,91	0,94	0,96	10 up to 20	0,50
36 – 40	0,82	0,88	0,91	21 up to 30	0,45
41 – 45	0,71	0,82	0,87	31 up to 40	0,40
46 – 50	0,58	0,75	0,82	41 and more	0,35
51 – 55	0,41	0,67	0,76		
56 – 60	–	0,58	0,71		
61 – 70	–	0,33	0,58		
71 – 80	–	–	0,41		

HELUKABEL

LIST OF UL-STYLES (single core cables)

UL-Style No.	Insulation Material	Voltage Volt	Temp. °C	Insulation thickness mm	AWG Size
1001	PVC/Nylon	300	80	0,23	30 – 16
1002	PVC	600	60	0,76	26 – 16
1003	PE, FRPE	300	60	0,76	26 – 16
1004	PVC/Nylon	–	80	0,20	30 – 16
1005	PVC/Nylon	–	90	0,20	26 – 16
1006	PVC/Nylon	–	105	0,20	26 – 16
1007	PVC	300	80	0,38	32 – 16
1011	PVC	600	80	0,76	28 – 9
1013	PVC	600	90	0,76	28 – 9
1015	PVC	600	105	0,76	28 – 9
1017	PVC	600	80	1,14	22 – 8
1019	PVC	600	80	1,52	8 – 2
1020	PVC	600	80	2,05	1 – 4/0
1022	PVC	600	80	2,78	–
1023	PVC	600	80	3,17	–
1024	PVC	600	90	1,14	18 – 8
1025	PVC/Nylon	600	90	1,14	8 – 6
1026	PVC	600	90	1,52	8 – 6
1027	PVC	600	90	1,91	1 – 4/0
1028	PVC	600	105	1,14	22 – 8
1029	PVC/Nylon	600	105	1,14	8 – 6
1030	PVC	1000	80	0,76	26 – 10
1031	PVC/Nylon	1000	80	0,76	26 – 10
1032	PVC	1000	90	0,76	26 – 10
1033	PVC/Nylon	1000	90	0,76	26 – 10
1037	PVC	300	60	0,30	24 – 20
1039	PVC	300	80	0,38	22 – 16
1040	P/B	300	80	–	22 – 16
1041	PVC	300	60	0,76	20 – 16
1043	PVC	300	80	0,76	20 – 16
1045	PVC	300	90	0,76	20 – 16
1049	PVC	300	80	1,14	20 – 16
1053	PVC	600	60	1,52	18 – 10
1054	PVC	600	80	1,52	18 – 10
1055	PVC	600	90	1,52	20 – 10
1056	PVC	600	105	1,52	20 – 10
1060	PVC	600	105	1,91	10 – 10
1061	SR PVC	300	80	0,23	30 – 16
1063	PVC	300	60	–	20 – 18
1095	PVC	300	80	0,30	30 – 16
1096	PVC/Nylon	300	80	–	26 – 10
1098	PE	2000	60	0,86	18
1099	PVC	300	80	0,38	28
1107	PE, FRPE	300	60	0,38	30 – 16
1108	PVC	300	80	–	26 – 16
1109	PVC, XPVC	300	90	0,38	26 – 16
1110	PVC; XPVC	300	105	0,38	26 – 16
1113	PE	600	60	–	26 – 16
1115	PVC	300/600	80	0,38	30 – 16
1116	PVC/Nylon	600	80	–	22 – 8
1118	PVC	300	90	0,38	26 – 16
1119	PVC	600	90	0,76	26 – 16
1120	PVC	600	105	0,76	30 – 4/0
1122	SR PVC	300	80	0,23	30
1123	PVC	300	80	0,76	22 – 20
1124	PVC	300	80	0,76	22 – 20
1158	PVC	300	60	0,76	22 – 9
1159	PVC	300	60	1,14	8
1160	PVC	300	60	0,38	22 – 16
1161	PVC	600	60	0,76	22 – 9
1162	PVC	600	60	1,14	22 – 9
1164	PTFE	300	150	0,33	32 – 10
1180	PTFE	300	200	0,38	28 – 10
1181	PVC/Nylon	600	60	0,76	18 – 16
1185	PVC	300	80	0,38	30 – 4/0
1195	PVC	300	80	0,38	26 – 14
1198	PTFE	600	150	0,51	26 – 10
1199	PTFE	600	200	0,51	26 – 10
1206	PVC	300	80	0,33	30 – 16
1208	PVC	300	80	0,33	26 – 16
1227	FEP	not specified*	105	0,20	32 – 14
1228	PVC	600	90	1,14	18 – 8
1229	PVC	600	90	1,52	8 – 2
1230	PVC	600	105	0,76	26 – 8
1231	PVC	600	105	1,14	18 – 8
1232	PVC	600	105	1,52/2,03	8 – 4/0
1233	PVC	600	80	1,52	18 – 8
1235	PVC	600	105	1,52	18 – 8
1237	PVC	600	80	1,14	22 – 19
1239	PVC	600	105	1,14	22 – 19
1270	PVC	600	90	1,14	18 – 9
1271	PVC	600	90	1,52	8 – 2
1272	PVC	600	90	1,91	1 – 4/0
1279	PVC	600	80	1,52	7 – 2
1280	PVC	600	80	1,14	18 – 8
1283	PVC	600	105	1,52	8 – 2
1284	PVC	600	105	1,91	1 – 4/0
1287	PVC	600	105	1,91	18 – 12
1306	PVC	600	80	2,29	8
1308	PVC	600	105	2,29	8

* not specified

UL-Style No.	Insulation Material	Voltage Volt	Temp. °C	Insulation thickness mm	AWG Size
1316	PVC/Nylon	600	105	0,38	26 – 12
1317	PVC/Nylon	600	105	0,51	10
1318	PVC/Nylon	600	105	0,76	8 – 6
1319	PVC/Nylon	600	105	1,02	4 – 2
1320	PVC/Nylon	600	105	1,27	1 – 4/10
1321	PVC/Nylon	600	105	1,78	250 – 1000
1322	PVC	600	90	1,91	14 – 10
1327	PVDF	–	105	0,25	30 – 16
1329	PVC	600	105	1,91	14 – 10
1330	FEP	600	200	variable	30 – 4/0
1331	FEP	600	105	variable	30 – 4/0
1332	FEP	300	200	0,38	30 – 10
1333	FEP	300	150	0,38	30 – 10
1335	PVC	600	90	0,76	22 – 10
1336	PVC	600	90	1,14	8
1337	PVC	600	90	1,52	6 – 2
1338	PVC	600	90	1,98	8 – 4/0
1366	PVC/PVC	600	90	variable	26 – 9
1394	PTFE	–	200	0,15	32 – 20
1400	PVC	600	90	1,14	14 – 10
1401	PVC	600	90	1,52	8
1402	PVC/Nylon	600	90	0,76	22 – 10
1405	PVC/Nylon	600	90	1,98	1 – 4/10
1408	PVC/Nylon	600	90	0,38	22 – 12
1409	PVC/Nylon	600	90	0,51	10
1410	PVC/Nylon	600	90	0,76	8 – 6
1411	PVC/Nylon	600	90	1,02	4 – 2
1412	PVC/Nylon	600	90	1,27	1 – 4/10
1413	PVC/Nylon	600	90	1,52	250 – 500
1414	PVC/Nylon	600	90	1,78	600 – 1000
1429	XPVC	150	80	0,25	32 – 16
1430	XPVC	300	105	0,38	30 – 16
1435	PE	300	80	0,41	26 – 16
1436	PE	300	80	0,79	26 – 16
1437	PE	300	80	1,63	26 – 16
1438	PE	300	80	1,14	26 – 16
1439	PE	300	80	0,81	26 – 16
1444	PVC	1000	90	1,14	18 – 10
1452	PVC/Nylon	1000	90	0,38	18 – 12
1453	PVC/Nylon	1000	90	0,51	10
1498	PCV	600	80	0,76	22 – 9
1499	PVC	600	90	0,76	22 – 9
1500	PVC	600	105	0,76	22 – 9
1508	ETFE	30	105	0,15	32 – 20
1517	ETFE	–	105	0,15	32 – 20
1523	ETFE	–	105	0,13	32 – 20
1533	PVC	–	80	0,23	30 – 10
1536	XPVC	–	80	0,25	30 – 10
1538	FEP	125	105	0,15	32 – 20
1542	PE-PVC	10000	80	–	24 – 10
1546	PE-PVC	600	–	–	20
1558	ETFE	–	125	0,10	32 – 20
1568	PVC	150	80	0,23	30 – 16
1569	PVC	300	105	0,38	28 – 10
1570	ETFE	600	250	–	24 – 8
1575	PVC	48	60	0,76	18 – 8
1581	PVC	300	80	0,38	14
1586	ETFE	–	105	0,20	32 – 6
1591	FEP	300	150	0,41	26 – 16
1592	FEP	300	200	0,41	26 – 16
1605	PVC	30	60	0,10	min. 46
1609	ETFE	125	105	0,13	32 – 6
1610	ETFE	not specified**	105	0,25	32 – 10
1612	PVDF	125	150	–	–
1618	PVC	300	80	0,38	–
1624	PVC	160	80	0,25	30 – 16
1662	PVC	300	80	variable	18 – 1/10
1680	PVC	–	105	–	18 – 1/10
1683	PVC	–	80	–	3/0
1692	PVC	30	80	2,54	min. 42
17107	PFA	30	200	0,127	32 – 20
1708	PFA	not specified**	200	0,127	32 – 20
1722	TPR	600	125	VAR	22 – 4/0
1729	PVC	300	80	0,22	32 – 16
1792	PE, PVC	30	80	0,05	min. 40
1847	FEP	30	105	0,08	min. 40
1848	FEP	300	150 o. 200	0,38	min. 24
1860	PFA	150	200	0,25	32 – 16
1888	TPR	300	125	0,41	–
1908	PVC	300	80	0,38	26 – 4/0
1909	PVC	600	80	0,76	26 – 4/0
1926	PE o. FRPE	300	60+80	0,17	30 – 16
1948	PVC	60	60	0,10	min. 46
1967	PVC	30	60+80	0,38	20 – 4/0
1968	PVC	–	60+80	0,38	20 – 4/0
1986	FEP	30	80	0,05	min. 50
1990	ETFE	600	105	0,50	30 – 4/0
1999	Zell. FEP	300	150	0,45	min. 36
10009	Zell. FEP	300	150	0,45	min. 36
10011	PFA	30	80	0,0254	min. 40
10030	PFA	300	250	0,025	30 – 10
10032	PFA	600	250	0,38	30 – 10
10050	FEP	600	150	0,457	30 – 4/0

LIST OF UL-STYLES (Multicore cables)

UL-Style No.	Insulation Material	Voltage Volt	Temp. °C	Insulation thickness mm	AWG Size
2006	PVC	300	80	1,14	20 – 16
2007	PVC	300	90	1,14	20 – 16
2012	PVC	300	80	1,52	18 – 16
2015	PVC	300	80	1,52	18 – 16
2030	PVC	600	80	1,91	14 – 10
2031	PVC	600	90	1,91	14 – 10
2032	PVC	600	105	1,91	14 – 10
2089	PVC	300	60	–	20 – 18
2090	PVC	300	60	–	20 – 18
2091	PVC	300	60	–	20 – 18
2092	PE	300	60	–	26 – 16
2093	PE	300	60	–	26 – 16
2094	PE	300	60	–	26 – 16
2095	PVC	300	90	–	32 – 16
2096	PVC	300	80	–	30 – 16
2097	PVC	300	80	–	30 – 18
2098	PVC	300	90	–	26 – 16
2099	PVC	300	90	–	26 – 16
2100	PVC	300	90	–	26 – 16
2101	PVC	300	105	0,38	30 – 16
2102	PVC	300	105	–	30 – 16
2103	PVC	300	105	0,38	30 – 16
2106	PE	600	60	–	26 – 12
2107	PE	600	60	–	26 – 12
2108	PE	600	60	–	26 – 12
2112	PVC	300	80	0,38	26 – 16
2113	PVC	300	80	0,38	26 – 16
2114	PVC	300	80	0,38	26 – 16
2115	PVC	600	80	–	26 – 16
2116	PVC	600	80	–	26 – 16
2117	PVC	600	80	–	26 – 16
2121	PVC	300/600	90	0,38	26 – 16
2122	PVC	300/600	90	0,38	26 – 16
2123	PVC	300/600	90	0,38	26 – 16
2124	PVC	600	90	0,76	28 – 9
2125	PVC	600	90	0,76	28 – 9
2126	PVC	600	90	0,76	28 – 9
2127	PVC	600	105	0,76	28 – 9
2128	PVC	600	105	0,76	29 – 9
2129	PVC	600	105	0,76	28 – 9
2243	PVC	300	105	1,14	20 – 16
2261	PVC	300	105	0,76	18
2262	PE	600 (isol.) 300 (Jacket)	60	0,76	26 – 16
2263	PE	600 (isol.) 300 (Jacket)	60	0,76	26 – 16
2264	PE	600 (isol.) 300 (Jacket)	60	0,76	26 – 16
2265	PVC	300	80	0,38	26 – 16
2266	PVC	300	80	–	26 – 16
2267	PVC	300	80	–	36 – 30
2268	PVC	300	80	–	26 – 16
2269	PVC	300	80	–	26 – 16
2270	PVC	300	80	–	26 – 16
2271	as for SVT	300	60	as for SVT	26 – 16
2272	as for SVT	300	60	as for SVT	26 – 16
2273	as for SVT	300	60	as for SVT	26 – 16
2274	as for SVT	300	60	as for SVT	26 – 16
2275	as for SVT	300	60	as for SVT	26 – 16
2276	as for SVT	300	60	as for SVT	26 – 16
2277	as for SVT	300	60	as for SVT	26 – 16
2278	as for SVT	300	60	as for SVT	26 – 16
2279	as for SVT	300	60	as for SVT	26 – 16
2280	as for SVT	300	60	as for SVT	26 – 16
2317	PE	600	60	–	26 – 16
2351	PE	600	80	–	26 – 16
2352	PE	300	80	–	26 – 16
2353	PE	300	80	–	26 – 16
2354	PE	600	80	–	26 – 16
2355	PE	600	80	–	26 – 16
2376	PVC	300	105	–	–
2384	variable	30	60	–	30
2385	VAR	30	60	–	30
2386	VAR	30	60	–	30
2387	VAR	30	60	–	30
2388	PVC	30	60	–	–
2405	PVC	300	80	–	30 – 16
2439	PE	600	80	–	26 – 16
2448	variable	30	60	–	30
2461	PVC	30	60	–	26 – 16
2462	PVC	300	60	–	–
2463	PVC	600	80	–	26 – 10

UL-Style No.	Insulation Material	Voltage Volt	Temp. °C	Insulation thickness mm	AWG Size
2464	variable	300	80	–	–
2468	PVC	300	80	0,38	32 – 16
2474	PVC	600	105	–	26 – 16
2477	PVC		60	–	33 – 16
2483	PVC	600	105	–	26 – 16
2489	PVC	600	60	–	18
2490	AWM	not specified*	60	AWM	min. 36
2493	PP		60	–	30 – 16
2498	PE	300	80	–	28 – 16
2501	PVC	600	105	–	30
2502	variable	30	80	–	–
2504	PVC	600	105	–	20 – 14
2507	PVC	600	60	–	26 – 16
2516	PVC	600	105	–	30 – 9
2517	PVC	300	105	–	32 – 16
2532	PVC	30	60	–	30 – 16
2535	PVC	30	80	–	30 – 16
2548	PE	300	80	–	–
2549	PVC	300	90	–	30 – 16
2550	AWM	600	90	AWM	min. 40
2551	AWM	30	105	AWM	min. 40
2560	PVC	30	60	–	30
2564	PVC	125	75	–	22
2567	PVC	600	60	–	–
2570	PVC	600	80	–	30 – 9
2571	PVC	–	80	–	30 – 16
2574	AWM	30	105	AWM	min. 40
2576	PVC	150	80	–	30 – 9
2582	PE	150	60	–	30 – 16
2584	PVC	125	80	–	30 – 9
2586	PVC	600	105	–	30 – 9
2587	PVC	600	90	–	30 – 9
2589	AWM	30	105	AWM	see AWM Requirements
2598	VAR	300	60	–	30 – 16
2606	PE	300	60	–	30
2610	labeled Style 1007	300	80	labeled Style 1007	see 1007 Requirements
2614	AWM	30	105	AWM	min. 40
2623	PE	30	80	–	30 – 20
2626	AWM	30	80	AWM	not specified*
2629	PE	300	80	–	30 – 16
2630	AWM	125	90	AWM	30 – 9
2631	AWM	not specified*	90	AWM	min. 40
2637	AWM	30	90	AWM	min. 40
2653	AWM	600	90	AWM	36 – 6
2654	AWM	300	90	AWM	36 – 6
2655	PVC	300	80	–	33 – 10
2656	AWM	600	80	AWM	36 – 6
2660	AWM	not specified*	60	AWM	–
2661	AWM	300	105	AWM	36 – 6
2662	PVC	600	105	–	33 – 10
2668	AWM	30	60	AWM	min. 40
2678	PVC	30	105	–	–
2704	PVC	30	60	–	30
2778	AWM	150	60	AWM	30 – 16
2789	AWM	30	60	AWM	see AWM
2833	AWM	30	60	AWM	–
2835	PP	30	80	–	22
2919	PP	30	80	–	28 – 18
2920	AWM	30	60	AWM	min. 40
2921	AWM	30	60	AWM	min. 40
2930	AWM	not specified*	105	AWM	min. 40
2931	AWM	125	105	AWM	min. 40
2937	AWM	300	80	AWM	AWM
3071	S/GB	600	200	0,76	18 – 14
3075	S/GB	600	200	0,76	10 – 2
3173	XLPE	600	125	0,76	26 – 9
3199	XLPE	300	105	0,38	22 – 16
3212	SiR	600	150	1,14	26 – 10
3213	SiR	600	150	1,52	8 – 2
3214	SiR	600	150	1,91	1 – 4/0
3239	SiR	VAR	150	VAR	24 – 10
3265	XLPE	150	125	0,25	28 – 20
3266	XLPE	300	125	0,38	26 – 16
3271	XLPE	600	125	VAR	24 – 12
3272	XLPE	600	125	VAR	22 – 4
3291	XPVC	300	105	–	26 – 16
20063	PE	300	80	0,5	28 – 16
20083	PE	300	80	AWM	various AWG
20601	AWM	300	80	AWM	AWM

* not specified

HELUKABEL®

INDEX BRITISH STANDARD

91	Electric cables, soldering buckets
125	Electric conductors, copper & copper-cadmium, for overhead transmission
215	Electric conductors, aluminium & steel-cored aluminium
801	Cable sheaths, lead and lead alloy
1441	Galvanised steel wire, for submarine cables
1442	Galvanised steel wire, for land cables
1791	Electric conductors, copper, cotton-covered
1843	Insulated cables, twin compensating cables, thermocouples, colour codes
1990	Communication transmission lines, wood poles
2316	Coaxial cables, radio frequency
2848	Cable sheaths, flexible
3242	Electric conductors, aluminium alloy, stranded, for power transmission
3573	Communication cables, polyolefin insulated & sheathed copper-conductor cables
3858	Electric cables, sleeves, binding & identification
3988	Electric conductors, aluminium solid conductors, for insulated cables
4066	Superseded by BSEN 50266-1:2001
4553	Insulated cables, PVC-insulated, split concentric copper
4565	Electric conductors, steal wire for reinforcing aluminium conductors
4579	Electric cables, mechanical & compression joints in connectors
4653	Electric conductors, copper, paper covered
4799	Electric conductors, copper glass fibre lapped
4801	Electric conductors, copper, glass fibre braided
4808	Communication cables, LE, PVC insulated & sheathed
4927	Electric conductors, copper, textile covered
50266	Test methods for cables under fire conditions
5055	Insulated cables, PVC & elastomer-insulated, for discharge-tube installations
5099	Cable sheaths, spark testing
5308	Insulated cables, instrumentation, intrinsically safe
5372	Electric cables, terminations for 3 & 4 core insulated cables, dimensions
5425	Communication cables, coaxial
5467	Power cables, armoured thermosetting-polymer insulated, for electricity supply
5593	Sheathed cables, aluminium-sheathed CONSAC cables
5819	Communication cables for interconnection between video recorder and television receivers
6004	Insulated cables, PVC insulated, non-armoured
6007	Insulated cables, rubber-insulated, non-armoured
6116	Flexible cables, elastomer-insulated flexible trailing cables, for mines and quarries
6141	Flexible conductors, for high temperature zones
6195	Flexible cables, insulated, for coil leads
6207	Mineral-insulated cables, copper sheathed, with copper conductors
6231	Single-core cables, PVC insulated, for switchgear and controlgear
6234	Insulated cables, polyethylene
6346	Power cables, PVC-insulated, for electricity supply
6360	Electric conductors, insulated cables
6387	Electric cables, fire-resistant, tests
6425	Electric cables, combustion gases, test methods
6469	Insulated cables, insulation and sheaths, test methods
6480	Power cables, impregnated paper-insulated, lead or lead alloy sheathed electric cables
6485	Electric conductors, PVC covered overhead power line conductors
6500	Flexible cables, insulated cords and cables
6622	Power cables, thermosetting-polymer insulated, high voltage
6708	Flexible cables, trailing cables, mining equipment
6724	Thermosetting polymer insulated, for electricity supply, low smoke
6726	Flexible conductors, for festoon and temporary lighting
6746	Cable sheaths, PVC

INDEX BRITISH STANDARD

6862	Electric cables, road vehicles
6883	Insulated cables, elastomer insulated cables, for ships
6899	Cable sheaths, rubber
6946	Electric cables, metal channel support systems
6977	Multicore cables, insulated flexible cables, for lifts
7211	Power cables, thermosetting polymer insulated, non-armoured, low smoke
7365	Electric conductors, hard drawn aluminium wire, for overhead lines
7919	Electric cables, flexible cables rated up to 450/750v for use with appliances and equipment intended for indutrial and similar environments
9530	Electric cables, cable fitting accessories, assessed quality, for circular electrical connectors
4737	Insulated cables, PVC-insulated, for intruder alarm systems
5425	Coaxial cables, for wideband distribution systems
638	Flexible cables, arc welding
6746C	Insulated cables, PVC insulation, colour chart
Aero 2E21	Pren type electric cables, for aircraft
Aero G177	Insulated cables, Nyvin type for aircraft
Aero G189	Tersil electric cables, for aircraft, imperial units
Aero G192	Specification for Efglas type electric cables with copper conductors, for aircraft
Aero G195	Insulated cables, Minyvin type, for aircraft, imperial units
Aero G206	Fepsil-type cables, for aircraft
Aero G210	Specification for PTFE insulated equipment wires (with silver plated copper conductors)
Aero G212	Electric cables, for aircraft
Aero G215	Insulated cables, thermocouple extension cables, for aircraft
Aero G221	Insulated cables, Minyvin-type, for aircraft, metric units
Aero G222	Insulated cables, Efglas-type, for aircraft, metric units
Aero G227	Tersil electric cables, for aircraft, metric units
Aero G230	Specification for general requirements for aircraft electrical cables (second series)
Aero G231	Electric conductors, copper and copper alloy, for aircraft cables
Aero G232	Insulated cables, lightweight thin-wall, wrapped for aircraft
Aero G233	Insulated cables, lightweight thin-wall, extruded for aircraft
Aero G235	Insulated cables, lightweight thin-wall, wrapped, silver plated copper conductors for aircraft
Aero G236	Insulated cables, lightweight thin-wall, wrapped, nickel plated copper conductors for aircraft
Aero G237	Insulated cables, lightweight thin-wall, extruded, nickel plated copper conductors for aircraft
Aero G238	Insulated cables, lightweight thin-wall, wrapped, nickel plated copper conductors for aircraft
Aero G241	Electric cables, fire-proof, for aircraft
Aero G242	Communication cables, for aircraft data bus interconnecting systems
Aero G243	Electric cables, ignition, for aircraft engines
Aero G291	Insulated cables, Efglas-type, for aircraft, imperial units
AU231	Specification for seven-core connecting cable for road vehicles
AU237	Flexible conductors, jumper lead sets, for automotive starting
AU7	Electric cables, automotive, colour codes
AU88	Electric cables, automobile, light duty, ratings
AU88a	Recommendations for ratings for light duty cables for automobile use
PD2379	Electric cables, manufacturers' identification threads, Commonwealth, South Africa, colour register

INTERNATIONAL ABBREVIATIONS

AFNOR **A**ssociation **F**rançaise de **NOR**malisation (France)
ANSI **A**merican **N**ational **S**tandards **I**nstitute (USA)
AS **A**ustralian **S**tandard (Australia)
ASTM **A**merican **S**tandard of **T**esting **M**aterials (USA)
BS **B**ritish **S**tandard (Great Britain)
BSI **B**ritish **S**tandard **I**nstitution (Great Britain)
BV **B**ureau **V**eritas (France)
CATV **C**ommunity **A**ntenna **T**elevision (International)
CEBEC **C**omité **E**lectrotechnique **B**elge (Belgium)
CEE International **C**ommission on Ruls for the Approval of **E**lectrical **E**quipment (International Commission)
CEI **C**ommission **E**lectrotechnique **I**nternationale (International)
CEMP **C**entre d'**E**tude des **M**atières **P**lastiques (France)
CEN **C**omité **E**uropéen de **N**ormalisation **E**lectrotechniques
CENELEC **C**omité **E**uropéen de **N**ormalisation **E**lectrotechniques
CNET **C**entre **N**ational d'**E**tude de **T**élécommunication (France)
CNOMO **C**omité de **N**ormalisation des **M**oyens de **P**roduction
CSA **C**anadian **S**tandards **A**ssociation (Canada)
DEMKO **D**anmarks **E**lektriske **M**aterielkontrol (Denmark)
DIN **D**eutsches **I**nstitut für **N**ormung (Germany)
DKE **D**eutsche **E**lektrotechnische **K**ommission im DIN und VDE (Germany)
EAC **E**ur**A**sian **C**onformity (GOST)
EN **E**uropean **S**tandards (Germany)
FAR **F**ederal **A**ir **R**egulation (USA)
FTZ **F**ernmeldetechnisches **Z**entralamt (Germany)
GOST **USSR**-**S**tandards
HD **H**armonisierungs-**D**okumente (International)
HN **H**armonisation des **N**ormes (France)
IEC **I**nternational **E**lectrotechnical **C**ommission (International)
IEE **I**nstitution of **E**lectrical **E**ngineers (Great Britain)
IEEE **I**nstitute of **E**lectrical and **E**lectronics **E**ngineers
ISDN **I**ntegrated **S**ervices **D**igital **N**etwork (International)
ISO **I**nternational **O**rganization for **S**tandardization (International)
KEMA **K**euring van **E**lektrotechnische **M**aterialien (Netherlands)
LCIE **L**aboratoire **C**entral des **I**ndustries **E**lectriques (France)
MIL **M**ilitary **S**pecification (USA)
NEC **N**ational **E**lectrical **C**ode (USA)
NEMA **N**ational **E**lectrical **M**anufacturers **A**ssociation (USA)
NEMKO **N**orges **E**lektriske **M**ateriellkontroll (Norway)
NEN **N**ederlands **N**ormalisatie-Instituut (Netherlands)
NF **N**ormes **F**rançaises (France)
NFC **N**ormes **F**rançaises **C**lass C (France)
ÖVE **Ö**sterreichischer **V**erband für **E**lektrotechnik (Austria)
SAE **S**ociety of **A**utomotive **E**ngineers
SEK **S**venska **E**lektriska **K**ommissionen (Sweden)
SEMKO **S**venska **E**lektriska **M**aterielkontroll-anstalten (Sweden)
SETI Sähkötarkastuslatios (Finland)
SEV **S**chweizerischer **E**lektrotechnischer **V**erein (Swizerland)
SNV **S**chweizerischer **N**ormenverband (Swizerland)
TGL **DDR**-**S**tandards: Technische Normen, Gütevorschriften und Lieferbedingungen (ehemalige GDR)
UL **U**nderwriters **L**aboratories Inc. (USA)
UNI **U**nificazione **N**azionale **I**taliana (Italy)
UTE **U**nion **T**echnique de l'**E**lectricité (France)
VDE **V**erein **D**eutscher **E**lektroingenieure (Germany)
VDEW **V**ereinigung **D**eutscher **E**lektrizitätswerke e. V. (Germany)
ZVEH **Z**entralverband der **D**eutschen **E**lektro-handwerke e. V. (Germany)
ZVEI **Z**entralverband der **E**lektrotechnik- und Elektronik **I**ndustrie e. V. (Germany)

HELUKABEL®

DEFINITIONS: CLASSES OF STRESS (DUTY) IN FLEXIBLE CABLES AND INSULATED WIRES

The application of a flexible cable in certain areas as, or in, operating materials as well as for certain combi-nations of external influences that can occur in these areas, is described by the collective term “stress” or “duty”. Suitable flexible cables and insulated wires are defined in the applicable equipment standards for the devices in question. On the basis of mechanical influences, as well the general expressions used, the term “stress” or “duty” is divided into the following categories.

Normal stress / Ordinary duty

– Normal stress is present when the cables are subject to low mechanical stresses in the areas of application, and the risk of mechanical damage is low, as is the case to be expected in the normal use of small to medium size equipment in domestic and commercial as well as in light industrial premises.
Such equipment includes amongst others, vacuum cleaners, toasters, washing machines, refrigerators.

Low stress / Light duty

– Low stress is then present when the risk of mechanical damage and mechanical stress is low in the areas of application, as is the case to be expected for normal use of lightweight hand-held devices and lightweight operating materials in domestic households.
Included in such equipment are radios, floor lamps, hairdryers, small desktop office equipment.

Very low stress / Extra light duty

– Very low stress is then present when the risk of mechanical damage and mechanical stress is very low and can be considered negligible, i.e. under those influences that are to be expected for lightweight appliances in households and offices; Cases of applications where the cables having a greater mechanical protection would restrict the freedom of movement by the appliance. Included in such types of appliances are electric clocks and electric shavers.

High stress / Heavy duty

– High stress is then present when the risk of mechanical damage or a mechanical stress is of medium severity appreciable, e.g. for normal use of equipment in moderately heavy branches of industry or agri-cultural workshops, and the temporary use of such at building sites.
Included in such equipment are, amongst others, moderately heavy portable machinery and motors at a building site or in agricultural workings, large hot-water boiling installations, hand-held lamps, hoists, and fixed installations in temporary buildings.

High stress (Heavy duty) in multi-core cables

– Applications as for high stress, though primarily for use in areas of manufacturing facilities including tool-making machinery, or mechanical handling equipment. The cables can be used inside or outside buildings for an ambient temperatures ranging from between −25°C and +50°C and the stabilised conductor temperatures do not exceed +60°C Examples are for connecting a control unit to a production machine, connections between a control unit and a machine, e.g. in hoists or cranes where the cable length does not normally exceed 10 m. Longer cable lengths are permissible for fixed inter-connections.

Application: Indoor and outdoor use

The terms are in conjunction with the limiting conditions, such as for example, minimum and maximum operating temperatures, or the influence of the ambient temperatures, understood as being limited by the design and intended usage. This context is defined by “the intended environment”.

Indoor use

– The cables are installed or connected to an apparatus device and can be used permanently in the building at all times, namely in “the intended environment”. The building can be used for commercial, industrial or residential purposes.

Outdoor use for a limited period

– The cables may be used outdoors as “the intended environment” for short periods of time, e.g. connected to electric lawnmowers or drills.

Permanent outdoor use

– The cables are designed to resist the various stresses that can occur outdoors in “the intended environment” (including weather conditions).

CHARACTERISTICS* OF INSULATING AND SHEATH MATERIALS

	Designation			Electrical					Thermic						
	VDE Initial-code	Abbreviations	Materials	Density g/m³	Breakdown-voltage KV/mm (20°C)	Spezific volume resistivty Ohm·cm 20°C	Dielectric constant 50 Hz/20°C	Dielectric loss-factor tan δ	Working temperature permanent °C	Working temperature short time °C	Melt-temperrature +°C	Flame-resistance	Oxygen index LOI (% O_2)	Heating value H_0 MJ·kg^{-1}	
Thermoplastic	Y	PVC	Polyvinylchloride compounds	1,35–1,5	25	10^{13}–10^{15}	3,6–6	4×10^{-2} to 1×10^{-1}	– 30 + 70	+100	>140	self-extinguishing	23–42	17–25	
	Yw	PVC	Heat-resistant 90°C	1,3–1,5	25	10^{12}–10^{15}	4–6,5		– 20 + 90	+120	>140			16–22	
	Yw	PVC	Heat-resistant 105°C	1,3–1,5	25	10^{12}–10^{15}	4,5–6,5		– 20 +105	+120	>140		24–42	16–20	
	Yk	PVC	Cold resistant	1,2–1,4	25	10^{12}–10^{15}	4,5 –6,5		– 40 + 70	+100	>140			17–24	
	2Y	LDPE	Low density Polyethylene	0,92–0,94	70	10^{17}	2,3	2×10^{-4}	– 50 + 70	+100	105–110	flammable	≦22	42-44	
	2Y	HDPE	High density Polyethylene	0,94–0,98	85	10^{17}	2,3	3×10^{-4}	– 50 +100	+120	130				
	2X	VPE	Cross-linked Polyethylene	0,92	50	10^{12}–10^{16}	4–6	2×10^{-3}	– 35 + 90	+100	–				
	O2Y		Foamed Polyethylene	~0,65	30	10^{17}	~1,55	5×10^{-4}	– 40 + 70	+100	105		18–30		
	3Y	PS	Polystrole	1,05	30	10^{16}	2,5	1×10^{-4}	– 50 + 80	+100	>120		≦22	40–43	
	4Y	PA	Polyamide	1,02 –1,1	30	10^{15}	4	2×10^{-2} to 1×10^{-3}	– 60 +105	+125	210		≦22	27–31	
	9Y	PP	Polypropylene	0,91	75	10^{16}	2,3 –2,4	4×10^{-4}	– 10 + 90	+140	160			42–44	
	11Y	PUR	Polyurethane	1,15 –1,2	20	10^{10} –10^{12}	4–7	$2,3 \times 10^{-2}$	– 55 + 80	+100	150		20–26	20–26	
	TPE-E (12Y)		Polyester Elastomer	1,2 –1,4	40	$>10^{10}$	3,7 –5,1	$1,8 \times 10^{-2}$	– 50 +100	+140	190		≦29	20–25	
	TPE-O		Polyolefine Elastomer	0,89–1,0	30	$>10^{14}$	2,7–3,6			+130	150		≦25	23–28	
Elastomere	G	NR SBR	Natural rubber Styrol-butadiene-rubber-compounds	1,5–1,7	20	10^{12}–10^{15}	3–5	$1,9 \times 10^{-2}$	– 65 + 60	+120	–	flammable	≦22	21–25	
	2G	SiR	Silicone rubber	1,2 –1,3	20	10^{15}	3–4	6×10^{-3}	– 60 +180	+260	–	high flash point	25–35	17–19	
	3G	EPR	Ethylen-propylene rubber-compounds	1,3–1,55	20	10^{14}	3–3,8	$3,4 \times 10^{-3}$	– 30 + 90	+160	–	flammable	≦22	21–25	
	4G	EVA	Ethylen-vinylacetat copolymer-compunds	1,3–1,5	30	10^{12}	5–6,5	2×10^{-2}	– 30 +125	+200	–			19–23	
	5G	CR	Polychloroprene compounds	1,4–1,65	20	10^{10}	6–8,5	5×10^{-2}	– 40 +100	+140	–	self-extinguishing	30–35	14–19	
	6G	CSM	Chlorsulfonated Polyethylene compunds	1,3–1,6	25	10^{12}	6–9	$2,8 \times 10^{-2}$	– 30 + 80	+140	+160			19–23	
High temp. materials	10Y	PVDF	Polyvinylidene fluoride Kynar/Dyflor	1,7–1,9	25	10^{14}	9–7	$1,4 \times 10^{-2}$	– 40 +135	+160	>170	self-extinguishing	40–45	15	
	7Y	ETFE	Ethylene-Tetrafluor ethylene	1,6–1,8	36	10^{16}	2,6	8×10^{-4}	–100 +150	+180	>265	self-extinguishing	30–35	14	
	6Y	FEP	Fluorine ethylene propylene	2,0–2,3	25	10^{18}	2,1	3×10^{-4}	–100 +205	+230	>225	self-extinguishing	>95	5	
	5YX	PFA	Perfluoralkoxypolimeric	2,0–2,3	25	10^{18}	2,1	3×10^{-4}	–190 +260	+280	>290	self-extinguishing	>95	5	
	5Y	PTFE	Polytetrafluorethylene	2,0–2,3	20	10^{18}	2,1	3×10^{-4}	–190 +260	+300	>325	self-extinguishing	>95	5	
halogen-free compounds	H	not cross-linked	halogen-free polymer-compounds	1,4–1,6	25	10^{12}–10^{14}	3,4–5	~10^{-3}	– 30 + 70	+100	>130	self-extinguishing	≦40	17-22	
	HX	cross-linked	halogen-free polymer-compounds	1,4–1,6	25	10^{13}–10^{14}	3,4–5	10^{-2}–10^{-3}	– 30 + 90	+150	–	self-extinguishing	≦40	16–25	

* The characteristics valid for unprocessed material

HELUKABEL®

CHARACTERISTICS* OF INSULATING AND SHEATH MATERIALS

Thermic			Mechanical					Halogen	Weather		Designation			
Thermal-conductivity W·K^{-1}·m^{-1}	Corrosive gases in case of fire	Radiation-resistance-max Mrad	tensile strength N/mm^2	Elongation at break %	Shore-hardness	Corrosion behaviour	Abrasion resistance	halogen-free	Weather resistance	Cold resistance	VDE-Initial-code	Abbreviations	Material	
0,17	Hydrogen chloride	80	10–25	130–350	70–95 (A)	medium	0,4	no	medium in black	moderate-good	Y	PVC	Polyvinylchloride-compounds	Thermoplastic
											Yw	PVC 90°C	Heat-resistant	
											Yw	PVC 105°C	Heat-resistant	
										very good	YK	PVC	Cold resistant	
0,3	no	100	10–20	400–600	43–50 (D)	medium	0,1	yes	good	good	2Y	LDPE	Low density Polyethylene	
0,4			20–30	500–1000	60–63 (D)	good					2Y	HDPE	High density Polyethylene	
0,3			12,5–20	300–400	40–45 (D)	medium			good		2X	VPE	Cross-linked Polyethylene	
0,25			8–12	350–450	–	–	–	conditional[1]	–		O2Y		Foamed Polyethylene	
0,25	no	80	55–65	300–400	35–50 (D)	good	0,4	yes	medium - good	moderate - good	3Y	PS	Polystrole	
0,23	no	10	50–60	50–170	–	very good	1,0–1,5		good	good	4Y	PA	Polyamide	
0,19			20–35	300	55–60 (D)	medium	0,1		moderate		9Y	PP	Polypropylene	
0,25		100 (500)	30–45	500–700	70–100 (A)	very good	1,5	yes[2]	very good	very good	11Y	PUR	Polyurethane	
0,5		10	30	>300	85 (A) 70 (D)	good	1,5	yes			TPE-E (12Y)		Polyester Elastomer	
1,5		10	20		55 (A) 70 (D)						TPE-O		Polyolefine Elastomer	
–	no	100	5–10	300–600	60–70 (A)	moderate	1,0	no	moderate	very good	G	NR SBR	Natural rubber Styrol-butadiene-rubber-compounds	Elastomere
0,22		50			40–80 (A)			yes	good		2G	SiR	Silicone rubber	
–		200		200–400	65–85 (A)				very good	good	3G	EPR	Ethylen-Propylene rubber-compounds	
–		100	8–12	250–350	70–80 (A)				good		4G	EVA	Ethylen-vinylacetat copolymer-compunds	
–	Hydrogen chloride	50	10–20	400–700	55–70 (A	medium		no	very good	moderate - good	5G	CR	Polychloroprene compounds	
–				350–600	60–70 (A)		1,5			moderate	6G	CSM	Chlorsulfonated Polyethylene compunds	
0,17	Hydro-fluoric	10	50–80	150	75–80 (D)	very good	0,01	no	very good	very good	10Y	PVDF	Polyvinylidene fluoride Kynar/Dyflor	High temp. materials
0,24	yes	10	40–50	150	70–75 (D)	very good	0,02		very good	very good	7Y	ETFE	Ethylene-Tetrafluor ethylene	
0,26	yes	1	15–25	250	55–60 (D)	very good	0,01		very good	very good	6Y	FEP	Fluorine ethylene propylene	
0,21	yes	0,1	25–30	250	55–60 (D)	very good	0,01		very good	very good	5YX	PFA	Perfluoralkoxypolimeric	
0,26	yes	0,1	80	50	55–60 (D)	very good	0,01		very good	very good	5Y	PTFE	Polytetrafluorethylene	
0,17	no	100	8–13	150–250	65–95 (A)	medium	0,2–1,5	yes	medium in black: good	average	H	not cross-linked	halogen-free polymer-compounds	halogen-free compouns
0,20	no	200	8–13	150–250		medium					HX	cross-linked	halogen-free polymer-compounds	

[1] The propellent may be e.g. Fluor-Chlor-Hydrcarbon

[2] depend on the type compound

HELUKABEL®

SAFETY REQUIREMENTS IN THE USE OF CABLES AND INSULATED WIRES

Fundamental requirements

The cables and insulated wires shall be of adequate safety for proper use in the intended manner such that these do not constitute any unacceptable risk to life or damage to property. The prevention of danger to persons and property during usage and storage of operating equipment means safety to include the detection of stress, risk and potential faults, as well as their rectification or a limitation to a minimum risk level.
Unless otherwise specified, cables and insulated wires should only be used for the conductance and distri-bution of electricity.

General requirements

The choice in the selection of cables and insulated wires should be such that the voltages and currents prevailing in the operating equipment, a system or device used shall meet all operating conditions to be expected.
The cables shall be constructed, installed, protected, used and maintained to prevent danger as far as its reasonably practical.

Limiting conditions

The limiting conditions in the DIN VDE and HD specifications shall be taken into account. An acceptable service life will be attained by compliance with the limiting conditions, depending on the circuit designed under defined conditions for use. The usable life of a permanently installed cable for power distribution is longer than that of a flexible cable.
The influence by all of the factors given in the following sections must be considered as an interrelationship and not on an individual basis.

Selection of cables and insulated wires

The choice in the selection of cables and insulated wires shall be made such that these are suitable for the operating conditions as well as for all other external influences and compliance with the respective protection class.

a) Operating conditions are, for example:
   - voltage
   - protective measures
   - grouping of cables
   - current
   - method of installation
   - accessibility

b) External influences are, for example:
   - ambient temperature
   - presence of rain, water vapour or the accumulation of water
   - presence of corrosive, contaminating or other chemical substances
   - mechanical stresses (such as holes or sharp edges from metal constructions for example)
   - animal world (such as rodents)
   - plant world (such as fungal growths)
   - irradiation (such as sunlight).

Note: The colour black provides a higher degree of protection than other colours.

SAFETY REQUIREMENTS IN THE USE OF CABLES AND INSULATED WIRES

Requirements for cables

– for permanent installation, and
– for flexible applications

Requirements for fixed installation

In the normal case, cables for permanent installation have solid single wire or stranded conductors. In certain circumstances, e.g. for greater ease of installation, the conductor may be Class 5 according to DIN VDE 0295.
Cables should not be in contact with, or close to, hot surfaces if the cables are not intended for such conditions.
Cables should not be buried directly in the earth and should be fastened by a suitable means while making allowance for the maximum spacing between fixing points.
The cable should not be damaged by any mechanical restraint used for its support . Cables which have been in use over longer periods of time may become damaged by movement. This can be caused by the natural effects of ageing on the physical properties of the materials used for the insulation sheath and jacket which can become brittle with time.

For flexible applications

Flexible cables are made up conductors consisting of multiplicity of small wires and are either stranded or bunched. These cables meet either Class 5 or Class 6 of DIN VDE 0295.
Flexible cables should be used for connections to mobile operating equipment. The length of the connecting cable must be chosen such that response by the short-circuit protecting device is assured. The cable length should be as short as is needed for the practical application so as to reduce the risk of mechanical damage. In cases of applications where flexible PVC-sheathed cables are permissible, the use of spiral cables can be considered for shortening the effective length.
Flexible PVC-sheathed cables are not necessarily suitable for processing further to spiral cables. Multicore control cables shall be protected against permanent bending stress. Abrasion, notches and sharp bends are to be avoided.

Except for cables for connections to permanently installed operating equipment, flexible cables should not be permanently fixed (with the exception of heavy-duty cable designs for permanent installation in temporary facilities) unless these are contained in an enclosure affording mechanical protection. For a fixed installation, at least one cable should be used for "normal" stress.

Flexible cables should not be subjected to excessive straining from tensile forces, compression, twisting or kicking. This applies in particular at the point of entry into the device, and strain relief or the point of connection to the fixed wiring. These should not be damaged by any strain relief or clamping device at points to the permanent installation.

Flexible cables should not be placed under floorcoverings or carpets because there is the danger that this can cause thermal insulating effects, leading to increased temperatures, or that the weight of furniture from traffic can damage the cables.

Flexible cables should neither be in contact with, or close to, hot surfaces nor extend into the immediate vicinity of such, as they are not suitable for this purpose.

On account of their characteristics, this also applies in particular for PVC-sheathed and/or jacketed cables. The suitability of flexible cables for outdoor applications, either for short periods or continuous operation, is defined in the tables of the HD 516 and in DIN VDE Part 300.

Flexible PVC-sheathed cables are not suitable for permanent use in outdoor applications.
The types of structures for PVC-sheathed cables for short-term use in outdoor applications should not however be operated in conditions others than these, e.g. at temperatures lower than the specified temperature.

SAFETY REQUIREMENTS IN THE USE OF CABLES AND INSULATED WIRES

Cables without a jacket may neither be used as a substitute for a jacketed cable nor as an extension cable. These shall principally not be used for connecting Class 2 equipment unless the cable in the constructional standard has been defined as a cable for extra light duty and the equipment standard explicitly permits this cable type.

The corresponding VDE and HD regulations shall be observed for the cables used in deep mining operations, in quarrying as well as for moveable equipment, such as in cranes with spring-loaded reeling devices for example.

Voltage

The rated voltage for a cable is the reference voltage for which the cable is designed and which serves to define the electrical testing requirements.
The rated voltage is expressed as the ratio of two values, U_0 /U, whereby U_0 is the effective value (r.m.s.) of the voltage between any insulated conductor and the "earth" (metal covering of the cable or surrounding medium)
U is the effective value (r.m.s.) between any two phase conductors of a multicore cable or of a system of single core cables. In an alternating current system, the rated voltage of a cable shall be at least equal to the nominal voltage to the value U_0 and U. In direct current system, the rated voltage of the system shall not be higher than 1,5 times that of the nominal voltage of the cable.
Note:
The operating voltage of a system may permanently exceed the rated voltage for the cable by 10 %.

Current carrying capacity

The nominal cross-section of each conductor should be selected such that the current carrying capacity is not less than the maximum continuous current that flows through the conductor under normal conditions of operation. The limiting temperature with respect to the current carrying capacity should not be exceeded for the cable insulation and sheath concerned.

Included in the defined conditions is also the method of installation for the cable used. The regulations for the permissible current rating shall be observed here for the current.
Correction factors may also be included in the values given for the load rating to allow for other conditions, such as for example:
1. cable grouping
2. type of overcurrent protection
3. ambient temperature
4. reeled / drummed cables
5. thermal insulation
6. frequency of the current (if other than 50 Hz)
7. effects of harmonic waves

Serious damage can be caused if cables are operated for longer periods of time above those limits given in the tables and can lead to early failure or considerable deterioration in the cable characteristics.

Thermal influences

Cables should be selected, located and installed so that the intended heat dissipation is not inhibited and they do not present a fire hazard to adjacent materials.

The limiting temperatures for the individual cables are given separately in our catalogue. Under no circumstances may these values be exceeded by an interaction of internal joulean heat (to the material of the cable, connections and terminals) by the ambient conditions.

SAFETY REQUIREMENTS IN THE USE OF CABLES AND INSULATED WIRES

Mechanical stress

Allowance shall be made for all possible mechanical stress that can arise during a normal installation process for laying cable in order to assess the risk of mechanical damage to cables.

Tension

The following values for tension should not be exceeded for each conductor in use. This applies up to a maximum value of 1000 N for the tensile stress of all conductors unless HELUKABEL® has approved limits deviating from this value.
50 N/mm^2 by permanent operation for fixed installation.
15 N/mm^2 for flexible cables under static tension for fixed installation that are used in current circuits.
It is recommended for those cases where the above values are exceeded, that a separate strain-relieving element or similar protection should be used. The connection of such a strain-relieving element to the cable shall be made such that the cable is not damaged.
If flexible cables are subjected to dynamic tensile stress (including those due to the mass inertia, e.g. for reeling drums), the permissible tension or the fatigue life should be agreed between the user and HELUKABEL®.

Bending stress

The internal bending radius of a cable should be chosen such that the cable is not damaged by this.
The choice of bending radii smaller than specified shall be concurred with HELUKABEL®.
Attention shall be given when stripping the insulation that the conductor is not damaged by this as the bending characteristics will otherwise seriously deteriorate.
The bending radii given apply for ambient temperatures of (20 ±10)°C. The recommendations from HELUKABEL® shall be enquired for ambient temperatures other than those given.

Bending too close to any internal and/or external anchorage shall be avoided.

Kink-protection sleeves or other devices shall not impede the movement of the cores within the cable.

Compression

Cables shall not be compressed to an extent that this will damage the cable.

Torsional stress

In general, flexible cables are not designed for torsional stress. In those cases where such torsional stress cannot be avoided, then the design of the cable and the installation arrangements should be agreed between user and HELUKABEL®.

SAFETY REQUIREMENTS IN THE USE OF CABLES AND INSULATED WIRES

Compatibility

The following points shall be considered in the selection and installation of cables:
– The avoidance of interference mechanical and electrical influences between adjacent circuits.
– Dissipation of heat from cables, or the chemical/physical influences from the materials used for the cables on bordering materials, such as for example, constructional and decorative materials, insulation tubes, supports, etc.
– Mutual interference by adjacent materials and the materials used for the cables. This applies for instance, for an absorption of plasticiser from PVC-sheathed cables by certain materials that are used for thermal insulation purposes, for strapping materials or for the equipment.

Dynamic stress

The possibility should be taken into consideration of damage to cables and fastenings for these, by the dynamic forces that can be caused by any current including short-circuit currents.

Storage/Handling/Transportation

Cables that are not intended for outdoor applications should be stored in dry indoor environments.
A number of constructional types of flexible cables are particularly susceptible to moisture, such as screened cables for example.

The ends of the cables should be sealed for the application and the expected duration of outdoor storage in order to prevent the penetration of moisture. The temperatures given in the tables in HD 516 S2 for storage shall be taken into account.

If the temperature of the cable falls below recommended values, then all types of mechanical stresses, in particular vibrations, shock, impact, bending and torsional twist shall be avoided.

HELUKABEL®

GLOSSARY OF TERMS: CABLES AND WIRES

A

Acceptance angle - The half-angle of the cone within which incident light is totally internally reflected by the fiber core. It is equal to arcsin (NA).

$$\ominus = \arcsin \sqrt{n_1^2 - n_2^2}$$

Aerial cable - A cable suspended in the air on poles or other overhead structure.

Appliance Wire and Cable - A classification covering insulated wire and cable for internal wiring of appliances and equipment.

Armoured Cable - A cable provided with a wrapping of metal for mechanical protection.

ASA - Abbreviation for American Standards Association. Former name of ANSI.

ASME - Abbreviation for American Society of Mechanical Engineers.

ASTM - Abbreviation for the American Society for Testing and Materials.

ATM (Asynchronous Transfer Mode) - A new emerging data standard that uses many of the same data rates as Fiber Channel and SONET.

Attenuation - The power drop or signal loss in a circuit, expressed in decibels (db). Generally attenuation increases (signal level decreases) with both frequency and cable length.

AWG - Abbreviation for American Wire Gauge. A standard measurement of the size of a conductor.

AWM - Designation for Appliance Wiring Material.

B

Bit - A binary digit, smallest element of information in binary system.

Bit (Binary Digit) - A basic unit for the datas of a digital transmitting system. A group of 8 Bit is usually expressed as one Byte.

Bit rate - The number of bits of data transmitted over a phone line per second.

B & S Gauge - Standard for Brown & Sharpe Gauge. The wire diameter standard is same as AWG.

Breakdown Voltage - The voltage at which the insulation between two conductors will break down. Performed as a type test in the laboratory.

British Standard Wire Gauge - A modification of the Birmingham Wire Gauge and the legal standard of Great Britain for all wires. It is variously known as Standard Wire Gauge (SWG), New British Standard (NBS), English Legal Standard, and Imperial Wire Guide.

Building Wire - Insulated wires used in building for light and power, 600 volts or less, usually not exposed to outdoor environment.

Buffer - A protective coating over an optical fibre. A soft material extruded tightly over the fibre coating, mechanically isolates individual fibres.

BUS - A network which functions like a signal line and is shared by a number of nodes.

C

Cable - Multicore stranded insulated wires under protective sheath to conduct electrical energy e.g. power cable, telecommunication cable, installation cable, data cable etc.

Cable Core - The portion of an insulated cable lying under the protective covering.

Cable Sheath - A protecting covering over the cable core to prevent outer damages.

Capacitance (Capacity) - That property of a system of conductors and a dielectric which permits the storage of electricity when potential difference exists between the conductors. A capacitance value is always positive.

Capacitive Coupling - Electrical interaction between two conductors caused by the capacitance between them.

CATV - Acronym for Community Antenna Television.

CEBEC - Belgium approval agency; Comite Electrotechnique Belge Service de la Marque.

CEE - European standards agency; International Commission on Rules for the Approval of Electrical Equipment.

Cellular insulation - Insulating material in foamed or sponge form with the cells closed or interconnected.

CENELEC - European standards agency; European Committee for Electrotechnical Norms.

Chromatic dispersion - The speed of an optical pulse travelling in a fiber changes if its wavelength changes. Chromatic dispersion can be measured by the measurement of travel time at different wavelength.

Circuit - The entire route of an electrical current. A complete path over which electrons can flow from the negative terminals of a voltage source through parts and wires to the positive terminals of the same voltage source.

Circuit Sizes - A popular term for building wire sizes 14 through 10 AWG.

GLOSSARY OF TERMS: CABLES AND WIRES

Circular Mil (CM) - Used to define cross-sectional areas of conductors. Area of a circle 1/1000 inches in a diameter. 1 mil (0,001 inch) is equal to square mil x 0,78540.

Cladding - A low-refractive index, glass or plastic that surrounds the core of a fiber. Optical cladding promotes total internal reflection for the propagation of light in a fiber.

Coaxial Cable - A cable consisting of two cylindrical conductors with a common axis, separated by a dielectric. The outer conductor or shield is commonly used to prevent external radiation from affecting the current flowing in the inner conductor.

Coherent waves - The phenomenon related to the existence of a correlation between the phases of the corresponding components of two waves or between the values of the phase of a given component of one wave at two instants in time or two points in space.

Colour Code - A system of identifying different insulated cores by means of colours, numbers, printing etc.

Concentric lay - Cable core composed of a central core surrounded by one or more layers of helically laid insulated wires or cores.

Conductor - A material capable of easily carrying an electrical conductivity. A wire or combination of wires not insulated from one another, suitable for carrying electric current.

Control Cable - A multi-conductor cable made for operation in control of signal circuits.

Copolymer - A compound resulting from the polymerization of two different monomers.

Copperweld - Copper covered steel wire. Copper and steel welded together. The trade name of Flexo Wire Division (Copperweld Steel Corp.) for their copper-clad steel conductors.

Cord - A small, flexible insulated cable.

Cord Set - Portable cords fitted with a wiring device at one or both ends. Cord is a small flexible insulated conductor or group of conductors, normally not larger than AWG 10 - up to 4 cores.

Core - In cables, a component or assembly of components over which other materials are applied, such as additional components, shield, sheath, or armour.

Corona - A discharge due to ionization of air around a conductor with a potential gradient exceeding a certain critical value. A high voltage electrical discharge that attacks insulation.

Crimp - Act of compressing a connector barrel around a cable in order to make an electrical connection.

Cross-linked - Setting up the chemical links between the molecular chains. A form of polyethylen material whose moleculars are more closely linked to produce a greater balance of physical and electrical properties. (XLPE - compound)

Crosstalk - Interference caused by audio frequencies. Undesired electrical currents in conductors caused by electromagnetic or electrostatic coupling from other conductors or from external sources. Also, leakage of optical power from one optical conductor to another.

CSA - Abbreviation for Canadian Standards Association, a non-profit independent organization which operates a listing service for electrical and electronic materials and equipment. The Canadian counterpart of the Underwriter's Laboratories.

Current - Flow of electricity measured in amperes. Practical unit is the ampere which represents the transfer of one coulomb per second.

Current rating - The maximum continuous electrical flow of current recommended by a given wire in a given situation, expressed in amperes.

Cut off wavelength - For a singlemode fiber, the wavelength above which the fiber exhibits singlemode operation.

D

dB - see decibel

D. C. - Abbreviation for direct current (D – C), Electricity that flows in one direction only.

Decibel (dB) - One-tenth of a bel. Unit to express differences of power level. Example: The decibel is 10 times the common logarithm of the power ratio. It is used to express power gain in amplifiers or power loss in passive circuits or cables.

DEMKO - Approval agency of Denmark. Denmarks Elektriske Material Kontrol.

Dielectric Breakdown - The voltage required to cause an electrical failure or breakthrough of the insulation.

Dielectric Strength - The maximum voltage insulation can withstand without rapture. Usually expressed as a voltage gradient, e. g. volts per mil.

Dispersion - A general term for those phenomena that cause a broadening or spreading of light as it propagates through an optical fiber. The three types are modal, material, and waveguide.

Drain Wire - An uninsulated wire used as an earth connection. This is generally laid over the component or under the screening, braiding etc.

Duct - An underground or overhead tube or conduit for carrying electrical cables.

E

EIA - Abbreviation for Electronic Industries Association.

Elastomer - Any material that will return to its original size after stretching. Elastomer is a rubber or rubber-like material which will stretch repeatedly to 200 percent or more and return rapidly with force to its approximate original shape.

Electromagnetic Coupling - Energy transfer by means of a varying magnetic field.

Electromagnetic Induction - The production of a voltage in a coil due to a change in the number of magnetic lines of force (flux linkages) passing through the coil.

Elongation - The fractional increase in the length of a material stressed in tension.

EMC - Electromagnetic Compatibility (EMV).

EMF - Abbreviation for Electro Motive Force – force determinating flow of electricity (voltage).

EMI - Any electrical or electromagnetic interference that causes undesirable response, degradation, or failure in electronic equipment. Optical fibers neither emit or receive EMI.

EMV - Designation for electromagnetic compatibility (EMC).

EPR - Ethylene-propylene copolymer rubber. The copolymer is chemically cross-linked.

ETFE - Ethylene tetrafluoroethylene

F

FDDI - Fiber Distributed Data Interface. Very high speed Computer Network working with fiber optics.

FEP - Fluorinated ethylene propylene

Ferrule - A component of a connector that holds fiber in place and aids in its alignment, usually cylindrical in shape with a hole through the center.

Filled Cable - A telephone cable construction in which the cable core is filled with a material that will prevent moisture from entering or passing through the cable.

Fine Stranded Wire - Stranded wire with component strands of 36 AWG or smaller.

Flame Resistance - The ability of a material not to propagate flame once the heat source is removed.

Flammability - The measure of the material's ability to support combustion.

Flat Cable - A cable in flat form, where the cores lying parallel longitudinally but essentially with flat surfaces.

Foamed Plastics - Insulations having a cellular structure.

Foils - A thin supporting film of continuous sheet such as plastic foil, metal foil, laminated foil etc. for static shielding, contacts and other electrical applications.

FR-1 - A flammability rating established by Underwriters Laboratories for wires and cables that pass a specially designed vertical flame test. This designation has been replaced by VW-1.

FRNC - Flame Retardant Non Corrosive

G

Gauge - A term used to denote the physical size of a wire.

Graded-index fiber - An optical fiber whose core has a nonuniform index of refraction. The core is composed of concentric rings of glass whose refractive indices decrease from the center axis. The purpose is to reduce modal dispersion and thereby increase fiber bandwidth.

Ground Conductor - An electrical conductor for the connection to the earth, making a complete electrical circuit.

H

Helix - A continuous spiral winding.

Henry - The unit of inductance (H).

Hertz (Hz) - A unit of measurements of the frequency equal to one cycle per second.

High Temperature Wire and Cable - Electrical wire and cables having thermal operating characteristics of 150°C and higher.

Hi-Pot - A test designed to determine the highest voltage that can be applied to a conductor without electrically breaking down the insulation.

High Voltage - Generally, a wire or cable with an operating voltage of 600 volts and above.

Hook-up Wire - Single conductor used to hook-up electrical parts of instruments for low current and voltage (under 1000 volts).

Hybrid Cable - Multi-conductor cable containing two or more types of components.

Hypalon - Du Pont's trade name for their chlorosulfonated polyethylene, an ozone resistant synthetic rubber (90°C).

Hz - Abbreviation for Hertz.

I

ICEA - Abbreviation for Insulated Cable Engineers Association.

IEC - European Standardization agency; International Electrotechnical Commission.

IEEE - Abbreviation for Institute of Electrical and Electronics Engineers.

Impedance - Resistance to flow of an alternating current at a particular frequency, expressed in ohms. It is a combination of resistance R and reactance X, measured in ohms.

Index profile - A graded-index optical fiber, the refractive index as a function of radius.

Induction - An influence exerted by a charged body or by a magnetic field on adjacent bodies without apparent communication.

Inductive Coupling - Crosstalk resulting from the action of the electromagnetic field of one conductor on the other.

Insulation - A non-conducting substance, named as dielectric, surrounding the conductor.

Interface - The two surfaces on the contact side of both halves of a multiple-contact connector which face each other when the connector is assembled. Common interconnection point for devices, e.g. RS232 Interface: Mouse-Personalcomputer.

ISDN - Integrated Services Digital Network. A standard protocol for digital telecommunications transmissions.

J

Jacket - An overall covering of a cable, called also sheath – which protects against the environment and stress.

Jumper - A short length of conductor used to make a temporary connection between terminals, around a break in a circuit, or around an instrument.

K

KEMA KEUR - Approval agency of Netherlands. Keuring van Elektrotechnische Materialien.

KV - Abbreviation for kilovolt = 1000 volts.

KVA - Abbreviation for kilovolt ampere = 1000 volts x amperes.

KW - Abbreviation for kilowatt = 1000 watt.

Kynar - Fluorocarbon insulation rated -65°C to +135°C, typically used as insulation for wire wrapwire.
A Pennwalt trade name for polyvinylidene floride.

L

Laser - Light Amplification by Stimulated Emission of Radiation. An electro-optic device that produces coherent light with a narrow range of wavelengths, typically centered around 780 nm, 1310 nm, or 1550 nm.

Laminated Tape - A tape consisting of two or more layers of different materials bonded together.

LAN = Local Area Network - A network located in a localised area e.g. in an office, building, complex buildings whose communication technology provides a high-bandwidth, low-cost medium to which many nodes can be connected.

LED - Light Emitting Diode.

LOCA - Abbreviation for Loss of Coolant Accident, a system malfunction associated with nuclear generating stations.

Loop Resistance - The total resistance of two conductors in a closed circuit, measured round trip from one end.

Loss Factor - The loss factor of an insulating material is equal to the product of its dissipation and dielectric constant.

M

MCM - Cross-section of greater AWG-sizes.
1 MCM= 1000 circular mils = 0,5067 mm^2.

Meg or Mega -
Prefix meaning 1 million = 1.000000 = 10^6.

Megarad - A unit for measuring radiation dosage.
1 megarad = one million rads = 10^6 rad or 10^6 cJ/kg.

Mho - The unit of conductivity. The reciprocal of an ohm.

MHz - One million cycles per second = megahertz = 10^6 Hz.

Modem - Abbreviation for Modulator/Demodulator. Device which allows to transmit electrical data via analogues transmission paths with limited bandwidth, e. g. Computer data via telephone lines.

MTW - An acronym for thermoplastic insulated Machine Tool Wire.

Multi-conductor - A combination of two or more conductors in a cable under jacket.

Multimode-Fiber - A type of optical fiber that supports more than one propagation mode.

Mutal Capacitance - Capacitance between two conductors when all other conductors are connected together to shield and ground.

Mylar - Du Pont trademark for polyester material.

N

National Electric Code Article 725 - The NEC Article which covers remote control, signal and communication power limited circuits that are not an integral part of the device or appliance.

National Electric Code Article 760 - The NEC Article which covers the fire and burglar alarms installation of wire and equipment operating at 600 Volts or less.

National Electric Code (NEC) - A set of regulations governing construction and installation of electrical wiring and apparatus in the United States, established by the American National Board of Fire Underwriters.

NEMA - National Electrical Manufacturers Association.

NEMKO - Approval agency of Norway.
Norges Elektriske Materiellkontroll.

Neoprene - A synthetic rubber of thermosetting material with good resistance to oil, chemical, and flame, known as polychloroprene - mostly used as jacketing.

Neper - An electrical unit similar to decibel, used to express the ratio between two amount of power existing at two distinct points. 1 Neper = 8,686 decibels.

NFPA - Abbreviation for National Fire Protection Association. Administrative Sponsor of the National Electric Code (ANSI Standards Committee CI).

Numerical Aperture NA - The "light-gathering ability" of a fiber, defining the maximum angle to the fiber axis at which light will be accepted and propagated through the fiber. NA = sin ø, where ø is the acceptance angle.

$$NA = \sin \ominus\text{-max} = \sqrt{n_1^2 - n_2^2}$$

Nylon - A group of polyamide polymers, used for wire and cable jacketings with good chemical and abrasion resistance.

O

Ohm - The electrical unit of resistance. The value of resistance through which a potential difference of one volt will maintain a current of one ampere.

Optical Fiber - Any filament or fiber, made of dielectric materials, that guides light, whether or not it is used to transmit signals. Synonym: optical waveguide.

OSHA - Abbreviation for Occupational Safety and Health Act. Specifically the Williams-Steiger law passed in 1970 covering all factors relating to safety in places of employment.

OVE - Approval agency of Austria.

Overlap - A certain portion of a foil or band which laps over the leading edge of a helical or longitudinally wrapping tape.

Ozone - A faintly blue gasious, reactive form of oxygen, obtained by the silent discharge of electricity in ordinary oxygen or in air.

Ozone Index - Percentage of oxygen necessary to support combustion in gas mixture.

P

Pair - 2 insulated wires twisted together in a certain lay-length to built a single circuit of transmission line.

Patch Cable - A cable with plugs or terminals on each end of the conductors to temporarily connect circuits of equipment together. In the IBM Cabling System, a length of Type 6 cable with data connectors on both ends.

Patch Cord - A flexible piece of electrical cord terminated at both ends with plugs, used for interconnecting circuits on a pasteboard.

Patch Panel - Distribution area to rearrange fiber connections and circuits.

pH - The measure of acidity or alkalinity of a substance. PH values are described from 0 to 14. Value 7 indicate the neutrality. Numbers below 7 result increasing acidity and number greater than 7 increasing alkalinity.

Pick - Distance between two adjacent crossover points of braiding wires or filaments, measured in picks per inch.

Pigtail - A short length of optical fiber, permanently fixed to a component, used to couple power between the component and a transmission fiber.

Plenum - The air return way of a central air handling system, either ductwork or open space over a dropped ceiling.

Plenum Cable - Cable approved by Underwriters Laboratories for installation in plenums without the need for conduit.

Plug - The part of the two mating halves of a connector which is movable when not fastened to the other mating half.

Polychloroprene - Chemical name of neoprene. A rubber-like compound for jacketing and also for insulating where cables are subject to rough usage, oils, moisture, solvents, greases and chemicals.

Polyester (PETP) - A resin formed by the reaction between a dibasic acid and a dithydroxy alcohol. Polyethylene terephthalate, used extensively as a moisture resistant cable core wrap.

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Polyethylene (PE) - This material is basically pure hydrocarbon resins with excellent dielectric properties, i. e. low dielectric constant, low dielectric loss across the frequency spectrum, mechanically rugged and resists abrasion and cold flow. The insulating materials derived from polymerization of ethylene gas.

Polyerm - A material of high molecular weight formed by polymerization of lower molecular weight molecules.

Polyolefin - A group of thermoplastics based upon the unsaturated hydrocarbons, known as olefins. When combined with butylene or styrene polymers, the form compounds such as polyethylene and polypropylene.

Polypropylene (PP) - A thermoplastic similar to polyethylene but stiffer and having higher softening point (temperature); excellent electrical properties.

Polyurethane (PUR) - Class of polymers known for good abrasion and solvent resistance. A copolymer of urethane is similar in properties to neoprene, usually used as a coldcuring moulding compound.

Polyvinyl Chloride (PVC) - This is a group of thermoplastic compounds composed of polymers of polyvinyl chloride or its polymer, vinylacetate, in combination with certain stabilizers, fillers, plasticizers, pigments etc., widely used for wire and cable insulations and several jackets.

Power Cables - Cables of several sizes, construction, and insulation, single or multi-conductor, designed to distribute primary power to various types of equipment, such as cables ≧ 0,6/1 kV.

Power Factor - The ratio between the true power in watts and the apparent power in volts – amperes.

Primary Coating - The plastic coating applied directly to the cladding surface of the fiber during manufacture to preserve the integrity of the surface.

Printed Wiring - A printed circuit intended to provide point-to-point electrical connections.

Propagation - Delay time required for an electrical wave to travel between two points on a transmission line.

R

Rayleigh Scattering - The scattering of light that results of from small inhomogeneities in material density or composition.

Reel - A revolvable flanged device made of wood or metal, Used for winding of wires or cables.

Refractive index - The ratio of the velocity of light in a vacuum to its velocity in the medium. Synonym: Index of Refraction.

Resistance - Property of an electric circuit which determines for a given current the rate at which electric energy is converted into a heat and has a value, is measured in ohms.

RG/U - Abbreviation for Radio Government, Universal. RG is the military designation for coaxial cable in Mil-C-17. R = Radio, G = Guide, U = Utility.

Ribbon Cable - A flat cable consisting of two or more insulated conductors laid parallel in one plane and held together by means of adhesive or woven textile yarns.

RMS (Root Mean Square) - The effektive value of an alternating current or voltage.

Rubber (Wire Insulation) - Term used to describe wire insulations made of thermosetting elastomers, occur naturally or may be made synthetically.

S

S - Rubber insulated heavy duty flexible cable, stranded copper wires with separator. Two or more colour coded, stranding with filler, wrapped with separator, rubber jacket. 600 V.

Semi-Rigid - A cable containing a flexible inner core and a relatively inflexible sheathing.

Semi-Rigid PVC - A hard semi-flexible polyvinylchloride compound with low plasticizer content, (shore A ≧97), for Termi-Point – connecting technique.

Semi-Solid - An insulation cross-section having a partially open space between the conductor and the insulation perimeter.

SEMKO - Approval agency of Sweden.

Separator - A layer of insulating material which is placed between a conductor and its dielectric, between a cable jacket and the component it covers, or between various components of a multiple-conductor cable.

Silicone - A thermosetting elastomer with excellent heat-resistant. Polymeric materials in which the recuring chemical groups contain silicon and oxygen atoms at links in the main chain.

Simplex - Transmission only in one direction.

Singlemode-Fiber - A small-core optical fiber that supports only one mode of light propagation above the cutoff wavelength. Typical diameter is 9 – 10 mm, the dispersion very low. Singlemode fibers are proper for long distance transmissions.

SJ - Junior hard service, rubber-insulated pendant or portable cord. Same construction as type S, but 300 V. Jacket thickness different.

SJO - Same as SJ, but neoprene, oil resistant compound outer jacket. Can also be made „waterresistant" 300 V, 60°C.

SJT - Junior hard service thermoplastic or rubberinsulated conductors with overall thermoplastic jacket. 300 V, 60°C to 105°C.

SJTO - Same as SJT but oil resistant thermoplastic outer jacket. 60°C.

SO - Hard service cord, same construction as type S except oil resistant neoprene jacket. 600 V, 60°C to 90°C.

SOOW – like SO, but oil and water-resistant.

Solid Conductor - A conductor consisting of a single wire.

SONET - Synchronous Optical Network.

SP-1 - All rubber, parallel-jacketed, two-conductor light duty cord for pendant or portable use in damp locations. 300 V.

SP-2 - Same as SP-1, but heavier construction, with or without third conductor for grounding purposes. 300 V.

SP-3 - Same as SP-2, but heavier construction for refrigerators or room air conditioners. 300 V.

SPT-1 - Same as SP-1, except all-thermoplastic. 300 V. With or without third conductor for grounding.

SPT-2 - Same as SP-2, except all-thermoplastic. 300 V. With or without third conductor for grounding.

SPT-3 - Same as SP-3, except all-thermoplastic. 300 V. With or without third conductor for grounding.

Spark Test - A test designed to locate pinholes in an insulated wire by application of an electrical potential across the material for a very short period of time while the wire is drawn through an electrode field.

Splice - An interconnection method for joining the ends of two optical fibers in a permanent or semipermanent fashion. Maybe thermally fused or mechanically applied.

ST - Hard service cord, jacketed, same as type S, except all-plastic design. 600 V, 60°C to 105°C.

Step index Fiber - An optical fiber, either multi-mode or singlemode, in which the core refractive index is uniform throughout so that a sharp step in refractive index occurs at the core-to-cladding interface.

STO - Same as ST but with oil resistant thermoplastic outer jacket. 600 V, 60°C.

SV - Vacuum cleaner cord, two or three-conductor, rubber-insulated. Overall rubber jacket. For light duty in damp locations. 300 V, 60°C.

SVO - Same as SV except neoprene jacket. 300 V, 60°C.

SVT - Same as SV except all-plastic, construction. With or without third conductor for grounding purposes only. 300 V, 60°C to 90°C.

T

Tape Wrap - A spirally applied tape over an insulated or uninsulated wire.

Tear Strength - The force required to initiate or continue a tear in a material under specified conditions.

Temperature Rating - The maximum temperature at which an insulating material may be used in continuous operation without loss of its basic properties.

TEW - Canadian Standard Association type appliance wires. Solid or stranded single conductor, plastic-insulated. 600 V, 105°C.

TF - Fixture wire, thermoplastic-covered solid or 7 strands. 60°C.

TFE - Tetrafluoroethylene.

TFF - Same as TF but flexible stranding. 60°C.

THHN - 90°C, 600 V nylon jacketed building wire.

Thermocouple Lead Wire - An insulated pair of wires used from the couple to a junction box.

Thermoplastic - A material which softens when heated and becomes firm on cooling.

THW - Thermoplastic vinyl insulated building wire. Flame-retardant, moisture and heat-resistant 75°C. Dry and wet locations.

THWN - Same as THW but with nylon jacket overall. 75°C.

Transmission - Transfer of electric energy from one location to another through conductors or by radiation or induction fields.

Tray Cable - A factory-assembled multi-conductor or multipair control cable approved under the National Electrical Code for installation in cable trays.

Triaxial Cable - A three-conductor cable constructed in three coincident axes, of which one conductor in the centre, second circular conductor concentric with the first and the third circular conductor insulated from the concentric with the first and second, usually with insulation, a braiding and a outer jacket.

TW - Thermoplastic vinyl-jacketed building wire, moisture resistant 60°C.

Twisted Pairs - A cable composed of two small insulated conductors twisted together without a common covering.

U

UL - Abbreviation for Underwriter's Laboratories, Inc.

Ultraviolet - Optical radiation for which the wavelengths are shorter than those for visible radiation, that is approximately between 1 nm and 400 nm.

Unilay Stranding - A conductor constructed in bunch form having more than one layer in a concentric stranding with a common length and direction of lay and contains 19, 27, 37 and any number of strands.

V

VDE - West Germany approval agency.

Velocity of light - The velocity of light is 300.000 km/s in vacuum. In a medium it depends on the refractive index and the wavelength.

Velocity of Propagation - Ratio of speed of flow of electric current in an insulated cable to the speed of light. Usually expressed in percentage.

Volt - A unit of electromotive force.

Voltage - The term most often used in place of electromotive force, potential difference, or voltage drop to designate the electric pressure that exists between two points and is capable of producing a current when a closed circuit is connected between two points.

Voltage Drop - The amount of voltage loss from original input to point of electrical device.

Voltage Rating - The highest voltage that may be continuously applied to a wire in comformance with standards.

VW-1 - A flammability rating established by Underwriters Laboratories for wires and cables that pass a specially designed vertical flame test, (formerly designated FR-1).

W

Wall Thickness - The thickness of the applied insulation or jacket.

WAN - Wide Area Network. A network of connected computers that covers a great geographical area.

Water Absorption - A test to determine the water absorbed by a material after a given immersion period.

Wire - A conductor, either bare or insulated. A slender rod of metal usually referring to a single conductor, such as size 9 AWG and smaller.

Wire Gauge - A system of numerical designation of wire sizes.

X

XLPE - Cross-linked polyethylene.

Y

Yield Strength - The minimum stress at which a material will start to physically deform without further increase in load.

Z

Zytel - Du Pont's trade name for nylon resins.

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INTERNATIONAL CERTIFICATION MARKS AND TESTING INSTITUTE

Country	Certification marks	Testing Institutes/ Registration Agency
Belgien		Comité Electrotechnique Belge Belgisch Elektrotechnisch Comité (CEBEC)
China		Chinesische Zwangsläufige Zertifikation (China Compulsory Certification)
Denmark		Danmarks Elektriske Materielkontrol (DEMKO)
Germany		VDE-Prüfstelle (Verband Deutscher Elektrotechniker e. V.
Germany		VDE-Prüfstelle (Verband Deutscher Elektrotechniker e. V.
Germany		Fraunhofer Institut Produktionstechnik und Automatisierung
Europe		Communauté Européenne
Finland		FIMKO LTD
France		Union Technique de l´Electricité (UTE)
Great Britain		BSI British Standards Institution (Zeichenvergabestelle)
Italy		IMQ Instituto Italiano de Marchio Qualitá
Canada		Canadian Standards Association (CSA)
Netherlands		Naamloze Vennootschap tot Keuring van Electrotechnische Materialen (KEMA)
Norway		Norges Elektriske Materiellkontroll (NEMKO)
Austria		Österreichischer Verband für Elektrotechnik (Registration Agency)
Russia		EAC Certification (Eurasian Conformity) (GOST-R is replaced by EAC)
Sweden		Svenska Elektriska Materielkontrollanstalten (SEMKO)
Switzerland		Schweizerischer Elektrotechnischer Verein (SEV)
USA		Underwriters Laboratories (UL)

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FORMULAS OF ELECTROTECHNIC AND ELECTRONIC

Cross-section for **single wire round**

$q = \frac{D^2 \cdot \pi}{4}$ or $D^2 \cdot 0{,}7854$

Cross-section for **bunched wire**

$q = \frac{d^2 \cdot \pi}{4} \cdot n$ or $d^2 \cdot 0{,}7854 \cdot n$

Diameter for
single wires cross-section

$D = \sqrt{\frac{q \cdot 4}{\pi}}$ or $\sqrt{q \cdot 1{,}2732}$

Diameter for **bunched wires**

$D = \sqrt{1{,}34 \cdot n \cdot d}$

q = cross-section (mm^2)
D = conductor diameter (mm)
d = single wire diameter (mm)
n = number of wires

Conductor Resistance

$R = \frac{l}{\kappa \cdot q}$ oder $\frac{\rho \cdot l}{q}$

$R_{Schleife} = \frac{2 \cdot l}{\kappa \cdot q}$ oder $\frac{2 \cdot l\ p}{q}$

R = Electrical direct-current resistant (Ohm)
$R_{Schleife}$ = Resistance of a complete circuit
q = cross-section (mm^2 or q mm)
κ (Kappa) = Conductivity
ρ (Rho) = Specific resistance ($\rho = \frac{1}{\kappa}$)
l = Conductor length (m)

Materials	Conductivity $\frac{m}{\Omega \cdot mm^2}$	Spec. resistance $\frac{\Omega \cdot mm^2}{m}$
Copper	58,00	0,01724
Aluminium	33,00	0,0303
Silver	62,00	0,0161
Iron	7,70	0,1299
Constantan	2,00	0,50

Serial connection

Resistance: $R = R_1 + R_2 + R_3 + ... + R_n$

Capacitance: $\frac{1}{C} = \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3} + ... + \frac{1}{C_n}$

Inductance: $L = L_1 + L_2 + L_3 + ... + L_n$

Parallel connection

Resistance: $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + ... \frac{1}{R_n}$

Capacitance: $C = C_1 + C_2 + C_3 + ... C_n$

Inductance: $\frac{1}{L} = \frac{1}{L_1} + \frac{1}{L_2} + \frac{1}{L_3} + ... \frac{1}{L_n}$

Equivalent resistance of 2 parallel connected resistance

$R = \frac{R_1 \cdot R_2}{R_1 + R_2}$

Mutual capacity (C)

• coaxial cable $C = \frac{\xi r \cdot 10^3}{18 \cdot \ln \frac{Da}{d}}$ (nF/km)

• parallel core $C = \frac{\xi r \cdot 10^3}{36 \cdot \ln \frac{Da}{d}}$ (nF/km)

• shielded twisted pair

$C_B = \frac{\xi r \cdot 10^3}{36 \ln \frac{2a}{d} \cdot \frac{(Da^2 - a^2)}{(Da^2 - a^2)}}$ (nF/km)

Da = Outer diameter over insulation
Ds = diameter over shield
d = diameter of conductor
a = distance - mid to mid of both conductors
ξ = dielectric constant

Ohm's Law

The current intensity (I) is proportional to voltage (U) and inversely proportional to resistance (R)

$I = \frac{U}{R}$ $R = \frac{U}{I}$ $U = I \cdot R$

I = current intensity (Amps - A)
R = electrical resistance (Ω)
U = electrical voltage (V)

Conductance

$G = \frac{1}{R}$ $1S = \frac{1}{1\ \Omega}$ or $1\ \mu S = \frac{1}{1\ M\Omega}$

S (Siemens) = reziprocal value of a resistance is used as **conductance**
1 Siemens = 1/Ohm
G = electrical conductance

Capacitance

• Single core against earth

$C_B = \frac{\xi r \cdot 10^3}{18\ \ln \frac{Di}{d}}$ (nF/km or pF/m)

• Unshielded symmetrical twisted pair

$C_B = \frac{\xi r \cdot 10^3}{36\ \ln \frac{2a}{d}}$ (nF/km or pF/m)

• Coaxial pair

$C_B = \frac{\xi r \cdot 10^3}{18\ \ln \frac{Di}{d}}$ (nF/km or pF/m)

• Shielded symmetrical twistet pair

$C_B = \frac{\xi r \cdot 10^3}{36\ \ln \frac{2a}{d} \cdot \frac{(Da^2 - a^2)}{(Da^2 - a^2)}}$ (nF/km or pF/m)

Di = outer diameter over single core (mm)
Da = outer diameter of multicores (mm)
d = conductor diamete (mm)
a = distance between two conductors mid to mid of both conductors

Inductance of parallel cores

at low frequencies

$L = 0{,}4 \left(\ln \frac{Da}{r} + 0{,}25\right)$ mH/km

at high frequencies

$L = 0{,}4 \left(\ln \frac{Da}{r} + 0\right)$ mH/km

Inductance of coaxial cable

at high frequencies

$L = 0{,}2 \left(\ln \frac{Da}{r} + 0\right)$ mH/km

Da = distance between two conductors mid to mid of both conductors
r = radius of a conductor
ξr = dielectric constant

Impedance (Z)

for coaxial cable $Z = \frac{60}{\sqrt{\xi r}} \cdot \ln \frac{D}{d}$ (Ω)

D = diameter over insulation
d = conductor diameter

for communication cable

at low frequencies $Z = \sqrt{\frac{R}{\omega C}}$ (Ω) $\cdot \tan \varphi = 1,\ \varphi = 45°$

at high frequencies $Z = \sqrt{\frac{L}{C}}$ (Ω)

R = Resistance (Ω/km)
L = Inductance (mH/km)
C = Capacitance (nF/km)
ω = 2 π f

Wave length $\lambda = \frac{V}{f}$

λ = wave length
V = propagation velocity (velocity of light: 300 000 km/s)
f = frequency

units of attenuation - Neper (N), decibel (dB) and Bel (B)

1 Np = 8,686 dB
1 dB = 0,1151 Np = $\frac{1}{10}$ Bel
1 Bel = 10 dB = 1,1513 Np

FORMULAS OF POWER ENGINEERING

Cross section

- for direct current and single **phase** alternative current
  one-phase current
  of known current
  for three-phase current

$$q = \frac{2 \cdot I \cdot l}{\kappa \cdot u} \quad (mm^2)$$

$$q = \frac{1{,}732 \cdot I \cdot \cos\varphi \cdot l}{\kappa \cdot u} \quad (mm^2)$$

- for direct current and single **phase** alternative current
  of known power
  for three-phase current

$$q = \frac{2 \cdot l \cdot P}{\kappa \cdot u \cdot U} \quad (mm^2)$$

$$q = \frac{l \cdot P}{\kappa \cdot u \cdot U} \quad (mm^2)$$

Voltage drop

For low voltage cable network of normal operation, it is advisable of a voltage drop of 3-5%.
On exceptional case, higher values (up to 7%) can be permitted in case of network-extension or in short-circuit.

- for direct **current**
  of known current

$$u = \frac{2 \cdot I \cdot l}{\kappa \cdot q} \quad (v)$$

  for single phase alternative current

$$u = \frac{2 \cdot I \cdot \cos\varphi \cdot l}{\kappa \cdot q} \quad (v)$$

  for three-phase current

$$u = \frac{1{,}732 \cdot I \cdot \cos\varphi \cdot l}{\kappa \cdot q} \quad (v)$$

- for direct **current**
  of known power

$$u = \frac{2 \cdot l \cdot P}{\kappa \cdot q \cdot U} \quad (v)$$

  for single phase alternative current

$$u = \frac{2 \cdot l \cdot P}{\kappa \cdot q \cdot U} \quad (v)$$

  for three-phase current

$$u = \frac{l \cdot P}{\kappa \cdot q \cdot U} \quad (v)$$

u = voltage drop(V)
U = operating voltage (V)
P = power (W)
R_w = effective resistance (Ω)/km)
L = Inductance (mH/km)
ωL = induktiver Widerstand (Ω)/km) ($\omega = 2 \cdot \pi \cdot f$ at 50 Hz = 314)
q = cross-section (mm^2)
I = working current (A = Ampere)
l = length of the line in m
κ (Kappa) = electrical conductivity of conductors ($m/\Omega \cdot mm^2$)
κ-copper : 58
κ-Alu : 33

Nominal voltage

The nominal voltage is to be expressed with two values of alternative current U_0/U in V (Volt).
U_0 /U = phase-to-earth voltage
U_0 : Voltage between conductor and earth or metallic covering (shields, armouring, concentric conductor)
U : Voltage between two outer conductors
U_0 : $U/\sqrt{3}$ for three-phase current systems
U_0 : U/2 for single-phase and direct current systems
U_0/U_0 : an outer conductor is earth-connected for A. C.- and Nominal current

Active current

I in (A)

Reactive current

$I_w = I \cdot \cos\varphi$

Blindstrom

$I_0 = I \cdot \sin\varphi$

Apparent power (VA)

$S = U \cdot I$ for single phase current (A. C.)
$S = 1{,}732 \cdot U \cdot I$ for three-phase current

Active power (W)

$P = U \cdot I \cdot \cos\varphi$ for single phase current (A. C.)
$P = 1{,}732 \cdot U \cdot I \cdot \cos\varphi$ for three-phase current
$P = U \cdot I$ for direct current

Reactive power (var)

$Q = U \cdot I \cdot \sin\varphi$ for single phase current (A. C.)
$Q = 1{,}732 \cdot U \cdot I \cdot \sin\varphi$ for three-phase current
(Voltampere reactiv) $Q = P \cdot \tan\varphi$

Phase angle

φ is a phase angle between voltage and current

cos φ	= 1,0	0,9	0,8	0,7	0,6	0,5
sin φ	= 0	0,44	0,6	0,71	0,8	0,87

Insulation resistance

$$R_{iso} = \frac{S_{iso}}{l} \cdot \ln \frac{Da}{d} \cdot 10^{-8} \ (M\Omega \cdot km)$$

Specific Insulation resistance

$$R_s = \frac{R \cdot 2\pi \cdot l \cdot 10^8}{\ln \frac{Da}{di}}$$

D_a = outer diameter over insulation (mm)
d = conductor diameter (mm)
di = inner diameter of insulation (mm)
l = length of the line (m)
S_{iso} = Spec. resistance of insulation materials (Ω · cm)

Mutual capacity (C_B) for single-core, three-core and H-cable)

$$C_B = \frac{\xi r \cdot 10^3}{18 \ln \frac{Da}{d}} \ (nF/km)$$

Inductance

Single-phase $0{,}4 \cdot (\ln \frac{Da}{r} + 0{,}25)$ mH/km

three-phase $0{,}2 \cdot (\ln \frac{Da}{r} + 0{,}25)$ mH/km

D_a = distance - mid to mid of both conductors
r = radius of conductor (mm)
ξr = dielectric constant
0,25 = factor for low frequency

Earth capacitance

$E_C = 0{,}6 \cdot C_B$

Charging current (only for three-phase current)

$I_{Lad} = U \cdot 2\pi f \cdot C_B \cdot 10^{-6}$ A/km je Ader bei 50 Hz

Charging power

$P_{Lad} = I_{Lad} \cdot U$

Leakage and loss factor

$G = \tan\delta \cdot \omega C$ (S)

$\tan\delta = \frac{G}{\omega C}$

ω = 2 π f
C = Capacity
tanδ = loss factor
S = Siemens = $\frac{1}{1\Omega}$

Dielectric loss

$D_v = U^2 \cdot 2\pi f \cdot C_B \cdot \tan \cdot 10^{-6}$ (W/km)
f on 50 Hz

tanδ PE/VPE cables	~0,0005
EPR	~0,005
Paper-single core, three-core, H-cable	~0,003
Oil-filled and pressure cable	~0,003
PVC-cable	~0,05

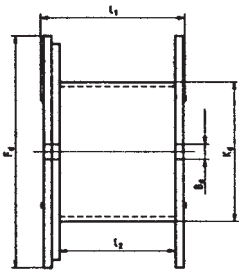
It should be noted that for the current load of the insulated cables and wires of selected cross-section, the power ratings table is also be considered.
To estimate the voltage drop of insulated wires and cables for heavy (big) cross-sections of single- and three-phase-overhead line, the active resistance as well as the inductive resistance must be considered.

The formula for single-phase (A. C.):
$U = 2 \cdot l \cdot I \cdot (R_w \cdot \cos\varphi + \omega L \cdot \sin\varphi) \cdot 10^{-3}$ (V)

Three-phase:

$U = 1{,}732 \cdot l \cdot I \cdot (R_w \cdot \cos\varphi + \omega L \cdot \sin\varphi) \cdot 10^{-3}$ (V)

CAPACITY OF KTG-POOL DRUMS



F_d = Flange-ø
K_d = Drum Barrel-ø
B_d = Bore-ø
l_1 = Width over all
l_2 = Width for windings

Wooden drums (standard)

Drum-code numbers	Drum-size	Flange Ø F_d	Drum-Barrel Ø K_d	Bore Ø B_d	Width over all l_1	Width for windings l_2	Load bearing capacity max.	Drum weight
		mm	mm	mm	mm	mm	kg	kg
051	05	500	150	56	470	410	100	8
061	06	630	315	56	415	315	250	17
071	07	710	355	80	520	400	250	25
081	08	800	400	80	520	400	400	31
091	09	900	450	80	690	560	750	47
101	10	1000	500	80	710	560	900	71
121	12	1250	630	80	890	670	1700	144
141	14	1400	710	80	890	670	2000	175
161	16/8	1600	800	80	1100	850	3000	280
181	18/10	1800	1000	100	1100	840	4000	380
201	20/12	2000	1250	100	1350	1045	5000	550
221	22/12	2240	1400	125	1450	1140	6000	710
250	25/14	2500	1400	125	1450	1140	7500	875
251	25/16	2500	1600	125	1450	1130	7500	900
281	28/18	2800	1800	140	1635	1280	10000	1175

Plastic drums

Drum-code numbers	Flange Ø F_d	Drum-Barrel Ø K_d	Width over all l_1	Width-for windings l_2	Load bearing capacity max.	Drum weight
	mm	mm	mm	mm	kg	kg
050	500	150	456	404	100	4
070	710	355	510	400	250	15
080	800	400	510	400	350	16
090	900	450	680	560	400	23
100	1000	500	704	560	500	32

One-way wooden drums

Drum-code numbers	Flange Ø F_d	Drum-Barrel Ø K_d	Width over all l_1	Width-for windings l_2	Bore Ø max. B_d	Drum weight
	mm	mm	mm	mm	mm	kg
HE 350	350	150	320	300	56	1,8
HE 400	400	150	320	300	56	2,1
HE 401	400	150	425	405	56	2,3
HE 501	500	150	320	300	56	3,0
HE 500	500	150	425	405	56	3,3
HE 600	600	150	425	405	56	4,5
HE 760	760	300	425	400	80	8,0

HELUKABEL®

CABLE LENGTHS (M) TO KTG-DRUMS CAPACITY OF POOL DRUMS

Drum sizes and code numbers

Cable Ø D mm	051 05	061 06	071 07	081 08	091 09	101 10	121 12	141 14	161 16/8	181 18/10	201 20/12	221 22/14	250 25/14	251 25/16	281 28/18	Cable Ø D mm
6	1130	1110	2024	2755												6
7	815	840	1480	2340												7
8	630	640	1064	1463	2730											8
9	460	470	890	1152	2202	2866										9
10	390	388	680	980	1768	2349										10
11	320	315	564	760	1404	1910										11
12	260	254	470	643	1206	1540										12
13	220	238	385	542	1032	1339	2727									13
14	190	190	360	454	880	1159	2265	2967								14
15	170	180	300	430	749	1000	1990	2480								15
16	150	140	239	358	632	860	1756	2205								16
17	130	134	228	294	603	736	1545	1960								17
18	110	102	218	280	505	705	1355	1737								18
19	105	96	172	228	485	599	1184	1535	2722							19
20	100	92	165	220	402	576	1139	1352	2435	2830						20
21	80	90	159	210	387	485	990	1304	2172	2527						21
22		65	122	167	315	468	856	1145	1930	2248						22
23		62	117	160	304	389	827	999	1870	2172	2954					23
24		60	113	156	294	377	709	967	1657	1927	2608					24
25		58	110	150	285	365	688	839	1608	1867	2522					25
26		56	80	116	226	299	668	814	1420	1650	2218					26
27			78	113	220	290	567	700	1244	1450	2150	2860				27
28			76	109	215	282	550	680	1210	1410	1880	2777				28
29			73	106	209	226	462	663	1180	1370	1826	2450		2976		29
30			70	103	162	220	450	564	1028	1200	1583	2383		2893		30
31				76	157	214	438	550	1003	1166	1540	2089		2558		31
32				74	153	209	428	537	866	1009	1500	2035	2978	2490		32
33				72	150	204	352	450	846	985	1289	1984	2908	2428		33
34					146	158	344	440	828	962	1257	1726	2605	2134		34
35					108	154	336	430	710	824	1227	1685	2547	2083	2890	35
36					105	150	329	422	692	806	1040	1646	2270	2035	2820	36
37					103	148	265	348	678	788	1017	1418	2223	1774	2760	37
38						144	259	340	664	772	994	1386	1969	1735	2432	38
39						110	254	334	560	653	972	1356	1930	1697	2380	39
40						105	249	327	549	640	812	1328	1892	1486	2330	40
41						102	244	264	539	627	795	1130	1664	1435	2036	41
42						100	190	259	529	615	779	1107	1633	1406	1995	42
43							187	254	437	510	763	1085	1603	1199	1956	43
44							183	249	430	502	750	1065	1574	1175	1692	44
45							180	245	422	492	610	890	1373	1153	1660	45
46							177	240	415	484	600	874	1349	1130	1630	46
47							174	187	408	475	589	858	1326	1110	1600	47
48							130	184	330	386	578	842	1144	930	1366	48
49							127	180	325	380	568	828	1125	914	1342	49
50							125	178	319	373	558	878	1107	898	1320	50
51							123	175	314	367	442	666	1089	883	1298	51
52							120	172	310	360	435	655	1072	869	1276	52
53								170	305	356	428	644	912	715	1072	53
54								126	230	280	420	634	898	700	1056	54
55								124	235	276	414	624	885	690	1040	55
56								122	232	270	408	614	872	680	1022	56
57								121	228	267	400	488	860	668	1006	57
58								119	225	263	304	480	720	658	990	58
59								117	222	260	300	473	710	649	815	59
60									220	256	295	466	700	640	803	60
61									216	252	290	460	690	610	790	61
62									160	190	287	453	680	500	780	62
63									158	187	282	448	670	494	770	63
64									156	184	280	440	662	487	760	64
65									154	182	275	335	640	480	748	65
66									152	180	270	330	534	474	738	66
67									150	178	266	326	528	468	588	67
68										174	264	320	520	462	580	68
69										172	186	317	515	456	574	69
70										170	184	313	510	450	566	70
71										168	182	310	502	342	558	71
72										166	180	305	498	338	552	72
73										164	177	300	490	334	545	73
74										162	175	297	486	330	540	74
75										160	173	294	480	326	532	75
76										112	170	291	380	322	526	76
77										110	168	287	375	318	520	77
78										109	166	284	370	314	514	78
79										108	164	281	367	310	508	79
80										107	163	278	363	306	502	80
81										106	161	196	360	304	382	81
82										105	158	194	356	300	378	82
83										103	156	192	352	297	375	83
84											155	190	349	294	370	84
85											154	188	345	290	367	85
86											152	186	342	288	363	86
87											150	184	338	285	359	87
88											149	182	335	202	355	88
89											147	180	332	200	352	89
90											146	178	329	198	348	90
91											144	176	248	196	345	91
92											90	175	245	194	340	92

min. Drum-Barrel-Ø ≦ 40 • D
min. Drum-Barrel-Ø ≦ 30 • D
min. Drum-Barrel-Ø ≦ 25 • D
min. Drum-Barrel-Ø ≦ 20 • D
min. Drum-Barrel-Ø ≦ 15 • D

Kd = Drum-Barrel-Ø
D = Cable-Ø

EXPLANATORY NOTES ON CE MARKING

Low Voltage Directive (NSR), EMC Legislation

The Manufacturers must have to identify those products by the CE marking which fall within the applicability of certain EC (European Community) directives.

This applies to products which are covered by these directives in accordance with the new concept to include particular requirements on the technical characteristics of products.

The realization of these requirements is the condition for marketing the products in Europe. Then these CE directives constitute binding legislation for the European Union.

The inclusion of the CE marking confirms the compliance by the products with the basic requirements of all specifications applicable to that product. This means that CE marking is thus the compelling requirement in order of placing the products on the market within the EU. This also applies in the country of manufacture.

These directives are only then binding when these have been implemented in the national legislation of individual EU member states. An implementation in the national legislation of individual members states does not always occurs at the same time and is not always accomplished within the foreseen period.
Furthermore, certain transition rules may apply. If the obligation for implementation of these directives is not met, then these directives can still be directly applicable in certain circumstances.

The validity for these directives are not always clearly formulated and are sometimes abstract and not differentiated such that it cannot always be unambiguously established whether a product is covered by one or more directives and thus requires the CE marking.

The CE marking serves as evidence to the supervisory authorities of compliance with these directives. It is however often misinterpreted as being a "symbol for safety or quality" which is why it is often requested from customers without any legal justifi-cation.

EC Low Voltage Directive (NSR)

The EC Low Voltage Directive (NSR) is one of these CE Designation Directives (Article 13 of the CE Marking Directive). This means that electrical equipment used in low voltage range applications must also be identified by the CE marking. The CE marking is affixed on these products since 01.01.1997.

The CE Marking Directive will apply to a large number of electrical products, alone on account of the extensive range of applicability of the Low Voltage (NSR) and Electromagnetic Compatibility (EMC) Directives.

The following directives are of particular significance for the electrical industry:

2006/95/EC
Electrical equipment for use within specified voltage limits (Low Voltage Directive)

EU No. 305/2011
Construction products regulation

2004/108/EC
Electromagnetic compatibility (EMC Directive)

2006/42/EC
Machinery directive

For HELUKABEL as manufacturer and supplier of cables and wires, only the Low Voltage Directive is of significance. The EMC directive is of indirect applicability – for customer enquiries – in that queries could arise regarding the immunity of cables to interference, capacitance unbalance values and similar characteristics.

The EMC Directive

The EMC Directive, which applies for the electromagnetic compatibility of electrical and electronic equipment in their environments, can only be applied in complete systems.

For example, systems which are made up of several units, whereby each individual unit alone meet EMC requirements, are tested as a system for EMC together with the interconnecting cables.

EMC testing of a single cable or a single wire cannot be specified.

Continuation ▶

EXPLANATORY NOTES ON CE MARKING

Low Voltage Directive (NSR), EMC Legislation

Important information regarding the Low Voltage Directive (NSR):

1. General Conditions:

a) The major characteristics required for knowledge and observance, for use in accordance with the intended application, are given on the electrical equipment, or, if this is not possible, in the accompanying instructions.

b) The manufacturer's symbol or trade mark shall be clearly visible on the electrical equipment, or, where this is not possible, shall be affixed on the packaging.

c) The electrical devices as well as the components for these, shall be procured such that these can be connected safely and properly.

d) The electrical equipment shall be designed and constructed such that protection from the hazards listed in item 2 and 3, is assured during use and proper maintenance in accordance with the intended application.

2. Protection against hazards which may arise from electrical equipment – technical measures shall be foreseen in accordance with item 1, such that:

a) Humans and working animals are protected from injury or other harm which can be caused by either direct or indirect contact.

b) No high temperatures, arcs or radiation are generated from which hazards could arise.

c) Humans, working animals and property are adequately protected against non-electrical hazards which, from experience, can arise from electrical equipment.

d) The insulation complies to the property requirements.

3. Protection against hazards which can arise from external influences on electrical equipment – technical measures are foreseen in accordance with item 1, such that the electrical equipment:

a) can withstand the mechanical loads such that humans, working animals or property are not endangered.

b) can withstand the non-mechanical effects under foreseen environmental conditions such that humans, working animals or property are not endangered.

c) cannot endanger humans, working animals or property in any way by the foreseen overloads.

Equipment and areas which do **not** fall within the Directive.

- Electrical equipment for use in explosive atmospheres
- Electrical-radiological and electrical medical equipment
- Electrical components of passenger and goods lifts
- Electricity meters, household plug-in fixtures, radio interference suppression devices
- Installation for supplying power to electrified pasture fencing
- Specified electrical equipment intended for use on ships, in aircraft or railways and which comply with the safety regulations of member states for international installations.

Electrical equipment within the context of the Low Voltage Directive is electrical equipment for applications with a rated voltage between 50 and 1000 V alternating current and between 75 and 1500 V direct current.

For a more **exact** interpretation of the Directive, cables and wires are covered by the regulation, **not** however cables with a rated voltage exceeding 1000 V alternating current or 1500 V direct current.

HELUKABEL® as manufacturer and supplier must act in accordance with the Low Voltage Directive, that is to say:

Cables and wires up to 1000 V nominal voltage **must** be identified by the CE marking.

The identification can be attached either to the product or on the label.

EUROPEAN DIRECTIVES WEEE, ROHS AND ElektroG

The European Union has approved directives with a view to protecting man and environment. The member states have made these directives into national law.

Directives and Laws

WEEE

Waste **E**lectrical and **E**lectronic **E**quipment
Directive 2012/19/EC of the European Parliament and the Council on used electrical and electronic devices dated July 4, 2012.

Aim:

- To attain a consistent level of health and environmental protection throughout the member states.
- To harmonise the responsibility held by the manufacturers.
- To attain equivalent participation by the traders.

The member states are to employ suitable measures for ensuring that used electrical and electronic devices are treated in such a way as to prevent their entry into the waste stream. They are to set out regulations for the dismantling, reuse and recycling of these devices.

RoHS

Restriction **o**f **H**azardous **S**ubstances in electric and electronic equipment
Directive 2011/65/EC of the European Parliament and the Council on restriction of use of certain hazardous substances in electrical and electronic equipment dated June 8, 2011.

Aim:

- To reconcile the legal regulations of the member states on restriction of use of hazardous substances and electrical and electronic equipment.
- Substance bans and restrictions.

The member states guarantee that from July 1, 2006, use of the following substances in electrical and electronic equipment will be restricted:
Lead, Mercury, Cadmium, Chromium VI, Deca-BDE,
Polybrominated biphenyl (PBB)
Polybrominated diphenylether (PBDE)

Law on the use, return and environmentally-compatible disposal of electrical and electronic equipment.

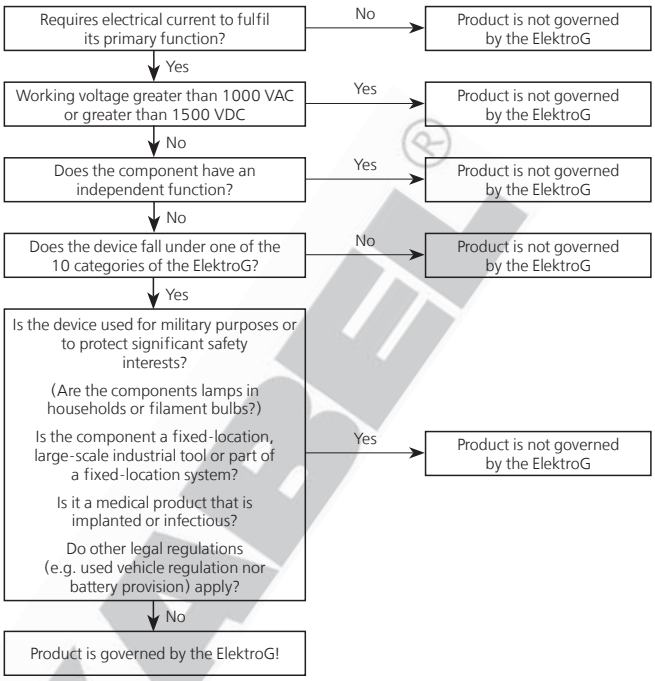
ElektroG (Electrical and Electronic Equipment Act) of March 16, 2005.
This Act enforces the EU Directives 2012/19/EC and 2011/65/EC.

Aims:

- To avoid electrical and electronic equipment waste.
- To reuse and/or recycle the materials from this waste.

Scope:
This Act applies for all electrical and electronic devices that fall under certain categories, insofar as they are not part of another device not covered by the scope of this Act.

Orientation aid



Substance bans

§ 5 from ElektroG (RoHS)
It is forbidden to bring into circulation new electrical and electronic devices containing more than 0.1 percent by weight of lead, mercury, hexavalent chromium, Deca-BDE, polybrominated biphenyl (PBB) or polybrominated diphenylether (PBDE) for each homogenous material or more than 0.01 percentage by weight of cadmium per homogenous material. Clause 1 does not apply for category 8 and 9 electrical and electronic devices nor for electrical and electronic devices brought into a member state of the European Union for the first time before July 1, 2006. Nor does it apply for spare parts for the repair or reuse of electrical and electronic devices brought into circulation for the first time before July 1, 2006.

Definition

The majority of our products are not governed by the ElektroG (WEEE/RoHS), as they do not have an independent function. As the possibility of our customers using our products in devices that are governed by the ElektroG, and as such are declarable, cannot be ruled out, we have decided to mark in this catalogue the products that either comply with the limit values indicated in accordance with ElektroG (WEEE/RoHS) § 5 and/or do not infringe provisions of the ElektroG (WEEE/RoHS).

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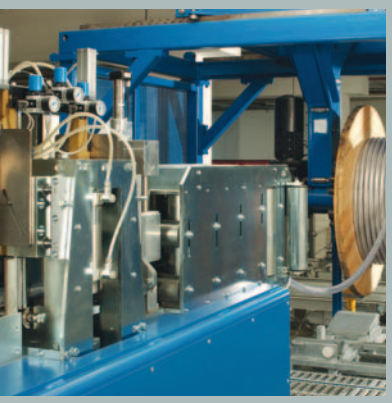
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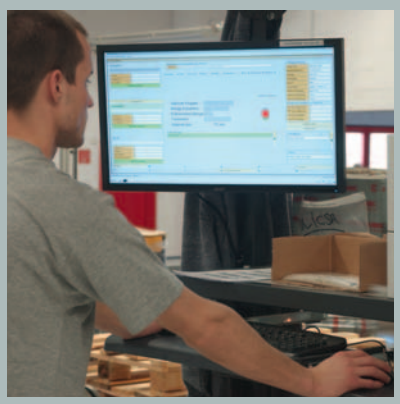
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