



HELUKABEL®

HELULIGHT®
HELUSOUND®



MEDIA TECHNOLOGY
2009/2010

Welcome



Photo: HELUKABEL®

HELUKABEL® are today one of Germany's leading cable companies, boasting an extensive range of cables, wires, special cables, media technology, cable accessories, as well as Data, Network & Bus Technology and cable protection systems for robotics and handling systems.

Today, we produce for all markets and for every purpose. Our extensive warehouse stock, containing over 33,000 articles, enables us to deliver your order within extremely short delivery times.

This catalogue provides you with a comprehensive overview of our wide range of cable and wire products for media technology. The employees of our internal and field sales teams will be happy to advise and assist you in finding the best solution for your needs.

You can reach us at:

HELUKABEL® GmbH, Headquarters
Dieselstr. 8-12, D-71282 Hemmingen, Germany
Phone +49 7150 9209-0
Fax +49 7150 8884

Domestic sales: Monday to Friday	7:00 a.m. to 6:00 p.m.
Export:	7:00 a.m. to 6:00 p.m. (German time)

Note

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Your partner for media technology



For 30 years, HELUKABEL® has been a solid concept for cables, special cables, cable accessories and data, network, and bus technology. HELUKABEL® provides a tailored, integrated range of products for the rapidly growing field of media applications - from audio and video right through to power.

In particular, the diverse range of products includes HELUSOUND® audio cables for analogue and digital transmission, HELULIGHT® for the DMX light controller, HELUKAT® data cables, HELUCOM® fibre optic technology, and corresponding pre-assembled cables for these application areas.

In addition to the clearly organised, wide range of standard cables, HELUKABEL® provides tailored cable solutions.

Using its own cable production, HELUKABEL® is able to provide cables which meet special technical requirements such as those currently used in the media sector.

The application areas for this range of products include television and sound studios, transmission systems, and event, stage and conference technology.

Why not put our expertise to the test?
We will be happy to answer any enquiries.

Cover image:
Stage and lighting design for "Die Fantastischen 4 - FORNIKA FÜR ALLE TOUR 2007"
by Gunther Hecker; photo: Ralph@Larmann.com

The Logistics Centre

A large part of the product assortment, which has over 33,000 articles, is held starting from the Hemmingen storage.



To meet the increasing demands of the market, HELUKABEL® opened a logistics centre in 2001. The goal of the logistics centre is to increase the order to delivery process through automation.

Innovative warehouse engineering and high-tech information techniques make this installation unique in the cable business.

“State of the Art” automation allows between 500 and 600 orders to be filled daily. Our “Just in Time” system pulls product from over 16,000 pallet storage locations.

The Production Windsbach/Nuremberg

Here we are realizing standard cables, special cables and customer-specific special solutions.

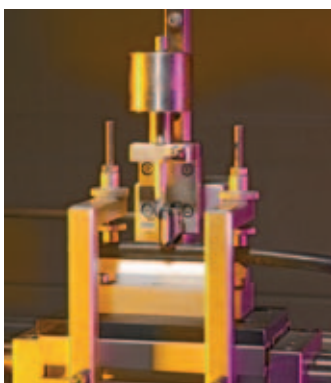
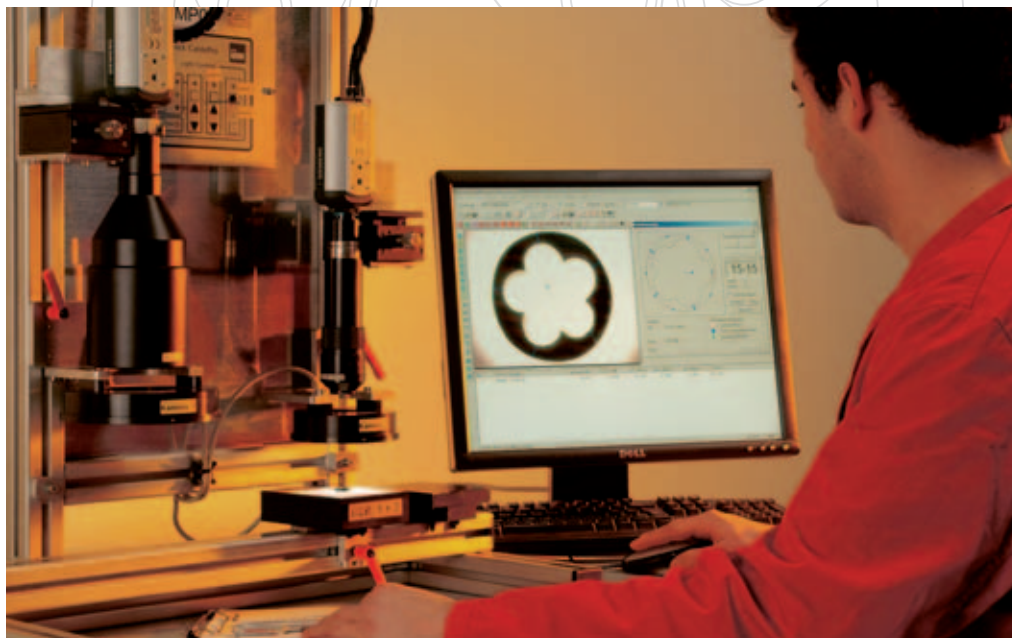


The annual production of our own plant in Windsbach/Nuremberg, which has a production surface area over 10,000 m² and approx. 140 employees, this equates to approx. 50,000 km of cable or 220,000 core kilometres.

The products include shielded, unshielded and steel wire reinforced control cables with PVC/PUR sheath or thermoplastic elastomers and halogen-free, flame-resistant and heat-resistant shielded and unshielded cables. Our range is rounded off by special-purpose cables produced to customer requirements.

Research & development

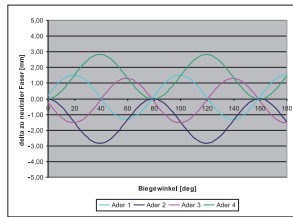
We devise optimised cable solutions for our customers.



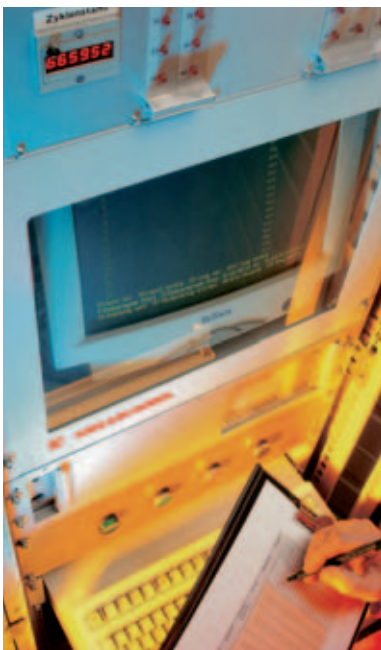
Photos: HELUKABEL®

The focus is very much on products for mobile use with a high level of vertical integration. Our customers expect extreme resistance to chemical, electrical and mechanical stresses combined with small bending radii, a high number of flexing cycles and outstanding service lives – we are happy to comply.

Our design engineers rely on the latest software to develop our cables. This software makes the cores' movement scenarios in the cable sheath visible.



Once these prerequisites are met, we can optimize the products - according to the type of stranding, lay-length and material - and the corresponding manufacturing technique.

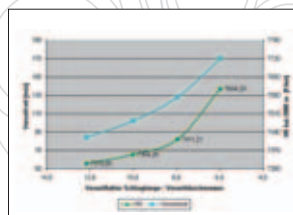
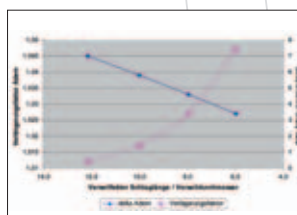


HELUKABEL GMBH			
Schleppketten-Testergabels			
Type: JZ-HF / -CY			
Art. Nr.	Aderzahl x Layenanzahl	Außenabm. mm	Wahlzahl
7	15023	750,75	8,30
8	15026	750,5	7,90
9	15041	754	8,30
10	15050	800,5	8,90
11	15006	402,5	3,90
12	15079	182	13,80
13	15067	140,75	13,80
14	15086	102	14,40
15	15066	102,5	14,50
16	15036	102,5	14,50

New products are tested in the state-of-the-art Test Center in Windsbach/Nuremberg to ensure their suitability for daily use and readiness for standard production. Our stringent quality standard is also upheld with measurements and random sample checks carried out during production.

In order to provide information on the service life, we document the real-life tests we carry out on our cables suitable for use in drag chains.

The effect of changing the lay-length



Contact – Germany

Sales office
D-25524 Itzehoe
Bahnhofstraße 9
 Telephone +49 4821 40394-0 • Fax +49 4821 40394-29



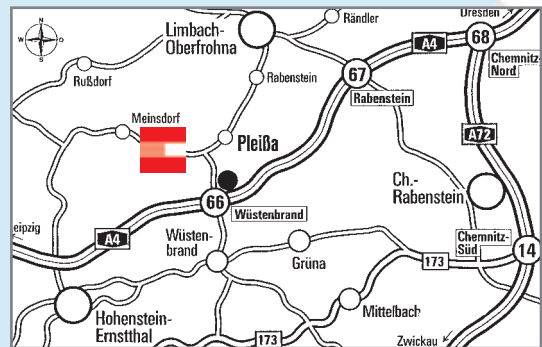
Sales office and stock
D-15366 Neuenhagen/Berlin
Zum Mühlenfließ 1
 Telephone +49 3342 2397-0 • Fax +49 3342 80033



Sales office
D-47269 Duisburg
Am Handwerkershof 2-4
 Telephone +49 203 73995-0 • Fax +49 203 73995-210

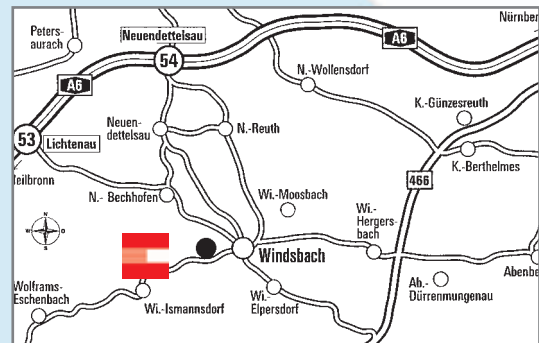


Sales office and stock
D-09212 Limbach/Oberfrohna
Eichelbergstraße 7
 Telephone +49 3722 6086-0 • Fax +49 3722 6086-420

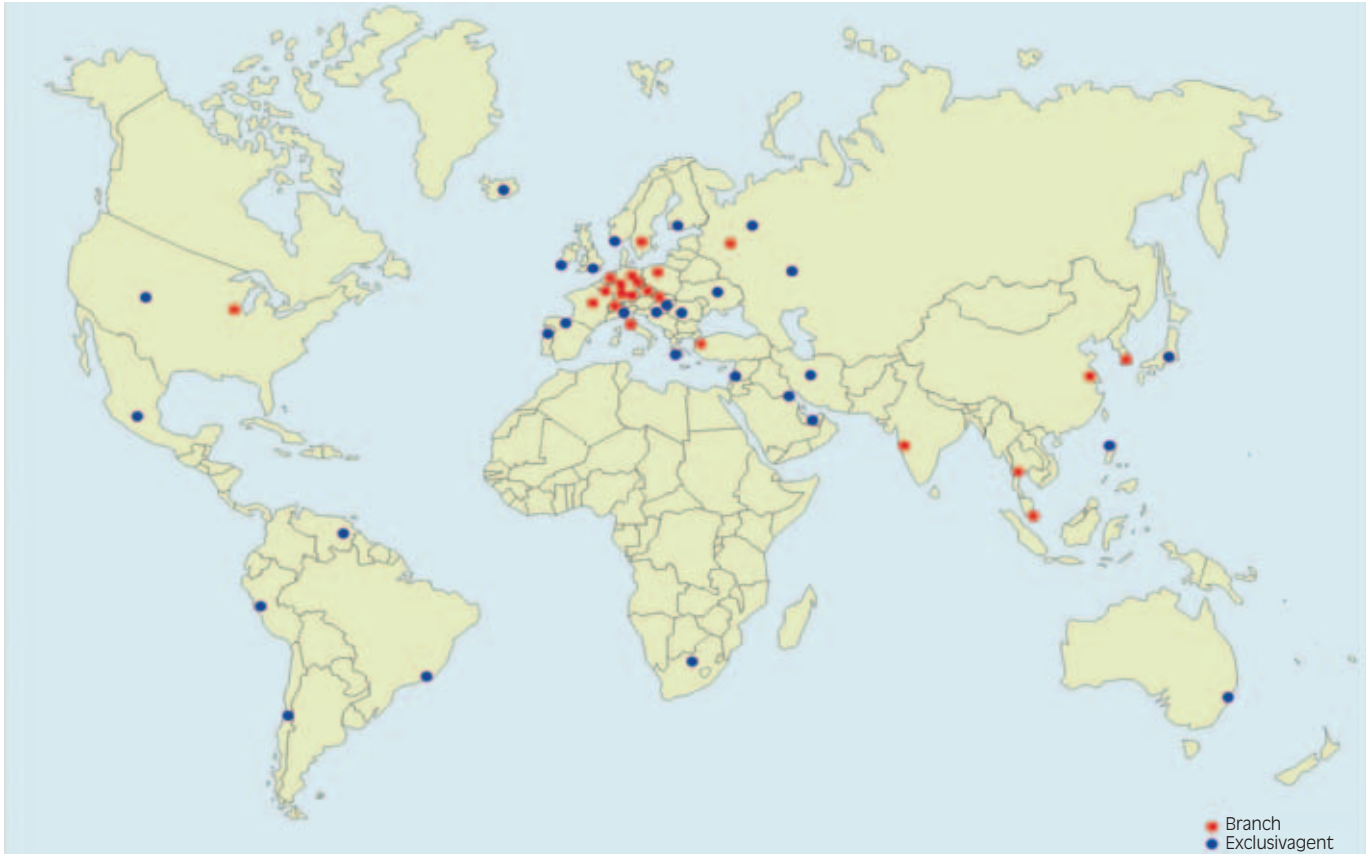


Headquarters
D-71282 Hemmingen
Dieselstraße 8-12
 Telephone +49 7150 9209-0
 Fax +49 7150 8884

Development & production
D-91575 Windsbach/Nuremberg
Neuseser Weg 11
 Telephone +49 9871 6793-0 • Fax +49 9871 1055



Contact – International



How to find our export department: Ph. +49 7150 9209-337 · Fax +49 7150 8884 · E-mail info@helukabel.de

HELUKABEL AG (CH)

Grabäckerstraße 60 · CH-8957 Spreitenbach
Tel. +41 56 4181515 · Fax +41 56 4181516
contact@helukabel.ch

Büro Suisse Romande (CH)

Tel. +41 24 4414414 · Fax +41 24 4414412

HELUKABEL Italia S.r.l.

Via delle Rovedine 23 · I-23899 Robbiate (LC)
Mobile: +39 3465861390
Tel. +39 039 9515450 · Fax +39 039 9281579
info@helukabel.it

HELUKABEL Polska Sp. z o.o. (PL)

Krze Duże 2 · PL-96325 Radziejowice
Tel. +48 46 85801-00 · Fax +48 46 85801-17/-18
biuro@helukabel.pl

HELUKABEL B.V. (NL)

De Kempen 4 · NL-6021PZ Budel/Eindhoven
Tel. +31 495 499049 · Fax +31 495 499048
info@helukabel.nl

HELUKABEL France SARL (F)

3, rue DMC-B.P. 30 · Z.A. du Pont d'Aspach
F-68520 Burnhaupt le haut
Tel. +33 389627562 · Fax +33 389627700
info@helukabel.fr

HELUKABEL Belgium BVBA

Z.1 Researpark 310 · B-1731 Zellik
Tel. +32 24810020 / +32 478426727
Fax +32 24810022
luc.rediers@helukabel.be

HELUKABEL China (CN)

1st Floor, Bldg. No.4, 668 HengAn Rd.
Pudong New Dist. Shanghai, China
PRC-200137 Shanghai
Tel. +86 21 58696108 · Fax +86 21 58693666
service@helukabel.com.cn

HELUKABEL AB (S)

Spjutvägen 1 · S-17561 Järfälla
Tel. +46 8 7617805 · Fax +46 8 6210059
info@helukabel.se

HELUKABEL CZ s.r.o. (CZ)

Areál dolu Max · CZ-27306 Linbušín/Kladno
Tel. +42 0 312672620 · Fax +42 0 312672621
prodej@helukabily.cz

HELUKABEL (RUS)

Tel. +49 7150 9209389 · Fax +49 7150 922695
kanarikov@helukabel.de

HELUKABEL India PVT LTD. (IN)

F-305 Kailash Complex
Hiranandani Gardens Link Road,
Vikhroli West, Mumbai - 400 079
Tel. +91 22 25185841 · Fax +91 22 25185839
Cell. 9324048933
info@heluindia.com

HELUKABEL Singapore Pte. Ltd. (SGP)

No. 3, New Industrial Road · #01-01 Kimly
Building
Singapore 536197
Tel. +65 64880170 · Fax +65 62851513
sales@helukabel.com.sg

HELUKABEL Korea Co. Ltd. (KR)

521-17 Daejeo 2 Dong Gang-seo Gu,
ROK - Busan Korea
Tel. +82 51 972-8646 · Fax +82 51 972-8649
huk365@helukabel.co.kr

HELUKABEL Thailand Co. Ltd. (THA)

73/4 Moo.1 Bangkrauy-Sainoi Rd.,
Banglane, Bangyai,
11140 Nonthaburi, Thailand
Tel. +66 29273570-3 / +66 25954401-4
Fax +66 29215402
sales@helukabel.co.th

HELUKABEL Slovakia (SK)

Balazi Kamil, Palkovicova 4087/6
SK-95501 Topolcany · Tel. +42 1915751549
balazi@helukabel.sk

HELUKABEL Kablo San. ve Tic.Ltd Sti. (TR)

Siyavuspasa Cad. Cevizlik Sok., Birlik Ap. 19/1
34182 Bahcelievler-Istanbul Turkey
Tel. +90 2125024195 · Fax +90 2125024198
GSM +90 5334831788
demirkiran@helukabel.com.tr

HELUKABEL USA, Inc.

1355 Bowes Road, Unit C, Elgin, IL 60123
Tel. +1 8479305118 · Fax +1 8476228766
info@helukabel.com

Achieving Success through Quality and Innovation

Product certificates document the tested quality level of our products

ISO 9000ff is used as the basis for quality management processes carried out at HELUKABEL®.

Product certificates issued by accredited institutions also make it easier for you to evaluate your suppliers.



Our continuous quality improvement process enables us not only to maintain a consistently high quality standard, it also ensures continued development and new product development.

Our commitment to protecting the environment can be seen in our-rate environment management systems.

We are member of



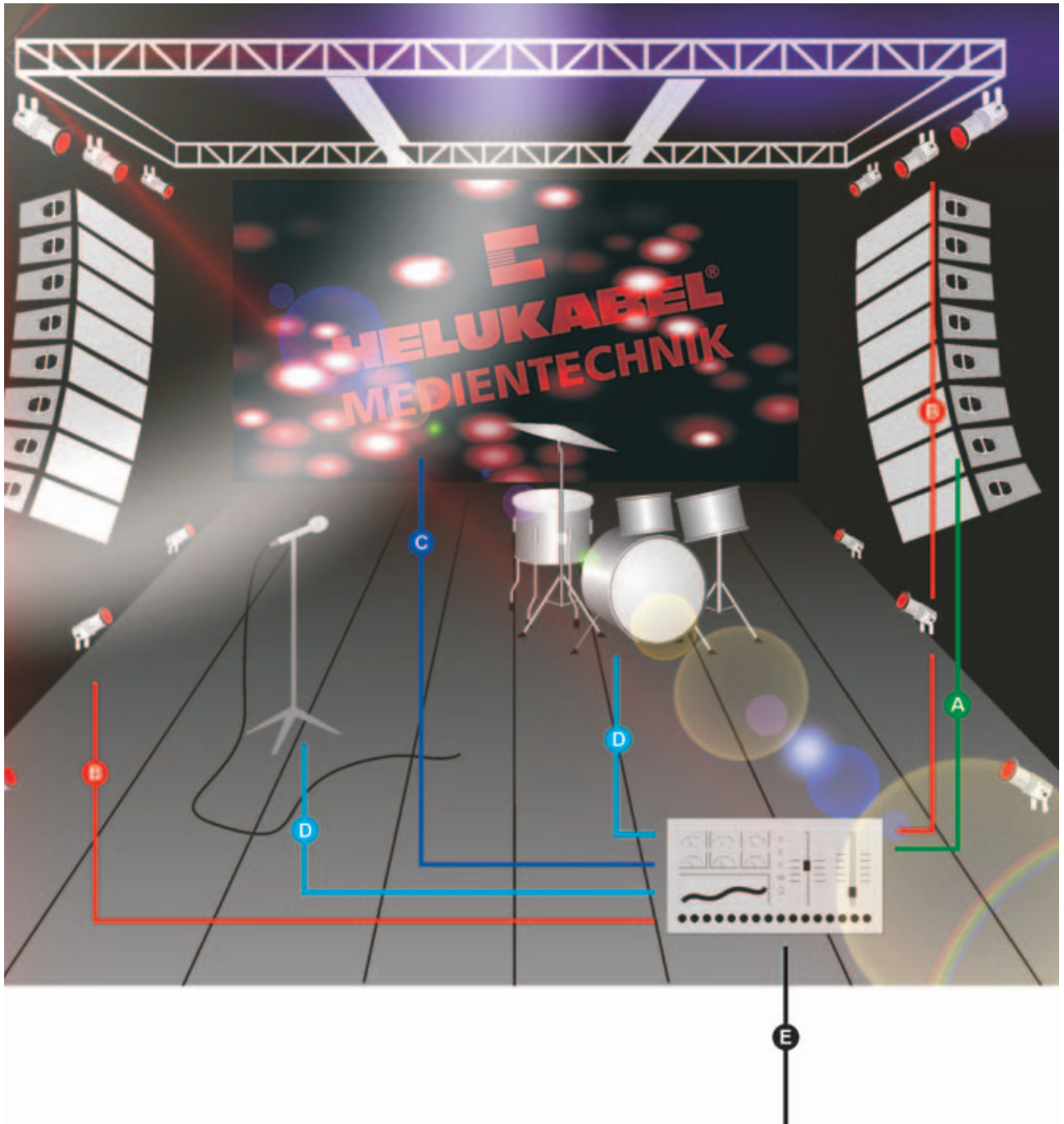
Der Verband für Licht-, Ton- und Veranstaltungstechnik

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Overview of stage technology cabling



A = Speaker systems

B = Lighting technology

C = LED/video screen

D = Musical instruments/microphone

E = Mixer/control apparatus/power

Overview of stage technology cabling



Photo: Ralph@Larmann.com

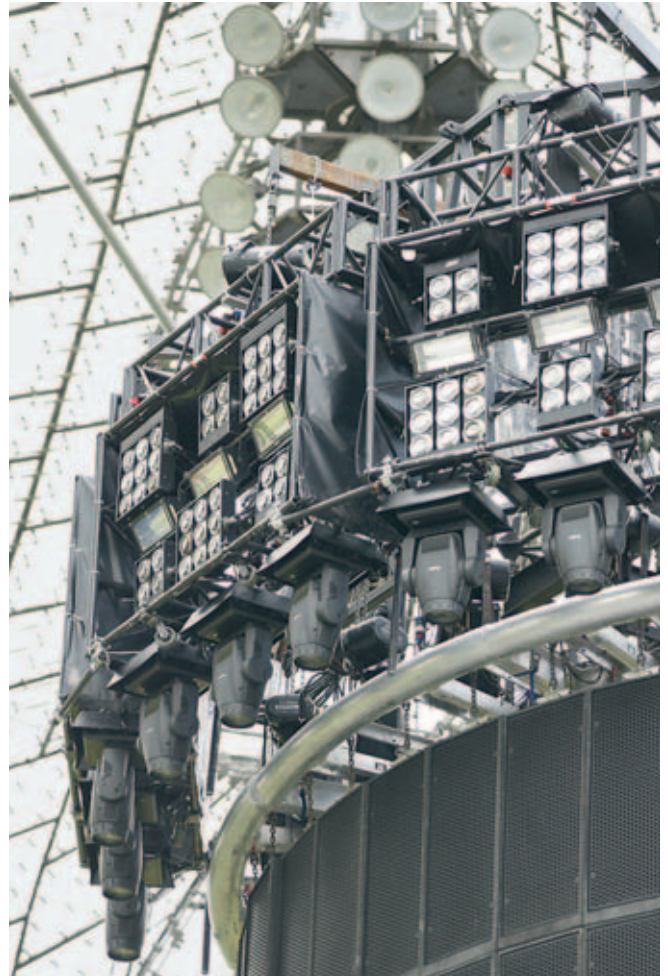


Photo: Ralph@Larmann.com

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Overview of stage technology cabling



Photo: Ralph@Larmann.com



Photo: Ralph@Larmann.com

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Overview of stage technology cabling



Photo: HELUKABEL®

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HELUKABEL[®]
MEDIA TECHNOLOGY



AUDIO

AUDIOSPRECHERLEITUNG
AUDIOKABEL AES/EBU DMX

HELUSOUND AUDIOKABEL DIGITAL

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Audio cables with braided shielding



Type Cable structure

Conductor material:
Core insulation:
Core colours:
Stranding element:
Drain wire:
Sheath material:
Cable external diameter:
Sheath colour:

HELUSOUND audio cable analog 2x0,25 + 0,25

Copper, bare
PVC
rd, wh
2 cores with 1 filler and 1 earth conductor stranded
yes
PVC
approx. 3,4 mm
black

Electrical data

Conductor resistance max.:
Insulation resistance min.:

75 Ohm/km
5,0 MOhm x km

Technical data

Weight:
Min. bending radius for laying:
Operating temperature range min.:
Operating temperature range max.:
Copper weight:

approx. 20,0 kg/km
35 mm
-25°C
+70°C
13,5 kg/km

Norms

Halogen-free acc. to EN 50267-2-3

Part No.	Structure	Conductor resistance Ohm / km	Outer diameter ca. mm	Cop. weight kg / km	Weight ca. kg / km
400000	2x0,25 + 0,25	< 75,0	3,4	13,5	20
400001	2x0,33+0,33	< 60,0	4,0	16,3	26
400002	2x0,5+0,33	< 36,8	5,6	26,1	49

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.

Audio cables, multicore, with braided shielding



Type Cable structure

Conductor material:
Core insulation:
Stranding element:
Sheath material:
Cable external diameter:
Sheath colour:

HELUSOUND audio cable analog 2x0,26

Copper, bare
PE
pairs stranded
PVC
approx. 5,2 mm
black

Electrical data

Conductor resistance max.: 73,9 Ohm/km
Insulation resistance min.: 1,0 GOhm x km

Technical data

Weight: approx. 37,0 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

Halogen-free acc. to EN 50267-2-3

Part No.	Structure	Conductor resistance Ohm / km	Outer diameter ca. mm	Cop. weight kg / km	Weight ca. kg / km
400003	2x0,26	< 73,9	5,2	16,8	37
400004	2x0,33	< 61,6	5,3	18,2	38
400005	4x0,33	< 61,6	5,9	27,2	52
400006	2x0,50	< 39,0	5,7	22,0	46
400007	2x0,75	< 26,0	7,2	30,0	70
400008	3x0,75	< 26,0	7,7	50,0	90
400009	4x0,75	< 26,0	8,3	60,0	102
400010	5x0,75	< 26,0	8,9	72,0	120

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 cables with foil shielding, single pair



Type Cable structure

Conductor material:
Core insulation:
Core colours:
Stranding element:
Sheath material:
Cable external diameter:
Sheath colour:

Analog audio cables 2x0,22

Copper, tinned
PE
rd, bu
pairs stranded
PVC
approx. 3,4 mm
black

Electrical data

Conductor resistance max.:
Insulation resistance min.:

86 Ohm/km
1,0 GOhm x km

Technical data

Weight:
Min. bending radius for laying:
Operating temperature range min.:
Operating temperature range max.:
Copper weight:

approx. 17,0 kg/km
35 mm
-25°C
+70°C
6,6 kg/km

Norms

Halogen-free acc. to EN 50267-2-3

Part no.

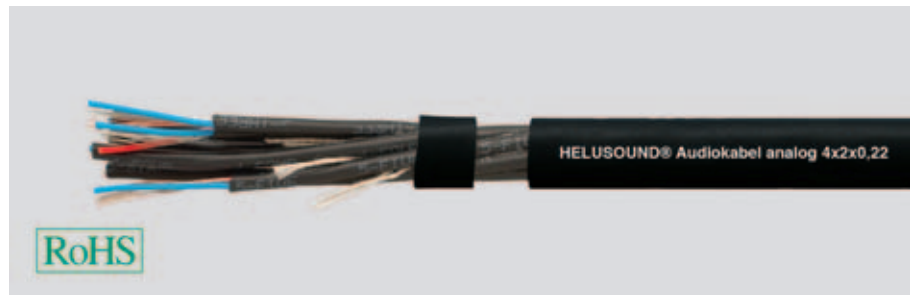
400011

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 cables, multipaired, pairs with foil shielding



Type Cable structure

Conductor material:
Core insulation:
Core colours:
Stranding element:
Drain wire:
Sheath material:
Cable external diameter:
Sheath colour:

Analog audio cables 2x2x0,22

Copper, bare
PE
rd, bu
pairs stranded
yes
PVC
approx. 7,6 mm
black

Electrical data

Conductor resistance max.:
Insulation resistance min.:

86 Ohm/km
1,0 GOhm x km

Technical data

Weight:
Min. bending radius for laying:
Operating temperature range min.:
Operating temperature range max.:
Copper weight:

approx. 72,0 kg/km
76 mm
-25°C
+70°C
13,2 kg/km

Norms

Halogen-free acc. to EN 50267-2-3

Part No.	Structure	Outer diameter ca. mm	Cop. weight kg / km	Weight ca. kg / km
400012	2x2x0,22	7,6	13,2	72
400013	4x2x0,22	9,2	26,0	100
400014	8x2x0,22	12,2	53,0	179
400015	12x2x0,22	14,2	79,0	248
400016	16x2x0,22	16,4	106,0	337
400017	20x2x0,22	18,4	132,0	421
400018	24x2x0,22	20,4	158,0	493
400019	32x2x0,22	22,4	211,0	620
400020	40x2x0,22	24,6	264,0	759

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 cables, multipaired, spirally screened pairs and overall braided shielding



Type

Cable structure

Conductor material:
Core insulation:
Stranding element:
Sheath material:
Cable external diameter:
Sheath colour:

Analog audio cables 12x2x0,14

Copper, tinned
TPE
pairs stranded
PUR
approx. 12,7 mm
black

Analog audio cables 16x2x0,14

Copper, tinned
TPE
pairs stranded
PUR
approx. 14,1 mm
black

Electrical data

Conductor resistance max.:
Insulation resistance min.:

150 Ohm/km
100,0 MOhm x km

150 Ohm/km
100,0 MOhm x km

Technical data

Weight:
Min. bending radius for laying:
Operating temperature range min.:
Operating temperature range max.:
Copper weight:

approx. 190,0 kg/km
127 mm
-25°C
+70°C
118,0 kg/km

approx. 247,0 kg/km
142 mm
-25°C
+70°C
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.

AES/EBU digital audio cables, single pair, with spiral screen



Type Cable structure

Conductor material:
Core insulation:
Core colours:
Stranding element:
Sheath material:
Cable external diameter:
Sheath colour:

Digital audio cables 2x0,22

Copper, bare
PE
rd, bu
2 cores with 1 earth conductor
PVC
approx. 5,0 mm
black

Electrical data

Characteristic impedance: 110 Ohm
Conductor resistance max.: 86 Ohm/km
Insulation resistance min.: 1,0 GOhm x km

Technical data

Weight: approx. 35,0 kg/km
Min. bending radius for laying: 50 mm
Operating temperature range min.: -25°C
Operating temperature range max.: +70°C
Copper weight: 13,0 kg/km

Norms

Halogen-free acc. to EN 50267-2-3

Part no.

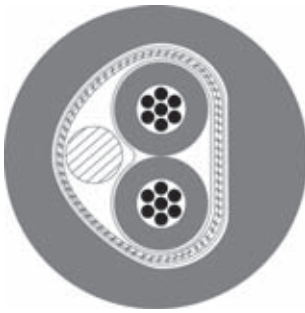
400021

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 the transmission of digital 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.

AES/EBU digital audio cables, single pair, foil/braided shielding



Type Cable structure

Conductor material:
Core insulation:
Core colours:
Stranding element:
Sheath material:
Cable external diameter:
Sheath colour:

Digital audio cables 2x0,22

Copper, tinned
Cell PE
rd, bu
2 cores with 1 earth conductor
PVC
approx. 6,0 mm
black

Electrical data

Characteristic impedance: 110 Ohm
Conductor resistance max.: 86 Ohm/km
Insulation resistance min.: 1,0 GOhm x km

Technical data

Weight: approx. 43,0 kg/km
Min. bending radius for laying: 60 mm
Operating temperature range min.: -25°C
Operating temperature range max.: +70°C
Copper weight: 15,7 kg/km

Norms

Halogen-free acc. to EN 50267-2-3

Part No.	Structure	Screen	Conductor resistance Ohm / km	Outer diameter ca. mm	Cop. weight kg / km	Weight ca. kg / km
400022	2x0,22	Foil + braid	< 86,0	6,0	15,7	43
400023	2x0,22	Foil + braid	< 86,0	4,5	15,7	25
400024	2x0,22	Foil	< 86,0	4,2	6,6	18

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.

AES/EBU digital audio cables, multipaired, pairs with foil shielding and overall foil shielding



Type

Cable structure

Conductor material:
Core insulation:
Core colours:
Stranding element:
Drain wire:
Sheath material:
Cable external diameter:
Sheath colour:

Digital audio cables

2x2x0,22

Copper, tinned
Cell PE
rd, bu
2 cores with 1 earth conductor
yes
PVC
approx. 9,9 mm
black

Electrical data

Characteristic impedance: 110 Ohm
Conductor resistance max.: 86 Ohm/km
Insulation resistance min.: 1,0 GOhm x km

Technical data

Weight: approx. 85,0 kg/km
Min. bending radius for laying: 100 mm
Operating temperature range min.: -25°C
Operating temperature range max.: +70°C
Copper weight: 15,4 kg/km

Norms

Halogen-free acc. to EN 50267-2-3

Part No.	Structure	Outer diameter ca. mm	Cop. weight kg / km	Weight ca. kg / km
400025	2x2x0,22	9,9	15,4	85
400026	4x2x0,22	11,8	29,0	119
400027	6x2x0,22	14,9	42,0	195
400028	8x2x0,22	16,1	55,0	232
400029	12x2x0,22	19,1	81,0	330

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.

AES/EBU digital audio cables, multipaired, spirally screened pairs and overall foil shielding



Type Cable structure

Conductor material:
Core insulation:
Core colours:
Stranding element:
Sheath material:
Cable external diameter:
Sheath colour:

Digital audio cables 12x2x0,22

Copper, bare
Cell PE
rd, bu
2 cores with 1 earth conductor
PVC
approx. 17,0 mm
black

Electrical data

Characteristic impedance: 110 Ohm
Conductor resistance max.: 86 Ohm/km
Insulation resistance min.: 1,0 GOhm x km

Technical data

Weight: approx. 320,0 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

Halogen-free acc. to EN 50267-2-3

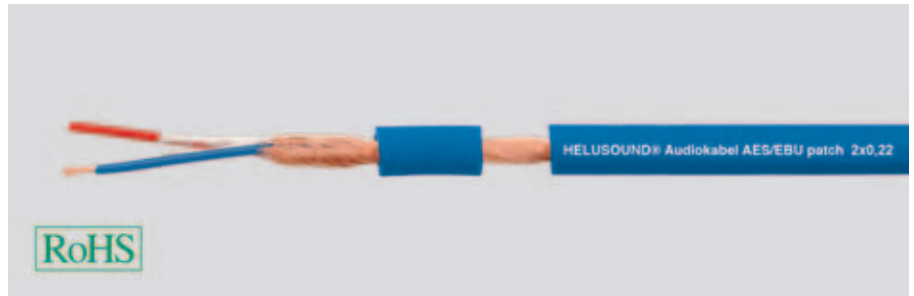
Part no.

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.



Type Cable structure

Conductor material:
Core insulation:
Core colours:
Stranding element:
Sheath material:
Cable external diameter:
Sheath colour:

DMX cables 2x0,22

Copper, tinned
PE
rd, bu
2 cores with textile filler stranded
PVC
approx. 5,0 mm
blue

Electrical data

Characteristic impedance: 110 Ohm
Conductor resistance max.: 80 Ohm/km
Insulation resistance min.: 5,0 GOhm x km

Technical data

Weight: approx. 33,0 kg/km
Min. bending radius for laying: 50 mm
Operating temperature range min.: -30°C
Operating temperature range max.: +70°C
Copper weight: 13,9 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.



Type Cable structure

Conductor material:
Core insulation:
Core colours:
Stranding element:
Sheath material:
Cable external diameter:
Sheath colour:

DMX cables 2x0,34

Copper, bare
PE
rd, wh
2 cores with textile filler stranded
PVC
approx. 6,4 mm
black

DMX cables 4x0,34

Copper, bare
PE
wh,gn,bn,ye
Star quad
PVC
approx. 7,0 mm
black

Electrical data

Characteristic impedance:
Conductor resistance max.:
Insulation resistance min.:

110 Ohm
53 Ohm/km
10,0 GOhm x km

110 Ohm
53 Ohm/km
5,0 GOhm x km

Technical data

Weight:
Min. bending radius for laying:
Operating temperature range min.:
Operating temperature range max.:
Copper weight:

approx. 50,0 kg/km
64 mm
-30°C
+70°C
13,8 kg/km

approx. 65,0 kg/km
70 mm
-30°C
+70°C
28,0 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 interference 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.



Type Cable structure

Conductor material:
Core insulation:
Core colours:
Stranding element:
Drain wire:
Sheath material:
Cable external diameter:
Sheath colour:

DMX cables 2x2x0,22

Copper, tinned
PE
or/wh, bu/wh
pairs stranded
yes
PVC
approx. 8,0 mm
black

Electrical data

Characteristic impedance:
Conductor resistance max.:
Insulation resistance min.:

110 Ohm
85 Ohm/km
100,0 GOhm x km

Technical data

Weight:
Min. bending radius for laying:
Operating temperature range min.:
Operating temperature range max.:
Copper weight:

approx. 76,0 kg/km
80 mm
-25°C
+70°C
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.

DMX cables, multicore with spiral screen



Type Cable structure

Conductor material:
Core insulation:
Core colours:
Stranding element:
Sheath material:
Cable external diameter:
Sheath colour:

DMX cables 2x0,22+0,22

Copper, tinned
PE spumed
wh,bu+rd
pair and core stranded together
PVC
approx. 6,4 mm
black

Electrical data

Characteristic impedance: 110 Ohm
Conductor resistance max.: 86 Ohm/km
Insulation resistance min.: 1,0 MOhm x km

Technical data

Weight: approx. 79,0 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

Halogen-free acc. to EN 50267-2-3

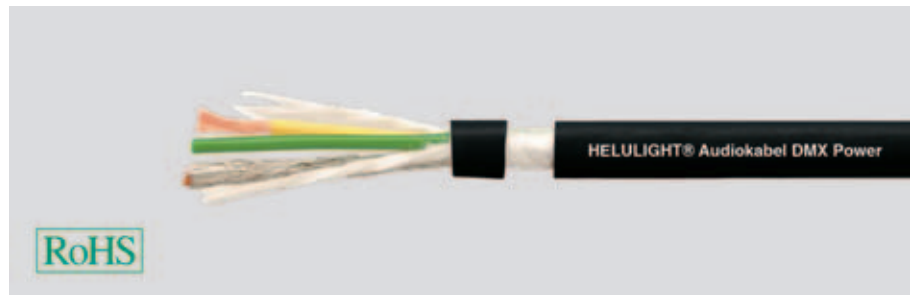
Part no.

400035

Dimensions and specifications may be changed without prior notice.

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.



Type Cable structure

Conductor material:
Core insulation:
Stranding element:
Sheath material:
Cable external diameter:
Sheath colour:

DMX cables (1x2x0,24)+2x1,0

Copper, bare
Foam-skin-PE
Double core
PVC
approx. 7,4 mm
black

Electrical data

Characteristic impedance:

110 Ohm

Technical data

Weight:
Copper weight:

approx. 74,0 kg/km
35,0 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.

Instrument cables with spiral screen



Type

Cable structure

Conductor material:
Core insulation:
Drain wire:
Sheath material:
Cable external diameter:
Sheath colour:

Instrument cables

1x0,22

Copper, bare
PP
no
PVC
approx. 6,0 mm
black

Instrument cables

1x0,38

Copper, bare
Cell PE
yes
PVC
approx. 7,0 mm
black

Electrical data

Conductor resistance max.:
Insulation resistance min.:

86 Ohm/km
1,0 GOhm x km

55 Ohm/km
1,0 GOhm x km

Technical data

Weight:
Min. bending radius for laying:
Operating temperature range min.:
Operating temperature range max.:
Copper weight:

approx. 44,0 kg/km
60 mm
-25°C
+70°C
7,6 kg/km

approx. 55,0 kg/km
70 mm
-25°C
+70°C
29,0 kg/km

Norms

Halogen-free acc. to EN 50267-2-3

Halogen-free acc. to EN 50267-2-3

Part no.

400036

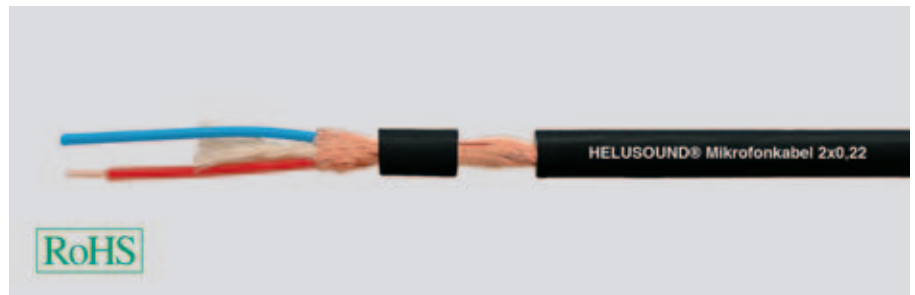
400037

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.

Microphone cables with spiral screen, paired



Type Cable structure

Conductor material:
Core insulation:
Core colours:
Stranding element:
Sheath material:
Cable external diameter:
Sheath colour:

Microphone cable 2x0,22

Copper, bare
PE
rd, bu
pairs stranded
PVC
approx. 6,5 mm
black

Microphone cable 2x0,15

Copper, bare
PVC
rd, wh
pairs stranded
PVC
approx. 4,2 mm
black

Electrical data

Conductor resistance max.:
Insulation resistance min.:

86 Ohm/km
1,0 GOhm x km

120 Ohm/km
1,0 GOhm x km

Technical data

Weight:
Min. bending radius for laying:
Operating temperature range min.:
Operating temperature range max.:
Copper weight:

approx. 55,0 kg/km
60 mm
-25°C
+70°C
9,0 kg/km

approx. 27,0 kg/km
42 mm
-25°C
+70°C
14,0 kg/km

Norms

Halogen-free acc. to EN 50267-2-3

Halogen-free acc. to EN 50267-2-3

Part no.

400038

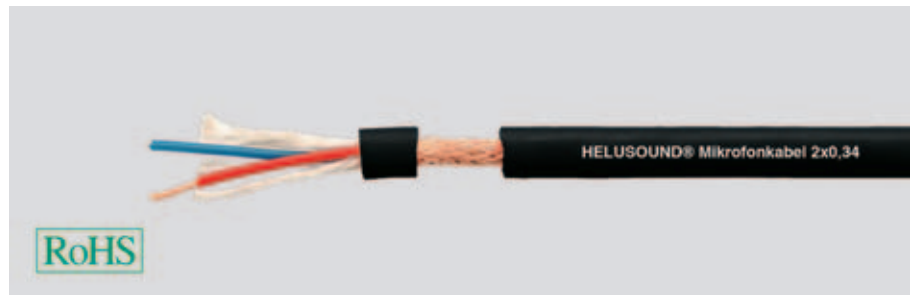
400039

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.

Microphone cables with braided shielding



Type Cable structure

Conductor material:
Core insulation:
Core colours:
Stranding element:
Sheath material:
Cable external diameter:
Sheath colour:

Microphone cable 2x0,34

Copper, bare
PE
rd, bu
2 cores with textile filler stranded
PVC
approx. 6,5 mm
black

Microphone cable 2x0,50

Copper, bare
PE
rd, wh
2 cores with textile filler stranded
PVC
approx. 6,7 mm
black

Electrical data

Conductor resistance max.:
Insulation resistance min.:

53 Ohm/km
1,0 GOhm x km

37 Ohm/km
1,0 GOhm x km

Technical data

Weight:
Min. bending radius for laying:
Operating temperature range min.:
Operating temperature range max.:
Copper weight:

approx. 30,0 kg/km
65 mm
-30°C
+70°C
15,2 kg/km

approx. 59,0 kg/km
67 mm
-30°C
+70°C
37,0 kg/km

Part no.

400040

400080

Dimensions and specifications may be changed without prior notice.

Application

The 2-core HELUSOUND® microphone cable with copper braided shield is suitable for use in professional stage and studio operation and for permanent installation. The cable is distinguished by its very flexible PVC sheath.

Microphone cables with braided shielding, star quads



Type Cable structure

Conductor material:
Core insulation:
Core colours:
Stranding element:
Drain wire:
Inner sheath material:
Sheath material:
Cable external diameter:
Sheath colour:

Microphone cable 4x0,22

Copper, bare
PE
rd, bu, gn, bk
Star quad
AWG 26/7, Kupfer verzinkt
PE
PVC
approx. 6,1 mm
black

Electrical data

Conductor resistance max.:
Insulation resistance min.:

86 Ohm/km
1,0 GOhm x km

Technical data

Weight:
Min. bending radius for laying:
Operating temperature range min.:
Operating temperature range max.:
Copper weight:

approx. 50,0 kg/km
62 mm
-25°C
+70°C
25,0 kg/km

Norms

Halogen-free acc. to EN 50267-2-3

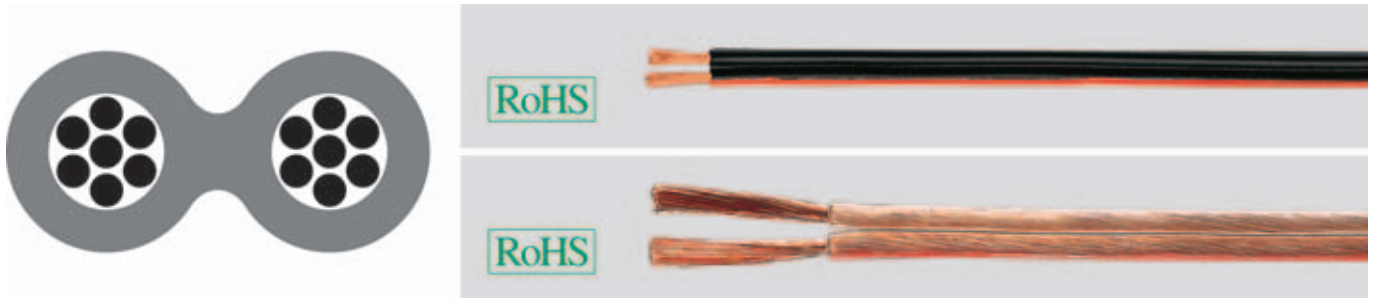
Part no.

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. Among other things, it is used as a stereo cable in the area of professional studio and microphone technology.



Cross section (mm ²)	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 4,0	2 x 4,0
Part No.	40180	40023	40181	40024	40182	40025	40183	40026	40184	40027

Cable structure

Conductor: Copper litz wire, bare

Identification: Grooves

Construction ø mm	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 approx. mm	2,1 x 4,7	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
Colour PVC-sheath	transparent	black/red	transparent	black/red	transparent	black/red	transparent	black/red	transparent	black/red
Approx. weight kg/km	15	15	20	20	37	37	63	63	80	80

Electrical characteristics

Loop-resistance

max. mOhm/m	70	70	47	47	23	23	14	14	9	9
Capacitance approx. pF/m	47	47	60	60	67	67	67	67	64	64
Inductance µH/m at										
1 kHz	0,67	0,67	0,61	0,61	0,54	0,54	0,54	0,54	0,58	0,58
10 kHz	0,79	0,79	0,73	0,73	0,59	0,59	0,62	0,62	0,65	0,65
100 kHz	0,85	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
Cu 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 (mm ²)	2 x 1,5	2 x 2,5	2 x 4,0	2 x 6,0	2 x 10,0
Part No.	40185	40186	40187	40188	40189

Cable structure

Conductor: Bare copper litz wire, highly flexible

Identification: Stripes

Construction ø mm	189 x 0,10	322 x 0,10	511 x 0,10	777 x 0,10	1273 x 0,10
Insulation approx. mm	3,1 x 6,5	3,6 x 7,5	5,0 x 10,2	6,1 x 12,5	7,0 x 15,0
Sheath material	PVC	PVC	PVC	PVC	PVC
Colour PVC-sheath	transparent	transparent	transparent	transparent	transparent
Approx. weight kg/km	41	60	79	136	254

Electrical characteristics

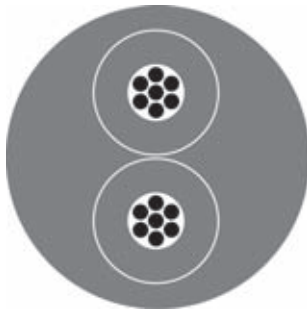
Loop-resistance

max. mOhm/m	23	14	9	6	3
Capacitance approx. pF/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
Cu 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.



Type Cable structure

Conductor material:
Core insulation:
Core colours:
Sheath material:
Cable external diameter:
Sheath colour:

Lautsprecherkabel HELUSOUND® 400 2x1,5

Copper, bare
PVC
rd, bk
PVC
approx. 6,6 mm
Black

Electrical data

Conductor resistance max.: 12,7 Ohm/km

Technical data

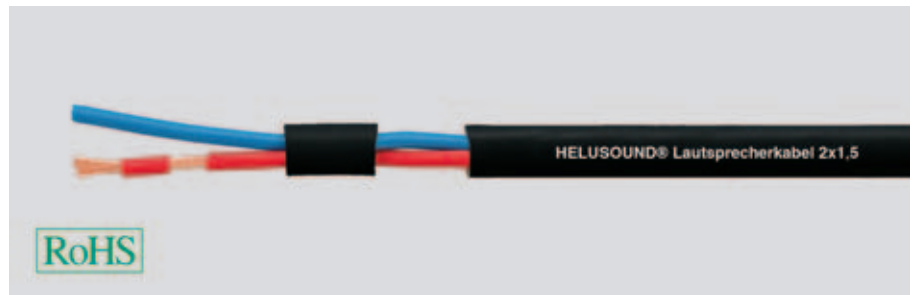
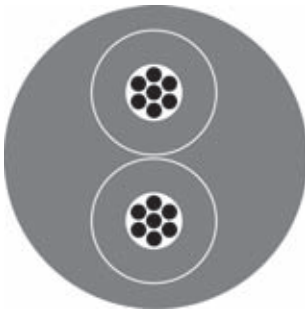
Weight: approx. 73,4 kg/km
Min. bending radius for laying: 33 mm
Operating temperature range min.: -10°C
Operating temperature range max.: +70°C
Copper weight: 28,8 kg/km

Part No.	Structure	Conductor resistance Ohm / km	Outer diameter ca. mm	Cop. weight kg / km	Weight ca. 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 strands and a very soft PVC outer sheath make this possible. These cables are particularly used in mobile applications, in studios and in conference technology.



Type Cable structure

Conductor material:
Core insulation:
Core colours:
Stranding element:
Sheath material:
Cable external diameter:
Sheath colour:

Speaker cable 2x1,5

Copper, bare
PVC
rd, bu
pairs stranded
PVC
approx. 7,0 mm
Black

Electrical data

Conductor resistance max.: 13,3 Ohm/km
Insulation resistance min.: 5,0 MOhm x km

Technical data

Weight: approx. 74,0 kg/km
Min. bending radius for laying: 70 mm
Operating temperature range min.: -25°C
Operating temperature range max.: +70°C
Copper weight: 30,0 kg/km

Norms

Halogen-free acc. to EN 50267-2-3

Part No.	Structure	Conductor resistance Ohm / km	Outer diameter ca. mm	Cop. weight kg / km	Weight ca. kg / km
400056	2x1,5	< 13,3	7,0	30,0	74
400057	2x2,5	< 7,98	7,6	50,0	97
400058	2x4,0	< 4,95	11,0	80,0	187
400059	4x2,5	< 7,98	10,0	100,0	176

Dimensions and specifications may be changed without prior notice.

Application

The HELUSOUND® loudspeaker cable suits for outdoor application as well as fixed installation. Due to its robustness and reeling characteristic, it is in use in all kind of acoustic irradiation systems, also in stage and building control systems.



Type Cable structure

Conductor material:
Core insulation:
Sheath material:
Cable external diameter:
Sheath colour:

Speaker cable 4x4,0

Copper, bare
PVC
PVC
approx. 11,0 mm
Black

Speaker cable 8x4,0

Copper, bare
PVC
PVC
approx. 15,6 mm
Black

Electrical data

Conductor resistance max.:
Insulation resistance min.:

4,5 Ohm/km
5,0 MOhm x km

4,5 Ohm/km
5,0 MOhm x km

Technical data

Weight:
Operating temperature range min.:
Operating temperature range max.:
Copper weight:

approx. 255,0 kg/km
-30°C
+70°C
154,0 kg/km

approx. 550,0 kg/km
-30°C
+70°C
307,0 kg/km

Part no.

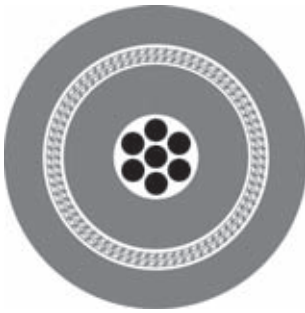
400079

400082

Dimensions and specifications may be changed without prior notice.

Application

The 4-core HELUSOUND® speaker cable is extremely flexible, rugged and treadproof. It can be easily reeled on a drum and it is suitable for mobile stage systems and also for fixed laying in building systems.



Type

Cable structure

Conductor material:
Core insulation:
Core colours:
Sheath material:
Cable external diameter:
Sheath colour:

Speaker cable

1x2,5

Copper, bare
PVC
Black
PVC
approx. 6,8 mm
Black

Speaker cable

1x4,0

Copper, bare
PVC
Black
PVC
approx. 7,9 mm
Black

Electrical data

Conductor resistance max.:
Insulation resistance min.:

7,98 Ohm/km
5,0 MOhm x km

4,95 Ohm/km
5,0 MOhm x km

Technical data

Weight:
Min. bending radius for laying:
Operating temperature range min.:
Operating temperature range max.:
Copper weight:

approx. 84,0 kg/km
68 mm
-25°C
+70°C
52,0 kg/km

approx. 129,0 kg/km
80 mm
-25°C
+70°C
87,0 kg/km

Norms

Halogen-free acc. to EN 50267-2-3

Halogen-free acc. to EN 50267-2-3

Part no.

400061

400062

Dimensions and specifications may be changed without prior notice.

Application

The coaxial HELUSOUND® speaker cable is protected by dual spiral screens in opposite directions and outer sheath. As well as robustness and good winding capability its design is particularly distinguished by high flexibility and small dimensions.



Photo: Ralph@Larmann.com



Video table of contents

Description	
Video cables, coaxial	44
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used as	Indoors	Indoors	Indoors	Indoors	Indoors, underground	Indoors	Indoors, underground	Indoors	Indoors, outdoors
Type	0,6/2,8	0,6L/3,7	0,6/3,7	1,0/6,6	1,0/6,6	1,0/6,6D	1,0/6,6D	1,0/6,6 2YD	0,6/3,7+2x0,75mm
Part No.	40022	40170	40171	40173	40056	40174	40073	40175	40028
Cable structure									
Inner conductor ø mm	0,6 Copper, bare	0,2 Copper, bare	0,6 Copper, bare	1,0 Copper, bare	1,0 Copper, bare	1,0 Copper, bare	1,0 Copper, bare	1,0 Copper, bare	0,6 Copper, bare
Insulation ø mm	2,8 Cell PE	3,7 PE	3,7 PE	6,4 PE	6,4 PE	6,4 PE	6,4 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	-	4,2	4,3	7,0	7,0	7,0	7,0	7,0	-
Inner sheath/foil	no	no	no	no	no	Foil	Foil	PE	-
ø approx. mm	-	-	-	-	-	-	-	8,5	-
2nd Outer conductor	Tinned copper braid	no	no	no	no	Bare copper braid	Bare copper braid	Bare copper braid	-
ø approx. mm	-	-	-	-	-	7,6	7,6	9,1	-
Outer jacket	FRNC	PVC	PVC	PVC	PE	PVC	PE	PVC	PVC
Colour	green	green	green	green	black	green	black	green	red/black
Approx. outer ø mm	4,3	6,1	6,1	8,8	8,8	9,0	9,0	11,0	11,8
Min. bending radius ca. mm	25	30	30	45	45	50	50	55	50
Approx. weight kg/km	24	48	48	95	93	128	125	151	-
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	1,2	1,1	0,6	0,6	0,6	0,6	0,6	1,1
5 MHz	2,2	2,6	2,5	1,3	1,3	1,4	1,4	1,4	2,5
7 MHz	2,6	-	-	-	-	-	-	-	-
10 MHz	3,2	3,6	3,5	2,0	2,0	2,0	2,0	2,0	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	-
Direct-current resistance at 20°C									
Inner conductor max. Ohm/km	63,0	83,0	63,0	22,0	22,0	24,0	24,0	24,0	63,0
Outer conductor max. Ohm/km	21,0	12,5	13,0	7,5	7,5	3,5	3,5	6,5	13,0
Approx. capacitance pF/m	54,0	67,0	67,0	67,0	67,0	67,0	67,0	67,0	67,0
Test voltage	3,5	4,2	4,2	7,0	7,0	7,0	7,0	7,0	4,2
Working voltage at (kV)									
Pulse operation	-	3,6	3,6	6,0	6,0	6,0	6,0	6,0	-
HF-operation (peak value)	-	1,8	1,8	3,0	3,0	3,0	3,0	3,0	-
DC operation	-	8,0	8,0	14,0	14,0	14,0	14,0	14,0	-
Screening efficiency (dB)									
50 and 900 MHz ≥	90,0	-	-	-	-	-	-	-	-
Cu weight kg/km	11,0	18,0	22,0	32,0	32,0	78,0	78,0	78,0	38,00

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



Type Cable structure

Conductor material:
Core insulation:
Sheath material:
Cable external diameter:
Sheath colour:

Video Cables 3x(0,6/2,8)

Copper, bare
Cell PE
PVC
approx. 12,9 mm
Black

Electrical data

Characteristic impedance: 75 Ohm
Inner conductor resistance max.: 65 Ohm/km

Technical data

Weight: approx. 178,0 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

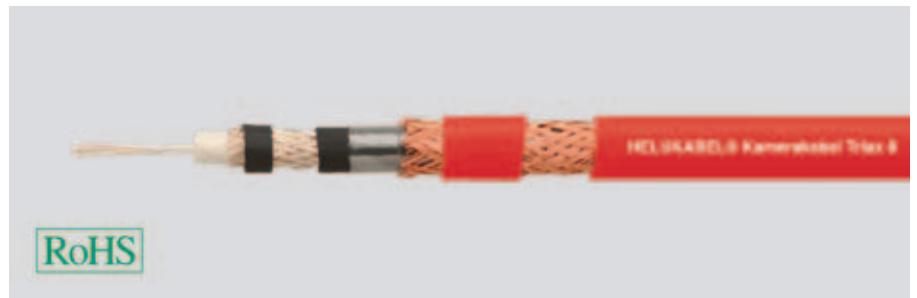
Halogen-free acc. to EN 50267-2-3

Part No.	Structure	Outer diameter ca. mm	Cop. weight kg / km	Weight ca. kg / km
400068	3x(0,6/2,8)	12,9	49,0	178
400069	4x(0,6/2,8)	14,1	65,0	214
400070	5x(0,6/2,8)	15,3	81,0	259
400071	6x(0,6/2,8)	16,7	97,0	295
400072	7x(0,6/2,8)	16,7	113,0	310

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).



Type Cable structure

Conductor material:
Core insulation:
Sheath material:
Cable external diameter:
Sheath colour:

Camera Cables Triax 8

Copper, silvered
PE
PUR
approx. 8,5 mm
Red

Electrical data

Characteristic impedance: 75 Ohm

Technical data

Weight: approx. 95,0 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.	Structure	Conductor isolation mm	Outer diameter ca. mm	Cop. weight kg / km	Weight ca. kg / km
400073	Triax 8	4,5	8,5	55,0	95
400074	Triax 11	6,5	11,0	80,0	150
400075	Triax 14	9,7	14,4	128,0	235
400076	Triax 8 flex	4,5	8,5	55,0	105
400077	Triax 11 flex	6,1	11,2	80,0	160
400078	Triax 14 flex	9,7	14,4	133,0	250

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.



COM

HELUCOM

Copper data cables

You can find all these and more items in the current data, network & bus technology catalogue, or on the Internet at www.helukabel.de.

FOR FIXED INSTALLATION



Data cable 600 S-STP

Part no. 80810



Data cable, 600 A, for outdoor use S-STP PVC/PVC

Part no. 801147



Data cable 600 S-STP ROBUST

Part no. 801197



Data cable 1200 S-STP

Part no. 81699

FOR FLEXIBLE APPLICATIONS



Data cable 600 S-STP flex

Part no. 80294



Data cable 200 S-FTP ROBUSTFLEX

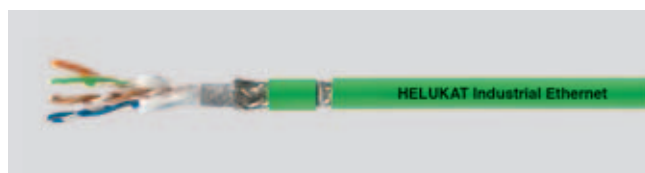
Part no. 800068

FOR USE IN DRAG CHAINS



Data cable 100 S S-FTP 4-CORE DRAG CHAIN ECO

Part no. 82838



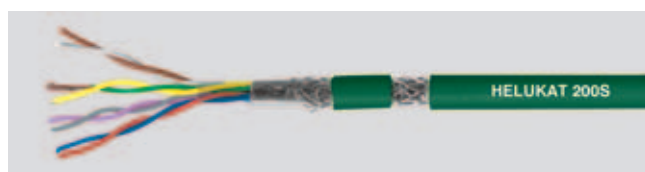
Data cable 100 S S-FTP 4-PAIR DRAG CHAIN ECO

Part no. 82839



Data cable 200 S S-FTP 4-CORE DRAG CHAIN

Part no. 800088



Data cable 200 S S-FTP 4-PAIR DRAG CHAIN

Part no. 81155

Fibre optic cables

You can find all these and more items in the current data, network & bus technology catalogue, or on the Internet at www.helukabel.de.

MULTIMODE FIBRES



**Fibre optic mini breakout cable
I-V(ZN)H**

Part no. 80435



**Fibre optic breakout cable
I-V(ZN)HH**

Part no. 80743



**Fibre optic universal mini breakout cable
A/I-VQ(ZN)BH**

Part no. 82804



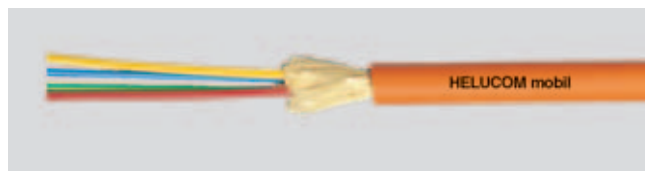
**Fibre optic universal cable
A/I-DQ(ZN)BH**

Part no. 80681



**Fibre optic cable, flexible
A-V(ZN)11Y11Y**

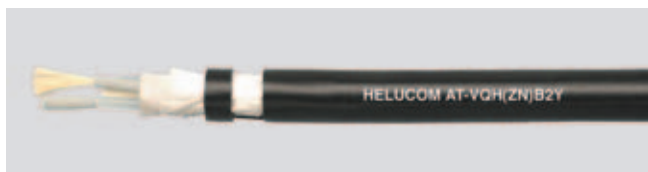
Part no. 81765



**Fibre optic mobile trailing cable
A-V(ZN)11Y**

Part no. 80382

HCS FIBRES



**Fibre optic HCS breakout cable
AT-VQH(ZN)B2Y**

Part no. 801196



**Fibre optic HCS breakout cable
I-V(ZN)Y11Y**

Part no. 800980

Polymer FIBRES



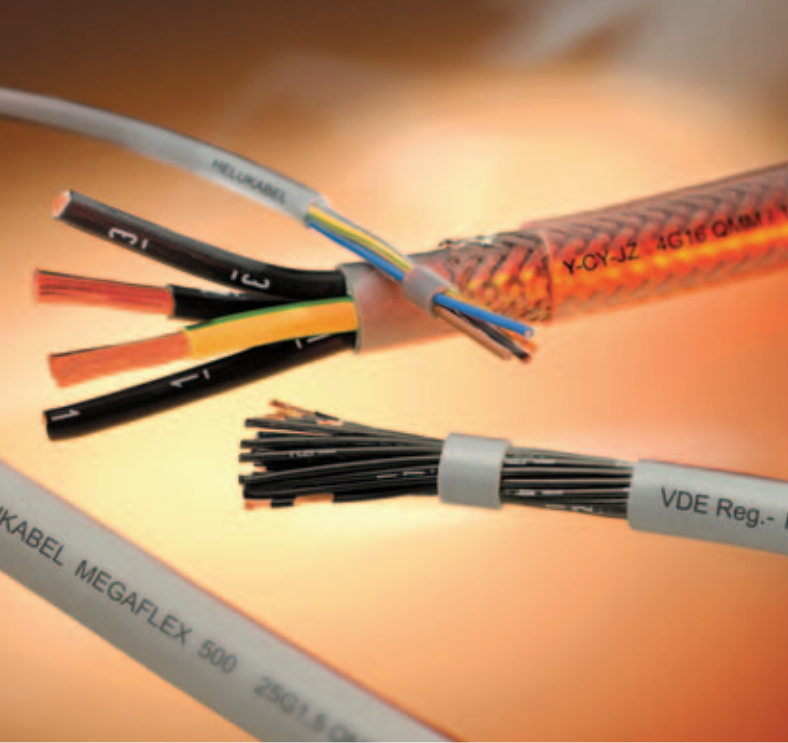
**POF/PE polymer fibre cable
I-V2Y**

Part no. 80532



**POF/PA polymer fibre cable
I-V4Y(ZN)11Y**

Part no. 801200



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JZ-600-Y-CY	58 to 59
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MEGAFLEX® 500	62 to 63
MEGAFLEX® 500-C	64 to 65
SIHF	66 to 67
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HELULIGHT® Reflect	70

Overview of power cables

You can find all these and more items
in the current catalogue for cables and wires,
or on the internet at www.helukabel.de.

PVC CONTROL CABLES

UNSHIELDED



JZ-500
Part no. 10001



JB-500
Part no. 11001



H05VV5-F
Part no. 13122



(H)05VV5-F
Part no. 13133



TRONIC (LiYY)
Part no. 18001

SHIELDED



F-CY-JZ
Part no. 16320



Y-CY-JB
Part no. 16121



H05VVC4V5-K
Part no. 13951



(H)05VVC4V5-K
Part no. 13170



TRONIC-CY
Part no. 20139

Overview of power cables

You can find all these and more items
in the current catalogue for cables and wires,
or on the internet at www.helukabel.de.

PUR CONTROL CABLES

UNSHIELDED



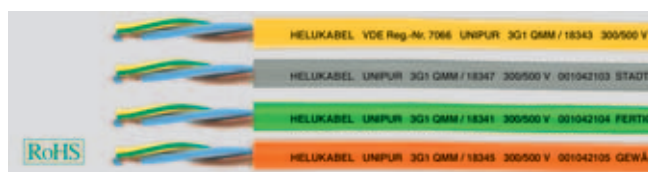
JZ-500 PUR
Part no. 23314



PURö-JZ
Part no. 22100



PUR-750
Part no. 49700



UNIPUR
Part no. 18120

SHIELDED



JZ-500 FC-PUR
Part no. 23414



F-C-PURö
Part no. 21200



Yö-C-PURö-JZ
Part no. 21400



UNIPUR-CP
Part no. 19150

HEAT-RESISTANT CABLES

SHIELDED



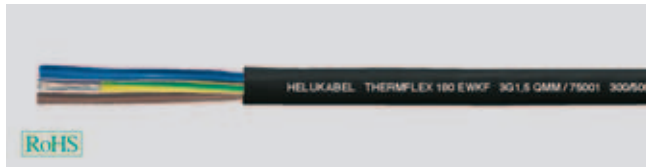
SiHF-GL/P
Part no. 23062



SiHF-C-Si
Part no. 23151

Overview of power cables

You can find all these and more items in the current catalogue for cables and wires, or on the internet at www.helukabel.de.



THERMFLEX 180 EWKF
Part no. 74992



THERMFLEX 180 EWKF-C
Part no. 79804

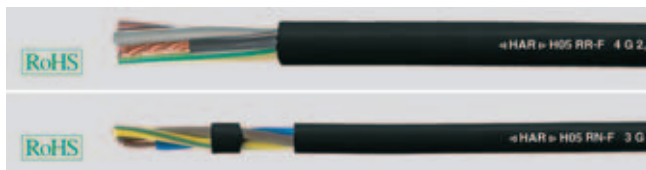


H05SS-F/H05SST-F
Part no. 22290



SiF/SiFF
Part no. 23200

RUBBER SHEATHED CABLES



H05RR-F/H05RN-F
Part no. 35001



YELLOWFLEX
Part no. 37259

HALOGEN-FREE CONTROL CABLES

UNSHIELDED



JZ-500 HMH
Part no. 11201

SHIELDED



JZ-500 HMH-C
Part no. 11656



JB-500 HMH
Part no. 11965

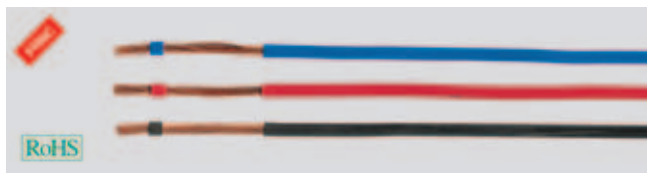


JB-500 HMH-C
Part no. 11942

Overview of power cables

You can find all these and more items in the current catalogue for cables and wires, or on the internet at www.helukabel.de.

SINGLE CORES HALOGEN-FREE



H05/H07 Z-K
Part no. 52872

HALOGENATED



H05V-K
Part no. 29081

HIGHLY FLEXIBLE CONTROL CABLES (FOR USE IN DRAG CHAINS)

UNSHIELDED



SUPERTRONIC-PVC
Part no. 49550

SHIELDED



SUPERTRONIC-C-PVC
Part no. 49620



JZ HF
Part no. 15001



JZ HF CY
Part no. 15930



MULTIFLEX 512-PUR
Part no. 22501



MULTIFLEX 512-C-PUR
Part no. 22571



MULTISPEED 500-PVC
Part no. 24050



MULTISPEED 500-C-PVC
Part no. 24086



Technical data

- Special PVC control cables Adapted to DIN VDE 0262/12.95 and DIN VDE 0281 part 13, with insulation thickness for 1 kV type
- **Temperature range**
flexing -5°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 MΩm x km
- **Power ratings**
per DIN VDE 0298
- **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, as per DIN VDE 0295 cl. 5, BS 6360 cl. 5 and IEC 60228 cl. 5
- Special PVC core insulation TI2, to DIN VDE 0281 part 1
- Black cores with white figure imprints to DIN VDE 0293
- Green-yellow earth core in the outer layer (3 cores and above)
- Cores stranded in layers with optimal lay-length
- Special PVC outer sheath TM2, to DIN VDE 0281 part 1
- colour black (RAL 9005)
- with meter marking, change-over in 2009

Properties

- Extensively oil resistant, chemical resistance - see table Technical Informations
- PVC self-extinguishing and flame retardant according 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
- Resistant to ultra violet rays

Note

- G = with green-yellow earth core;
x = without green-yellow earth core (OZ).
- Different dimensions are also available with red resp. blue cores.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- **screened analogue type:**
JZ-600-Y-CY (see page 58)

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.

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

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

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

Continuation ▶



Technical data

- Special control cables with thermoplastic PVC insulation On the basis of DIN VDE 0262/12.95 and DIN VDE 0281 part 13
- **Temperature range**
flexing -5°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 MΩm x km
- **Power rating**
according to DIN VDE 0298
- **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, according to DIN VDE 0295 cl. 5, BS 6360 cl. 5 and IEC 60228 cl. 5
- Special PVC core insulation TI2, to DIN VDE 0281 part 1
- Black cores with sequential numbering imprinted in white, according to DIN VDE 0293
- Green-yellow earth core in the outer layer (3 cores and above)
- Cores stranded in layers with optimal lay-length
- PVC-insulated inner sheath
- Braided screen of tinned Cu wires, coverage approx. 85%
- Special PVC outer sheath TM2, to DIN VDE 0281 part 1
- colour black (RAL 9005)
- with meter marking, change-over in 2009

Properties

- Extensively oil resistant
Chemical Resistance - see table Technical Informations
- PVC self-extinguishing and flame retardant according 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
- Resistant to ultra violet rays

Note

- G = with green-yellow earth core;
x = without green-yellow earth core (OZ).
- Further sizes are available upon request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- **unscreened analogue type:**
JZ-600 (see page 56)

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 optimise 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/EG.

Part No.	No. cores x cross-sec. mm ²	Outer ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.	Part No.	No. cores x cross-sec. mm ²	Outer ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
11464	2 x 0,5	8,5	41,0	129,0	20	11546	2 x 1,5	10,4	64,0	162,0	16
11465	3 G 0,5	8,8	45,0	150,0	20	11547	3 G 1,5	11,1	82,0	187,0	16
11466	4 G 0,5	9,6	54,0	170,0	20	11548	4 G 1,5	11,8	99,0	240,0	16
11467	5 G 0,5	10,2	66,0	199,0	20	11549	5 G 1,5	13,1	123,0	289,0	16
11469	7 G 0,5	11,1	79,0	235,0	20	11551	7 G 1,5	14,2	148,0	383,0	16
11472	12 G 0,5	14,0	137,0	320,0	20	11556	12 G 1,5	18,4	274,0	592,0	16
11475	18 G 0,5	16,2	156,0	428,0	20	11559	18 G 1,5	21,5	386,0	806,0	16
11478	25 G 0,5	19,2	250,0	503,0	20	11563	25 G 1,5	25,6	531,0	1241,0	16
11489	2 x 0,75	8,8	46,0	143,0	18	11574	2 x 2,5	11,8	110,0	272,0	14
11490	3 G 0,75	9,3	57,0	155,0	18	11575	3 G 2,5	12,7	148,0	298,0	14
11491	4 G 0,75	9,9	63,0	190,0	18	11576	4 G 2,5	13,8	169,0	345,0	14
11492	5 G 0,75	10,8	76,0	228,0	18	11577	5 G 2,5	15,1	220,0	427,0	14
11494	7 G 0,75	11,5	100,0	323,0	18	11578	7 G 2,5	16,3	284,0	561,0	14
11498	12 G 0,75	14,6	175,0	410,0	18	11580	12 G 2,5	21,3	470,0	857,0	14
11501	18 G 0,75	17,1	240,0	560,0	18	11582	18 G 2,5	25,4	572,0	1355,0	14
11504	25 G 0,75	20,3	306,0	730,0	18	11584	25 G 2,5	30,0	740,0	1995,0	14
11516	2 x 1	9,4	54,0	150,0	17	11590	2 x 4	14,2	124,0	306,0	12
11517	3 G 1	9,8	64,0	163,0	17	11591	3 G 4	15,1	178,0	391,0	12
11518	4 G 1	10,4	76,0	200,0	17	11592	4 G 4	16,2	234,0	527,0	12
11519	5 G 1	11,4	89,0	239,0	17	11593	5 G 4	18,0	284,0	700,0	12
11521	7 G 1	12,5	114,0	289,0	17	11594	7 G 4	19,8	321,0	920,0	12
11525	12 G 1	15,7	186,0	464,0	17	11596	12 G 4	25,8	581,0	1510,0	12
11528	18 G 1	18,4	284,0	628,0	17	11597	2 x 6	15,9	176,0	420,0	10
11532	25 G 1	21,8	387,0	855,0	17	11598	3 G 6	16,9	245,0	629,0	10
						11599	4 G 6	18,7	316,0	731,0	10

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

Continuation ▶

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



Part No.	No. cores x cross-sec. mm ²	Outer ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.	Part No.	No. cores x cross-sec. mm ²	Outer ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
11600	5 G 6	20,4	442,0	1105,0	10	11616	3 G 35	32,3	1250,0	3230,0	2
11601	7 G 6	22,2	530,0	1465,0	10	11617	4 G 35	35,8	1680,0	4100,0	2
11602	2 x 10	18,5	260,0	845,0	8	11618	5 G 35	39,5	2020,0	4950,0	2
11603	3 G 10	19,2	367,0	1125,0	8	11619	3 G 50	39,7	1887,0	4590,0	1
11604	4 G 10	21,2	549,0	1345,0	8	11620	4 G 50	43,4	2370,0	5780,0	1
11605	5 G 10	23,2	604,0	1635,0	8	11621	5 G 50	47,8	2880,0	7210,0	1
11606	7 G 10	26,8	820,0	2210,0	8	11622	3 G 70	44,9	2516,0	5610,0	2/0
11607	2 x 16	22,8	491,0	1150,0	6	11623	4 G 70	49,1	3257,0	7480,0	2/0
11608	3 G 16	24,7	653,0	1395,0	6	11624	5 G 70	53,8	4032,0	9390,0	2/0
11609	4 G 16	27,0	807,0	1870,0	6	11625	3 G 95	49,6	3086,0	8585,0	3/0
11610	5 G 16	30,0	940,0	2720,0	6	11626	4 G 95	54,1	4060,0	10220,0	3/0
11611	7 G 16	32,2	1345,0	3213,0	6	11627	5 G 95	57,7	5244,0	13800,0	3/0
11612	3 G 25	29,2	920,0	2465,0	4	11628	3 G 120	51,5	4176,0	11105,0	4/0
11613	4 G 25	32,0	1169,0	2750,0	4	11629	4 G 120	59,4	5231,0	13750,0	4/0
11614	5 G 25	35,7	1420,0	3490,0	4	13137	4 G 150	67,9	7760,0	15990,0	300 kcmil
11615	7 G 25	39,0	1921,0	4980,0	4	13147	4 G 185	74,0	7760,0	18470,0	350 kcmil

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



Technical data

- Rubber sheathed cable H07 RN-F to DIN VDE 0282 part 4, HD 22.4 S4BS7919 ΔIEC 60245-4
- **Temperature range** -30°C to +60°C
- Permissible **operating temperature** at conductor +60°C
- **Nominal voltage** U₀/U 450/750 V in case of protected and fixed installation U₀/U 600/1000 V
- Max. permissible **operating voltage** in three phase and one phase a.c. system U₀/U 476/825 V direct current-system U₀/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 5-7x cable Ø

Cable structure

- Copper conductor fine wire stranded, bare to DIN VDE 0295 cl. 5, BS 6360 cl. 5, IEC 60228 cl. 5 and HD 383
- Rubber core insulation EI4 to DIN VDE 0282 part 1
- Insulation thickness to DIN VDE 0282 part 4
- Core identification to DIN VDE 0293-308 and HD 186
- Core colours up to 5 cores one-coloured 6 and more cores, black with numbering 3 and above, with green-yellow earth core 2 cores without green-yellow earth core
- Cores stranded in layers with optimal lay-length
- Outer jacket of rubber black, rubber compound to DIN VDE 0282 part 1
- Sheath thickness to DIN VDE 0282 part 4
- Colour black

Properties

- **Resistant to** Ozone Weather
- **Test** Test according to VDE 0482-332-1-2, DIN EN 60332-1-2/ 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 EN 60811-2-1

Note

- G = with green-yellow earth core; x = without green-yellow earth core.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm².
- The core identification of a single core jacketed, of an insulated wire is black. For application as a protective core, the ends are to be identified with green-yellow and the middle conductor with light blue

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/EG.

Part No.	No. cores x cross-sec. mm ²	Outer ø min - max ca. mm	Cop. weight kg / km	Weight ca. kg / km	AWG-No.	Part No.	No. cores x cross-sec. mm ²	Outer ø min - max ca. mm	Cop. weight kg / km	Weight ca. kg / km	AWG-No.
37001	1 x 1,5	5,7 - 7,1	14,4	58,0	16	37019	2 x 1	7,7 - 10,0	19,0	98,0	17
37002	1 x 2,5	6,3 - 7,9	24,0	71,0	14	37020	2 x 1,5	8,5 - 11,0	29,0	135,0	16
37003	1 x 4	7,2 - 9,0	38,0	100,0	12	37021	2 x 2,5	10,2 - 13,1	48,0	193,0	14
37004	1 x 6	7,9 - 9,8	58,0	130,0	10	37022	2 x 4	11,8 - 15,1	77,0	280,0	12
37005	1 x 10	9,5 - 11,9	96,0	230,0	8	37023	2 x 6	13,1 - 16,8	115,0	330,0	10
37006	1 x 16	10,8 - 13,4	154,0	290,0	6	37024	2 x 10	17,7 - 22,6	192,0	586,0	8
37007	1 x 25	12,7 - 15,8	240,0	420,0	4	37025	2 x 16	20,2 - 25,7	307,0	810,0	6
37008	1 x 35	14,3 - 17,9	336,0	530,0	2	37026	2 x 25	24,3 - 30,7	480,0	1160,0	4
37009	1 x 50	16,5 - 20,6	480,0	750,0	1	37027	3 G 1	8,3 - 10,7	29,0	130,0	17
37010	1 x 70	18,6 - 23,3	672,0	960,0	2/0	37028	3 G 1,5	9,2 - 11,9	43,0	165,0	16
37011	1 x 95	20,8 - 26,0	912,0	1250,0	3/0	37029	3 G 2,5	10,9 - 14,0	72,0	235,0	14
37012	1 x 120	22,8 - 28,6	1152,0	1560,0	4/0	37030	3 G 4	12,7 - 16,2	115,0	320,0	12
37013	1 x 150	25,2 - 31,4	1440,0	1900,0	300 kcmil	37031	3 G 6	14,1 - 18,0	173,0	420,0	10
37014	1 x 185	27,6 - 34,4	1776,0	2300,0	350 kcmil	37032	3 G 10	19,1 - 24,2	288,0	810,0	8
37015	1 x 240	30,6 - 38,3	2304,0	2950,0	500 kcmil	37033	3 G 16	21,8 - 27,6	461,0	1050,0	6
37016	1 x 300	33,5 - 41,9	2880,0	3600,0	600 kcmil	37034	3 G 25	26,1 - 33,0	720,0	1250,0	4
37017	1 x 400	37,4 - 46,8	3840,0	4600,0	750 kcmil	37035	3 G 35	29,3 - 37,1	1008,0	1900,0	2
37018	1 x 500	41,3 - 52,0	4800,0	6000,0	1000 kcmil	37036	3 G 50	34,1 - 42,9	1440,0	2600,0	1

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

Continuation ▶

H07 RN-F rubber-sheathed cable, harmonized type



Part No.	No. cores x cross-sec. mm ²	Outer ø min - max ca. mm	Cop. weight kg / km	Weight ca. kg / km	AWG-No.	Part No.	No. cores x cross-sec. mm ²	Outer ø min - max ca. mm	Cop. weight kg / km	Weight ca. kg / km	AWG-No.
37037	3 G 70	38,4 - 48,3	2016,0	3400,0	2/0	37058	4 G 185	64,0 - 80,0	7104,0	9800,0	350 kcmil
37038	3 G 95	43,3 - 54,0	2736,0	4450,0	3/0	37059	4 G 240	72,0 - 91,0	9216,0	12100,0	500 kcmil
37039	3 G 120	47,4 - 60,0	3456,0	5180,0	4/0	37060	4 G 300	80,0 - 101,0	11520,0	15200,0	600 kcmil
37040	3 G 150	52,0 - 66,0	4320,0	6500,0	300 kcmil	37061	5 G 1,5	11,2 - 14,4	72,0	240,0	16
37041	3 G 185	57,0 - 72,0	5328,0	7860,0	350 kcmil	37062	5 G 2,5	13,3 - 17,0	120,0	345,0	14
37042	3 G 240	65,0 - 82,0	6192,0	10224,0	500 kcmil	37063	5 G 4	15,6 - 19,9	192,0	485,0	12
37043	3 G 300	72,0 - 90,0	8640,0	12620,0	600 kcmil	37064	5 G 6	17,5 - 22,2	288,0	650,0	10
37044	4 G 1	9,2 - 11,9	38,0	150,0	17	37065	5 G 10	22,9 - 29,1	480,0	1200,0	8
37045	4 G 1,5	10,2 - 13,1	58,0	200,0	16	37066	5 G 16	26,4 - 33,3	768,0	1550,0	6
37046	4 G 2,5	12,1 - 15,5	96,0	290,0	14	37067	5 G 25	32,0 - 40,4	1200,0	2250,0	4
37047	4 G 4	14,0 - 17,9	154,0	395,0	12	37068	5 G 35	36,8 - 45,8	1680,0	2750,0	2
37048	4 G 6	15,7 - 20,0	230,0	540,0	10	37091	5 G 50	40,0 - 50,8	2400,0	3950,0	1
37049	4 G 10	20,9 - 26,5	384,0	950,0	8	37154	5 G 70	43,8 - 54,0	3360,0	4740,0	1
37050	4 G 16	23,8 - 30,1	614,0	1260,0	6	37092	7 G 1,5	14,5 - 17,5	101,0	375,0	16
37051	4 G 25	28,9 - 36,6	960,0	1860,0	4	37079	7 G 2,5	16,5 - 20,0	168,0	520,0	14
37052	4 G 35	32,5 - 41,1	1344,0	2380,0	2	37093	12 G 1,5	17,6 - 22,4	175,0	460,0	16
37053	4 G 50	37,7 - 47,5	1920,0	3190,0	1	37096	12 G 2,5	20,6 - 26,2	288,0	760,0	14
37054	4 G 70	42,7 - 54,0	2688,0	4260,0	2/0	37097	18 G 2,5	24,4 - 30,9	432,0	850,0	14
37055	4 G 95	48,4 - 61,0	3648,0	5600,0	3/0	37094	19 G 1,5	20,7 - 26,3	274,0	810,0	16
37056	4 G 120	53,0 - 66,0	4608,0	6830,0	4/0	37098	19 G 2,5	25,5 - 31,0	456,0	1075,0	14
37057	4 G 150	58,0 - 73,0	5760,0	8320,0	300 kcmil	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)

Current ratings for H07 RN F for current supply in industrial application

Operating temperature at conductor 60°C; Ambient temperature 30°C (Air)

Number of cores	1-core		2-cores	3-cores	3-cores	4-cores	5-cores
	2 cores loaded	3 cores loaded	2 cores loaded	2 cores loaded	3 cores loaded	3 cores loaded	3 cores loaded
Cross-section, mm ²	Current ratings in Ampere (A)						
4	34	30	34	35	29	30	30
6	43	38	43	44	36	37	38
10	60	53	60	62	51	52	54
16	79	71	79	82	67	69	71
25	104	94	105	109	89	92	94
35	129	117	-	135	110	114	-
50	162	148	-	169	138	143	-
70	202	185	-	211	172	178	-
95	240	222	-	250	204	210	-
120	280	260	-	292	238	246	-
150	321	300	-	335	273	282	-
185	363	341	-	378	309	319	-
240	433	407	-	447	365	377	-
300	497	468	-	509	415	430	-
400	586	553	-	-	-	-	-
500	670	634	-	-	-	-	-
630	784	742	-	-	-	-	-

Note

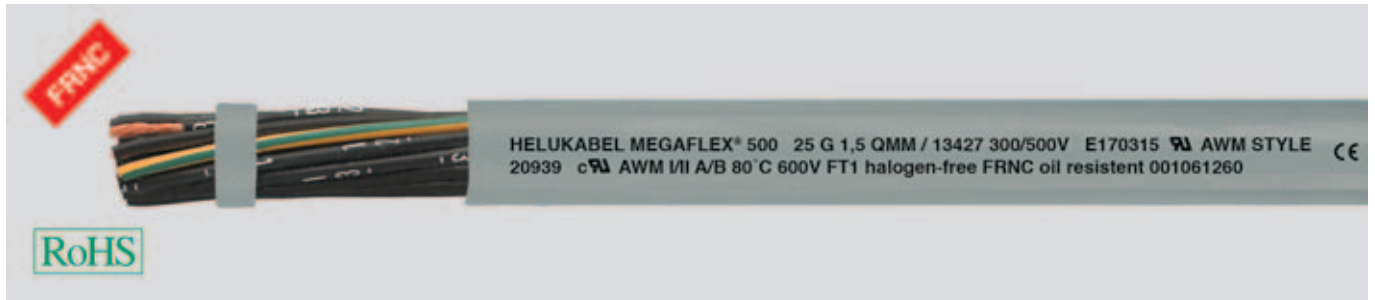
For the method of installation

- Single core cables are bunched (unit-form)
- 2 cores cables laid parallel with contact
- 3 cores cables are in triangle-form

Conversion factors for deviating ambient temperature

Ambient temperature at air °C	30	35	40	45	50	55
Factor	1,0	0,91	0,82	0,71	0,58	0,41

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



Technical data

- Halogen-free flexible control cable, adapted to E DIN VDE 0281 part 14
- **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**
flexing approx. 10x cable \emptyset
fixed installation approx. 4x cable \emptyset
- **Flexible**
Alternate bending test according to DIN VDE 0281-2

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
- Black cores with white continuous numbering to DIN VDE 0293
- Green-yellow earth core in the outer layer (3 cores and above)
- Cores stranded in layer with optimal lay-length
- Outer sheath, halogen-free special polymer
- Outer jacket colour grey (RAL 7001)
- The materials used in manufacture are cadmium-free and contain no silicone and are free from substances harmful to the wetting properties of lacquers
- with meter marking, change-over in 2009
- **LSOH** = Low Smoke Zero Halogen-free.

Properties

- Halogen-free
- Highly flame-retardant
- Resistant to oils and greases
- Resistant to UV and weathering
- Hydrolysis resistant
- Flexible, abrasion- and wear-resistant
- Ozone-resistant
- Recycleable
- Flame test to VDE 0482 part 266-2-4/ BS 4066 part 3/ EN 50266-2/ IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Self-extinguishing and flame retardant according to DIN VDE 0482-332-1-2, DIN EN/IEC 60332-1 (previously DIN VDE 0472 part 804 test method B)
- Corrosiveness of combustion gases according 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 according 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 VDE 0473 part 811-2-1
- Hydrolysis-resistant to DIN EN 61234-1
- Ozone-resistant to DIN EN 60811-2-1 / DIN VDE 0281-2

Note

- G = with green-yellow earth core;
x = without green-yellow earth core (OZ).
- screened analogue type:
MEGAFLEX® 500-C (see page 64)

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 building and air-conditioning systems, in warehousing and conveying systems, in ship-building and for regenerative types of energy such as in the construction of wind power stations.

Especially well-suited for use in public buildings, such as airports and train stations, where personal injuries and subsequent damage must be prevented in the event of a fire. The product is conformed with the EC Low-Voltage Directive 2006/95/EG.

Part No.	No. cores x cross-sec. mm ²	Outer \emptyset app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.	Part No.	No. cores x cross-sec. mm ²	Outer \emptyset app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
13344	2 x 0,5	4,8	9,6	43,0	20	13348	4 x 0,5	5,7	19,0	60,0	20
13345	3 G 0,5	5,1	14,4	50,0	20	13349	5 G 0,5	6,2	24,0	71,0	20
13346	3 x 0,5	5,1	14,4	50,0	20	13350	5 x 0,5	6,2	24,0	71,0	20
13347	4 G 0,5	5,7	19,0	60,0	20	13351	7 G 0,5	7,4	33,6	84,0	20

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

Continuation ▶

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



Part No.	No. cores x cross-sec. mm ²	Outer ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.	Part No.	No. cores x cross-sec. mm ²	Outer ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
13352	8 G 0,5	8,0	38,0	101,0	20	13422	12 G 1,5	12,1	173,0	311,0	16
13353	10 G 0,5	8,8	48,0	121,0	20	13423	16 G 1,5	13,6	230,0	392,0	16
13354	12 G 0,5	9,1	58,0	142,0	20	13425	18 G 1,5	14,5	259,0	450,0	16
13355	16 G 0,5	10,0	76,0	183,0	20	13426	20 G 1,5	15,2	288,0	497,0	16
13356	18 G 0,5	10,7	86,0	204,0	20	13427	25 G 1,5	17,8	360,0	630,0	16
13357	20 G 0,5	11,2	96,0	227,0	20	13428	34 G 1,5	19,8	490,0	842,0	16
13359	25 G 0,5	12,7	120,0	283,0	20	13429	37 G 1,5	20,2	533,0	897,0	16
13360	30 G 0,5	13,5	144,0	324,0	20	13430	50 G 1,5	23,7	720,0	1277,0	16
13361	34 G 0,5	14,5	163,0	367,0	20	13431	61 G 1,5	25,3	878,0	1460,0	16
13362	37 G 0,5	15,0	178,0	381,0	20	13432	65 G 1,5	26,0	936,0	1612,0	16
13363	41 G 0,5	15,8	197,0	417,0	20	13433	2 x 2,5	7,6	48,0	118,0	14
13364	42 G 0,5	15,8	202,0	454,0	20	13434	3 G 2,5	8,3	72,0	151,0	14
13365	50 G 0,5	17,3	240,0	519,0	20	13435	4 G 2,5	9,1	96,0	181,0	14
13366	61 G 0,5	19,4	293,0	635,0	20	13436	5 G 2,5	10,2	120,0	224,0	14
13367	65 G 0,5	19,4	312,0	694,0	20	13437	7 G 2,5	12,1	168,0	316,0	14
13368	2 x 0,75	5,2	14,4	47,0	19	13438	8 G 2,5	13,2	192,0	370,0	14
13369	3 G 0,75	5,5	21,6	56,0	19	13439	10 G 2,5	14,7	240,0	451,0	14
13370	3 x 0,75	5,5	21,6	56,0	19	13440	12 G 2,5	15,2	288,0	499,0	14
13371	4 G 0,75	6,2	29,0	69,0	19	13441	16 G 2,5	17,5	384,0	720,0	14
13372	4 x 0,75	6,2	29,0	69,0	19	13442	18 G 2,5	18,1	432,0	769,0	14
13373	5 G 0,75	6,8	36,0	83,0	19	13443	20 G 2,5	18,7	480,0	911,0	14
13374	5 x 0,75	6,8	36,0	83,0	19	13444	25 G 2,5	22,2	600,0	1047,0	14
13375	7 G 0,75	8,1	50,0	114,0	19	13445	30 G 2,5	23,7	720,0	1280,0	14
13376	7 x 0,75	8,1	50,0	114,0	19	13446	2 x 4	9,2	77,0	199,0	12
13377	8 G 0,75	8,9	58,0	136,0	19	13447	3 G 4	9,9	115,0	247,0	12
13378	10 G 0,75	9,6	72,0	172,0	19	13448	4 G 4	11,0	154,0	299,0	12
13379	12 G 0,75	9,9	86,0	183,0	19	13449	5 G 4	12,1	192,0	369,0	12
13380	16 G 0,75	11,5	115,0	241,0	19	13450	7 G 4	13,3	269,0	463,0	12
13381	18 G 0,75	11,9	130,0	266,0	19	13451	8 G 4	15,9	307,0	601,0	12
13382	20 G 0,75	12,6	144,0	291,0	19	13452	10 G 4	17,3	384,0	698,0	12
13383	25 G 0,75	14,1	180,0	374,0	19	13453	12 G 4	18,3	461,0	790,0	12
13384	30 G 0,75	15,4	216,0	450,0	19	13454	16 G 4	20,2	614,0	1130,0	12
13385	34 G 0,75	16,4	245,0	517,0	19	13455	18 G 4	21,8	691,0	1280,0	12
13386	37 G 0,75	17,2	260,0	541,0	19	13456	2 x 6	10,8	115,0	266,0	10
13387	41 G 0,75	17,6	296,0	611,0	19	13457	3 G 6	11,7	173,0	360,0	10
13388	42 G 0,75	17,6	302,0	621,0	19	13458	4 G 6	13,0	230,0	429,0	10
13389	50 G 0,75	19,8	360,0	742,0	19	13459	5 G 6	14,5	288,0	529,0	10
13390	61 G 0,75	20,9	439,0	853,0	19	13460	7 G 6	16,0	403,0	631,0	10
13392	65 G 0,75	21,5	468,0	909,0	19	13461	2 x 10	14,0	192,0	440,0	8
13393	2 x 1	5,5	19,2	63,0	18	13462	3 G 10	15,0	288,0	550,0	8
13394	3 G 1	6,0	29,0	74,0	18	13463	4 G 10	16,8	384,0	708,0	8
13395	3 x 1	6,0	29,0	74,0	18	13464	5 G 10	18,7	480,0	862,0	8
13396	4 G 1	6,6	38,4	90,0	18	13465	7 G 10	20,6	672,0	1124,0	8
13397	4 x 1	6,6	38,4	90,0	18	13466	2 x 16	16,5	307,0	642,0	6
13398	5 G 1	7,2	48,0	109,0	18	13467	3 G 16	17,6	461,0	830,0	6
13399	7 G 1	8,6	67,0	151,0	18	13468	4 G 16	19,7	641,0	1060,0	6
13400	8 G 1	9,4	77,0	184,0	18	13469	5 G 16	21,9	768,0	1270,0	6
13401	10 G 1	10,4	96,0	224,0	18	13470	7 G 16	24,4	1075,0	1794,0	6
13402	12 G 1	10,7	115,0	243,0	18	13471	3 G 25	22,5	720,0	1190,0	4
13403	16 G 1	12,0	154,0	314,0	18	13472	4 G 25	25,2	960,0	1594,0	4
13404	18 G 1	12,7	173,0	361,0	18	13473	5 G 25	27,9	1200,0	2014,0	4
13405	20 G 1	13,5	192,0	387,0	18	13474	3 G 35	25,2	1008,0	1590,0	2
13406	25 G 1	15,2	240,0	496,0	18	13475	4 G 35	28,0	1344,0	2200,0	2
13407	34 G 1	17,4	326,0	670,0	18	13476	5 G 35	31,0	1680,0	2693,0	2
13408	37 G 1	18,4	355,0	713,0	18	13477	3 G 50	29,5	1440,0	2571,0	1
13409	41 G 1	18,9	394,0	784,0	18	13478	4 G 50	33,4	1920,0	3087,0	1
13410	42 G 1	18,9	403,0	824,0	18	13479	5 G 50	37,2	2400,0	3980,0	1
13411	50 G 1	21,0	480,0	952,0	18	13480	3 G 70	37,0	2016,0	3207,0	2/0
13412	61 G 1	22,2	586,0	1140,0	18	13481	4 G 70	41,2	2688,0	4077,0	2/0
13413	65 G 1	22,8	628,0	1201,0	18	13482	5 G 70	46,0	3360,0	5501,0	2/0
13414	2 x 1,5	6,3	29,0	70,0	16	13483	3 G 95	41,0	2736,0	4708,0	3/0
13415	3 G 1,5	6,7	43,0	94,0	16	13484	4 G 95	46,0	3648,0	5590,0	3/0
13416	3 x 1,5	6,7	43,0	94,0	16	13485	5 G 95	50,5	4560,0	6972,0	3/0
13417	4 G 1,5	7,3	58,0	112,0	16	13486	3 G 120	45,7	3456,0	5515,0	4/0
13418	5 G 1,5	8,2	72,0	141,0	16	13487	4 G 120	50,3	4608,0	7100,0	4/0
13419	7 G 1,5	9,8	101,0	191,0	16	13488	3 G 150	52,2	4320,0	6279,0	300 kcmil
13420	8 G 1,5	10,6	115,0	224,0	16	13489	4 G 150	57,0	5760,0	7781,0	300 kcmil
13421	10 G 1,5	11,7	144,0	282,0	16						

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

MEGAFLEX® 500-C halogen-free, flame retardant, oil-resistant, UV-resistant, flexible, screened, meter marking, EMV-preferred type



Technical data

- Halogen-free flexible control cable, adapted to E DIN VDE 0281 part 14
- **Temperature range**
flexing -30°C to +80°C
fixed installation -40°C to +80°C
- **Nominal voltage** U₀/U 300/500 V
- **Test voltage** 3000 V
- **Minimum bending radius**
flexing approx. 10x cable Ø
fixed installation approx. 4x cable Ø
- **Flexible**
Alternate bending test according to DIN VDE 0281-2
- **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
- Black cores with white continuous numbering to DIN VDE 0293
- Green-yellow earth core in the outer layer (3 cores and above)
- Cores stranded in layer with optimal lay-length
- Separating foil
- Tinned copper braided screening, coverage approx. 85%
- Outer sheath, halogen-free special polymer
- Outer jacket colour grey (RAL 7001)
- The materials used in manufacture are cadmium-free and contain no silicone and are free from substances harmful to the wetting properties of lacquers
- with meter marking, change-over in 2009
- **LSOH** = Low Smoke Zero Halogen-free.

Properties

- Halogen-free
- Highly flame-retardant
- Resistant to oils and greases
- Resistant to UV and weathering
- Flexible, abrasion- and wear-resistant
- Ozone-resistant
- Recycleable
- Flame test to VDE 0482 part 266-2-4/ BS 4066 part 3/ EN 50266-2/ IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Self-extinguishing and flame retardant according to DIN VDE 0482-332-1-2, DIN EN/IEC 60332-1 (previously DIN VDE 0472 part 804 test method B)
- Corrosiveness of combustion gases according 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 according 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 VDE 0473 part 811-2-1
- hydrolysebeständig nach DIN EN 61234-1
- Ozone-resistant to DIN EN 60811-2-1 / DIN VDE 0281-2

Note

- G = with green-yellow earth core;
x = without green-yellow earth core (OZ).
- **unscreened analogue type:**
MEGAFLEX® 500 (see page 62)

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. An interference-free transmission of signals and pulse is assured by the high degree of screening. As a measuring and control cable primarily in machinery and plant construction, in building and air-conditioning systems, in warehousing and conveying systems, in ship-building and for regenerative types of energy such as in the construction of wind power stations. Especially well-suited for use in public buildings, such as airports and train stations, where personal injuries and subsequent damage must be prevented in the event of a fire.

EMC = Electromagnetic compatibility

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

Part No.	No. cores x cross-sec. mm ²	Outer ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.	Part No.	No. cores x cross-sec. mm ²	Outer ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
13500	2 x 0,5	5,7	35,0	46,0	20	13508	8 G 0,5	8,5	80,0	116,0	20
13501	3 G 0,5	6,0	42,0	56,0	20	13509	10 G 0,5	9,3	94,0	135,0	20
13502	3 G 0,5	6,0	42,0	56,0	20	13510	12 G 0,5	9,6	108,0	158,0	20
13503	4 G 0,5	6,5	47,0	62,0	20	13511	16 G 0,5	10,7	129,0	210,0	20
13504	4 G 0,5	6,5	47,0	62,0	20	13512	18 G 0,5	11,2	145,0	216,0	20
13505	5 G 0,5	7,0	56,0	75,0	20	13514	20 G 0,5	11,9	172,0	240,0	20
13506	5 x 0,5	7,0	56,0	75,0	20	13515	25 G 0,5	13,4	240,0	315,0	20
13507	7 G 0,5	7,9	69,0	98,0	20	13516	2 x 0,75	6,1	40,0	60,0	18

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

Continuation ▶

MEGAFLEX® 500-C halogen-free, flame retardant, oil-resistant, UV-resistant, flexible, screened, meter marking, EMV-preferred type



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

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



Technical data

- Special silicone multicores cable with higher heat-resistance range adapted to DIN VDE 0250 part 1 and part 816
- **Temperature 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
- **Insulation resistance**
min. 200 MΩ 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 7,5x cable Ø
fixed installation 4x cable Ø
- **Radiation resistance**
up to 20×10^6 cJ/kg (up to 20 Mrad)

Cable structure

- Tinned fine wire copper conductors to DIN VDE 0295 cl. 5, BS 6360 cl. 5 and IEC 60228 cl. 5
- Silicone core insulation
- 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
- Green-yellow earth-core (3 cores and above)
- Outer jacket of silicone
- Jacket colour preferably redbrown
- with meter marking, change-over in 2009

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 SiO₂
- **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**
according to VDE 0482 part 267/
DIN EN 50267-2-2/ IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- **Behaviour in fire**
no flame propagation
test according to DIN VDE 0482 part 265-2-1/ EN 50265-2-1/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- For laying as a fixed installation only in open or ventilated pipe systems as well as in ducts. Otherwise the mechanical properties of the silicone are reduced by the enclosed air at temperatures exceeding 90°C.

Note

- G = with green-yellow earth core;
x = without green-yellow earth core (OB).

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 elastic characteristic of core insulations, these are used as flexible connection cable.

☞ The product is conformed with the EC Low-Voltage Directive 2006/95/EG.

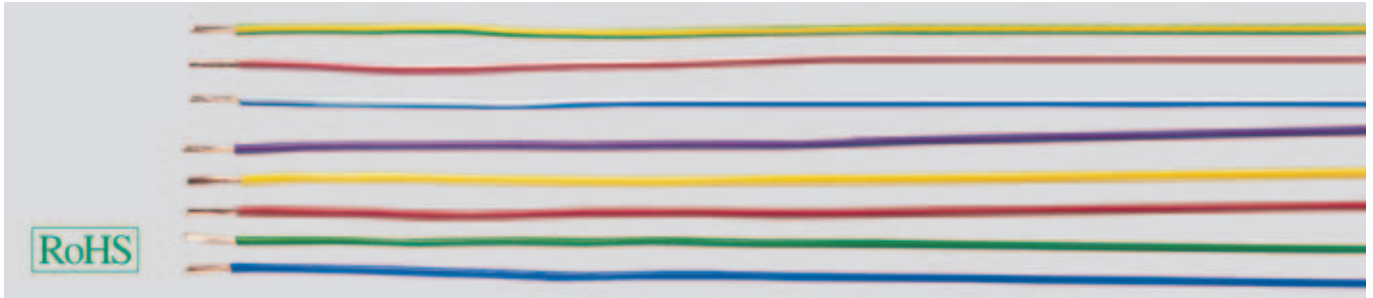
Part No.	No. cores x cross-sec. mm ²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.	Part No.	No. cores x cross-sec. mm ²	Outer Ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
22989	2 x 0,5	5,8	9,6	42,0	20	23001	2 x 0,75	6,4	14,4	53,0	18
22990	3 G 0,5	6,3	14,5	44,0	20	23002	3 G 0,75	6,7	21,6	63,0	18
22940	3 x 0,5	6,3	14,5	44,0	20	23104	3 x 0,75	6,7	21,6	63,0	18
22991	4 G 0,5	6,9	19,3	58,0	20	23003	4 G 0,75	7,5	29,0	83,0	18
22941	4 x 0,5	6,9	19,3	58,0	20	23105	4 x 0,75	7,5	29,0	83,0	18
22992	5 G 0,5	7,7	24,0	62,0	20	23004	5 G 0,75	8,4	36,0	101,0	18
22942	5 x 0,5	7,7	24,0	62,0	20	22943	5 x 0,75	8,4	36,0	101,0	18
22993	6 G 0,5	8,4	28,9	79,0	20	23005	6 G 0,75	9,5	43,0	115,0	18
22994	7 G 0,5	8,4	33,7	85,0	20	23006	7 G 0,75	9,5	50,0	124,0	18
22995	8 G 0,5	9,9	38,4	99,0	20	23127	8 G 0,75	10,9	57,7	138,0	18
22996	10 G 0,5	11,0	48,1	124,0	20	23128	10 G 0,75	11,8	72,1	156,0	18
22997	12 G 0,5	11,2	57,6	141,0	20	23129	12 G 0,75	12,2	86,5	185,0	18
22998	16 G 0,5	12,7	76,7	186,0	20	23130	16 G 0,75	13,8	115,2	218,0	18
22999	18 G 0,5	13,6	86,5	211,0	20	23131	18 G 0,75	14,5	129,7	260,0	18
23000	25 G 0,5	16,4	120,0	271,0	20	23132	25 G 0,75	17,6	180,0	370,0	18

Dimensions and specifications may be changed without prior notice. (RE01)

Continuation ▶

Part No.	No. cores x cross-sec. mm ²	Outer ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.	Part No.	No. cores x cross-sec. mm ²	Outer ø app. mm	Cop. weight kg / km	Weight app. kg / km	AWG-No.
23007	2 x 1	6,7	19,0	59,0	17	23029	4 G 2,5	10,6	96,0	188,0	14
23008	3 G 1	7,5	29,0	77,0	17	23030	5 G 2,5	11,6	120,0	228,0	14
22944	3 x 1	7,5	29,0	77,0	17	23139	6 G 2,5	12,6	144,0	304,0	14
23009	4 G 1	8,1	38,0	94,0	17	23032	7 G 2,5	12,6	168,0	320,0	14
22945	4 x 1	8,1	38,0	94,0	17	23140	8 G 2,5	15,0	192,2	373,0	14
23010	5 G 1	8,8	48,0	115,0	17	23141	10 G 2,5	16,6	240,1	450,0	14
22946	5 x 1	8,8	48,0	115,0	17	23033	12 G 2,5	17,1	288,0	502,0	14
23011	6 G 1	9,6	58,0	134,0	17	23142	16 G 2,5	19,6	384,0	659,0	14
23012	7 G 1	9,6	67,0	144,0	17	23143	18 G 2,5	20,8	432,2	761,0	14
23133	8 G 1	11,0	76,7	175,0	17	23144	25 G 2,5	24,7	600,0	1007,0	14
23134	10 G 1	12,4	96,1	216,0	17	23034	2 x 4	10,6	77,0	180,0	12
23135	12 G 1	12,6	115,2	251,0	17	23035	3 G 4	11,4	115,0	224,0	12
23136	16 G 1	14,3	153,5	302,0	17	23036	4 G 4	13,0	154,0	295,0	12
23137	18 G 1	15,1	172,9	340,0	17	23037	5 G 4	14,3	192,0	359,0	12
23138	25 G 1	18,3	240,0	431,0	17	23039	7 G 4	15,5	269,0	479,0	12
23013	2 x 1,5	7,8	29,0	81,0	16	23040	2 x 6	12,6	115,0	210,0	10
23014	3 G 1,5	8,2	43,0	98,0	16	23041	3 G 6	13,3	173,0	270,0	10
22947	3 x 1,5	8,2	43,0	98,0	16	23042	4 G 6	14,7	230,0	341,0	10
23015	4 G 1,5	8,9	58,0	122,0	16	23043	5 G 6	16,4	288,0	432,0	10
22948	4 x 1,5	8,9	58,0	122,0	16	23045	7 G 6	18,0	403,0	552,0	10
23016	5 G 1,5	9,8	72,0	147,0	16	23046	2 x 10	15,4	192,0	400,0	8
22949	5 x 1,5	9,8	72,0	147,0	16	23047	3 G 10	16,5	288,0	507,0	8
23017	6 G 1,5	10,8	86,0	173,0	16	23048	4 G 10	18,5	384,0	644,0	8
23018	7 G 1,5	10,8	101,0	187,0	16	23049	5 G 10	20,5	480,0	788,0	8
23019	8 G 1,5	12,7	114,0	213,0	16	23145	7 G 10	22,6	672,2	1151,0	8
23020	10 G 1,5	14,0	116,0	263,0	16	23050	2 x 16	19,0	308,0	591,0	6
23021	12 G 1,5	14,7	173,0	314,0	16	23051	3 G 16	20,1	462,0	749,0	6
23022	14 G 1,5	15,5	202,0	379,0	16	23052	4 G 16	22,2	616,0	950,0	6
23023	16 G 1,5	16,4	231,0	445,0	16	23053	5 G 16	24,7	770,0	1204,0	6
23024	18 G 1,5	17,4	260,0	506,0	16	23146	7 G 16	27,3	1075,3	1682,0	6
23025	20 G 1,5	18,2	288,0	566,0	16	23054	2 x 25	23,0	480,0	700,0	4
23026	24 G 1,5	20,7	346,0	722,0	16	23055	3 G 25	24,6	720,0	1100,0	4
23027	2 x 2,5	9,2	48,0	134,0	14	23056	4 G 25	27,4	960,0	1500,0	4
23028	3 G 2,5	9,7	72,0	152,0	14	23057	2 x 35	24,6	672,0	1100,0	2
						23058	3 G 35	26,5	1008,0	1500,0	2
						23059	4 G 35	29,2	1344,0	2100,0	2

Dimensions and specifications may be changed without prior notice. (RE01)



Technical data

- PVC single cores to DIN VDE 0281 part 3, HD 21.3 S3 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**
12,5 to 15x cable Ø
- **Radiation resistance**
up to 80×10^6 cJ/kg (up to 80 Mrad)

Cable structure

- Bare copper fine wire stranded to DIN VDE 0295 cl. 5, BS 6360 cl. 5, HD 383 and IEC 60228 cl. 5
- PVC core insulation, compound T11 to DIN VDE 0281 part 3, HD 21.3 S3 and IEC 60227-3
- Core colours see below
- **Core Identification with nominal voltage U_0/U 450/750 V**
- 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.
- **Colour code Single core cables H07 see Technical Informations**

Properties

- PVC self-extinguishing and flame retardant according 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

- Colours yellow, green, transparent only in (H)07 V-K available.
- Two-coloured combination is only permitted for (H)07 V-K.

Application

These insulated wires 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/EG.

Cross-section mm ² ca. RAL	Outer ø min. - max. mm	Cop. weight kg / km	black	gn-ye	blue	brown	red	white	grey	vio	ye	pink	green	trans	dk-bu	og	2-col.	u-blue
			9005	-	5015	8003	3000	1013	7000	4005	1021	3015	6018	-	5010	2003	-	5002



Coil in cardboard (100m)

Packing

H07 V-K, (H)07 V-K

Part No.	Outer ø min. - max. mm	Cop. weight kg / km	29129	29130	29131	29132	29133	29134	29135	29136	29137	29138	29139	29140	29141	29142	29144**	26395
1,5	2,8 - 3,4	14,4																
2,5	3,4 - 4,1	24,0	29145	29146	29147	29148	29149	29150	29151	29152	29153	29154	29155	29156	29157	29158	29160	26396
4	3,9 - 4,8	38,0	29161	29162	29163	29164	29165	29166	29167	29168	29169	29170	29171	29172	29173	29174	29176	26397
6	4,4 - 5,3	58,0	29177	29178	29179	29180	29181	29182	29183	29184	29185	29186	29187	29188	29189	29190	29192	26398



Spool (with various capacity)

Packing

H07 V-K, (H)07 V-K

Part No.	Outer ø min. - max. mm	Cop. weight kg / km	26690	26691	26692	26693	26694	26695	26696	26697	26698	26699	26700	26701	26702	26703	26705**	26399
1,5	2,8 - 3,4	14,4																
2,5	3,4 - 4,1	24,0	26706	26707	26708	26709	26710	26711	26712	26713	26714	26715	26716	26717	26718	26719	26721	26400
4	3,9 - 4,8	38,0	26722	26723	26724	26725	26726	26727	26728	26729	26730	26731	26732	26733	26734	26735	26737	26401
6	4,4 - 5,3	58,0	26738	26739	26740	26741	26742	26743	26744	26745	26746	26747	26748	26749	26750	26751	26753	26402

Dimensions and specifications may be changed without prior notice. (RK01)

Continuation ▶

H07 V-K / (H)07 V-K PVC-Single Cores, fine wire stranded



Cross-section mm ² ca. RAL	Outer ø min. - max. mm	Cop. weight kg / km	black	gn-ye	blue	brown	red	white	grey	vio	ye	pink	green	trans	dk-bu	og	2-col.	u-blue
			9005	-	5015	8003	3000	1013	7000	4005	1021	3015	6018	-	5010	2003	-	-



Packing

Barrel (with various capacity)

H07 V-K, (H)07 V-K			26755	26756	26757	26758	26759	26760	26761	26762	26763	26764	26765	26766	26767	26768	26770	26403
Part No. 1,5	2,8 - 3,4	14,4	26771	26772	26773	26774	26775	26776	26777	26778	26779	26780	26781	26782	26783	26784	26786	26404
Part No. 2,5	3,4 - 4,1	24,0	26787	26788	26789	26790	26791	26792	26793	26794	26795	26796	26797	26798	26799	26800	26802	26819
Part No. 4	3,9 - 4,8	38,0	26803	26804	26805	26806	26807	26808	26809	26810	26811	26812	26813	26814	26815	26816	26818	26820
Part No. 6	4,4 - 5,3	58,0																



Packing

Coil in foil (100m)

H07 V-K, (H)07 V-K			26060	26061	26062	26063	26064	26065	26066	26067	26068	26069	26092	26099	26108	26109	26111	26821
Part No. 1,5	2,8 - 3,4	14,4	26112	26113	26114	26115	26116	26117	26118	26119	29855	29856	29857	29858	29859	29890	29892	26822
Part No. 2,5	3,4 - 4,1	24,0	29893	29894	29895	29896	29897	29898	29899	29905	29906	29907	29908	29909	29910	29911	29913	26823
Part No. 4	3,9 - 4,8	38,0	29914	29915	29916	29917	29918	29919	29921	29922	29923	29924	29925	29926	29927	29928	29933	26824
Part No. 6	4,4 - 5,3	58,0	29193	29194	29195	29196	29197	29198	29199	29200	29201	29202	29203	29204	29205	29206	29208	-
Part No. 10	5,7 - 6,8	96,0	29209	29210	29211	29212	29213	29214	29215	29216	29217	29218	29219	29220	29221	29222	29224	-
Part No. 16	6,7 - 8,1	154,0	29225	29226	29227	29228	29229	29230	29231	29232	29233	29234	29235	29236	29237	29238	29240	-
Part No. 25	8,4 - 10,2	240,0	29241	29242	29243	29244	29245	29246	29247	29248	29249	29250	29251	29252	29253	29254	29256	-
Part No. 35	9,7 - 11,7	336,0	29257	29258	29259	29260	29261	29262	29263	29264	29265	29266	29267	29268	29269	29270	29272	-
Part No. 50	11,5 - 13,9	480,0	29273	29274	29275	29276	29277	29278	29279	29280	29281	29282	29283	29284	29285	29286	29288	-
Part No. 70	13,2 - 16,0	672,0	29289	29290	29291	29292	29293	29294	29295	29296	29297	29298	29299	29300	29301	29302	29304	-
Part No. 95	15,1 - 18,2	912,0	29418	29419	29420	29421	29422	29423	29424	29425	29426	29427	29428	29429	29430	29431	29433	-
Part No. 120	16,7 - 20,2	1152,0	29434	29435	29436	29437	29438	29439	29440	29441	29442	29443	29444	29445	29446	29447	29449	-
Part No. 150	18,6 - 22,5	1440,0	29494	29495	29496	29497	29498	29499	29590	29591	29592	29593	29594	29595	29596	29597	29599	-
Part No. 185	20,6 - 24,9	1776,0	29813	29814	29815	29816	29817	29818	29819	29840	29841	29842	29843	29844	29845	29846	29848	-
Part No. 240	23,5 - 28,4	2304,0																



Packing

Drum

H07 V-K, (H)07 V-K			26825	26826	26827	26828	26829	26830	26831	26832	26833	26834	26835	26836	26837	26838	26840	-
Part No. 10	5,7 - 6,8	96,0	26841	26842	26843	26844	26845	26846	26847	26848	26849	26850	26851	26852	26853	26854	26856	-
Part No. 16	6,7 - 8,1	154,0	26857	26858	26859	26860	26861	26862	26863	26864	26865	26866	26867	26868	26869	26870	26872	-
Part No. 25	8,4 - 10,2	240,0	26873	26874	26875	26876	26877	26878	26879	26880	26881	26882	26883	26884	26885	26886	26888	-
Part No. 35	9,7 - 11,7	336,0	26889	26890	26891	26892	26893	26894	26895	26896	26897	26898	26899	26900	26901	26902	26904	-
Part No. 50	11,5 - 13,9	480,0	26905	26906	26907	26908	26909	26910	26911	26912	26913	26914	26915	26916	26917	26918	26920	-
Part No. 70	13,2 - 16,0	672,0	26921	26922	26923	26924	26925	26926	26927	26928	26929	26930	26931	26932	26933	26934	26936	-
Part No. 95	15,1 - 18,2	912,0	29305	29306	29307	29308	29309	29310	29311	29312	29313	29314	29315	29316	29317	29318	29320	-
Part No. 120	16,7 - 20,2	1152,0	29321	29322	29323	29324	29325	29326	29327	29328	29329	29330	29331	29332	29333	29334	29336	-
Part No. 150	18,6 - 22,5	1440,0	29337	29338	29339	29340	29341	29342	29343	29344	29345	29346	29347	29348	29349	29350	29352	-
Part No. 185	20,6 - 24,9	1776,0	29353	29354	29355	29356	29357	29358	29359	29360	29361	29362	29363	29364	29365	29366	29368	-
Part No. 240	23,5 - 28,4	2304,0																

Dimensions and specifications may be changed without prior notice. (RK01)



Type Cable structure

Conductor material:
Sheath material:
External diameter:

Earthing cables

Copper litz wire, bare
PVC
approx. 14,0 mm

Electrical data

Insulation resistance min.:
Test voltage:

20,0 MOhm x km
2000 kV

Technical data

Weight:
Copper weight:

approx. 575 kg/km
480,0 kg/km

Part no.

428943

Dimensions and specifications may be changed without prior notice.

Application

The new HELULIGHT® Reflect Series combines appearance with usefulness. Tripping hazards in the stage and construction site area are made visible using the reflective foil. As well as the power supply, HELULIGHT® Reflect can also be integrated in the stage appearance as another highlight. Almost every power cable with transparent sheath can be supplemented with the reflective foil.

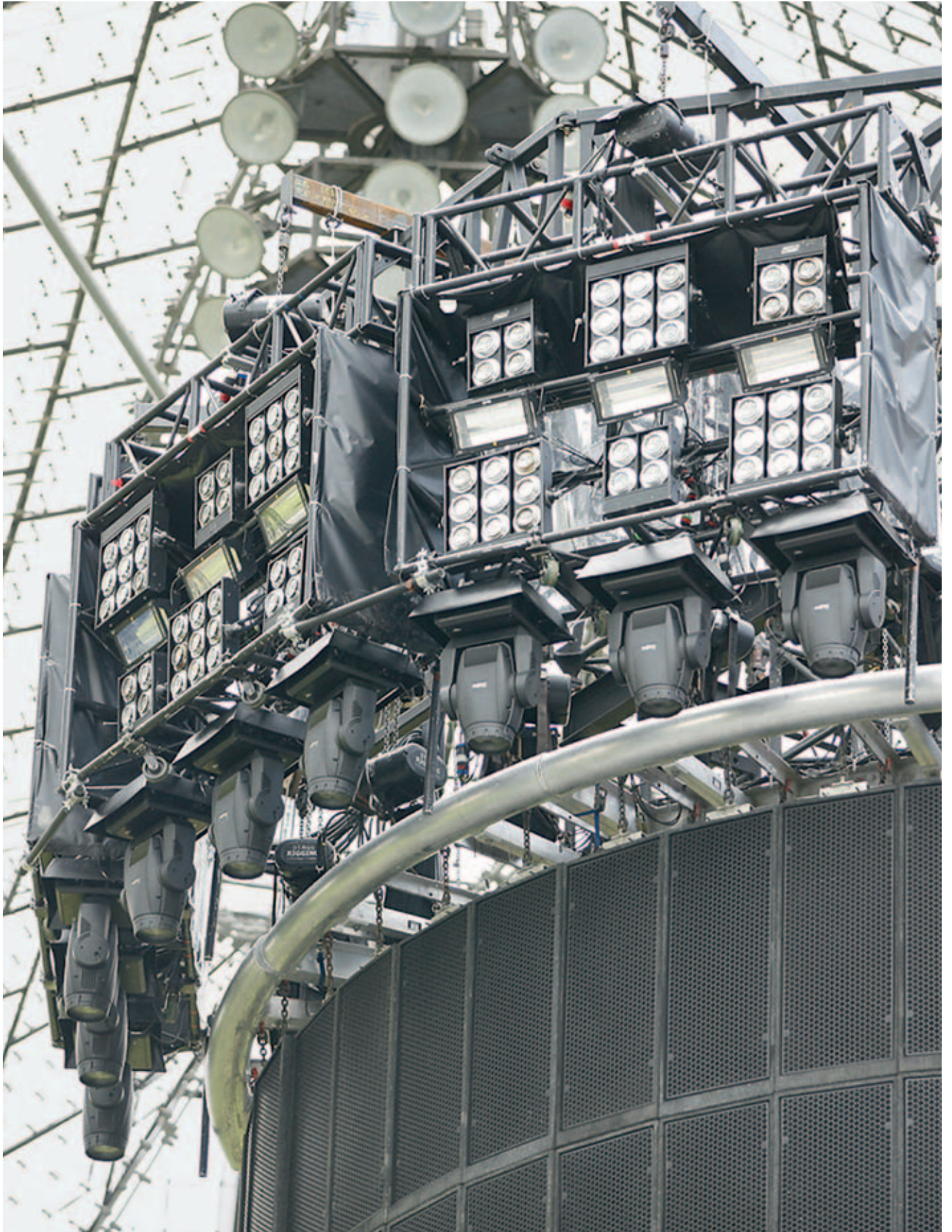
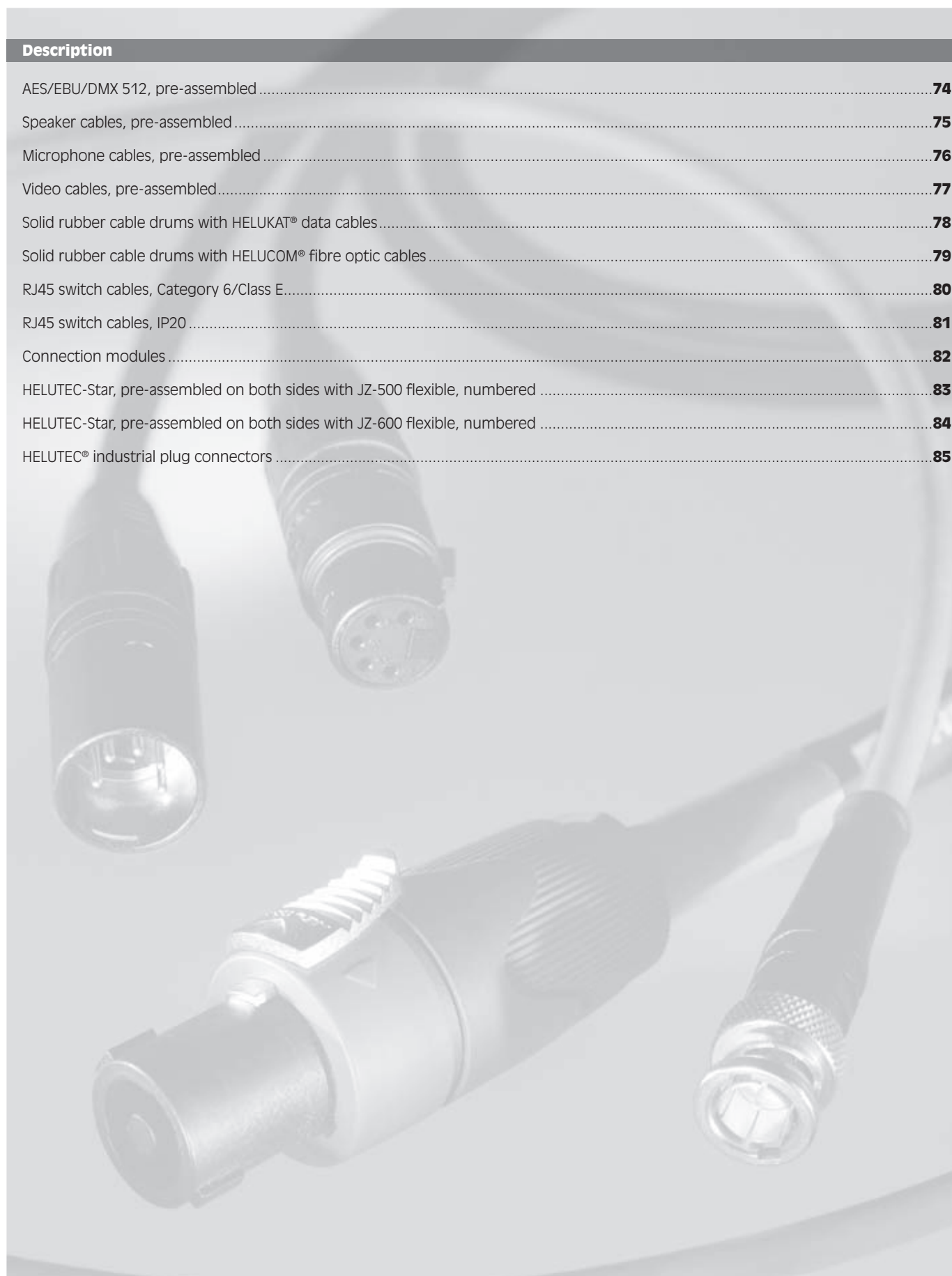


Photo: Ralph@Larmann.com



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Cable

AES/EBU cable DMX cable, Part no. 400032
AES/EBU DMX512, Part no. 400033

Connector

Black Hicon or Neutrik XLR plug connectors

Application

The pre-assembled HELULIGHT® AES/EBU / DMX 512 cable is used for the transmission of digital signals in the 110 Ω AES/EBU and DMX data formats.

AES / EBU & DMX cables

XLR male ⇔ XLR female 3-pin, HICON
other lengths on request.

Part no.	Length
410056	3,0 m
410057	5,0 m
410058	7,5 m
410059	10,0 m

AES / EBU & DMX cables

XLR male ⇔ XLR female 5-pin, 3-pin assigned, HICON
Assignment: Shield on PIN 1, + on PIN 2, - on PIN 3,
other lengths on request.

Part no.	Length
410065	2,5 m
410066	5,0 m
410067	10,0 m
410068	20,0 m

AES / EBU & DMX cables

XLR male 3-pin ⇔ XLR female 5-pin, 3-pin assigned, NEUTRIK
Assignment: Shield on PIN 1, + on PIN 2, - on PIN 3,
other lengths on request.

Part no.	Length
410074	0,1 m
410075	1,0 m
410076	2,5 m
410077	5,0 m

AES / EBU DMX 512

XLR male ⇔ XLR female 5-pin, fully assigned, HICON,
other lengths on request.

Part no.	Length
410082	2,5 m
410083	5,0 m
410084	10,0 m
410085	20,0 m

AES / EBU & DMX cables

XLR male ⇔ XLR female 3-pin, NEUTRIK,
other lengths on request.

Part no.	Length
410060	2,5 m
410061	5,0 m
410062	10,0 m
410063	20,0 m
410064	50,0 m

AES / EBU & DMX cables

XLR male ⇔ XLR female 5-pin, 3-pin assigned, NEUTRIK
Assignment: Shield on PIN 1, + on PIN 2, - on PIN 3,
other lengths on request.

Part no.	Length
410069	2,5 m
410070	5,0 m
410071	10,0 m
410072	20,0 m
410073	50,0 m

AES / EBU & DMX cables

XLR male 5-pin ⇔ XLR female 3-pin, 3-pin assigned, NEUTRIK
Assignment: Shield on PIN 1, + on PIN 2, - on PIN 3,
other lengths on request.

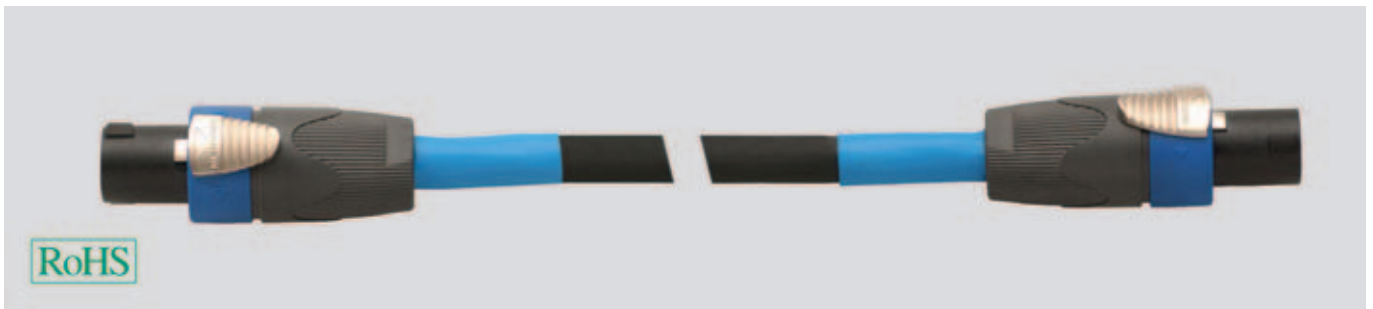
Part no.	Length
410078	0,1 m
410079	1,0 m
410080	2,5 m
410081	5,0 m

AES / EBU DMX 512

XLR male ⇔ XLR female 5-pin, NEUTRIK,
other lengths on request.

Part no.	Length
410086	2,5 m
410087	5,0 m
410088	10,0 m
410089	20,0 m
410090	50,0 m

Dimensions and specifications may be changed without prior notice.



Cable

Speaker cable, round, paired / multi-core

Connector

XLR connector from Neutrik; Speakon connector from Neutrik or Amphenol

Application

The pre-assembled HELUSOUND® speaker cable for professional media technology.

Loudspeaker, round, paired

TWINAXIAL, XLR male ↔ XLR female, NEUTRIK, other lengths on request.

Part no.	Length
410091	1,0 m
410092	2,5 m
410093	5,0 m
410094	10,0 m
410095	15,0 m
410096	20,0 m

Loudspeaker, round, paired

Speakon ↔ Speakon 2-pin, NEUTRIK, other lengths on request.

Part no.	Length
410104	1,0 m
410105	2,5 m
410106	5,0 m
410107	10,0 m
410108	15,0 m
410109	20,0 m
410110	25,0 m

Loudspeaker, round, multicore

NEUTRIK NL4F, fully assigned, individual cores numbered

Part no.	Length
410118	1,0 m
410119	2,5 m
410120	5,0 m
410121	10,0 m
410122	15,0 m
410123	20,0 m
410124	25,0 m

Loudspeaker, round, multicore

Amphenol EP8, fully assigned, individual cores numbered

Part no.	Length
410130	10,0 m
410131	15,0 m
410132	20,0 m
410133	25,0 m
410134	50,0 m

Dimensions and specifications may be changed without prior notice.

Loudspeaker, round, paired

Speakon ↔ Speakon 2-pin, NEUTRIK, other lengths on request.

Part no.	Length
410097	1,0 m
410098	2,5 m
410099	5,0 m
410100	10,0 m
410101	15,0 m
410102	20,0 m
410103	25,0 m

Loudspeaker, round, multicore

NEUTRIK NL8FL, fully assigned, individual cores numbered

Part no.	Length
410125	5,0 m
410126	10,0 m
410127	15,0 m
410128	20,0 m
410129	25,0 m



Cable

Microphone cable 2x0.22, Part No. 400038

Connector

HI-XCM3N-BLK connector or HI-XCF3N-BLK from HICON
NC3MX or NC3FX from NEUTRIK

Application

The pre-assembled HELUSOUND® microphone cable for professional use in media, radio and stage technology.

Microphone cables

XLR male ↔ XLR female, HICON

Cables only in black,

other lengths on request.

Part no.	Length
410135	1,0 m
410136	3,0 m
410137	6,0 m
410138	10,0 m
410139	15,0 m

Microphone cables

XLR male ↔ XLR female, NEUTRIK,

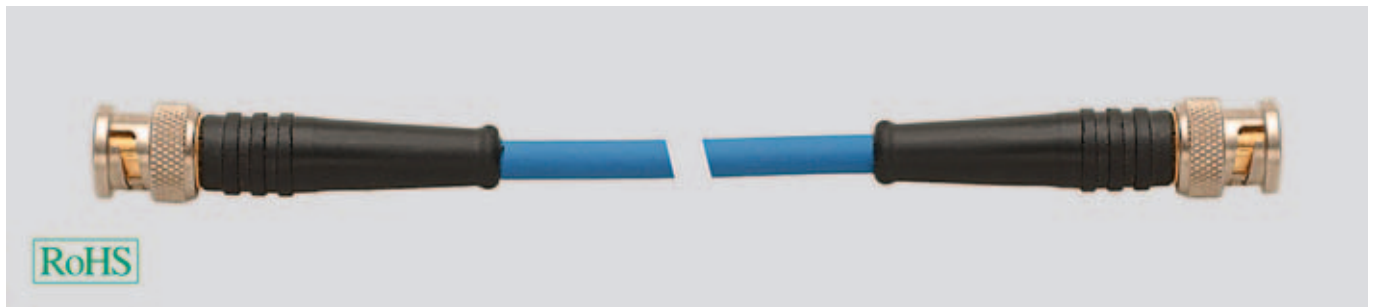
other lengths on request.

Part no.	Length
410140	0,5 m
410141	1,0 m
410142	2,5 m
410143	5,0 m
410144	7,5 m
410145	10,0 m
410146	15,0 m
410147	20,0 m

Dimensions and specifications may be changed without prior notice.

Video cable

Video cable, preassembled



Cable

RG58 cable with bend protection sleeve 50 Ohm
RG59 with bend protection sleeve 75 Ohm
0.8/3.7 video patch cable

Connector

BNC plug connectors from HICON
HDTV-BNC video plug connector from Damar+Hagen

Application

The pre-assembled HELUKABEL® video cable for professional use in media, radio and video technology.

RG 58

**BNC male ⇔ BNC male 50 Ohm RG58, HICON,
other lengths on request.**

Part no.	Length
410148	0,25 m
410149	0,5 m
410150	0,75 m
410151	1,0 m
410152	2,0 m
410153	3,0 m
410154	5,0 m
410155	10,0 m

RG 59

**BNC male ⇔ BNC male 75 Ohm, HICON,
other lengths on request.**

Part no.	Length
410156	0,25 m
410157	0,5 m
410158	0,75 m
410159	1,0 m

RG 59

**BNC male ⇔ BNC male 75 Ohm, HICON,
other lengths on request.**

Part no.	Length
410160	2,0 m
410161	3,0 m
410162	5,0 m
410163	10,0 m

0,8 / 3,7 Video patch cables

**HDTV BNC male ⇔ HDTV BNC male, Damar+Hagen,
other lengths on request.**

Part no.	Length
410164	0,25 m
410165	0,5 m
410166	0,75 m
410167	1,0 m
410168	2,0 m
410169	3,0 m
410170	5,0 m
410171	10,0 m

Dimensions and specifications may be changed without prior notice.



Type

Rubber cable reel with HELUKAT® copper data cable

Drum

Equipment:

Rubber

with supporting frame

Plug

Push-On connector type 1:

Push-On connector type 2:

System type:

Pin assignment:

RJ45 8/8 - jack

RJ45 8/8 - jack

office connector

1:1 acc. to TIA/EIA 568 B

Norms

Components of HELUKAT CONNECTING SYSTEMS® to 155 MHz acc. Categorie 5E and to 600MHz acc. Categorie 6 (Link), ISO 11801 1st Edition, EN 50173-3 and EIA/TIA 568 B. Be in accordance with the Cat.5E respectively the Cat. 6 structured cabling.

Preferred types

Part no.	Designation	Jacket colour	Frequency MHz	Cable length m	Flame proof	Oil resistance
802073	FTP 4x2xAWG24/1 PVC	Yellow similar to RAL 1021	155	50,0	no	-
802074	FTP 4x2xAWG24/1 PVC	Yellow similar to RAL 1021	155	90,0	no	-
802075	S-STP 4x2xAWG 23/1 FRNC	Blue Lilac similar to RAL 4005	600	50,0	acc. to IEC 60332-3	-
802076	S-STP 4x2xAWG 23/1 FRNC	Blue Lilac similar to RAL 4005	600	90,0	acc. to IEC 60332-3	-
802207	S-STP 4x2xAWG 23/1 PUR	Green similar to RAL 6018	600	50,0	acc. to IEC 60332-1	EN60811-2-1
802208	S-STP 4x2xAWG 23/1 PUR	Green similar to RAL 6018	600	90,0	acc. to IEC 60332-1	EN60811-2-1

Dimensions and specifications may be changed without prior notice.

Characteristics

Rubber cable reel with RJ45 jacks and dust protection. Suitable for mobile use on site, for example for meetings, TV-Transmissions, Fairs, etc.. Everywhere when there is a need for a removable cable connection. Usable for fixed installation cabling.

Options

We also can deliver other cable length, cross-over cables or other types of plugs.



Type

Rubber cable reel with HELUCOM® fibre optic mobile cable

Drum

Equipment:

Rubber

with supporting frame

Cable

Description:
sheath colour:

Fibre-optic cable, mobile, trailing
Orange

Flame retardant:
Oil-resistant:

acc. to EN 50265-2-1
oilresistent acc. EN60811-2-1

Plug

System type:
Protective grommet:
APC version:

office connector
Plugged
no

Norms

Components of HELUCOM CONNECTING SYSTEMS® according actual standards. Meet the standard IEC 60794-1-2 F5 and E6. Also they realize the optical data acc. OM1, OM2 and ITU-T G.652.

Preferred types

Part no.	Fibre type	Fibre count	Plug 1	Plug 2	Cable length m
802223	Multimode G50/125	4	ST	ST	500,0
802224	Multimode G50/125	4	SC duplex	SC duplex	500,0
802225	Multimode G50/125	4	LC duplex	LC duplex	500,0
802226	Multimode G62,5/125	4	ST	ST	500,0
802227	Multimode G62,5/125	4	SC duplex	SC duplex	500,0
802228	Multimode G62,5/125	4	LC duplex	LC duplex	500,0
802229	Single-Mode E9/125	4	ST	ST	500,0
802230	Single-Mode E9/125	4	SC duplex	SC duplex	500,0
802231	Single-Mode E9/125	4	LC duplex	LC duplex	500,0

Dimensions and specifications may be changed without prior notice.

Characteristics

Rubber cable reel with 4 fibre optic jacks and fibre optic plugs. Suitable for mobile use on site, for example for meetings, TV-Transmissions, Fairs, etc.. Everywhere when there is a need for a removable cable connection. Usable for flexible and fixed installation cabling.

Options

We also can deliver other cable length, other fibre types or other types of plugs.



Type

Patch cable S-STP halogenfree, Cat.6

Cable

Designation:
Sheath material:
Sheath colour:
Frequency:

S-STP 4x2xAWG 27/7 halogenfree
PVC LSOH
grey
up to 600 MHz

Plug

Push-on connector type 1:
Push-on connector type 2:
Pin assignment:

RJ45 8(8)
RJ45 8(8)
1:1 acc. to TIA/EIA 568 B

Norms and standards

HELUKAT CONNECTING SYSTEMS® system components up to 250 MHz in the of category 6 or Class E in accordance with ISO 11801, 2nd edition, EN 50173, 2nd edition, and EIA/TIA 568 B.

Preferred types

Part no.	Length in meters	Packing unit
82857	0,5	10
82858	1,0	10
82859	2,0	10
82860	3,0	10
82861	5,0	5
82862	7,5	5
82863	10,0	5
82864	15,0	5

Dimensions and specifications may be changed without prior notice.

Options

Naturally, we also offer other lengths, colors and crossover cables on request.



Type

Patch Cable RJ45 HARTING IP20, LAN-Industry drag chain

Cable

Designation: S-FTP 4x1xAWG 24/19 PUR
 Sheath material: PUR
 Sheath colour: green
 Frequency: up to 100 MHz

Plug

Push-on connector type 1: RJ45-connector IP20
 Push-on connector type 2: RJ45-connector IP20
 System type: Harting IP20 Industrial 4P
 Pin assignment: 1:1 acc. to TIA/EIA 568 B

Flame proof

acc. to IEC 60332-1

Oil-resistant

Acc. to EN60811-2-1

Norms and standards

Components of HELUKAT CONNECTING SYSTEMS® to 100 MHz acc. Categorie 5, ISO 11801 1st Edition, EN 50173-3 and EIA/TIA 568 B. Support the ISO/IEC 24702 and IEC 61076-3-106.

Preferred types

Part no.	Length in meters	Packing unit
800833	0,5	10
800834	1,0	10
800835	2,0	10
800836	3,0	10
800837	5,0	10
800838	10,0	10

Dimensions and specifications may be changed without prior notice.

Characteristics

- Drag chain suitable
- Bending radius 7,5 x cable outerdiameter maximum
- Moving speed 180 m/min maximum
- Movement distance 6 m maximum
- Acceleration 5 m/s² maximum
- Cycles maximum 10 Mio.
- Temperature range from -40°C to +80°C
- Transmission rate maximum 100 Mbit/s
- Transmission distance maximum 50 m from the Hub to the receiver
- Suitable for the „Light-Duty“ range

Options

We also can deliver other cable length, cross-over cables or other types of plugs.



Cable structure

Housing material:	Metal/PUR
Colour:	red
Connection type:	plugged
Shielding:	yes
Pin Code:	EIA/TIA 568 B
Dust protection:	yes

Electrical details

Category:	5
Class:	D

Norms and standards

HELUKAT CONNECTING SYSTEMS® INDUSTRY system component up to 100 MHz in category 5 or Class D in accordance with ISO 11801, 2nd edition, EN 50173, 2nd edition, EIA/TIA 568 B, and EN 55022 (EMC)

Application

As non-crush extension unit for coupling Ethernet connections in rough industrial environments.

Part no.

801307

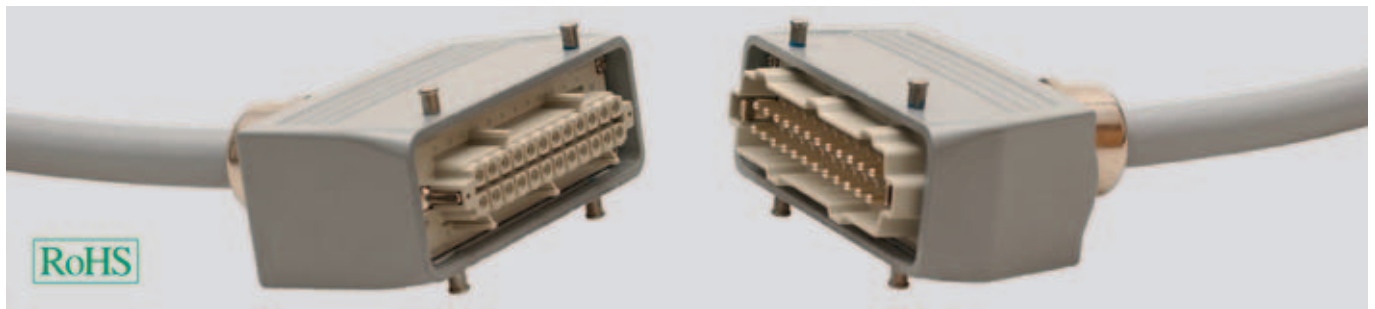
Dimensions and specifications may be changed without prior notice.

Packing unit

10

HELUTEC-Star

preassembled on both sides with flexible JZ-500, numbered



Cable

HELUKABEL JZ 500

Connector

HELUTEC-STAR®

Application

The pre-assembled HELUTEC-Star® control cable for the professional Media, Broadcast and Stage Technic using.

Part No.	Wire	No. cores x cross-sec. mm ²	Outer ø ca. mm	Length m	Plug 1	Plug 2
410000	10105	14 G 1,5	12,9	1,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410001	10105	14 G 1,5	12,9	3,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410002	10105	14 G 1,5	12,9	5,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410003	10105	14 G 1,5	12,9	10,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410004	10105	14 G 1,5	12,9	15,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410005	10105	14 G 1,5	12,9	20,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410006	10105	14 G 1,5	12,9	30,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F

Part No.	Wire	No. cores x cross-sec. mm ²	Outer ø ca. mm	Length m	Plug 1	Plug 2
410007	10107	18 G 1,5	14,5	1,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410008	10107	18 G 1,5	14,5	3,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410009	10107	18 G 1,5	14,5	5,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410010	10107	18 G 1,5	14,5	10,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410011	10107	18 G 1,5	14,5	15,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410012	10107	18 G 1,5	14,5	20,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410013	10107	18 G 1,5	14,5	30,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F

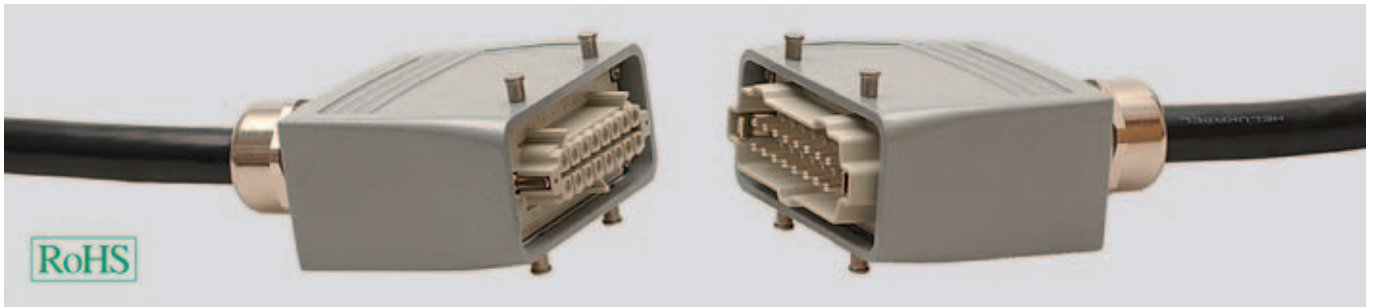
Part No.	Wire	No. cores x cross-sec. mm ²	Outer ø ca. mm	Length m	Plug 1	Plug 2
410014	10131	14 G 2,5	16,1	1,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410015	10131	14 G 2,5	16,1	3,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410016	10131	14 G 2,5	16,1	5,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410017	10131	14 G 2,5	16,1	10,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410018	10131	14 G 2,5	16,1	15,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410019	10131	14 G 2,5	16,1	20,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410020	10131	14 G 2,5	16,1	30,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F

Part No.	Wire	No. cores x cross-sec. mm ²	Outer ø ca. mm	Length m	Plug 1	Plug 2
410021	10132	18 G 2,5	18,1	1,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410022	10132	18 G 2,5	18,1	3,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410023	10132	18 G 2,5	18,1	5,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410024	10132	18 G 2,5	18,1	10,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410025	10132	18 G 2,5	18,1	15,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410026	10132	18 G 2,5	18,1	20,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410027	10132	18 G 2,5	18,1	30,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F

Dimensions and specifications may be changed without prior notice.

HELUTEC-Star

preassembled on both sides with flexible JZ-600, numbered



Cable

HELUKABEL JZ 600

Connector

HELUTEC-STAR®

Application

The pre-assembled HELUTEC-Star® control cable for the professional Media, Broadcast and Stage Technic using.

Part No.	Wire	No. cores x cross-sec. mm ²	Outer ø ca. mm	Length m	Plug 1	Plug 2
410028	10672	14 G 1,5	17,4	1,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410029	10672	14 G 1,5	17,4	3,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410030	10672	14 G 1,5	17,4	5,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410031	10672	14 G 1,5	17,4	10,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410032	10672	14 G 1,5	17,4	15,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410033	10672	14 G 1,5	17,4	20,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410034	10672	14 G 1,5	17,4	30,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F

Part No.	Wire	No. cores x cross-sec. mm ²	Outer ø ca. mm	Length m	Plug 1	Plug 2
410035	10674	18 G 1,5	19,7	1,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410036	10674	18 G 1,5	19,7	3,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410037	10674	18 G 1,5	19,7	5,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410038	10674	18 G 1,5	19,7	10,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410039	10674	18 G 1,5	19,7	15,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410040	10674	18 G 1,5	19,7	20,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410041	10674	18 G 1,5	19,7	30,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F

Part No.	Wire	No. cores x cross-sec. mm ²	Outer ø ca. mm	Length m	Plug 1	Plug 2
410042	10700	14 G 2,5	19,6	1,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410043	10700	14 G 2,5	19,6	3,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410044	10700	14 G 2,5	19,6	5,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410045	10700	14 G 2,5	19,6	10,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410046	10700	14 G 2,5	19,6	15,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410047	10700	14 G 2,5	19,6	20,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F
410048	10700	14 G 2,5	19,6	30,0	HELUTEC-STAR 16-pole M	HELUTEC-STAR 16-pole F

Part No.	Wire	No. cores x cross-sec. mm ²	Outer ø ca. mm	Length m	Plug 1	Plug 2
410049	10701	18 G 2,5	22,0	1,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410050	10701	18 G 2,5	22,0	3,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410051	10701	18 G 2,5	22,0	5,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410052	10701	18 G 2,5	22,0	10,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410053	10701	18 G 2,5	22,0	15,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410054	10701	18 G 2,5	22,0	20,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F
410055	10701	18 G 2,5	22,0	30,0	HELUTEC-STAR 24-pole M	HELUTEC-STAR 24-pole F

Dimensions and specifications may be changed without prior notice.

HELUTEC® – Industrial plug connectors



HELUTEC® – the new cable accessory program from HELUKABEL®. Signal and power circular connector series for industrial applications.

Our new Online Service:

www.helutec.de

Test our **Connector Configurator** at www.helutec.de. This online service allows you to configure standard types of HELUTEC® industrial connectors.

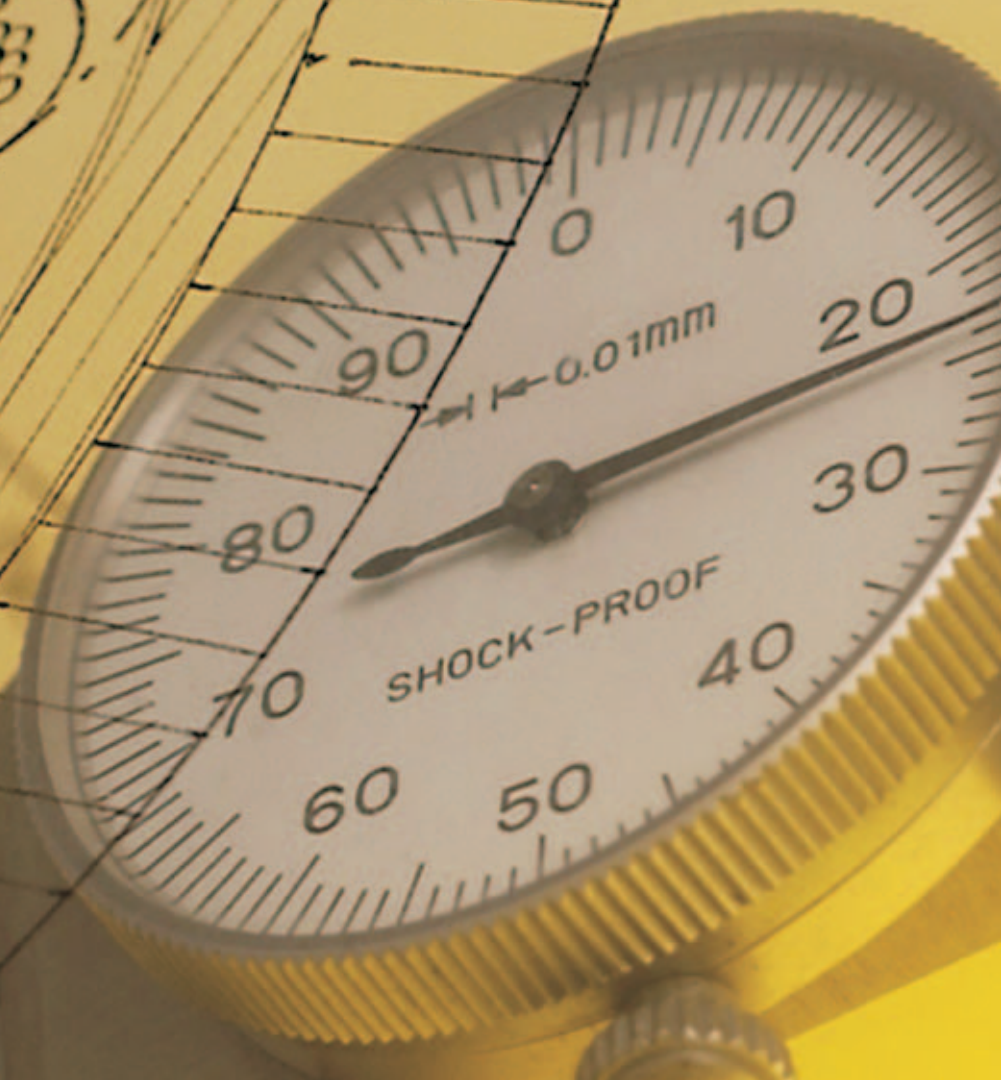
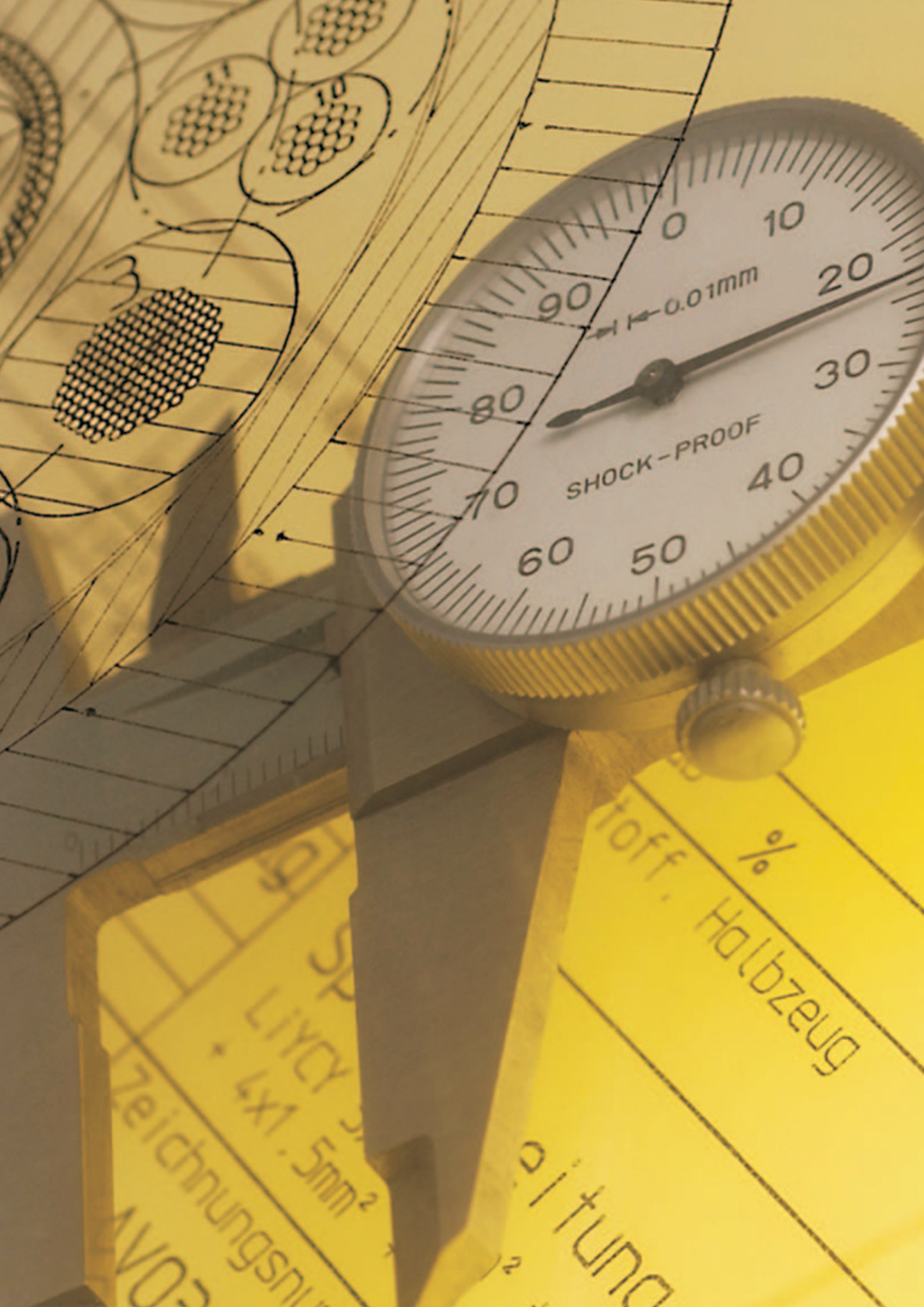


HELUTEC®
industrial connectors

**HELUTEC® is
also available
pre-assembled.**

Any questions? Please contact us directly.

For further information, please order our detailed HELUTEC® technical documentation.



SP
L1YCY
4x1,5mm²
Zeichnungstisch
AVO3

Stiftung
Grenzzeug
%

Technical appendix

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Characteristics* of insulating and sheath materials

Designation			Electrical					Thermic							
VDE Initial-code	Ab- brevi- ations	Materials	Density g/m ³	Break- down- voltage- KV/mm (20°C)	Spezific volume resistivity Ohm · cm 20°C	Dielectric constant 50 Hz/20°C	Dielectric loss- factor tan δ	Working temperature		Melt- temperature +°C	Flame- resistance	Oxygen index LOI (% O ₂)	Heating value H ₀ MU · kg ⁻¹		
								permanent °C	short time °C						
Thermoplastics	Y	PVC	Polyvinylchloride compounds	1,35–1,5	25	10 ¹⁵ –10 ¹⁵	3,6–6	4 x 10 ⁻² to 1 x 10 ⁻¹	- 30 + 70	+100	>140	self-extin- guishing	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 x 10 ⁻⁴	- 50 + 70	+100	105–110	flam- mable	≤22	42–44	
	2Y	HDPE	High density Polyethylene	0,94–0,98	85	10 ¹⁷	2,3	3 x 10 ⁻⁴	- 50 +100	+120	130				
	2X	VPE	Cross-linked Polyethylene	0,92	50	10 ¹² –10 ¹⁶	4–6	2 x 10 ⁻³	- 35 + 90	+100	-				
	02Y		Foamed Polyethylene	~0,65	30	10 ¹⁷	~1,55	5 x 10 ⁻⁴	- 40 + 70	+100	105				
	3Y	PS	Polystrole	1,05	30	10 ¹⁶	2,5	1 x 10 ⁻⁴	- 50 + 80	+100	>120		≤22	40–43	
	4Y	PA	Polyamide	1,02–1,1	30	10 ¹⁵	4	2 x 10 ⁻² bis 1 x 10 ⁻³	- 60 +105	+125	210		≤22	27–31	
	9Y	PP	Polypropylene	0,91	75	10 ¹⁶	2,3–2,4	4 x 10 ⁻⁴	- 10 +140	+140	160		42–44		
	11Y	PUR	Polyurethane	1,15–1,2	20	10 ¹⁰ –10 ¹²	4–7	2,3 x 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 x 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 x 10 ⁻²	- 65 + 60	+120	-		flam- mable	≤22	21–25
	2G	SiR	Silicone rubber	1,2–1,3	20	10 ¹⁵	3–4	6 x 10 ⁻³	- 60 +180	+260	-		high flash point	25–35	17–19
	3G	EPR	Ethylene-propylene rubber-compounds	1,3–1,55	20	10 ¹⁴	3–3,8	3,4 x 10 ⁻³	- 30 + 90	+160	-		flam- mable	≤22	21–25
	4G	EVA	Ethylene-vinylacetat copolymer-compunds	1,3–1,5	30	10 ¹²	5–6,5	2 x 10 ⁻²	- 30 +125	+200	-		19–23		
	5G	CR	Polychloroprene compounds	1,4–1,65	20	10 ¹⁰	6–8,5	5 x 10 ⁻²	- 40 +100	+140	-	self-extin- guishing	30–35	14–19	
	6G	CSM	Chlorsulfonated Polyethylene compunds	1,3–1,6	25	10 ¹²	6–9	2,8 x 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 x 10 ⁻²	- 40 +135	+160	>170	self-extin- guishing	40–45	15	
	7Y	ETFE	Ethylene-Tetrafluor ethylene	1,6–1,8	36	10 ¹⁶	2,6	8 x 10 ⁻⁴	-100 +150	+180	>265	self-extin- guishing	30–35	14	
	6Y	FEP	Fluorine ethylene propylene	2,0–2,3	25	10 ¹⁸	2,1	3 x 10 ⁻⁴	-100 +205	+230	>225	self-extin- guishing	>95	5	
	5YX	PFA	Perfluoralkoxy- polimeric	2,0–2,3	25	10 ¹⁸	2,1	3 x 10 ⁻⁴	-190 +260	+280	>290	self-extin- guishing	>95	5	
	5Y	PTFE	Polytetrafluorethylene	2,0–2,3	20	10 ¹⁸	2,1	3 x 10 ⁻⁴	-190 +260	+300	>325	self-extin- guishing	>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-extin- guishing	≤40	17–22	
	HX	cross- linked	halogen-free polymer-compounds	1,4–1,6	25	10 ¹⁵ –10 ¹⁴	3,4–5	10 ⁻² –10 ⁻³	- 30 + 90	+150	-	self-extin- guishing	≤40	16–25	

* The characteristics valid for unprocessed material

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	Abrieb-verhalten	Abrasion resistance	halogen-free	Weather resistance	Cold resistance	VDE-Initial-code	Ab-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							
											Yw	PVC	Heat-resistant 90°C							
											Yw	PVC	Heat-resistant 105°C							
											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						
				20-30	500-1000	60-63 (D)	good					2Y	HDPE	High density Polyethylene						
				12,5-20	300-400	40-45 (D)	medium					2X	VPE	Cross-linked Polyethylene						
	0,25	no	80	8-12	350-450	-	-	-	conditional ¹⁾	-	02Y		Foamed Polyethylene							
	0,25			55-65	300-400	35-50 (D)	good	0,4	medium-good	moderate-good	3Y	PS	Polystyrol							
	0,23			50-60	50-170	-	very good	1,0-1,5	yes	good	good	4Y	PA	Polyamide						
0,19	no	100 (500)	20-35	300	55-60 (D)	medium	0,1	yes ²⁾	moderate	good	9Y	PP	Polypropylene							
0,25			30-45	500-700	70-100 (A)	very good	1,5		very good		very good	11Y	PUR	Polyurethane						
0,5			10	30	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							
											0,22	50	40-80 (A)	moderate	good	very good	2G	SiR	Silicone rubber	
											-	200	200-400	65-85 (A)	moderate	very good	good	3G	EPR	Ethylen-Propylene rubber-compounds
											-	100	8-12	250-350	70-80 (A)	moderate	good	4G	EVA	Ethylen-vinylacetat copolymer-compounds
	-	Hydrogen chloride	50	10-20	400-700	55-70 (A)	medium	1,5	no	very good	moderate-good	5G	CR	Polychloroprene compounds						
	-				350-600	60-70 (A)						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							
	yes	10	40-50	150	70-75 (D)	very good	0,02				7Y	ETFE	Ethylene-Tetrafluor ethylene							
	yes	1	15-25	250	55-60 (D)	very good	0,01				6Y	FEP	Fluorine ethylene propylene							
	yes	0,1	25-30	250	55-60 (D)	very good	0,01				5YX	PFA	Perfluoralkoxypolimeric							
	yes	0,1	80	50	55-60 (D)	very good	0,01				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							
	0,20	no	200	8-13		150-250					medium	HX	cross-linked	halogen-free polymer-compounds						

¹⁾ The propellant may be e.g. Fluor-Chlor-Hydrarbon

²⁾ depend on the type compound

AWG-Wires and AWG-stranded conductors

AWG No.	AWG- make-up n x AWG	conductor make-up Ø x 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	7x0,05	0,014	0,152	1271,0	0,125
34	solid	solid	0,020	0,160	918,0	0,178
34	7/42	7x0,05	0,022	0,192	777,0	0,196
32	solid	solid	0,032	0,203	571,0	0,284
32	7/40	7x0,078	0,034	0,203	538,0	0,302
32	19/44	19x0,05	0,037	0,229	448,0	0,329
30	solid	solid	0,051	0,254	365,0	0,45
30	7/38	7x0,102	0,057	0,305	339,0	0,507
30	19/42	19x0,064	0,061	0,305	286,7	0,543
28	solid	solid	0,080	0,330	232,0	0,71
28	7/36	7x0,127	0,087	0,381	213,0	0,774
28	19/40	19x0,078	0,091	0,406	186,0	0,81
27	7/35	7x0,142	0,111	0,457	179,0	0,988
26	solid	solid	0,128	0,409	143,0	1,14
26	10/36	10x0,127	0,127	0,533	137,0	1,13
26	19/38	19x0,102	0,155	0,508	113,0	1,38
26	7/34	7x0,160	0,141	0,483	122,0	1,25
24	solid	solid	0,205	0,511	89,4	1,82
24	7/32	7x0,203	0,227	0,610	76,4	2,02
24	10/34	10x0,160	0,201	0,582	85,6	1,79
24	19/36	19x0,127	0,241	0,610	69,2	2,14
24	41/40	41x0,078	0,196	0,582	84,0	1,74
22	solid	solid	0,324	0,643	55,3	2,88
22	7/30	7x0,254	0,355	0,762	48,4	3,16
22	19/34	19x0,160	0,382	0,787	45,1	3,4
22	26/36	26x0,127	0,330	0,762	52,3	2,94
20	solid	solid	0,519	0,813	34,6	4,61
20	7/28	7x0,320	0,562	0,965	33,8	5,0
20	10/30	10x0,254	0,507	0,889	33,9	4,51
20	19/32	19x0,203	0,615	0,940	28,3	5,47
20	26/34	26x0,160	0,523	0,914	33,0	4,65
20	41/36	41x0,127	0,520	0,914	32,9	4,63
18	solid	solid	0,823	1,020	21,8	7,32
18	7/26	7x0,404	0,897	1,219	19,2	7,98
18	16/30	16x0,254	0,811	1,194	21,3	7,22
18	19/30	19x0,254	0,963	1,245	17,9	8,57
18	41/34	41x0,160	0,824	1,194	20,9	7,33
18	65/36	65x0,127	0,823	1,194	21,0	7,32
16	solid	solid	1,310	1,290	13,7	11,66
16	7/24	7x0,511	1,440	1,524	12,0	12,81
16	65/34	65x0,160	1,310	1,499	13,2	11,65
16	26/30	26x0,254	1,317	1,499	13,1	11,72
16	19/29	19x0,287	1,229	1,473	14,0	10,94
16	105/36	105x0,127	1,330	1,499	13,1	11,84
14	solid	solid	2,080	1,630	8,6	18,51
14	7/22	7x0,643	2,238	1,854	7,6	19,92
14	19/27	19x0,361	1,945	1,854	8,9	17,31
14	41/30	41x0,254	2,078	1,854	8,3	18,49
14	105/34	105x0,160	2,111	1,854	8,2	18,79

AWG-Wires and AWG-stranded conductors

AWG No.	AWG-make-up n x AWG	conductor make-up Ø x 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	7x0,813	3,63	2,438	4,8	32,30
12	19/25	19x0,455	3,09	2,369	5,6	27,50
12	65/30	65x0,254	3,292	2,413	5,7	29,29
12	165/34	165x0,160	3,316	2,413	5,2	29,51
10	solid	solid	5,26	2,59	3,4	46,81
10	37/26	37x0,404	4,74	2,92	3,6	42,18
10	49/27	49x0,363	5,068	2,946	3,6	45,10
10	105/30	105x0,254	5,317	2,946	3,2	47,32
8	49/25	49x0,455	7,963	3,734	2,2	70,87
8	133/29	133x0,287	8,604	3,734	2,0	76,57
8	655/36	655x0,127	8,297	3,734	2,0	73,84
6	133/27	133x0,363	13,764	4,676	1,5	122,49
6	259/30	259x0,254	13,123	4,674	1,3	116,79
6	1050/36	1050x0,127	13,316	4,674	1,3	118,51
4	133/25	133x0,455	21,625	5,898	0,80	192,46
4	259/27	259x0,363	26,804	5,898	0,66	238,55
4	1666/36	1666x0,127	21,104	5,898	0,82	187,82
2	133/23	133x0,574	34,416	7,417	0,50	306,30
2	259/26	259x0,404	33,201	7,417	0,52	295,49
2	665/30	665x0,254	33,696	7,417	0,52	299,89
2	2646/36	2646x0,127	33,518	7,417	0,52	298,31
1	133/22	133x0,643	43,187	8,331	0,40	384,37
1	259/25	259x0,455	42,112	8,331	0,41	374,80
1	817/30	817x0,254	41,397	8,331	0,42	368,43
1	2109/34	2109,160	42,403	8,331	0,41	377,39
1/0	133/21	1330,724	54,75	9,347	0,31	487,28
1/0	259/24	2590,511	53,116	9,347	0,32	472,73
2/0	133/20	1330,813	69,043	10,516	0,25	614,48
2/0	259/23	2590,574	67,021	10,516	0,25	596,49
3/0	259/22	2590,643	84,102	11,786	0,20	748,51
3/0	427/24	4270,511	87,570	11,786	0,19	779,37
4/0	259/21	2590,724	106,626	13,259	0,16	948,97
4/0	427/23	4270,574	110,494	13,259	0,15	983,39

AWG-Wire (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

Copper and Alu-Price Calculation

Calculation examples:

- Assumption:
- DEL-Quotation 194,29 EUR/100 kg for copper
 - Daily rate 173,84 EUR/100 kg for aluminium
 - Individual discount, e. g. 20%

1. Profibus 1 x 2 x 0,64 mm, PVC, Part no. 81448

Quantity ordered 1000 m

Price brutto (Copper base)= 150 EUR	1400,00 EUR/km
minus 20% (discount)	<u>280,00 EUR/km</u>
	1120,00 EUR/km

+ Copper surcharge:

$\frac{(194,29 + 1,9429) - 150}{100}$ x Copper value

equal, 0,4623 EUR/kg x 22 kg/km =

<u>10,17 EUR/km</u>
1130,17 EUR/km

2. NYCWY 3 x 70/35 sm, 0,6/1 kV, Part No. 32268

Quantity ordered 1000 m

Copper base = 0	7930,00 EUR/km
minus 20% (discount)	<u>1586,00 EUR/km</u>
	6344,00 EUR/km

+ Copper surcharge (Conductor + screen):

$\frac{(194,29 + 1,9429) - 0}{100}$ x Copper value

equal, 1,962 EUR/kg x 2410 kg/km =

<u>4728,42 EUR/km</u>
11072,42 EUR/km

3. NA2XSJ 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)	<u>1900,00 EUR/km</u>
	7600,00 EUR/km

+ Copper surcharge (screen):

$\frac{(194,29 + 1,9429) - 0}{100}$ x Copper value

equal, 1,962 EUR/kg x 182 kg/km =

357,08 EUR/km

+ Aluminium (Conductor):

Aluminium value x daily rate

203 kg/km x 1,74 EUR/kg

<u>353,22 EUR/km</u>
8310,30 EUR/km

Fire performance and fire propagation in accordance with EN 60332-X

European standards EN 50167, EN 50168, and EN 50169, require not only data lines with shielding, they also require data lines with halogen-free sheathing. Consideration and compliance with these standards is particularly recommended for public facilities such as hospitals, schools, and airports. We also recommend the use of halogen-free cable for buildings with high concentration of personnel or material assets.

Cable with PVC sheath

If there is a fire, standard PVC material can propagate fires and form hydrochloric acid through the liberation of hydrogen chloride gas (HCl) in combination with moisture (e.g. water for fire fighting). In addition, burning PVC (polyvinyl chloride) produces high smoke density and the corrosive damage to buildings and equipment can often assume devastating proportions that far exceed the actual fire damage. HELUKAT® data lines are manufactured in accordance with IEC 60332-1 relative to fire propagation behaviour.

Cable with halogen-free sheath

Here materials are used that do not contain halogens (such as chloride) and that do not release corrosive gases in the event of fire. The portion of toxic gases is also reduced to a minimum, and smoke density and fire propagation are hardly present or possible. Markings on the cable include the abbreviations FRNC or LSOH. These markings specifically refer to the following:

- FR** flame retardant (inhibits fire propagation)
- NC** non-corrosive (no corrosive components)
- LS** low smoke (low smoke density)
- OH** zero halogen (halogen-free)

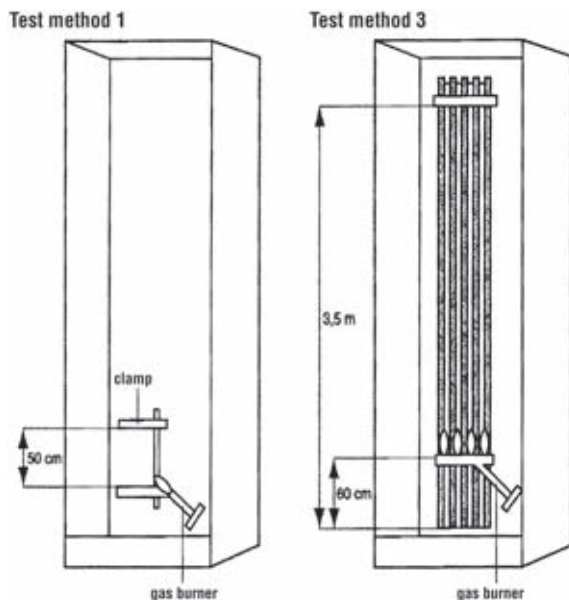
For safety, when using such materials, it is essential that the view of passageways and emergency exits remains unobstructed. For this, however, it is necessary to also consider the use of such materials for other products such as power cables or cable guide channels. In terms of fire propagation behaviour, HELUKAT® data lines are manufactured in accordance with IEC 60332-1 or in accordance with the more rigorous IEC 60332-3.

Caloric load [kWh/m] [MJ/m]

There is a wide variety of different combustible fixtures or products in every building. These include (even if concealed in suspended ceilings or channels) cables and lines that can represent a significant part of the facility, particularly in commercial premises. These cables have different energies (heating values) and they can significantly increase the total caloric value of a building. Consequently, in the planning stage ensure that caloric value quantities are kept as low as possible.

Test methods for fire propagation

The verification or definition of how effectively or how well cable must counter fire propagation and thus the spread of the fire is specified in the standards IEC 60332-1, IEC 60332-2 and IEC 60332-3. For test method 1, a 50 cm long cable is exposed to flame from a gas burner for 1 minute, and must then extinguish any flame on its own, and it may be burned up to a maximum of 5 cm under the upper clamp. For test method 3, an entire bundle of cable, 3.5 m long is mounted vertically on a ladder in a cabinet and exposed to flame for 20 minutes. After turning off the gas burner, the flame must extinguish on its own within 1 hour and the distance between burner and the fire damage on the cables furthest removed from the burner must not exceed 2.5 m.



This test is a very realistic representation of a possible fire in a cabling chute.

Glossary

AES/EBU

Informal name of a digital audio standard jointly created by the AES (Audio Engineering Society) and the EBU (European Broadcasting Union). The standard specifies the transmission properties of the digital signal in order to simplify the communication between the devices. The connecting cable is used for the transmission of digital stereo, dual-channel or mono audio signals. Primarily used in professional sound studios. The right plug connector for coaxial cables is BNC. XLR connector plugs are used for symmetrical cables.

Analogue

The analogue signal is a physically measurable variable (such as a voltage), which can be modified in terms of frequency and amplitude and is used to transmit information. Analogue cables transmit analogue signals in the low frequency range. They are required in the audio sector for connecting instruments, microphones, loudspeakers and other components.

ATM

Asynchronous Transfer Mode. Based on cells of 53 bytes. Suitable for telephone, video and other data transmission. Mainly used in WAN applications.

Attenuation

Reduction of the signal output between two cross section areas of a fibre. It is dependent on the wavelength: Main causes: Dispersion, absorption. Its unit of measure is "dB", specified as $10\log P(L1)/P(L2)$.

Attenuation coefficient

This is the attenuation of the cable in relation to the length in stationary condition (unit: dB/km or dB/100).

AWG

American Wire Gauge, a unit for wire diameter.

BNC connector

The name is based on the names of the inventors of the bayonet nut connector: Neill and Concelman. Used in radio, video, medicine and computer technology.

Broadband cable distributor network

The broadband cable distributor network is used on the basis of coaxial cables, e.g. for cable television in the frequency range of 47 MHz to 446 MHz.

BUS

A network topology which is characterised by a single cable that leads to all workstations.

Bus system

The bus system is a system of cables for informatics, which is used to transmit information and data.

Cable

Means of transferring signals. This consists of one or several electric conductors insulated from each other in a common sleeve installed in the cable covering.

Cable shield

Conductive sleeve of a cable or a conductor for protecting individual cores or the complete stranded elements against outside electromagnetic influences.

Cable core

The total complement of stranded elements present in the cable and the wrapping over all these elements.

Cable covering

The cable sheath, generally made of polyethylene (PE), polyvinyl chloride (PVC) or halogen-free material (H) which protects the cable core from environmental influences.

CATV

Community Antenna Television (International).

CATV cables

CATV cables are primarily used for television distribution but they can also be used for all other transmissions up to 1 GHz. The inner conductor is made of copper with PE discs used as spacers for the cavity-type insulation that is primarily used. The outer conductor, which is formed from a copper band into a closed tube, is coated with a black UV-resistant PE jacket.

CEE

International Commission on Rules for the Approval of Electrical Equipment.

CENELEC

Comité Européen de Normalisation Electrotechnique (European Committee for Electrical Engineering Standardisation) Responsible for the harmonisation of electrical engineering standards in the European Union.

Cinch connector

The term "cinch connector" describes a connector plug for 2-core cables. They have been distributed worldwide in HiFi devices that were originally built in Asia.

Coaxial cable

Concentric conductor pair, consisting of an inside conductor and an outside conductor which completely encloses the inside conductor. The inside conductor and outside conductor are insulated from each other with a homogenous material or a combination of fixed supporting shells and a gas.

Compact fibre

A combination of single fibre loose buffer and tight buffered cable. The small hollow space between the fibre and sheathing is filled with a non-stick coating.

Conductor

Conductors are used for forwarding the electrical carriers and thus consist of an electrically conductive material (metal). Conductors are usually round.

Conductor resistance

The conductor resistance is determined by the quality of the copper used and of the conductor cross-section. It increases linearly with the length of the cable and is a key factor in determining the attenuation.

Corrosivity

Produced by corrosive gases and acids when burning cables and wires. Non-corrosive cables should be used when laying cables in buildings. Halogen-free cables are generally non-corrosive.

Coupling

Due to the spatial layout of the telecom cables, electrical influences occur between the voice circuits (the couplings). The effect of these is crosstalk.

Coupling resistance

Measurement for the quality of the shielding. It is defined as the ratio of the voltage along the shield of the disturbed system to the current of the interfering system.

Crimping

Crimping is a physical connecting technique. This involves sliding a metal sleeve over the shielding and squeezing it together using crimping pliers, e.g. for connecting coaxial connectors to a coaxial cable.

Crimping

A mechanical protection is made by pressing a sleeve around the fibres.

Crosstalk

Undesired transfer of energy, e.g. between two neighbouring fibres of a cable.

Decibel

Decibel=dB. A decibel is a dimensionless numerical proportion. It is the tenth part of the bel and is the unit of measure for attenuation.

Digital/analogue converter

Functional unit which converts a digital signal to an analogue signal.

Digital signal

A digital signal has several information parameters, e.g. 8, 16, 32 or 64, which are provided one after the other chronologically for serial signals and in parallel chronologically for parallel signals. The 1/0 coded representation of information such as digits and letters or the bit patterns from analogue signals (sounds, images, videos, measurement values etc) produced by scanning and quantisation. In media technology, digital signals are transmitted in the AES/EBU, S/P-DIF and DMX standard by means of digital cables. The digital cable connects scanners, lighting control panels, studio equipment or other HiFi components.

DMX cable (Digital Multiplex)

This is used in lighting technology for controlling dimmers, floodlights and effect units.

Earth conductor

Conductor which connects the body of an apparatus to be earthed with an earth connector or several earth connectors, provided this conductor is insulated in the earth or laid outside it.

Glossary

Electromagnetic interference

Irradiation of interference during signal transmission caused by electromagnetic fields.

EMC

Electromagnetic compatibility is the ability of an electric apparatus to operate satisfactorily in its electromagnetic environment without abnormally influencing this environment (which also includes other equipment) or itself being influenced by it.

EMC directives, general

Basic requirements for electromagnetic compatibility are specified in this new EMC Directive which equipment must comply with so that it can be placed on the market and put into service. "Equipment" is the higher-level concept for the objects included in the Directive, which on the one hand are "devices" and on the other hand "stationary systems". For the purposes of the Directive, equipment also means components and assemblies installed in a device by the end user and mobile systems, which are defined as a combination of devices and other components which can be operated at various locations. Stationary systems in the new EMC Directive also include large machines, high-voltage systems, electricity grids and telecommunications networks. These must be designed according to the recognised technology regulations, however do not require a conformity assessment before being put into service.

Face coupling (star surface coupling)

Signal transfer via fibre ends connected at the front.

FDDI (Fibre Distributed Data Interface)

Fibre optic network with dual opposite ring topology and 100 Mbit/s transfer rate. The FDDI is fault tolerant to cable or node failure.

Fibre multiplex

Transmission method where one fibre is assigned to each transmission channel.

Fibre optics

Transparent dielectric waveguide for transferring electromagnetic waves in the visible light range. The conductors are made of glass fibre or plastic fibre and are not sensitive to electromagnetic interference.

Flame retardant

Description of the behaviour of products against fire propagation

Frequency

Number of complete oscillations per second (in Hz).

FRNC

FR=flame retardant and NC=non corrosive.

Halogen-free

No halides (e.g. chlorine) in use. Halogen-free cables are used for increased fire protection requirements (in public buildings) with respect to protection of persons or on account of high material concentration. In the event of a fire, they do not release any corrosive gases and the quantity of toxic gases that is released is significantly lower than for PVC materials.

High frequency

HF=high frequency is an alternating current of a very high number of oscillations (10 kHz to 3000 MHz) and is used in telecommunications engineering.

High frequency cables

Used for conducted transmission of HF signals, e.g. television signals. The quality of the HF cables and lines is characterised by the low reflection, low interference and low attenuation transmission of signals.

High frequency power cable

High frequency power cables are single-core cables with full PE insulation or polystyrol muffs as spacers, outer conductors made of copper wire braid or copper flared tube conductors, and are used as transmission cables for radio transmitters.

Hybrid cables

Consist of at least two different types of cable (e.g. power and audio cables) in a common sleeve.

Impedance

Impedance of the electrical quadripole; it is composed of the ohmic resistance and the reactance, the frequency-dependent resistances and capacitances. Structurally speaking, impedance is specified by the dimensions of the internal conductor, dielectric and shielding.

Interference

Fault, adverse effect, reduction of functionality

Indoor cables

Cable for applications inside buildings. They are not suitable for laying outdoors.

Insulation resistance

This is determined by the insulation material, whereby the material properties are more significant than the insulation thickness. The insulation resistance is dependent on the length. The higher the specific resistance of a material, the more suitable the material is for insulation; the unit is Ωm ; for cables and wires, the conventional units are the derived units $\text{M}\Omega\text{km}$ or $\text{G}\Omega\text{km}$.

Interference sensitivity

Electromagnetic inability of a device, of a unit or of a system to operate without reduction of functionality in the presence of electromagnetic interference.

ISDN

Abbreviation for Integrated Services Digital Network. Integrated digital network for combining different postal services via common digital switches and digital paths, e.g. telephones, data transmission.

ISO

International Standards Organisation: worldwide federation of national standards institutions from more than 130 countries.

LAN

Local Area Network: spatially limited system for high speed information transfer between a limited number of independent terminals with equal rights.

LASER

Light Amplification by Stimulated Emission of Radiation: Amplifier for electromagnetic waves in the visible light spectrum.

Lay-length

The lay-length is the length on which a stranding element is laid, 360 degrees around the stranding axis.

LED

Light Emitting Diode – Light emitting diodes are components that generate light.

LON

Local Operating Network: open bus system which enables components from different manufacturers to interact with one another.

Loop resistance

Total ohmic resistance of transmit and return conductors (unit: W/km)

LSOH

Low smoke and halogen-free (LS = low smoke) and (OH= zero halogen).

Microbending

Bending of a fibre which produces light losses and thus an increase in attenuation.

Modem

Name for a modulator-demodulator. A modem modulates and demodulates analogue and digital electrical voltages. When transmitting data via a modem, the digital electrical signal (a consequence of voltage changes) is converted into an analogue electrical signal (a consequence of amplitude oscillations).

Modes

All waveguides capable of propagation in a fibre optic cable.

Modulation cable

For television transmission from a central or junction point to television transmitters.

Network

System with the associated transfer method that is supported by message coding cabling.

OLM

Optical Link Module: bus component for the construction of fibre optics networks and the transition from copper conductors to fibre optic cable.

Outdoor cable

Cables which are constructed so that they are sufficient for all requirements such as those which occur for underground and pipeline cable systems.

Glossary

Patch cable

Flexible connecting cable for connecting two components, e.g. in a distributor cabinet.

PIMF

Pair in metal foil.

Plug connection

Easily removable connection with plugs. The insertion loss of a plug connection is usually higher than the transfer loss of a splice connection.

POF

Polymer Optical Fibre - name for a fibre optic cable whose optical core and sheath are constructed using plastic. POF fibres have a typical core diameter of 0.98 mm.

Polyethylene (PE)

A macromolecular hydrocarbon with a paraffin-like structure. Thanks to its outstanding dielectric properties, e.g. low density, high durability and elongation at break, very good electrical insulating properties, low water absorption and the fact that it is practically insoluble in almost all organic solvents, it is now indispensable as an insulating material in the cable industry.

Polypropylene (PP)

Polypropylene is made by means of polymerisation and is classified as a partially crystalline thermoplastic (in a similar way to polyethylene) but has high rigidity, hardness and strength with good electrical properties.

Polyurethane (PUR)

Thermoplastic polyurethanes are similar to polyamides in terms of their properties; however, they absorb hardly any water when compared with these, have outstanding physical properties, are impact-resistant, notch-resistant, have a high degree of flexibility at low temperatures and possess good friction resistance.

Polyvinyl chloride (PVC)

Polyvinyl chloride is a thermoplastic which is manufactured for the cable industry according to the suspension polymerisation process (PVC-S). It is an odourless, free-flowing white powder. It is free of electrolytes and therefore exhibits very good dielectric properties.

PROFIBUS

The Process Field Bus is a field bus with a 3-layered design and a fully developed network management system.

PROFIBUS DP

Profibus for the field of "distributed peripherals". Simple digital and analogue input/output components and intelligent signal and process data processing units can be relocated locally and thus, among other things, significantly reduce costs in terms of the amount of time and effort spent on cabling.

ProfiSafe

Safety profile: allows the transfer of safety-integrated and standard data on a single bus line.

Reduction factor

The thicknesses of the cable sheath (metal sheath, armouring and cable sheath) are increased if telecom cables are located in the vicinity of power cables or railway facilities and electromagnetic fields arise, which result in inductive influence on the operation.

Redundancy

Abundance, excess, surplus

Reflection

Reflection of rays (waves) at border surfaces between two different substances.

Repeater

Repeater, amplifier - apparatus for amplifying and regenerating signals and a network. It can cover larger distances. Simple, economic means of extending a LAN. Repeaters with more than two ports are called hubs.

Resistance difference

Difference of the ohmic resistance between two cores of a cable (unit W).

RG/U

Abbreviation of Radio Government, Universal. RG is a military designation for coaxial cables in MIL-C-17. R=Radio, G=Guide, U=Utility.

RG58

Coaxial cable with 50 Ohm wave resistance. Also called Thin Wire or 10BASE2.

RJ45

Connector for twisted pair.

Return loss

Measure for matching systems; when the correct termination resistance of a cable (wave resistance) is selected, the reflection factor is 0 and thus also the return loss.

SC

Straight Connector. Connector.

Secondary cabling

Internal building connection of the building distributor with the individual floor distributors (backbone).

Sensor

Apparatus which converts a physical factor based on a physical effect into an electric, pneumatic or hydraulic signal for further processing. These sensors are used in automation technology to obtain the necessary information for process execution. This includes, for example, the recording of power unit and machine statuses, or the recording of process data such as temperature, pressure, speed, filling level, flow rate, paths, angles, etc.

Shield

Shielding which should prevent the transfer of interference signals, e.g. those from electrical fields for data cables. Usually braided with aluminium or copper.

Shields can be arranged for cables and wires by individual elements in the cable or group, or by the entire stranded bundle. The structure of the shield is always determined by how the product is intended to be used. Their purpose is usually to keep external electrical influences away from cables and wires and to prevent these fields from escaping (coupling resistance). Shielding can be made of braids, braiding, metal foils, foil-cladding or steel armouring.

Shielding attenuation

Measure of the reduction or attenuation of the electromagnetic field strength at a point in the room, caused by inserting an electromagnetic shield between the field source and this point; usually expressed in dB.

Skin effect

The tendency of alternating current to flow on the surface of a conductor as the frequency increases (a reduction in the effective conductor cross-section and thus an increase in the electrical resistance).

Slotted core cable

Cable where the fibres are placed in grooves made in the surface of the central element.

Smoke density

Method of measuring smoke development when burning a cable. When laying cables in buildings, it should be ensured that the level of smoke density is low (typical value: 50%).

S/PDIF

Sony/Philips Digital Interface. For transmission of digital audio signals. Flexible coaxial cable, which is assembled using a Cinch connector.

Splice

A permanent cable connection. For fibre optic cables, for example, this involves fusing two fibres.

Star coupler

Active or passive component which ensures a uniform light output distribution for an equally large number of incoming and outgoing fibres.

Star quad

Strand element which consists of four wires twisted together, and each of the pairs of wires forms a transmission path (trunk).

STP

Shielded Twisted Pair.

STQ

Shielded Twisted Quad.

Telecom cables

These are used for transmitting telephone calls, signals and data, primarily in local networks of telecommunications companies.

Glossary

Tertiary cabling

Horizontal connection of the floor distributor with the connection units at the work place.

Tight buffer

A fibre which is applied immediately above the protective coating of a plastic sleeve.

Time multiplex

Transfer process where several pieces of information are transferred simultaneously with different wavelengths on one fibre.

TP

Twisted Pair. Data cable.

Triaxial Cable

A 3-conductor cable, built on three axes: this consists of one conductor in the centre, the second conductor concentrically around the first conductor and the third conductor insulated from the first and second, usually by insulation, a braid and an outer sheath.

Twin axial cable

A cable which consists of concentric, mutually insulated conductors.

Wave bands or frequency ranges

The frequency ranges used in radio technology are divided into a decade system:

Centimetre waves:	1 -10 cm
Decimetre waves:	10 -100 cm
Ultra-short waves:	1 -10 m
Short waves:	10 -100 m
Medium waves:	100 -1000 m
Long waves:	1000 -10,000 m
Long waves:	10 -100 km

Wavelength

Length of a complete oscillation (period) of a wave. Three wavelength ranges are usually used in optical message technology. These are around 850 nm, 1310 nm and 1550 nm.

Wavelength multiplex

Transfer process where several parallel incoming data signals are transferred on a fibre in one serial data stream.

XLR

The 5-pin XLR connector is frequently used in professional stage and lighting engineering for transmitting DMX control signals. The XLR connector is also used in professional studio engineering, for microphone cables and speaker cables. The XLR couplings are designated as "female" and the XLR connector plugs are designated as "male".

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HELUKABEL®

The Logistic Centre Hemmingen



**HELUKABEL® GmbH
Headquarters**

Dieselstraße 8-12
D-71282 Hemmingen
Germany
Phone +49 7150 9209-0
Fax +49 7150 8884
info@helukabel.de

Other branches:

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