09 45 600 01X0

HARTING PROFINET Type A Cable 4-wire Cat. 5 PVC

PROFINET Type A Cable
4-wire, Cat. 5, PVC

Advantages

- Suitable for PROFINET cabling Category 5 / Class D according to ISO/IEC 11 801 respectively EN 50 173-1 and ISO/IEC 24 702 respectively EN 50 173-3
- Capable for fix installation
- Applicable for industrial premises
- RoHS conform, UL listed, flame retardant

General

This data cable is suitable for PROFINET cabling according to type A in industrial premises and areas. It is useable for fix installation. The core is fitted with 4 wires twisted to quad that allows the transmission of Fast Ethernet 10/100Mbit/s.

It is designed for fast assembling with the easy-stripping tool and can be assembled with all HARTING 4-pole RJ45 connectors.

Identification	Part number	Drawing
PROFINET Type A Cable 4-wire, Cat. 5, PVC		
20 m ring	09 45 600 0130	
50 m ring	09 45 600 0140	
100 m ring	09 45 600 0100	
500 m reel	09 45 600 0110	

- Wire: Solid bare copper AWG 22/1
- Insulation: PE Ø 1.5 mm
- Inner sheath: Polyvinylchloride (PVC)
- Overall screen: Aluminate foil overlapped, tinned copper wire braid, braid coverage about 90%
- Outer sheath: Polyvinylchloride (PVC), flame retardant

Color code: wh, ye, bu, or
Color of inner sheath: white
Color of outer sheath: green, RAL 6018
Overall diameter: 6.3 mm – 6.7 mm

09 45 600 01X0

HARTING PROFINET Type A Cable 4-wire Cat. 5 PVC

Technical Characteristics

Performance	Category 5 according to EN 50288-2-1:2003, IEC 61156-5:2002
Mechanical Characteristics	
Minimal bending radius	Repeated bending: 7,5 x diameter Single bending: 3 x diameter
Tensile strength	max. 150 N
Electrical Characteristics at 20 °C	
Transfer impedance 10 MHz	10 mOhm/m
Conductor resistance	max. 115 Ohm/km
Insulation resistance	min. 500 MOhm*km
Velocity of propagation	5.3 ns/m
Characteristic impedance at 100 MHz	100 Ohm ± 5 Ohm
Test voltage (wire/wire/screen rms 50 Hz 1min)	2000 V
Chemical Characteristics	
Flame retardant	IEC 60332-1-2
Free of hazardous substances	RoHS 2002/95/EG
Limited oil resistance	
Sunlight resistant	UL 1581 Sec. 1200
Thermal Characteristics	
Permissible temperature range	
fixed operation	– 40 °C to + 75 °C
flexible operation	– 20 °C to + 60 °C
Printing	HARTING INDUSTRIAL ETHERNET STANDARD CABLE CAT 5 PLUS * 22AWG (SHIELDED) (UL) E333432 VERIFIED CAT 5E CMG 75°C or PLTC or AWM 21694 600V FT4 SUN RES * 094560001000100 "Metermarkierung" * "Jahr/Auftragsnummer" "HARTING-LOGO"
Weight about	66 kg/km

HARTING PROFINET Type A Cable 4-wire Cat. 5 PVC

Technical Characteristics

Frequency MHz	Attenuation dB/100m		NEXT dB	
	typ.	Cat 5 max*	typ.	Cat 5 min*
1	1.6	2.1	80	65.3
4	3.2	4.0	75	56.3
10	5.2	6.3	70	50.3
16	6.9	8.0	65	47.2
20	7.8	9.0	63	45.8
31.25	10.5	11.4	60	42.9
62.5	15	16.5	55	38.4
100	19.5	21.3	50	35.3

* EN 50288-2-1:2003

09 45 600 01X2

HARTING PROFINET Type B Cable 4-wire Cat. 5 PVC

PROFINET Type B Cable
4-wire, Cat. 5, PVC

Advantages

- Suitable for PROFINET cabling Category 5 / Class D according to ISO/IEC 11 801 respectively EN 50 173-1 and ISO/IEC 24 702 respectively EN 50 173-3
- Capable flexible cords
- Applicable for industrial premises
- RoHS conform, UL listed, flame retardant

General

This data cable is suitable for PROFINET cabling according to type B in industrial premises and areas. It is useable for flexible cords. The core is fitted with 4 wires twisted to quad that allows the transmission of Fast Ethernet 10/100Mbit/s.

It is designed for fast assembling with the easy-stripping tool and can be assembled with all HARTING 4-pole RJ45 connectors.

Identification	Part number	Drawing
PROFINET Type B Cable 4-wire, Cat. 5, PVC		
20 m ring	09 45 600 0132	• Wire: Stranded tinned copper AWG 22/7
50 m ring	09 45 600 0142	• Insulation: : PE Ø 1.56 mm (± 0.03)
100 m ring	09 45 600 0102	• Inner sheath: Polyvinylchloride (PVC)
500 m reel	09 45 600 0112	• Overall screen: aluminate foil overlapped, tinned copper wire braid, braid coverage about 85 %
		• Outer sheath: Polyvinylchloride (PVC), flame retardant
		Color code: wh, ye, bu, or
		Color of inner sheath: white
		Color of outer sheath: green, RAL 6018
		Overall diameter: 6.3 mm – 6.7 mm

HARTING PROFINET Type B Cable 4-wire Cat. 5 PVC

09 45 600 01X2

Technical Characteristics

Performance	Category 5 according to EN 50288-2-1:2003, IEC 61156-5:2002
Mechanical Characteristics	
Minimal bending radius	Repeated bending: 5 x diameter Single bending: 3 x diameter
Torsional strength	±180° on 1 m, 30,000 cycles
Electrical Characteristics at 20 °C	
Transfer impedance 10 MHz	20 mOhm/m
Conductor resistance	max. 120 Ohm/km
Insulation resistance	min. 500 MOhm*km
Velocity of propagation	5.3 ns/m
Characteristic impedance at 100 MHz	100 Ohm ± 5 Ohm
Test voltage (wire/wire/screen rms 50 Hz 1min)	2000 V
Chemical Characteristics	
Flame retardant	UL 1685 (CSA FT 4)
Free of hazardous substances	RoHS 2002/95/EG
Sunlight resistant	UL 1581 Sec. 1200
Thermal Characteristics	
Permissible temperature range	
fixed operation	– 40 °C to + 70 °C
flexible operation	– 20 °C to + 60 °C
Printing	HARTING INDUSTRIAL ETHERNET STRANDED CABLE CAT 5 PLUS * 22AWG (SHIELDED) (UL) E333432 CMG or PLTC or AWM 21695 80°C 600V FT4 SUN RES * 094560001020200 "Metermarkierung" * "Jahr/ Auftragsnummer" HARTING-LOGO"
Weight about	68 kg/km

HARTING PROFINET Type B Cable 4-wire Cat. 5 PVC

09 45 600 01X2

Technical Characteristics

Frequency MHz	Attenuatin dB/100m		NEXT dB	
	typ.	Cat 5 max*	typ.	Cat 5 min*
1	2.1	2.1	80	80
4	4	4	76	76
10	6.3	6.3	70	70
16	8	8	65	65
20	9	9	63	63
31.25	11.4	11.4	60	60
62.5	16.5	16.5	55	55
100	21.3	21.3	50	50

* EN 50288-2-1:2003

HARTING PROFINET Type B Outdoor Cable 4-wire Cat. 5 PVC

PROFINET Type B Outdoor cable 4-wire, Cat. 5, PVC

09 45 600 01X5

Advantages

- Suitable for PROFINET cabling Category 5 / Class D according to ISO/IEC 11 801 respectively EN 50 173-1 and ISO/IEC 24 702 respectively EN 50 173-3
- Capable for outdoor installation
- Applicable for industrial premises
- RoHS conform, UL listed, flame retardant

General

This data cable is suitable for PROFINET cabling according to type B in industrial premises and areas. It is useable for flexible cords. The core is fitted with 4 wires twisted to quad that allows the transmission of Fast Ethernet 10/100 Mbit/s.

It is designed for fast assembling with the easy-stripping tool and can be assembled with all HARTING 4-pole RJ45 connectors.

Identification	Part number	Drawing
PROFINET Type B Outdoor Cable 4-wire, Cat. 5, PVC		
20 m ring	09 45 600 0135	• Wire: Stranded tinned copper AWG 22/7
50 m ring	09 45 600 0145	• Insulation: : PE Ø 1.56 mm (± 0.03)
100 m ring	09 45 600 0105	• Inner sheath: Polyvinylchloride (PVC)
500 m reel	09 45 600 0115	• Overall screen: aluminate foil overlapped, tinned copper wire braid, braid coverage about 85 %
		• Outer sheath: Polyvinylchloride (PVC), flame retardant
		Color code: wh, ye, bu, or
		Color of inner sheath: white
		Color of outer sheath: black, RAL 9005
		Overall diameter: 6.3 mm – 6.7 mm

HARTING PROFINET Type B Outdoor Cable 4-wire Cat. 5 PVC

09 45 600 01X5

Technical Characteristics

Performance	Category 5 according to EN 50288-2-1:2003, IEC 61156-5:2002
Mechanical Characteristics	
Minimal bending radius	Repeated bending: 5 x diameter Single bending: 3 x diameter
Torsional strength	± 180° on 1 m, 30,000 cycles
Electrical Characteristics at 20 °C	
Transfer impedance 10 MHz	20 mOhm/m
Conductor resistance	max. 120 Ohm/km
Insulation resistance	min. 500 MOhm*km
Velocity of propagation	5.3 ns/m
Characteristic impedance at 100 MHz	100 Ohm ± 5 Ohm
Test voltage (wire/wire/screen rms 50 Hz 1min)	2000 V
Chemical Characteristics	
Flame retardant	UL 1685 (CSA FT 4)
Free of hazardous substances	RoHS 2002/95/EG
Sunlight resistant	UL 1581 Sec.1200
Thermal Characteristics	
Permissible temperature range	
fixed operation	– 40 °C to + 70 °C
flexible operation	– 20 °C to + 60 °C
Printing	HARTING INDUSTRIAL ETHERNET STRANDED CABLE CAT 5 PLUS * UV protected * 22AWG (SHIELDED) (UL) E333432 CMG or PLTC or AWM 21695 80°C 600V FT4 SUN RES * 094560001020300 "Metermarkierung" * "Jahr/ Auftragsnummer" "HARTING-LOGO"
Weight about	68 kg/km

HARTING PROFINET Type B Outdoor Cable 4-wire Cat. 5 PVC

Technical Characteristics

Frequency MHz	Attenuatin dB/100m		NEXT dB	
	typ.	Cat 5 max*	typ.	Cat 5 min*
1	2.1	2.1	80	80
4	4	4	76	76
10	6.3	6.3	70	70
16	8	8	65	65
20	9	9	63	63
31.25	11.4	11.4	60	60
62.5	16.5	16.5	55	55
100	21.3	21.3	50	50

* EN 50288-2-1:2003

09 45 600 01X5

HARTING PROFINET Type B Cable 4-wire Cat. 5 PUR

PROFINET Type B Cable
4-wire, Cat. 5, PUR

09 45 600 01X9

Advantages

- Suitable for PROFINET cabling Category 5 / Class D according to ISO/IEC 11 801 respectively EN 50 173-1 and ISO/IEC 24 702 respectively EN 50 173-3
- Capable for flexible cords
- Applicable for industrial premises
- RoHS conform, flame retardant, halogen free

General

This data cable is suitable for PROFINET cabling according to type B in industrial premises and areas. It is useable for flexible cords. The core is fitted with 4 wires twisted to quad that allows the transmission of Fast Ethernet 10/100Mbit/s.

It is designed for fast assembling with the easy-stripping tool and can be assembled with all HARTING 4-pole RJ45 connectors.

Identification	Part number	Drawing
PROFINET Type B Cable 4-wire, Cat. 5, PUR		
20 m ring	09 45 600 0139	• Wire: Stranded tinned copper AWG 22/7 • Insulation: : PE Ø 1.56 mm (± 0.03) • Inner sheath: Thermoplastic Copolymer (FRNC) • Overall screen: aluminate foil overlapped, tinned copper wire braid, braid coverage about 85 % • Outer sheath: Polyurethane (PUR), flame retardant, halogen free Color code: wh, ye, bu, or Color of inner sheath: white Color of outer sheath: green, RAL 6018 Overall diameter: 6.3 mm – 6.7 mm
50 m ring	09 45 600 0149	
100 m ring	09 45 600 0109	
500 m reel	09 45 600 0119	

HARTING PROFINET Type B Cable 4-wire Cat. 5 PUR

Technical Characteristics

Performance	Category 5 according to EN 50 288-2-1:2003, IEC 61 156-5:2002
Mechanical Characteristics	
Minimal bending radius	Repeated bending: 7 x diameter Single bending: 3 x diameter
Torsional strength	±180° on 1 m, 30,000 cycles
Electrical Characteristics at 20 °C	
Transfer impedance 10 MHz	20 mOhm/m
Conductor resistance	max. 120 Ohm/km
Insulation resistance	min. 500 MOhm*km
Velocity of propagation	5.3 ns/m
Characteristic impedance at 100 MHz	100 Ohm ± 5 Ohm
Test voltage (wire/wire/screen rms 50 Hz 1min)	2000 V
Chemical Characteristics	
Flame retardant	IEC 60 332-1-2
Free of hazardous substances	RoHS 2002/95/EG
Thermal Characteristics	
Permissible temperature range	
fixed operation	– 40 °C to + 70 °C
flexible operation	– 20 °C to + 60 °C
Printing	HARTING INDUSTRIAL ETHERNET STRANDED CABLE CAT 5 PLUS PUR FRNC * 22AWG (SHIELDED) * 094560001020400 "sequential length in meters" * "year/internal order number" HARTING LOGO"
Weight about	62 kg/km

09 45 600 01X9

HARTING PROFINET Type B Cable 4-wire Cat. 5 PUR

Technical Characteristics

Frequency MHz	Attenuatin dB/100m		NEXT dB	
	typ.	Cat 5 max*	typ.	Cat 5 min*
1	2.1	2.1	80	80
4	4	4	76	76
10	6.3	6.3	70	70
16	8	8	65	65
20	9	9	63	63
31.25	11.4	11.4	60	60
62.5	16.5	16.5	55	55
100	21.3	21.3	50	50

* EN 50288-2-1:2003

09 45 600 01X9

HARTING PROFINET Type C Cable 4-wire Cat. 5 PUR

PROFINET Type C Cable
4-wire, Cat. 5, PUR

Advantages

- Suitable for PROFINET cabling Category 5 / Class D according to ISO/IEC 11 801 respectively EN 50 173-1 and ISO/IEC 24 702 respectively EN 50 173-3
- Capable for drag-line
- Applicable for industrial premises
- RoHS conform, UL listed, flame retardant, halogen free

General

This data cable is suitable for PROFINET cabling according to type C in industrial premises and areas. It is useable for flexible cords especially for drag-chain. The core is fitted with 4 wires twisted to quad that allows the transmission of Fast Ethernet 10/100 Mbit/s.

It is designed for fast assembling with the easy-stripping tool and can be assembled with all HARTING 4-pole RJ45 connectors.

Identification	Part number	Drawing
PROFINET Type C Cable 4-wire, Cat. 5, PUR		
20 m ring	09 45 600 0131	
50 m ring	09 45 600 0141	
100 m ring	09 45 600 0101	
500 m reel	09 45 600 0111	

- Wire: Stranded tinned copper AWG 22/7
- Insulation: : PE Ø 1.56 mm (± 0.03)
- Inner sheath: Thermoplastic copolymer (FRNC)
- Overall screen: aluminate foil overlapped, tinned copper wire braid, braid coverage about 85 %
- Outer sheath: Polyurethane (PUR), flame retardant

Color code: wh, ye, bu, or

Color of inner sheath: white

Color of outer sheath: green, RAL 6018

Overall diameter: 6.3 mm – 6.7 mm

HARTING PROFINET Type C Cable 4-wire Cat. 5 PUR

Technical Characteristics

Performance	Category 5 according to EN 50288-2-1:2003, IEC 61156-5:2002
Mechanical Characteristics	
Minimal bending radius	Repeated bending: 7 x diameter Single bending: 3 x diameter
Tensile strength	max. 150 N
Trailing strength	3 million bending cycles bending diameter 200 mm at a speed of 4 m/s acceleration 4 m/s²
Torsional strength	± 180° on 1 m, 30,000 cycles
Electrical Characteristics at 20 °C	
Transfer impedance 10 MHz	20 mOhm/m
Conductor resistance	max. 120 Ohm/km
Insulation resistance	min. 500 MOhm*km
Velocity of propagation	5.3 ns/m
Characteristic impedance at 100 MHz	100 Ohm ± 5 Ohm
Test voltage (wire/wire/screen rms 50 Hz 1min)	2000 V
Chemical Characteristics	
Flame retardant	IEC 60332-1-2
Free of hazardous substances	RoHS 2002/95/EG
Oil resistance	EN 60811-2-1
UV-resistant	
Thermal Characteristics	
Permissible temperature range	
fixed operation	– 40 °C to + 70 °C
flexible operation	– 20 °C to + 60 °C
Printing	HARTING INDUSTRIAL ETHERNET TRAILING CABLE CAT 5 PLUS * E333432 VERIFIED (UL) CAT 5E PATCH CABLE CMX 75°C FRNC * 2x2xAWG22/7*094560001010100 "Metermarkierung" * "HARTING-LOGO"
Weight about	61 kg/km

HARTING PROFINET Type C Cable 4-wire Cat. 5 PUR

Technical Characteristics

Frequency MHz	Attenuatin dB/100m		NEXT dB	
	typ.	Cat 5 max*	typ.	Cat 5 min*
1	2.1	2.1	80	65.3
4	4	4	76	56.3
10	6.3	6.3	70	50.3
16	8	8	65	47.2
20	9	9	63	45.8
31.25	11.4	11.4	60	42.9
62.5	16.5	16.5	55	38.4
100	21.3	21.3	50	35.3

* EN 50288-2-1:2003

09 45 600 01X1

HARTING PROFINET Type C Torsional Stress Cable 4-wire, Cat. 5, PUR

PROFINET Type C Torsional Cable
4-wire, Cat. 5, PUR

Advantages

- Suitable for PROFINET cabling Category 5 / Class D according to ISO/IEC 11 801 respectively EN 50 173 and ISO/IEC 24 702 respectively EN 50 173-3
- Applicable for industrial premises
- Applicable for torsional stress
- RoHS conform, UL recognized, flame retardant, halogen free

General

This data cable is suitable for PROFINET cabling according to type C torsional stress in industrial premises and areas. It is usable for flexible cords especially e.g. for industrial robot application. The core is fitted with 4 wires twisted to quad that allows the transmission of Fast Ethernet 10/100Mbit/s.

Can be assembled with all HARTING 4-pole RJ45 connectors.

Identification	Part number	Drawing
PROFINET Type C Torsional Cable 4-wire, Cat. 5, PUR 20 m ring 50 m ring 100 m reel 500 m reel	09 45 600 1110 09 45 600 1120 09 45 600 1130 09 45 600 1140	 • Wire: Stranded tinned copper AWG 22/19 • Foamed: PE Ø 1.52 mm (± 0.03) • Plastic Tape, overlapped • Overall screen: tinned copper wire braid, braid coverage about 85 % • Outer sheath: Polyurethane (PUR), flame retardant Color code: wh, ye, bu, or Color of outer sheath: green, RAL 6018 Overall diameter: 6.3 mm – 6.7 mm

HARTING PROFINET Type C Torsional Stress Cable 4-wire, Cat. 5, PUR

Technical Characteristics

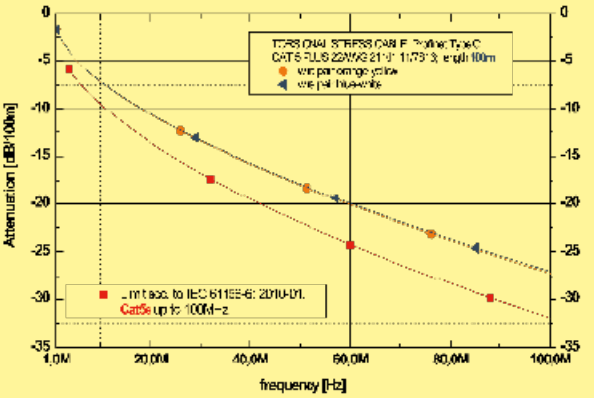
Performance	Category 5 according to EN 50 288-2-2:2003, IEC 61 156-6:2002
Mechanical Characteristics	
Minimal bending radius	Single bending: 5 x diameter max. 150 N
Torsional strength	± 180° on 1 m, 1 Mil. cycles
Electrical Characteristics at 20 °C	
Conductor resistance	max. 120 Ohm/km
Insulation resistance	min. 500 MOhm * km
Velocity of propagation	4.7 ns/m
Characteristic impedance at 100 MHz	100 Ohm ± 15 Ohm
Test voltage (wire/wire/screen rms 50 Hz 1 min)	700 V
Chemical Characteristics	
Halogen free	
Flame retardant UL-Style 21 161 (80 °C)	IEC 60 332-1-2
Thermal Characteristics	
Permissible temperature range	– 40 °C to + 80 °C
Printing	HARTING INDUSTRIAL ETHERNET TORSIONAL STRESS CABLE CAT 5 PLUS * 22AWG * E 333435 AWM STYLE 21161 80°C * 094560001010300 „sequential length in meters“ * „year/internal order number“ „HARTINGLOGO“
Weight about	54 kg/km

09 45 600 11X0

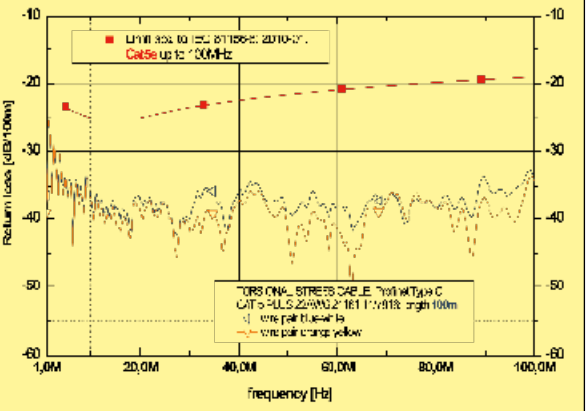
HARTING PROFINET Type C Torsional Stress Cable 4-wire, Cat. 5, PUR

Technical Characteristics, Transmission performance

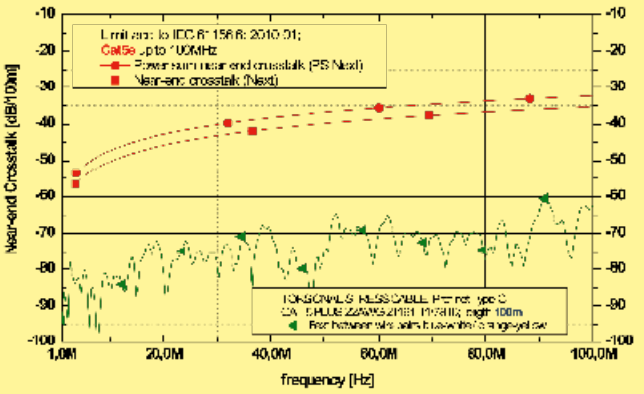
Attenuation



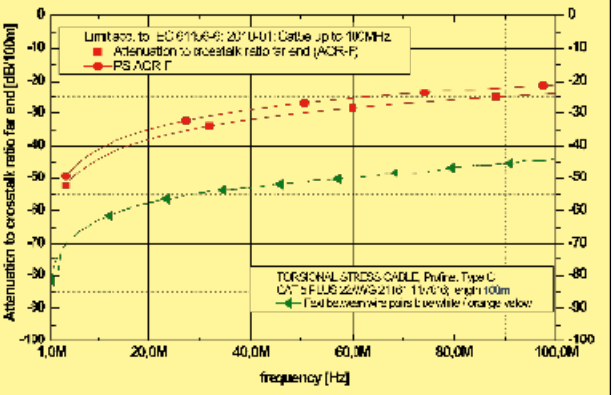
Return loss



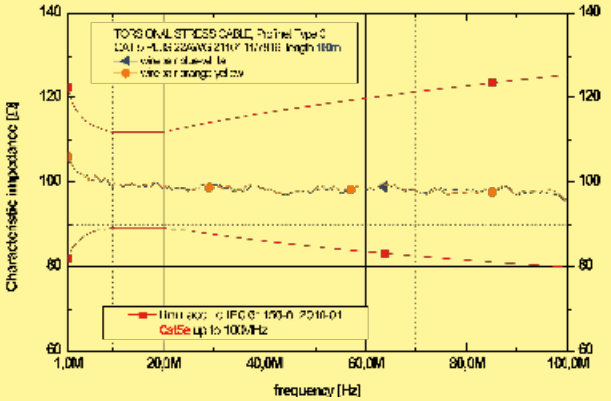
NEXT



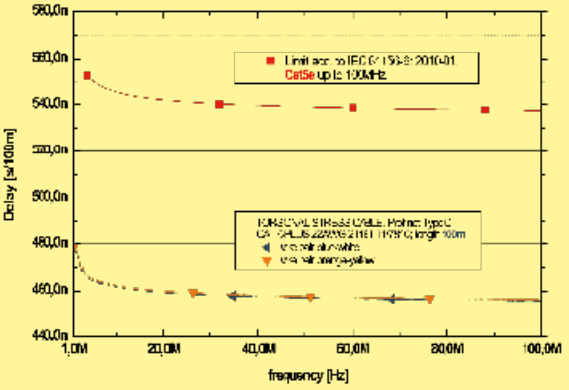
Attenuation to Crosstalk Radio fa-end (ACR)



Characteristic Impedance



Propagation Delay



All data given are in line with the actual state of art and therefore not binding.
HARTING reserves the right to modify designs without giving the relevant reasons.

HARTING PROFINET Hybrid Cable 4-wire + 4 x 1.5 Cat. 5 FRNC

PROFINET Hybrid Cable
4-wire + 4 x 1.5, Cat. 5, FRNC

Advantages

- Suitable for PROFINET cabling Category 5 / Class D according to ISO/IEC 11 801 respectively EN 50 173-1 and ISO/IEC 24 702 respectively EN 50 173-3
- Capable for flexible cords
- Applicable for industrial premises
- RoHS conform, UL recognized, flame retardant FRNC

General

This data cable is suitable for PROFINET Hybrid cabling according to type B in industrial premises and areas. It is useable for flexible cords and installation also. The core is fitted with 4 data wires twisted to star quad that allows the transmission of Fast Ethernet 10/100 Mbit/s and 4 power wires each of 1.5 mm² cross section.

It is designed for fast assembling in benefit for the customer. The PROFINET Hybrid cable is best capable for termination with Han® 3 A RJ45 Hybrid connector set.

Identification		Part number	Drawing
PROFINET Hybrid Cable 4-wire + 4 x 1.5, Cat. 5, FRNC			
10 m	ring	09 45 600 0310	
20 m	ring	09 45 600 0330	
50 m	ring	09 45 600 0340	
100 m	reel	09 45 600 0300	
500 m	reel	09 45 600 0320	

Quad
- Wire: Stranded tinned copper AWG 22/7
- Insulation: PE Ø 1.55 mm
- Color: wh, ye, bu, og
- Screen: Aluminate foil overlapped, tinned copper wire braid, braid coverage about 85 %

Power
- Wire: Stranded bare copper 4 x 1.5 mm² 84 x 0.15 mm (AWG 16)
- Insulation: FRNC Ø 2.4 mm
- Color: bk, number printed

Core
- Plastic tape overlapped
- Outer sheath: Thermoplastic Copolymer (FRNC), flame retardant

Color of outer sheath: green, RAL 6018
Overall diameter: 9.7 mm – 10.3 mm

HARTING PROFINET Hybrid Cable 4-wire + 4 x 1.5 Cat. 5 FRNC

Technical Characteristics

Performance	Category 5 according to EN 50288-2-1:2003, IEC 61156-5:2002
Mechanical Characteristics	
Minimal bending radius	Repeated bending: 10 x diameter Single bending: 5 x diameter
Tensile strength	max. 200 N
Electrical Characteristics at 20 °C	
Quad	
Transfer impedance at 1 MHz	50 mOhm/m
Transfer impedance at 10 - 100 MHz	10 mOhm/m
Conductor resistance	max. 120 Ohm/km
Insulation resistance	min. 500 MOhm x km
Velocity of propagation	5.3 ns/m
Characteristic impedance at 100 MHz	100 Ohm ± 5 Ohm
Test voltage (wire/wire/screen rms 50 Hz 1 min)	1500 V
Operating voltage	150 V
Power	
Conductor resistance	max. 14 Ohm/km
Insulation resistance	min. 20 MOhm*km
Test voltage (wire/wire/screen rms 50 Hz 1 min)	1500 V
Operating voltage	150 V
Chemical Characteristics	
Flame retardant	IEC 60332-1-2
Free of hazardous substances	RoHS 2002/95/EG
Halogen free	EN 60811-2-1
Thermal Characteristics	
Permissible temperature range	
fixed operation	– 20 °C to + 80 °C
flexible operation	– 20 °C to + 80 °C
Printing	HARTING PROFINET HYBRID CABLE CAT 5 FRNC * 4xAWG22/7 + 4x1.5 (SHIELDED) E333435 AWM 21282 * 09456000300200 “internal lot number” “sequential length in meters”
Weight about	154 kg/km

HARTING PROFINET Hybrid Cable 4-wire + 4 x 1.5 Cat. 5 FRNC

Technical Characteristics

Frequency MHz	Attenuation dB/100 m		NEXT dB		PS NEXT dB		EL FEXT dB		PS EL FEXT dB		Return Loss dB	
	typ.	Cat 5 max*	typ.	Cat 5 min*	typ.	Cat 5 min*	typ.	Cat 5 min*	typ.	Cat 5 min*	typ.	Cat 5 min*
1	2.1	2.1	65.3	65.3	62.3	62.3	63.8	63.8	60.8	60.8	-	-
4	4	4	56.3	56.3	53.3	53.3	51.8	51.8	48.8	48.8	23.0	23
10	6.3	6.3	50.3	50.3	47.3	47.3	43.8	43.8	40.8	40.8	25	25
16	8	8	47.2	47.2	44.2	44.2	39.7	39.7	36.7	36.7	25	25
20	9	9	45.8	45.8	42.8	42.8	37.8	37.8	34.8	34.8	25	25
31.25	11.4	11.4	42.9	42.9	39.9	39.9	33.9	33.9	30.9	30.9	23.6	23.6
62.5	16.5	16.5	38.4	38.4	35.4	35.4	27.9	27.9	24.9	24.9	21.5	21.5
100	21.3	21.3	35.3	35.3	32.3	32.3	23.8	23.8	20.8	20.8	20.1	20.1

* EN 50288-2-1:2003

HARTING Hybrid Cable 8-wire + 4 x 1.5 Cat. 6 PUR

Hybrid Cable
8-wire + 4 x 1.5 Cat. 6 PUR

Advantages

- Suitable for cabling Category 6 / Class E according to ISO/IEC 11 801 respectively EN 50 173-1 and ISO/IEC 24 702 respectively EN 50 173-3
- Valid for Gigabit Ethernet 1000 Base-T acc. to IEEE 802.3
- Capable for industrial communications cabling for the outdoor
- Very robust and high flexible PUR jacket
- Halogen-free and Oil retardant
- Good EMC characteristics

General

This data cable is suitable for Hybrid cabling in industrial premises as well as outdoor areas.

The four twisted pairs PIMF construction is designed for Gigabit Ethernet and gives good EMC capabilities.

The cable comes with four power wires which each of them has a 1.5 mm² cross section. Polyurethane is used for the cable sheath which protects the cable against ingress and impact.

HARTING offers field assembling Han® 3 A RJ45 Hybrid connectors with reliable IDC termination technology.

The connectors are designed for fast and easy assembling without any special tooling.

Identification	Part number	Drawing
Hybrid Cable 8-wire + 4 x 1.5, Cat. 6, PUR 20 m ring 50 m ring 100 m reel other length on request	09 45 600 0332 09 45 600 0342 09 45 600 0302	

Data wires
- Wire: Stranded tinned copper AWG 28/7
- Insulation: foamed PE Ø 0.98 mm
- Wires: Twisted Pair acc. TIA/EIA 568
- Shielding: F/FTP, tinned copper wire braid coverage about 60 %

Power wires
- Wire: Stranded bare copper 4 x 1.5 mm² 84 x 0.15 mm (AWG 16)
- Insulation: FRNC Ø 2.4 mm
- Color: bk, number printed

Core
- Plastic tape overlapped
- Outer sheath: Polyurethane, flame retardant and halogen free

Color of outer sheath: black, RAL 9004
Overall diameter: 10.0 mm – 10.6 mm

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Technical Characteristics

Performance	Category 6 according to EN 50288-5-2, IEC 61156-5 Note: Standardized up to 60 m. For length above attenuation is max. 10 % higher.
Mechanical Characteristics	
Minimal bending radius	Repeated bending: 10 x diameter Single bending: 5 x diameter
Tensile strength	max. 200 N
Electrical Characteristics at 20 °C	
Data wires	
Conductor resistance	385 Ohm/km
Insulation resistance	1.5 TOhm x km
Velocity of propagation	4.6 ns/m
Characteristic impedance at 100 MHz	105 Ohm ± 5 Ohm
Test voltage (wire/wire/screen rms 50 Hz 1 min)	700 V
Operating voltage	100 V
Power	
Conductor resistance	max. 14 Ohm/km
Insulation resistance	min. 20 MOhm*km
Test voltage (wire/wire/screen rms 50 Hz 1 min)	1500 V
Operating voltage	150 V
Chemical Characteristics	
Flame retardant	UL style 21523 (80 °C / 30 V)
Free of hazardous substances	RoHS 2002/95/EG
Halogen free	
Oil resistant	EN 60811-2-1
UV resistant	
Thermal Characteristics	
Permissible temperature range	
fixed operation	– 20 °C to + 80 °C
flexible operation	– 20 °C to + 80 °C
Printing	HARTING HYBRID Ethernet OUTDOOR CABLE CAT 6 PUR 4x2xAWG28/7 + 4x1.5 094560007000000 * E333435 AWM21523 80°C 30V * "sequential length in meters" "internal lot number" "HARTING-Logo"
Weight about	135 kg/km

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Technical Characteristics

Frequency MHz	Attenuation dB/100 m		NEXT dB		PS NEXT dB		EL FEXT dB		PS EL FEXT dB		Return Loss dB	
	typ.	Cat 6 max*	typ.	Cat 6 min*	typ.	Cat 6 min*	typ.	Cat 6 min*	typ.	Cat 6 min*	typ.	Cat 6 min*
1	3	3.1	75	66	75	64	80	66	80	64	24	20
4	5.6	5.8	80	65.3	80	63.3	80	58	80	55	27	23
10	8.7	9.0	95	59.3	90	57.3	75	50	70	47	29	25
16	11	11.4	95	56.2	90	54.2	70	45.9	68	43	29	25
20	12.2	12.8	91	54.8	88	52.8	68	44	65	41	29	25
31,25	15.3	16.1	88	51.9	86	49.9	62	40.1	62	37.1	30	23.6
62,5	22	23.2	83	47.4	78	45.3	45	34.1	45	31.1	30	21.53
100	28.3	29.9	77	44.3	75	42.3	38	30	40	27	30	20.1
155	36	38.0	72	41.4	70	39.4	38	26.2	38	23.2	26	18.8
200	41.5	43.7	68	39.8	67	37.8	37	24	37	21	23	18
250	47.1	49.5	65	38.3	65	36.3	35	22	35	19	22	17.32

* EN 50288-2-1:2003

HARTING Tools

Identification	Part number	
HARTING RJ Industrial® Stripping Tool		
Stripping tool for Ethernet cables including blade cassette	09 45 800 0000	
Spare blade cassette	09 45 800 0001	The RJ Industrial Stripping Tool is ready to remove insulation from cables for fast mounting with diameters from 2.5 to 8 mm quick and easy. It allows to remove cable sheath and shielding braid in one.

Ha-VIS preLink® Tool

Identification	Part number	
HARTING Assembly tool for Ha-VIS preLink® terminale module	20 82 000 9901	 The preLink® tool for termination of data cables by cutting all wires in length at the same time. Just to use in combination with the preLink® termination block.

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