

Network cable - NBC-MSD/ 5.0-93B SCO - 1407497

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Network cable, PROFINET CAT5 (100 Mbps), EtherCAT® CAT5 (100 Mbps), 4-position, PVC/PVC, green RAL 6018, shielded, Plug straight M12 SPEEDCON / IP67, coding: D, on free cable end, cable length: 5 m



Key Commercial Data

Packing unit	1 pc
GTIN	 4 046356 777964
GTIN	4046356777964
Weight per Piece (excluding packing)	357.300 g
Custom tariff number	85444210
Country of origin	Poland

Technical data

Dimensions

Length of cable	5 m
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Ambient conditions

Degree of protection	IP65
	IP67
Ambient temperature (operation)	-25 °C ... 90 °C (M12 connector)

General data

Note	This product corresponds to the PROFINET Cabling and Interconnection Technology Guideline for PROFINET regulations, version 2.00, order no: 2.252, Chapter 8.2 Connectors for Outside Environment (Balanced cabling)
	Further products with variable cable type and variable cable length can be found in the accessories section
Rated current at 40°C	4 A
Rated voltage	48 V AC
	60 V DC

Network cable - NBC-MSD/ 5.0-93B SCO - 1407497

Technical data

General data

Number of positions	4
Signal type/category	PROFINET CAT5 (IEC 11801), 100 Mbps
	EtherCAT® CAT5 (IEC 11801), 100 Mbps
Standards/regulations	M12 connector IEC 61076-2-101
Contact material	CuSn
Contact carrier material	TPU GF
Contact surface material	Ni/Au

Characteristics head 1

Head type	Plug straight M12 SPEEDCON / IP67
No. of positions (pin connector pattern)	4
Coding	D (Data)
Color	black
Material (component)	CuSn (Contact)
	Ni/Au (Contact surface)
	PA (Contact carriers)
	TPU, hardly inflammable, self-extinguishing (Grip)
	Zinc die-cast, nickel-plated (Screw connection)
Insulation resistance	≥ 100 MΩ
Insertion/withdrawal cycles	≥ 100
Torque	0.4 Nm
Ambient temperature (operation)	-25 °C ... 90 °C

Characteristics head 2

Head type	free cable end
Color	black

Standards and Regulations

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

Cable

Cable type	PROFINET PVC stranded CAT5
Cable type (abbreviation)	93B
UL AWM style	21694
Signal type/category	PROFINET CAT5 (IEC 11801), 100 Mbps
	EtherCAT® CAT5 (IEC 11801), 100 Mbps
Cable structure	1x4xAWG22/7; SF/TQ
Conductor cross section	4x 0.34 mm²
AWG signal line	22
Conductor structure signal line	7x 0.25 mm
Core diameter including insulation	1.55 mm
Wire colors	White, yellow, blue, orange

Network cable - NBC-MSD/ 5.0-93B SCO - 1407497

Technical data

Cable

Overall twist	Star quad
Shielding	Aluminum-coated foil, tinned copper braided shield
Optical shield covering	85 %
External sheath, color	green RAL 6018
Outer sheath thickness	approx. 0.9 mm
External cable diameter D	6.5 mm ±0.2 mm
Minimum bending radius, fixed installation	3 x D
Minimum bending radius, flexible installation	7 x D
Cable weight	67 kg/km
Outer sheath, material	PVC
Material, inner sheath	PVC
Material conductor insulation	PE
Conductor material	Tin-plated Cu litz wires
Insulation resistance	≥ 500 MΩ*km
Loop resistance	≤ 120.00 Ω/km
Wave impedance	100 Ω ±15 Ω (at 100 MHz)
Near end crosstalk attenuation (NEXT)	80 dB (with 1 MHz)
	76 dB (at 4 MHz)
	70 dB (at 10 MHz)
	65 dB (at 16 MHz)
	63 dB (at 20 MHz)
	60 dB (at 31.25 MHz)
	55 dB (at 62.5 MHz)
	50 dB (at 100 MHz)
Attenuation	2.1 dB (with 1 MHz)
	4 dB (at 4 MHz)
	6.3 dB (at 10 MHz)
	8 dB (at 16 MHz)
	9 dB (at 20 MHz)
	11.4 dB (at 31.25 MHz)
	16.5 dB (at 62.5 MHz)
	21.3 dB (at 100 MHz)
Signal speed	0.66 c
Signal runtime	5.3 ns/m
Coupling resistance	≤ 20.00 mΩ/m (at 10 MHz)
Nominal voltage, cable	600 V
Test voltage Core/Core	2000 V (50 Hz, 1 min.)
Test voltage Core/Shield	2000 V (50 Hz, 1 min.)
Flame resistance	According to UL 1685 (CSA FT 4)
Resistance to oil	Resistant to oil to a limited extent

Network cable - NBC-MSD/ 5.0-93B SCO - 1407497

Technical data

Cable

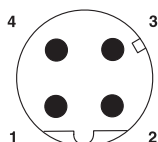
Other resistance	UV resistant According to UL 1581, Section 1200
Ambient temperature (operation)	-40 °C ... 70 °C (cable, fixed installation)
	-40 °C ... 70 °C (cable, flexible installation)
Ambient temperature (installation)	-20 °C ... 60 °C
Ambient temperature (storage/transport)	-50 °C ... 70 °C

Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

Drawings

Schematic diagram



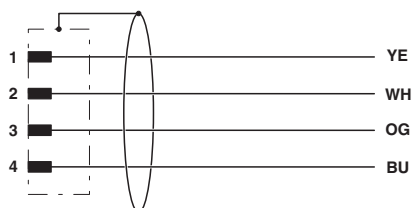
Pin assignment M12 male connector, 4-pos., D-coded, male side

Cable cross section



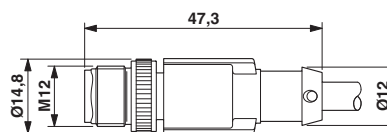
PROFINET PVC stranded CAT5 [93B]

Circuit diagram



Contact assignment of the M12 plug

Dimensional drawing



Plug, M12 x 1, straight, shielded

Classifications

eCl@ss

eCl@ss 4.0	27060307
eCl@ss 4.1	27060307
eCl@ss 5.0	27060307
eCl@ss 5.1	27060300
eCl@ss 6.0	27279200

Network cable - NBC-MSD/ 5.0-93B SCO - 1407497

Classifications

eCl@ss

eCl@ss 7.0	27279218
eCl@ss 8.0	27279218
eCl@ss 9.0	27060308

ETIM

ETIM 3.0	EC000830
ETIM 4.0	EC001855
ETIM 5.0	EC002599
ETIM 6.0	EC000830

UNSPSC

UNSPSC 6.01	31261501
UNSPSC 7.0901	31261501
UNSPSC 11	31261501
UNSPSC 12.01	31261501
UNSPSC 13.2	31251501

Approvals


Approvals

Approvals

UL Recognized / EAC

Ex Approvals

Approval details

UL Recognized		http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm	FILE E 335024
Nominal voltage UN	250 V		
Nominal current IN	4 A		

EAC		RU C- DE.AI30.B.00767
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Network cable - NBC-MSD/ 5.0-93B SCO - 1407497

Accessories

Accessories

Cable connector

Conductor connectors - SACC-CC-4QO SH PN - 1414416



Cable connector, PROFINET CAT5 (100 Mbps), 4-pos., halogen-free, shielded, insulation displacement connection, housing material: zinc die-cast, nickel-plated, outer cable diameter of 5 mm ... 9.7 mm

Circular connector (cable-side)

Connector - SACC-MSD-4QO SH PN SCO - 1411068



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

Bus system connector - SACC-M12MRD-4Q SH PN - 1554539



Bus system connector, PROFINET CAT5 (100 Mbps), 4-position, shielded, Plug angled M12, D-coded, Insulation displacement connection, knurl material: Nickel-plated brass, external cable diameter 4 mm ... 8 mm

Connector - SACC-FSD-4QO SH PN SCO - 1411071



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

Bus system connector - SACC-M12FRD-4Q SH PN - 1554542



Bus system connector, PROFINET CAT5 (100 Mbps), 4-position, shielded, Socket angled M12, D-coded, Insulation displacement connection, knurl material: Nickel-plated brass, external cable diameter 4 mm ... 8 mm

Network cable - NBC-MSD/ 5.0-93B SCO - 1407497

Accessories

Connector - SACC-M12MSD-4PL SH PN - 1424682



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

Connector - SACC-M12MRD-4PL SH PN - 1424684



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

Connector - SACC-M12FSD-4PL SH PN - 1424683



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

Connector - SACC-M12FRD-4PL SH PN - 1424685



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

Connector - SACC-M12MSD-4CT-CM SH PN - 1422846



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

Network cable - NBC-MSD/ 5.0-93B SCO - 1407497

Accessories

Connector - SACC-M12MRD-4CT-CM SH PN - 1422847



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

Connector - SACC-M12FSD-4CT-CM SH PN - 1422848



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

Connector - SACC-M12FRD-4CT-CM SH PN - 1422849



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

Corrugated pipe

Protective hose - WP-PA HF 13,0 BK - 3240681



Polyamide protective hose, inflammability class V0, UV resistant

Protective hose - WP-PA HF-HB 13,0 BK - 3240839



Polyamide protective hose, inflammability class HB, UV resistant

Cutting tools

Network cable - NBC-MSD/ 5.0-93B SCO - 1407497

Accessories

Cable-cutting tool - CUTFOX 12 - 1212128



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

Diagonal cutter - CUTFOX-S VDE - 1212207



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

Data cable preassembled

Network cable - NBC-MSD SCO-PN/.../... - 1408640



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT[®] CAT5 (100 Mbps), 4-position, Variable cable type, shielded, Plug straight M12 SPEEDCON / IP67, coding: D, on free cable end, cable length: Free input (0.2 ... 40.0 m)

Network cable - NBC-MRD SCO-PN/.../... - 1408633



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT[®] CAT5 (100 Mbps), 4-position, Variable cable type, shielded, Plug angled M12 SPEEDCON / IP67, coding: D, on free cable end, cable length: Free input (0.2 ... 40.0 m)

Network cable - NBC-FSD SCO-PN/.../... - 1408623



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT[®] CAT5 (100 Mbps), 4-position, Variable cable type, shielded, free cable end, on Socket straight M12 SPEEDCON / IP67, coding: D, cable length: Free input (0.2 ... 40.0 m)

Network cable - NBC-MSD/ 5.0-93B SCO - 1407497

Accessories

Network cable - NBC-FRD SCO-PN/.../... - 1408615



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT® CAT5 (100 Mbps), 4-position, Variable cable type, shielded, free cable end, on Socket angled M12 SPEEDCON / IP67, coding: D, cable length: Free input (0.2 ... 40.0 m)

Data plug

RJ45 connector - VS-PN-RJ45-5-Q/IP20 - 1658435



RJ45 connector, degree of protection: IP20, number of positions: 4, 100 Mbps, CAT5 (IEC 11801:2002), material: PA, connection method: IDC fast connection, connection cross section: AWG 22- 22, cable outlet: straight, color: traffic grey A RAL 7042

RJ45 connector - CUC-IND-C1ZNI-S/R4IP8 - 1421126



RJ45 connector, degree of protection: IP20, number of positions: 8, 1 Gbps, CAT5 (IEC 11801:2002), material: Zinc die-cast, connection method: IDC fast connection, connection cross section: AWG 23- 22, cable outlet: straight

RJ45 connector - CUC-IND-C1ZNI-T/R4IP8 - 1421128



RJ45 connector, degree of protection: IP20, number of positions: 8, 1 Gbps, CAT5 (IEC 11801:2002), material: Zinc die-cast, connection method: IDC fast connection, connection cross section: AWG 23- 22, cable outlet: angled

RJ45 connector - CUC-IND-C1ZNI-B/R4IP8 - 1421127



RJ45 connector, degree of protection: IP20, number of positions: 8, 1 Gbps, CAT5 (IEC 11801:2002), material: Zinc die-cast, connection method: IDC fast connection, connection cross section: AWG 23- 22, cable outlet: angled

Network cable - NBC-MSD/ 5.0-93B SCO - 1407497

Accessories

RJ45 connector - CUC-V14-C1ZNI-S/R4P8 - 1422664



Push-pull connector (version 14), die-cast zinc, with RJ45 connector insert, 8-pos., with IDC fast connection technology, for 1 and 7-wire cores, 23 ... 22 AWG, for cable diameter of 5.5 mm ... 10 mm

RJ45 connector - CUC-V14-C1ZNI-T/R4P8 - 1422667



Push-pull connector (version 14), die-cast zinc, with RJ45 connector insert, 8-pos., with IDC fast connection technology, for 1 and 7-wire cores, 23 ... 22 AWG, for cable diameter of 5.5 mm ... 10 mm

RJ45 connector - CUC-V14-C1ZNI-B/R4P8 - 1422665



Push-pull connector (version 14), die-cast zinc, with RJ45 connector insert, 8-pos., with IDC fast connection technology, for 1 and 7-wire cores, 23 ... 22 AWG, for cable diameter of 5.5 mm ... 10 mm

Electronics pliers

Diagonal cutter - MICROFOX-SP-1 - 1212487



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

Protective cap

Sealing cap - PROT-M12 FS-PA-CHAIN - 1430873

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



Safety locking

Network cable - NBC-MSD/ 5.0-93B SCO - 1407497

Accessories

Locking clip - SAC-M12-EXCLIP-M - 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

Screwdriver tools

Adapter insert - TSD-M SAC-BIT ADAPTER - 1212600



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

Tool - SAC BIT M12-D15 - 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

Stripping tool

Stripping tool - WIREFOX 4 - 1212156



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

Stripping tool - WIREFOX-E 4 - 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

Network cable - NBC-MSD/ 5.0-93B SCO - 1407497

Accessories

Stripping tool - WIREFOX 10 - 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

Torque tool

Torque screwdriver - TSD 04 SAC - 1208429



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

Torque screwdriver - TSD-M 1,2NM - 1212224



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

Stripping tool - VS-CABLE-STRIP-VARIO - 1657407



Stripping tool, for the multi-level stripping of shielded cables

Protective hose adapter - WP-CTA POM 13,0 BK - 1422884



Protective hose adapter, for corrugated hoses with a nominal size of 13 (10 x 13), corrugated in parallel
