

# NBC-M12MSX/ 3,0-94C/M12MSX - Network cable



1423311

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Network cable, Ethernet CAT5 (1 Gbps) CAT5 (1 Gbps), 8-position, PUR halogen-free, water blue RAL 5021, shielded (Advanced Shielding Technology), Plug straight M12, coding: X / IP67, on Plug straight M12, coding: X / IP67, cable length: 3 m

## Commercial data

|                                      |                                |
|--------------------------------------|--------------------------------|
| Item number                          | 1423311                        |
| Packing unit                         | 1 pc                           |
| Minimum order quantity               | 1 pc                           |
| Note                                 | Made to order (non-returnable) |
| Sales key                            | BF04                           |
| Product key                          | AF1CMJ                         |
| GTIN                                 | 4055626338194                  |
| Weight per piece (including packing) | 204.8 g                        |
| Weight per piece (excluding packing) | 204.8 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          | Ethernet                |
| Number of positions  | 8                       |
| No. of cable outlets | 1                       |
| Shielded             | yes                     |
| Coding               | X                       |

### Interfaces

|                      |  |
|----------------------|--|
| Bus system           | Ethernet                               |
| Signal type/category | Ethernet CAT5 (IEC 11801:2002), 1 Gbps |

### Signaling

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

### Electrical properties

|   |         |
|---|---------|
| Nominal voltage $U_N$                   | 48 V AC |
|   | 60 V DC |
| Nominal current $I_N$                   | 0.5 A   |
| Transmission medium                     | Copper  |
| Transmission speed                      | 1 Gbps  |
| Transmission characteristics (category) | CAT5    |

### Connector

#### Connection 1

|                                 |   |
|---------------------------------|---|
| Type                            | Plug straight M12 / IP67                                |
| Number of positions             | 8   |
| Coding type                     | X (Data)  |
| Handle color                    | black   |
| Material                        | CuZn (Contact)  |
|                                 | Ni/Au (Contact surface)                                 |
|                                 | PP (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 / IP67  |
| Coding type                     | X (Data)  |
| Handle color                    | black   |
| Material                        | CuZn (Contact)<br>Ni/Au (Contact surface)<br>PP (Contact carrier)<br>TPU, hardly inflammable, self-extinguishing (Grip body)<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 | 3 m |
|--------------|-----|

## Ethernet drag chain CAT5, 4-pair [94C]

|                                 |  |
|---------------------------------|--|
| Dimensional drawing             |  |
| Cable weight                    | 57 kg/km   |
| UL AWM Style                    | 20963 (80°C/30 V)  |
| Number of positions             | 8  |
| Shielded                        | yes  |
| Cable type                      | Ethernet drag chain CAT5, 4-pair [94C]   |
| Conductor structure             | 4x2xAWG26/19, S/UTP  |
| Signal runtime                  | 5.3 ns/m   |
| Conductor structure signal line | 19x 0.10 mm  |
| AWG signal line                 | 26   |
| Conductor cross-section         | 4x 2x 0.14 mm <sup>2</sup>   |
| Wire diameter incl. insulation  | 1 mm   |
| External cable diameter         | 6.90 mm +0.1 mm ... 0.2 mm   |
| Outer sheath, material          | PUR  |
| External sheath, color          | water blue RAL 5021  |
| Conductor material              | Bare Cu litz wires   |
| Material wire insulation        | PP   |
| Single wire, color              | white/blue-blue, white/orange-orange, white/green-green,                             |

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|  |   |
|--|---|
|  | white/brown-brown   |
| Thickness, outer sheath                                | 0.85 mm   |
| Twisted pairs  | 2 cores to the pair   |
| Overall twist  | Four pairs and four fillers to the core   |
| Optical shield covering                                | 90 %  |
| Insulation resistance                                  | $\geq 500 \text{ M}\Omega \cdot \text{km}$  |
| Coupling resistance                                    | $\leq 100.00 \text{ m}\Omega/\text{m}$ (at 10 MHz)  |
| Loop resistance  | $\leq 290.00 \text{ }\Omega/\text{km}$  |
| Wave impedance   | $100 \text{ }\Omega \pm 5 \text{ }\Omega$ (at 100 MHz)  |
| Cable capacity   | approx. 50 nF/km (at 1 kHz)   |
| Nominal voltage, cable                                 | $\leq 100 \text{ V}$  |
| 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            | 28 mm   |
| Smallest bending radius, movable installation          | 56 mm   |
| Dynamic load capacity (bending)                        | Max. bending cycles: 5000000, Bending radius: 7,5 x D, Traversing rate: 3 m/s, Acceleration: 5 m/s <sup>2</sup> |
| Tensile strength                                       | $\leq 100 \text{ N}$  |
| 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)   |
| Power-summated near end crosstalk attenuation (PSNEXT) | 35.3 dB (at 100 MHz)  |
|  | 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)  |
| Return attenuation (RL)                                | 35.4 dB (at 62.5 MHz)   |
|  | 32.3 dB (at 100 MHz)  |
|  | 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)  |

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|                                    |   |
|------------------------------------|---|
| 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                                |

## Standards and regulations

|                          |                 |
|--------------------------|-----------------|
| Standard designation     | M12 connector   |
| Standards/specifications | IEC 61076-2-109 |

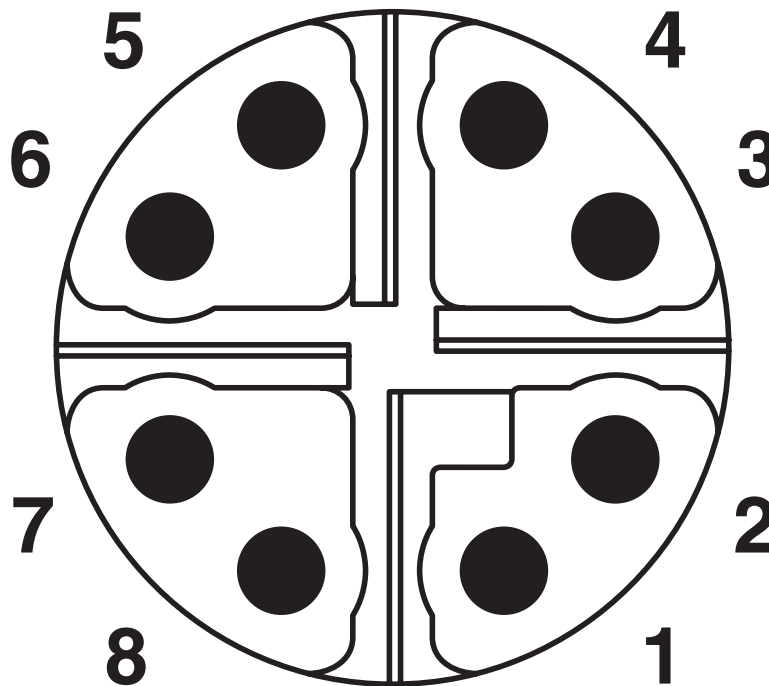
Drawings

Dimensional drawing



Plug, M12 x 1, straight, shielded

Schematic diagram



Pin assignment of M12 plug, 8-pos., X-coded, pin side view

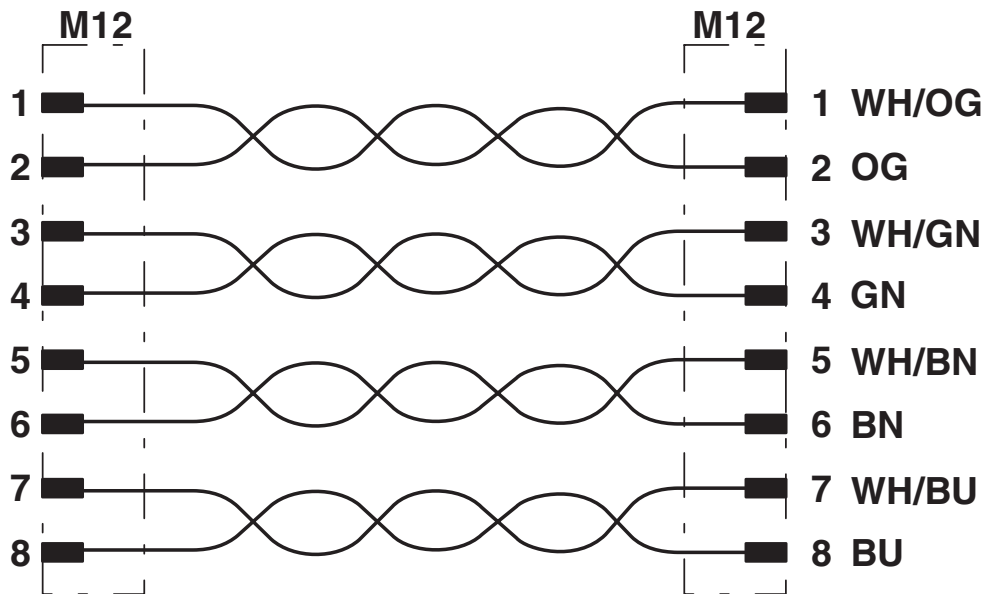
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Circuit diagram



Contact assignment of the M12 plugs

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## Approvals

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|  <b>UL Listed</b><br>Approval ID: FILE E 335024 |                       |                       |                   |                             |
|--|-----------------------|-----------------------|-------------------|-----------------------------|
|  | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
| keine  |                       |                       |                   |                             |
|  | 30 V                  | 0.5 A                 | -                 | -                           |

|  <b>cUL Listed</b><br>Approval ID: FILE E 335024 |                       |                       |                   |                             |
|---|-----------------------|-----------------------|-------------------|-----------------------------|
|   | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
| keine   |                       |                       |                   |                             |
|   | 30 V                  | 0.5 A                 | -                 | -                           |

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27060307 |
| ECLASS-15.0 | 27060307 |

### ETIM

|           |          |
|-----------|----------|
| ETIM 10.0 | EC001855 |
|-----------|----------|

### UNSPSC

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

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## 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% |
|-------------------------------------|----------------------------|

### EF3.1 Climate Change

|         |               |
|---------|---------------|
| CO2e kg | 5.877 kg CO2e |
|---------|---------------|

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