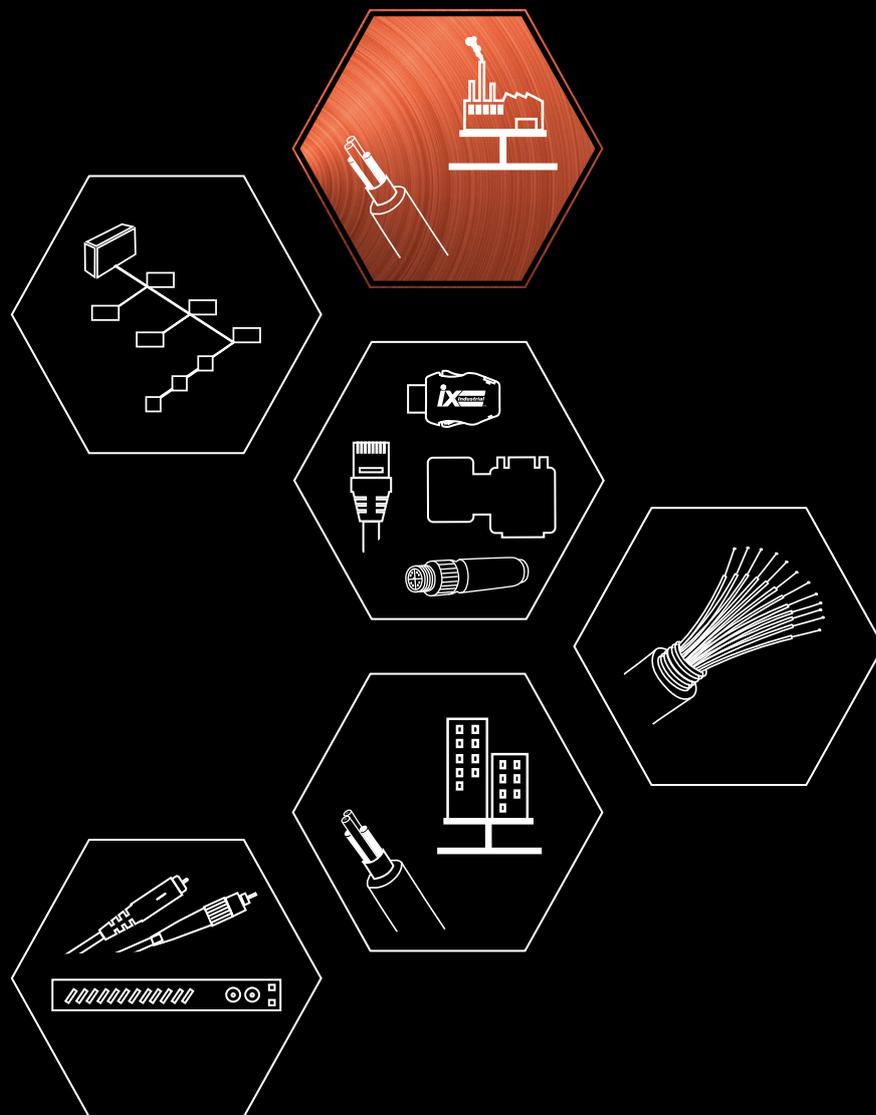


Data, Network & Bus Technology – Vol. 1/6: Digital Copper Data Cables

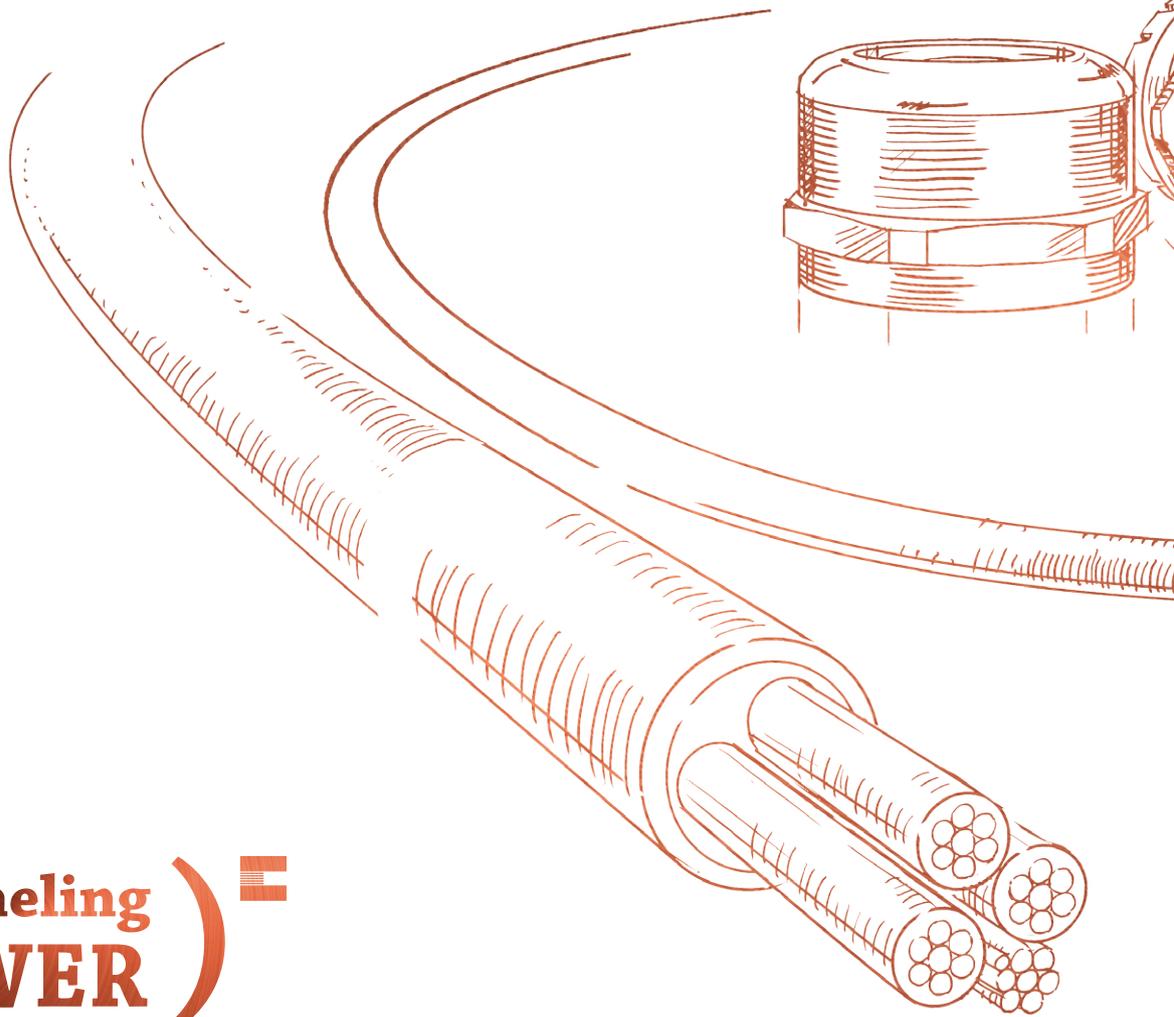
INDUSTRIAL ETHERNET CABLES

Ed. 1 // EN



**(Channeling
POWER)** 

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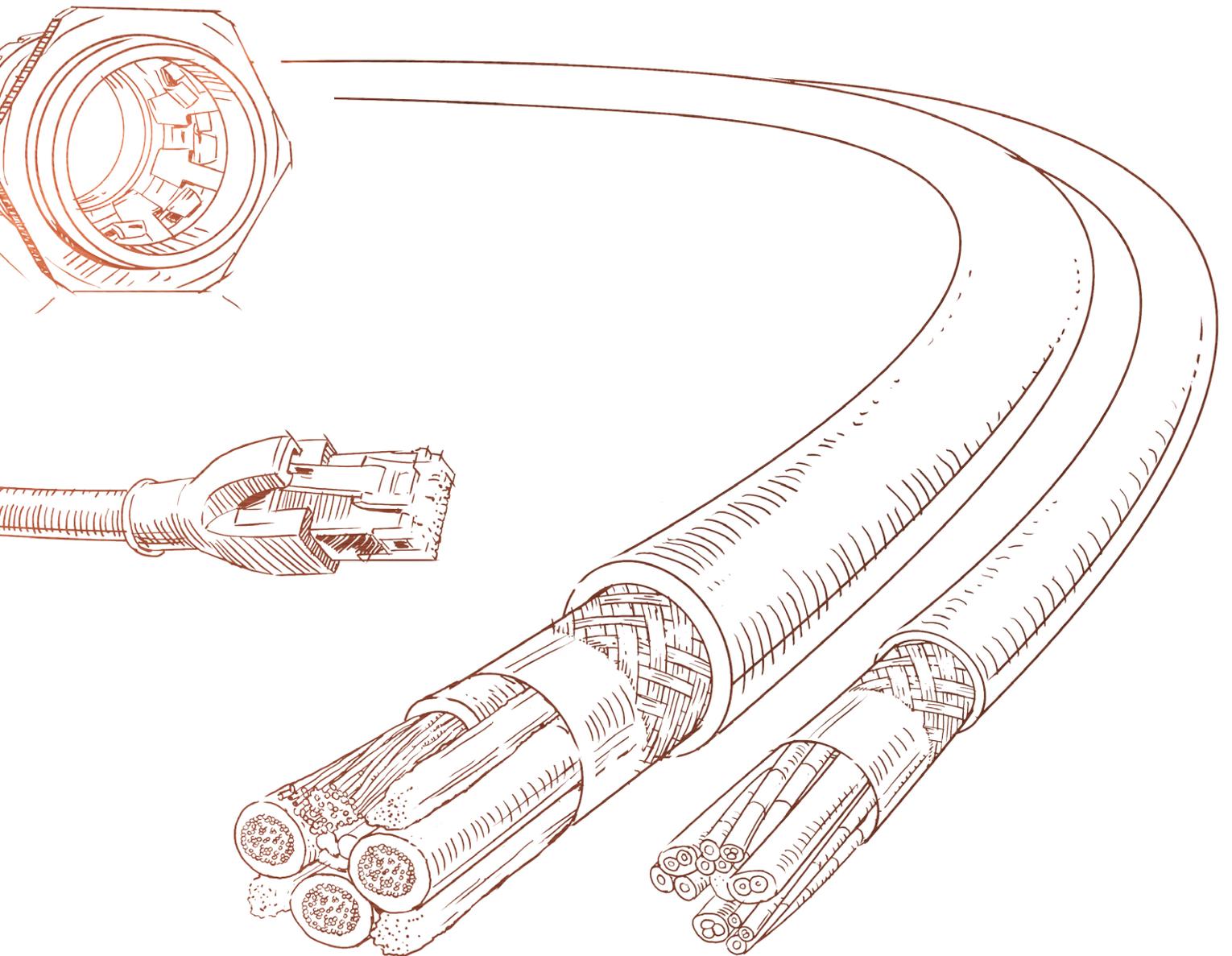
(Channeling POWER)

Cables are the vital supply lines of complex machines, plants, and systems. Whether operating under extreme mechanical stress, in the middle of the Arctic Ocean, in the scorching heat, or in the vastness of space – such conditions demonstrate what top-of-the-line cables can achieve.

We at HELUKABEL have made it our mission to bring energy and communication to our customers' destinations reliably and consistently at all times, and to make the

impossible, possible! "Channeling Power" succinctly summarizes this mission and is our commitment to customers.

Over 2,500 employees located at 71 sites across 42 countries work towards this common goal. We see it as our challenge to find the right cable solution for you every day, giving you the time to concentrate on more important things than cables and wires. This is where our products truly create value for you and your application.

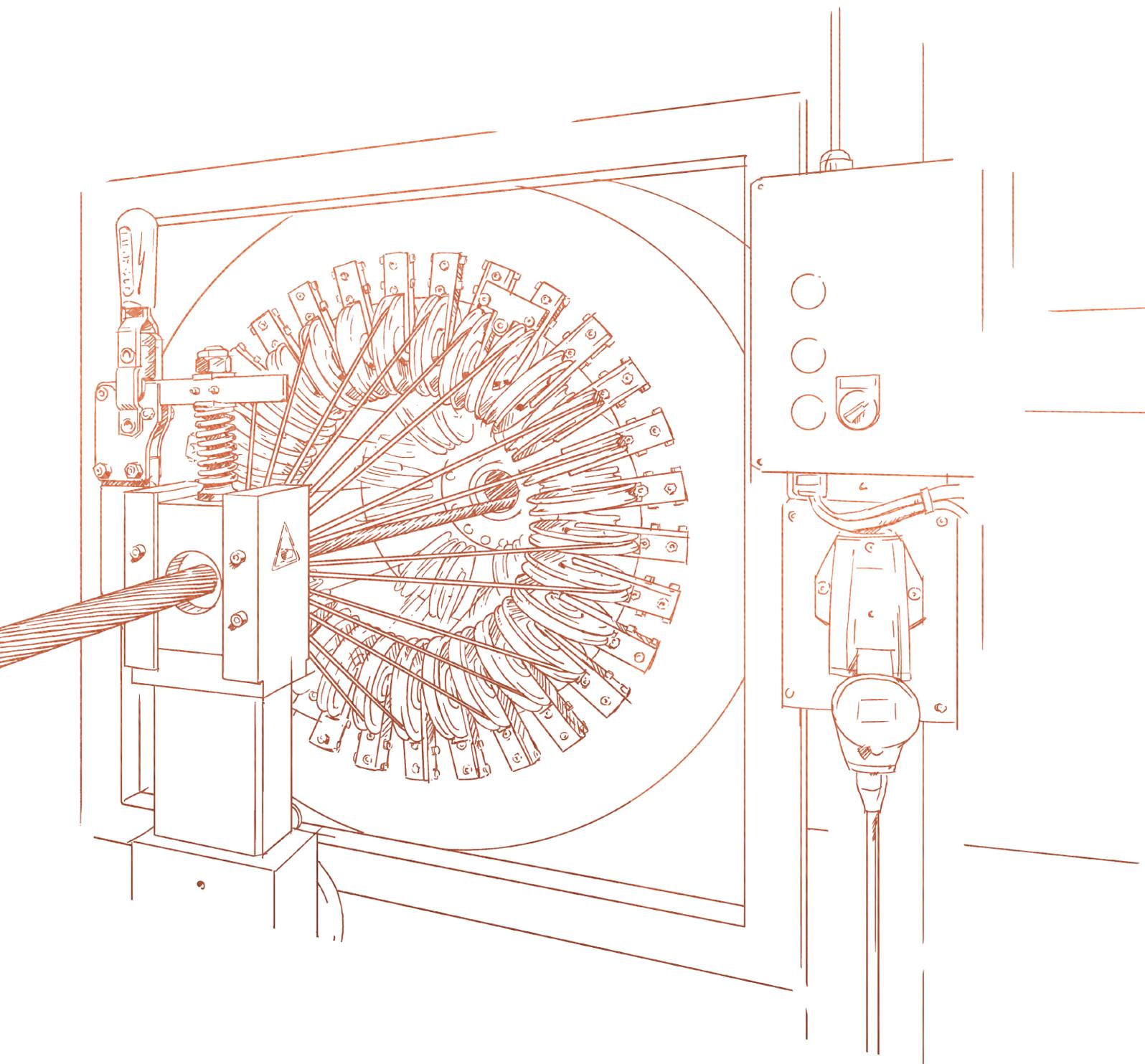


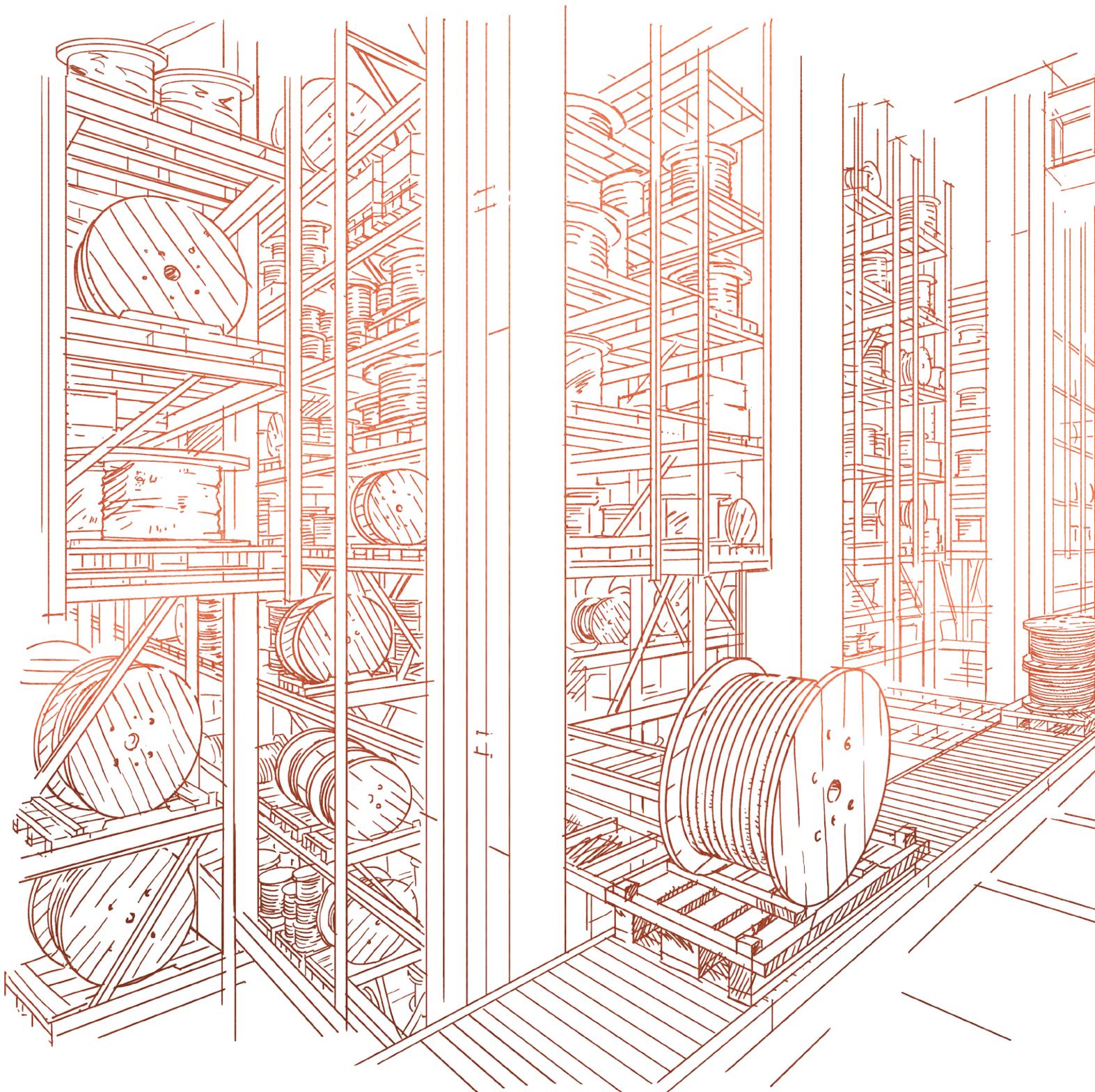
Channeling **INNOVATION**



A cable is only as good as the minds that ask the right questions before it's made. We have a lot of bright minds at HELUKABEL who spend every day searching for intelligent answers. This is important because the challenges faced by modern cables and wires are multifaceted: for example, moving applications with more than ten million cycles, exposure to extreme mechanical and chemical loads, tricky bending radii and space-saving hybrid solutions. For each situation, HELUKABEL has answers

to help you. To ensure there are no issues during use, all newly developed products undergo rigorous testing at our R&D centre in Windsbach, near Nuremberg. Here we bend, pull, grind and ignite the cable for all it's worth. Our special aging ovens are time machines that simulate a cable's life cycle and far beyond. Our cables are tested to comply with national and international standards, and all results are signed and sealed.





(Channeling LOGISTICS)



Where there's no cable there's no data nor electricity. When everything's going according to plan, cables are of little interest to anyone; but inevitably the day comes when a machine starts malfunctioning or a missing cable is holding up the completion of a project task. Whatever the situation in which problems occur, the time can be tense and critical for everyone involved.

At HELUKABEL, we try to remove the stress you're experiencing as quickly as possible. To this end, we built the biggest distribution centre for cable products in Europe.

With over 33,000 products stored in a fully automated, high-bay warehouse, we're ready to act upon your needs quickly and ship you the right cable at a moment's notice. Our "known shipper" status with the Federal Office of Civil Aviation means that your goods are checked in and pass security control directly at our warehouse, which speeds up the shipment process. On top of this, we have 33 additional warehouses on 5 continents so you can order your cables in Spanish, French, Chinese or in 24 other languages.



Channeling (KNOW-HOW)

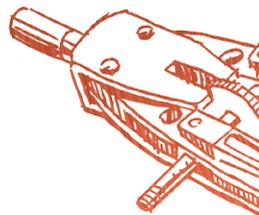
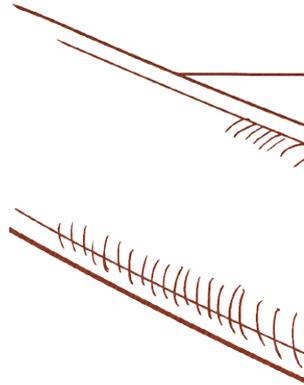


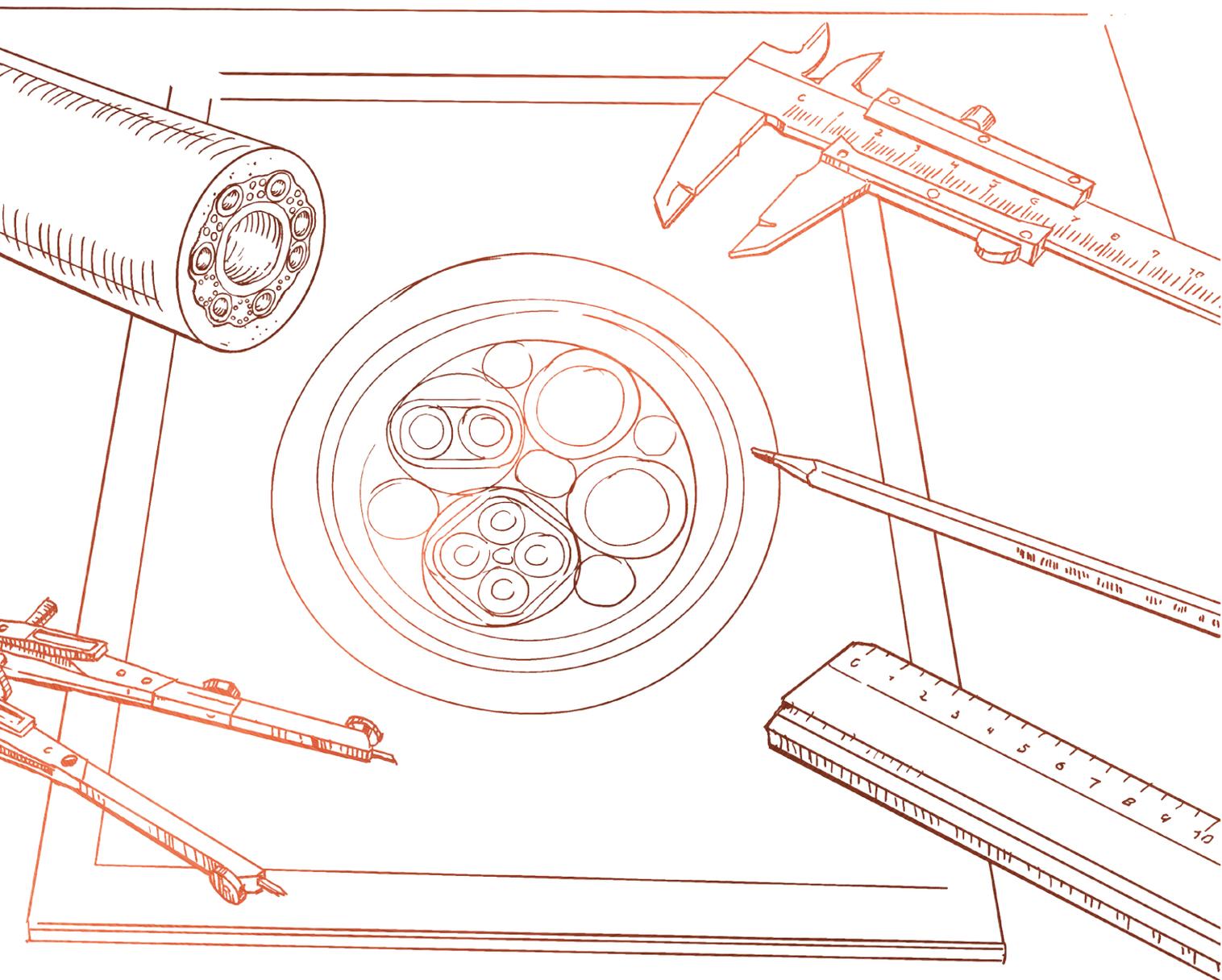
We are mighty proud of our portfolio of more than 33,000 stock items - and yet, among all these products, it still happens that a customer does not find the right solution for a specific application. Luckily, we have a strong backup plan for cases like these: HELUKABEL has in-house experienced specialists who can develop the optimum connection solution precisely tailored to your needs.

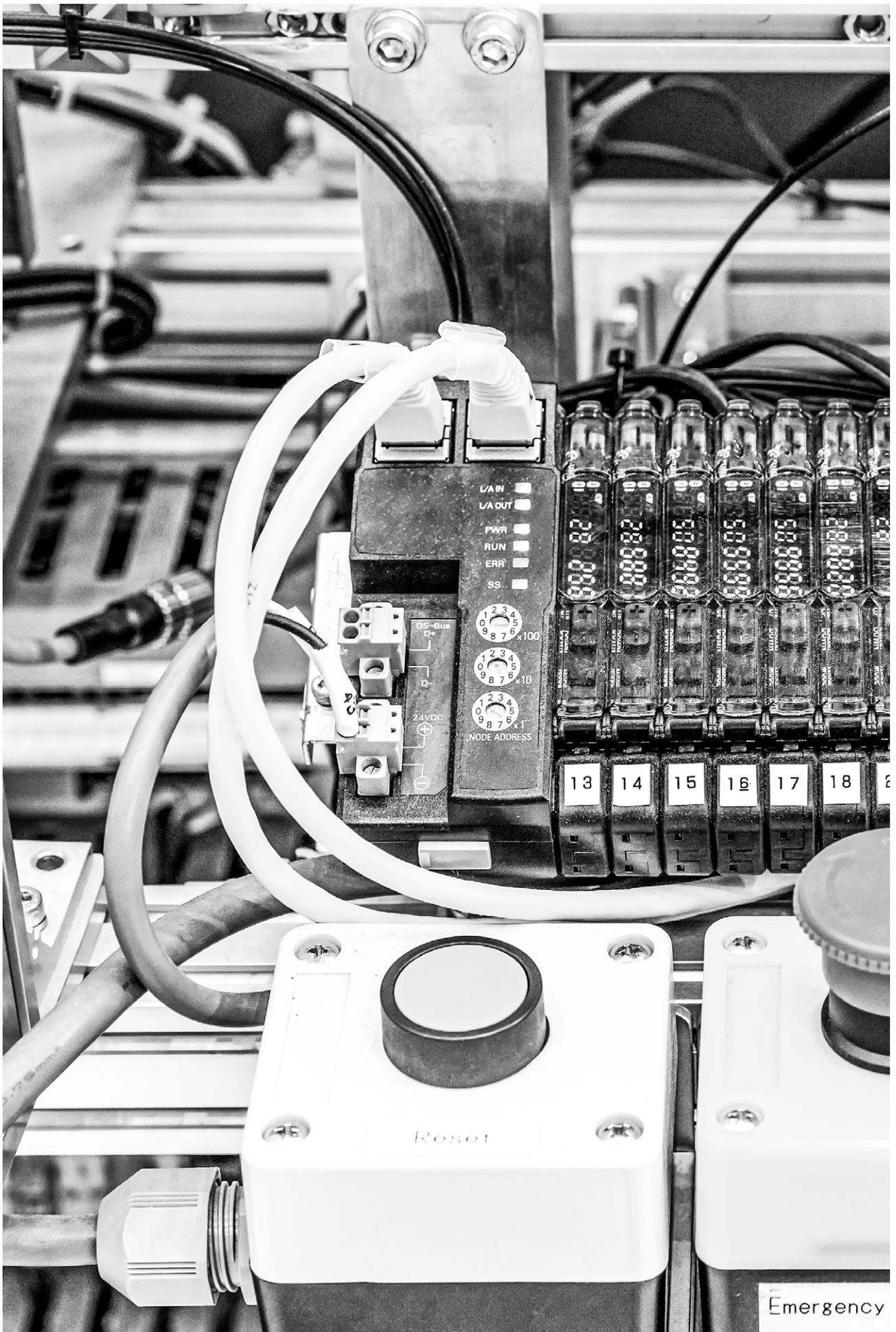
Depending on which electrical, chemical and mechanical properties your cable must fulfil in practice, we carefully determine all the parameters: from the cross-section of the conductor and its structure to the insulation and arrangement of the individual elements in the cable, to the shielding

and outer sheath. Only when a special cable truly meets all requirements are our engineers fully satisfied - so that you will be too. It's with this approach that we develop reliable solutions together with our customers, even for complex and unusual situations.

In such instances, the results range from small and inconspicuous to great and spectacular: special cables from HELUKABEL can be found, for example, in aerial ladders on fire engines, in sewer robots, tunnel boring machines, on oil platforms or in wind power and biogas plants. After all, when it comes to cables, wires and accessories, there's almost nothing we can't do.







I/A IN
I/A OUT
PWR
RUN
ERR
SS

DS-Bus
D-
0
24VDC
+

1 2 3 4 5
0 9 8 7 6 x100
1 2 3 4 5
0 9 8 7 6 x10
1 2 3 4 5
0 9 8 7 6 x1
NODE ADDRESS

13 14 15 16 17 18

Reset

Emergency

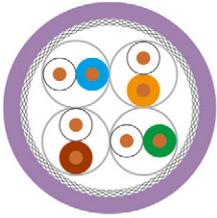
Cat 7/7A/7e Industrial Ethernet

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HELUKAT® 600 CAT.7e S/FTP FRNC STATIC



CC-Link IE Field certified, performance up to 1000 MHz, flame-retardant, low smoke



TECHNICAL DATA

LAN cable / Cat. 7e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, DIN EN 50288-4-1

Temperature range	fixed installation -20°C to +60°C during installation 0°C to +50°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage	700 V
Conductor resistance at 20°C	max. 77.0 Ohm/km
Loop resistance at 20°C	max. 154.0 Ohm/km
Mutual capacitance core/core	at 800 Hz, approx. 48 pF/m
Rel. Velocity of Propagation	approx. 79%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 1000 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 0.60 MJ/m
Minimum bending radius	during installation 8x Outer-Ø fixed installation 4x Outer-Ø

- Outer sheath: halogen-free, flame retardant compound (FRNC)
- Length marking: in metres

PROPERTIES

- halogen-free
- flame-retardant

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3 / DIN EN 60332-3 / IEC 60332-3
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- CPR class: D_{ca}
- certifications and approvals: CC-Link IE

CABLE STRUCTURE

- Copper conductor bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
 - No. 1: white / blue
 - No. 2: white / orange
 - No. 3: white / green
 - No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths
- Screening element: pairs, plastic-coated aluminium foil (St)
- Screen: braided screen of tinned copper wires

APPLICATION

HELUKAT® 600 CAT.7e S/FTP FRNC STATIC data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

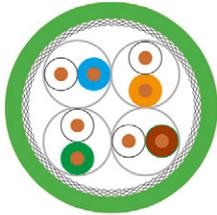
TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	200	300	600	900	1000
Attenuation (dB/100m)	5.6	7.1	13.9	17.5	25.2	32.1	44.9	55.0	58.0
NEXT (dB)	100.0	100.0	96.0	94.0	88.0	84.0	73.0	71.0	69.0
ACR (dB/100m)	94.4	92.9	82.1	76.5	62.8	51.9	28.1	16.0	9.0

Part no.	No. cores x AWG-No.	Sheath colour	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
80810	4 x 2 x AWG 23 / 1	violet (RAL 4005)	0.57	1.4	7.3	28.0	55.0
803897	4 x 2 x AWG 23 / 1	orange (RAL 2003)	0.57	1.4	7.3	28.0	55.0

HELUKAT® 600IND CAT.7e S/FTP PUR STATIC

CC-Link IE Field certified, extended performance up to 1200 MHz



TECHNICAL DATA

Industrial Ethernet cable / Cat. 7e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, DIN EN 50288-4-1, UL-Std. 758 (AWM) Style 21238

Temperature range	fixed installation -40°C to +80°C during installation -5°C to +50°C UL (AWM) to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Conductor resistance at 20°C	max. 74.5 Ohm/km
Loop resistance at 20°C	max. 149.0 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 43 pF/m
Rel. Velocity of Propagation	approx. 77%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 1200 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 0.74 MJ/m
Minimum bending radius	during installation 10x Outer-Ø fixed installation 8x Outer-Ø

CABLE STRUCTURE

- Copper conductor bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
 - No. 1: white / blue
 - No. 2: white / orange
 - No. 3: white / green
 - No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths
- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs stranded in layers with optimal lay lengths
- Screen: braided screen of tinned copper wires
- Outer sheath: PUR

- Sheath colour: see table
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- halogen-free
- flame-retardant

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC, CC-Link IE

APPLICATION

HELUKAT® 600IND CAT.7e S/FTP PUR STATIC is used for harsh industrial environments. Mechanically, this product exhibits excellent resistance to mineral oils, greases and cooling lubricants and has good microbe and hydrolysis resistance. Electrically, this cable is characterized by high reserve capacity and outstanding performance. This allows you to create services such as 10 Gigabit Ethernet, Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, Token Ring 4/16 Mbit/s or ISDN without difficulty. These cables considerably exceed the requirement for compliance with Class B interference emission to EN55022, as well as interference immunity to EN55024. This gives the series outstanding EMC characteristics.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 600 V

TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	250	350	600	900	1000	1200
Attenuation (dB/100m)	5.6	7.0	13.8	17.6	28.3	34.0	45.2	57.1	60.8	66.0
NEXT (dB)	95.0	95.0	89.0	87.0	82.0	79.0	74.0	70.0	66.0	63.0
ACR (dB/100m)	89.4	88.0	75.2	69.4	53.7	43.0	27.8	13.9	5.2	-3.0

HELUKAT® 600IND CAT.7e S/FTP PUR STATIC

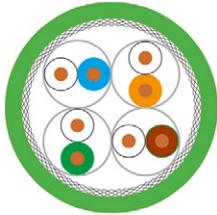
CC-Link IE Field certified, extended performance up to 1200 MHz



Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Sheath colour	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
801197	4 x 2 x AWG 23 /1	0.26	green	0.57	1.42	7.7	34.0	64.0
11022997	4 x 2 x AWG 23 /1	0.26	grey	0.57	1.42	7.7	34.0	64.0
11022998	4 x 2 x AWG 23 /1	0.26	blue	0.57	1.42	7.7	34.0	64.0
803815	4 x 2 x AWG 23 /1	0.26	red	0.57	1.42	7.7	34.0	64.0

HELUKAT® 600IND CAT.7e S/FTP FRNC STATIC

extended performance up to 1200 MHz, flame-retardant, low smoke



TECHNICAL DATA

Industrial Ethernet cable / Cat. 7e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, DIN EN 50288-4-1, UL-Std. 758 (AWM) Style 21143

Temperature range	fixed installation -40°C to +80°C during installation -5°C to +50°C UL (AWM) to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	1500 V
Conductor resistance at 20°C	max. 74.5 Ohm/km
Loop resistance at 20°C	max. 149.0 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 43 pF/m
Rel. Velocity of Propagation	approx. 77%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 1200 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 0.74 MJ/m
Minimum bending radius	during installation 10x Outer-Ø fixed installation 7x Outer-Ø

CABLE STRUCTURE

- Copper conductor bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
 - No. 1: white / blue
 - No. 2: white / orange
 - No. 3: white / green
 - No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths
- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs stranded in layers with optimal lay lengths

- Screen: braided screen of tinned copper wires
- Outer sheath: halogen-free, flame retardant compound (FRNC)
- Sheath colour: green (RAL 6018)
- Length marking: in metres

PROPERTIES

- halogen-free
- flame-retardant, low smoke development

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

APPLICATION

HELUKAT® 600IND CAT.7e S/FTP FRNC STATIC is used for industrial environments with halogen free and low smoke characteristics. Electrically, this cable is characterized by high reserve capacity and outstanding performance. This allows you to create services such as 10 Gigabit Ethernet, Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, Token Ring 4/16 Mbit/s or ISDN without difficulty. These cables considerably exceed the requirement for compliance with Class B interference emission to EN55022, as well as interference immunity to EN55024. This gives the series outstanding EMC characteristics.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 600 V

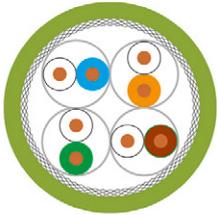
TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	250	350	600	900	1000	1200
Attenuation (dB/100m)	5.6	7.0	13.8	17.6	28.3	34.0	45.2	57.1	60.8	66.0
NEXT (dB)	95.0	95.0	89.0	87.0	82.0	79.0	74.0	70.0	66.0	63.0
ACR (dB/100m)	89.4	88.0	75.2	69.4	53.7	43.0	27.8	13.9	5.2	-3.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11007775	4 x 2 x AWG 23 /1	0.26	0.57	1.45	7.8	34.0	68.0

HELUKAT® 1200IND CAT.7A S/FTP PUR STATIC

extended performance up to 1200 MHz



TECHNICAL DATA

Industrial Ethernet cable / Cat. 7A acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, DIN EN 50288-9-1, UL-Std. 758 (AWM) Style 20549

Temperature range	fixed installation -40°C to +80°C during installation -5°C to +50°C UL (AWM) to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	1500 V
Conductor resistance at 20°C	max. 74.5 Ohm/km
Loop resistance at 20°C	max. 149.0 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 43 pF/m
Rel. Velocity of Propagation	approx. 77%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 1200 MHz, 100 Ohm ± 25 Ohm
Caloric load	approx. 0.76 MJ/m
Minimum bending radius	during installation 10x Outer-Ø fixed installation 7x Outer-Ø

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs stranded in layers with optimal lay lengths
- Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green (RAL 6018)
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- halogen-free
- flame-retardant

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

APPLICATION

HELUKAT® 1200IND CAT.7A S/FTP PUR STATIC is used for harsh industrial environments. Mechanically, this product exhibits excellent resistance to mineral oils, greases and cooling lubricants and has good microbe and hydrolysis resistance. Electrically, this cable is characterized by high reserve capacity and outstanding performance.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 300 V

CABLE STRUCTURE

- Copper conductor bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
 - No. 1: white / blue
 - No. 2: white / orange
 - No. 3: white / green
 - No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths

TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	250	350	600	900	1200
Attenuation (dB/100m)	5.6	7.0	13.8	17.6	28.3	34.0	45.2	57.1	66.0
NEXT (dB)	95.0	95.0	89.0	87.0	82.0	89.0	74.0	70.0	63.0
ACR (dB/100m)	89.4	86.0	73.2	67.4	51.7	43.0	27.8	13.9	1.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805680	4 x 2 x AWG 23 / 1	0.26	0.57	1.43	7.8	37.0	68.0

HELUKAT® 1000IND CAT.7A S/FTP PUR ROBUSTFLEX

performance up to 1000 MHz



TECHNICAL DATA

Industrial Ethernet cable / Cat. 7A acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-4-2, UL-Std. 758 (AWM) Style 21238

Temperature range	flexible -25°C to +60°C fixed installation -40°C to +80°C
Peak operating voltage	UL (AWM) to +80°C 125 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Conductor resistance at 20°C	max. 145.0 Ohm/km
Loop resistance at 20°C	max. 290.0 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 44 pF/m
Rel. Velocity of Propagation	approx. 77%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 1000 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 0.45 MJ/m
Minimum bending radius	flexible 8x Outer-Ø fixed installation 6x Outer-Ø

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs stranded in layers with optimal lay lengths
- Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green (RAL 6018)
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- halogen-free
- flame-retardant

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

APPLICATION

HELUKAT® 1000IND CAT.7A S/FTP PUR ROBUSTFLEX is an Ethernet cable that, thanks to use of a halogen-free PU outer sheath, is ideal for harsh industrial surroundings. This cable is configurable with common RJ45 plugs (industrial and office version), as well as with some Sub-D and M12 plugs.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 600 V

CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
 - No. 1: white / blue
 - No. 2: white / orange
 - No. 3: white / green
 - No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths

TYPICAL VALUES

Frequency (MHz)	10	100	250	600	800	1000
Attenuation (dB/100m)	7.7	27.0	42.0	71.0	83.0	93.0
NEXT (dB)	100.0	99.0	95.0	94.0	85.0	77.0
ACR (dB/100m)	92.3	72.0	53.0	23.0	2.0	-16.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805684	4 x 2 x AWG 26 / 7	0.14	0.48	1.05	6.2	23.0	40.0

HELUKAT® 600S CAT.7 SF/FTP PUR CHAIN

CC-Link IE Field certified



TECHNICAL DATA

Industrial Ethernet cable / Cat. 7 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-4-2, UL-Std. 444 (CMX), CSA-Std. C22.2 No. 214 - CMX, UL-Std. 758 (AWM) Style 20940

Temperature range	flexible -30°C to +70°C fixed installation -40°C to +80°C UL (CMX) to +75°C UL (AWM) to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	750 V
Conductor resistance at 20°C	max. 87.6 Ohm/km
Loop resistance at 20°C	max. 175.2 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 45 pF/m
Rel. Velocity of Propagation	approx. 77%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 600 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 0.80 MJ/m
Minimum bending radius	flexible 15x Outer-Ø fixed installation 8x Outer-Ø

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs with optimal lay lengths stranded around a central cross-shaped filler
- 1. Screen: metallised conductive fleece
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- suitable for use in drag chains
- halogen-free
- flame-retardant

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: CC-Link IE

APPLICATION

HELUKAT® 600S CAT.7 SF/FTP PUR CHAIN is designed for use in cable carriers and the recurring loads caused by moving machine components. It provides excellent transmission characteristics under extremely difficult conditions.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 600 V

TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	250	500	600
Attenuation (dB/100m)	7.0	9.0	17.5	22.5	36.0	50.0	58.5
NEXT (dB)	100.0	100.0	100.0	100.0	97.0	90.0	89.0
ACR (dB/100m)	93.0	91.0	82.5	77.5	61.0	40.0	30.5

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805614	4 x 2 x AWG 24 /7	0.22	0.6	1.3	8.7	46.0	95.0

HELUKAT® 600T CAT.7 SF/FTP PUR TORSION

CC-Link IE Field certified



TECHNICAL DATA

Industrial Ethernet cable / Cat. 7 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-4-2, UL-Std. 444 (CMX), CSA-Std. C22.2 No. 214 - CMX, UL-Std. 758 (AWM) Style 20940

Temperature range	flexible -30°C to +70°C fixed installation -40°C to +80°C UL (CMX) to +75°C UL (AWM) to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	750 V
Conductor resistance at 20°C	max. 87.6 Ohm/km
Loop resistance at 20°C	max. 175.2 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 45 pF/m
Rel. Velocity of Propagation	approx. 77%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 600 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 0.80 MJ/m
Minimum bending radius	flexible 15x Outer-Ø fixed installation 8x Outer-Ø

CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
 - No. 1: white / blue
 - No. 2: white / orange
 - No. 3: white / green
 - No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs with optimal lay lengths stranded around a central cross-shaped filler
- 1. Screen: metallised conductive fleece
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- torsion rated
- halogen-free
- flame-retardant

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

APPLICATION

HELUKAT® 600T CAT.7 SF/FTP PUR TORSION Cable is designed for use in robots. It provides excellent transmission characteristics under extremely difficult conditions.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 600 V

TYPICAL VALUES

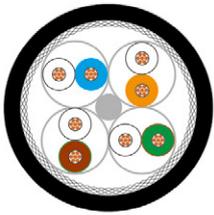
Frequency (MHz)	10	16	62.5	100	200	300	600
Attenuation (dB/100m)	7.0	9.0	17.5	22.5	36.0	50.0	58.5
NEXT (dB)	100.0	100.0	100.0	100.0	97.0	90.0	89.0
ACR (dB/100m)	93.0	91.0	82.5	77.5	61.0	40.0	30.5

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805828	4 x 2 x AWG 24 / 7	0.22	0.6	1.3	8.7	46.0	95.0

HELUKAT® 600IND CAT.7 S/FTP FRNC SHIPLINE



Marine and Offshore, flame-retardant, low smoke



TECHNICAL DATA

Industrial Ethernet cable / Cat. 7 acc. to DIN EN 50288-4-2, IEC 61156-6

Temperature range	flexible -40°C to +80°C fixed -40°C to +80°C
Peak operating voltage	100 V (not for high power current installation purposes)
Test voltage	700 V
Conductor resistance at 20°C	max. 90.0 Ohm/km
Loop resistance at 20°C	max. 180.0 Ohm/km
Insulation resistance	min. 0.5 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 42 pF/m
Rel. Velocity of Propagation	approx. 71%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 600 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 0.99 MJ/m
Minimum bending radius	flexible 10x Outer-Ø fixed 5x Outer-Ø

- Sheath colour: black
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation
- halogen-free
- Suitable for naval and offshore applications

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- certifications and approvals: DNV

CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
No. 1: white / blue
No. 2: white / orange
No. 3: white / green
No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths
- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs stranded in layers with optimal lay lengths
- Screen: braided screen of tinned copper wires
- Outer sheath: halogen-free, flame retardant compound (FRNC)

APPLICATION

HELUKAT® 600IND CAT.7 S/FTP FRNC SHIPLINE is designed and DNV-certified for flexible marine and offshore applications. This cable is exceptionally well suited for Ethernet applications and guarantees first-class data transmission properties, even under the harshest of conditions.

NOTES

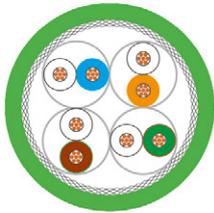
- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	200	300	600
Attenuation (dB/100m)	8.5	10.8	21.7	27.8	40.1	50.0	73.3
NEXT (dB)	80.0	80.0	75.1	69.6	67.9	65.3	60.8
ACR (dB/100m)	71.5	69.2	53.4	41.8	27.8	15.3	12.5

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11021853	4 x 2 x AWG 24 / 7	0.23	0.61	1.45	8.7	36.0	85.0

HELUKAT® 600IND CAT.7 S/FTP PUR ROBUSTFLEX



TECHNICAL DATA

Industrial Ethernet cable / Cat. 7 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-4-2, UL-Std. 758 (AWM) Style 20963

Temperature range	flexible -20°C to +60°C fixed installation -40°C to +80°C
Peak operating voltage	UL (AWM) to +80°C 125 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Conductor resistance at 20°C	max. 140.0 Ohm/km
Loop resistance at 20°C	max. 280.0 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 75%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 600 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 0.45 MJ/m
Minimum bending radius	flexible 8x Outer-Ø fixed installation 4x Outer-Ø

CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
 - No. 1: white / blue
 - No. 2: white / orange
 - No. 3: white / green
 - No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths
- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs stranded in layers with optimally matched lay lengths

- Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- halogen-free
- flame-retardant

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

APPLICATION

HELUKAT® 600IND CAT.7 S/FTP PUR ROBUSTFLEX is an Ethernet cable that is ideal for harsh industrial surroundings thanks to use of a halogen-free PU outer sheath. This cable is configurable with common RJ45 plugs (industrial and office version), as well as with some Sub-D and M12 plugs.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 30 V

TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	200	600
Attenuation (dB/100m)	8.4	10.4	20.5	26.2	38.0	67.8
PS-NEXT (dB)	95.0	95.0	90.0	90.0	85.0	73.0
PS-ACR (dB/100m)	86.6	84.6	69.5	63.8	47.0	5.2

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
802184	4 x 2 x AWG 26 / 7	0.14	0.48	1.0	6.4	28.0	48.0



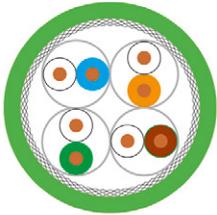
Cat 6/6A Industrial Ethernet

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HELUKAT® 500IND CAT.6A S/FTP FRNC STATIC



flame-retardant, low smoke



TECHNICAL DATA

Industrial Ethernet cable / Cat. 6A acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, DIN EN 50288-10-1, UL-Std. 444 (CM), CSA-Std. C22.2 No. 214 - CM

Temperature range	fixed installation -40°C to +80°C during installation 0°C to +70°C UL (CM) to +75°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Conductor resistance at 20°C	max. 59.0 Ohm/km
Loop resistance at 20°C	max. 118.2 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 77%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 0.95 MJ/m
Minimum bending radius	during installation 10x Outer-Ø fixed installation 5x Outer-Ø

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs stranded in layers with optimal lay lengths
- Screen: braided screen of tinned copper wires
- Outer sheath: halogen-free, flame retardant compound (FRNC)
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- halogen-free
- flame-retardant, low smoke development

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- UL Vertical-Tray Flame Exposure acc. to UL Std. 1685 Sec. 4-11

APPLICATION

HELUKAT® 500IND CAT.6A S/FTP FRNC STATIC was designed specially for extreme industrial applications for fixed installation. The copper data cable is especially well-suited for Category 6A 10 Giga-bit/500MHz (IEC 61156-5) Ethernet applications. It guarantees excellent transmission characteristics and may be used even under the harshest conditions.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

CABLE STRUCTURE

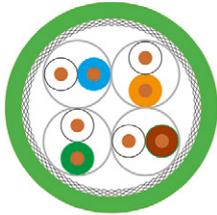
- Copper conductor bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
 - No. 1: white-blue / blue
 - No. 2: white-orange / orange
 - No. 3: white-green / green
 - No. 4: white-brown / brown
- Cores stranded in pairs with optimal lay lengths

TYPICAL VALUES

	10	16	62.5	100	250	500
Frequency (MHz)						
Attenuation (dB/100m)	5.9	7.5	15.0	19.1	31.1	45.3
NEXT (dB)	60.3	57.2	48.4	45.3	39.3	34.8
ACR (dB/100m)	54.4	49.7	43.4	26.2	8.2	-10.5

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11007777	4 x 2 x AWG 22 / 1	0.32	0.64	1.55	8.7	53.0	103.0

HELUKAT® 500IND CAT.6A S/FTP PUR STATIC



TECHNICAL DATA

Industrial Ethernet cable / Cat. 6A acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, DIN EN 50288-10-1, UL-Std. 444 (CMX), CSA-Std. C22.2 No. 214 - CMX, UL-Std. 758 (AWM) Style 21238

Temperature range	fixed installation -40°C to +80°C during installation 0°C to +50°C UL (CMX) to +75°C UL (AWM) to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Conductor resistance at 20°C	max. 59.1 Ohm/km
Loop resistance at 20°C	max. 118.2 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 45 pF/m
Rel. Velocity of Propagation	approx. 78%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 1.63 MJ/m
Minimum bending radius	during installation 8x Outer-Ø fixed installation 5x Outer-Ø

■ CABLE STRUCTURE

- Copper conductor bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
 - No. 1: white-blue / blue
 - No. 2: white-orange / orange
 - No. 3: white-green / green
 - No. 4: white-brown / brown
- Cores stranded in pairs with optimal lay lengths

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs stranded in layers with optimally matched lay lengths
- Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

■ PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- halogen-free
- flame-retardant

■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

■ APPLICATION

HELUKAT® 500IND CAT.6A S/FTP PUR STATIC was designed specially for extreme industrial applications for fixed installation. The copper data cable is especially well-suited for Category 6A 10 Giga-bit/500MHz (IEC 61156-5) Ethernet applications. It guarantees excellent transmission characteristics and may be used even under the harshest conditions.

■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 600 V

■ TYPICAL VALUES

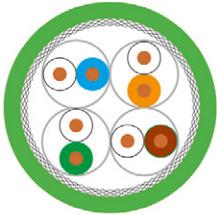
Frequency (MHz)	10	16	62.5	100	250	500
Attenuation (dB/100m)	5.9	7.5	15.0	19.1	31.1	45.3
NEXT (dB)	60.3	57.2	48.4	45.3	39.3	34.8
ACR (dB/100m)	54.4	49.7	33.4	26.2	8.2	10.5

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11007778	4 x 2 x AWG 22 / 1	0.32	0.64	1.55	8.7	53.0	103.0

HELUKAT® 500IND CAT.6A S/FTP PVC STATIC



highly flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 6A acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, DIN EN 50288-10-1, UL-Std. 444 (CMG), CSA-Std. C22.2 No. 214 - CMG, UL-Std. 13 (CL2), UL-Std. 758 (AWM) Style 21694

Temperature range	fixed installation -30°C to +80°C during installation 0°C to +50°C UL (CMG) to +75°C UL (AWM) to +60°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Conductor resistance at 20°C	max. 59.0 Ohm/km
Loop resistance at 20°C	max. 118.2 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 45 pF/m
Rel. Velocity of Propagation	approx. 78%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 1.63 MJ/m
Minimum bending radius	during installation 8x Outer-Ø fixed installation 5x Outer-Ø

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs stranded in layers with optimally matched lay lengths
- Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation (SUN RES)
- flame-retardant

TESTS

- flame-retardant acc. to CSA FT4
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24

APPLICATION

HELUKAT® 500IND CAT.6A S/FTP PVC STATIC was designed specially for extreme industrial applications for fixed installation. The copper data cable is especially well-suited for Category 6A 10 Giga-bit/500MHz (IEC 61156-5) Ethernet applications. It guarantees excellent transmission characteristics and may be used even under the harshest conditions.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 600 V

CABLE STRUCTURE

- Copper conductor bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
No. 1: white-blue / blue
No. 2: white-orange / orange
No. 3: white-green / green
No. 4: white-brown / brown
- Cores stranded in pairs with optimal lay lengths

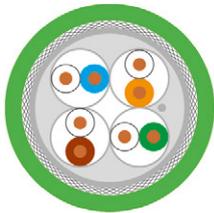
TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	250	500
Attenuation (dB/100m)	5.9	7.5	15.0	19.1	31.1	45.3
NEXT (dB)	60.3	57.2	48.4	45.3	39.3	34.8
ACR (dB/100m)	54.4	49.7	33.4	26.2	8.2	10.5

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11007776	4 x 2 x AWG 22 / 1	0.32	0.64	1.55	8.7	53.0	103.0

HELUKAT® 500IND CAT.6A SK S/FTP PVC STATIC

CC-Link IE Field certified, FastConnect (SK) capable, highly flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 6A acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, DIN EN 50288-10-1, UL-Std. 444 (CMG), CSA-Std. C22.2 No. 214 - CMG

Temperature range	fixed installation -40°C to +80°C during installation -5°C to +70°C UL (CMG) to +75°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Conductor resistance at 20°C	max. 56.5 Ohm/km
Loop resistance at 20°C	max. 112.9 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 76%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 1.63 MJ/m
Minimum bending radius	during installation 8x Outer-Ø fixed installation 4x Outer-Ø

CABLE STRUCTURE

- Copper conductor bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
 - No. 1: white / blue
 - No. 2: white / orange
 - No. 3: white / green
 - No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs stranded in layers with optimally matched lay lengths
- Inner sheath: halogen-free, flame retardant compound (FRNC)
- drain wire
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation (SUN RES)
- flame-retardant

TESTS

- flame-retardant acc. to CSA FT4
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24 (Cat. C)
- certifications and approvals:
 - EAC
 - CC-Link IE

APPLICATION

HELUKAT® 500IND CAT.6A SK S/FTP PVC STATIC was designed specially for extreme industrial applications for fixed installation. The copper data cable is especially well-suited for Category 6A 10 Giga-bit/500MHz (IEC 61156-5) Ethernet applications. It guarantees excellent transmission characteristics and may be used even under the harshest conditions.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

TYPICAL VALUES

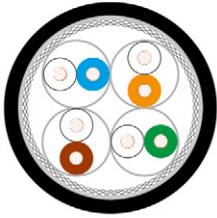
Frequency (MHz)	10	16	62.5	100	250	500
Attenuation (dB/100m)	4.8	6.2	12.7	16.2	25.9	37.0
NEXT (dB)	108.3	107.1	100.2	99.5	90.2	80.0
PS-NEXT (dB)	57.3	54.2	45.4	42.3	36.3	31.8
ACR (dB/100m)	103.5	100.9	87.5	83.3	64.3	43.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
803693	4 x 2 x AWG 22 / 1	0.32	0.64	1.55	9.6	44.0	115.0

HELUKAT® 500IND CAT.6A S/FTP PVC FLEX



flame-retardant



HELUKAT® 500IND INDUSTRIAL ETHERNET CAT 6A S/FTP 4x2AWG23/7 PVC

TECHNICAL DATA

Industrial Ethernet cable acc. to ISO/IEC 11801, UL-Std. 758 (AWM) Style 2461

Temperature range	flexible 0°C to +50°C fixed installation -40°C to +80°C
Peak operating voltage	80 V (not for high power current installation purposes)
Test voltage core/core	800 V
Loop resistance at 20°C	max. 150.0 Ohm/km
Insulation resistance	min. 5000 MOhm x km
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm
Minimum bending radius	flexible 8x Outer-Ø null 4x Outer-Ø

- Outer sheath: PVC
- Sheath colour: black
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation
- flame-retardant

TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, CSA FT2
- Sunlight Resistance (SUN RES) acc. to UL Std. 1581 Sec. 1200

APPLICATION

HELUKAT® 500IND was designed for fixed installation and occasional moving. The cable construction is optimized to be used either in industrial systems as a classic Cat 6A cable. This is also ideal for use in CP-Link 4 systems from company Beckhoff as a transmission medium for DVI- and USB 2.0 signals as well as the 24 V power supply to the multi-touch panels.

NOTES

- UL Voltage Rating: 300 V

CABLE STRUCTURE

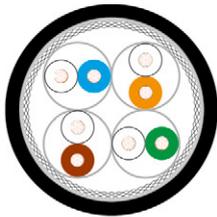
- Copper wire tinned
- Core insulation: Foam PE
- Cores stranded in pairs with optimal lay lengths
- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs stranded in layers with optimal lay lengths
- Screen: braided screen of tinned copper wires

TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	250	500
Attenuation (dB/100m)	5.6	7.0	13.8	17.6	28.3	34.0
NEXT (dB)	60.3	57.0	49.0	45.0	39.0	35.0

Part no.	No. cores x AWG-No.	Outer-Ø min - max mm	Conductor Ø mm, approx.	Core Ø mm, approx.	Weight kg/km, approx.
11023769	4 x 2 x AWG 23 /7	8.5 - 8.8	0.66	1.58	81.0

HELUKAT® 500IND S/FTP CAT.6A FRNC FLEX



HELUKAT® 500IND S/FTP CAT.6A FRNC FLEX

TECHNICAL DATA

Industrial Ethernet cable acc. to ISO/IEC 11801, IEC 61156-6, UL-Std. 758 (AWM) Style 21307

Temperature range	flexible 0°C to +50°C fixed -40°C to +80°C
Peak operating voltage	80 V (not for high power current installation purposes)
Loop resistance at 20°C	max. 150.0 Ohm/km
Insulation resistance	min. 5000 MOhm x km
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Minimum bending radius	flexible 8x Outer-Ø fixed installation 4x Outer-Ø

■ CABLE STRUCTURE

- Copper wire tinned
- Core insulation: Foam PE
- Cores stranded in pairs with optimal lay lengths
- Screening element: pairs, plastic-coated aluminium foil (St)

- 4 pairs stranded into bundles with optimal lay lengths
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Fleece wrapping
- Outer sheath: halogen-free, flame retardant compound (FRNC)
- Sheath colour: black (RAL 9005)

■ PROPERTIES

- resistant to: UV radiation
- halogen-free

■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, CSA FT2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404, IRM 902 4h at +70°C

■ APPLICATION

HELUKAT® 500IND S/FTP CAT.6A FRNC FLEX for fixed installations subjected to vibration or occasional movement in industrial networks.

■ TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	250	500
Attenuation (dB/100m)	5.6	7.0	13.8	17.6	28.3	34.0
NEXT (dB)	60.3	57.0	49.0	45.0	39.0	35.0

Part no.	No. cores x AWG-No.	Outer-Ø min - max mm	Conductor Ø mm, approx.	Core Ø mm, approx.	Weight kg/km, approx.
11026524	4 x 2 x AWG 23 /7	8.5 - 8.8	0.66	1.55	88.0

HELUKAT® 500S CAT.6A SF/FTP PVC CHAIN

highly flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 6A acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-10-2, UL-Std. 444 (CM), CSA-Std. C22.2 No. 214 - CM

Temperature range	flexible -10°C to +70°C fixed installation -40°C to +80°C UL (CM) to +75°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	3000 V
Conductor resistance at 20°C	max. 87.6 Ohm/km
Loop resistance at 20°C	max. 175.2 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 75%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 1.69 MJ/m
Minimum bending radius	flexible 8x Outer-Ø fixed installation 4x Outer-Ø

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs with optimal lay lengths stranded around a central cross-shaped filler
- 1. Screen: metallised conductive fleece
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: oil
- suitable for use in drag chains
- flame-retardant

TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

APPLICATION

HELUKAT® 500S CAT.6A SF/FTP PVC CHAIN was designed specially for flexible applications in drag chains in extreme industrial environments. The copper data cable is especially well-suited for Category 6A Ethernet applications. It guarantees excellent transmission characteristics and may be used even under the harshest conditions. The PVC version has UL CM listing.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
 - No. 1: white / blue
 - No. 2: white / orange
 - No. 3: white / green
 - No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths

TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	200	300	500
Attenuation (dB/100m)	6.6	8.4	17.3	22.0	31.4	38.9	51.2
NEXT (dB)	72.8	73.0	74.1	74.4	74.4	72.7	69.2
ACR (dB/100m)	66.2	64.6	56.8	52.4	43.0	33.8	18.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805704	4 x 2 x AWG 24 /7	0.22	0.6	1.3	8.7	44.0	88.0

HELUKAT® 500S CAT.6A SF/FTP PUR CHAIN

halogen-free, highly flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 6A acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-10-2, UL-Std. 444 (CMX), CSA-Std. C22.2 No. 214 - CMX, UL-Std. 758 (AWM) Style 21576

Temperature range	flexible -20°C to +60°C fixed installation -40°C to +80°C UL (CMX) to +75°C UL (AWM) to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	3000 V
Conductor resistance at 20°C	max. 87.6 Ohm/km
Loop resistance at 20°C	max. 175.2 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 75%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 1.69 MJ/m
Minimum bending radius	flexible 8x Outer-Ø fixed installation 4x Outer-Ø

CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
 - No. 1: white / blue
 - No. 2: white / orange
 - No. 3: white / green
 - No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs with optimal lay lengths stranded around a central cross-shaped filler
- 1. Screen: metallised conductive fleece
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- suitable for use in drag chains
- halogen-free
- flame-retardant

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, CSA FT2

APPLICATION

HELUKAT® 500S CAT.6A SF/FTP PUR CHAIN was designed specially for extreme industrial applications for drag chain moving. The copper data cable is especially well-suited for Category 6A Ethernet applications. It guarantees excellent transmission characteristics and may be used even under the harshest conditions.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 1000 V

TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	200	300	500
Attenuation (dB/100m)	6.6	8.4	17.3	22.0	31.4	38.9	51.2
NEXT (dB)	72.8	73.0	74.1	74.4	74.4	72.2	69.2
ACR (dB/100m)	66.2	64.6	56.8	52.4	43.0	33.8	18.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805703	4 x 2 x AWG 24 /7	0.22	0.6	1.3	8.7	44.0	90.0



HELUKAT® 500S CAT.6A SF/FTP SLIM PUR CHAIN

halogen-free, flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 6A acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-10-2, UL-Std. 444 (CMX), CSA-Std. C22.2 No. 214 - CMX, UL-Std. 758 (AWM) Style 21576

Temperature range	flexible -20°C to +70°C fixed installation -40°C to +80°C UL (CMX) to +75°C UL (AWM) to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Conductor resistance at 20°C	max. 150.0 Ohm/km
Loop resistance at 20°C	max. 300.0 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 76%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 1.35 MJ/m
Minimum bending radius	flexible 10x Outer-Ø fixed installation 8x Outer-Ø

■ CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
 - No. 1: white / blue
 - No. 2: white / orange
 - No. 3: white / green
 - No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs with optimal lay lengths stranded around a central cross-shaped filler
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

■ PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- suitable for use in drag chains
- halogen-free
- flame-retardant

■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

■ APPLICATION

HELUKAT® 500S CAT.6A SF/FTP SLIM PUR CHAIN is designed for use in cable carriers and the recurring loads caused by moving machine components. It provides excellent transmission characteristics under extremely difficult conditions.

■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 1000 V

■ TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	300	500
Attenuation (dB/100m)	9.0	11.0	23.0	29.0	51.0	68.0
NEXT (dB)	60.3	57.2	48.4	45.3	38.1	34.8
ACR (dB/100m)	59.4	56.1	46.1	42.6	33.0	28.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805548	4 x 2 x AWG 26 /7	0.14	0.55	1.05	7.8	34.0	81.0

HELUKAT® 500IND CAT.6A S/FTP LSOH EXTRAFLEX



extremely flexible



TECHNICAL DATA

Industrial Ethernet cable acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5

Temperature range	flexible -20°C to +75°C fixed -20°C to +75°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	1000 V
Conductor resistance at 20°C	max. 142.0 Ohm/km
Loop resistance at 20°C	max. 284.0 Ohm/km
Insulation resistance	min. 100 MOhm x km
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 25 Ohm at 101 to 500 MHz, 100 Ohm ± 25 Ohm
Minimum bending radius	flexible 5x Outer-Ø fixed 5x Outer-Ø

- Screen: braided screen of tinned copper wires
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- halogen-free
- flame-retardant

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2

CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
 - No. 1: white / blue
 - No. 2: white / orange
 - No. 3: white / green
 - No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths
- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs stranded in layers with optimal lay lengths

APPLICATION

HELUKAT® 500IND CAT.6A S/FTP TPE/LSZH EXTRAFLEX was designed specifically for use in extreme industrial applications and installations requiring non-cyclical bending. This copper data cable is exceptionally well suited for Cat. 6A Ethernet applications and guarantees first-class data transmission properties, even under the harshest of conditions.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	250	500
Attenuation (dB/10m)	6.5	8.2	16.4	20.9	33.9	49.3
NEXT (dB)	56.6	53.2	43.4	39.9	33.1	27.9
ACR (dB/100m)	50.1	45.0	27.0	29.0	-0.8	-21.4

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Weight kg/km, approx.
11023932	4 x 2 x AWG 26 /7	0.14		1.04	6.5	70.0

HELUKAT® 250IND CAT.6 CMG SF/UTP PVC STATIC

with FRNC inner sheath, highly flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 6 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, DIN EN 50288-5-1, UL-Std. 444 (CMG), CSA-Std. C22.2 No. 214 - CMG

Temperature range	fixed installation -40°C to +80°C during installation -5°C to +70°C UL (CMG) to +75°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	1500 V
Conductor resistance at 20°C	max. 95.0 Ohm/km
Loop resistance at 20°C	max. 190.0 Ohm/km
Insulation resistance	min. 0.5 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 72 pF/m
Rel. Velocity of Propagation	approx. 62%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 250 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 1.69 MJ/m
Minimum bending radius	during installation 10x Outer-Ø fixed installation 5x Outer-Ø

- Foil wrapping
- Screening element: pairs
- Pairs with optimal lay lengths stranded around a central cross-shaped filler
- Inner sheath: halogen-free, flame retardant compound (FRNC)
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

■ PROPERTIES

- resistant to: oil, UV radiation
- flame-retardant

■ TESTS

- flame-retardant acc. to CSA FT4
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24

■ APPLICATION

HELUKAT® 250IND CAT.6 CMG SF/UTP PVC STATIC was designed specially for extreme industrial applications. The copper data cable is especially well-suited for Ethernet applications Category 6. It guarantees excellent transmission characteristics and may be used even under the harshest conditions.

■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

■ CABLE STRUCTURE

- Copper conductor bare, AWG sizes
- Core insulation: PE
- Core identification: colour coded, pairs:
 - No. 1: white-blue / blue
 - No. 2: white-orange / orange
 - No. 3: white-green / green
 - No. 4: white-brown / brown
- Cores stranded in pairs with optimal lay lengths

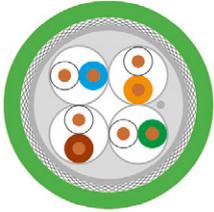
■ TYPICAL VALUES

	10	16	62.5	100	250
Frequency (MHz)					
Attenuation (dB/100m)	5.6	7.1	14.5	18.4	30.3
NEXT (dB)	77.0	75.9	66.4	64.7	57.2
ACR (dB/100m)	71.4	68.8	51.9	46.3	26.9

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805655	4 x 2 x AWG 24 / 1	0.20	0.51	1.03	8.0	37.0	76.0

HELUKAT® 250IND CAT.6 SF/FTP PVC STATIC

with FRNC inner sheath, highly flame-retardant



HELUKAT® 250IND SF/FTP 4x2xAWG24/1 PVC

TECHNICAL DATA

Industrial Ethernet cable / Cat. 6 acc. to DIN EN 50173, ISO/IEC 11801, IEC 61156-5, UL-Std. 444 (CMG), CSA-Std. C22.2 No. 214 - CMG

Temperature range	fixed installation -30°C to +80°C during installation 0°C to +50°C UL (CMG) to +75°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	1000 V
Conductor resistance at 20°C	max. 95.0 Ohm/km
Loop resistance at 20°C	max. 190.0 Ohm/km
Insulation resistance	min. 2.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 43 pF/m
Rel. Velocity of Propagation	approx. 76%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 250 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 0.79 MJ/m
Minimum bending radius	during installation 15x Outer-Ø fixed installation 12x Outer-Ø

- Inner sheath: halogenfreies Polymer (LSOH)
- drain wire
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation (SUN RES)
- highly flame-retardant

TESTS

- flame-retardant acc. to CSA FT4, DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404, IRM 902 4h at +70°C
- ozone-resistant acc. to DIN VDE 0473-811-403 / DIN EN 60811-403

APPLICATION

HELUKAT® 250IND CAT.6A SF/FTP PVC STATIC was designed specifically for use in extreme industrial applications. This copper data cable is especially well suited for Cat. 6 Ethernet applications. This cable guarantees first-class data transmission properties, even under the harshest of conditions.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

CABLE STRUCTURE

- Copper conductor bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
 - No. 1: white / blue
 - No. 2: white / orange
 - No. 3: white / green
 - No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths
- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs stranded in layers with optimal lay lengths

TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	250
Attenuation (dB/100m)	6.3	8.0	16.0	21.0	33.0
NEXT (dB)	90.0	90.0	90.0	87.0	81.0
ACR (dB/100m)	83.7	82.0	74.0	66.0	48.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11017904	4 x 2 x AWG 24 / 1	0.20	0.5	1.23	8.0	34.0	75.0

HELUKAT® 250IND CAT.6 AWM SF/UTP PVC STATIC

with FRNC inner sheath, flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 6 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, DIN EN 50288-5-1, UL-Std. 758 (AWM) Style 2571

Temperature range	fixed installation -40°C to +80°C during installation -5°C to +70°C UL (AWM) to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	1500 V
Conductor resistance at 20°C	max. 95.0 Ohm/km
Loop resistance at 20°C	max. 190.0 Ohm/km
Insulation resistance	min. 0.5 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 72 pF/m
Rel. Velocity of Propagation	approx. 62%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 250 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 1.69 MJ/m
Minimum bending radius	during installation 10x Outer-Ø fixed installation 5x Outer-Ø

- Screening element: pairs
- Pairs with optimal lay lengths stranded around a central cross-shielded filler
- Inner sheath: halogen-free, flame retardant compound (FRNC)
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: UV radiation
- flame-retardant

TESTS

- flame-retardant acc. to CSA FT1
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24 (Cat. C)

APPLICATION

HELUKAT® 250IND CAT.6 AWM SF/UTP PVC STATIC was designed specially for extreme industrial applications. The copper data cable is especially well-suited for Category 6 Ethernet applications. It guarantees excellent transmission characteristics and may be used even under the harshest conditions. This version with PVC jacket is designed specifically for fixed installation under difficult industrial conditions.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

CABLE STRUCTURE

- Copper conductor bare, AWG sizes
- Core insulation: PE
- Core identification: colour coded, pairs:
 - No. 1: white-blue / blue
 - No. 2: white-orange / orange
 - No. 3: white-green / green
 - No. 4: white-brown / brown
- Cores stranded in pairs with optimal lay lengths

TYPICAL VALUES

	10	16	62.5	100	250
Frequency (MHz)					
Attenuation (dB/100m)	5.6	7.1	14.5	18.4	30.3
NEXT (dB)	77.0	75.9	66.4	64.7	57.2
ACR (dB/100m)	71.4	68.8	51.9	46.3	26.9

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805681	4 x 2 x AWG 24 / 1	0.20	0.51	1.03	8.0	40.0	78.0

HELUKAT® 250S CAT.6 CMG SF/UTP PVC CHAIN

highly flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 6 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-5-2, UL-Std. 444 (CMG), CSA-Std. C22.2 No. 214 - CMG

Temperature range	flexible -25°C to +80°C fixed installation -40°C to +80°C
Peak operating voltage	UL (CMG) to +75°C 125 V (not for high power current installation purposes)
Test voltage core/core	1500 V
Conductor resistance at 20°C	max. 90.0 Ohm/km
Loop resistance at 20°C	max. 180.0 Ohm/km
Insulation resistance	min. 0.5 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 67%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 250 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 1.69 MJ/m
Minimum bending radius	flexible 20x Outer-Ø fixed installation 3x Outer-Ø

- Foil wrapping
- Pairs with optimal lay lengths stranded around a central cross-shaped filler
- Inner sheath: halogen-free, flame retardant compound (FRNC)
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: UV radiation
- suitable for use in drag chains
- flame-retardant

TESTS

- flame-retardant acc. to CSA FT4
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24 (Cat. C)

APPLICATION

HELUKAT® 250S CAT.6 CMG SF/UTP PVC CHAIN was designed specially for extreme industrial applications. The copper data cable is especially well-suited for Category 6 Ethernet applications. It guarantees excellent transmission characteristics and may be used even under the harshest conditions. This version with PVC jacket and stranded conductor is designed specifically for trailing use under difficult industrial conditions.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
 - No. 1: white-blue / blue
 - No. 2: white-orange / orange
 - No. 3: white-green / green
 - No. 4: white-brown / brown
- Cores stranded in pairs with optimal lay lengths

TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	200	250
Attenuation (dB/100m)	9.0	11.4	23.2	29.9	43.7	49.5
NEXT (dB)	59.3	56.2	47.4	44.3	39.8	38.3
ACR (dB/100m)	50.3	44.8	24.2	13.4	-3.9	-11.2

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805658	4 x 2 x AWG 24 /7	0.22	0.6	1.1	8.0	39.0	72.0

HELUKAT® 250S CAT.6 CMX SF/UTP PUR CHAIN

flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 6 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-5-2, UL-Std. 444 (CMX), CSA-Std. C22.2 No. 214 - CMX, UL-Std. 758 (AWM) Style 21576

Temperature range	flexible -30°C to +70°C fixed installation -40°C to +80°C UL (CMX) to +75°C UL (AWM) to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	700 V
Conductor resistance at 20°C	max. 140.0 Ohm/km
Loop resistance at 20°C	max. 280.0 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 67%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 250 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 1.35 MJ/m
Minimum bending radius	flexible 8x Outer-Ø fixed 4x Outer-Ø

- Pairs with optimal lay lengths stranded around a central cross-shaped filler
- Inner sheath: halogen-free, flame retardant compound (FRNC)
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant
- suitable for use in drag chains
- halogen-free
- flame-retardant

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

APPLICATION

HELUKAT 250S CAT.6 CMX SF/UTP PUR CHAIN is designed for use in cable carriers and the recurring loads caused by moving machine components. It provides excellent transmission characteristics under extremely difficult conditions.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 1000 V

CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: PP
- Core identification: colour coded, pairs:
 - No. 1: white-blue / blue
 - No. 2: white-orange / orange
 - No. 3: white-green / green
 - No. 4: white-brown / brown
- Cores stranded in pairs with optimal lay lengths

TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	250
Attenuation (dB/100m)	7.7	9.9	20.8	26.7	43.1
NEXT (dB)	73.0	72.0	62.0	61.0	53.0
ACR (dB/100m)	65.3	62.1	41.2	34.3	9.9

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
803387	4 x 2 x AWG 26 / 19	0.15	0.55	1.02	8.0	34.0	63.0



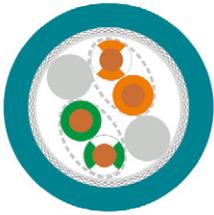
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HELUKAT® 100IND CAT.5 SF/UTP FRNC STATIC



flame-retardant, low smoke



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-2, DIN EN 50288-2-1

Temperature range	fixed installation -25°C to +80°C during installation -5°C to +60°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	1000 V
Conductor resistance at 20°C	max. 96.0 Ohm/km
Loop resistance at 20°C	max. 192.0 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 48 pF/m
Rel. Velocity of Propagation	approx. 70%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 0.43 MJ/m
Minimum bending radius	during installation 15x Outer-Ø fixed installation 8x Outer-Ø

- Foil wrapping
- Pairs stranded with optimal lay lengths
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: halogen-free, flame retardant compound (FRNC)
- Sheath colour: blue
- Length marking: in metres

PROPERTIES

- halogen-free
- flame-retardant, low smoke development

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

APPLICATION

HELUKAT® 100IND CAT.5 SF/UTP FRNC STATIC for fixed installation indoor in halogen free and flame retardant edition.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

CABLE STRUCTURE

- Copper conductor bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
No. 1: white-orange / orange
No. 2: white-green / green
- Cores stranded in pairs with optimal lay lengths

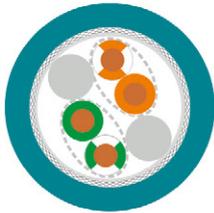
TYPICAL VALUES

	10	16	62.5	100
Frequency (MHz)				
Attenuation (dB/100m)	5.7	7.1	14.2	18.3
NEXT (dB)	57.0	54.0	45.0	42.0
ACR (dB/100m)	51.3	46.9	30.8	23.7

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805699	2 x 2 x AWG 24 / 1	0.20	0.51	1.03	5.6	22.0	45.0

HELUKAT® 100IND CAT.5 SF/UTP PUR STATIC

flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-2, DIN EN 50288-2-1

Temperature range	fixed installation -40°C to +80°C during installation -5°C to +60°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	1000 V
Conductor resistance at 20°C	max. 96.0 Ohm/km
Loop resistance at 20°C	max. 192.0 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 48 pF/m
Rel. Velocity of Propagation	approx. 75%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 0.63 MJ/m
Minimum bending radius	during installation 15x Outer-Ø fixed installation 8x Outer-Ø

■ CABLE STRUCTURE

- Copper conductor bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
No. 1: white-orange / orange
No. 2: white-green / green
- Cores stranded in pairs with optimal lay lengths
- Foil wrapping
- Pairs stranded with optimal lay lengths

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: blue
- Length marking: in metres

■ PROPERTIES

- resistant to: oil
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- halogen-free
- flame-retardant

■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

■ APPLICATION

HELUKAT® 100IND CAT.5 SF/UTP PUR STATIC for fix installation in halogen free and flame retardant edition. Thanks to the PUR jacket excellent oil resistance for harsh environmental applications.

■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

■ TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	5.7	7.1	14.2	18.3
NEXT (dB)	57.0	54.0	45.0	42.0
ACR (dB/100m)	51.3	46.9	30.8	23.7

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805700	2 x 2 x AWG 24 / 1	0.20	0.51	1.04	5.6	22.0	53.0

HELUKAT® 100IND CAT.5e SF/UTP FRNC FLEX



flame-retardant, low smoke



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-2-2

Temperature range	flexible -10°C to +70°C fixed installation -30°C to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	1000 V
Conductor resistance at 20°C	max. 140.0 Ohm/km
Loop resistance at 20°C	max. 280.0 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 47 pF/m
Rel. Velocity of Propagation	approx. 70%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 0.44 MJ/m
Minimum bending radius	flexible 15x Outer-Ø fixed installation 8x Outer-Ø

- Foil wrapping
- Pairs stranded with optimal lay lengths
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: halogen-free, flame retardant compound (FRNC)
- Sheath colour: blue
- Length marking: in metres

PROPERTIES

- halogen-free
- flame-retardant, low smoke development

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

APPLICATION

HELUKAT® 100IND CAT.5e SF/UTP FRNC FLEX is designed for flexible use. Thanks to the FRNC sheath, it also offers halogen free and flame retardant parameters.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
No. 1: white-orange / orange
No. 2: white-green / green
- Cores stranded in pairs with optimal lay lengths

TYPICAL VALUES

	10	16	62.5	100
Frequency (MHz)				
Attenuation (dB/100m)	8.3	10.6	21.7	27.9
NEXT (dB)	59.0	56.0	48.0	45.0
ACR (dB/100m)	50.7	45.4	26.3	17.1

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805701	2 x 2 x AWG 26 /7	0.14	0.5	0.95	5.6	19.0	44.0

HELUKAT® 100IND CAT.5 SF/UTP PUR ROBUSTFLEX

flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-2-2, UL-Std. 758 (AWM) Style 21576

Temperature range	flexible -30°C to +70°C fixed installation -40°C to +80°C
Peak operating voltage	UL (AWM) to +80°C 125 V (not for high power current installation purposes)
Test voltage core/core	1000 V
Conductor resistance at 20°C	max. 140.0 Ohm/km
Loop resistance at 20°C	max. 280.0 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 67%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 0.65 MJ/m
Minimum bending radius	flexible 15x Outer-Ø fixed installation 8x Outer-Ø

■ CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
No. 1: white-orange / orange
No. 2: white-green / green
- Cores stranded in pairs with optimal lay lengths
- Foil wrapping
- Pairs stranded with optimal lay lengths

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: blue
- Length marking: in metres

■ PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, lubricating oils, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- conditionally suitable for drag chains
- halogen-free
- flame-retardant

■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

■ APPLICATION

HELUKAT® 100IND CAT.5e SF/UTP PUR FLEX is designed for flexible use and in drag chain with low performance. Thanks to the PUR sheath, it also offers excellent resistance to typical oils (ASTM 1/2).

■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 1000 V

■ TYPICAL VALUES

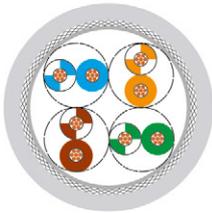
Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	8.3	10.6	21.7	27.9
NEXT (dB)	59.0	56.0	48.0	45.0
ACR (dB/100m)	50.7	45.4	26.3	17.1

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805702	2 x 2 x AWG 26 / 7	0.14	0.5	0.95	5.7	19.0	45.0

HELUKAT® 200IND CAT.5e SF/UTP PUR ROBUSTFLEX



flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-3, DIN EN 50288-2-2, UL-Std. 758 (AWM) Style 21576

Temperature range	flexible -20°C to +50°C fixed installation -40°C to +80°C
Peak operating voltage	UL (AWM) to +80°C 125 V (not for high power current installation purposes)
Test voltage core/core	1000 V
Conductor resistance at 20°C	max. 140.0 Ohm/km
Loop resistance at 20°C	max. 280.0 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 47 pF/m
Rel. Velocity of Propagation	approx. 67%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 200 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 0.64 MJ/m
Minimum bending radius	flexible 8x Outer-Ø fixed installation 4x Outer-Ø

- Pairs stranded in layers with optimal lay lengths
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: grey
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- halogen-free
- flame-retardant

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

APPLICATION

HELUKAT® 200IND CAT.5e SF/UTP PUR ROBUSTFLEX is used in harsh industrial surroundings and characterized by high reserve capacity and outstanding performance. Mechanically, the halogen-free PU outer sheath makes it ideal for harsh industrial surroundings. This cable is configurable with common RJ45 plugs (industrial and office version), as well as with various Sub-D and M12 plugs.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 1000 V

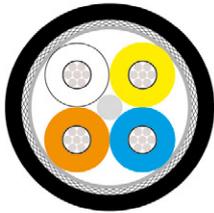
TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	200
Attenuation (dB/100m)	8.0	11.0	24.0	29.0	43.0
NEXT (dB)	58.0	56.0	45.0	43.0	37.0
ACR (dB/100m)	50.0	45.0	21.0	14.0	-6.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
800068	4 x 2 x AWG 26 /7	0.14	0.48	0.95	5.8	24.0	44.0

HELUKAT® 100IND CAT.5 WK SF/UTP X-FRNC FLEX

Cross-linked FRNC outer sheath, heat resistant, flame-retardant, low smoke



HELUKABEL® WK-Industrial Ethernet 105°C

TECHNICAL DATA

Industrial Ethernet cable / Cat. 5 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-3, DIN EN 50288-2-2, UL-Std. 758 (AWM) Style 21281

Temperature range	flexible -20°C to +60°C fixed installation -40°C to +105°C UL (AWM) to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Conductor resistance at 20°C	max. 60.0 Ohm/km
Loop resistance at 20°C	max. 120.0 Ohm/km
Insulation resistance	min. 0.5 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 57 pF/m
Rel. Velocity of Propagation	approx. 69%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 0.89 MJ/m
Minimum bending radius	fixed 8x Outer-Ø fixed installation 4x Outer-Ø

■ CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: XLPE
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: cross-linkable, halogen-free, flame retardant compound (X-FRNC)
- Sheath colour: black

■ TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	6.3	8.0	16.5	21.3
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	63.7	57.0	38.5	28.7

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
802293	2 x 2 x AWG 22 / 7	0.35	0.75	1.55	6.5	34.0	64.0

- Length marking: in metres

■ PROPERTIES

- resistant to: oil, UV radiation, microbes, coolants, acids, alkalis
- abrasion-resistant, notch-resistant, low adhesion
- for outdoor use
- halogen-free
- flame-retardant, low smoke development

■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- bundle fire test acc. to DIN VDE 0482-332-3 / DIN EN 60332-3 / IEC 60332-3
- certifications and approvals: EAC

■ APPLICATION

HELUKAT® 100IND CAT.5 WK SF/UTP X-FRNC FLEX is designed specially for demanding temperature requirements such as those encountered in wind turbines. Radiation cross-linking provides improved thermal stability as well as good oil resistance.

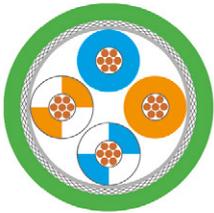
■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- Temperature range up to +105°C, for an operating period of max. 5000h
- UL Voltage Rating: 300 V

HELUKAT® 100S CAT.5e 30 V 4C SF/UTP PUR CHAIN



flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-2-2, UL-Std. 758 (AWM) Style 20963

Temperature range	flexible -30°C to +60°C fixed installation -40°C to +80°C
Peak operating voltage	UL (AWM) to +80°C 125 V (not for high power current installation purposes)
Test voltage core/core	500 V
Conductor resistance at 20°C	max. 140.0 Ohm/km
Loop resistance at 20°C	max. 280.0 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 67%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 0.37 MJ/m
Minimum bending radius	flexible 15x Outer-Ø fixed installation 7x Outer-Ø

- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- suitable for use in drag chains
- halogen-free
- flame-retardant

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

APPLICATION

HELUKAT 100S CAT.5e 30 V 4C SF/UTP PUR CHAIN is designed in use in cable carriers and the recurring loads cause by moving machine components. Thanks to the PU sheath, it also offers excellent resistance to common mineral oils, greases and cooling lubricants.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 30 V

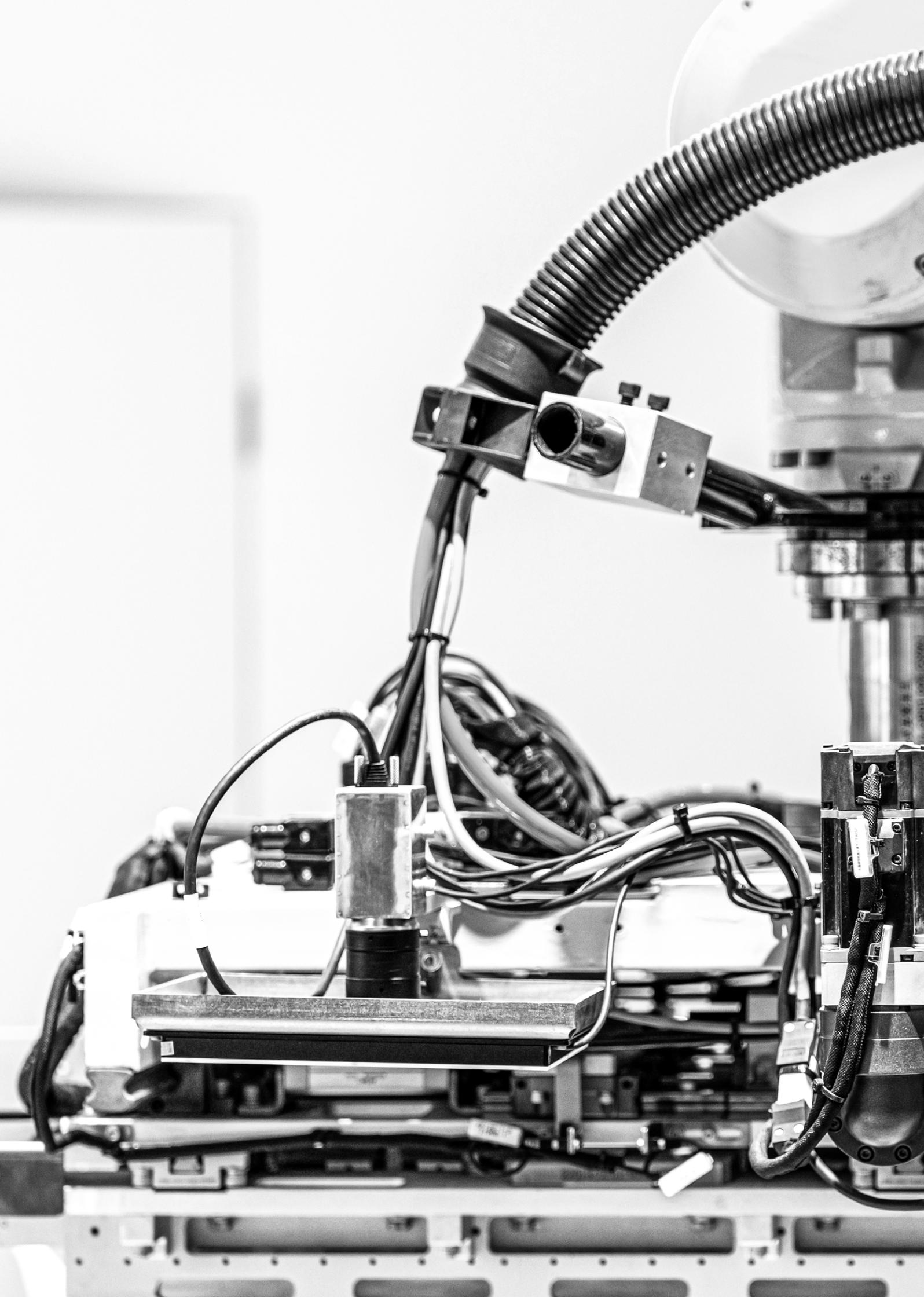
CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: Polyolefin
- Core identification: blue, orange, white-blue, white-orange
- Cores twisted into a star quad with optimal lay lengths
- Fleece wrapping
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green

TYPICAL VALUES

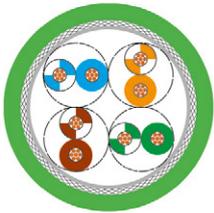
Frequency (MHz)	10	16	62.5	100	155
Attenuation (dB/100m)	9.1	11.3	22.8	29.5	41.0
NEXT (dB)	67.5	69.0	56.1	55.7	30.0
ACR (dB/100m)	58.4	57.7	33.3	26.2	11.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
82838	2 x 2 x AWG 26 / 19	0.15	0.5	1.0	4.8	17.0	30.0



HELUKAT® 100S CAT.5e 1000 V SF/UTP PUR CHAIN

flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-2-2, UL-Std. 758 (AWM) Style 21576

Temperature range	flexible -30°C to +60°C fixed installation -40°C to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	500 V
Conductor resistance at 20°C	max. 125.0 Ohm/km
Loop resistance at 20°C	max. 250.0 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 67%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 0.64 MJ/m
Minimum bending radius	flexible 15x Outer-Ø fixed installation 7x Outer-Ø

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- suitable for use in drag chains
- halogen-free
- flame-retardant

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

APPLICATION

HELUKAT® 100S CAT.5e 1000 V SF/UTP PUR CHAIN is designed for use in cable carriers and the recurring loads caused by moving machine components. Thanks to the PUR sheath, it also offers excellent resistance to common mineral oils, greases and cooling lubricants.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 1000 V

CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: Polyolefin
- Core identification: colour coded, pairs:
 - No. 1: white-blue / blue
 - No. 2: white-orange / orange
 - No. 3: white-green / green
 - No. 4: white-brown / brown
- Cores stranded in pairs with optimal lay lengths
- Fleece wrapping
- Pairs stranded in layers with optimal lay lengths

TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	155
Attenuation (dB/100m)	9.5	12.1	24.8	32.0	41.0
NEXT (dB)	50.3	47.2	38.4	35.3	30.0
ACR (dB/100m)	40.8	35.1	13.6	3.3	-11.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11007779	2 x 2 x AWG 26 / 19	0.15	0.5	1.0	6.6	31.0	56.0

HELUKAT® 100S CAT.5e 30 V 4P SF/UTP PUR CHAIN

flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-2-2, UL-Std. 758 (AWM) Style 20963

Temperature range	flexible -30°C to +60°C fixed installation -40°C to +80°C
Peak operating voltage	UL (AWM) to +80°C 125 V (not for high power current installation purposes)
Test voltage core/core	500 V
Conductor resistance at 20°C	max. 125.0 Ohm/km
Loop resistance at 20°C	max. 250.0 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 67%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 0.64 MJ/m
Minimum bending radius	flexible 15x Outer-Ø fixed installation 7x Outer-Ø

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- suitable for use in drag chains
- halogen-free
- flame-retardant

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

APPLICATION

HELUKAT® 100S CAT.5e 30 V 4P SF/UTP PUR CHAIN is designed for use in cable carriers and the recurring loads caused by moving machine components. Thanks to the PUR sheath, it also offers excellent resistance to common mineral oils, greases and cooling lubricants.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 30 V

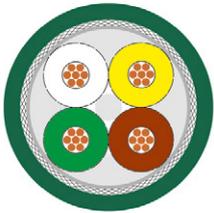
TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	155
Attenuation (dB/100m)	9.1	11.3	22.8	29.5	41.0
NEXT (dB)	67.5	69.0	56.1	55.7	30.0
ACR (dB/100m)	58.4	57.7	33.3	26.2	11.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Sheath colour	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
82839	4 x 2 x AWG 26 / 19	0.15	green	0.5	1.0	6.6	31.0	56.0
11021879	4 x 2 x AWG 26 / 19	0.15	yellow	0.5	1.0	6.6	31.0	56.0

HELUKAT® 200S CAT.5 4C SF/UTP PUR CHAIN

flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-3, DIN EN 50288-2-2

Temperature range	flexible -20°C to +70°C fixed installation -35°C to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	700 V
Conductor resistance at 20°C	max. 84.0 Ohm/km
Loop resistance at 20°C	max. 168.0 Ohm/km
Insulation resistance	min. 2.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 51 pF/m
Rel. Velocity of Propagation	approx. 67%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 0.94 MJ/m
Minimum bending radius	flexible 12x Outer-Ø fixed installation 6x Outer-Ø

- Length marking: in metres

PROPERTIES

- resistant to: oil
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- suitable for use in drag chains
- halogen-free
- flame-retardant

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

APPLICATION

HELUKAT® 200S CAT.5 4C SF/UTP PUR CHAIN is designed for use in cable carriers and the extreme loads caused by moving machine components and provides excellent transmission characteristics under the most difficult and extreme conditions. Thanks to the clever structure, it is also suitable mechanically for use even in cable carriers with a high packing density.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: Polyolefin
- Core identification: white, yellow, brown, green
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green

TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	6.0	8.0	16.0	22.0
NEXT (dB)	59.0	55.0	43.0	38.0
ACR (dB/100m)	53.0	47.0	27.0	16.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
800088	4 x 1 x AWG 24 / 19	0.24	0.64	1.3	6.2	30.0	54.0

HELUKAT® 200S CAT.5 4P SF/UTP PUR CHAIN

flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-3, DIN EN 50288-2-2

Temperature range	flexible -25°C to +70°C fixed installation -35°C to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	700 V
Conductor resistance at 20°C	max. 78.0 Ohm/km
Loop resistance at 20°C	max. 156.0 Ohm/km
Insulation resistance	min. 2.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 51 pF/m
Rel. Velocity of Propagation	approx. 67%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 2.08 MJ/m
Minimum bending radius	flexible 12x Outer-Ø fixed installation 6x Outer-Ø

- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: oil
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- suitable for use in drag chains
- halogen-free
- flame-retardant

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: PE
- Core identification: colour coded, pairs:
 - No. 1: white / brown
 - No. 2: green / yellow
 - No. 3: grey / pink
 - No. 4: blue / red
- Cores stranded in pairs with optimal lay lengths
- Foil wrapping
- Pairs stranded in layers with optimal lay lengths
- Inner sheath: TPE
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires

APPLICATION

HELUKAT® 200S CAT.5 4P SF/UTP PUR CHAIN is designed for use in cable carriers and the extreme loads caused by moving machine components and provides excellent transmission characteristics under the most difficult and extreme conditions. Thanks to the clever structure, it is also suitable mechanically for use even in cable carriers with a high packing density.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

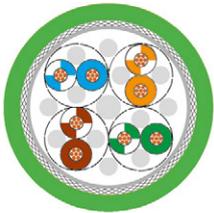
TYPICAL VALUES

	10	16	62.5	100
Frequency (MHz)				
Attenuation (dB/100m)	7.0	9.0	20.0	25.0
NEXT (dB)	57.0	54.0	45.0	43.0
ACR (dB/100m)	50.0	45.0	25.0	18.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
81155	4 x 2 x AWG 24 / 19	0.24	0.64	1.25	9.5	54.3	110.0

HELUKAT® 100T CAT.5 SF/UTP PUR TORSION

flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-2-2, UL-Std. 758 (AWM) Style 21161

Temperature range	flexible -30°C to +70°C fixed installation -40°C to +80°C
Peak operating voltage	UL (AWM) to +80°C 125 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Conductor resistance at 20°C	max. 140.0 Ohm/km
Loop resistance at 20°C	max. 280.0 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 67%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 1.23 MJ/m
Minimum bending radius	flexible 8x Outer-Ø fixed installation 4x Outer-Ø

- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- torsion rated
- halogen-free
- flame-retardant

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

APPLICATION

HELUKAT 100T CAT.5 SF/UTP PUR TORSION is designed for applications with torsion loads, e.g. in robots, and characterized by high reserve capacity and outstanding performance, even after exposure to extreme conditions. Thanks to the clever structure, it is also possible to achieve a long service life mechanically.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: PP
- Core identification: colour coded, pairs:
 - No. 1: white-blue / blue
 - No. 2: white-orange / orange
 - No. 3: white-green / green
 - No. 4: white-brown / brown
- Cores stranded in pairs with optimal lay lengths
- Pairs stranded in layers with optimal lay lengths
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires

TYPICAL VALUES

	10	16	62.5	100
Frequency (MHz)				
Attenuation (dB/100m)	9.5	12.1	17.1	32.0
NEXT (dB)	50.3	47.2	38.4	35.3
ACR (dB/100m)	40.8	35.1	21.3	3.3

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
800067	4 x 2 x AWG 26 / 19	0.15	0.48	1.04	7.5	29.5	74.0

HELUKAT® 100T CAT.5e S/UTP PUR TORSION

flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, UL-Std. 758 (AWM) Style 20549

Temperature range	flexible -30°C to +70°C fixed installation -40°C to +80°C UL (AWM) to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Conductor resistance at 20°C	max. 59.4 Ohm/km
Loop resistance at 20°C	max. 118.8 Ohm/km
Insulation resistance	min. 0.5 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 52 pF/m
Rel. Velocity of Propagation	approx. 74%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 5 Ohm
Caloric load	approx. 0.45 MJ/km
Minimum bending radius	flexible 8x Outer-Ø fixed installation 4x Outer-Ø

■ CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: Foam PE
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green

- Length marking: in metres

■ PROPERTIES

- resistant to: oil, hydrolysis, microbes, coolants, greases, UV radiation (SUN RES)
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- torsion rated
- halogen-free
- flame-retardant

■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, CSA FT2
- certifications and approvals: EAC

■ APPLICATION

HELUKAT 100T CAT.5e S/UTP PUR TORSION offers excellent transmission characteristics and is designed for applications with torsion loads. The cable listed here corresponds to the classification for continuous movement.

■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

■ TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	6.8	8.8	18.6	24.1
NEXT (dB)	76.1	66.6	60.8	54.0
ACR (dB/100m)	69.3	57.8	42.2	29.9

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
802186	2 x 2 x AWG 22 /19	0.38	0.75	1.5	6.5	32.0	54.0



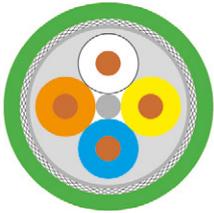
Profinet/EtherCAT

HELUKAT® PROFINet A CAT.5e SF/UTP PVC STATIC	60
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HELUKAT® PROFinet A CAT.5e SF/UTP PVC STATIC



PROFinet Type A, FastConnect (SK) capable, highly flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, PROFinet Guideline, UL-Std. 444 (CMG), CSA-Std. C22.2 No. 214 - CMG, UL-Std. 13 (PLTC), UL-Std. 758 (AWM) Style 21694

Temperature range	fixed installation -40°C to +80°C during installation -20°C to +60°C UL (CMG) to +75°C UL (AWM) to +60°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Conductor resistance at 20°C	max. 57.5 Ohm/km
Loop resistance at 20°C	max. 115.0 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 48 pF/m
Rel. Velocity of Propagation	approx. 62%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 0.91 MJ/m
Minimum bending radius	during installation 10x Outer-Ø fixed installation 5x Outer-Ø

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation, weathering effects, microbes
- highly flame-retardant

TESTS

- flame-retardant acc. to CSA FT4
- bundle fire test acc. to DIN VDE 0482-332-3 / DIN EN 60332-3 / IEC 60332-3
- CPR class: Eca
- certifications and approvals: EAC

APPLICATION

HELUKAT® PROFinet A CAT.5e SF/UTP PVC STATIC for fixed installation in industrial networks, rugged. It guarantees excellent transmission characteristics and may be used even under the harshest conditions. The cable listed here corresponds to PROFinet Type A and is designed for normal fixed installation in industrial environments.

CABLE STRUCTURE

- Copper conductor bare, AWG sizes
- Core insulation: PE
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- Inner sheath: PVC

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 600 V

TYPICAL VALUES

Parameter	10 MHz	16 MHz	62.5 MHz	100 MHz
Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	5.2	6.9	15.0	19.5
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	64.8	58.1	40.0	30.5

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
800653	2 x 2 x AWG 22 / 1	0.32	0.64	1.5	6.5	32.0	67.0

HELUKAT® PROFINet A CAT.5e SF/UTP PVC STATIC PLTC-ER

PROFINet Type A, FastConnect (SK) capable, highly flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, PROFINet Guideline, UL-Std. 444 (CMG), CSA-Std. C22.2 No. 214 - CMG, UL-Std. 13 (PLTC)

Temperature range	fixed installation -40°C to +80°C during installation -5°C to +70°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Test voltage core/screen	2000 V
Conductor resistance at 20°C	max. 55.0 Ohm/km
Loop resistance at 20°C	max. 110.0 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 62%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 0.91 MJ/m
Minimum bending radius	fixed installation 4x Outer-Ø

■ CABLE STRUCTURE

- Copper conductor bare, AWG sizes
- Core insulation: PP
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths

- Foil wrapping
- Inner sheath: thermoplastisches Spezial-Polymer
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

■ PROPERTIES

- resistant to: oil, UV radiation
- highly flame-retardant

■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- UV-resistant acc. to UL Std. 2556
- certifications and approvals: EAC

■ APPLICATION

HELUKAT® PROFINET A CAT.5e SF/UTP PVC STATIC PLTC-ER complies with the PROFINET Type A classification for cables intended for permanent installation in industrial environments.

■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

■ TYPICAL VALUES

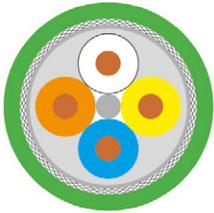
	4	10	16	62.5	100
Frequency (MHz)					
Attenuation (dB/100m)	4.1	6.5	8.3	17.0	22.0
NEXT (dB)	56.3	50.3	47.2	38.4	35.3
ACR (dB/100m)	52.4	43.8	38.9	21.4	13.3

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11018984	2 x 2 x AWG 22 /1	0.32	0.64	1.5	6.5	32.0	67.0

HELUKAT® PROFINet A CAT.5e SF/UTP PUR STATIC



PROFINet Type A, FastConnect (SK) capable, flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, PROFINet Guideline

Temperature range	fixed installation -40°C to +80°C during installation -20°C to +60°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Conductor resistance at 20°C	max. 62.5 Ohm/km
Loop resistance at 20°C	max. 115.0 Ohm/km
Insulation resistance	min. 0.5 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 62%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 0.91 MJ/m
Minimum bending radius	during installation 10x Outer-Ø fixed installation 5x Outer-Ø

- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- halogen-free
- flame-retardant

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

APPLICATION

HELUKAT PROFINet A CAT.5e SF/UTP PVC STATIC for fixed installation in industrial networks, rugged. It guarantees excellent transmission characteristics and may be used even under the harshest conditions. The cable listed here corresponds to PROFINet Type A and is designed for difficult fixed installation in harsh industrial environments and offers excellent oil resistance due to the PUR jacket.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

CABLE STRUCTURE

- Copper conductor bare, AWG sizes
- Core insulation: PE
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- Inner sheath: halogen-free, flame retardant compound (FRNC)
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR

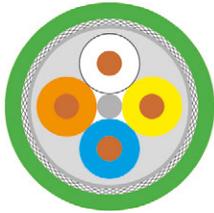
TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	5.2	6.9	15.0	19.5
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	64.8	58.1	40.0	30.5

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
801194	2 x 2 x AWG 22 / 1	0.32	0.64	1.5	6.5	32.0	64.0

HELUKAT® PROFINet A CAT.5e SF/UTP FRNC STATIC

PROFINet Type A, FastConnect (SK) capable, flame-retardant, low smoke



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, PROFINet Guideline, UL-Std. 444 (CM), CSA-Std. C22.2 No. 214 - CM, UL-Std. 13 (PLTC), UL-Std. 758 (AWM) Style 21279

Temperature range	fixed installation -25°C to +75°C during installation -25°C to +75°C UL (CM) to +75°C UL (AWM) to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Conductor resistance at 20°C	max. 57.5 Ohm/km
Loop resistance at 20°C	max. 115.0 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 48 pF/m
Rel. Velocity of Propagation	approx. 62%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 0.34 MJ/m
Minimum bending radius	during installation 10x Outer-Ø fixed installation 5x Outer-Ø

CABLE STRUCTURE

- Copper conductor bare, AWG sizes
- Core insulation: PE
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- Inner sheath: halogen-free, flame retardant compound (FRNC)

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: halogen-free, flame retardant compound (FRNC)
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: UV radiation
- halogen-free
- flame-retardant, low smoke development

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to CSA FT4
- bundle fire test acc. to DIN VDE 0482-332-3 / DIN EN 60332-3 / IEC 60332-3
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2

APPLICATION

HELUKAT® PROFINet A CAT.5e SF/UTP FRNC STATIC for fixed installation in industrial networks, rugged. It guarantees excellent transmission characteristics and may be used even under the harshest conditions. The cable listed here corresponds to PROFINet Type A in halogen free and flame retardant design.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 600 V

TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	5.2	6.9	15.0	19.5
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	64.8	58.1	40.0	30.5

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805653	2 x 2 x AWG 22 / 1	0.32	0.64	1.5	6.5	32.0	65.0

HELUKAT® PROFInet A CAT.5e SF/UTP PE STATIC ARMoured

PROFInet Type A, armoured, for outdoor use



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, PROFInet Guideline

Temperature range	fixed installation -40°C to +70°C during installation -20°C to +60°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Conductor resistance at 20°C	max. 57.5 Ohm/km
Loop resistance at 20°C	max. 115.0 Ohm/km
Insulation resistance	min. 0.5 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 62%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 2.14 MJ/m
Minimum bending radius	during installation 10x Outer-Ø fixed installation 5x Outer-Ø

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Inner sheath: PVC
- Steel tape, galvanised
- Outer sheath: PE
- Sheath colour: black
- Length marking: in metres

PROPERTIES

- resistant to: UV radiation, weathering effects, microbes, coolants, acids, alkalis
- for outdoor use

TESTS

- certifications and approvals: EAC

APPLICATION

HELUKAT® PROFInet A CAT.5e SF/UTP PE STATIC ARMoured for fixed installation in industrial networks. It guarantees excellent transmission characteristics and may be used even under the harshest conditions. The cables listed here correspond to PROFInet Type A and thanks to their special construction with PVC inner sheath/PE outer sheath ideal for areas with rodent problems.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

CABLE STRUCTURE

- Copper conductor bare, AWG sizes
- Core insulation: PE
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- Inner sheath: PVC

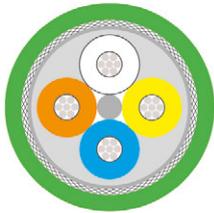
TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	5.2	6.9	15.0	19.5
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	64.8	58.1	40.0	30.5

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
801650	2 x 2 x AWG 22 / 1	0.32	0.64	1.5	9.3	31.0	124.0

HELUKAT® PROFINet B CAT.5e SF/UTP PVC FLEX

PROFINet Type B, FastConnect (SK) capable, highly flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, PROFINet Guideline, UL-Std. 444 (CMG), CSA-Std. C22.2 No. 214 - CMG, UL-Std. 13 (PLTC), UL-Std. 758 (AWM) Style 21694

Temperature range	flexible -20°C to +60°C fixed installation -40°C to +80°C UL (CMG) to +75°C UL (AWM) to +60°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Conductor resistance at 20°C	max. 57.5 Ohm/km
Loop resistance at 20°C	max. 115.0 Ohm/km
Insulation resistance	min. 0.5 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 48 pF/m
Rel. Velocity of Propagation	approx. 65%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 0.96 MJ/m
Minimum bending radius	flexible 10x Outer-Ø fixed installation 5x Outer-Ø

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation, weathering effects, microbes
- highly flame-retardant

TESTS

- flame-retardant acc. to CSA FT4
- bundle fire test acc. to DIN VDE 0482-332-3 / DIN EN 60332-3 / IEC 60332-3
- CPR class: Eca
- certifications and approvals: EAC

APPLICATION

HELUKAT® PROFINet B CAT.5e SF/UTP PVC FLEX for use on moving parts. The cables listed here correspond to the PROFINet classifications Type B for moving cables and are designed to withstand mechanical loads.

CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: PE
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- Inner sheath: PVC

NOTES

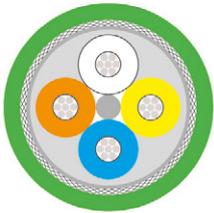
- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 600 V

TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	6.0	7.6	16.0	21.0
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	64.0	57.4	39.0	29.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
800654	2 x 2 x AWG 22 /7	0.35	0.75	1.5	6.5	32.0	67.0

HELUKAT® PROFInet B CAT.5e PLTC-ER SF/UTP PVC FLEX



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, PROFInet Guideline, UL-Std. 444 (CMG), CSA-Std. C22.2 No. 214 - CMG, UL-Std. 13 (PLTC-ER)

Temperature range	flexible -5°C to +70°C fixed -40°C to +80°C UL (CMG) to +75°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage	2000 V
Conductor resistance at 20°C	max. 57.5 Ohm/km
Loop resistance at 20°C	max. 115.0 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 67%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Minimum bending radius	flexible 8x Outer-Ø fixed 4x Outer-Ø

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation (SUN RES)
- flame-retardant

TESTS

- flame-retardant acc. to CSA FT4, DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- oil-resistant acc. to UL Oil Res I

APPLICATION

HELUKAT® PROFINET B CAT.5e PLTC-ER SF/UTP PVC FLEX for use in flexible applications. This cable conforms to the PROFINET Type B classification for flexible cable installations in industrial environments.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: PP
- Core identification: white, yellow, blue, orange
- 4 cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- Inner sheath: TPE

TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	6.3	8.0	16.5	21.3
NEXT (dB)	50.3	47.2	38.4	35.3
ACR (dB/100m)	44.0	39.2	21.9	14.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11018959	2 x 2 x AWG 22 / 7	0.35	1.5	6.5	32.0	68.0

HELUKAT® PROFINet B CAT.5e SF/UTP FRNC FLEX

PROFINet Type B, FastConnect (SK) capable, flame-retardant, low smoke



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, PROFINet Guideline, UL-Std. 444 (CM), CSA-Std. C22.2 No. 214 - CM, UL-Std. 13 (PLTC), UL-Std. 758 (AWM) Style 21279

Temperature range	flexible -25°C to +75°C fixed installation -40°C to +75°C UL (CM) to +75°C UL (AWM) to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Conductor resistance at 20°C	max. 60.0 Ohm/km
Loop resistance at 20°C	max. 120.0 Ohm/km
Insulation resistance	min. 0.5 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 52 pF/m
Rel. Velocity of Propagation	approx. 65%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 0.32 MJ/m
Minimum bending radius	flexible 10x Outer-Ø fixed installation 5x Outer-Ø

■ CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: PP
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- Inner sheath: halogen-free, flame retardant compound (FRNC)

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: halogen-free, flame retardant compound (FRNC)
- Sheath colour: green
- Length marking: in metres

■ PROPERTIES

- resistant to: UV radiation, microbes
- halogen-free
- flame-retardant, low smoke development

■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- bundle fire test acc. to DIN VDE 0482-332-3 / DIN EN 60332-3 / IEC 60332-3
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- CPR class: D_{ca}

■ APPLICATION

HELUKAT® PROFINet B CAT.5e SF/UTP FRNC FLEX for flexible use. The cable listed here correspond to the PROFINet classification Type B and can be used in areas with requirement of halogen-free.

■ NOTES

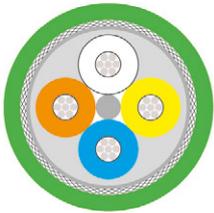
- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 600 V

■ TYPICAL VALUES

	10	16	62.5	100
Frequency (MHz)				
Attenuation (dB/100m)	6.0	7.6	16.0	21.0
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	64.0	57.4	39.0	29.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805654	2 x 2 x AWG 22 /7	0.35	0.75	1.5	6.5	32.0	65.0

HELUKAT® PROFInet B CAT.5e SF/UTP FRNC FLEX Cca



TECHNICAL DATA

Industrial Ethernet cable acc. to DIN EN 50288-2-1, UL-Std. 444 (CMG), UL-Std. 13 (PLTC), UL-Std. 758 (AWM) Style 22375, CSA-Std. C22.2 No. 210 - AWM I A/B

Temperature range	flexible 0°C to +50°C fixed -40°C to +70°C
Peak operating voltage	80 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Test voltage core/screen	2000 V
Conductor resistance at 20°C	max. 60.0 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 48 pF/m
Rel. Velocity of Propagation	approx. 69%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Minimum bending radius	flexible 15x Outer-Ø fixed 6x Outer-Ø

CABLE STRUCTURE

- Copper wire tinned
- Core insulation: PE
- 4 cores twisted into a star quad with optimal lay lengths
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: halogen-free, flame retardant compound (FRNC)
- Sheath colour: green (RAL 6018)

PROPERTIES

- resistant to: oil, UV radiation
- halogen-free

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to CSA FT2, UL FT4
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404, IRM 902 4h at +70°C
- CPR class: C_{ca} s1a d2 a1
- Sunlight Resistance (SUN RES) acc. to UL Std. 1581 Sec. 1200

APPLICATION

HELUKAT® PROFINET B meets the fire performance class of Cca acc. to the European Construction Products Regulation (CPR), and its halogen-free, reduced flame propagation, and low-smoke characteristics make it suitable for use in buildings with high safety requirements.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

TYPICAL VALUES

Frequency (MHz)	1	4	10	16	20	31.25	62.5	100
Attenuation (dB/100m)	2.1	4.0	6.3	8.0	9.0	11.4	16.5	21.3
NEXT (dB)	65.3	56.3	50.3	47.2	45.8	42.9	38.4	35.3
PS-NEXT (dB)	62.3	53.3	47.3	44.2	42.8	39.9	35.4	32.3
ELFEXT (dB/100m)	64.0	52.0	44.0	40.0	38.0	34.0	28.0	24.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11027770	2 x 2 x AWG 22 /7	0.35	0.75	1.5	6.5	33.4	71.0

HELUKAT® PROFINet B CAT.5e HYBRID SF/UTP FRNC FLEX



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, PROFINet Guideline, IEC 61158-2, UL Style 22482

Data conductor AWG 22:

Conductor resistance at 20°C max. 55,4 Ohm/km
Loop resistance at 20°C 110,8 Ohm/km

Mutual capacitance core/core a

at 800 Hz, approx. 50 pF/m
Characteristic impedance at 1 to 100 MHz, 100 Ohm ± 15 Ohm

Characteristic impedance

Power conductor at AWG 16:

Conductor resistance at 20°C max. 13,7 Ohm/km

Test voltage

2000 V

Insulation resistance

min. 0,5 GOhm x km

Caloric load

approx. 1,50 MJ/m

Minimum bending radius

flexible 10x Outer-Ø
fixed 5x Outer-Ø

- 2 pairs stranded with 4 powercores
- Polyester foil
- Outer sheath: FRNC
- Sheath colour: green (RAL 6018)
- Length marking: in metres

PROPERTIES

- halogen-free
- flame-retardant

TESTS

- flame-retardant acc. To DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2 / UL VW-1 / CSA FT-1
- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- FT2 Horizontal Flame Test acc. to UL 2556 Abs. 9.1, UL 1581 Abs. 1100

CABLE STRUCTURE

- Copper wire bare
- Conductor diameter data conductor: AWG (22/7)
- Conductor diameter power conductor: AWG (16/84)
- Core insulation data conductor: Foam-Skin-PE
- Core insulation power conductor: PO
- Core identification data conductor: white/blue, yellow/orange
- Core identification power conductor: black cores with digits 1-4
- Double core
- Polyester foil over stranded bundle
- data conductor 2 pairs:
 1. Screen: plastic-coated aluminium foil (St)
 2. Screen: braided screen of tinned copper wires

APPLICATION

HELUKAT®PROFINet Typ B Kategorie 5e hybrid für den flexiblen Einsatz. Die hier aufgeführte Leitung entspricht der PROFINet Type B mit integrierter Spannungsversorgung in einem Kabel in halogenfreier und flammwidriger Ausführung.

NOTES

- UL Voltage Rating: 600 V

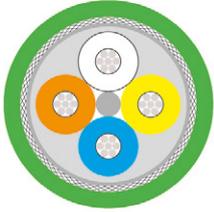
TYPICAL VALUES

Frequency (MHz)	4	10	16	20	31.25	62.5	100
Attenuation (dB/100m)	4.1	6.5	8.3	9.3	11.7	17.0	22.0
NEXT (dB)	56.3	50.3	47.2	45.8	42.9	38.4	35.3

Part no.	No. cores x AWG-No.	Outer Ø app. Mm	Cop. Factor per km	Weight app. kg / km
801651	2 x 2 x AWG 22/7 + 4x1,5mm ²	10,3	94	153

HELUKAT® PROFinet B CAT.5e SF/UTP FRNC SHIPLINE

PROFinet Type B, FastConnect (SK) capable, Marine and Offshore



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, PROFinet Guideline, UL-Std. 444 (CM), CSA-Std. C22.2 No. 214 - CM, UL-Std. 13 (PLTC)

Temperature range	flexible 0°C to +50°C fixed installation -25°C to +75°C UL (CM) to +75°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	1500 V
Conductor resistance at 20°C	max. 60.0 Ohm/km
Loop resistance at 20°C	max. 120.0 Ohm/km
Insulation resistance	min. 0.5 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 52 pF/m
Rel. Velocity of Propagation	approx. 66%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 0.45 MJ/m
Minimum bending radius	flexible 7.5x Outer-Ø fixed installation 3x Outer-Ø

- Outer sheath: halogen-free, flame retardant compound (FRNC)
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: UV radiation
- halogen-free
- flame-retardant, low smoke development
- Suitable for naval and offshore applications

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- bundle fire test acc. to DIN VDE 0482-332-3 / DIN EN 60332-3 / IEC 60332-3
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- certifications and approvals:
EAC
DNV

CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: PP
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires

APPLICATION

HELUKAT® PROFinet B CAT.5e SF/UTP FRNC SHIPFLEX designed specially for marine/offshore applications.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

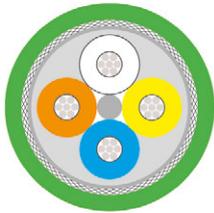
TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	6.0	7.6	16.0	21.0
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	64.0	57.4	39.0	29.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
802185	2 x 2 x AWG 22 / 7	0.35	0.75	1.5	6.5	32.0	64.0

HELUKAT® PROFINet B CAT.5e SF/UTP PVC FESTOON

PROFINet Type B, FastConnect (SK) capable, highly flame-retardant, for festoon suspension



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, PROFINet Guideline, UL-Std. 444 (CMG), CSA-Std. C22.2 No. 214 - CMG, UL-Std. 13 (PLTC), UL-Std. 758 (AWM) Style 21694

Temperature range	flexible -10°C to +80°C fixed installation -10°C to +80°C UL (CMG) to +75°C UL (AWM) to +60°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Conductor resistance at 20°C	max. 60.0 Ohm/km
Loop resistance at 20°C	max. 120.0 Ohm/km
Insulation resistance	min. 0.5 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 52 pF/m
Rel. Velocity of Propagation	approx. 67%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 1.20 MJ/m
Minimum bending radius	flexible 11x Outer-Ø fixed installation 5x Outer-Ø

- Foil wrapping
- Inner sheath: PVC
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation
- highly flame-retardant

TESTS

- flame-retardant acc. to CSA FT4
- bundle fire test acc. to DIN VDE 0482-332-3 / DIN EN 60332-3 / IEC 60332-3
- certifications and approvals: EAC

APPLICATION

HELUKAT® PROFINet Typ B Kategorie 5e FESTOON designed specially for FESTOON applications.

CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: PE
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths

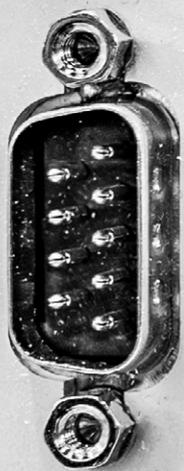
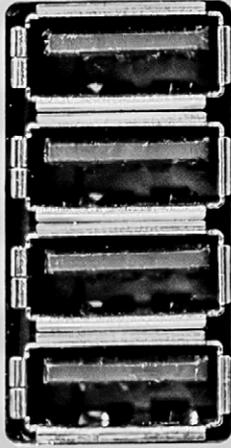
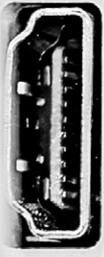
NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 600 V

TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	6.0	7.6	16.0	21.0
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	64.0	57.4	39.0	29.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
803295	2 x 2 x AWG 22 /7	0.35	0.75	1.55	6.5	32.0	68.0



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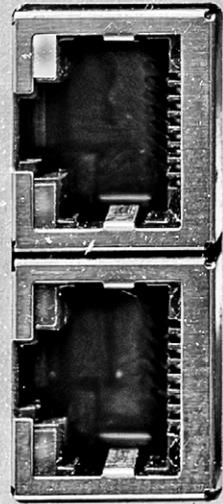
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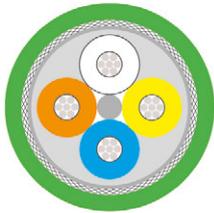
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HELUKAT® PROFINet C CAT.5e SF/UTP PVC CHAIN



PROFINet Type C, FastConnect (SK) capable, highly flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, PROFINet Guideline, UL-Std. 444 (CMG), CSA-Std. C22.2 No. 214 - CMG, UL-Std. 13 (PLTC), UL-Std. 758 (AWM) Style 21694

Temperature range	flexible -10°C to +70°C fixed installation -20°C to +70°C UL (CMG) to +75°C UL (AWM) to +60°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Conductor resistance at 20°C	max. 60.0 Ohm/km
Loop resistance at 20°C	max. 120.0 Ohm/km
Insulation resistance	min. 0.5 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 52 pF/m
Rel. Velocity of Propagation	approx. 66%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 0.85 MJ/m
Minimum bending radius	flexible 8x Outer-Ø fixed installation 6x Outer-Ø

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation, weathering effects, microbes
- abrasion-resistant, notch-resistant
- suitable for use in drag chains
- highly flame-retardant

TESTS

- flame-retardant acc. to CSA FT4
- bundle fire test acc. to DIN VDE 0482-332-3 / DIN EN 60332-3 / IEC 60332-3

APPLICATION

HELUKAT® PROFINet C CAT.5e SF/UTP PVC CHAIN for use on moving parts and in cable carriers. The cable listed here correspond to the PROFINet classifications Type C for moving cables and is designed to withstand mechanical loads. Thanks to the flame retardant jacket the PVC cable has UL CMG PLTC FT4 AWM 600V approval.

CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: PE
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- Inner sheath: PVC

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 600 V

TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	6.0	7.6	16.0	21.0
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	64.0	57.4	39.0	29.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
802914	2 x 2 x AWG 22 /7	0.35	0.75	1.55	6.5	32.0	68.0

HELUKAT® PROFinet C CAT.5e SF/UTP PUR CHAIN

PROFinet Type C, FastConnect (SK) capable, flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, PROFinet Guideline, UL-Std. 444 (CMX), CSA-Std. C22.2 No. 214 - CMX

Temperature range	flexible -30°C to +75°C fixed installation -40°C to +80°C
Peak operating voltage	UL (CMX) to +75°C 125 V (not for high power current installation purposes)
Test voltage core/core	2500 V
Conductor resistance at 20°C	max. 58.6 Ohm/km
Loop resistance at 20°C	max. 117.1 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 66%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 0.85 MJ/m
Minimum bending radius	flexible 12x Outer-Ø fixed installation 4x Outer-Ø

- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- suitable for use in drag chains
- halogen-free
- flame-retardant

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

APPLICATION

HELUKAT® PROFinet C CAT.5e SF/UTP PUR CHAIN for use on moving parts and in cable carriers. The cable listed here correspond to the PROFinet classifications Type C for moving cables and is designed to withstand mechanical loads. This PUR version has UL CMX listing and offers higher values in chain and chemical resistance.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only

CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: PE
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- Inner sheath: halogen-free, flame retardant compound (FRNC)
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR

TYPICAL VALUES

Parameter	10 MHz	16 MHz	62.5 MHz	100 MHz
Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	6.3	8.0	16.5	21.3
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	64.0	57.4	39.0	29.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
800655	2 x 2 x AWG 22 /7	0.35	0.75	1.5	6.5	32.0	61.0

HELUKAT® PROFINet R+ CAT.5e SF/UTP PUR ROBOTIC

PROFINet Type R, flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, UL-Std. 758 (AWM) Style 21209

Temperature range	flexible -30°C to +90°C fixed installation -40°C to +90°C
Peak operating voltage	UL (AWM) to +90°C 125 V (not for high power current installation purposes)
Test voltage core/core	2000 V
Conductor resistance at 20°C	max. 60.0 Ohm/km
Loop resistance at 20°C	max. 120.0 Ohm/km
Insulation resistance	min. 0.5 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 66%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 0.55 MJ/m
Minimum bending radius	flexible 10x Outer-Ø fixed installation 5x Outer-Ø

■ CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: Polyolefin
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires

- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

■ PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- torsion rated
- halogen-free
- flame-retardant

■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, CSA FT1

■ APPLICATION

HELUKAT® PROFINet R+ CAT.5e SF/UTP PUR ROBOTIC offers excellent transmission characteristics with double shielding and is designed for applications with torsion loads, e.g. in robots. The cable listed here corresponds to the classification for continuous movement.

■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 1000 V

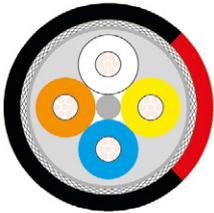
■ TYPICAL VALUES

Frequency (MHz)	1	10	16	20	62.5	100
Attenuation (dB/100m)	2.1	6.0	7.6	9.0	16.0	21.0
NEXT (dB)	80.0	70.0	65.0	63.0	55.0	50.0
ACR (dB/100m)	77.9	64.0	57.4	54.0	39.0	29.0

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11007800	2 x 2 x AWG 22 / 19	0.38	0.8	1.5	7.2	33.0	63.0

HELUKABEL® EtherCAT-P100S-L CAT.5e SF/UTP PUR CHAIN

flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, UL-Std. 758 (AWM) Style 21198

Temperature range	flexible -30°C to +70°C fixed -40°C to +80°C UL (AWM) to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage	1000 V
Conductor resistance at 20°C	max. 55.4 Ohm/km
Loop resistance at 20°C	max. 110.8 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 48 pF/m
Rel. Velocity of Propagation	approx. 66%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 0.97 MJ/m
Minimum bending radius	flexible 15x Outer-Ø fixed 5x Outer-Ø

- Sheath colour: black-red
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- suitable for use in drag chains
- halogen-free
- flame-retardant

TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404

APPLICATION

HELUKABEL® EtherCAT-P100S-L CAT.5e SF/UTP PUR CHAIN for use on moving parts and in cable carriers. The cable listed here correspond to the EtherCAT classifications for moving cables and is designed to withstand permanent mechanical loads. This PUR version has UL AWM Style and offers higher values in chain and chemical resistance.

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 300 V

CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: Polymer
- Core identification: white, yellow, blue, orange
- 4 cores twisted into a star quad with optimal lay lengths
- Inner sheath: TPE
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Fleece wrapping
- Outer sheath: PUR

TYPICAL VALUES

Frequency (MHz)	1	4	10	16	20	31.25	62.5	100
Attenuation (dB/100m)	2.8	4.9	7.8	9.9	11.1	14.1	20.4	26.4
NEXT (dB)	65.0	56.3	50.3	47.2	45.8	42.9	38.4	35.3
ACR (dB/100m)	62.2	51.4	42.5	37.3	34.7	28.8	18.0	8.9

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11007522	4 x 1 x AWG 22 / 7	0.35	0.75	1.55	6.5	32.0	77.0

HELUKABEL® EtherCAT-P100S-M CAT.5e SF/UTP PUR CHAIN

flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, UL-Std. 758 (AWM) Style 21198

Temperature range	flexible -30°C to +70°C fixed -40°C to +80°C UL (AWM) to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	1000 V
Conductor resistance at 20°C	max. 87.6 Ohm/km
Loop resistance at 20°C	max. 175.2 Ohm/km
Insulation resistance	min. 5.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 79%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 0.57 MJ/m
Minimum bending radius	flexible 15x Outer-Ø fixed 8x Outer-Ø

■ CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: Foam PE
- Core identification: white, yellow, blue, orange
- 4 cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires

- Fleece wrapping
- Outer sheath: PUR
- Length marking: in metres

■ PROPERTIES

- resistant to: oil, UV radiation
- suitable for use in drag chains
- halogen-free
- flame-retardant

■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1

■ APPLICATION

HELUKABEL® EtherCAT-P100S-M CAT.5e SF/UTP PUR CHAIN for use on moving parts and in cable carriers. The cable listed here correspond to the EtherCAT classifications for moving cables and is designed to withstand permanent mechanical loads. This PUR version has UL AWM Style and offers higher values in chain and chemical resistance.

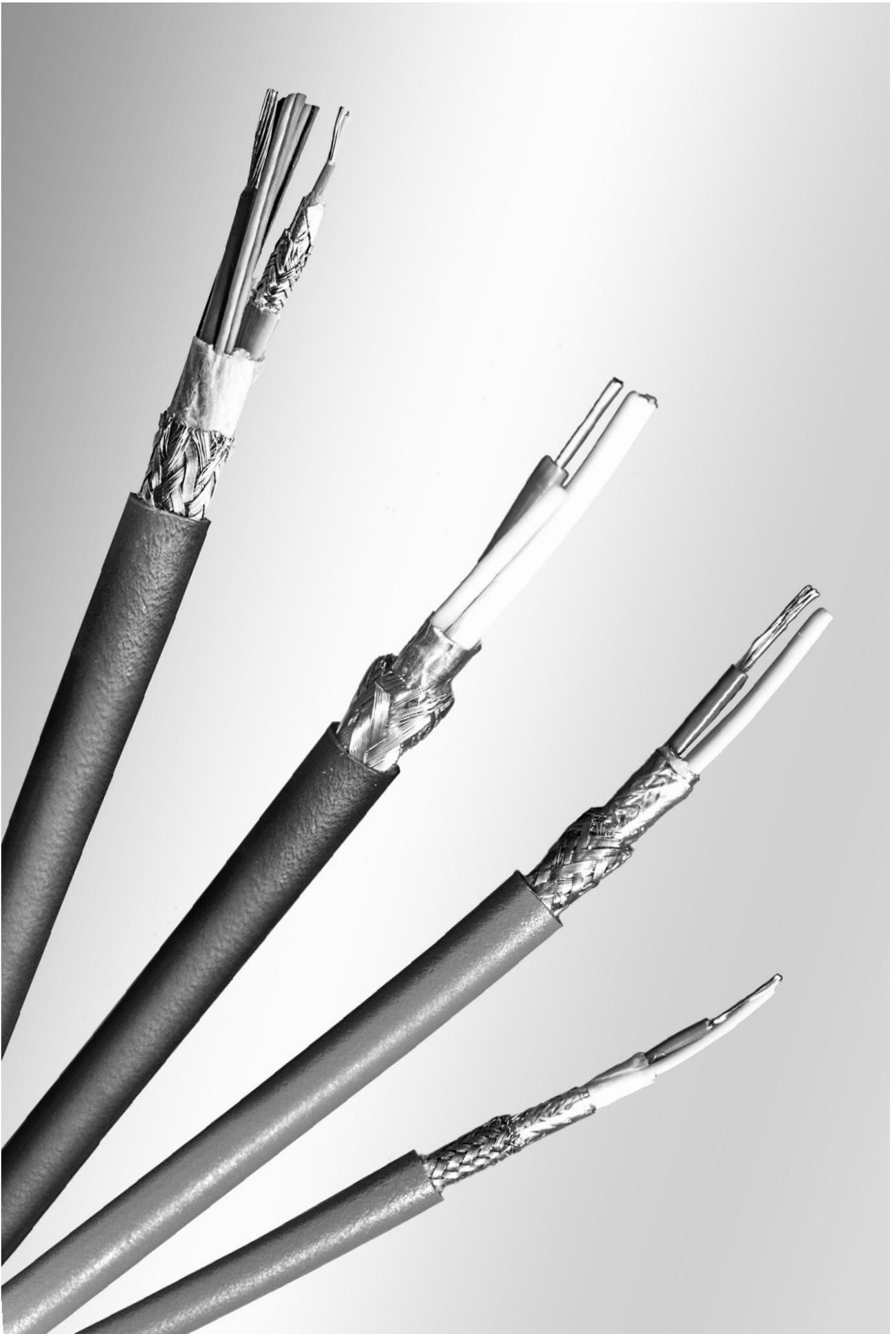
■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 300 V

■ TYPICAL VALUES

Frequency (MHz)	1	4	10	16	20	31.25	62.5	100
Attenuation (dB/100m)	3.0	6.0	9.5	12.1	13.5	17.1	24.8	32.0
NEXT (dB)	65.0	56.3	50.0	47.2	45.8	42.9	38.4	35.3
ACR (dB/100m)	62.0	50.3	40.5	35.1	32.3	25.8	13.6	3.3

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11007523	4 x 1 x AWG 24 /7	0.22	0.61	1.15	5.2	19.0	44.9

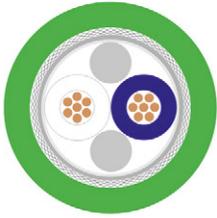


SPE Single Pair Ethernet

HELUKAT® SPE Type C 1000BASE-T1 THICK SF/UTP PUR CHAIN	80
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HELUKAT® SPE Type C 1000BASE-T1 THICK SF/UTP PUR CHAIN

Single Pair Ethernet Type C



TECHNICAL DATA	
Industrial Ethernet cable acc. to UL-Std. 758 (AWM) Style 21223	
Temperature range	flexible -30°C to +80°C fixed -40°C to +80°C UL (AWM) to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	3000 V
Conductor resistance at 20°C	max. 55.0 Ohm/km
Loop resistance at 20°C	max. 110.0 Ohm/km
Insulation resistance	min. 1.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 77%
Characteristic impedance	at 100 MHz, 100 Ohm ± 5 Ohm
Caloric load	approx. 0.86 MJ/m
Minimum bending radius	flexible 12x Outer-Ø fixed 5x Outer-Ø

■ CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: Foam PE
- Core identification: white, blue
- Fleece wrapping
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

■ PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- suitable for use in drag chains
- halogen-free
- flame-retardant

■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404

■ APPLICATION

The 1 Gbit Standard SPE 1000BASE-T1 is suitable for use in drag chains in machine and plant construction applications in Ethernet networks with transmission distances up to 40 metres. Single Pair Ethernet meets the requirements of many different industries and is able to simultaneously supply power to devices via Power over Data Line (PoDL).

■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 600 V

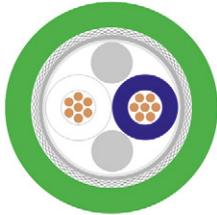
■ TYPICAL VALUES

Frequency (MHz)	1	4	10	16	20	31.25	62.5	100	155	200	250	300	400	600
Attenuation (dB/100m)	2.1	3.7	5.8	7.3	8.2	10.3	14.6	18.5	23.2	26.5	29.7	32.7	37.0	47.1

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11018068	1 x 2 x AWG 22 / 19	0.38	0.79	1.9	6.2	24.0	50.0

HELUKAT® SPE Type C 1000BASE-T1 THIN SF/UTP PUR CHAIN

Single Pair Ethernet Type C



TECHNICAL DATA

Industrial Ethernet cable acc. to UL-Std. 758 (AWM) Style 21223

Temperature range	flexible -30°C to +80°C fixed -40°C to +80°C UL (AWM) to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	3000 V
Conductor resistance at 20°C	max. 125.0 Ohm/km
Loop resistance at 20°C	max. 250.0 Ohm/km
Insulation resistance	min. 1.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 75%
Characteristic impedance	at 100 MHz, 100 Ohm ± 5 Ohm
Caloric load	approx. 0.50 MJ/m
Minimum bending radius	flexible 12x Outer-Ø fixed 5x Outer-Ø

■ CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: Foam PE
- Core identification: white, blue
- Fleece wrapping
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

■ PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- suitable for use in drag chains
- halogen-free
- flame-retardant

■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404

■ APPLICATION

The 1 Gbit Standard SPE 1000BASE-T1 is suitable for use in drag chains in machine and plant construction applications in Ethernet networks with transmission distances up to 40 metres. Single Pair Ethernet meets the requirements of many different industries and is able to simultaneously supply power to devices via Power over Data Line (PoDL).

■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 600 V

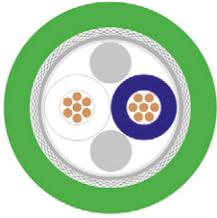
■ TYPICAL VALUES

Frequency (MHz)	1	4	10	16	20	31.25	62.5	100	155	200	250	300	400	600
Attenuation (dB/100m)	3.8	5.62	8.73	11.01	12.31	15.39	21.86	27.79	34.81	39.71	44.59	49.04	57.02	70.65

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11018067	1 x 2 x AWG 26 / 19	0.15	0.51	1.2	4.8	16.0	29.0

HELUKAT® SPE Type R 1000BASE-T1 SF/UTP PUR ROBOTIC

Single Pair Ethernet Type R



TECHNICAL DATA

Industrial Ethernet cable acc. to UL-Std. 758 (AWM) Style 21223, CSA bzw. cRU AWM I/II A/B

Temperature range	flexible -30°C to +80°C fixed -40°C to +80°C UL (AWM) to +80°C
Peak operating voltage	100 V (not for high power current installation purposes)
Test voltage core/core	3000 V
Test voltage core/screen	3000 V
Conductor resistance at 20°C	max. 125.0 Ohm/km
Loop resistance at 20°C	max. 250.0 Ohm/km
Insulation resistance	min. 1.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 69%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 600 MHz, 100 Ohm ± 20 Ohm
Caloric load	approx. 0.65 MJ/m
Minimum bending radius	flexible 12x Outer-Ø fixed 5x Outer-Ø

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires, approx. coverage 85%
- Fleece wrapping
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- torsion rated
- halogen-free
- flame-retardant

TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 600 V

CABLE STRUCTURE

- Copper wire bare
- Core insulation: Polyolefin
- Core identification: white, blue
- Fleece wrapping

TYPICAL VALUES

Frequency (MHz)	1	4	10	16	20	31.25	62.5	100	155	200	250	300	400	600
Attenuation (dB/100m)	3.08	5.62	8.73	11.01	12.31	15.39	21.86	27.79	34.81	39.71	44.59	49.04	57.02	70.65

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11019818	1 x 2 x AWG 26 / 19	0.14	0.51	1.2	5.5	14.0	30.0

HELUKAT® SPE Type B 1000BASE-T1 HYBRID SF/UTP PUR FLEX



TECHNICAL DATA	
Industrial Ethernet cable acc. to UL-Std. 758 (AWM) Style 20233	
Data conductor AWG 26:	
Conductor resistance at 20°C	max. 145.0 Ohm/km
Loop resistance at 20°C	max. 290.0 Ohm/km
Mutual capacitance core/core at 800 Hz, approx.	43 pF/m
Power conductor at AWG 16:	
Conductor resistance at 20°C	max. 15,6 Ohm/km
Temperature range	flexible -20°C to +90°C fixed -40°C to +90°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	1000 V
Insulation resistance	min. 5.0 GOhm x km
Rel. Velocity of Propagation	approx. 76%
Characteristic impedance	at 1 to 100 MHz, 100 Ohm ± 5 Ohm
Caloric load	approx. 0,50 MJ/m
Minimum bending radius	flexible 8x Leitungs Ø fixed installation 4x Leitungs Ø

■ CABLE STRUCTURE

- Data Section:
- Conductor: Copper wire bare AWG 26/7
- Core: Foam PP, approx. 1.15mm Ø
- Pair: white/blue + filler elements
- Shielding: Foil shield + tinned copper braid
- Wrapping: Fleece tape
- Inner sheath: Polyester, silver-grey similar to RAL 7001
- Diameter: 3.7 +/- 0.2 mm
- Power Cores:
- Conductor: Bare copper AWG 16/19

- Core: PP, approx. 1.84 mm Ø
- Colour code: red, red-white, black, black-white
- Hybrid:
- Stranding: Data section + power cores + filler elements (optional)
- Wrapping: Non-woven tape
- Shielding: Tinned copper braid
- Wrapping: Fleece tape
- Outer sheath: PUR, black similar to RAL 9005
- Diameter: 9.0 +/- 0.3 mm

■ PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- halogen-free
- flame-retardant

■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 603321-2 / IEC 60332-1-2

■ APPLICATION

HELUKAT SPE B 1000BASE-T1 HYBRID is intended for flexible applications or for permanent installation and is exceptionally oil resistant due to its PUR sheathing. This cable is intended for use with SPE hybrid plugs acc. to IEC 63171 Type II.

■ NOTES

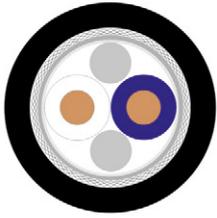
- UL Voltage Rating: 300 V

Part no.	No. cores x cross-sec. mm ²	Outer Ø app. Mm	Cop. Factor per km	Weight app. kg / km
11022604	1 x 2 x AWG 26/7 + 4 x AWG 16/19	9	86	138,4

HELUKAT® SPE Type A 10BASE-T1L PVC STATIC



Single Pair Ethernet Type A



HELUKAT® SPE 10Base-T1L AWG18/1 PVC UL AWM

TECHNICAL DATA

Industrial Ethernet cable acc. to UL-Std. 758 (AWM) Style 21179

Temperature range	fixed installation -40°C to +80°C during installation -30°C to +80°C
Peak operating voltage	125 V (not for high power current installation purposes)
Test voltage core/core	3000 V
Conductor resistance at 20°C	max. 22.0 Ohm/km
Loop resistance at 20°C	max. 44.0 Ohm/km
Insulation resistance	min. 1.0 GOhm x km
Mutual capacitance core/core	at 800 Hz, approx. 50 pF/m
Rel. Velocity of Propagation	approx. 80%
Characteristic impedance	at 20 MHz, 100 Ohm ± 15 Ohm
Caloric load	approx. 1.01 MJ/m
Minimum bending radius	flexible 15x Outer-Ø fixed installation 4x Outer-Ø

- Outer sheath: PVC
- Sheath colour: black
- Length marking: in metres

PROPERTIES

- resistant to: oil, UV radiation
- flame-retardant

TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404

APPLICATION

For fixed installations with transmission paths up to 1,000m; offers those in the process industry the opportunity to upgrade from the 31.25 kBit Profibus PA / Foundation Fieldbus to a data rate of 10 Mbit with the SPE 10BASE-T1L. With Single Pair Ethernet, the requirements of diverse industries are covered, and devices can simultaneously be supplied with voltage via Power over Data Line (PoDL).

NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm²) are approximated and are for reference only
- UL Voltage Rating: 600 V

CABLE STRUCTURE

- Copper conductor bare, AWG sizes
- Core insulation: Foam PE
- Core identification: white, blue
- Cores stranded to form a pair
- Foil wrapping
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires

TYPICAL VALUES

Frequency (MHz)	1	4	10	16	20
Attenuation (dB/100m)	0.73	2.32	3.41	4.21	4.67

Part no.	No. cores x AWG-No.	Cross-sec. mm ² , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11017748	1 x 2 x AWG 18 / 1	0.82	1.02	2.35	7.0	35.0	70.0



SK PROFINET

Stripping Tool



APPLICATION

For removing the sheathing and insulation of special PROFINET™ Type A, B, and C cables.

DETAILS

- Three-level removal of sheathing, screening, and filler material
- Fits blade cassettes on both sides
- Standard use for PROFINET™ cables with exterior diameters of 6.5 mm
- Suitable for variable uses via adjustable screw holder or by exchanging the blade cassette even with other cable types, such as coaxial cables

KIT CONTENTS

Stripping tool with a set of green blades and setting block. Additional setting blocks for other diameters can be ordered.

OPTIONS

Blade cassettes for other cable types or constructions

DESCRIPTION

Stripping tool SK PROFINET

PART NO.

801497

Subject to technical modifications.

NOTES

Technical modifications

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Length markings

The length marking, which cannot be calibrated, is an aid, e.g. for easy material allowance determination or for determination of the length remaining on the drum. Deviation of the wire length shown by the marking is up to 1%. Incomplete length markings or length markings missing from sections, deviations of the cable length shown by the length marking do not substantiate any legal obligation whatsoever. Only use calibrated measurement devices to determine wire length.

Safety notice

The cables and wires described in the catalogue are produced in accordance with national and international standards, as well as plant standards; application safety, as stipulated in the safety directives, standards, and statutory regulations, as amended, are provided. Following proper installation and usage guidelines, the possibility of product-specific dangers can be excluded. This catalogue describes general information for each product's use. Independent of the above, the applicable DIN VDE specifications apply. Installation and processing must only be executed by qualified electricians.

Our General Terms of delivery and payment, which can be viewed at www.helukabel.com, apply

Contact



Our product expert is available to answer your questions and provide customised solutions:

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**(Channeling
POWER)** 