

## Network cable - NBC-MSD/40,0-93E/MSD SCO - 1030998

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Network cable, Ethernet CAT5 (100 Mbps), 4-position, PUR, water blue RAL 5021, cable length: 40 m

RoHS



### Key Commercial Data

|                        |   |
|------------------------|---|
| Packing unit           | 1 pc  |
| Minimum order quantity | 10 pc   |
| GTIN                   | <br>4 055626 534725 |
| GTIN                   | 4055626534725   |

### Technical data

#### Dimensions

|                 |      |
|-----------------|------|
| Length of cable | 40 m |
|-----------------|------|

#### 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                   | 4 A (Plug/socket in accordance with IEC 61076-2-101, cable technical data is to be observed)                |
| 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   |
| Degree of protection                    | IP65/IP67   |
| Transmission characteristics (category) | CAT5  |

#### Characteristics head 1

|                        |                     |
|------------------------|---------------------|
| Outer sheath, material | PUR                 |
| External sheath, color | water blue RAL 5021 |

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## Technical data

### Standards and Regulations

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

### Cable

|  |  |
|--|--|
| Cable type   | Ethernet flexible CAT5, 2-pair                     |
| 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-summed near end crosstalk attenuation (PSNEXT) | 62.3 dB (with 1 MHz)                               |

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## Technical data

### Cable

|   |   |
|---|---|
|   | 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)                                  |
| 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 |

## Network cable - NBC-MSD/40,0-93E/MSD SCO - 1030998

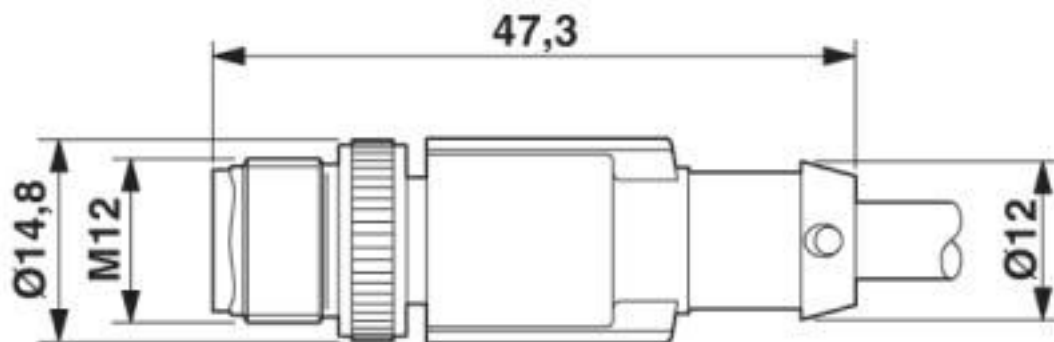
### Technical data

#### Environmental Product Compliance

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

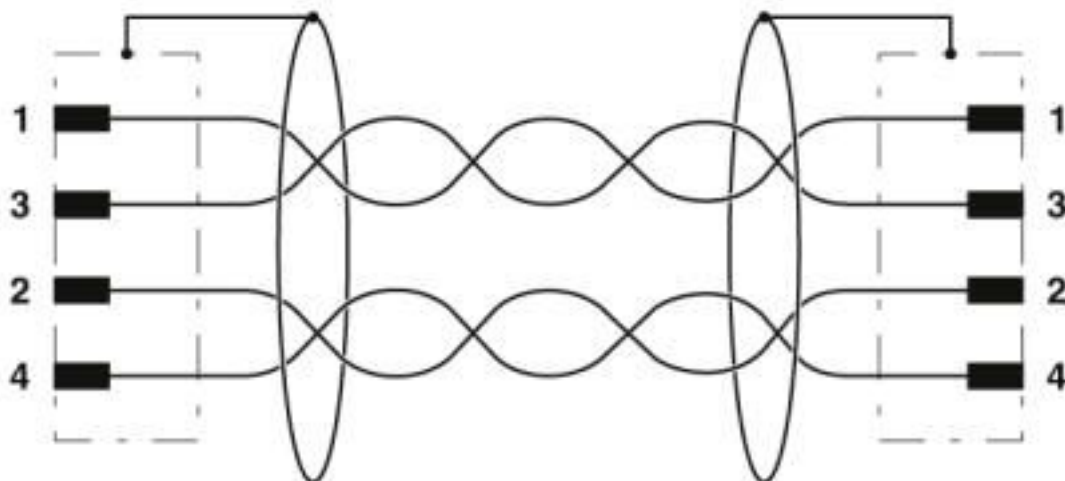
### Drawings

Dimensional drawing



Plug, M12 x 1, straight, shielded

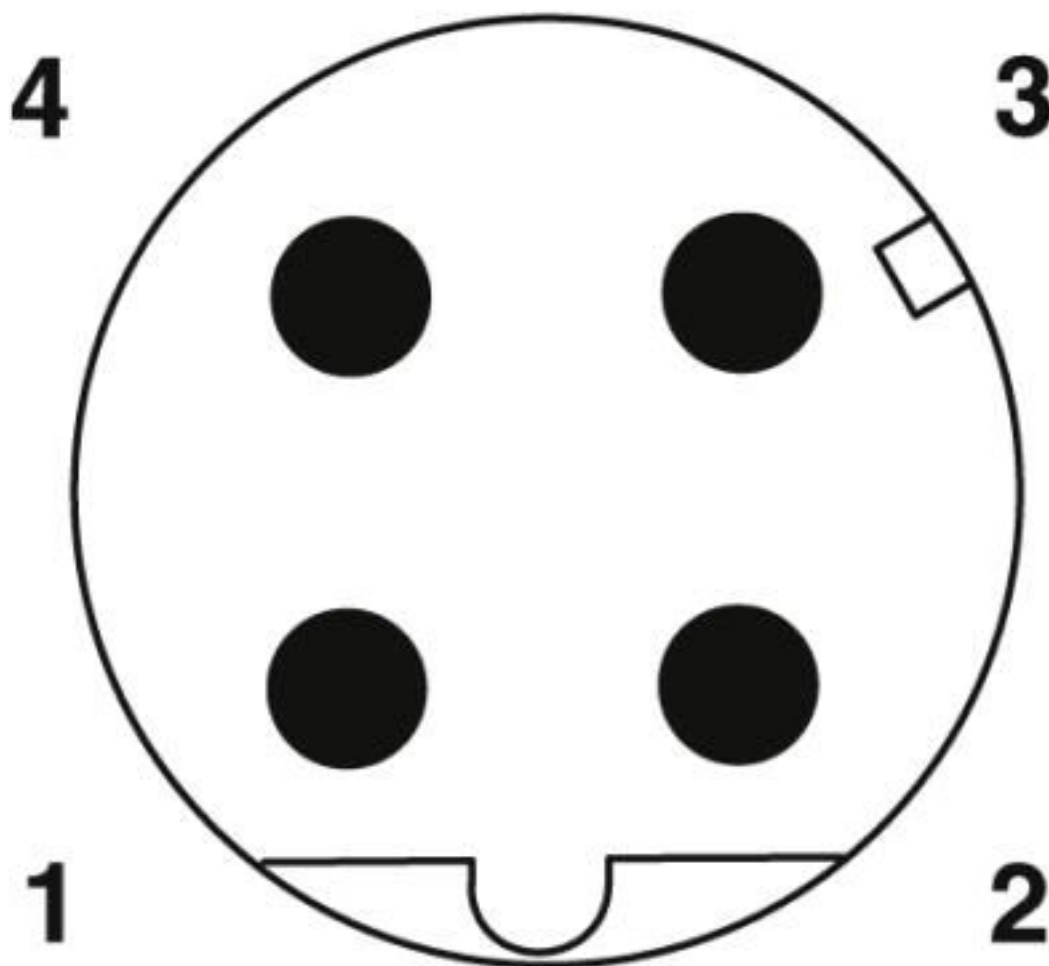
Circuit diagram



Contact assignment of the M12 plugs

## Network cable - NBC-MSD/40,0-93E/MSD SCO - 1030998

Schematic diagram



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

## Network cable - NBC-MSD/40,0-93E/MSD SCO - 1030998

Cable cross section



Ethernet flexible CAT5, 2-pair [93E]

### 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 6.0 | EC001262 |
| ETIM 7.0 | EC001262 |

## Network cable - NBC-MSD/40,0-93E/MSD SCO - 1030998

### Approvals


#### Approvals

Approvals

UL Listed

Ex Approvals

### Approval details

|                    |   |   |               |
|--------------------|---|---|---------------|
| UL Listed          |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 335024 |
| Nominal voltage UN |   | 30 V  |               |
| Nominal current IN |   | 4 A   |               |

### Accessories

#### Accessories

#### Data cable preassembled

Network cable - NBC-MSD-MSD SCO/.../... - 1408706



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

Network cable - NBC-MSD-MRD SCO/.../... - 1408700



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

Network cable - NBC-MSD-FSD SCO/.../... - 1408692



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

## Network cable - NBC-MSD/40,0-93E/MSD SCO - 1030998

### Accessories

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#### Network cable - NBC-MSD-FRD SCO/.../... - 1408684



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

#### Network cable - NBC-MRD-MRD SCO/.../... - 1408699



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

#### Network cable - NBC-MRD-FSD SCO/.../... - 1408691



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

#### Network cable - NBC-MRD-FRD SCO/.../... - 1408683



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

### 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



### Safety locking



## Network cable - NBC-MSD/40,0-93E/MSD SCO - 1030998

### 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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