HELUKABEL®

Data, Network & Bus Technology

CC-Link Certified Cables

HELUKAT® ®
CONNECTING SYSTEMS

BUS Cables
CC-Link BUS fixed installed

HELUKABEL®

PVC

Type
Cable structure

Fixed installation, indoor
3x0.5 mm²

Inner conductor diameter:	Copper, bare (AWG 20/7)
Core insulation:	Foam-skin-PE
Core colours:	wh, bu, ye
Stranding element:	Triple core
Separator:	Polyester foil over stranded bundle
Shielding 1:	Al-Foil
Total shielding:	Cu braid, tinned
Drain wire:	yes
Outer sheath material:	PVC
Cable external diameter:	app. 7,7 mm ± 0,3 mm
Outer sheath colour:	Red

Electrical data

Characteristic impedance:	110 Ohm ± 15 Ohm
Conductor resistance, max.:	37,8 Ohm/km
Insulation resistance, min.:	10 GOhm x km
Loop resistance:	75,6 Ohm/km max.
Mutual capacitance:	60 nF/km nom.
Test voltage:	2 kV
Attenuation:	1 MHz < 16,0 dB/100m
	5 MHz < 35,0 dB/100m

Technical data

Weight:	app. 77 kg/km
bending radius, repeated:	120 mm
Operating temperature range min.:	-40°C
Operating temperature range max.:	+75°C
Caloric load, approx. value:	1,10 MJ/m
Copper weight:	40,00 kg/km

Norms

Applicable standards:	CC-Link Specification 1.10
	Flame-retardant acc. IEC 60332-2-1
UL Style:	CM 75°C or PLTC
CSA standard:	CSA FT 4

Application

HELUKABEL® CC-Link Bus PVC for fixed installation. The primary market is Asia, but the USA and the United Kingdom are using CC-Link increasingly. The cable has the appropriate approvals for these markets. A version with power supply conductors is optionally available. It is used particularly in channels.
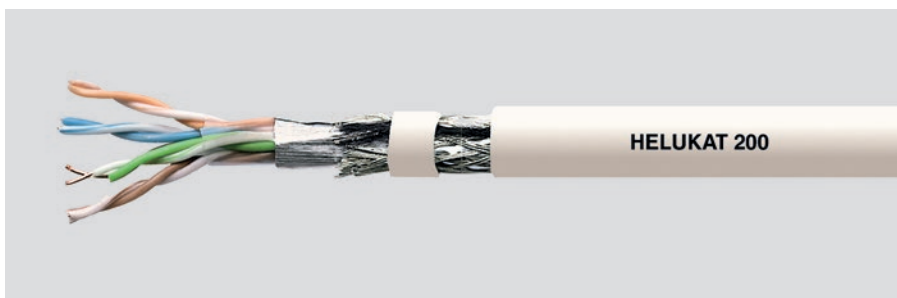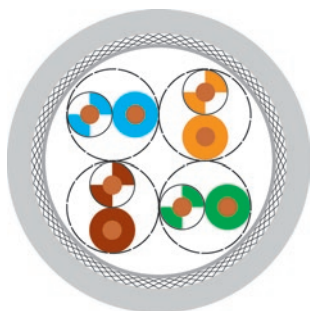
Part no.

800497, CC-Link communications cable

Dimensions and specifications may be changed without prior notice.

LAN Cable
Category 5e

HELUKAT® 200 Dca CPR

CC-Link IE Field   SF/UTP

Cable structure
SF/UTP 4x2xAWG 24/1 PVC

Inner conductor Ø:	0,51 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	whbu/bu, whog/og, whgn/gn, whbn/bn
Separator:	-
Screen over stranding element:	-
Screen 1 over stranding:	Al-Foil
Screen 2 over stranding:	Cu braid
Outer sheath material:	PVC
Outer diameter:	app. 6,0 mm
Outer sheath colour:	Grey similar to RAL 7035

Electrical data

Characteristic impedance:	100 Ohm ± 15 Ohm at 1 to 100 MHz
	100 Ohm ± 20 Ohm at 101 to 200 MHz
Loop resistance:	185 Ohm/km max.
Mutual capacitance:	48 nF/km nom.
Rel. propagation velocity:	74 %
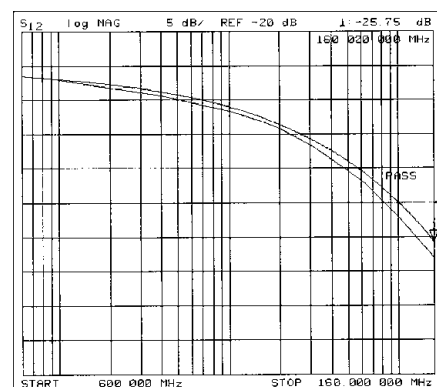
Typical values

| Frequency	(MHz)	10	16	62,5	100	200
Attenuation	(dB/100m)	5,6	7,2	14,4	18,2	25,9
Next	(db)	62,0	59,0	50,0	46,0	40,0
ACR	(db)	56,4	51,8	35,6	27,8	14,6

Technical data

Weight:	app. 50 kg/km
bending radius, repeated:	52 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,60 MJ/m / 0,48 MJ/m
Copper weight:	28,00 kg/km

Norms
81610:
Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5e
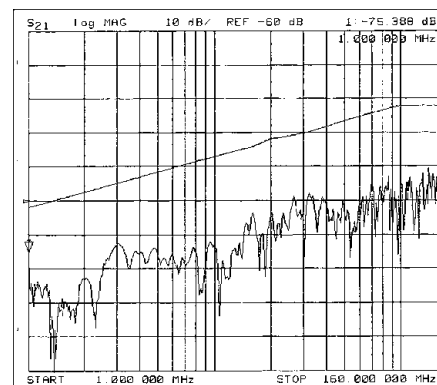
Application

HELUKAT®200 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.
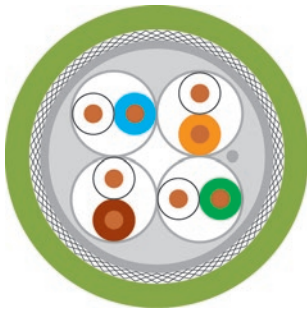
Part no.
81610, SF/UTP 4x2xAWG 24/1 PVC (S-FTP)

Dimensions and specifications may be changed without prior notice.

Industrial Ethernet

10GIG

HELUKAT® 500IND

CC-Link IE Field SF/FTP, Category 6ₐ

Type
Cable structure

Industrial Area
S/FTP 4x2xAWG 22/1

Inner conductor diameter:	Copper, bare (AWG 22/1)
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Stranding element:	Double core
Separator:	-
Inner sheath material:	FRNC
Shielding 1:	Al-Foil
Total shielding:	AL-Foil + braid
Drain wire:	yes
Outer sheath material:	PVC
Cable external diameter:	app. 9,6 mm ± 0,3 mm
Outer sheath colour:	Green similar to RAL 6018

Electrical data

Characteristic impedance:	100 Ohm ± 15 Ohm at 1 to 100 MHz
	100 Ohm ± 20 Ohm at 101 to 500 MHz
Conductor resistance, max.:	59 Ohm/km
Insulation resistance, min.:	0,5 GOhm x km
Loop resistance:	118 Ohm/km max.
Mutual capacitance:	72 nF/km nom.
Test voltage:	0,7 kV
Relative propagation velocity:	62 %

Typical values

Frequency	(MHz)	10	16	62,5	100	250	500
Attenuation	(db/100m)	5,9	7,5	15,0	19,1	31,1	45,3
Next	(dB)	60,3	57,2	48,4	45,3	39,3	34,8
PSNext	(dB)	57,3	54,2	45,4	42,3	36,3	31,8

Technical data

Weight:	app. 115 kg/km
bending radius, repeated:	80 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	1,63 MJ/m
Copper weight:	44,00 kg/km

Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 6ₐ, Flame-retardant acc. to IEC 60332-3, CMG FT4

Application

HELUKAT® 500IND was designed specially for extreme industrial applications for fixed installation. The copper data cable is especially well-suited for **Category 6ₐ 10 Gigabit/ 500MHz (IEC 61156-5)** Ethernet applications. It guarantees excellent transmission characteristics and may be used even under the harshest conditions.
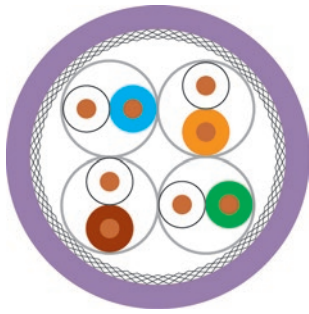
Part no.

803693, INDUSTRIAL ETHERNET KAT.6A 10GIG PVC

Dimensions and specifications may be changed without prior notice.

LAN Cable
Category 7e

HELUKAT® 600 | CPR Dca

CC-Link IE Field | S/FTP

Cable structure

S/FTP 4x2xAWG 23/1 FRNC

Inner conductor Ø:	0,57 mm
Conductor material:	Copper, bare
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Separator:	-
Screen over stranding element:	Al-Foil
Screen 1 over stranding:	Cu braid
Screen 2 over stranding:	-
Outer sheath material:	FRNC
Outer diameter:	app. 7,5 mm
Outer sheath colour:	Blue Lilac similar to RAL 4005

Electrical data

Characteristic impedance:	100 Ohm ± 15 Ohm at 1 to 100 MHz
	100 Ohm ± 20 Ohm at 101 to 1000 MHz
Loop resistance:	169 Ohm/km max.
Mutual capacitance:	43 nF/km nom.
Rel. propagation velocity:	79 %
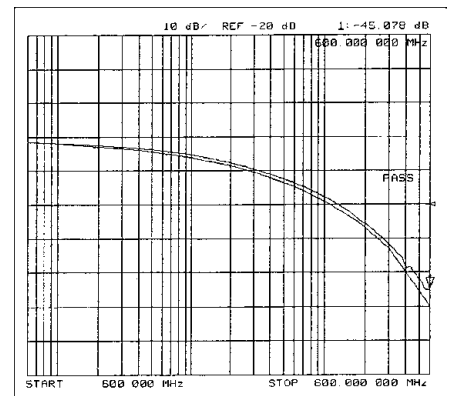
Typical values

Frequency	(MHz)	10	16	62,5	100	200	300	600	900	1000
Attenuation	(dB/100m)	5,6	7,1	13,9	17,5	25,2	32,1	44,9	55,0	58,0
Next	(db)	100,0	100,0	96,0	94,0	88,0	84,0	73,0	71,0	69,0
ACR	(db)	94,4	92,9	82,1	76,5	62,8	51,9	28,1	16,0	9,0

Technical data

Weight:	app. 60 kg/km
bending radius, repeated:	60 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+60°C
Caloric load, approx. value:	0,60 MJ/m
Copper weight:	28,00 kg/km

Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7e, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3
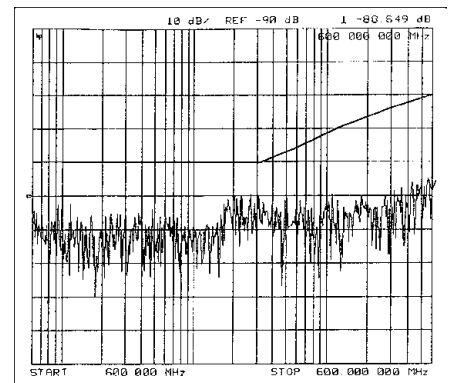
Application

HELUKAT®600 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.
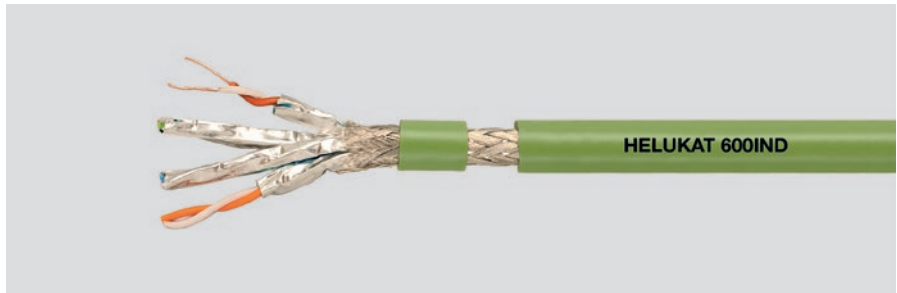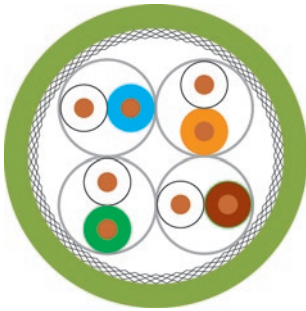
Part no.

80810, S/FTP 4x2xAWG 23/1 FRNC (S-STP)

Dimensions and specifications may be changed without prior notice.

Industrial Ethernet
ROBUST

HELUKAT® 600IND

CC-Link IE Field   S/FTP, Category 7e

HELUKAT 600IND

Type
Cable structure

Industrial Area
S/FTP 4x2xAWG 23/1 PUR

Inner conductor diameter:	Copper, bare (AWG 23/1)
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Stranding element:	Double core
Separator:	-
Shielding 1:	Al-Foil
Screen 1 over stranding:	Cu braid
Screen 2 over stranding:	-
Outer sheath material:	PUR
Cable external diameter:	app. 7,5 mm ± 0,3 mm
Outer sheath colour:	Green similar to RAL 6018

Electrical data

Characteristic impedance:	100 Ohm ± 15 Ohm at 1 to 100 MHz
	100 Ohm ± 20 Ohm at 101 to 1200 MHz
Loop resistance:	149 Ohm/km max.
Mutual capacitance:	43 nF/km nom.
Relative propagation velocity:	77 %

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)	89,4	88,0	75,2	69,4	53,7	43,0	27,8	13,9	5,2	-3,0

Technical data

Weight:	app. 68 kg/km
bending radius, repeated:	78 mm
Operating temperature range min.:	-40°C
Operating temperature range max.:	+80°C
Caloric load, approx. value:	0,74 MJ/m
Copper weight:	34,00 kg/km

Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7e, Flame-retardant acc. to IEC 60332-1-2, Halogen-free acc. to 60754-2, Oil-resistant, AWM Style 21238 600V 80°C

Application

HELUKAT® 600IND Category 7e Robust is used for harsh industrial environments. Mechanically, this product exhibits excellent resistance to mineral oils, greases and cooling lubricants and has good microbe and hydrolysis resistance. Electrically, this cable is characterized by high reserve capacity and outstanding performance. This allows you to create services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, Token Ring 4/16 Mbit/s or ISDN without difficulty. These 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. **Also in color blue under p/n 11008281 availiable.**

Part no.

801197, S/FTP 4x2xAWG 23/1 PUR (S-STP)

Dimensions and specifications may be changed without prior notice.

Industrial Ethernet

Drag Chain

HELUKAT® 600S

CC-Link IE Field   SF/FTP, Category 7

Cable structure

Drag Chain
SF/FTP 4x2xAWG 24/7
(stranded) PUR

Inner conductor diameter:	Copper, tinned (AWG 24/7)
Core insulation:	Foam-skin-PE
Core colours:	wh/bu, wh/og, wh/gn, wh/bn
Separator:	-
Shielding 1:	Al-Foil
Screen 1 over stranding:	Al-Foil
Screen 2 over stranding:	Cu braid
Outer sheath material:	PUR
Cable external diameter:	app. 8,7 mm ± 0,3 mm
Outer sheath colour:	Green similar to RAL 6018

Electrical data

Characteristic impedance:	100 Ohm ± 15 Ohm at 1 to 100 MHz
	100 Ohm ± 20 Ohm at 101 to 600 MHz
Loop resistance:	175,2 Ohm/km max.

Typical values

frequency	(MHz)	10	16	62,5	100	200	300	600
attenuation	(db/100m)	6,7	8,5	17,4	22,1	31,6	39,2	57,4
next	(db)	78	78	75,5	72,4	67,9	65,2	60,7
ACR	(db)	71,3	69,5	58,1	50,3	36,3	26	3,3

Technical data

Weight:	app. 95 kg/km
bending radius, repeated:	131 mm
Operating temperature range min.:	-30°C
Operating temperature range max.:	+70°C
Copper weight:	46,00 kg/km

Norms

Applicable standards:	Acc. to ISO/IEC 11801
	Acc. to EIA/TIA 568-A
	Category 7
	Halogen-free acc. to 60754-1
	Flame-retardant acc. to IEC 60332-1-2
UL Style:	CMX 75°C (shielded) or AWM 20940 600V

Application

HELUKAT® 600S Category 7 Trailing Cable 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.

Part no.

805614, SF/FTP 4x2xAWG 24/7 PUR

Dimensions and specifications may be changed without prior notice.

CC-Link Certified Cables

The HELUKABEL® GmbH provides you with all cable types for your CCLink network, approved by the CLPA organization. In addition to the classical red 3-cored CC-Link cable, there are now various approved versions for CC-Link IE available. Different application areas are:

CC-Link		
Type	Part no.	Application
HELUKABEL® CC-Link BUS	800497	fixed installed, random movement

CC-Link IE		
Type	Part no.	Application
HELUKAT® 200 4x2xAWG24/1 PVC	81610	fixed installed, Cat5e
HELUKAT® 500IND 4x2xAWG22/1 PVC	803693	fixed installed, Cat6$_A$
HELUKAT® 600 4x2xAWG23/1 FRNC	80810	halogen-free, fixed installed, Cat7e
HELUKAT® 600IND 4x2xAWG23/1 PUR	801197	fixed installed, Cat7e
HELUKAT® 600S 4x2xAWG 24/7 PUR	805614	dragchain, Cat7

CC-Link
CC-Link **IE**
CC-Link **IE** Field
CC-Link **IE** Field Motion

■ CONTACTS

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