

# NBC-MS/ 5,0-94B/FS SCO - Network cable



1407465

<https://www.phoenixcontact.com/us/products/1407465>

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Network cable, Ethernet CAT5 (1 Gbps), 8-position, PUR halogen-free, water blue RAL 5021, shielded (Aluminum-coated foil, tinned copper braided shield), Plug straight M12 SPEEDCON, coding: A / IP67, on Socket straight M12 SPEEDCON, coding: A / IP67, cable length: 5 m

## Commercial data

|                                      |                     |
|--------------------------------------|---------------------|
| Item number                          | 1407465             |
| Packing unit                         | 1 pc                |
| Minimum order quantity               | 1 pc                |
| Sales key                            | BF04                |
| Product key                          | BF1CMI              |
| Catalog page                         | Page 401 (C-2-2019) |
| GTIN                                 | 4046356775861       |
| Weight per piece (including packing) | 270.3 g             |
| Weight per piece (excluding packing) | 268.1 g             |
| Customs tariff number                | 85444210            |
| Country of origin                    | PL                  |

## Technical data

### Notes

|         |                                                                                                             |
|---------|-------------------------------------------------------------------------------------------------------------|
| General | Further products with variable cable type and variable cable length can be found in the accessories section |
|---------|-------------------------------------------------------------------------------------------------------------|

### Product properties

|                      |                         |
|----------------------|-------------------------|
| Product type         | Data cable preassembled |
| Application          | Standard                |
| Sensor type          | Ethernet                |
| Number of positions  | 8                       |
| No. of cable outlets | 1                       |
| Shielded             | yes                     |
| Coding               | A                       |

### Interfaces

|                      |                                            |
|----------------------|--------------------------------------------|
| Bus system           | Ethernet                                   |
| Signal type/category | Ethernet CAT5 (based on IEC 11801), 1 Gbps |

### Signaling

|                        |    |
|------------------------|----|
| Status display         | No |
| Status display present | No |

### Electrical properties

|                                         |                       |
|-----------------------------------------|-----------------------|
| Nominal voltage $U_N$                   | 48 V AC               |
|                                         | 60 V DC               |
| Nominal current $I_N$                   | 2 A                   |
| Transmission medium                     | Copper                |
| Transmission characteristics (category) | CAT5 (IEC 11801:2002) |

### Material specifications

|               |     |
|---------------|-----|
| Seal material | NBR |
|---------------|-----|

### Connector

#### Connection 1

|                     |                                                    |
|---------------------|----------------------------------------------------|
| Type                | Plug straight M12 SPEEDCON / IP67                  |
| Number of positions | 8                                                  |
| Locking type        | SPEEDCON                                           |
| Coding type         | A (Standard)                                       |
| Handle color        | black                                              |
| Material            | CuZn (Contact)                                     |
|                     | Ni/Au (Contact surface)                            |
|                     | TPU GF (Contact carriers)                          |
|                     | TPU, hardly inflammable, self-extinguishing (Grip) |

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|                                 |                                                 |
|---------------------------------|-------------------------------------------------|
|                                 | Zinc die-cast, nickel-plated (Screw connection) |
| Insertion/withdrawal cycles     | ≥ 100                                           |
| Insulation resistance           | ≥ 100 MΩ                                        |
| Tightening torque               | 0.4 Nm                                          |
| Degree of protection            | IP67                                            |
| Ambient temperature (operation) | -25 °C ... 90 °C                                |

## Connection 2

|                                 |                                                                                                                                                                                 |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                            | Socket straight M12 SPEEDCON / IP67                                                                                                                                             |
| Number of positions             | 8                                                                                                                                                                               |
| Locking type                    | SPEEDCON                                                                                                                                                                        |
| Coding type                     | A (Standard)                                                                                                                                                                    |
| Handle color                    | black                                                                                                                                                                           |
| Material                        | CuZn (Contact)<br>Ni/Au (Contact surface)<br>TPU GF (Contact carriers)<br>TPU, hardly inflammable, self-extinguishing (Grip)<br>Zinc die-cast, nickel-plated (Screw connection) |
| Insertion/withdrawal cycles     | ≥ 100                                                                                                                                                                           |
| Insulation resistance           | ≥ 100 MΩ                                                                                                                                                                        |
| Tightening torque               | 0.4 Nm                                                                                                                                                                          |
| Degree of protection            | IP67                                                                                                                                                                            |
| Ambient temperature (operation) | -25 °C ... 90 °C                                                                                                                                                                |

## Cable/line

|              |     |
|--------------|-----|
| Cable length | 5 m |
|--------------|-----|

## Ethernet flexible CAT5, 4-pair [94B]

|                                 |                                                                                      |
|---------------------------------|--------------------------------------------------------------------------------------|
| Dimensional drawing             |  |
| Cable weight                    | 47 kg/km                                                                             |
| UL AWM Style                    | 20963 (80°C/30 V)                                                                    |
| Number of positions             | 8                                                                                    |
| Shielded                        | yes                                                                                  |
| Cable type                      | Ethernet flexible CAT5, 4-pair [94B]                                                 |
| Conductor structure             | 4x2xAWG26/7, SF/UTP                                                                  |
| Signal runtime                  | 5.3 ns/m                                                                             |
| Conductor structure signal line | 7x 0.16 mm                                                                           |
| AWG signal line                 | 26                                                                                   |

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|                                                        |                                                                            |
|--------------------------------------------------------|----------------------------------------------------------------------------|
| Conductor cross section                                | 4x 2x 0.14 mm <sup>2</sup>                                                 |
| Wire diameter incl. insulation                         | 0.96 mm                                                                    |
| External cable diameter                                | 6.40 mm ±0.2 mm                                                            |
| Outer sheath, material                                 | PUR                                                                        |
| External sheath, color                                 | water blue RAL 5021                                                        |
| Conductor material                                     | Bare Cu litz wires                                                         |
| Material wire insulation                               | Foamed PE                                                                  |
| Single wire, color                                     | white/blue-blue, white/orange-orange, white/green-green, white/brown-brown |
| Thickness, outer sheath                                | 1.05 mm                                                                    |
| Twisted pairs                                          | 2 cores to the pair                                                        |
| Overall twist                                          | 4 pairs for core                                                           |
| Optical shield covering                                | 70 %                                                                       |
| Insulation resistance                                  | ≥ 5 GΩ*km                                                                  |
| Coupling resistance                                    | ≤ 100.00 mΩ/m (at 10 MHz)                                                  |
| Loop resistance                                        | ≤ 290.00 Ω/km                                                              |
| Wave impedance                                         | 100 Ω ±5 Ω (at 100 MHz)                                                    |
| Cable capacity                                         | 48 nF/km (at 1 kHz)                                                        |
| Nominal voltage, cable                                 | ≤ 100 V                                                                    |
| Test voltage Core/Core                                 | 700 V (50 Hz, 1 min.)                                                      |
| Test voltage Core/Shield                               | 700.00 V (50 Hz, 1 min.)                                                   |
| Minimum bending radius, fixed installation             | 4 x D                                                                      |
| Minimum bending radius, flexible installation          | 8 x D                                                                      |
| Smallest bending radius, fixed installation            | 26 mm                                                                      |
| Smallest bending radius, movable installation          | 52 mm                                                                      |
| Tensile strength                                       | ≤ 100 N                                                                    |
| Near end crosstalk attenuation (NEXT)                  | 71.3 dB (with 1 MHz)                                                       |
|                                                        | 62.3 dB (at 4 MHz)                                                         |
|                                                        | 56.3 dB (at 10 MHz)                                                        |
|                                                        | 53.2 dB (at 16 MHz)                                                        |
|                                                        | 51.8 dB (at 20 MHz)                                                        |
|                                                        | 48.9 dB (at 31.25 MHz)                                                     |
|                                                        | 44.4 dB (at 62.5 MHz)                                                      |
|                                                        | 41.3 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)                                                        |
|                                                        | 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)                                                       |
| Return attenuation (RL)                                | 23 dB (at 4 MHz)                                                           |
|                                                        | 24.1 dB (at 8 MHz)                                                         |

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|                                    |                                                 |
|------------------------------------|-------------------------------------------------|
|                                    | 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)                            |
| Shield 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)                              |
| Halogen-free                       | according to IEC 60754-1                        |
| Flame resistance                   | according to IEC 60332-1-2                      |
| Resistance to oil                  | in accordance with 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                                |

## Environmental and real-life conditions

### Ambient conditions

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

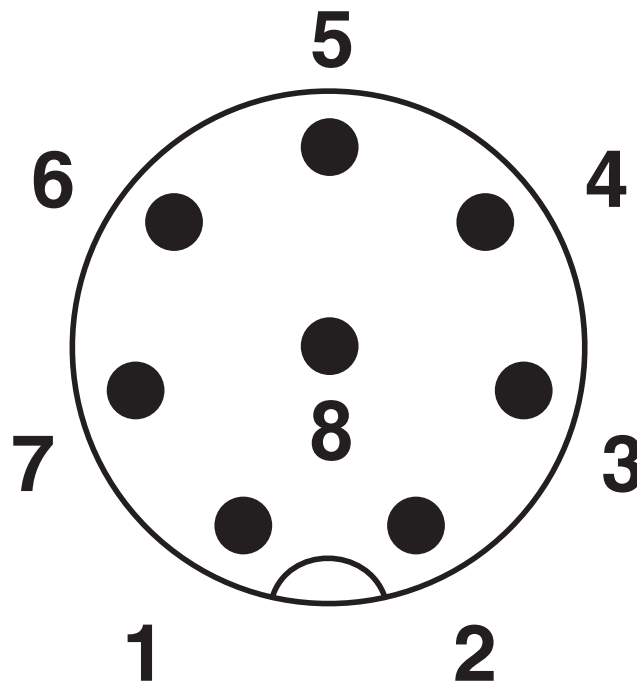
## Standards and regulations

### M12

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

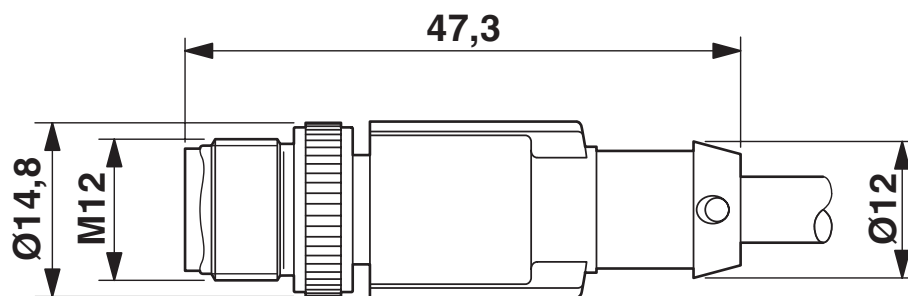
## Drawings

Schematic diagram



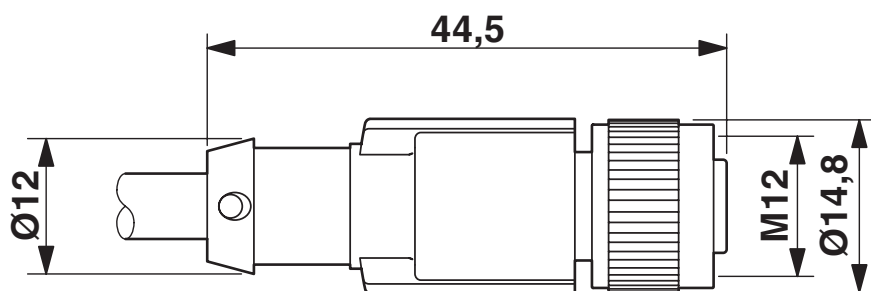
Pin assignment M12 plug, 8-pos., A-coded, view plug side

Dimensional drawing



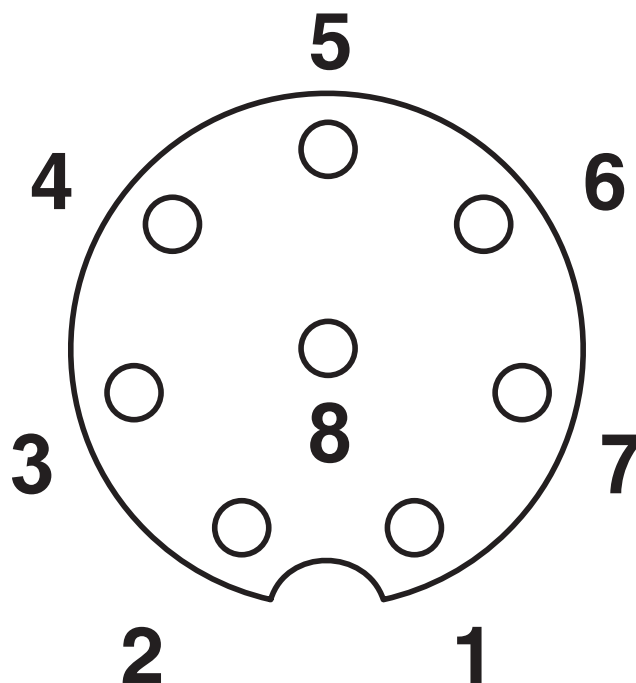
Plug, M12 x 1, straight, shielded

Dimensional drawing



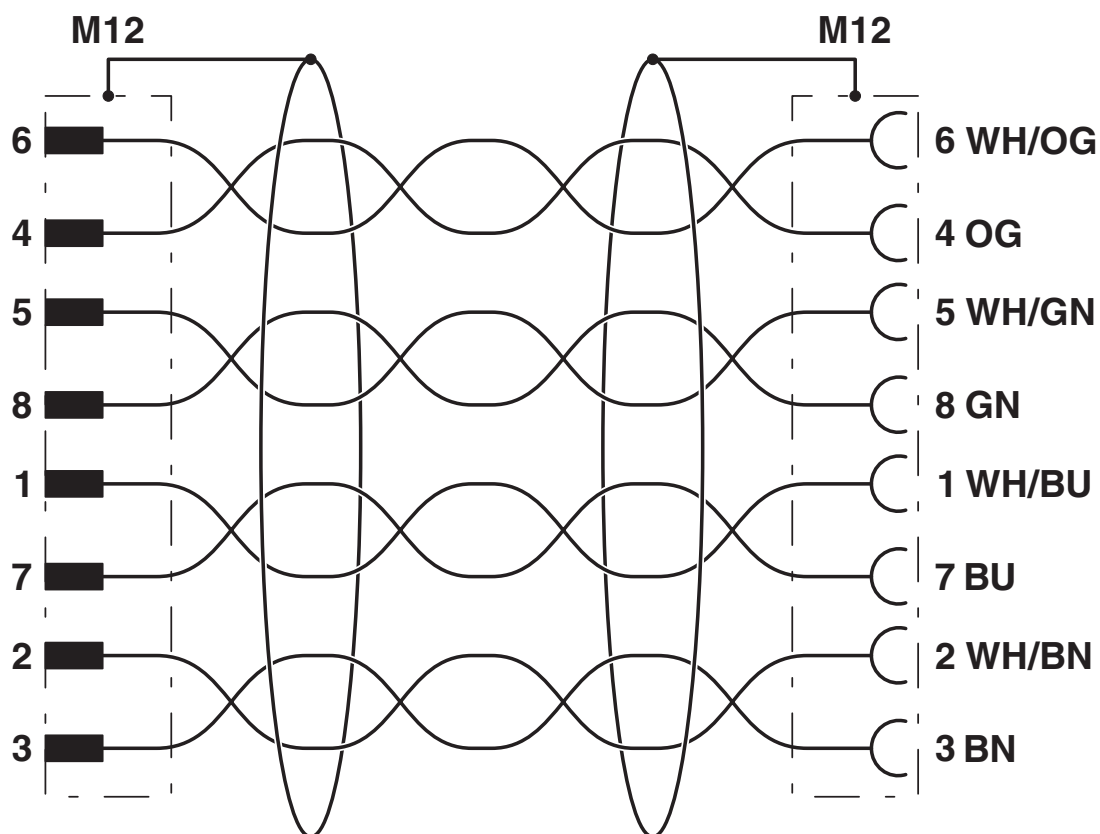
M12 x 1 socket, straight, shielded

Schematic diagram



Pin assignment M12 socket, 8-pos., A-coded, view female side

Circuit diagram





# NBC-MS/ 5,0-94B/FS SCO - Network cable



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1407465>

|                                                                                                                                  |                       |                       |                   |                             |
|----------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-------------------|-----------------------------|
|  <b>UL Listed</b><br>Approval ID: FILE E 335024 |                       |                       |                   |                             |
|                                                                                                                                  | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
|                                                                                                                                  | 30 V                  | 1.5 A                 | -                 | -                           |

|                                                                                                                                   |                       |                       |                   |                             |
|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-------------------|-----------------------------|
|  <b>cUL Listed</b><br>Approval ID: FILE E 335024 |                       |                       |                   |                             |
|                                                                                                                                   | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
|                                                                                                                                   | 30 V                  | 1.5 A                 | -                 | -                           |

|                                                                                                                                         |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
|  <b>EAC-RoHS</b><br>Approval ID: RU D-DE.HB35.B.00387 |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|

|                     |  |  |  |  |
|---------------------|--|--|--|--|
| <b>cULus Listed</b> |  |  |  |  |
|---------------------|--|--|--|--|

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-11.0 | 27060307 |
| ECLASS-12.0 | 27060307 |
| ECLASS-13.0 | 27060307 |

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC001855 |
|----------|----------|

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 21.0 | 26121600 |
|-------------|----------|

Environmental product compliance

|                                         |                                          |
|-----------------------------------------|------------------------------------------|
| EU RoHS                                 |                                          |
| Fulfills EU RoHS substance requirements | Yes, No exemptions                       |
| China RoHS                              |                                          |
| Environment friendly use period (EFUP)  | EFUP-E                                   |
|                                         | No hazardous substances above the limits |
| EU REACH SVHC                           |                                          |
| REACH candidate substance (CAS No.)     | No substance above 0.1 wt%               |

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## Accessories

### NBC-MS-MS SCO-IE/.../... - Network cable

1408676

<https://www.phoenixcontact.com/us/products/1408676>



Network cable, Ethernet CAT5 (1 Gbps), 8-position, Plug straight M12 SPEEDCON, coding: A / IP67, on Plug straight M12 SPEEDCON, coding: A / IP67, cable length: Free input (0.2 ... 40.0 m)

### NBC-MS-MR SCO-IE/.../... - Network cable

1408667

<https://www.phoenixcontact.com/us/products/1408667>



Network cable, Ethernet CAT5 (1 Gbps), 8-position, Plug straight M12 SPEEDCON, coding: A / IP67, on Plug angled M12 SPEEDCON, coding: A / IP67, cable length: Free input (0.2 ... 40.0 m)

## NBC-MS/ 5,0-94B/FS SCO - Network cable

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### NBC-MS-FS SCO-IE/.../... - Network cable

1408659

<https://www.phoenixcontact.com/us/products/1408659>



Network cable, Ethernet CAT5 (1 Gbps), 8-position, Plug straight M12 SPEEDCON, coding: A / IP67, on Socket straight M12 SPEEDCON, coding: A / IP67, cable length: Free input (0.2 ... 40.0 m)

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### NBC-MS-FR SCO-IE/.../... - Network cable

1408650

<https://www.phoenixcontact.com/us/products/1408650>



Network cable, Ethernet CAT5 (1 Gbps), 8-position, Plug straight M12 SPEEDCON, coding: A / IP67, on Socket angled M12 SPEEDCON, coding: A / IP67, cable length: Free input (0.2 ... 40.0 m)

## NBC-MS/ 5,0-94B/FS SCO - Network cable

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## NBC-MR-MR SCO-IE/.../... - Network cable

1408666

<https://www.phoenixcontact.com/us/products/1408666>



Network cable, Ethernet CAT5 (1 Gbps), 8-position, Plug angled M12 SPEEDCON, coding: A / IP67, on Plug angled M12 SPEEDCON, coding: A / IP67, cable length: Free input (0.2 ... 40.0 m)

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## NBC-MR-FS SCO-IE/.../... - Network cable

1408658

<https://www.phoenixcontact.com/us/products/1408658>



Network cable, Ethernet CAT5 (1 Gbps), 8-position, Plug angled M12 SPEEDCON, coding: A / IP67, on Socket straight M12 SPEEDCON, coding: A / IP67, cable length: Free input (0.2 ... 40.0 m)

## NBC-MS/ 5,0-94B/FS SCO - Network cable

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## NBC-MR-FR SCO-IE/.../... - Network cable

1408649

<https://www.phoenixcontact.com/us/products/1408649>



Network cable, Ethernet CAT5 (1 Gbps), 8-position, Plug angled M12 SPEEDCON, coding: A / IP67, on Socket angled M12 SPEEDCON, coding: A / IP67, cable length: Free input (0.2 ... 40.0 m)

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

1430873

<https://www.phoenixcontact.com/us/products/1430873>



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

## NBC-MS/ 5,0-94B/FS SCO - Network cable

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## SAC-M12-EXCLIP-M - Locking clip

1558988

<https://www.phoenixcontact.com/us/products/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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## PROT-M12 MS-PA-CHAIN - Screw plug

1430899

<https://www.phoenixcontact.com/us/products/1430899>



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



## NBC-MS/ 5,0-94B/FS SCO - Network cable

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<https://www.phoenixcontact.com/us/products/1407465>



## SAC-M12-EXCLIP-F - Locking clip

1558991

<https://www.phoenixcontact.com/us/products/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

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## TSD 04 SAC - Torque screwdriver

1208429

<https://www.phoenixcontact.com/us/products/1208429>



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

## NBC-MS/ 5,0-94B/FS SCO - Network cable

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

1212224

<https://www.phoenixcontact.com/us/products/1212224>



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

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

1212600

<https://www.phoenixcontact.com/us/products/1212600>



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

## NBC-MS/ 5,0-94B/FS SCO - Network cable

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## SAC BIT M12-D15 - Tool

1208432

<https://www.phoenixcontact.com/us/products/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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