

# NBC-M12MRD/ 0,5-93E/R4AC US - Network cable



1408742

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Network cable, Ethernet CAT5 (100 Mbps), 4-position halogen-free, shielded, Plug angled M12, coding: D / IP67, on Plug straight RJ45 / IP20, cable length: 0.5 m

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 1408742       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | BF15          |
| Product key                          | BF1IHA        |
| GTIN                                 | 4046356828642 |
| Weight per piece (including packing) | 41.86 g       |
| Weight per piece (excluding packing) | 40.6 g        |
| Customs tariff number                | 85444290      |
| Country of origin                    | US            |

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## Technical data

### Product properties

|                     |                         |
|---------------------|-------------------------|
| Product type        | Data cable preassembled |
| Sensor type         | Ethernet                |
| Number of positions | 4                       |
| Application         | Standard, U.S. cables   |
| Shielded            | yes                     |
| Coding              | D                       |

### Interfaces

|                      |                                     |
|----------------------|-------------------------------------|
| Bus system           | Ethernet                            |
| Signal type/category | Ethernet 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 $I_N$                   | 1 A                   |
| Transmission medium                     | Copper                |
| Transmission characteristics (category) | CAT5 (IEC 11801:2002) |

### Connector

#### Connection 1

|                      |  |
|----------------------|--|
| Type                 | Plug angled M12 / IP67                             |
| Coding type          | D (Data)   |
| Material             | CuSn (Contact)                                     |
|                      | Ni/Au (Contact surface)                            |
|                      | PA (Contact carriers)                              |
|                      | TPU, hardly inflammable, self-extinguishing (Grip) |
|                      | Zinc die-cast, nickel-plated (Screw connection)    |
| Degree of protection | IP67   |

#### Connection 2

|                      |                           |
|----------------------|---------------------------|
| Type                 | Plug straight RJ45 / IP20 |
| Material             | CuSn (Contact)            |
|                      | Ni/Au (Contact surface)   |
|                      | PA (Contact carriers)     |
|                      | PA (Housing)              |
| Degree of protection | IP20                      |


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## Cable/line

|                                      |  |
|--------------------------------------|--|
| Cable length                         | 0.5 m  |
| Ethernet flexible CAT5, 2-pair [93E] |  |
| Dimensional drawing                  |  |
| Cable weight                         | 42 kg/km   |
| UL AWM Style                         | 20963 (80°C/30 V)  |
| Wiring standards/regulations         | Electrical requirements EN 50288-2-2   |
| Number of positions                  | 4  |
| Shielded                             | yes  |
| Cable type                           | Ethernet flexible CAT5, 2-pair [93E]   |
| Conductor structure                  | 2x2xAWG26/7, SF/UTP  |
| Signal runtime                       | 5.3 ns/m   |
| Conductor structure signal line      | 7x 0.16 mm   |
| AWG signal line                      | 26   |
| Conductor cross section              | 2x 2x 0.14 mm <sup>2</sup>   |
| Wire diameter incl. insulation       | 0.98 mm  |
| External cable diameter              | 6.4 mm ±0.2 mm   |
| Outer sheath, material               | PUR  |
| External sheath, color               | water blue RAL 5021  |
| Conductor material                   | Bare Cu litz wires   |
| Material wire insulation             | Foamed PE  |
| Single wire, color                   | white/orange-orange, white/green-green   |
| Thickness, outer sheath              | 1.2 mm   |
| Twisted pairs                        | 2 cores to the pair  |
| Overall twist                        | Two pairs with two fillers to the core   |
| Optical shield covering              | 70 %   |
| Insulation resistance                | ≥ 500 MΩ*km  |
| Coupling resistance                  | ≤ 100.00 mΩ/m (at 10 MHz)  |
| Loop resistance                      | ≤ 290.00 Ω/km  |
| Wave impedance                       | 100 Ω ±5 Ω (at 100 MHz)  |
| Cable capacity                       | approx. 45 nF/km (at 1 kHz)  |
| 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)  |

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|  |   |
|--|---|
| Minimum bending radius, fixed installation           | 4 x D   |
| Minimum bending radius, flexible installation        | 8 x D   |
| Smallest bending radius, fixed installation          | 26 mm   |
| Smallest bending radius, movable installation        | 52 mm   |
| Tensile strength                                     | ≤ 80 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)                           |
|  | 35.3 dB (at 100 MHz)                            |
| Power-summed 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)                            |
| Return attenuation (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)                            |
| 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                      |
|  | in acc. to UL VW1                               |
|  | in accordance with UN ECE-R 118.03              |
| 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) |

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|                                    |                  |
|------------------------------------|------------------|
| Ambient temperature (installation) | -20 °C ... 80 °C |
|------------------------------------|------------------|

## Environmental and real-life conditions

### Ambient conditions

|                                 |                                   |
|---------------------------------|-----------------------------------|
| Degree of protection            | IP65 (M12 connector)              |
|                                 | IP67 (M12 connector)              |
|                                 | IP20 (RJ45 connector)             |
|                                 | IP67/IP20                         |
| Ambient temperature (operation) | -25 °C ... 85 °C (M12 connector)  |
|                                 | -25 °C ... 60 °C (RJ45 connector) |

## Standards and regulations

### M12

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

## Drawings

### Schematic diagram

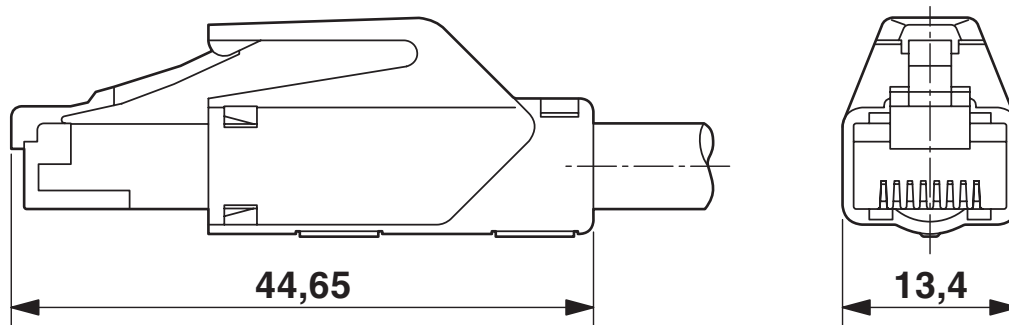


Connector pin assignment plug RJ45

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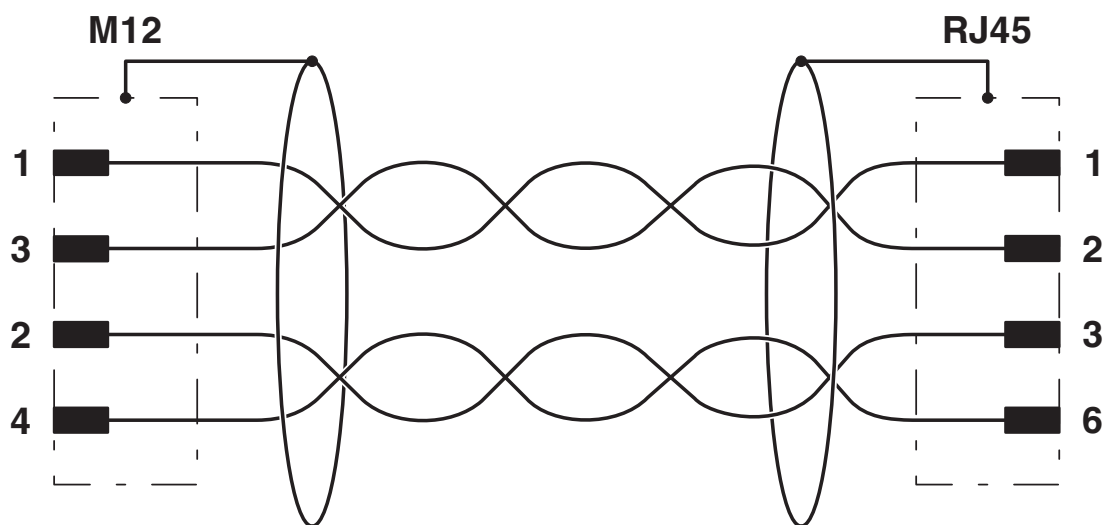
<https://www.phoenixcontact.com/us/products/1408742>

Dimensional drawing



RJ45 connector, IP20

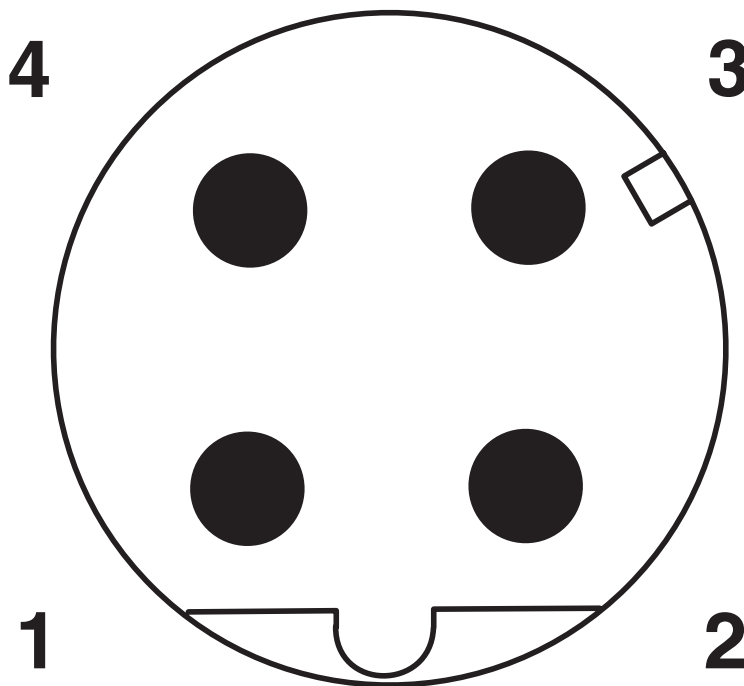
Circuit diagram



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Schematic diagram




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


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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1408742>

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

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

| <b>cULus Listed</b> |  |  |  |  |
|---------------------|--|--|--|--|
|---------------------|--|--|--|--|

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-11.0 | 27060307 |
| ECLASS-12.0 | 27060307 |
| ECLASS-13.0 | 27060307 |

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC001855 |
|----------|----------|

### UNSPSC

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

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## Environmental product compliance

|            |  |
|------------|--|
| China RoHS | Environmentally Friendly Use Period = 50 years<br>For information on hazardous substances, refer to the manufacturer's declaration available under "Downloads" |
|------------|--|

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Phoenix Contact USA  
586 Fulling Mill Road  
Middletown, PA 17057, United States  
(+717) 944-1300  
[info@phoenixcon.com](mailto:info@phoenixcon.com)