

## Network cable - NBC-MSD/ 2,0-93E SCO - 1407357


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Network cable, Ethernet CAT5 (100 Mbps), 4-position, PUR, water blue RAL 5021, shielded, Plug straight M12 SPEEDCON / IP67, coding: D, on free cable end, cable length: 2 m



### Key Commercial Data

|              |   |
|--------------|---|
| Packing unit | 1 pc  |
| GTIN         | <br>4 046356 774857 |
| GTIN         | 4046356774857   |

### Technical data

#### Dimensions

|                 |     |
|-----------------|-----|
| Length of cable | 2 m |
|-----------------|-----|

#### Ambient conditions

|                                 |                                  |
|---------------------------------|----------------------------------|
| Degree of protection            | IP65                             |
|                                 | IP67                             |
| Ambient temperature (operation) | -25 °C ... 85 °C (M12 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    | 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   |
| Contact material         | CuSn  |
| Contact carrier material | TPU GF  |

# Network cable - NBC-MSD/ 2,0-93E SCO - 1407357

## Technical data

### General data

|                          |       |
|--------------------------|-------|
| Contact surface material | Ni/Au |
|--------------------------|-------|

### Characteristics head 1

|  |  |
|--|--|
| Head type                                | Plug straight M12 SPEEDCON / IP67                  |
| No. of positions (pin connector pattern) | 4  |
| Coding                                   | D (Data)   |
| Color                                    | black  |
| Material (component)                     | CuZn (Contact)                                     |
|  | Ni/Au (Contact surface)                            |
|  | PA (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                                   |

### Characteristics head 2

|           |                |
|-----------|----------------|
| Head type | free cable end |
| Color     | black          |

### Standards and Regulations

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

### Cable

|                                    |  |
|------------------------------------|--|
| Cable type                         | PUR ETHERNET 2x2 FLEX                              |
| 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                                     |

## Network cable - NBC-MSD/ 2,0-93E SCO - 1407357

### Technical data

#### Cable

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

## Network cable - NBC-MSD/ 2,0-93E SCO - 1407357

### Technical data

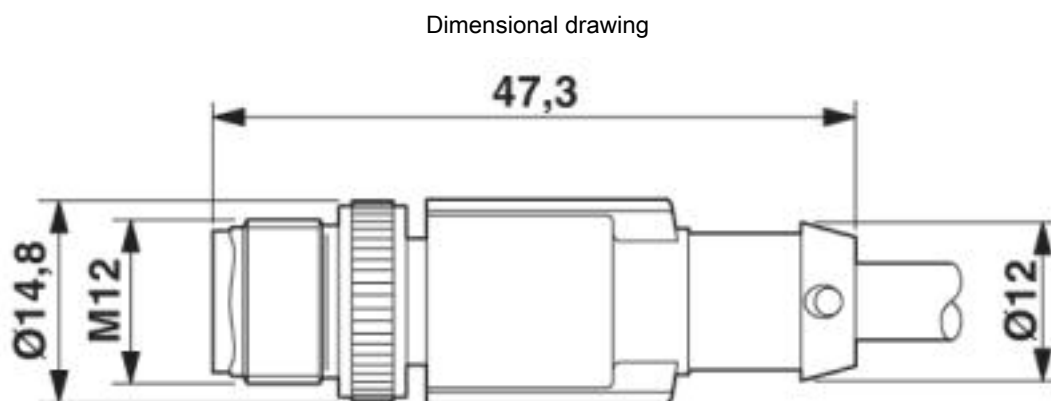
#### Cable

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

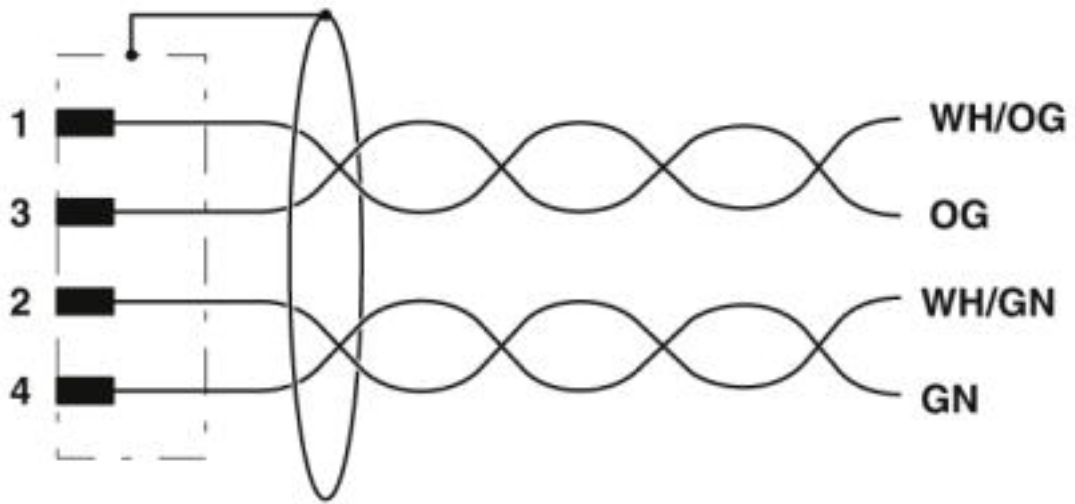
### Drawings



Plug, M12 x 1, straight, shielded

## Network cable - NBC-MSD/ 2,0-93E SCO - 1407357

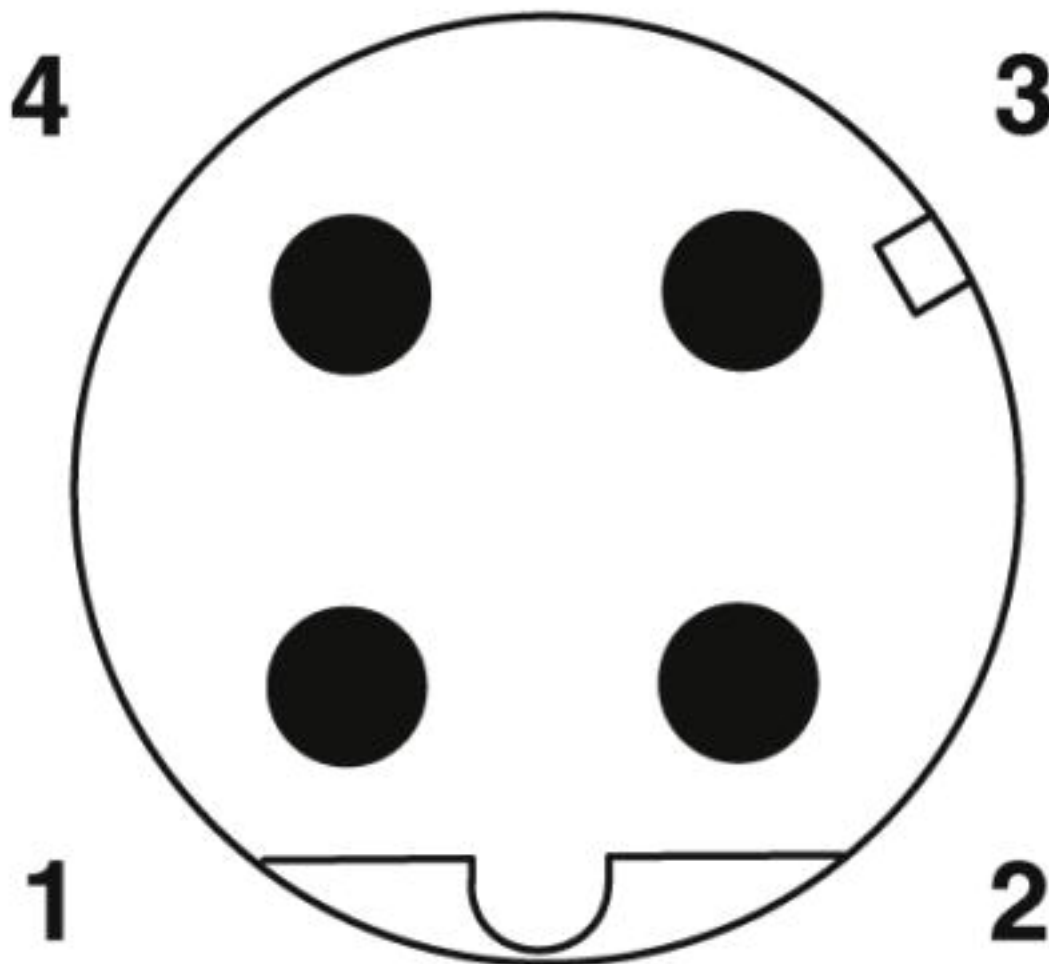
Circuit diagram



Contact assignment of the M12 plug

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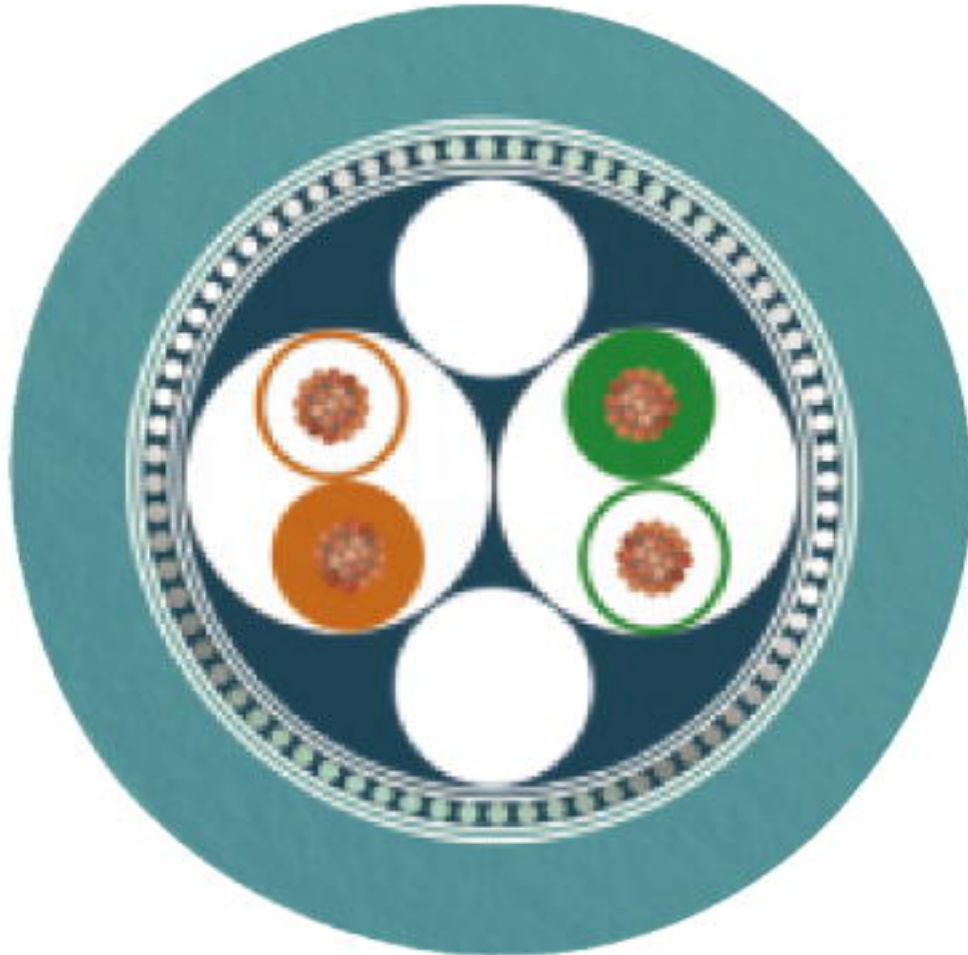
Schematic diagram



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

# Network cable - NBC-MSD/ 2,0-93E SCO - 1407357

Cable cross section



PUR ETHERNET 2x2 FLEX [93E]

## Approvals

Approvals

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Approvals

UL Recognized / cUL Recognized / cULus Recognized

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Ex Approvals


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Approval details

## Network cable - NBC-MSD/ 2,0-93E SCO - 1407357

### Approvals

|                    |   |   |               |
|--------------------|---|---|---------------|
| UL Recognized      |  | <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   |               |

|                    |   |   |               |
|--------------------|---|---|---------------|
| cUL Recognized     |  | <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   |               |

|                  |  |  |  |
|------------------|--|--|--|
| cULus Recognized |  |  |  |
|------------------|--|--|--|

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