

# NBC-MSD/42,0-939/MSD SCO RAIL - Network cable



1081336

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Network cable, PROFINET CAT5 (100 Mbps), 4-position, PE-X halogen-free, black, shielded, Plug straight M12 SPEEDCON, coding: D / IP65, on Plug straight M12 SPEEDCON, coding: D / IP65, cable length: 42 m, Product tested according to customer specification/rail application

## Commercial data

Item number	1081336
Packing unit	1 pc
Minimum order quantity	4 pc
Note	Made to order (non-returnable)
Product key	AF1CJN
GTIN	4055626809960
Weight per piece (including packing)	2,709.08 g
Weight per piece (excluding packing)	2,709.08 g
Country of origin	PL

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## Technical data

### Product properties

Product type	Data cable preassembled
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
Signal type/category	PROFINET 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 speed	100 Mbps
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
Coding type	D (Data)
Shielded	yes
Handle color	black
Material	CuSn (Contact)
	Ni/Au (Contact surface)
	PA 6.6 (Contact carrier)
	PA 6.6 (Grip body)

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	Zinc die-cast, nickel-plated (Screw connection)
Insertion/withdrawal cycles	≥ 100 (Quantity: 500 with Phoenix Contact mating connector)
Insulation resistance	≥ 100 MΩ
Tightening torque	0.4 Nm
Degree of protection	IP65
Ambient temperature (operation)	-40 °C ... 90 °C

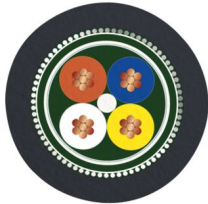
## Connection 2

Type	Plug straight M12 SPEEDCON / IP65
Number of positions	4
Locking type	SPEEDCON
Coding type	D (Data)
Shielded	yes
Handle color	black
Material	CuSn (Contact) Ni/Au (Contact surface) PA 6.6 (Contact carrier) PA 6.6 (Grip body) Zinc die-cast, nickel-plated (Screw connection)
Insertion/withdrawal cycles	≥ 100 (Quantity: 500 with Phoenix Contact mating connector)
Insulation resistance	≥ 100 MΩ
Tightening torque	0.4 Nm
Degree of protection	IP65
Ambient temperature (operation)	-40 °C ... 90 °C

## Cable/line

Cable length	42 m
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## PROFINET BETAtans® railway application CAT5 [939]

Dimensional drawing	
Cable weight	71 kg/km
Number of positions	4
Shielded	yes
Cable type	PROFINET BETAtans® railway application CAT5 [939]
Conductor structure	1x4xAWG22/7, SF/TQ
Signal runtime	4.4 ns/m
Signal speed	0.75 c
Conductor structure signal line	7x 0.25 mm

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AWG signal line	22
Conductor cross-section	4x 0.34 mm <sup>2</sup>
Wire diameter incl. insulation	1.4 mm ±0.1 mm
External cable diameter	6.60 mm ±0.2 mm
Outer sheath, material	PE-X
External sheath, color	black
Conductor material	Tin-plated Cu litz wires
Material wire insulation	Cell PE
Single wire, color	white-blue, orange-yellow
Thickness, outer sheath	1.00 mm
Overall twist	Star quad
Max. conductor resistance	≤ 54.4 Ω/km
Insulation resistance	≥ 5 GΩ*km
Coupling resistance	< 13.00 mΩ/m (f = 1 MHz) < 8.00 mΩ/m (f = 10 MHz ... 100 MHz)
Wave impedance	100 Ω ±5 Ω (f = 100 MHz)
Cable capacity	44 nF/km (Line-line)
Cable impedance	100 Ω ±15 Ω (f = 0.5 MHz ... 3 MHz)
Nominal voltage, cable	125 V
Test voltage Core/Core	1000 V AC (50 Hz, 1 min.)
Test voltage Core/Shield	1000.00 V AC (50 Hz, 1 min.)
Minimum bending radius, fixed installation	5 x D
Minimum bending radius, flexible installation	6 x D
Smallest bending radius, fixed installation	33 mm
Smallest bending radius, movable installation	40 mm
Tensile strength	≤ 60 N (temporary) ≤ 15 N (Permanent)
Near end crosstalk attenuation (NEXT)	76 dB (with 1 MHz) 71 dB (at 4 MHz) 64 dB (at 10 MHz) 60 dB (at 16 MHz) 56 dB (at 31.25 MHz) 52 dB (at 62.5 MHz) 48 dB (at 100 MHz) 45 dB (at 155 MHz) 42 dB (at 200 MHz)
Power-summated near end crosstalk attenuation (PSNEXT)	73 dB (with 1 MHz) 68 dB (at 4 MHz) 61 dB (at 10 MHz) 57 dB (at 16 MHz) 53 dB (at 31.25 MHz) 49 dB (at 62.5 MHz) 45 dB (at 100 MHz) 42 dB (at 155 MHz)

Return attenuation (RL)	39 dB (at 200 MHz)
	25 dB (with 1 MHz)
	25 dB (at 4 MHz)
	28 dB (at 10 MHz)
	28 dB (at 16 MHz)
	27 dB (at 31.25 MHz)
	26 dB (at 62.5 MHz)
	25 dB (at 100 MHz)
	25 dB (at 155 MHz)
	23 dB (at 200 MHz)
Shield attenuation	1.5 dB (with 1 MHz)
	3.3 dB (at 4 MHz)
	5.3 dB (at 10 MHz)
	6.9 dB (at 16 MHz)
	9.9 dB (at 31.25 MHz)
	14.5 dB (at 62.5 MHz)
	18.8 dB (at 100 MHz)
	23.6 dB (at 155 MHz)
	27.3 dB (at 200 MHz)
	60.00 dB (up to 1000 MHz)
Halogen-free	in accordance with EN 50267-2-1
	in accordance with EN 60684-2
Flame resistance	in accordance with EN 60332-1-2
	in accordance with EN 50266-2-5
	in accordance with ISO 14572 5.21 (UN ECE-R 118.01)
Concentration of fumes	EN 61034-2
Resistance to oil	in accordance with EN 50306-4, 72 hours at 100°C, IRM 902
Fire protection in rail vehicles	BS 6853 (Internal cable Ia, Ib, II/external cable Ia, Ib, II)
	DIN 5510-2 (Fire protection level 1, 2, 3, 4)
	EN 45545-2 (Risk level HL1 - HL3)
	EN 50306-4
	NF F16-101 (Classification C/F1)
	NF F16-101 (Internal cable A1, A2, B/external cable A1, A2, B)
	NFPA 130
	PN-K-02511
UIC 564-2 (Class A)	
Other resistance	Resistant to fuel (in accordance with EN 50306-4, 168 hours at 70°C, IRM 903)
	Resistant to ozone (in accordance with EN 50306-4, 72 hours at 40°C, method B, volumetric concentration of 200 x 10 <sup>-6</sup> )
Ambient temperature (operation)	-40 °C ... 85 °C (cable, fixed installation)
	-25 °C ... 70 °C (Cable, flexible installation)
	160 °C (Short circuit)

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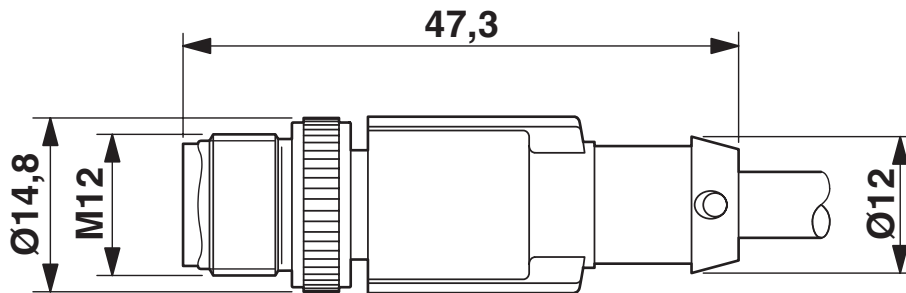
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## M12

Standard designation	M12 connector
Standards/specifications	IEC 61076-2-101

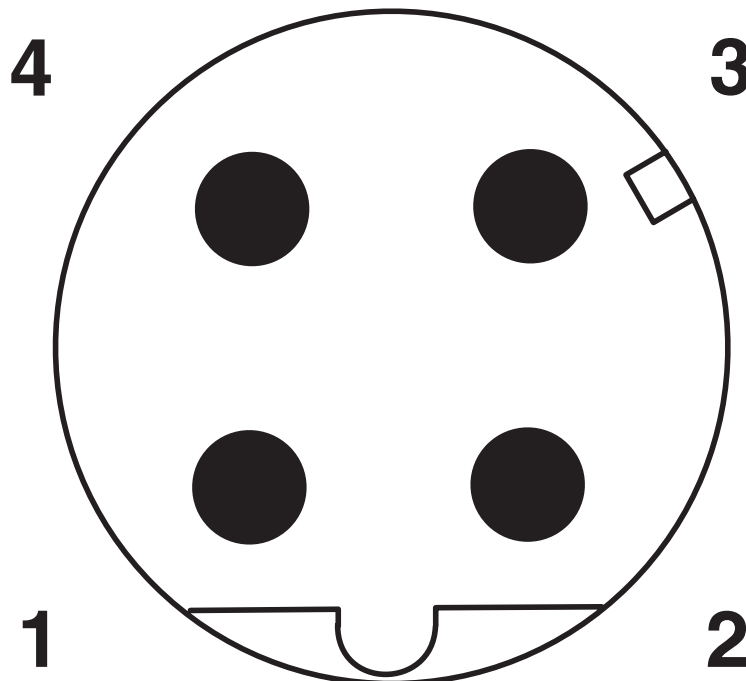
Drawings

Dimensional drawing



M12 SPEEDCON plug, straight, shielded

Schematic diagram

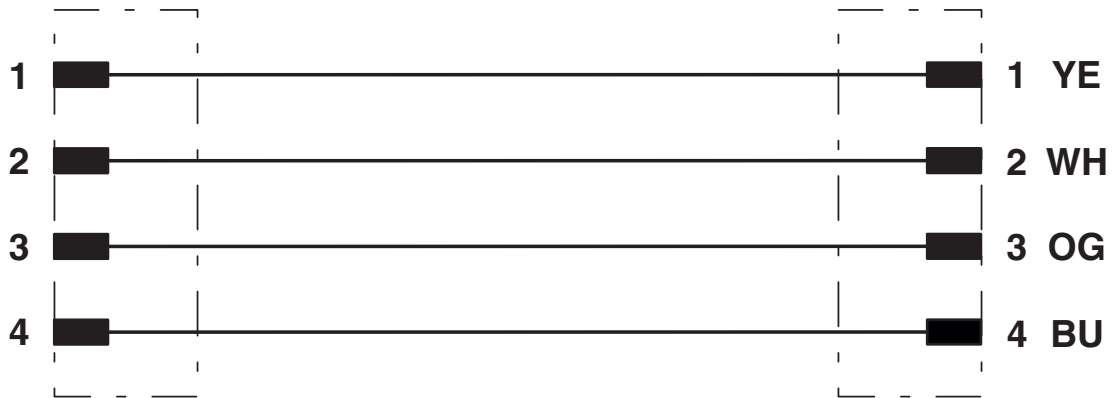


Pin assignment M12 male connector, 4-pos., D-coded, male side

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Circuit diagram



Contact assignment of the M12 plugs

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## Classifications

### ECLASS

ECLASS-13.0	27060307
ECLASS-15.0	27060307

### UNSPSC

UNSPSC 21.0	26121600
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## Environmental product compliance

### EU RoHS

Fulfills EU RoHS substance requirements	Yes, No exemptions
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### China RoHS

Environment friendly use period (EFUP)	EFUP-E
	No hazardous substances above the limits

### EU REACH SVHC

REACH candidate substance (CAS No.)	6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol(CAS: 119-47-1)
SCIP	62ca948c-8637-4616-af4d-f66a08ff4353

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