

## Network cable - NBC-M12FSD/10,0-93C/R4AC - 1038760

Please be informed that the data shown in this PDF Document is generated from our Online Catalog. Please find the complete data in the user's documentation. Our General Terms of Use for Downloads are valid (<http://phoenixcontact.com/download>)



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT® CAT5 (100 Mbps), 4-position, PUR/FRNC halogen-free, green RAL 6018, shielded, Plug straight RJ45 / IP20, on Socket straight M12 / IP67, coding: D, cable length: 10 m



### Key Commercial Data

|              |                                                                                      |
|--------------|--------------------------------------------------------------------------------------|
| Packing unit | 1 pc                                                                                 |
| GTIN         |  |
| GTIN         | 4055626592428                                                                        |

### Technical data

#### Dimensions

|                 |      |
|-----------------|------|
| Length of cable | 10 m |
|-----------------|------|

#### Ambient conditions

|                                 |                                   |
|---------------------------------|-----------------------------------|
| Degree of protection            | IP65 (M12 connector)              |
|                                 | IP67 (M12 connector)              |
|                                 | IP20 (RJ45 connector)             |
| Ambient temperature (operation) | -25 °C ... 85 °C (M12 connector)  |
|                                 | -25 °C ... 60 °C (RJ45 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 | 1 A                                                                                                                                                                                                                  |
| Rated voltage         | 48 V AC                                                                                                                                                                                                              |
|                       | 60 V DC                                                                                                                                                                                                              |
| Number of positions   | 4                                                                                                                                                                                                                    |

# Network cable - NBC-M12FSD/10,0-93C/R4AC - 1038760

## Technical data

### General data

|                                         |                                      |
|-----------------------------------------|--------------------------------------|
| Signal type/category                    | PROFINET CAT5 (IEC 11801), 100 Mbps  |
|                                         | EtherCAT® CAT5 (IEC 11801), 100 Mbps |
| Standards/regulations                   | M12 connector IEC 61076-2-101        |
| Degree of protection                    | IP67/IP20                            |
| Transmission characteristics (category) | CAT5                                 |

### Characteristics head 1

|                                          |                           |
|------------------------------------------|---------------------------|
| Head type                                | Plug straight RJ45 / IP20 |
| No. of positions (pin connector pattern) | 4 (8)                     |
| Color                                    | black                     |
| Material (component)                     | CuSn (Contact)            |
|                                          | Ni/Au (Contact surface)   |
|                                          | PA (Contact carriers)     |
|                                          | PA (Housing)              |
| Insertion/withdrawal cycles              | ≥ 750                     |
| Ambient temperature (operation)          | -25 °C ... 80 °C          |
| Shielded                                 | yes                       |
| Outer sheath, material                   | PUR                       |
| External sheath, color                   | green RAL 6018            |
| Type type, plug side                     | Plug straight             |
| Type type, socket side                   | Socket, straight          |

### Characteristics head 2

|                                          |                                                    |
|------------------------------------------|----------------------------------------------------|
| Head type                                | Socket straight M12 / IP67                         |
| No. of positions (pin connector pattern) | 4                                                  |
| Coding                                   | D (Data)                                           |
| Color                                    | black                                              |
|                                          | black                                              |
| Material (component)                     | CuSn (Contact)                                     |
|                                          | Ni/Au (Contact surface)                            |
|                                          | TPU GF (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                                   |

### Standards and Regulations

|                          |                               |
|--------------------------|-------------------------------|
| Standards/specifications | M12 connector IEC 61076-2-101 |
|--------------------------|-------------------------------|

### Cable

# Network cable - NBC-M12FSD/10,0-93C/R4AC - 1038760

## Technical data

### Cable

|                                               |                                                                                                                                                                                        |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product labeling                              | "sequential length in metres" PN-CABLE-934-C / PUR-4X22AWG/7 Trailing * 22AWG (SHIELDED) (UL) E119100 CMX 75°C VERIFIED (UL) CAT 5E PATCH CABLE FRNC * (Cable printing cable supplier) |
| Cable type                                    | PROFINET drag chain CAT5                                                                                                                                                               |
| Cable type (abbreviation)                     | 93C                                                                                                                                                                                    |
| 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            | 1.5 mm                                                                                                                                                                                 |
| Wire colors                                   | White, yellow, blue, orange                                                                                                                                                            |
| 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    | 5 x D                                                                                                                                                                                  |
| Minimum bending radius, flexible installation | 7.5 x D                                                                                                                                                                                |
| Number of bending cycles                      | 3000000                                                                                                                                                                                |
| Bending radius                                | 100 mm                                                                                                                                                                                 |
| Traversing path                               | 10 m                                                                                                                                                                                   |
| Traversing rate                               | 4 m/s                                                                                                                                                                                  |
| Acceleration                                  | 4 m/s²                                                                                                                                                                                 |
| Torsion force                                 | ± 30 °/m                                                                                                                                                                               |
| Tensile strength GRP                          | ≤ 150 N                                                                                                                                                                                |
| Cable weight                                  | 61 kg/km                                                                                                                                                                               |
| Outer sheath, material                        | PUR                                                                                                                                                                                    |
| Material, inner sheath                        | FRNC                                                                                                                                                                                   |
| 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 1 ... 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)                                                                                                                                                                      |

## Network cable - NBC-M12FSD/10,0-93C/R4AC - 1038760

### Technical data

#### Cable

|                                         |                                                 |
|-----------------------------------------|-------------------------------------------------|
|                                         | 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 (UL rating)                               |
| Test voltage Core/Core                  | 2000 V (50 Hz, 1 min.)                          |
| Test voltage Core/Shield                | 2000 V (50 Hz, 1 min.)                          |
| Special properties                      | Electrical properties according to EN 50288-2-2 |
| Flame resistance                        | according to IEC 60332-1-2                      |
| Halogen-free                            | yes                                             |
| Resistance to oil                       | in accordance with DIN EN 60811-2-1             |
| Other resistance                        | UV resistant                                    |
| 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

|            |                                                         |
|------------|---------------------------------------------------------|
| China RoHS | Environmentally friendly use period: unlimited = EFUP-e |
|            | No hazardous substances above threshold values          |

### Drawings

## Network cable - NBC-M12FSD/10,0-93C/R4AC - 1038760

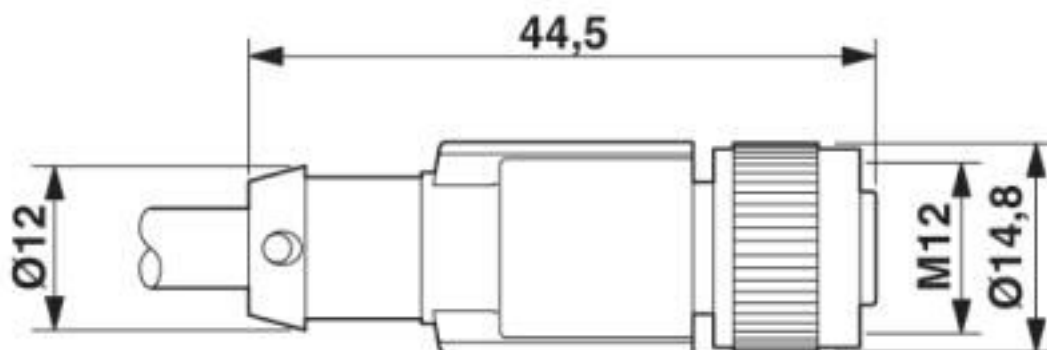
Schematic diagram



Connector pin assignment plug RJ45

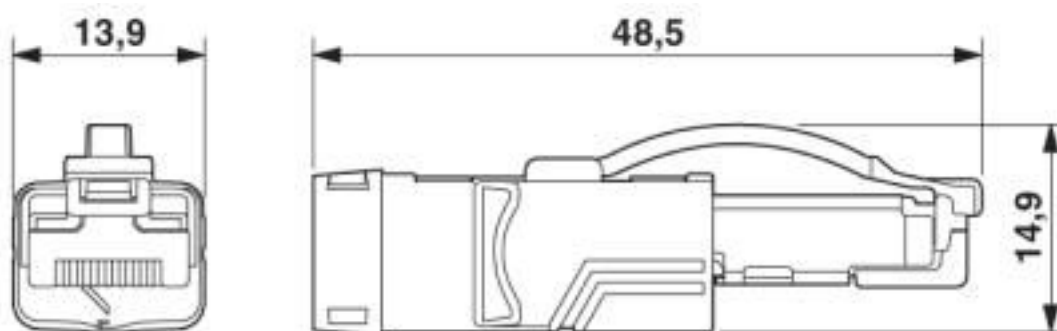
## Network cable - NBC-M12FSD/10,0-93C/R4AC - 1038760

Dimensional drawing



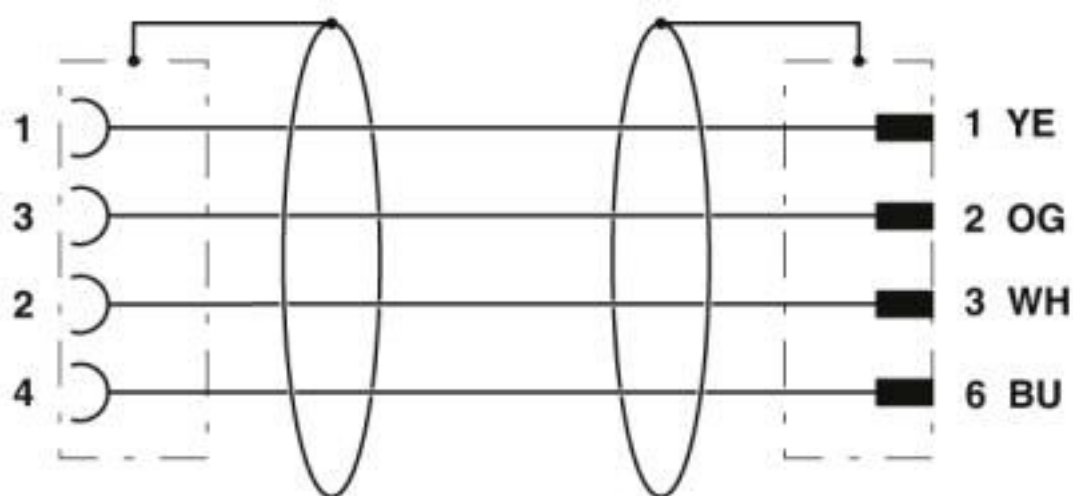
M12 x 1 socket, straight, shielded

Dimensional drawing



RJ45 connector, IP20

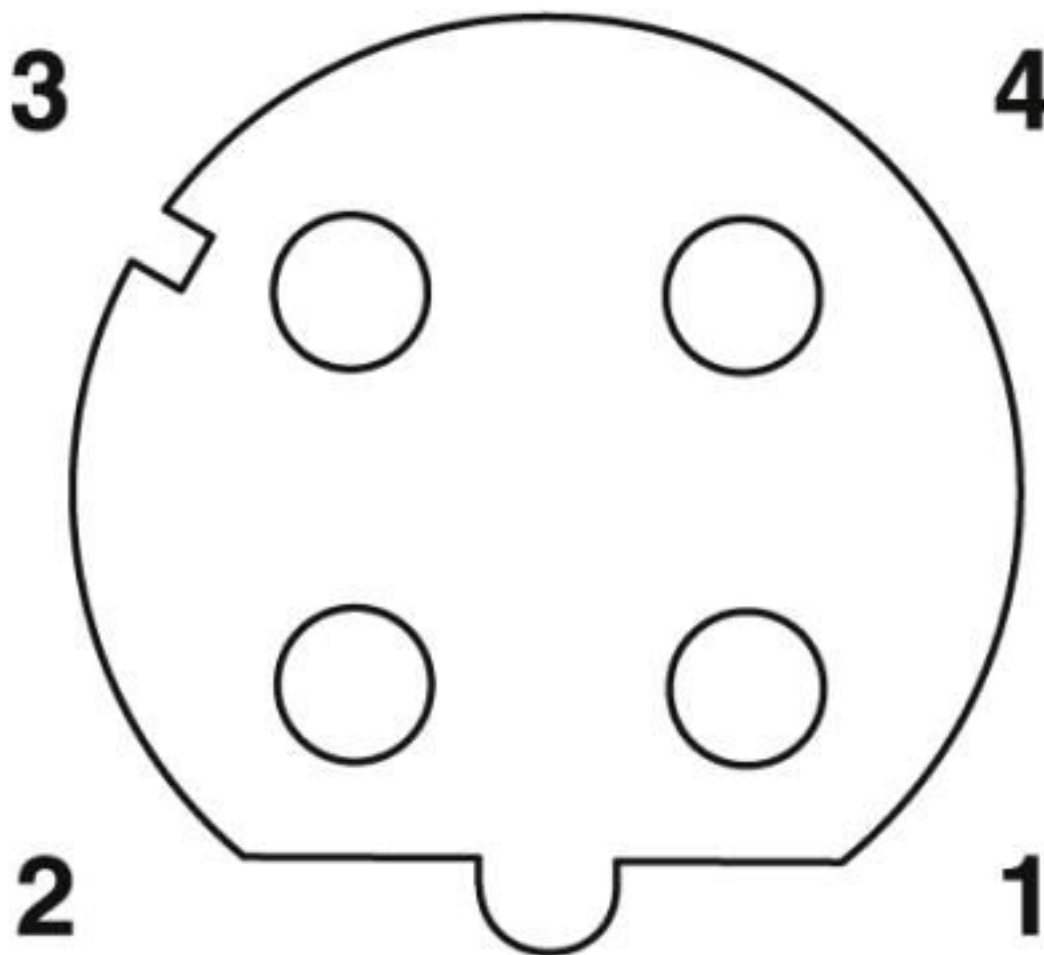
Circuit diagram



Contact assignment of the M12 socket and the RJ45 plug

## Network cable - NBC-M12FSD/10,0-93C/R4AC - 1038760

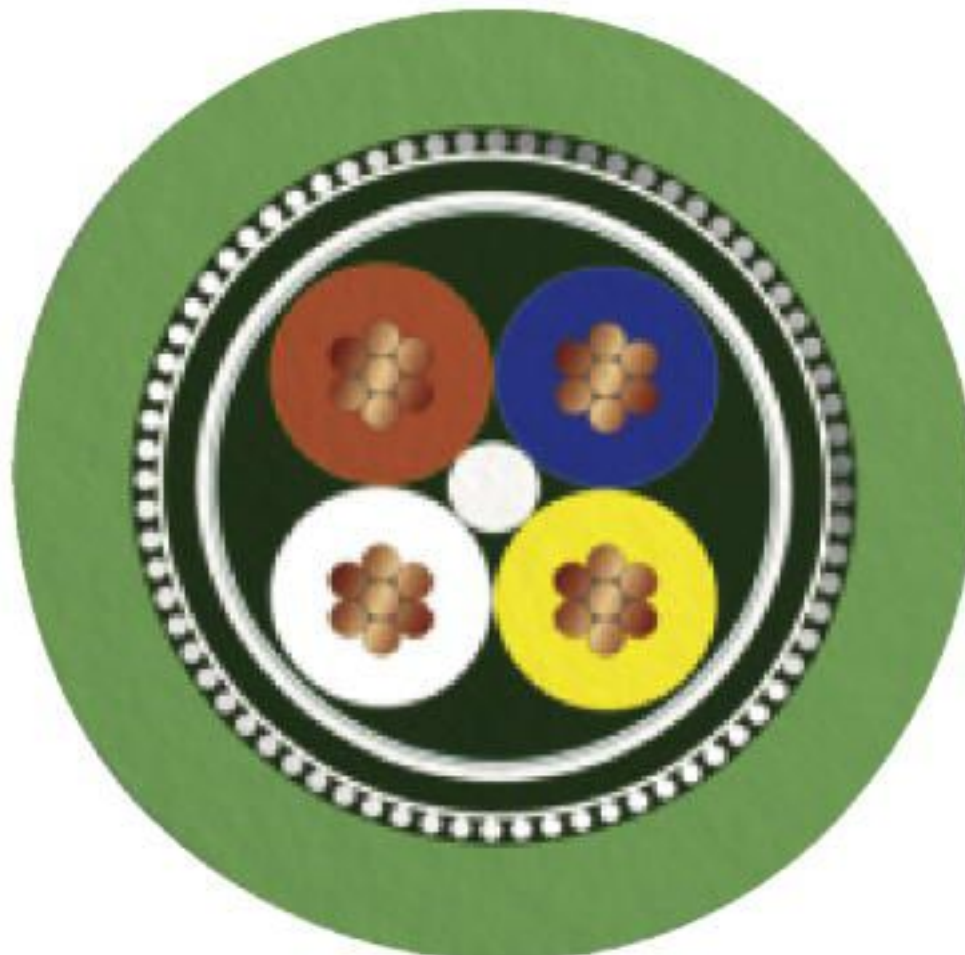
Schematic diagram



Pin assignment M12 socket, 4-pos., D-coded, female side

## Network cable - NBC-M12FSD/10,0-93C/R4AC - 1038760

Cable cross section



PROFINET drag chain CAT5 [93C]

### Classifications

eCl@ss

|               |          |
|---------------|----------|
| eCl@ss 10.0.1 | 27060308 |
| eCl@ss 7.0    | 27060308 |
| eCl@ss 8.0    | 27279218 |
| eCl@ss 9.0    | 27060308 |

ETIM

|          |          |
|----------|----------|
| ETIM 5.0 | EC002599 |
| ETIM 6.0 | EC001262 |
| ETIM 7.0 | EC001262 |

## Network cable - NBC-M12FSD/10,0-93C/R4AC - 1038760

### Approvals

#### Approvals

---

Approvals

EAC-RoHS

---

Ex Approvals

#### Approval details

EAC-RoHS



RU D-  
DE.HB35.B.00385

### Accessories

#### Accessories

##### Data cable preassembled

Network cable - NBC-FSD-R4AC SCO-PN/.../... - 1408622



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT® CAT5 (100 Mbps), 4-position, Variable cable type, shielded, Plug straight RJ45 / IP20, on Socket straight M12 SPEEDCON / IP67, coding: D, cable length: Free input (0.2 ... 40.0 m)

---

Network cable - NBC-FSD-R4ACR SCO-PN/.../... - 1408621



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT® CAT5 (100 Mbps), 4-position, Variable cable type, shielded, Plug angled RJ45 / IP20, on Socket straight M12 SPEEDCON / IP67, coding: D, cable length: Free input (0.2 ... 40.0 m)

---

Network cable - NBC-FRD-R4AC SCO-PN/.../... - 1408613



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT® CAT5 (100 Mbps), 4-position, Variable cable type, shielded, Plug straight RJ45 / IP20, on Socket angled M12 SPEEDCON / IP67, coding: D, cable length: Free input (0.2 ... 40.0 m)

## Network cable - NBC-M12FSD/10,0-93C/R4AC - 1038760

### Accessories

Network cable - NBC-FRD-R4ACR SCO-PN/.../... - 1408612



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT® CAT5 (100 Mbps), 4-position, Variable cable type, shielded, Plug angled RJ45 / IP20, on Socket angled M12 SPEEDCON / IP67, coding: D, cable length: Free input (0.2 ... 40.0 m)

Network cable - NBC-FSD-R4AC SCO-PN/.../... - 1408622



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT® CAT5 (100 Mbps), 4-position, Variable cable type, shielded, Plug straight RJ45 / IP20, on Socket straight M12 SPEEDCON / IP67, coding: D, cable length: Free input (0.2 ... 40.0 m)

Network cable - NBC-FSD-R4ACR SCO-PN/.../... - 1408621



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT® CAT5 (100 Mbps), 4-position, Variable cable type, shielded, Plug angled RJ45 / IP20, on Socket straight M12 SPEEDCON / IP67, coding: D, cable length: Free input (0.2 ... 40.0 m)

Network cable - NBC-FRD-R4AC SCO-PN/.../... - 1408613



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT® CAT5 (100 Mbps), 4-position, Variable cable type, shielded, Plug straight RJ45 / IP20, on Socket angled M12 SPEEDCON / IP67, coding: D, cable length: Free input (0.2 ... 40.0 m)

Network cable - NBC-FRD-R4ACR SCO-PN/.../... - 1408612



Network cable, PROFINET CAT5 (100 Mbps), EtherCAT® CAT5 (100 Mbps), 4-position, Variable cable type, shielded, Plug angled RJ45 / IP20, on Socket angled M12 SPEEDCON / IP67, coding: D, cable length: Free input (0.2 ... 40.0 m)

### Plug for cable screw gland

## Network cable - NBC-M12FSD/10,0-93C/R4AC - 1038760

### Accessories

Screw plug - PROT-M12 MS-PA-CHAIN - 1430899

M12 sealing cap with fixing band, for sensor cables, for free M12 sockets



---

### Safety locking

Locking clip - SAC-M12-EXCLIP-F - 1558991



Locking clip for the socket 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

---

### 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

## Network cable - NBC-M12FSD/10,0-93C/R4AC - 1038760

### Accessories

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



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

---

Phoenix Contact 2020 © - all rights reserved  
<http://www.phoenixcontact.com>

PHOENIX CONTACT GmbH & Co. KG  
Flachsmarktstr. 8  
32825 Blomberg  
Germany  
Tel. +49 5235 300  
Fax +49 5235 3 41200  
<http://www.phoenixcontact.com>

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Phoenix Contact:](#)

[1038760](#)