

## Network cable - NBC-MSD/10,0-93K/MSD SCO - 1411536

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Network cable, Sercos CAT5 (100 Mbps), 4-position, PVC/PVC, signal red RAL 3020, shielded, Plug straight M12 SPEEDCON / IP67, coding: D, on Plug straight M12 SPEEDCON / IP67, coding: D, cable length: 10 m



### Key Commercial Data

|              |                                                                                      |
|--------------|--------------------------------------------------------------------------------------|
| Packing unit | 1 pc                                                                                 |
| GTIN         |  |
| GTIN         | 4046356933797                                                                        |

### Technical data

#### Dimensions

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

#### Ambient conditions

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

#### General data

|                                         |                                   |
|-----------------------------------------|-----------------------------------|
| Rated current at 40 °C                  | 4 A                               |
| Rated voltage                           | 48 V AC                           |
|                                         | 60 V DC                           |
| Number of positions                     | 4                                 |
| Signal type/category                    | Sercos CAT5 (IEC 11801), 100 Mbps |
| Standards/regulations                   | M12 connector IEC 61076-2-101     |
| Degree of protection                    | IP65/IP67                         |
| Transmission characteristics (category) | CAT5                              |

#### Characteristics head 1

|           |                                   |
|-----------|-----------------------------------|
| Head type | Plug straight M12 SPEEDCON / IP67 |
|-----------|-----------------------------------|

# Network cable - NBC-MSD/10,0-93K/MSD SCO - 1411536

## Technical data

### Characteristics head 1

|                                          |                                                    |
|------------------------------------------|----------------------------------------------------|
| No. of positions (pin connector pattern) | 4                                                  |
| Coding                                   | D (Data)                                           |
| Color                                    | black                                              |
| Material (component)                     | CuSn (Contact)                                     |
|                                          | Ni/Au (Contact surface)                            |
|                                          | PA (Contact carriers)                              |
|                                          | TPU, hardly inflammable, self-extinguishing (Grip) |
|                                          | Zinc die-cast, nickel-plated (Screw connection)    |
| Insulation resistance                    | $\geq 100 \text{ M}\Omega$                         |
| Insertion/withdrawal cycles              | $\geq 100$                                         |
| Torque                                   | 0.4 Nm                                             |
| Ambient temperature (operation)          | -25 °C ... 90 °C                                   |
| Shielded                                 | yes                                                |
| Outer sheath, material                   | PVC                                                |
| External sheath, color                   | signal red RAL 3020                                |
| Type type, plug side                     | Plug straight                                      |
| Type type, socket side                   | Plug, straight                                     |

### Characteristics head 2

|                                          |                                                    |
|------------------------------------------|----------------------------------------------------|
| Head type                                | Plug straight M12 SPEEDCON / IP67                  |
| No. of positions (pin connector pattern) | 4                                                  |
| Coding                                   | D (Data)                                           |
| Color                                    | black                                              |
|                                          | black                                              |
| Material (component)                     | CuSn (Contact)                                     |
|                                          | Ni/Au (Contact surface)                            |
|                                          | Zinc die-cast, nickel-plated (Screw connection)    |
|                                          | Zinc die-cast, nickel-plated (Screw connection)    |
|                                          | TPU, hardly inflammable, self-extinguishing (Grip) |
|                                          | PA (Contact carriers)                              |
|                                          | TPU, hardly inflammable, self-extinguishing (Grip) |
| Insulation resistance                    | $\geq 100 \text{ M}\Omega$                         |
| Insertion/withdrawal cycles              | $\geq 100$                                         |
| 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                | Sercos III |
| Cable type (abbreviation) | 93K        |

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## Technical data

### Cable

|                                               |                                                 |
|-----------------------------------------------|-------------------------------------------------|
| UL AWM style                                  | 21694 (60°C / 600 V)                            |
| Signal type/category                          | Sercos CAT5 (IEC 11801), 100 Mbps               |
| Cable structure                               | 1x4xAWG22/7; SF/TQ                              |
| Conductor cross section                       | 4x 0.34 mm <sup>2</sup>                         |
| AWG signal line                               | 22                                              |
| Conductor structure signal line               | 7x 0.25 mm                                      |
| Core diameter including insulation            | approx. 1.55 mm                                 |
| Wire colors                                   | White, yellow, blue, orange                     |
| Type of pair shielding                        | Aluminum-lined polyester foil                   |
| Overall twist                                 | Star quad                                       |
| Shielding                                     | Tinned copper braided shield                    |
| External sheath, color                        | signal red RAL 3020                             |
| Outer sheath thickness                        | approx. 0.9 mm                                  |
| External cable diameter D                     | 6.5 mm ±0.2 mm                                  |
| Minimum bending radius, fixed installation    | 3 x D                                           |
| Minimum bending radius, flexible installation | 7 x D                                           |
| Cable weight                                  | 68 kg/km                                        |
| Outer sheath, material                        | PVC                                             |
| Material, inner sheath                        | PVC                                             |
| Material conductor insulation                 | PE                                              |
| Conductor material                            | Tin-plated Cu litz wires                        |
| Insulation resistance                         | ≥ 0.5 GΩ*km                                     |
| Conductor resistance                          | ≤ 120 Ω/km                                      |
| Wave impedance                                | 100 Ω ±15 Ω (at 100 MHz)                        |
| Signal runtime                                | 5.3 ns/m                                        |
| Coupling resistance                           | ≤ 20.00 mΩ/m (at 10 Hz)                         |
| Nominal voltage, cable                        | 600 V                                           |
| Test voltage Core/Core                        | 2000 V (50 Hz, 1 min.)                          |
| Test voltage Core/Shield                      | 2000 V (50 Hz, 1 min.)                          |
| Flame resistance                              | according to UL 1685 (CSA FT 4)                 |
| Resistance to oil                             | Resistant to oil to a limited extent            |
| Other resistance                              | UV resistant According to UL 1581, Section 1200 |
| Ambient temperature (operation)               | -40 °C ... 70 °C (cable, fixed installation)    |
|                                               | -40 °C ... 70 °C (cable, flexible installation) |
| Ambient temperature (installation)            | -20 °C ... 60 °C                                |
| Ambient temperature (storage/transport)       | -50 °C ... 70 °C                                |

### Environmental Product Compliance

|            |                                                |
|------------|------------------------------------------------|
| REACH SVHC | Lead 7439-92-1                                 |
| China RoHS | Environmentally Friendly Use Period = 50 years |

## Network cable - NBC-MSD/10,0-93K/MSD SCO - 1411536

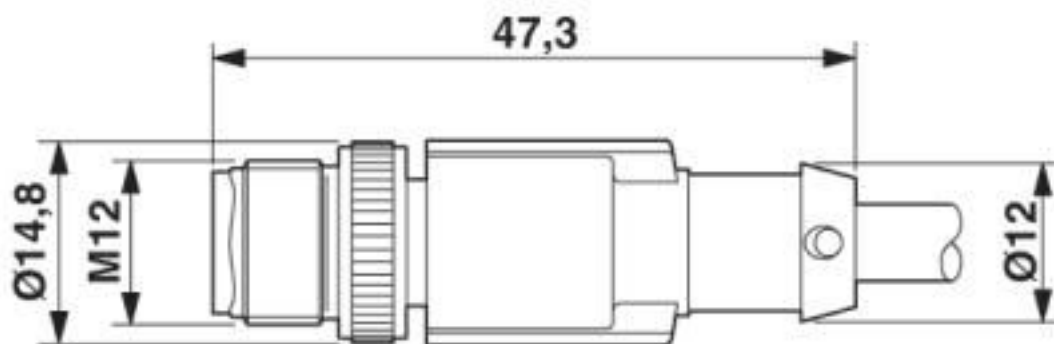
### Technical data

#### Environmental Product Compliance

|  |                                                                                                     |
|--|-----------------------------------------------------------------------------------------------------|
|  | For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration" |
|--|-----------------------------------------------------------------------------------------------------|

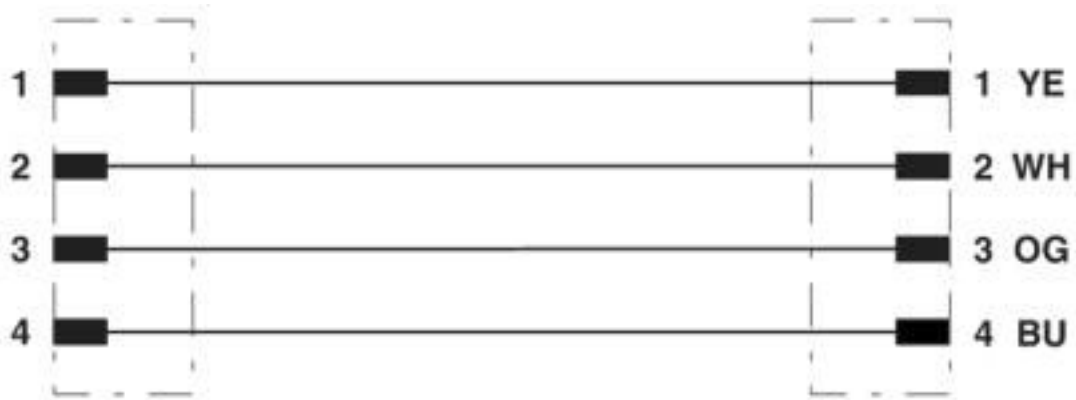
### Drawings

Dimensional drawing



Plug, M12 x 1, straight, shielded

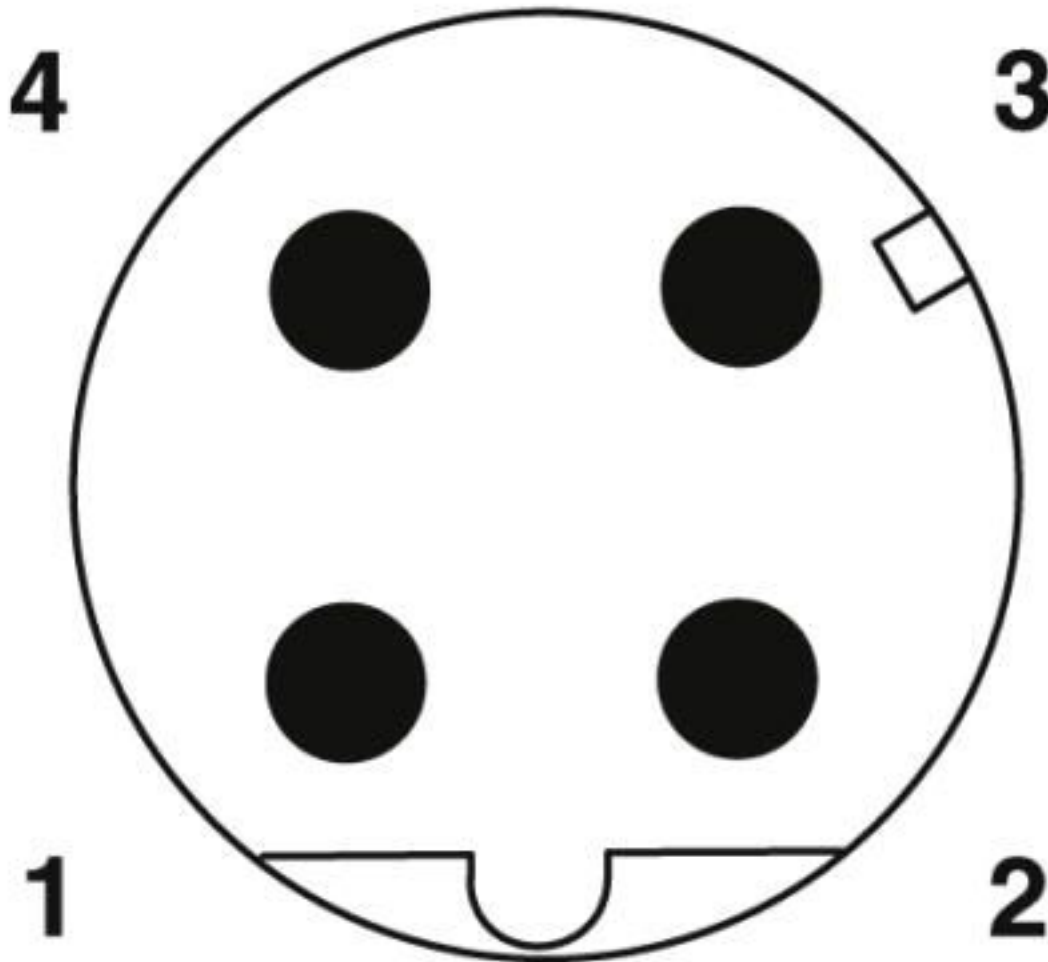
Circuit diagram



Contact assignment of the M12 plugs

## Network cable - NBC-MSD/10,0-93K/MSD SCO - 1411536

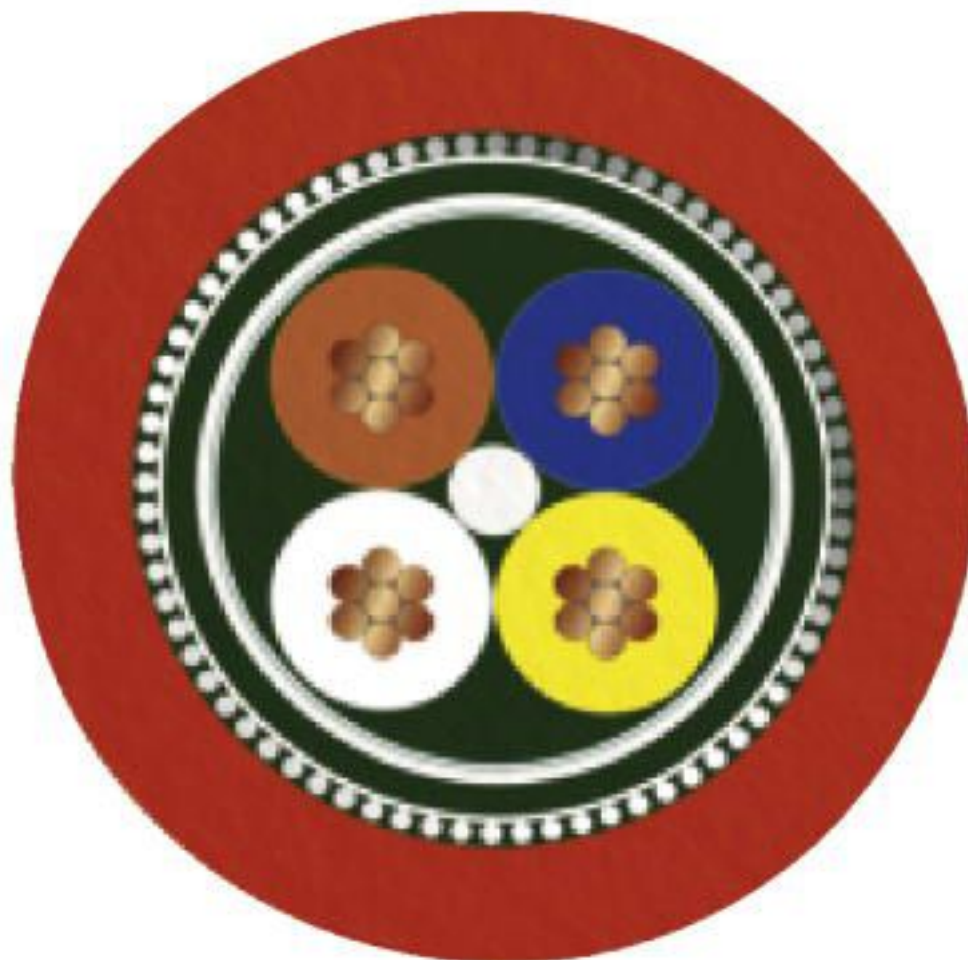
Schematic diagram



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

## Network cable - NBC-MSD/10,0-93K/MSD SCO - 1411536

Cable cross section



Sercos III [93K]

### Classifications

eCl@ss

|               |          |
|---------------|----------|
| eCl@ss 10.0.1 | 27060308 |
| eCl@ss 4.0    | 27060300 |
| eCl@ss 4.1    | 27060300 |
| eCl@ss 5.0    | 27060300 |
| eCl@ss 5.1    | 27060300 |
| eCl@ss 6.0    | 27279200 |
| eCl@ss 7.0    | 27279218 |
| eCl@ss 8.0    | 27279218 |
| eCl@ss 9.0    | 27060308 |

## Network cable - NBC-MSD/10,0-93K/MSD SCO - 1411536

### Classifications

#### ETIM

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

#### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 13.2 | 31251501 |
| UNSPSC 18.0 | 26121604 |
| UNSPSC 19.0 | 26121604 |
| UNSPSC 20.0 | 26121604 |
| UNSPSC 21.0 | 26121604 |

### Approvals

#### Approvals

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Approvals

EAC-RoHS

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Ex Approvals

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#### Approval details

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

### Accessories

#### Accessories

##### Protective cap

Sealing cap - PROT-M12 FS-PA-CHAIN - 1430873

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



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#### Safety locking

## Network cable - NBC-MSD/10,0-93K/MSD SCO - 1411536

### Accessories

Locking clip - SAC-M12-EXCLIP-M - 1558988



Locking clip for the pin side of sensor/actuator cables with M12 connector and M12 connectors for assembly, for knurl diameter: 15 mm or for Allen key with a wrench size of 14 mm, prevents the disconnection of plug-in connections without tools

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### Screwdriver tools

Adapter insert - TSD-M SAC-BIT ADAPTER - 1212600



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

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Tool - SAC BIT M12-D15 - 1208432



Nut for assembling sensor/actuator cables with M12 connector and M12 connectors for assembly, with a knurl diameter of 15 mm, for 4 mm hexagonal drive

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### Torque tool

Torque screwdriver - TSD 04 SAC - 1208429



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

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



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

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