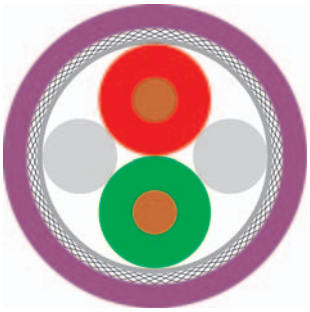
BUS Cables

Profibus L2

HELUKABEL

Indoor



Type Cable structure	Fixed installation, indoor 1x2x0.64 mm	Fixed installation, indoor 1x2x0.64 mm
Inner conductor diameter:	Copper, bare (AWG 22/1)	Copper, bare (AWG 22/1)
Core insulation:	Foam-skin-PE	Foam-skin-PE
Core colours:	rd, gn	rd, gn
Stranding element:	2 cores + 2 fillers stranded together	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PVC	PVC
Cable external diameter:	app. 7,8 mm ± 0,2 mm	app. 7,8 mm ± 0,2 mm
Outer sheath colour:	Grey similar to RAL 7001	Violet similar to RAL 4001
Electrical data		
Characteristic impedance:	150 Ohm ± 10 %	150 Ohm ± 10 %
Conductor resistance, max.:	55 Ohm/km	55 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	110 Ohm/km max.	110 Ohm/km max.
Mutual capacitance:	30 nF/km nom.	30 nF/km nom.
Test voltage:	1,5 kV	1,5 kV
Attenuation:	9,6 kHz < 2,5 dB/km 38,4 kHz < 4,0 dB/km 4 MHz < 22,0 dB/km 16 MHz < 42,0 dB/km	9,6 kHz < 2,5 dB/km 38,4 kHz < 4,0 dB/km 4 MHz < 22,0 dB/km 16 MHz < 42,0 dB/km
Technical data		
Weight:	app. 69 kg/km	app. 69 kg/km
bending radius, repeated:	120 mm	120 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	0,99 MJ/m	0,99 MJ/m
Copper weight:	24,00 kg/km	24,00 kg/km
Norms		
Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to IEC 60332-1	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to IEC 60332-1
UL Style:	CMX 75°C (shielded)	CMX 75°C (shielded)
CSA standard:	CSA FT1	CSA FT1

Application

HELUKABEL® Profibus L2 Indoor is designed for fixed indoor installation in Profibus industrial networks. Depending on the application, the colour grey (special colour) or violet (standard colour) is availiable. Otherwise, the technical characteristics of the two products are identical.

R

Part no.

80384, Profibus L2

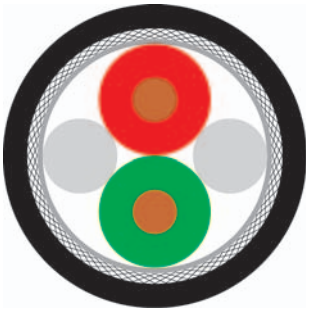
81448, Profibus L2

Dimensions and specifications may be changed without prior notice.

BUS Cables

PROFIBUS L2 Outdoor + Industry

HELUKABEL
Outdoor + Industry



Type	Fixed installation, outdoor	Industrial Area
Cable structure	**1x2x0.64 mm**	**1x2x0.64 mm**
Inner conductor diameter:	Copper, bare (AWG 22/1)	Copper, bare (AWG 22/1)
Core insulation:	Foam-skin-PE	Foam-skin-PE
Core colours:	rd, gn	rd, gn
Stranding element:	2 cores + 2 fillers stranded together	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PE	PUR
Cable external diameter:	app. 8,0 mm ± 0,4 mm	app. 8,0 mm ± 0,4 mm
Outer sheath colour:	Black similar to RAL 9005	Petrol similar to RAL 5018
Electrical data		
Characteristic impedance:	150 Ohm ± 10 %	150 Ohm ± 10 %
Conductor resistance, max.:	55 Ohm/km	55 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	110 Ohm/km max.	110 Ohm/km max.
Mutual capacitance:	30 nF/km nom.	30 nF/km nom.
Test voltage:	1,5 kV	1,5 kV
Attenuation:	9,6 kHz < 2,5 dB/km 38,4 kHz < 4,0 dB/km 4 MHz < 22,0 dB/km 16 MHz < 42,0 dB/km	9,6 kHz < 2,5 dB/km 38,4 kHz < 4,0 dB/km 4 MHz < 22,0 dB/km 16 MHz < 42,0 dB/km
Technical data		
Weight:	app. 64 kg/km	app. 67 kg/km
bending radius, repeated:	120 mm	120 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	2,26 MJ/m	1,52 MJ/m
Copper weight:	24,00 kg/km	24,00 kg/km
Norms		
Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Halogen-free acc. to 60754-2	Profibus acc. to DIN 19245 T3 and EN50170 Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1

Application

HELUKABEL® Profibus L2 Outdoor + Industry are special cables for use in Profibus industrial networks. The Outdoor version is designed for use in open-air environments, i.e. can withstand wind, weather and sun (not for burial direcly in the ground). The Industry version is used in fixed installation applications in harsh industrial environment. Mechanically, this product exhibits excellent resistance to mineral oils, greases and cooling lubricants and has good microbe and hydrolysis resistance.

Part no.

80792, Profibus L2

81186, Profibus L2

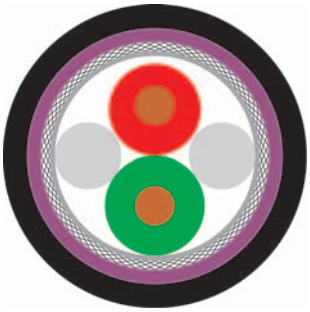
Dimensions and specifications may be changed without prior notice.

BUS Cables

Profibus L2 direct Burial

HELUKABEL

without + with Armouring



Type	Direct burial	Direct burial
Cable structure	**1x2x0.64 mm**	**1x2x0.64 mm**
Inner conductor diameter:	Copper, bare (AWG 22/1)	Copper, bare (AWG 22/1)
Core insulation:	Foam-skin-PE	Cell PE
Core colours:	rd, gn	rd, gn
Stranding element:	2 cores + 2 fillers stranded together	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle	-
Inner sheath material:	PVC	PVC
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Armouring:	-	Steel band
Outer sheath material:	PE	PE
Cable external diameter:	app. 10,0 mm ± 0,2 mm	app. 10,6 mm ± 0,5 mm
Outer sheath colour:	Black similar to RAL 9005	Black similar to RAL 9005
Electrical data		
Characteristic impedance:	150 Ohm ± 10 %	150 Ohm ± 10 %
Conductor resistance, max.:	55 Ohm/km	55 Ohm/km
Insulation resistance, min.:	1 GOhm x km	5 GOhm x km
Loop resistance:	110 Ohm/km max.	110 Ohm/km max.
Mutual capacitance:	30 nF/km nom.	30 nF/km nom.
Nominal voltage:	-	250 V
Test voltage:	1,5 kV	1,5 kV
Attenuation:	9,6 kHz < 2,5 dB/km	9,6 kHz < 2,5 dB/km
	38,4 kHz < 4,0 dB/km	38,4 kHz < 4,0 dB/km
	3 MHz < 22,0 dB/km	4 MHz < 22,0 dB/km
	20 MHz < 42,0 dB/km	16 MHz < 42,0 dB/km
Technical data		
Weight:	app. 92 kg/km	app. 132 kg/km
bending radius, repeated:	150 mm	165 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+80°C	+80°C
Caloric load, approx. value:	2,657 MJ/m	2,40 MJ/m
Copper weight:	24,00 kg/km	24,00 kg/km
Norms		
Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170	Profibus acc. to DIN 19245 T3 and EN50170

Application

HELUKABEL® Profibus L2 Direct Burial cables without + with armouring are special cables in the Profibus industrial networks. The version without armouring is for normal an direct cable burial in the ground. The version with steel tape armouring offers additional protection against rodents and is the right choice for regions with such animals.

R

Part no.

82824, Profibus ERD

802177, Profibus L2

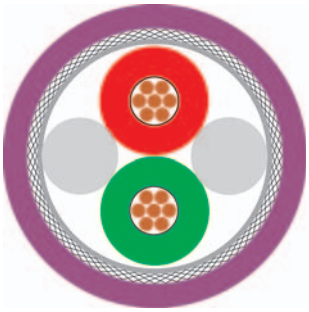
Dimensions and specifications may be changed without prior notice.

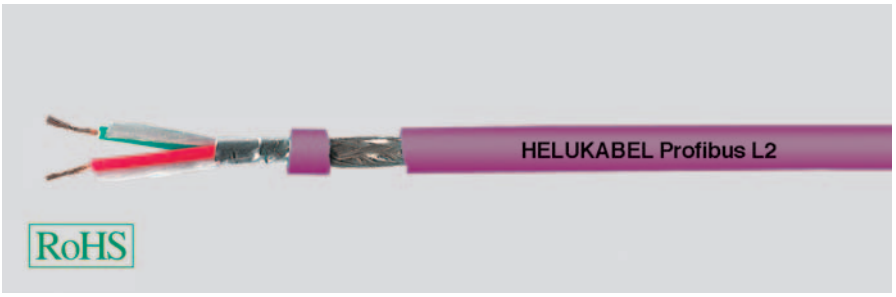
BUS Cables

Profibus L2

HELUKABEL

7-wire





Type
Cable structure

Mobile use
1x2x0.64 mm (stranded)

Inner conductor diameter:	Copper, bare (AWG 24/7)
Core insulation:	Foam-skin-PE
Core colours:	rd, gn
Stranding element:	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned
Outer sheath material:	PVC
Cable external diameter:	app. 7,8 mm ± 0,3 mm
Outer sheath colour:	Violet similar to RAL 4001

Electrical data

Characteristic impedance:	150 Ohm ± 10 %
Conductor resistance, max.:	86,7 Ohm/km
Insulation resistance, min.:	1 GOhm x km
Loop resistance:	173 Ohm/km max.
Mutual capacitance:	30 nF/km nom.
Test voltage:	1,5 kV
Attenuation:	9,6 kHz < 3,0 dB/km
	38,4 kHz < 5,0 dB/km
	4 MHz < 26,0 dB/km
	16 MHz < 55,0 dB/km

Technical data

Weight:	app. 75 kg/km
bending radius, repeated:	80 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+80°C
Caloric load, approx. value:	1,20 MJ/m
Copper weight:	24,00 kg/km

Norms

Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170
	Flame-retardant acc. to EN 50265-2-1
UL Style:	UL Style 2571

Application

HELUKABEL® Profibus L2 7-wire for mobile applications in Profibus industrial networks. With its core design and the special PVC sheath, the type described here is suitable for normal mobile applications.

Part no.

800648, Profibus L2

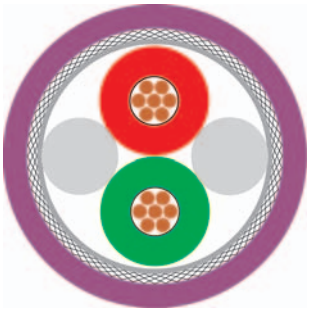
Dimensions and specifications may be changed without prior notice.

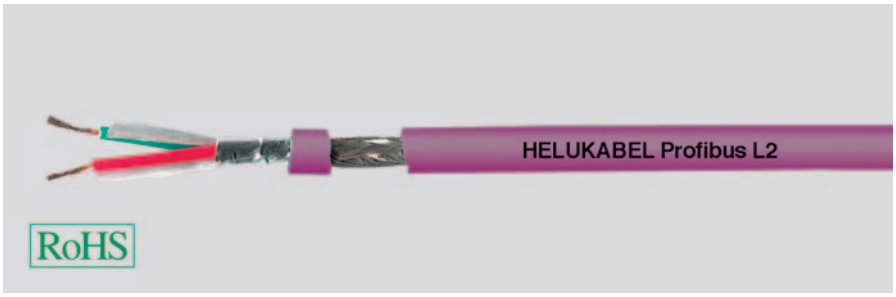
BUS Cables

Profibus L2

HELUKABEL

Drag Chain





Type Cable structure	Drag chain applications 1x2x0.64 mm (stranded)	Drag chain applications 1x2x0.64 mm (stranded)
Inner conductor diameter:	Copper, bare (AWG 24/19)	Copper, bare (AWG 24/19)
Core insulation:	Foam-skin-PE	Foam-skin-PE
Core colours:	rd, gn	rd, gn
Stranding element:	2 cores + 2 fillers stranded together	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PUR	PUR
Cable external diameter:	app. 8,0 mm ± 0,4 mm	app. 8,0 mm ± 0,4 mm
Outer sheath colour:	Violet similar to RAL 4001	Petrol similar to RAL 5018
Electrical data		
Characteristic impedance:	150 Ohm ± 10 %	150 Ohm ± 10 %
Conductor resistance, max.:	80 Ohm/km	80 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	160 Ohm/km max.	160 Ohm/km max.
Mutual capacitance:	30 nF/km nom.	30 nF/km nom.
Test voltage:	1,5 kV	1,5 kV
Attenuation:	9,6 kHz < 3,0 dB/km 38,4 kHz < 5,0 dB/km 4 MHz < 25,0 dB/km 16 MHz < 52,0 dB/km	9,6 kHz < 3,0 dB/km 38,4 kHz < 5,0 dB/km 4 MHz < 25,0 dB/km 16 MHz < 52,0 dB/km
Technical data		
Weight:	app. 65 kg/km	app. 65 kg/km
bending radius, repeated:	63 mm	63 mm
Operating temperature range min.:	-30°C	-30°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	1,52 MJ/m	1,52 MJ/m
Copper weight:	25,00 kg/km	25,00 kg/km
Norms		
Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1	Profibus acc. to DIN 19245 T3 and EN50170 Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1

Application

This system cable is used to interconnect L2-BUS components. This cable is an economical solution for the cell and field area. For the information exchange between different automation systems as well as for communication with the connected decentralized field units, serial field bus systems are used. The above mentioned types are suitable for drag chains (stranded).

R

Part no.

80267, Profibus L2

81003, Profibus L2

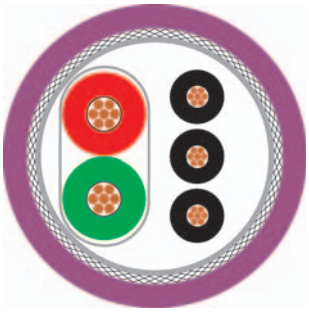
Dimensions and specifications may be changed without prior notice.

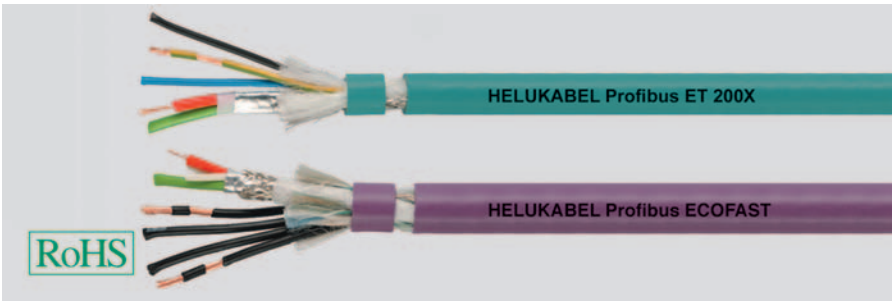
BUS Cables

Profibus

HELUKABEL

ET200X + ECOFAST





Type Cable structure	Drag chain applications 1x2x0.65 mm + 3x1x0.75 mm² (stranded)	Drag chain applications 1x2x0.65 mm + 4x1x1.5 mm² (stranded)
Inner conductor diameter 1:	Copper, bare (AWG 22/19)	Copper, bare (AWG 24/19)
Inner conductor diameter 2:	Copper, bare (AWG 18/24)	Copper, bare (AWG 18/84)
Core insulation 1:	Foam-skin-PE	Foam-skin-PE
Core insulation 2:	PVC	TPM
Core colours 1:	rd, gn	rd, gn
Core colours 2:	bk, bu, gnye	bk, bk, bk, bk
Stranding element 1:	Double core	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	Foil + braid	Foil + braid
Total shielding:	Polyester foil	-
Outer sheath material:	PUR	TPU
Cable external diameter:	app. 9,7 mm ± 0,5 mm	app. 11,5 mm ± 0,3 mm
Outer sheath colour:	Petrol similar to RAL 5018	Violet similar to RAL 4001

Electrical data

Characteristic impedance:	150 Ohm ± 10 %	150 Ohm ± 15 %
Conductor resistance, max.:	73 Ohm/km	73 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	145 Ohm/km max.	145 Ohm/km max.
Mutual capacitance:	30 nF/km nom.	30 nF/km nom.
Test voltage:	1,5 kV	1,5 kV
Relative propagation velocity:	-	81 %
Attenuation:	9,6 kHz < 3,0 dB/Km 38,4 kHz < 5,0 dB/Km 4 MHz < 25,0 dB/Km 16 MHz < 52,0 dB/Km	9,6 kHz ≤ 3,0 dB/km 38,4 kHz ≤ 5,0 dB/km 4 MHz ≤ 30,0 dB/km 16 MHz ≤ 60,0 dB/km

Technical data

Weight:	app. 105 kg/km	app. 159 kg/km
bending radius, repeated:	140 mm	165 mm
Operating temperature range min.:	-5°C	-15°C
Operating temperature range max.:	+60°C	+60°C
Caloric load, approx. value:	1,973 MJ/m	2,835 MJ/m
Copper weight:	46,00 kg/km	90,00 kg/km

Norms

Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Halogen-free acc. to 60754-2	Profibus acc. to DIN 19245 T3 and EN50170 Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1
UL Style:	AWM Style 20236 AWM I/II A/B 80°C 30V FT1	UL Style 20233

Application

HELUKABEL® Profibus ET200X + Ecofast Hybrid cables are designed for continuous motion in cable carriers. The hybrid construction integrates the power supply next to the Profibus in one cable. The type ET200X offers three 0,75mm² power conductors, while the type Ecofast 4 has 1,5mm² power conductors and greater current-carrying capacity.

Part no.

82913, Profibus L2

800044, Profibus L2

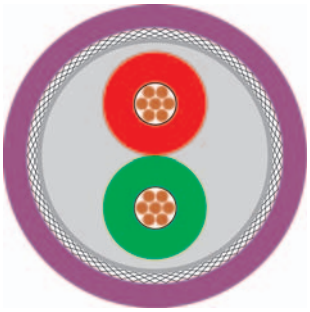
Dimensions and specifications may be changed without prior notice.

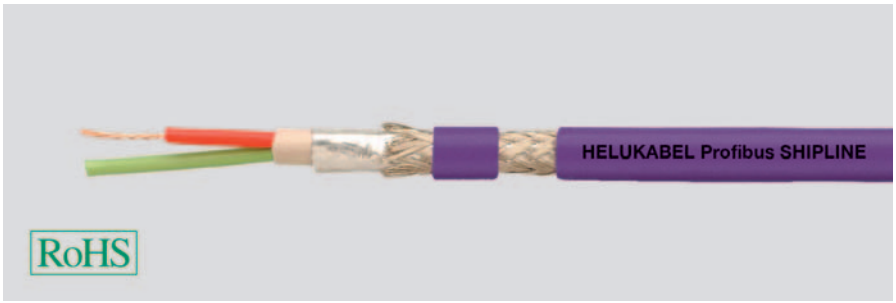
BUS Cables

Profibus

HELUKABEL

SHIPLINE and High Temperature





Type	Marine and Offshore	High temperature areas
Cable structure	**1x2x0.75 mm (stranded)**	**1x2x0.64 mm**
Inner conductor diameter:	Copper, bare (AWG 22/7)	Copper, bare (AWG 22/1)
Core insulation:	Foam-skin-PE	FEP
Core colours:	rd, gn	rd, gn
Stranding element:	Double core	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle	-
Inner sheath material:	FRNC	-
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	X-FRNC	FEP
Cable external diameter:	app. 8,0 mm ± 0,4 mm	app. 7,2 mm ± 0,3 mm
Outer sheath colour:	Violet similar to RAL 4001	Violet similar to RAL 4001
Electrical data		
Characteristic impedance:	150 Ohm ± 10 %	150 Ohm ± 10 %
Conductor resistance, max.:	55 Ohm/km	55 Ohm/km
Insulation resistance, min.:	1,6 GOhm x km	1,6 GOhm x km
Loop resistance:	110 Ohm/km max.	110 Ohm/km max.
Mutual capacitance:	29 nF/km nom.	28 nF/km nom.
Nominal voltage:	60 V	250 V
Test voltage:	1 kV	3,6 kV
Attenuation:	9,6 kHz < 2,5 dB/Km	9,6 kHz < 2,5 dB/km
	38,4 kHz < 4,0 dB/Km	38,4 kHz < 4,0 dB/km
	4 MHz < 22,0 dB/Km	4 MHz < 22,0 dB/km
	16 MHz < 42,0 dB/Km	16 MHz < 42,0 dB/km
Technical data		
Weight:	app. 84 kg/km	app. 64 kg/km
bending radius, repeated:	80 mm	52 mm
Operating temperature range min.:	-25°C	-50°C
Operating temperature range max.:	+80°C	+180°C
Caloric load, approx. value:	1,26 MJ/m	0,30 MJ/m
Copper weight:	35,00 kg/km	24,00 kg/km
Norms		
Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to IEC 60332-3

R

Application

HELUKABEL® Profibus Shipline is designed for marine/offshore applications and **certified by German Lloyd**. Thanks to use of stranded conductors, this cable can be moved occasionally. The High-Temperature version is used in fixed installations with demanding temperature requirements, e.g. in the vicinity of a hot furnace or near welding activities.

Part no.

802178, Profibus SHIPLINE

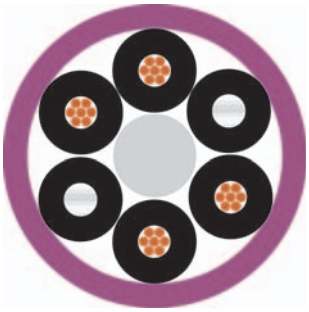
802179, Profibus high temperature

Dimensions and specifications may be changed without prior notice.

BUS Cables

DESINA®-HYBRID-BUS

HELUKABEL hybrid



Type
Cable structure

Hybrid Bus Cable
4x1.5 mm² + 2xPOF

Conductor material	Copper, bare, KL.6 = extra fine wire
Core insulation:	TPM
Polymer optical fibre:	4x POF 980/1000
Core colours:	Black
Core identification:	Numbers
Total shielding:	PETP fleece
Outer sheath material:	TPU
Cable external diameter:	app. 8,8 mm ± 0,3 mm
Outer sheath colour:	Violet similar to RAL 4001

Electrical data

Conductor resistance, max.:	13,7 Ohm/km
Insulation resistance, min.:	0,5 GOhm x km
Test voltage:	3 kV

Optical characteristic

Fibre attenuation:	230 dB/km max. at 650 nm

Technical data

Weight:	app. 120 kg/km
bending radius, repeated:	130 mm
Operating temperature range min.:	-20°C
Operating temperature range max.:	+80°C
Copper weight:	60,00 kg/km

Norms

Applicable standards:	Detail specification for DESINA®

Application

HELUKABEL® DESINA®-Hybrid-Bus is used for mobile applications in machinery. Use of a PU sheath provides excellent resistance to common mineral oils, greases and cooling lubricants in industrial automation.

Part no.

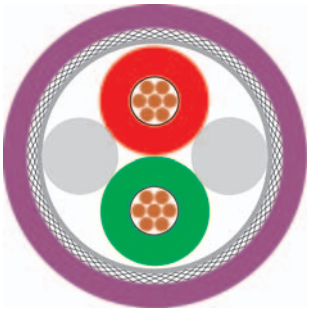
81713, DESINA® HYBRID BUS

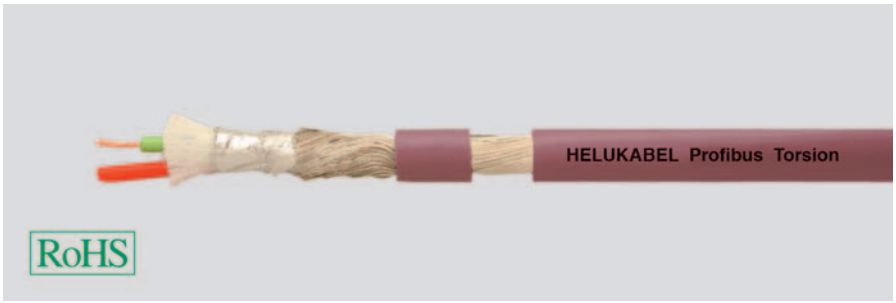
Dimensions and specifications may be changed without prior notice.

BUS Cables

Profibus L2

HELUKABEL
TORSION + FESTOON





Type Cable structure	Torsional applications 1x2x0.80 mm (stranded)	Mobile use 1x2x0.65 mm (stranded)
Inner conductor diameter:	Copper, bare (AWG 22/19)	Copper, bare (AWG 24/19)
Core insulation:	Foam-skin-PE	Cell PE
Core colours:	rd, gn	rd, gn
Stranding element:	2 cores + filler	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PUR	PVC
Cable external diameter:	app. 8,0 mm ± 0,4 mm	app. 8,0 mm ± 0,3 mm
Outer sheath colour:	Violet similar to RAL 4001	Petrol similar to RAL 5018

Electrical data

Characteristic impedance:	150 Ohm ± 10 %	150 Ohm ± 10 %
Conductor resistance, max.:	49 Ohm/km	66,5 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1,6 GOhm x km
Loop resistance:	98 Ohm/km max.	133 Ohm/km max.
Mutual capacitance:	29 nF/km nom.	28 nF/km nom.
Test voltage:	3,6 kV	2 kV
Relative propagation velocity:	-	81 %
Attenuation:	9,6 kHz < 3,0 dB/km	9,6 kHz ≤ 3,0 dB/km
	38,4 kHz < 5,0 dB/km	38,4 kHz ≤ 4,0 dB/km
	4 MHz < 25,0 dB/km	4 MHz ≤ 25,0 dB/km
	16 MHz < 51,0 dB/km	16 MHz ≤ 49,0 dB/km

Technical data

Weight:	app. 66 kg/km	app. 64 kg/km
bending radius, repeated:	100 mm	70 mm
Operating temperature range min.:	-25°C	-40°C
Operating temperature range max.:	+75°C	+60°C
Caloric load, approx. value:	0,89 MJ/m	1,09 MJ/m
Copper weight:	32,00 kg/km	23,00 kg/km

Norms

Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to EN 50265-2-1
UL Style:	CMX 75°C (shielded)	CMG 75°C or CL2 or AWM 20201 600V
CSA standard:	-	CSA FT 4

R

Application

HELUKABEL® Profibus Torsion is used in mobile applications in robots. The special torsion construction allows this cable to be twisted (torsioned) and is halogen-free thanks to use PU sheath. The Festoon version is used for hanging/moving loads in garland applications.

Part no.

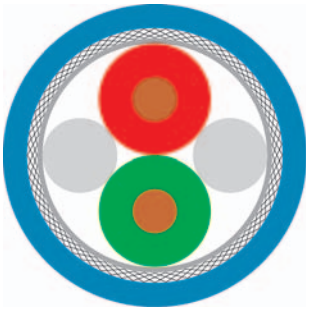
800109, Profibus L2

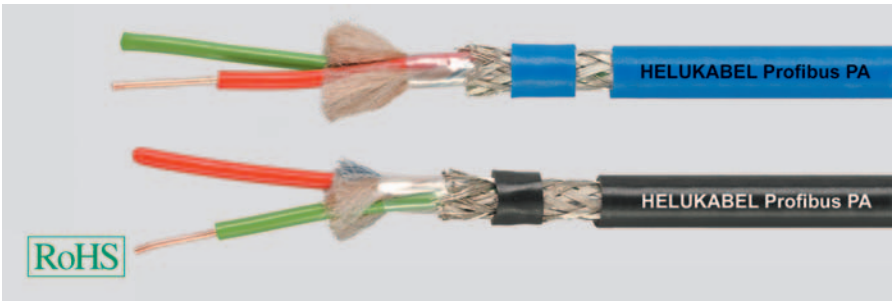
800649, Profibus L2

Dimensions and specifications may be changed without prior notice.

BUS Cables

Profibus PA





Type	Hazardous areas	Non-hazardous areas
Cable structure	**1x2x1.0/2.55 mm**	**1x2x1.0/2.55 mm**
Inner conductor diameter:	Copper, bare (AWG 18/1)	Copper, bare (AWG 18/1)
Core insulation:	PE	PE
Core colours:	rd, gn	rd, gn
Stranding element:	2 cores + 2 fillers stranded together	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PVC	PVC
Cable external diameter:	app. 7,6 mm ± 0,2 mm	app. 7,6 mm ± 0,2 mm
Outer sheath colour:	Blue	Black
Electrical data		
Characteristic impedance:	100 Ohm ± 20 %	100 Ohm ± 20 %
Conductor resistance, max.:	22 Ohm/km	22 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	44 Ohm/km max.	44 Ohm/km max.
Mutual capacitance:	60 nF/km nom.	60 nF/km nom.
Nominal voltage:	300 V	300 V
Test voltage:	2,5 kV	2,5 kV
Attenuation:	39 kHz ≤ 3,0 dB/km	39 kHz ≤ 3,0 dB/km
Technical data		
Weight:	app. 76 kg/km	app. 76 kg/km
bending radius, repeated:	140 mm	140 mm
Operating temperature range min.:	-30°C	-30°C
Operating temperature range max.:	+80°C	+80°C
Caloric load, approx. value:	0,95 MJ/m	0,95 MJ/m
Copper weight:	44,00 kg/km	44,00 kg/km
Norms		
Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to EN 50265-2-1	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to EN 50265-2-1
UL Style:	UL Style 2571	UL Style 2571

Application

HELUKABEL® Profibus PA is used for normal requirements in the process automation field (chemical industry). The colour blue identifies it as suitable for use in potentially explosive areas (and ATEX/ Class II, EX-i/ EN 60079-14). For other applications, the colour black is usually selected.

Part no.		
	82835, Profibus PA	**82836,** Profibus PA

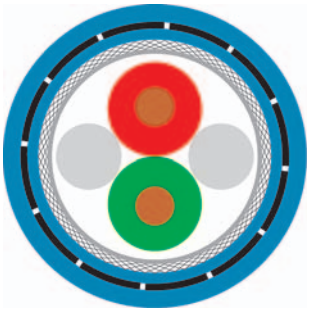
Dimensions and specifications may be changed without prior notice.

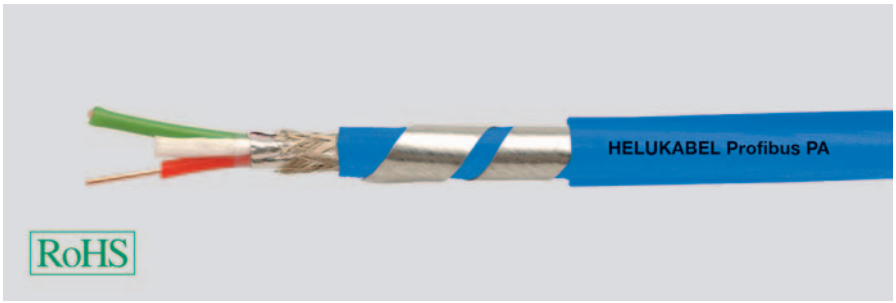
BUS Cables

Profibus PA

HELUKABEL

armoured





Type Cable structure	Hazardous areas 1x2x1.0/2.55 mm	Non-hazardous areas 1x2x1.0/2.55 mm
Inner conductor diameter:	Copper, bare (AWG 18/1)	Copper, bare (AWG 18/1)
Core insulation:	PE	PE
Core colours:	rd, gn	rd, gn
Stranding element:	2 cores + 2 fillers stranded together	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Inner sheath material:	PVC	PVC
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Armouring:	Steel band	Steel band
Outer sheath material:	PVC	PVC
Cable external diameter:	app. 10,2 mm ± 0,2 mm	app. 10,2 mm ± 0,2 mm
Outer sheath colour:	Blue	Black

Electrical data

Characteristic impedance:	100 Ohm ± 15 %	100 Ohm ± 15 %
Conductor resistance, max.:	22 Ohm/km	22 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	44 Ohm/km max.	44 Ohm/km max.
Mutual capacitance:	55 nF/km nom.	55 nF/km nom.
Nominal voltage:	300 V	300 V
Test voltage:	2,5 kV	2,5 kV
Attenuation:	39 kHz ≤ 3,0 dB/km	39 kHz ≤ 3,0 dB/km

Technical data

Weight:	app. 170 kg/km	app. 170 kg/km
bending radius, repeated:	140 mm	200 mm
Operating temperature range min.:	-20°C	-20°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	1,95 MJ/m	1,95 MJ/m
Copper weight:	45,00 kg/km	45,00 kg/km

Norms

Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to EN 50265-2-1	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to EN 50265-2-1

Application

HELUKABEL® Profibus PA Armoured finds use in areas with rodent such as rats, nutria etc. but also offers additional protection against all other outside mechanical influences thanks to it steel tape armouring. The colour blue identifies it as suitable for use in potentially explosive areas (and ATEX/ Class II, EX-i/EN 60079-14). For other applications, the colour black is usually selected.

R

Part no.

802180, Profibus PA

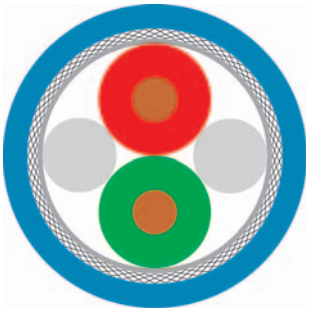
802181, Profibus PA

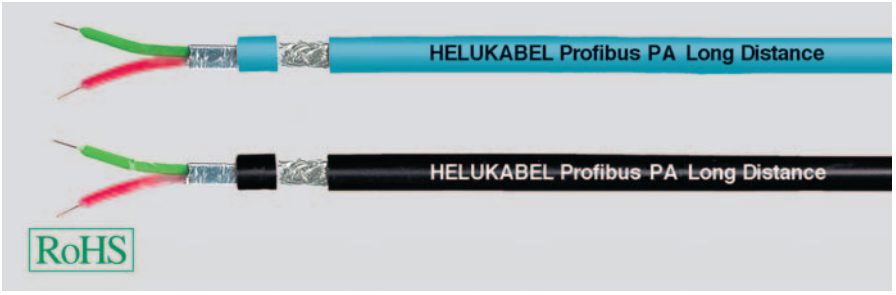
Dimensions and specifications may be changed without prior notice.

BUS Cables

Profibus PA

HELUKABEL
Long Distance





Type Cable structure	Hazardous areas 1x2x1.6/3.2 mm	Non-hazardous areas 1x2x1.6/3.2 mm
Inner conductor diameter:	Copper, bare (AWG 16/7)	Copper, bare (AWG 16/7)
Core insulation:	Foam-skin-PE	Foam-skin-PE
Core colours:	rd, gn	rd, gn
Stranding element:	2 cores + 2 fillers stranded together	2 cores + 2 fillers stranded together
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PVC	PVC
Cable external diameter:	app. 9,5 mm ± 0,3 mm	app. 9,5 mm ± 0,3 mm
Outer sheath colour:	Blue	Black
Electrical data		
Characteristic impedance:	100 Ohm ± 20 %	100 Ohm ± 20 %
Conductor resistance, max.:	24 Ohm/km	24 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	48 Ohm/km max.	48 Ohm/km max.
Mutual capacitance:	60 nF/km nom.	60 nF/km nom.
Nominal voltage:	300 V	300 V
Test voltage:	1 kV	1 kV
Attenuation:	39 kHz ≤ 2,7 dB/km	39 kHz ≤ 2,7 dB/km
Technical data		
Weight:	app. 131 kg/km	app. 131 kg/km
bending radius, repeated:	100 mm	100 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	1,57 MJ/m	1,57 MJ/m
Copper weight:	62,00 kg/km	62,00 kg/km
Norms		
Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to IEC 60332-1	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to IEC 60332-1
UL Style:	UL Style 2571	UL Style 2571

Application

HELUKABEL® Profibus PA Long Distance is used for especially long transmission distances in process networks. It uses a larger conductor cross-section to satisfy the attenuation requirements. The colour blue identifies it as suitable for use in potentially explosive areas (and ATEX/Class II, EX-i/EN 60079-14). For other applications, the colour black is usually selected.

Part no.

800650, Profibus PA

800715, Profibus PA

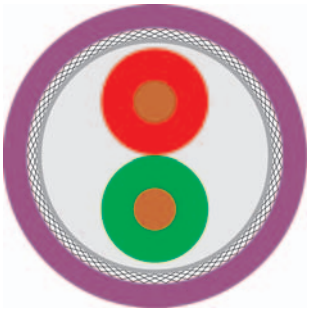
Dimensions and specifications may be changed without prior notice.

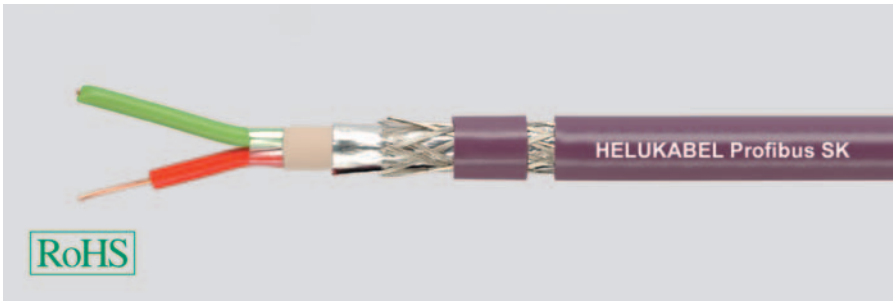
BUS Cables

Profibus SK

HELUKABEL

Indoor + Outdoor





Type Cable structure	Fixed installation, indoor 1x2x0.64 mm	Fixed installation, outdoor 1x2x0.64 mm
Inner conductor diameter:	Copper, bare (AWG 22/1)	Copper, bare (AWG 22/1)
Core insulation:	Foam-skin-PE	Foam-skin-PE
Core colours:	rd, gn	rd, gn
Stranding element:	Double core	Double core
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Inner sheath material:	PVC	PVC
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PVC	PE
Cable external diameter:	app. 8,0 mm ± 0,4 mm	app. 8,0 mm ± 0,4 mm
Outer sheath colour:	Violet similar to RAL 4001	Black similar to RAL 9005

Electrical data

Characteristic impedance:	150 Ohm ± 10 %	150 Ohm ± 10 %
Conductor resistance, max.:	55 Ohm/km	55 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	110 Ohm/km max.	110 Ohm/km max.
Mutual capacitance:	35 nF/km nom.	35 nF/km nom.
Test voltage:	1,5 kV	1,5 kV
Attenuation:	9,6 kHz < 2,5 dB/km 38,4 kHz < 4,0 dB/km 4,0 MHz < 22,0 dB/km 16,0 MHz < 42,0 dB/km	9,6 kHz < 2,5 dB/km 38,4 kHz < 4,0 dB/km 4 MHz < 22,0 dB/km 16 MHz < 42,0 dB/km

Technical data

Weight:	app. 79 kg/km	app. 65 kg/km
bending radius, repeated:	120 mm	120 mm
Operating temperature range min.:	-40°C	-20°C
Operating temperature range max.:	+80°C	+70°C
Caloric load, approx. value:	1,068 MJ/m	1,451 MJ/m
Copper weight:	24,00 kg/km	24,00 kg/km

Norms

Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to IEC 60332-3	Profibus acc. to DIN 19245 T3 and EN50170 Halogen-free acc. to 60754-2
UL Style:	CMG 75°C or CL3 or AWM 21694 600V	-
CSA standard:	CSA FT 4	-

R

Application

HELUKABEL® Profibus SK Indoor + Outdoor have a special structure for processing with the Fast Connect Stripping Tool from Siemens. The indoor version is used for normal requirements in fixed installation applications in equipment; the Outdoor version is used in open-air applications, i.e. can withstand wind, weather and sun (not for burial directly in the ground).

Part no.

81903, Profibus SK

81904, Profibus SK

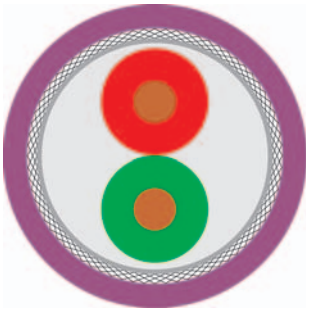
Dimensions and specifications may be changed without prior notice.

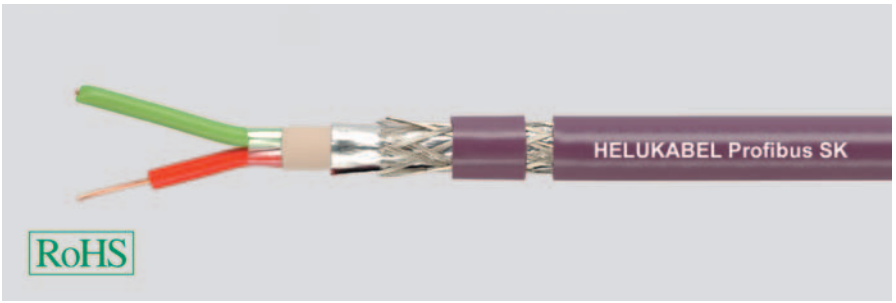
BUS Cables

Profibus SK

HELUKABEL

FRNC + Robust





Type	Fixed installation, indoor	Industrial Area
Cable structure	**1x2x0.64 mm**	**1x2x0.64 mm**
Inner conductor diameter:	Copper, bare (AWG 22/1)	Copper, bare (AWG 22/1)
Core insulation:	Foam-skin-PE	Foam-skin-PE
Core colours:	rd, gn	rd, gn
Stranding element:	Double core	Double core
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Inner sheath material:	FRNC	FRNC
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	FRNC	PUR
Cable external diameter:	app. 8,0 mm ± 0,4 mm	app. 8,0 mm ± 0,4 mm
Outer sheath colour:	Violet similar to RAL 4001	Violet similar to RAL 4001
Electrical data		
Characteristic impedance:	150 Ohm ± 10 %	150 Ohm ± 10 %
Conductor resistance, max.:	55 Ohm/km	55 Ohm/km
Insulation resistance, min.:	1 GOhm x km	1 GOhm x km
Loop resistance:	110 Ohm/km max.	110 Ohm/km max.
Mutual capacitance:	35 nF/km nom.	35 nF/km nom.
Test voltage:	1,5 kV	1,5 kV
Attenuation:	9,6 kHz < 2,5 dB/km	9,6 kHz < 2,5 dB/km
	38,4 kHz < 4,0 dB/km	38,4 kHz < 4,0 dB/km
	4 MHz < 22,0 dB/km	4 MHz < 22,0 dB/km
	16 MHz < 42,0 dB/km	16 MHz < 42,0 dB/km
Technical data		
Weight:	app. 73 kg/km	app. 71 kg/km
bending radius, repeated:	160 mm	120 mm
Operating temperature range min.:	-25°C	-40°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	1,203 MJ/m	1,574 MJ/m
Copper weight:	24,00 kg/km	24,00 kg/km
Norms		
Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170	Profibus acc. to DIN 19245 T3 and EN50170
	Halogen-free acc. to 60754-2	Halogen-free acc. to 60754-2
	Flame-retardant acc. to EN 50265-2-1	Flame-retardant acc. to IEC 60332-1
UL Style:	CM 750C (shielded)	AWM Style 20236 AWM I/II A/B 80°C 30V FT1
CSA standard:	-	CSA FT1

Application

HELUKABEL® Profibus SK FRNC + Robust has a special structure for processing with the Fast Connect Stripping Tool from Siemens. The FRNC version is used to satisfy halogen-free and flame-retardent requirements in buildings. The Rpbust version is used in harsh industrial environments and offers excellent resistance to mineral oils, greases and cooling lubricants.

Part no.

81501, Profibus SK

81905, Profibus SK

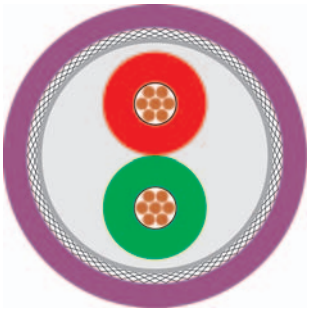
Dimensions and specifications may be changed without prior notice.

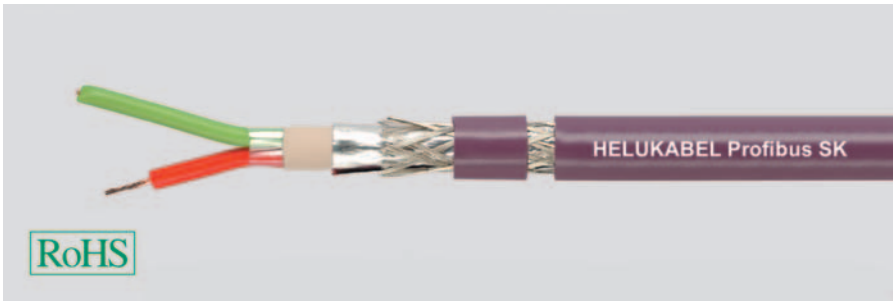
BUS Cables

Profibus SK

HELUKABEL

Drag Chain





Type Cable structure	Drag chain applications 1x2x0.65 mm (stranded)	Drag chain applications 1x2x0.65 mm (stranded)
Inner conductor diameter:	Copper, bare (AWG 24/19)	Copper, bare (AWG 24/19)
Core insulation:	Foam-skin-PE	Foam-skin-PE
Core colours:	rd, gn	rd, gn
Stranding element:	Double core	Double core
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Inner sheath material:	PVC	PVC
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PUR	PUR
Cable external diameter:	app. 8,0 mm ± 0,4 mm	app. 8,0 mm ± 0,4 mm
Outer sheath colour:	Violet similar to RAL 4001	Petrol similar to RAL 5018

Electrical data

Characteristic impedance:	150 Ohm ± 10 %				150 Ohm ± 10 %	
Conductor resistance, max.:	67 Ohm/km				67 Ohm/km	
Insulation resistance, min.:	1 GOhm x km				1 GOhm x km	
Loop resistance:	134 Ohm/km max.				134 Ohm/km max.	
Mutual capacitance:	35 nF/km nom.				35 nF/km nom.	
Test voltage:	1,5 kV				1,5 kV	
Attenuation:	9,6	kHz	< 3,0	dB/km	9,6	kHz < 3,0 dB/km
	38,4	kHz	< 5,0	dB/km	38,4	kHz < 5,0 dB/km
	4	MHz	< 25,0	dB/km	4	MHz < 25,0 dB/km
	16	MHz	< 52,0	dB/km	16	MHz < 52,0 dB/km

Technical data

Weight:	app. 70 kg/km	app. 70 kg/km
bending radius, repeated:	100 mm	100 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	1,53 MJ/m	1,53 MJ/m
Copper weight:	25,00 kg/km	25,00 kg/km

Norms

Applicable standards:	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to IEC 60332-1	Profibus acc. to DIN 19245 T3 and EN50170 Flame-retardant acc. to IEC 60332-1
UL Style:	CMX 75°C (shielded)	CMX 75°C (shielded)
CSA standard:	CSA FT1	CSA FT1

R

Application

HELUKABEL® Profibus SK drag chain is designed for continous motion in cable carriers and has a special structure for processing with the Fast Connect Stripping Tool from Siemens. Thanks to the PU sheath, it also offers excellent resistance to common mineral oils, greases and cooling lubricants. Depending on the application, the colour petrol or violet is availiable.

Part no.

801659, Profibus SK	**81906,** Profibus SK

Dimensions and specifications may be changed without prior notice.