

## Network cable - NBC-FSD/ 1,0-93E/R4QC SCO - 1407396

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, Ethernet CAT5 (100 Mbps), 4-position, PUR, water blue RAL 5021, shielded, Plug straight RJ45 Push Pull / IP67, on Socket straight M12 SPEEDCON / IP67, coding: D, cable length: 1 m



### Key Commercial Data

|              |                                                                                                         |
|--------------|---------------------------------------------------------------------------------------------------------|
| Packing unit | 1 pc                                                                                                    |
| GTIN         | <br>4 046356 775243 |
| GTIN         | 4046356775243                                                                                           |

### Technical data

#### Dimensions

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

#### Ambient conditions

|                                 |                                   |
|---------------------------------|-----------------------------------|
| Degree of protection            | IP65 (M12 connector)              |
|                                 | IP67 (M12 connector)              |
|                                 | IP67 (RJ45 connector)             |
| Ambient temperature (operation) | -25 °C ... 85 °C (M12 connector)  |
|                                 | -25 °C ... 60 °C (RJ45 connector) |

#### General data

|                       |                                                                                                             |
|-----------------------|-------------------------------------------------------------------------------------------------------------|
| Note                  | 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                                                                                                           |
| Signal type/category  | Ethernet CAT5 (IEC 11801), 100 Mbps                                                                         |
| Standards/regulations | M12 connector IEC 61076-2-101                                                                               |
| Contact material      | CuSn                                                                                                        |

# Network cable - NBC-FSD/ 1,0-93E/R4QC SCO - 1407396

## Technical data

### General data

|                                         |           |
|-----------------------------------------|-----------|
| Contact carrier material                | TPU GF    |
| Contact surface material                | Ni/Au     |
| Housing material                        | Plastic   |
| Degree of protection                    | IP65/IP67 |
| Transmission characteristics (category) | CAT5      |

### Characteristics head 1

|                                          |                                     |
|------------------------------------------|-------------------------------------|
| Head type                                | Plug straight RJ45 Push Pull / IP67 |
| No. of positions (pin connector pattern) | 4 (8)                               |
| Color                                    | black                               |
| Material (component)                     | CuSn (Contact)                      |
|                                          | Ni/Au (Contact surface)             |
|                                          | PC (Contact carriers)               |
|                                          | PA GF (Housing)                     |
| Insertion/withdrawal cycles              | ≥ 750                               |
| Ambient temperature (operation)          | -40 °C ... 70 °C                    |
| Shielded                                 | yes                                 |
| Outer sheath, material                   | PUR                                 |
| External sheath, color                   | water blue RAL 5021                 |
| Type type, plug side                     | Plug straight                       |
| Type type, socket side                   | Socket, straight                    |

### Characteristics head 2

|                                          |                                                    |
|------------------------------------------|----------------------------------------------------|
| Head type                                | Socket straight M12 SPEEDCON / IP67                |
| No. of positions (pin connector pattern) | 4                                                  |
| Coding                                   | D (Data)                                           |
| Color                                    | black                                              |
|                                          | black                                              |
| Material (component)                     | CuZn (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

|            |                                |
|------------|--------------------------------|
| Cable type | Ethernet flexible CAT5, 2-pair |
|------------|--------------------------------|

# Network cable - NBC-FSD/ 1,0-93E/R4QC SCO - 1407396

## Technical data

### Cable

|                                                        |                                                    |
|--------------------------------------------------------|----------------------------------------------------|
| Cable type (abbreviation)                              | 93E                                                |
| UL AWM style                                           | 20963 (80°C/30 V)                                  |
| Signal type/category                                   | Ethernet CAT5 (IEC 11801), 100 Mbps                |
| Cable structure                                        | 2x2xAWG26/7; SF/UTP                                |
| Conductor cross section                                | 2x 2x 0.14 mm <sup>2</sup>                         |
| AWG signal line                                        | 26                                                 |
| Conductor structure signal line                        | 7x 0.16 mm                                         |
| Core diameter including insulation                     | 0.98 mm                                            |
| Wire colors                                            | white/orange-orange, white/green-green             |
| Twisted pairs                                          | 2 cores to the pair                                |
| Overall twist                                          | Two pairs with two fillers to the core             |
| Shielding                                              | Aluminum-coated foil, tinned copper braided shield |
| Optical shield covering                                | 70 %                                               |
| External sheath, color                                 | water blue RAL 5021                                |
| Outer sheath thickness                                 | 1.2 mm                                             |
| External cable diameter D                              | 6.4 mm ±0.2 mm                                     |
| Minimum bending radius, fixed installation             | 4 x D                                              |
| Minimum bending radius, flexible installation          | 8 x D                                              |
| Tensile strength GRP                                   | ≤ 80 N                                             |
| Cable weight                                           | 42 kg/km                                           |
| Outer sheath, material                                 | PUR                                                |
| Material conductor insulation                          | Foamed PE                                          |
| Conductor material                                     | Bare Cu litz wires                                 |
| Standards/specifications                               | Electrical requirements EN 50288-2-2               |
| Insulation resistance                                  | ≥ 500 MΩ*km                                        |
| Loop resistance                                        | ≤ 290.00 Ω/km                                      |
| Cable capacity                                         | approx. 45 nF/km (at 1 kHz)                        |
| Wave impedance                                         | 100 Ω ±5 Ω (at 100 MHz)                            |
| Near end crosstalk attenuation (NEXT)                  | 65.3 dB (with 1 MHz)                               |
|                                                        | 56.3 dB (at 4 MHz)                                 |
|                                                        | 50.3 dB (at 10 MHz)                                |
|                                                        | 47.2 dB (at 16 MHz)                                |
|                                                        | 45.8 dB (at 20 MHz)                                |
|                                                        | 42.9 dB (at 31.25 MHz)                             |
|                                                        | 38.4 dB (at 62.5 MHz)                              |
|                                                        | 35.3 dB (at 100 MHz)                               |
|                                                        |                                                    |
| Power-summated near end crosstalk attenuation (PSNEXT) | 62.3 dB (with 1 MHz)                               |
|                                                        | 53.3 dB (at 4 MHz)                                 |
|                                                        | 47.3 dB (at 10 MHz)                                |
|                                                        | 44.2 dB (at 16 MHz)                                |

## Network cable - NBC-FSD/ 1,0-93E/R4QC SCO - 1407396

### Technical data

#### Cable

|                                         |                                                       |
|-----------------------------------------|-------------------------------------------------------|
|                                         | 42.8 dB (at 20 MHz)                                   |
|                                         | 39.9 dB (at 31.25 MHz)                                |
|                                         | 35.4 dB (at 62.5 MHz)                                 |
|                                         | 32.3 dB (at 100 MHz)                                  |
| Attenuation                             | 3.2 dB (with 1 MHz)                                   |
|                                         | 6 dB (at 4 MHz)                                       |
|                                         | 9.5 dB (at 10 MHz)                                    |
|                                         | 12.1 dB (at 16 MHz)                                   |
|                                         | 13.6 dB (at 20 MHz)                                   |
|                                         | 17.1 dB (at 31.25 MHz)                                |
|                                         | 24.8 dB (at 62.5 MHz)                                 |
|                                         | 32 dB (at 100 MHz)                                    |
| Return loss (RL)                        | 23 dB (at 4 MHz)                                      |
|                                         | 24.1 dB (at 8 MHz)                                    |
|                                         | 25 dB (at 10 MHz)                                     |
|                                         | 25 dB (at 16 MHz)                                     |
|                                         | 25 dB (at 20 MHz)                                     |
|                                         | 23.6 dB (at 31.25 MHz)                                |
|                                         | 21.5 dB (at 62.5 MHz)                                 |
|                                         | 20.1 dB (at 100 MHz)                                  |
| Signal runtime                          | 5.3 ns/m                                              |
| Coupling resistance                     | ≤ 100.00 mΩ/m (at 10 MHz)                             |
| Nominal voltage, cable                  | ≤ 100 V (Peak value, not for high-power applications) |
| Test voltage Core/Core                  | 700 V (50 Hz, 1 min.)                                 |
| Test voltage Core/Shield                | 700 V (50 Hz, 1 min.)                                 |
| Current carrying capacity of cable      | 2 A (according to DIN VDE 0891-1)                     |
| Flame resistance                        | according to IEC 60332-1-2                            |
|                                         | in acc. to UL VW1                                     |
| Halogen-free                            | according to IEC 60754-1                              |
| Resistance to oil                       | according to EN 60811-2-1                             |
| Ambient temperature (operation)         | -40 °C ... 80 °C (cable, fixed installation)          |
|                                         | -20 °C ... 80 °C (cable, flexible installation)       |
| Ambient temperature (installation)      | -20 °C ... 80 °C                                      |
| Ambient temperature (storage/transport) | -20 °C ... 80 °C                                      |

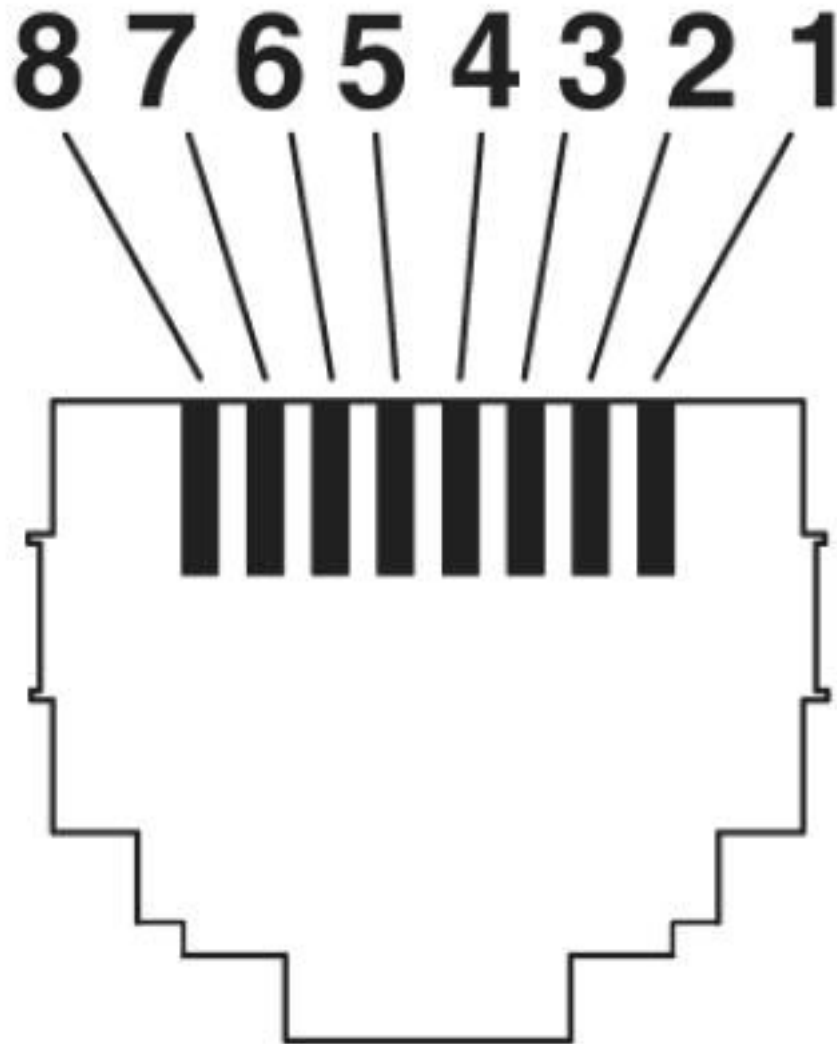
#### Environmental Product Compliance

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

## Network cable - NBC-FSD/ 1,0-93E/R4QC SCO - 1407396

### Drawings

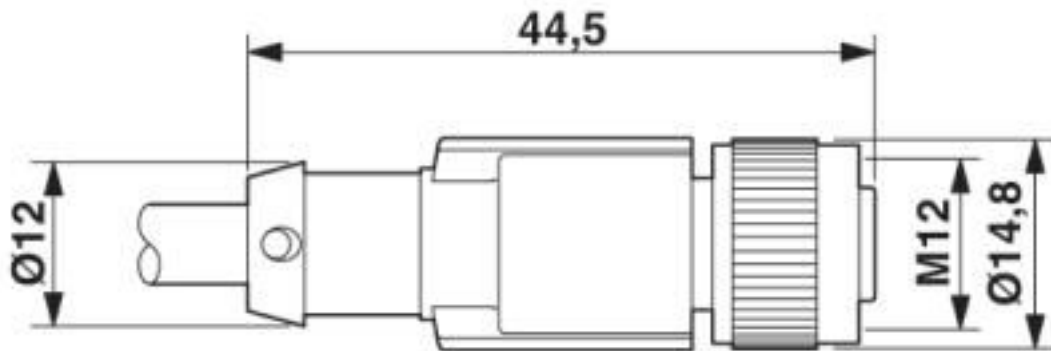
Schematic diagram



Connector pin assignment plug RJ45

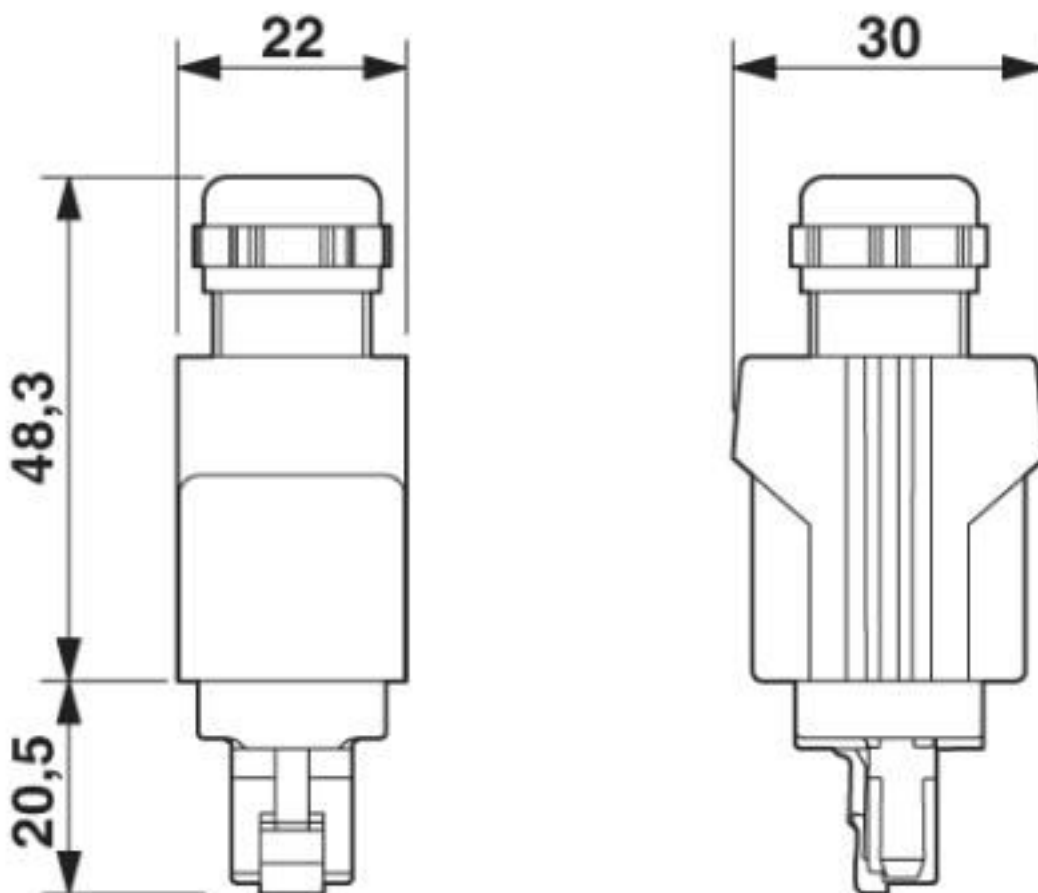
## Network cable - NBC-FSD/ 1,0-93E/R4QC SCO - 1407396

Dimensional drawing



M12 x 1 socket, straight, shielded

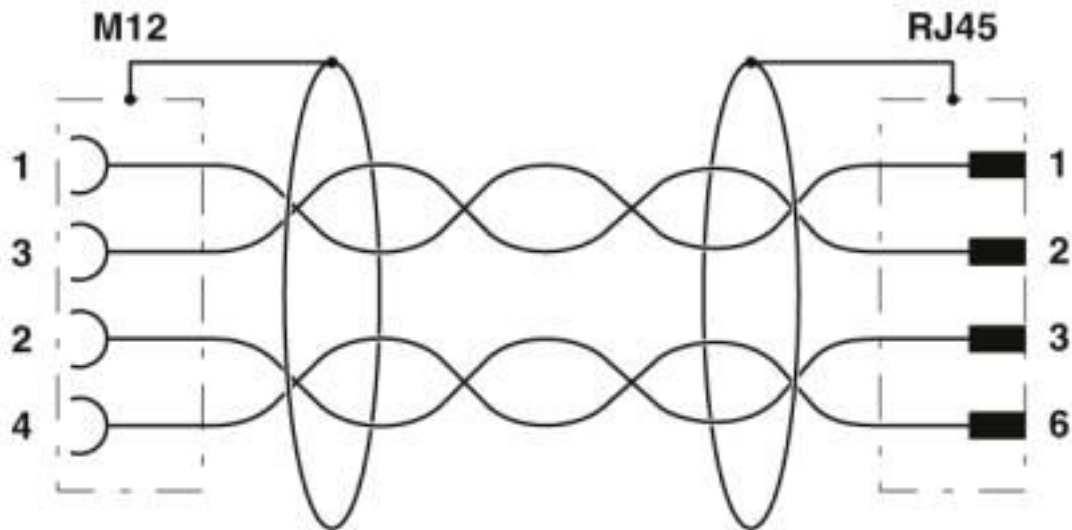
Dimensional drawing



RJ45 Push-Pull connector, IP67

## Network cable - NBC-FSD/ 1,0-93E/R4QC SCO - 1407396

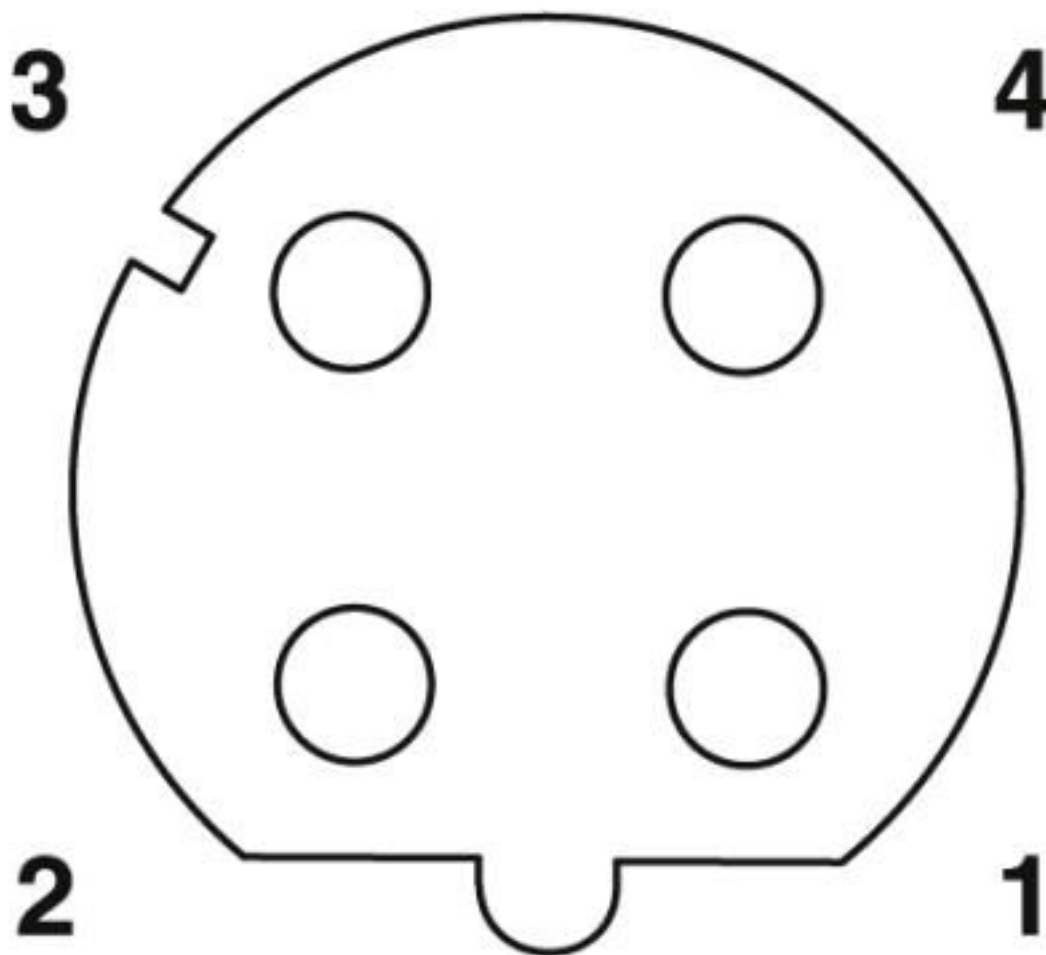
Circuit diagram



Contact assignment of the M12 socket and the RJ45 plug

## Network cable - NBC-FSD/ 1,0-93E/R4QC SCO - 1407396

Schematic diagram



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

## Network cable - NBC-FSD/ 1,0-93E/R4QC SCO - 1407396

Cable cross section



Ethernet flexible CAT5, 2-pair [93E]

### Classifications

eCl@ss

|               |          |
|---------------|----------|
| eCl@ss 10.0.1 | 27060308 |
| eCl@ss 4.0    | 24010400 |
| eCl@ss 4.1    | 24010400 |
| eCl@ss 5.0    | 19030300 |
| eCl@ss 5.1    | 19030300 |
| eCl@ss 6.0    | 27061800 |
| eCl@ss 7.0    | 27061801 |
| eCl@ss 8.0    | 27061801 |
| eCl@ss 9.0    | 27060308 |

## Network cable - NBC-FSD/ 1,0-93E/R4QC SCO - 1407396

### Classifications

#### ETIM

|          |          |
|----------|----------|
| ETIM 3.0 | EC001855 |
| ETIM 4.0 | EC001855 |
| ETIM 5.0 | EC002599 |
| ETIM 6.0 | EC001262 |
| ETIM 7.0 | EC001262 |

#### UNSPSC

|               |          |
|---------------|----------|
| UNSPSC 6.01   | 31251501 |
| UNSPSC 7.0901 | 31251501 |
| UNSPSC 11     | 31251501 |
| UNSPSC 12.01  | 31251501 |
| UNSPSC 13.2   | 26121604 |
| UNSPSC 18.0   | 26121604 |
| UNSPSC 19.0   | 26121604 |
| UNSPSC 20.0   | 26121604 |
| UNSPSC 21.0   | 26121604 |

### Approvals

#### Approvals

Approvals

EAC-RoHS

Ex Approvals

#### Approval details

|          |                                                                                     |                          |
|----------|-------------------------------------------------------------------------------------|--------------------------|
| EAC-RoHS |  | RU D-<br>DE.HB35.B.00387 |
|----------|-------------------------------------------------------------------------------------|--------------------------|

### Accessories

#### Accessories

Data cable preassembled

## Network cable - NBC-FSD/ 1,0-93E/R4QC SCO - 1407396

### Accessories

Network cable - NBC-MSD-R4RC SCO/.../... - 1408709



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

Network cable - NBC-MRD-R4RC SCO/.../... - 1408702



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

Network cable - NBC-FSD-R4RC SCO/.../... - 1408694



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

Network cable - NBC-FRD-R4RC SCO/.../... - 1408687



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

Network cable - NBC-MSD-R4QC SCO/.../... - 1408707



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

## Network cable - NBC-FSD/ 1,0-93E/R4QC SCO - 1407396

### Accessories

Network cable - NBC-MRD-R4QC SCO/.../... - 1408701



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

Network cable - NBC-FSD-R4QC SCO/.../... - 1408693



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

Network cable - NBC-FRD-R4QC SCO/.../... - 1408686



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

### Plug for cable screw gland

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

## Network cable - NBC-FSD/ 1,0-93E/R4QC SCO - 1407396

### Accessories

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

---

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:](#)

[1407396](#)