

# DeviceNet, FireWire, Torsion

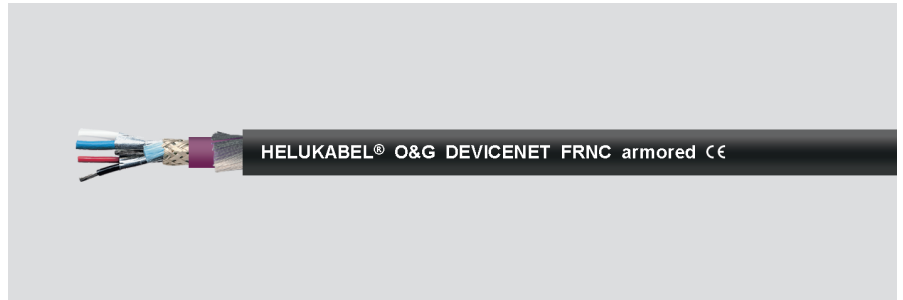
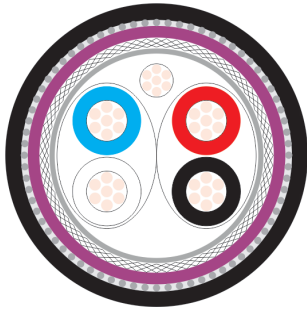
## Технические характеристики

### По вопросам продаж и поддержки обращайтесь:

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Россия (495)268-04-70	Киргизия (996)312-96-26-47	Казахстан (7172)727-132	

# BUS Cables

HELUKABEL® DeviceNet™ FRNC armored



## Type Cable structure

Inner conductor diameter 1:  
Inner conductor diameter 2:  
Core insulation 1:  
Core insulation 2:  
Core colours 1:  
Core colours 2:  
Stranding element 1:  
Separator:  
Inner sheath material:  
Shielding 1:  
Total shielding:  
Drain wire:  
Armouring:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Industrial Area 1x2xAWG18 + 1x2xAWG15

Copper, tinned (AWG 18/19)  
Copper, tinned (AWG 15/19)  
Cell PE  
PE  
light bu, wh  
rd, bk  
Double core  
-  
FRNC  
Al-Foil  
Cu braid, tinned  
yes  
steel wire  
FRNC  
app. 15,6 mm ± 0,3 mm  
Black

## Electrical data

Characteristic impedance: 120 Ohm ± 10 %  
Conductor resistance, max.: 22,6 Ohm/km  
Insulation resistance, min.: 0,2 GOhm x km  
Loop resistance: 45,2 Ohm/km max.  
Mutual capacitance: 39 nF/km nom.  
Test voltage: 2 kV  
Attenuation: 125 kHz < 4.2 dB/km  
500 kHz < 8.1 dB/km

## Technical data

Weight: app. 331 kg/km  
bending radius, repeated: 190 mm  
Operating temperature range min.: -25°C  
Operating temperature range max.: +80°C  
Caloric load, approx. value: 4,28 MJ/m  
Copper weight: 88,00 kg/km

## Norms

Applicable standards: ODVA DeviceNet  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2

## Application

HELUKABEL® DeviceNet™ FRNC for fixed installation in areas where high flame retardance and a halogen-free design are needed. The special aspect of this bus system is that a data pair and a power supply pair are **always** integrated in one cable. The small cross-section is used for short distances or as a point-to-point connection; the large cross-section as main conductor for long distances and frequently in combination with the thin conductor as drain wire. The steel wire armouring also realizes an outstanding rodent protection.

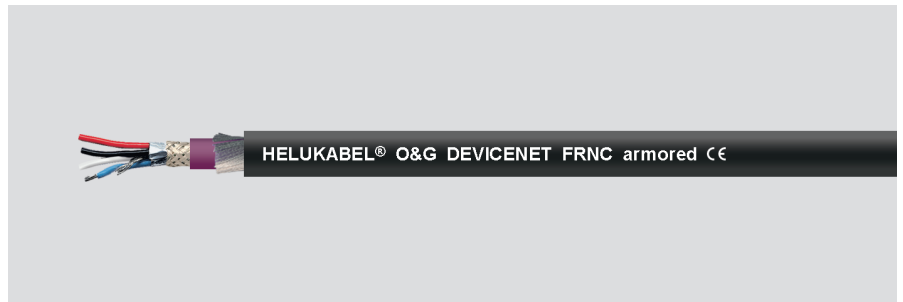
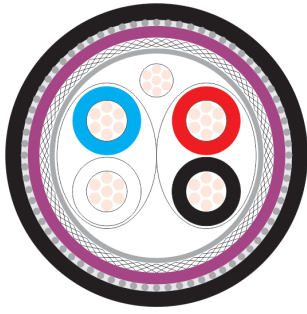
## Part no.

**11018110**, DeviceNet FRNC

Dimensions and specifications may be changed without prior notice.

# BUS Cables

HELUKABEL® DeviceNet™ FRNC armored



## Type Cable structure

Inner conductor diameter 1:  
Inner conductor diameter 2:  
Core insulation 1:  
Core insulation 2:  
Core colours 1:  
Core colours 2:  
Stranding element 1:  
Separator:  
Inner sheath material:  
Shielding 1:  
Total shielding:  
Drain wire:  
Armouring:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Industrial Area 1x2xAWG24 + 1x2xAWG22

Copper, tinned (AWG 24/19)  
Copper, tinned (AWG 22/19)  
Cell PE  
PE  
light bu, wh  
rd, bk  
Double core  
-  
FRNC  
Al-Foil  
Cu braid, tinned  
yes  
steel wire  
FRNC  
app. 9,7 mm ± 0,3 mm  
Black

## Electrical data

Characteristic impedance: 120 Ohm ± 10 %  
Conductor resistance, max.: 90 Ohm/km  
Insulation resistance, min.: 0,2 GOhm x km  
Loop resistance: 180 Ohm/km max.  
Mutual capacitance: 39,8 nF/km nom.  
Test voltage: 2 kV  
Attenuation: 125 kHz < 9.5 dB/km  
500 kHz < 16.4 dB/km

## Technical data

Weight: app. 150 kg/km  
bending radius, repeated: 110 mm  
Operating temperature range min.: -25°C  
Operating temperature range max.: +80°C  
Caloric load, approx. value: 1,62 MJ/m  
Copper weight: 34,00 kg/km

## Norms

Applicable standards: ODVA DeviceNet  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2

## Application

HELUKABEL® DeviceNet™ FRNC for fixed installation in areas where high flame retardance and a halogen-free design are needed. The special aspect of this bus system is that a data pair and a power supply pair are **always** integrated in one cable. The small cross-section is used for short distances or as a point-to-point connection; the large cross-section as main conductor for long distances and frequently in combination with the thin conductor as drain wire. The steel wire armouring also realizes an outstanding rodent protection.

## Part no.

**11018263**, DeviceNet FRNC

Dimensions and specifications may be changed without prior notice.

# BUS Cables

FIREWIRE drag chain

 **HELUKABEL®**

PUR



## Type

### Cable structure

Inner conductor diameter 1:  
Inner conductor diameter 2:  
Core insulation 1:  
Core insulation 2:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Drag chain applications

### 2x2xAWG26/19 + 2xAWG22/19

Copper, tinned (AWG 22/19)  
Copper, tinned (AWG 26/19)  
PP  
Foam-skin-PE  
Cu braid, tinned  
PUR  
app. 8,2 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Nominal voltage:  
Test voltage:

100 Ohm ± 15 %  
59,4 Ohm/km  
2 GOhm x km  
120 Ohm/km max.  
45 nF/km nom.  
30 V  
0,7 kV

## Typical values

Frequency (MHz)	250	400	500	800	1000
attenuation (db/5m)	2,5	3,0	3,6	4,7	5,6

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 88 kg/km  
98 mm  
-30°C  
+70°C  
0,986 MJ/m  
58,00 kg/km

## Norms

Applicable standards:  
UL Style:

Halogen-free acc. to 60754-1  
Flame-retardant CSA FT1  
AWM Style 20236 AWM I/II A/B 80°C 30V FT1

## Application

HELUKABEL® FireWire™ Trailing will be used for permanent moving processes.

## Part no.

**805057**, FireWire™

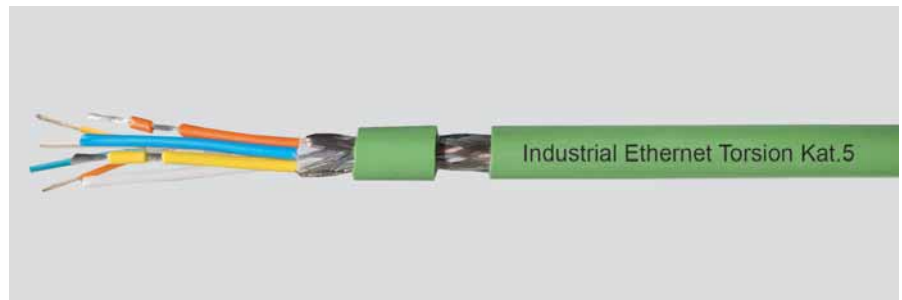
Dimensions and specifications may be changed without prior notice.

# Industrial Ethernet

IE Torsion

**HELUKAT**<sup>®</sup>

PUR



## Type

### Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Torsional applications

### 2x2x0,75 mm (stranded)

Copper, tinned (AWG 22/19)  
Foam-skin-PE  
wh, ye, bu, og  
Star quad  
Polyester foil over stranded bundle  
Cu braid, tinned  
PUR  
app. 6,5 mm ± 0,2 mm  
Green similar to RAL 6018

## Electrical data

Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
Conductor resistance, max.: 60 Ohm/km  
Insulation resistance, min.: 0,5 GOhm x km  
Loop resistance: 120 Ohm/km max.  
Mutual capacitance: 52 nF/km nom.  
Test voltage: 0,7 kV

## Typical values

Frequency	(MHz)	10	16	62,5	100
Attenuation	(db/100m)	7,6	10,0	26,5	41,0
ELFEXT	(db)	43,8	39,7	24,0	20,0

## Technical data

Weight: app. 54 kg/km  
bending radius, repeated: 70 mm  
Operating temperature range min.: -40°C  
Operating temperature range max.: +80°C  
Caloric load, approx. value: 0,45 MJ/m  
Copper weight: 32,00 kg/km

## Norms

Category 5e, Flame-retardant acc. to IEC 60332-1-2, Halogen-free acc. to 60754-1, AWM Style 21161 80°C

## Application

HELUKAT<sup>®</sup> INDUSTRIAL ETHERNET Category 5e TORSION offers excellent transmission characteristics and is designed for applications with torsion loads, e.g. in robots. The cable listed here corresponds to the classification for continuous movement.

## Part no.

**802186**, INDUSTRIAL ETHERNET CAT.5e

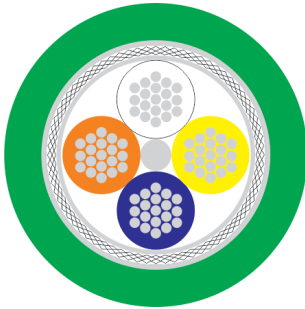
Dimensions and specifications may be changed without prior notice.

# Industrial Ethernet

PROFINet Typ R Torsion

**HELUKAT**<sup>®</sup>

PUR



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Stranding element:  
Separator:  
Shielding 1:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Torsion Patch Cables 2x2x0,8mm

Copper, tinned (AWG 22/19)  
PO  
Quad  
Polyester foil over stranded bundle  
-  
Al-Foil  
Cu braid  
PUR  
app. 7,2 mm  
Green similar to RAL 6018

## Electrical data

Characteristic impedance:  
Loop resistance:  
Mutual capacitance:

100 Ohm  $\pm$  15 Ohm at 1 to 100 MHz  
120 Ohm/km max.  
50 nF/km nom.

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Copper weight:

app. 63 kg/km  
72 mm  
-40°C  
+90°C  
33,00 kg/km

## Norms

Applicable standards:

Acc. to ISO/IEC 11801  
Acc. to EN 50173  
Acc. to EIA/TIA 568-A  
Category 5e  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
AWM Style 21209 1000V 90°C

UL Style:

## Application

HELUKAT<sup>®</sup> PROFInet Type R Category 5e TORSION 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.

## Part no.

**11007800,**

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