

NBC-MSD/ 2,0-937 SCO RAIL - Network cable



1407339

<https://www.phoenixcontact.com/sg/products/1407339>

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Network cable, PROFINET CAT5 (100 Mbps), Ethernet CAT5 (100 Mbps), 4-position, PE-X halogen-free, black RAL 9005, shielded (Plastic-coated aluminum foil, tinned copper braided shield), Plug straight M12 SPEEDCON, coding: D / IP65, on free cable end, cable length: 2 m, For railway applications

Your advantages

- Easy and safe: 100 % electrically tested plug-in components
- Securely locked by special vibration brake
- Resistant to temperature influences – tested for an extended temperature range and for resistance to temperature shocks
- Reliable signal transmission – 360° shielding in environments with electromagnetic interference

Commercial data

Item number	1407339
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	*****
Product key	BF1CJN
Catalog page	Page 133 (C-4-2013)
GTIN	4046356774550
Weight per piece (including packing)	144.4 g
Weight per piece (excluding packing)	144.4 g
Customs tariff number	85444290
Country of origin	PL

Technical data

Notes

General	Further products with variable cable type and variable cable length can be found in the accessories section
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Product properties

Product type	Data cable preassembled
Application	Railway applications
Sensor type	PROFINET
Number of positions	4
No. of cable outlets	1
Shielded	yes
Coding	D

Insulation characteristics

Overvoltage category	II
Degree of pollution	3

Interfaces

Bus system	PROFINET
	Ethernet
Signal type/category	PROFINET CAT5 (IEC 11801), 100 Mbps
	Ethernet CAT5 (IEC 11801), 100 Mbps

Signaling

Status display	No
Status display present	No

Electrical properties

Nominal voltage U_N	48 V AC
	60 V DC
Nominal current I_N	4 A
Transmission medium	Copper
Transmission characteristics (category)	CAT5 (IEC 11801:2002)

Material specifications

Flammability rating according to UL 94	V0
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Connector

Connection 1

Type	Plug straight M12 SPEEDCON / IP65
Number of positions	4
Locking type	SPEEDCON

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Coding type	D (Data)
Shielded	yes
Handle color	black
Material	CuSn (Contact) Ni/Au (Contact surface) PA 6.6 (Contact carriers) PA 6.6 (Grip) Zinc die-cast, nickel-plated (Screw connection)
Standards/regulations	PA 6.6: Fire protection in rail vehicles - requirement sets R22, R23, and R24 acc. to DIN EN 45545-2 (Risk level HL1 - HL3)
Insertion/withdrawal cycles	≥ 100
Insulation resistance	≥ 100 MΩ
Tightening torque	0.4 Nm
Degree of protection	IP65
Ambient temperature (operation)	-40 °C ... 85 °C

Connection 2

Type	free cable end
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Cable/line

Cable length	2 m
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PROFINET RADOX[®] railway application CAT5 [937]

Dimensional drawing	
Cable weight	70 kg/km
Number of positions	4
Shielded	yes
Cable type	PROFINET RADOX [®] railway application CAT5 [937]
Conductor structure	1x4xAWG22/7, SF/TQ
Signal speed	75 c
Conductor structure signal line	7x 0.25 mm
AWG signal line	22
Conductor cross section	4x 0.34 mm ²
Wire diameter incl. insulation	approx. 1.5 mm
External cable diameter	6.60 mm ±0.4 mm
Outer sheath, material	PE-X
External sheath, color	black RAL 9005
Conductor material	silver-plated Cu litz wires

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Material wire insulation	Foamed PE
Single wire, color	white-blue, orange-yellow
Thickness, outer sheath	approx. 1.00 mm
Overall twist	Star quad
Max. conductor resistance	$\leq 54.4 \text{ } \Omega/\text{km}$
Coupling resistance	200.00 m Ω /m (f $\leq$ 30 MHz)
Wave impedance	100 $\Omega \pm 5 \text{ } \Omega$ (f = 100 MHz)
Working capacitance	$\leq 65 \text{ pF}$ (Line-line)
	$\leq 100 \text{ pF}$ (Line-shield)
Nominal voltage, cable	300 V AC
Test voltage	2000 V AC (50 Hz, 5 minutes)
Minimum bending radius, fixed installation	6 x D
Smallest bending radius, fixed installation	40 mm
Near end crosstalk attenuation (NEXT)	73 dB (with 1 MHz)
	70 dB (at 4 MHz)
	65 dB (at 10 MHz)
	57 dB (at 31.5 MHz)
	52 dB (at 62.5 MHz)
	48 dB (at 100 MHz)
Return attenuation (RL)	25 dB (at 4 MHz)
	30 dB (at 10 MHz)
	30 dB (at 31.5 MHz)
	30 dB (at 62.5 MHz)
	28 dB (at 100 MHz)
Remote crosstalk attenuation (FEXT)	78 dB (with 1 MHz)
	77 dB (at 4 MHz)
	70 dB (at 10 MHz)
	65 dB (at 31.5 MHz)
	56 dB (at 62.5 MHz)
	48 dB (at 100 MHz)
Shield attenuation	2 dB (with 1 MHz)
	4.4 dB (at 4 MHz)
	7.4 dB (at 10 MHz)
	14 dB (at 31.5 MHz)
	20 dB (at 62.5 MHz)
	26 dB (at 100 MHz)
	40.00 dB (30 MHz $\leq$ f $\leq$ 100 MHz)
Halogen-free	in accordance with EN 50267-2-1
Flame resistance	EN 60332-1-2
	EN 50266
	EN 60332-3-25
	NF C32-070, 2.1
	NF C32-070, 2.2
	UL 1685, 12 (FT4)

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	in accordance with ISO 6722-1 5.22 (UN ECE-R 118.01)
Fume corrosiveness	EN 50267-2-2
Fume toxicity	BS 6853 B.1
	EN 50305, 9.2
Concentration of fumes	BS 6853 D.8.7
	EN 61034-2
	UL 1685, 12 (FT4)
Resistance to oil	according to IRM 902, 72 h at 100 °C
Fire protection in rail vehicles	BS 6853 (Category Ia, Ib, II)
	GM/RT 2130 (Category Ia, Ib, II)
	EN 45545 (Risk level HL1 - HL3)
	DIN 5510 (Fire protection level 1, 2, 3, 4)
	NF F16-101 (Category A1, A2, B)
	NF F16-101 (Class C/F0)
	NFPA 130
	UNI CEI 11170 (Risk level LR1 - LR4)
Other resistance	Resistance to fuels (according to IRM 903, 168 h at 70 °C)
Ambient temperature (operation)	-50 °C ... 90 °C (cable, fixed installation)
	-40 °C ... 90 °C (Cable, flexible installation)
Ambient temperature (installation)	-25 °C ... 90 °C

Environmental and real-life conditions

Ambient conditions

Degree of protection	IP65
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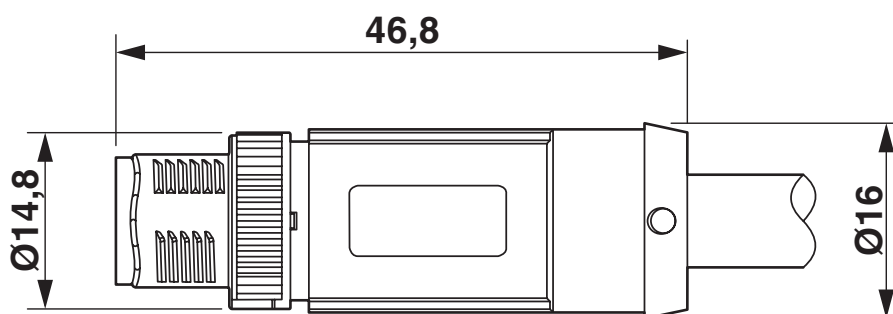
Standards and regulations

M12

Standard designation	M12 connector
Standards/specifications	IEC 61076-2-101
Standard designation	Shock, vibration
Standards/specifications	EN 50155

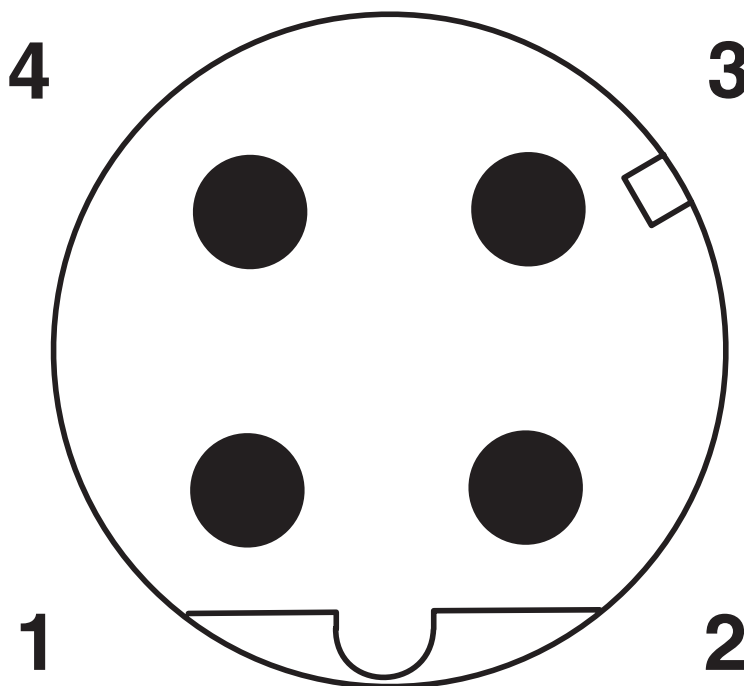
Drawings

Dimensional drawing



M12 SPEEDCON plug, straight, shielded

Schematic diagram



Pin assignment M12 male connector, 4-pos., D-coded, male side

Circuit diagram



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Approvals

🔗 To download certificates, visit the product detail page: <https://www.phoenixcontact.com/sg/products/1407339>



EAC-RoHS

Approval ID: RU D-DE.HB35.B.00387



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Classifications

ECLASS

ECLASS-11.0	27060307
ECLASS-12.0	27060307
ECLASS-13.0	27060307

ETIM

ETIM 9.0	EC001855
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UNSPSC

UNSPSC 21.0	26121600
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Environmental product compliance

EU RoHS	
Fulfills EU RoHS substance requirements	Yes, No exemptions
China RoHS	
Environment friendly use period (EFUP)	EFUP-E
	No hazardous substances above the limits
EU REACH SVHC	
REACH candidate substance (CAS No.)	1,6,7,8,9,14,15,16,17,17,18,18-Dodecachloropentacyclo[12.2.1.16,9.02,13.05,10]octadeca-7,15-diene ("Dechlorane Plus" TM)(CAS: n/a)
SCIP	92608fc8-d7ce-455e-8f58-da48cd68abd6

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Accessories

NBC-MSD SCO RAIL/.../... - Network cable

1412178

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Network cable, PROFINET CAT5 (100 Mbps), Ethernet CAT5 (100 Mbps), 4-position, Plug straight M12 SPEEDCON, coding: D / IP65, on free cable end, cable length: Free input (0.2 ... 40.0 m), For railway applications

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1412179

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Network cable, PROFINET CAT5 (100 Mbps), Ethernet CAT5 (100 Mbps), 4-position, Plug angled M12 SPEEDCON, coding: D / IP65, on free cable end, cable length: Free input (0.2 ... 40.0 m), For railway applications

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NBC-MSD-MSD SCO RAIL/.../... - Network cable

1412177

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Network cable, PROFINET CAT5 (100 Mbps), Ethernet CAT5 (100 Mbps), 4-position, Plug straight M12 SPEEDCON, coding: D / IP65, on Plug straight M12 SPEEDCON, coding: D / IP65, cable length: Free input (0.2 ... 40.0 m), For railway applications

NBC-FSD SCO RAIL/.../... - Network cable

1412181

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Network cable, PROFINET CAT5 (100 Mbps), Ethernet CAT5 (100 Mbps), 4-position, free cable end, on Socket straight M12 SPEEDCON, coding: D / IP65, cable length: Free input (0.2 ... 40.0 m), For railway applications

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PROT-M12 FS-PA-CHAIN - Sealing cap

1430873

<https://www.phoenixcontact.com/sg/products/1430873>

M12 sealing cap made of plastic with fixing band, for sensor cables, for free M12 plugs



SAC-M12-EXCLIP-M - Locking clip

1558988

<https://www.phoenixcontact.com/sg/products/1558988>

Locking clip for the pin side of sensor/actuator cables with M12 connector and M12 connectors for assembly, for knurl diameter: 15 mm or for Allen key with a wrench size of 14 mm, prevents the disconnection of plug-in connections without tools



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SACC-M12MSD-4QO SH PN - Data connector

1411068

<https://www.phoenixcontact.com/sg/products/1411068>



Data connector, PROFINET CAT5 (100 Mbps), 4-position, halogen-free, shielded, Plug straight M12, coding: D, Insulation displacement connection, knurl material: Zinc die-cast, nickel-plated, external cable diameter 5 mm ... 9.7 mm

SACC-M12FSD-4QO SH PN - Data connector

1411071

<https://www.phoenixcontact.com/sg/products/1411071>



Data connector, PROFINET CAT5 (100 Mbps), 4-position, halogen-free, shielded, Socket straight M12, coding: D, Insulation displacement connection, knurl material: Zinc die-cast, nickel-plated, external cable diameter 5 mm ... 9.7 mm

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SACC-M12MSD-4PL SH PN - Connector

1424682

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Connector, PROFINET CAT5 (100 Mbps), 4-position, shielded, Plug straight M12, coding: D, Push-lock spring connection, knurl material: Zinc die-cast, nickel-plated, external cable diameter 4 mm ... 8 mm

SACC-M12MRD-4PL SH PN - Connector

1424684

<https://www.phoenixcontact.com/sg/products/1424684>



Connector, PROFINET CAT5 (100 Mbps), 4-position, shielded, Plug angled M12, coding: D, Push-lock spring connection, knurl material: Zinc die-cast, nickel-plated, external cable diameter 4 mm ... 8 mm

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SACC-M12FSD-4PL SH PN - Connector

1424683

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Connector, PROFINET CAT5 (100 Mbps), 4-position, shielded, Socket straight M12, coding: D, Push-lock spring connection, knurl material: Zinc die-cast, nickel-plated, external cable diameter 4 mm ... 8 mm

SACC-M12FRD-4PL SH PN - Connector

1424685

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Connector, PROFINET CAT5 (100 Mbps), 4-position, shielded, Socket angled M12, coding: D, Push-lock spring connection, knurl material: Zinc die-cast, nickel-plated, external cable diameter 4 mm ... 8 mm

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SACC-M12MSD-4CT-CM SH PN - Data connector

1422846

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Data connector, PROFINET CAT5 (100 Mbps), 4-position, shielded, Plug straight M12, coding: D, Crimp connection, knurl material: Zinc die-cast, tin-plated, external cable diameter 4.5 mm ... 7.5 mm, without crimp contacts

SACC-M12MRD-4CT-CM SH PN - Data connector

1422847

<https://www.phoenixcontact.com/sg/products/1422847>



Data connector, PROFINET CAT5 (100 Mbps), 4-position, shielded, Plug angled M12, coding: D, Crimp connection, knurl material: Zinc die-cast, tin-plated, external cable diameter 4.5 mm ... 7.5 mm, without crimp contacts

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SACC-M12FSD-4CT-CM SH PN - Data connector

1422848

<https://www.phoenixcontact.com/sg/products/1422848>



Data connector, PROFINET CAT5 (100 Mbps), 4-position, shielded, Socket straight M12, coding: D, Crimp connection, knurl material: Zinc die-cast, tin-plated, external cable diameter 4.5 mm ... 7.5 mm, without crimp contacts

SACC-M12FRD-4CT-CM SH PN - Data connector

1422849

<https://www.phoenixcontact.com/sg/products/1422849>



Data connector, PROFINET CAT5 (100 Mbps), 4-position, shielded, Socket angled M12, coding: D, Crimp connection, knurl material: Zinc die-cast, tin-plated, external cable diameter 4.5 mm ... 7.5 mm, without crimp contacts

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SACC-PO12MSD-4CT-CM SH PN - Data connector

1021830

<https://www.phoenixcontact.com/sg/products/1021830>



Data connector, PROFINET CAT5 (100 Mbps), 4-position, shielded, Plug straight M12 Push-Pull, coding: D, Crimp connection, knurl material: PA 6.6, external cable diameter 4.5 mm ... 7.5 mm, without crimp contacts

SACC-PO12MRD-4CT-CM SH PN - Data connector

1021831

<https://www.phoenixcontact.com/sg/products/1021831>



Data connector, PROFINET CAT5 (100 Mbps), 4-position, shielded, Plug angled M12 Push-Pull, coding: D, Crimp connection, knurl material: PA 6.6, external cable diameter 4.5 mm ... 7.5 mm, without crimp contacts

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SACC-M12MSD-4QO SH ETH - Data connector

1411066

<https://www.phoenixcontact.com/sg/products/1411066>



Data connector, Ethernet CAT5 (100 Mbps), 4-position, halogen-free, shielded, Plug straight M12, coding: D, Insulation displacement connection, knurl material: Zinc die-cast, nickel-plated, external cable diameter 5 mm ... 9.7 mm

SACC-M12FSD-4QO SH ETH - Data connector

1411069

<https://www.phoenixcontact.com/sg/products/1411069>



Data connector, Ethernet CAT5 (100 Mbps), 4-position, halogen-free, shielded, Socket straight M12, coding: D, Insulation displacement connection, knurl material: Zinc die-cast, nickel-plated, external cable diameter 5 mm ... 9.7 mm

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TSD 04 SAC - Torque screwdriver

1208429

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Torque screwdriver, with preset torque of 0.4 Nm and 4 mm hexagonal drive for M12 connectors

TSD-M 1,2NM - Torque screwdriver

1212224

<https://www.phoenixcontact.com/sg/products/1212224>



Torque screw driver, accuracy as per EN ISO 6789 standard, adjustable from 0.3 - 1.2 Nm

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TSD-M SAC-BIT ADAPTER - Adapter insert

1212600

<https://www.phoenixcontact.com/sg/products/1212600>



Adapter bit for TSD-M...torque tools, E6.3-1/4" drive with 4 mm hexagon to accommodate SAC bits

SAC BIT M12-D15 - Tool

1208432

<https://www.phoenixcontact.com/sg/products/1208432>



Nut for assembling sensor/actuator cables with M12 connector and M12 connectors for assembly, with a knurl diameter of 15 mm, for 4 mm hexagonal drive

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B-STIFT - Marker pen

1051993

<https://www.phoenixcontact.com/sg/products/1051993>



Marker pen, for manual labeling of unprinted Zack strips, smear-proof and waterproof, line thickness 0.5 mm

CUTFOX 12 - Cable-cutting tool

1212128

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Cable cutter, for copper and aluminum up to 12 mm diameter (up to 35 mm²)

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CUTFOX-S VDE - Diagonal cutter

1212207

<https://www.phoenixcontact.com/sg/products/1212207>



Diagonal cutter for hard (piano wire) and soft wires, VDE 1000 V AC/1500 V DC tested

MICROFOX-SP-1 - Diagonal cutter

1212487

<https://www.phoenixcontact.com/sg/products/1212487>



Electronic diagonal cutter, tapered head, without chamfer, with opening spring, non-reflective phosphate-treated surface, punched version

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WIREFOX 4 - Stripping tool

1212156

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Stripping tool, for cables and conductors (especially for rubber and silicone insulations) from 0.1 - 4 mm², self-adjusting, stripping length of up to 18 mm, cutting capacity of up to 10 mm² stranded/1.5 mm² solid, replaceable stripping blade

WIREFOX-E 4 - Stripping tool

1212704

<https://www.phoenixcontact.com/sg/products/1212704>



Stripping tool, for cables and conductors (especially for rubber and silicone insulations) from 0.1 - 4 mm², self-adjusting, stripping length of up to 18 mm, cutting capacity of up to 10 mm² stranded/1.5 mm² solid, replaceable stripping blade

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WIREFOX 10 - Stripping tool

1212150

<https://www.phoenixcontact.com/sg/products/1212150>



Stripping tool, for cables and conductors from 0.02 - 10 mm², self-adjusting, stripping length of up to 18 mm, cutting capacity of up to 10 mm² stranded/1.5 mm² solid, replaceable stripping blade

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