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## Network cable - NBC-MSD/ 1,0-93K SCO - 1411503

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Network cable, Sercos III CAT5 (100 Mbps), 4-position, PVC/PVC, signal red RAL 3020, shielded, Plug straight M12 SPEEDCON / IP67, Coding: D, on free cable end, Cable length: 1 m



### Key Commercial Data

|                      |          |
|----------------------|----------|
| Packing unit         | 1 STK    |
| Custom tariff number | 85444210 |
| Country of origin    | Poland   |

### Technical data

#### Dimensions

|                 |     |
|-----------------|-----|
| Length of cable | 1 m |
|-----------------|-----|

#### Ambient conditions

|                      |                      |
|----------------------|----------------------|
| Degree of protection | IP65 (M12 connector) |
|                      | IP67 (M12 connector) |

#### General data

|                       |                                       |
|-----------------------|---------------------------------------|
| Rated current at 40°C | 4 A                                   |
| Rated voltage         | 250 V                                 |
| Number of positions   | 4                                     |
| Signal type/category  | Sercos III CAT5 (IEC 11801), 100 Mbps |
| Standards/regulations | M12 connector IEC 61076-2-101         |

#### Characteristics head 1

|  |                                   |
|--|-----------------------------------|
| Head type                                | Plug straight M12 SPEEDCON / IP67 |
| No. of positions (pin connector pattern) | 4                                 |

# Network cable - NBC-MSD/ 1,0-93K SCO - 1411503

## Technical data

### Characteristics head 1

|                                 |  |
|---------------------------------|--|
| 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           | $\geq 100 \text{ M}\Omega$                         |
| Insertion/withdrawal cycles     | $\geq 100$   |
| Torque                          | 0.4 Nm   |
| Ambient temperature (operation) | -25 °C ... 90 °C                                   |

### Characteristics head 2

|   |                |
|---|----------------|
| Head type   | free cable end |
| Stripping length of the sheath (free conductor end) | 50 mm          |

## Standards and Regulations

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

## Cable

|   |                                       |
|---|---------------------------------------|
| Cable type                                    | Sercos III                            |
| Cable type (abbreviation)                     | 93K                                   |
| UL AWM style                                  | 21694 (60°C / 600 V)                  |
| Signal type/category                          | Sercos III CAT5 (IEC 11801), 100 Mbps |
| Cable structure                               | 1x4xAWG22/7; SF/TQ                    |
| Conductor cross section                       | 4x 0.34 mm <sup>2</sup>               |
| AWG signal line                               | 22                                    |
| Conductor structure signal line               | 7x 0.25 mm                            |
| Core diameter including insulation            | approx. 1.55 mm                       |
| Wire colors                                   | White, yellow, blue, orange           |
| Type of pair shielding                        | Aluminum-lined polyester foil         |
| Overall twist                                 | Star quad                             |
| Shielding                                     | Tinned copper braided shield          |
| External sheath, color                        | signal red RAL 3020                   |
| Outer sheath thickness                        | approx. 0.9 mm                        |
| External cable diameter D                     | 6.5 mm $\pm$ 0.2 mm                   |
| Minimum bending radius, fixed installation    | 3 x D                                 |
| Minimum bending radius, flexible installation | 7 x D                                 |

## Network cable - NBC-MSD/ 1,0-93K SCO - 1411503

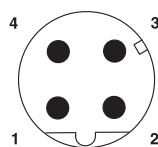
### Technical data

#### Cable

|   |   |
|---|---|
| Cable weight                            | 68 kg/km  |
| Outer sheath, material                  | PVC   |
| Material, inner sheath                  | PVC   |
| Material conductor insulation           | PE  |
| Conductor material                      | Tin-plated Cu litz wires                                |
| Insulation resistance                   | $\geq 0.5 \text{ G}\Omega \cdot \text{km}$              |
| Conductor resistance                    | $\leq 120 \text{ }\Omega/\text{km}$                     |
| Wave impedance                          | $100 \text{ }\Omega \pm 15 \text{ }\Omega$ (at 100 MHz) |
| Signal runtime                          | 5.3 ns/m  |
| Coupling resistance                     | $\leq 20.00 \text{ m}\Omega/\text{m}$ (at 10 Hz)        |
| 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                    |
| 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  |

### Drawings

Schematic diagram



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

Cable cross section

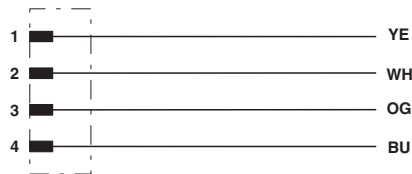


Sercos III [93K]

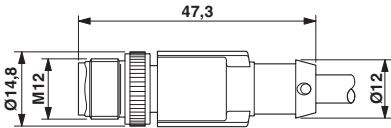


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Circuit diagram



Dimensional drawing



Contact assignment of the M12 plug

Plug, M12 x 1, straight, shielded

## Classifications

eCl@ss

|            |          |
|------------|----------|
| eCl@ss 4.1 | 27060306 |
| eCl@ss 5.1 | 27060307 |
| eCl@ss 6.0 | 27060390 |
| eCl@ss 8.0 | 27279218 |
| eCl@ss 9.0 | 27060311 |

ETIM

|          |          |
|----------|----------|
| ETIM 4.0 | EC002599 |
| ETIM 5.0 | EC001855 |

## Accessories

Accessories

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

## Network cable - NBC-MSD/ 1,0-93K SCO - 1411503

### Accessories

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#### Cutting tools

Diagonal cutter - CUTFOX-S VDE - 1212207



Diagonal cutter for copper and aluminum conductors, VDE 1000 V AC/ 1500 V DC-tested

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#### 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 sockets



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#### Safety locking

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

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#### 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

## Network cable - NBC-MSD/ 1,0-93K SCO - 1411503

### Accessories

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

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### Stripping tool

Stripping tool - WIREFOX 10 - 1212150



Stripping tool, for cables and conductors from 0.02 - 10 mm<sup>2</sup>, self-adjusting, stripping length of up to 18 mm, cutting capacity of up to 10 mm<sup>2</sup> stranded/1.5 mm<sup>2</sup> solid, replaceable stripping blade

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### 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

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



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

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



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

## Network cable - NBC-MSD/ 1,0-93K SCO - 1411503

### Accessories

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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

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