

# NBC-MSD/ 5,0-93K/MSD SCO - Network cable



1411532

<https://www.phoenixcontact.com/us/products/1411532>

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Network cable, Sercos CAT5 (100 Mbps), 4-position, PVC/PVC, signal red RAL 3020, shielded, Plug straight M12 SPEEDCON, coding: D / IP67, on Plug straight M12 SPEEDCON, coding: D / IP67, cable length: 5 m

## Commercial data

|                                      |                                |
|--------------------------------------|--------------------------------|
| Item number                          | 1411532                        |
| Packing unit                         | 1 pc                           |
| Minimum order quantity               | 1 pc                           |
| Note                                 | Made to order (non-returnable) |
| Sales key                            | BF04                           |
| Product key                          | AF1CJO                         |
| GTIN                                 | 4046356933780                  |
| Weight per piece (including packing) | 354.3 g                        |
| Weight per piece (excluding packing) | 354.3 g                        |
| Customs tariff number                | 85444290                       |
| Country of origin                    | PL                             |

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## Technical data

### Product properties

|                     |                         |
|---------------------|-------------------------|
| Product type        | Data cable preassembled |
| Application         | Standard                |
| Sensor type         | Sercos                  |
| Number of positions | 4                       |
| Shielded            | yes                     |
| Coding              | D                       |

### Interfaces

|                      |                                   |
|----------------------|-----------------------------------|
| Bus system           | Sercos III                        |
| Signal type/category | Sercos CAT5 (IEC 11801), 100 Mbps |

### Signaling

|                        |    |
|------------------------|----|
| Status display         | no |
| Status display present | no |

### Electrical properties

|                                         |                       |
|-----------------------------------------|-----------------------|
| Nominal voltage $U_N$                   | 48 V AC               |
|                                         | 60 V DC               |
| Nominal current $I_N$                   | 4 A                   |
| Transmission medium                     | Copper                |
| Transmission speed                      | 100 Mbps              |
| Transmission characteristics (category) | CAT5 (IEC 11801:2002) |

### Connector

#### Connection 1

|                                 |                                                         |
|---------------------------------|---------------------------------------------------------|
| Type                            | Plug straight M12 SPEEDCON / IP67                       |
| Number of positions             | 4                                                       |
| Locking type                    | SPEEDCON                                                |
| Coding type                     | D (Data)                                                |
| Handle color                    | black                                                   |
| Material                        | CuSn (Contact)                                          |
|                                 | Ni/Au (Contact surface)                                 |
|                                 | PA (Contact carrier)                                    |
|                                 | TPU, hardly inflammable, self-extinguishing (Grip body) |
|                                 | 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                                        |

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## Connection 2

|                                 |                                                                                                                                                                                                                                                                                               |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                            | Plug straight M12 SPEEDCON / IP67                                                                                                                                                                                                                                                             |
| Number of positions             | 4                                                                                                                                                                                                                                                                                             |
| Locking type                    | SPEEDCON                                                                                                                                                                                                                                                                                      |
| Coding type                     | D (Data)                                                                                                                                                                                                                                                                                      |
| Handle color                    | black                                                                                                                                                                                                                                                                                         |
| Material                        | CuSn (Contact)<br>Ni/Au (Contact surface)<br>Zinc die-cast, nickel-plated (Screw connection)<br>Zinc die-cast, nickel-plated (Screw connection)<br>TPU, hardly inflammable, self-extinguishing (Grip body)<br>PA (Contact carrier)<br>TPU, hardly inflammable, self-extinguishing (Grip body) |
| 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 |
|--------------|-----|

## Sercos III [93K]

|                                 |                                                                                      |
|---------------------------------|--------------------------------------------------------------------------------------|
| Dimensional drawing             |  |
| Cable weight                    | 68 kg/km                                                                             |
| UL AWM Style                    | 21694 (60 °C / 600 V)                                                                |
| Number of positions             | 4                                                                                    |
| Shielded                        | yes                                                                                  |
| Cable type                      | Sercos III [93K]                                                                     |
| Conductor structure             | 1x4xAWG22/7, SF/TQ                                                                   |
| Signal runtime                  | 5.3 ns/m                                                                             |
| Conductor structure signal line | 7x 0.25 mm                                                                           |
| AWG signal line                 | 22                                                                                   |
| Conductor cross section         | 4x 0.34 mm²                                                                          |
| Wire diameter incl. insulation  | approx. 1.55 mm                                                                      |
| External cable diameter         | 6.50 mm ±0.2 mm                                                                      |
| Outer sheath, material          | PVC                                                                                  |

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|                                               |                                                                                                 |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------|
| External sheath, color                        | signal red RAL 3020                                                                             |
| Conductor material                            | Tin-plated Cu litz wires                                                                        |
| Material wire insulation                      | PE                                                                                              |
| Single wire, color                            | white, yellow, blue, orange                                                                     |
| Thickness, outer sheath                       | approx. 0.90 mm                                                                                 |
| Type of pair shielding                        | Aluminum-lined polyester foil                                                                   |
| Overall twist                                 | Star quad                                                                                       |
| Max. conductor resistance                     | $\leq 120 \Omega/\text{km}$                                                                     |
| Insulation resistance                         | $\geq 0.5 \text{ G}\Omega \cdot \text{km}$                                                      |
| Coupling resistance                           | $\leq 20.00 \text{ m}\Omega/\text{m}$ (at 10 Hz)                                                |
| Wave impedance                                | $100 \Omega \pm 15 \Omega$ (at 100 MHz)                                                         |
| Nominal voltage, cable                        | 600 V                                                                                           |
| Test voltage Core/Core                        | 2000 V (50 Hz, 1 min.)                                                                          |
| Test voltage Core/Shield                      | 2000.00 V (50 Hz, 1 min.)                                                                       |
| Minimum bending radius, fixed installation    | 3 x D                                                                                           |
| Minimum bending radius, flexible installation | 7 x D                                                                                           |
| Smallest bending radius, fixed installation   | 20 mm                                                                                           |
| Smallest bending radius, movable installation | 46 mm                                                                                           |
| 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)<br>-40 °C ... 70 °C (Cable, flexible installation) |
| Ambient temperature (installation)            | -20 °C ... 60 °C                                                                                |

## Environmental and real-life conditions

### Ambient conditions

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

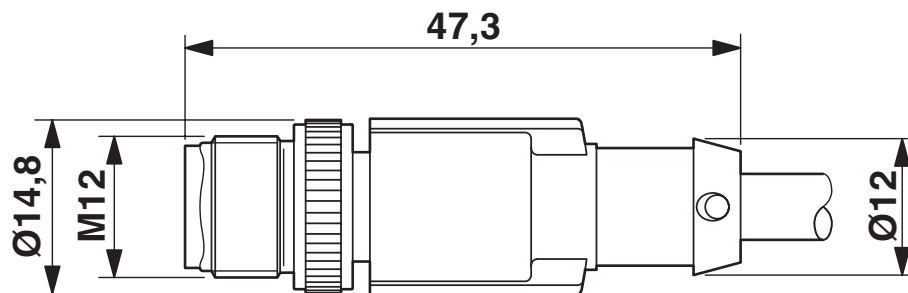
## Standards and regulations

### M12

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

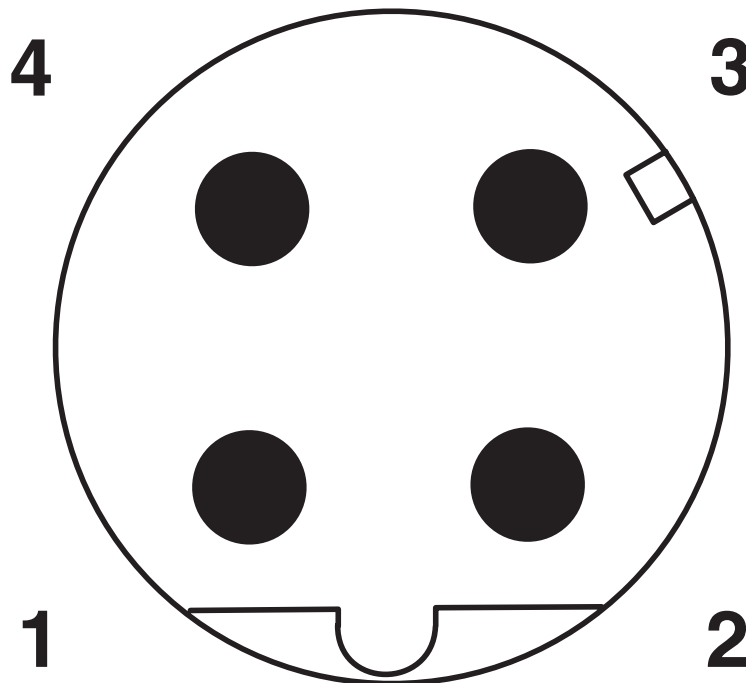
## Drawings

Dimensional drawing



Plug, M12 x 1, straight, shielded

Schematic diagram

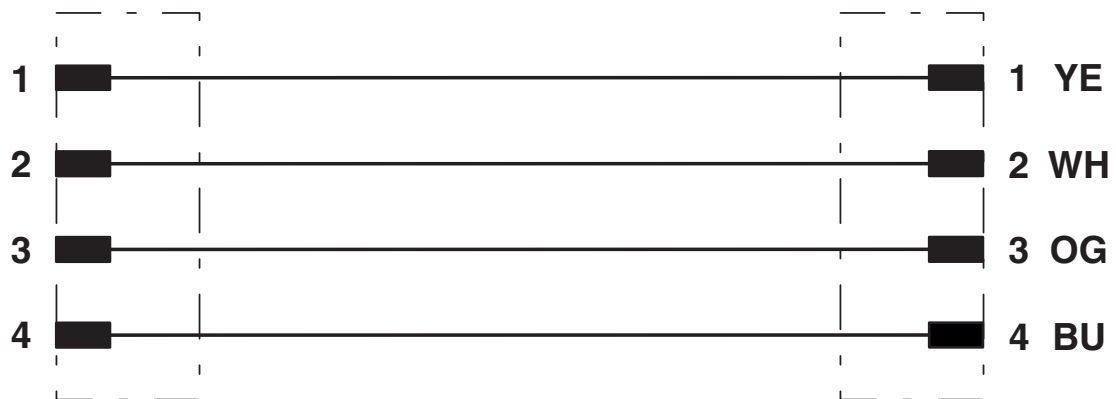


Pin assignment M12 male connector, 4-pos., D-coded, male side

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Circuit diagram



Contact assignment of the M12 plugs

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Classifications

ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27060307 |
|-------------|----------|

ETIM

|          |          |
|----------|----------|
| ETIM 8.0 | 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%               |