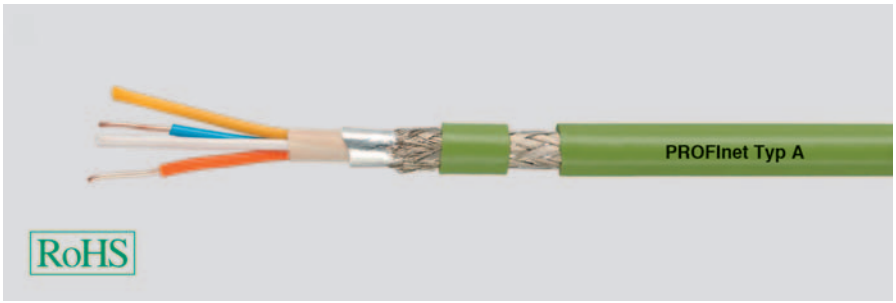
Industrial Ethernet

PROFInet Type A

HELUKAT®
fixed installed + robust



Type	Fixed installation, indoor	Industrial Area
Cable structure	**2x2x0.64 mm**	**2x2x0.64 mm**
Inner conductor diameter:	Copper, bare (AWG 22/1)	Copper, bare (AWG 22/1)
Core insulation:	PE	PE
Core colours:	wh, ye, bu, og	wh, ye, bu, og
Stranding element:	Star quad	Star quad
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Inner sheath material:	PVC	FRNC
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PVC	PUR
Cable external diameter:	app. 6,5 mm ± 0,2 mm	app. 6,5 mm ± 0,2 mm
Outer sheath colour:	Green similar to RAL 6018	Green similar to RAL 6018

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz	100 Ohm ± 15 ohm at 1 to 100 MHz
Conductor resistance, max.:	62 Ohm/km	62 Ohm/km
Insulation resistance, min.:	0,5 GOhm x km	0,5 GOhm x km
Loop resistance:	115 Ohm/km max.	115 Ohm/km max.
Mutual capacitance:	50 nF/km nom.	50 nF/km nom.
Test voltage:	2 kV	2 kV

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)	64,8	58,1	40,0	30,5

Technical data

Weight:	app. 67 kg/km	app. 64 kg/km
bending radius, repeated:	65 mm	65 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+80°C	+70°C
Caloric load, approx. value:	0,34 MJ/m	0,91 MJ/m
Copper weight:	32,00 kg/km	32,00 kg/km

Norms

Applicable standards:	PROFInet Guideline Acc. to ISO/IEC 11801 Acc. to EN 50173 Category 5e Flame-retardant acc. to IEC 60332-1	PROFInet Guideline Acc. to ISO/IEC 11801 Acc. to EN 50173 Category 5e Flame-retardant acc. to IEC 60332-1
UL Style:	CMG 75°C PLTC FT4	-
CSA standard:	CSA FT 4	-

Application

HELUKAT® PROFInet Type A Cat 5e 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; this means the version with PVC sheath is designed for normal fixed installations and the version with PU sheath is for difficult fixed installations in harsh industrial environments.

Part no.

800653, PROFInet type A (SK)

801194, PROFInet type A (SK)

Dimensions and specifications may be changed without prior notice.

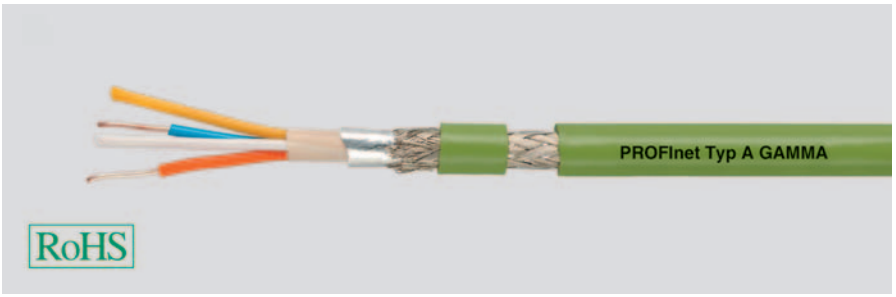
R

Industrial Ethernet

PROFInet Type A

HELUKAT®

radiation resistant + armoured



Type	ray loaded areas	Fixed installation, outdoor
Cable structure	**2x2x0.64 mm**	**2x2x0.64 mm**
Inner conductor diameter:	Copper, bare (AWG 22/1)	Copper, bare (AWG 22/1)
Core insulation:	XLPE ray cross-linking	PE
Core colours:	wh, ye, bu, og	wh, ye, bu, og
Stranding element:	Star quad	Star quad
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Inner sheath material:	TPR ray cross-linking	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:	PUR	PE
Cable external diameter:	app. 6,5 mm ± 0,2 mm	app. 9,3 mm ± 0,5 mm
Outer sheath colour:	Green similar to RAL 6018	Black

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz	100 Ohm ± 15 ohm at 1 to 100 MHz
Conductor resistance, max.:	62 Ohm/km	62 Ohm/km
Insulation resistance, min.:	0,5 GOhm x km	0,5 GOhm x km
Loop resistance:	124 Ohm/km max.	115 Ohm/km max.
Mutual capacitance:	50 nF/km nom.	50 nF/km nom.
Test voltage:	2 kV	2 kV

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)	64,8	58,1	40,0	30,5

Technical data

Weight:	app. 63 kg/km	app. 124 kg/km
bending radius, repeated:	100 mm	100 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+80°C	+70°C
Caloric load, approx. value:	0,29 MJ/m	2,14 MJ/m
Copper weight:	32,00 kg/km	31,00 kg/km

Norms

Applicable standards:	PROFInet Guideline Acc. to ISO/IEC 11801 Acc. to EN 50173 Category 5e	PROFInet Guideline Acc. to ISO/IEC 11801 Acc. to EN 50173 Category 5e

Application

HELUKAT® PROFInet Type A Cat 5e is radiation-resistant + 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 cross-linked PVC-inner sheath/PU outer sheath are well-suited for fixed applications inside irradiated areas, while the armoured type with PVC inner sheath/PE outer sheath is ideal for areas with rodent problems.

Part no.

801195, PROFInet type A (SK)

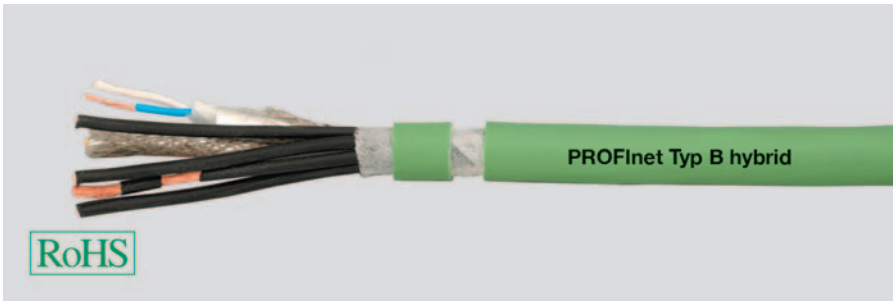
801650, PROFInet type A (SK)

Dimensions and specifications may be changed without prior notice.

Industrial Ethernet

PROFInet Type B

HELUKAT® hybrid



Type
Cable structure

Mobile use
2x2x0,75 mm (stranded)+ 4x1,5qmm

Inner conductor diameter 1:	Copper, bare (AWG 22/7)
Inner conductor diameter 2:	Copper, bare (AWG 16/84)
Core insulation 1:	Foam-skin-PE
Core insulation 2:	PO
Core colours 1:	wh, ye, bu, og
Core colours 2:	Black
Stranding element 1:	Double core
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	Polyester foil, aluminium-lined
Total shielding:	Polyester foil
Outer sheath material:	FRNC
Cable external diameter:	app. 10,3 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
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:	2 kV

Typical values

Frequency	(MHz)	10	16	62,5	100
Attenuation	(dB/100m)	6,3	8,0	16,5	21,3
Next	(db)	50,0	47,0	38,0	35,0
ACR	(db)	43,7	39,0	21,5	13,7

Technical data

Weight:	app. 153 kg/km
bending radius, repeated:	103 mm
Operating temperature range min.:	-40°C
Operating temperature range max.:	+70°C
Caloric load, approx. value:	1,50 MJ/m
Copper weight:	94,00 kg/km

Norms

Applicable standards:	PROFInet Guideline Acc. to ISO/IEC 11801 Acc. to EN 50173 Category 5e Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1 Corrosiveness acc. to EN50267-2-3 Low-smoke acc. to EN50268-2
UL Style:	UL Style 21282

Application

HELUKAT® PROFInet Type B Cat 5e hybrid for flexible applications. The cable listed here corresponds to PROFInet Type B with integrated power supply in a cable with halogen-free and flame-retardent construction.

Part no.

801651, PROFInet type B (SK)

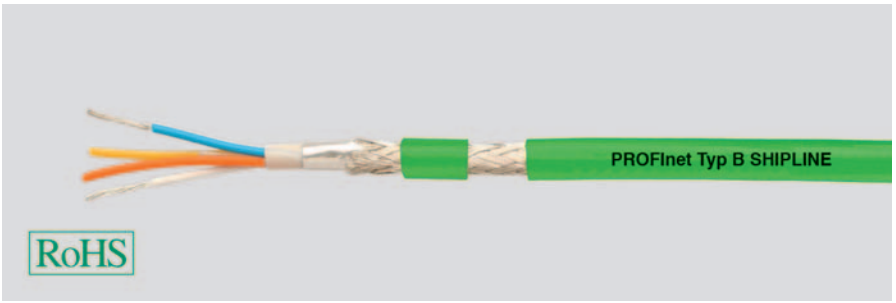
Dimensions and specifications may be changed without prior notice.

R

Industrial Ethernet

PROFInet Typ B

HELUKAT®
SHIPLINE + FESTOON



Type	Marine and Offshore	FESTOON
Cable structure	**2x2x0,34 qmm (stranded)**	**2x2x0.75 mm (stranded)**
Inner conductor diameter:	Copper, tinned (AWG 22/7)	Copper, tinned (AWG 22/7)
Core insulation:	PP	PE
Core colours:	wh, ye, bu, og	wh, ye, bu, og
Stranding element:	Star quad	Star quad
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Inner sheath material:	FRNC	PVC
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	FRNC	PVC
Cable external diameter:	app. 6,5 mm ± 0,4 mm	app. 6,5 mm ± 0,2 mm
Outer sheath colour:	Green similar to RAL 6018	Green similar to RAL 6018
Electrical data		
Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz	100 Ohm ± 5 %
Conductor resistance, max.:	60 Ohm/km	60 Ohm/km
Insulation resistance, min.:	0,5 GOhm x km	0,5 GOhm x km
Loop resistance:	120 Ohm/km max.	120 Ohm/km max.
Mutual capacitance:	52 nF/km nom.	52 nF/km nom.
Test voltage:	2 kV	2 kV

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)	64,0	57,4	39,0	29,0

Technical data		
Weight:	app. 68 kg/km	app. 68 kg/km
bending radius, repeated:	50 mm	70 mm
Operating temperature range min.:	-40°C	-10°C
Operating temperature range max.:	+70°C	+80°C
Caloric load, approx. value:	0,45 MJ/m	1,20 MJ/m
Copper weight:	32,00 kg/km	32,00 kg/km
Norms		
Applicable standards:	PROFInet Guideline Acc. to ISO/IEC 11801 Acc. to EN 50173 Category 5e Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-3 Corrosiveness acc. to EN50267-2-3 Low-smoke acc. to EN50268-2	PROFInet Guideline Acc. to ISO/IEC 11801 Acc. to EN 50173 Category 5e Flame-retardant acc. to IEC 60332-3
UL Style:	CMG 75°C PLTC FT4	CMG 75°C or PLTC or AWM 21694 600V
CSA standard:	CSA FT 4	CSA FT 4

Application

HELUKAT® PROFInet Type B Cat 5e SHIPLINE + FESTOON designed specially for marine/offshore applications as well as FESTOON applications. The SHIPLINE version is certified by the **Germanische Lloyd** and suitable for flexible **marine and offshore applications**.

Part no.

802185, PROFInet type B (SK)

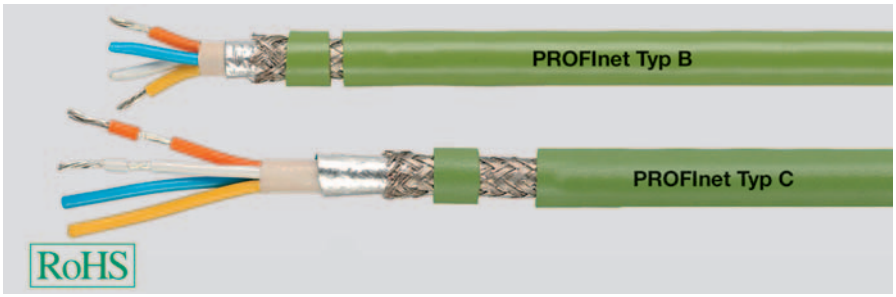
803295, PROFInet type B (SK)

Dimensions and specifications may be changed without prior notice.

Industrial Ethernet

PROFInet Type B + C

HELUKAT®
flexible + high flexible



Type Cable structure	Mobile use 2x2x0,75 mm (stranded)	Drag chain applications 2x2x0.75 mm (stranded)
Inner conductor diameter:	Copper, tinned (AWG 22/7)	Copper, tinned (AWG 22/7)
Core insulation:	PE	PE
Core colours:	wh, ye, bu, og	wh, ye, bu, og
Stranding element:	Star quad	Star quad
Shielding 1:	Polyester foil over stranded bundle	Polyester foil over stranded bundle
Inner sheath material:	PVC	FRNC
Shielding 2:	Polyester foil, aluminium-lined	Polyester foil, aluminium-lined
Total shielding:	Cu braid, tinned	Cu braid, tinned
Outer sheath material:	PVC	PUR
Cable external diameter:	app. 6,5 mm ± 0,2 mm	app. 6,5 mm ± 0,2 mm
Outer sheath colour:	Green similar to RAL 6018	Green similar to RAL 6018

Electrical data

Characteristic impedance:	100 Ohm ± 15 ohm at 1 to 100 MHz	100 Ohm ± 15 ohm at 1 to 100 MHz
Conductor resistance, max.:	62 Ohm/km	60 Ohm/km
Insulation resistance, min.:	0,5 GOhm x km	0,5 GOhm x km
Loop resistance:	115 Ohm/km max.	115 Ohm/km max.
Mutual capacitance:	52 nF/km nom.	52 nF/km nom.
Test voltage:	2 kV	0,7 kV

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)	64,0	57,4	39,0	29,0

Technical data

Weight:	app. 67 kg/km	app. 61 kg/km
bending radius, repeated:	100 mm	55 mm
Operating temperature range min.:	-40°C	-40°C
Operating temperature range max.:	+70°C	+70°C
Caloric load, approx. value:	0,32 MJ/m	0,85 MJ/m
Copper weight:	32,00 kg/km	32,00 kg/km

Norms

Applicable standards:	PROFInet Guideline Acc. to ISO/IEC 11801 Acc. to EN 50173 Category 5e Flame-retardant acc. to IEC 60332-1	PROFInet Guideline Acc. to ISO/IEC 11801 Acc. to EN 50173 Category 5e Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1
UL Style:	CMG 75°C PLTC FT4	CMX 75°C (shielded)
CSA standard:	CSA FT 4	-

Application

HELUKAT® PROFInet Type B (flexible) + Type C (highly flexible) Cat 5e for use on moving parts and in cable carriers. The cables listed here correspond to the PROFInet classifications Type B and Type C for moving cables and are designed to withstand mechanical loads.

Part no.

800654, PROFInet type B (SK)

800655, PROFInet type C (SK)

Dimensions and specifications may be changed without prior notice.

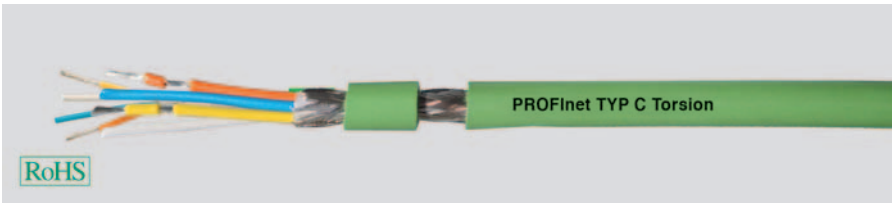
R

Industrial Ethernet

PROFInet Type C

HELUKAT®

Torsion



Type
Cable structure

Inner conductor diameter:	Copper, tinned (AWG 22/19)
Core insulation:	Foam-skin-PE
Core colours:	wh, ye, bu, og
Stranding element:	Star quad
Shielding 1:	Polyester foil over stranded bundle
Shielding 2:	Cu braid, tinned
Total shielding:	Cu braid, tinned
Outer sheath material:	PUR
Cable external diameter:	app. 6,5 mm ± 0,2 mm
Outer sheath colour:	Green similar to RAL 6018

Torsional applications
2x2x0,75 mm (stranded)

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

Applicable standards:	PROFInet Guideline Category 5e Halogen-free acc. to 60754-2 Flame-retardant acc. to IEC 60332-1 Corrosiveness acc. to EN50267-2-3 Low-smoke acc. to EN50268-2
UL Style:	AWM Style 21161 80°C

Application

HELUKAT® PROFInet Type C Cat 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 PROFInet Type C classification for continous movement.

Part no.

802186, PROFInet type C (SK)

Dimensions and specifications may be changed without prior notice.