

NBC-FSD-R4AC SCO-EC/.../... - Network cable



1408589

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Network cable, EtherCAT® CAT5 (100 Mbps), 4-position, Variable cable type, shielded, Plug straight RJ45 / IP20, on Socket straight M12 SPEEDCON, coding: D / IP67, cable length: Free input (0.2 ... 40.0 m)

Commercial data

| | |
|-----------------------|--------------------------------|
| Item number | 1408589 |
| Packing unit | 1 pc |
| Note | Made to order (non-returnable) |
| Sales key | BF04 |
| Product key | AF1CJP |
| 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 | EtherCAT® |
| Number of positions | 4 |
| Shielded | yes |
| Coding | D |

Interfaces

| | |
|----------------------|--------------------------------------|
| Bus system | EtherCAT® |
| Signal type/category | EtherCAT® 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 speed | 100 Mbps |
| Transmission characteristics (category) | CAT5 (IEC 11801:2002) |

Material specifications

| | |
|---------------|-----|
| Seal material | NBR |
|---------------|-----|

Connector

Connection 1

| | |
|---------------------------------|---------------------------|
| Type | Plug straight RJ45 / IP20 |
| Number of positions | 4 (8) |
| Handle color | black |
| Material | CuSn (Contact) |
| | Ni/Au (Contact surface) |
| | PA (Contact carrier) |
| | PA (Housing) |
| Insertion/withdrawal cycles | ≥ 750 |
| Degree of protection | IP20 |
| Ambient temperature (operation) | -25 °C ... 80 °C |

Connection 2

| | |
|------|-------------------------------------|
| Type | Socket straight M12 SPEEDCON / IP67 |
|------|-------------------------------------|

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| | |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of positions | 4 |
| Locking type | SPEEDCON |
| Coding type | D (Data) |
| Handle color | black |
| Material | CuSn (Contact) Ni/Au (Contact surface) TPU GF (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 |

Cable/line

| | |
|--------------|-----------------------------|
| Cable length | Free input (0.2 ... 40.0 m) |
|--------------|-----------------------------|

EtherCAT® [93G]

| | |
|---------------------------------|----------------------------------------------------|
| Cable weight | 67 kg/km |
| UL AWM Style | 21694 |
| Number of positions | 4 |
| Shielded | yes |
| Cable type | EtherCAT® [93G] EtherCAT® 93G |
| Conductor structure | 1x4xAWG22/7, SF/TQ |
| Signal runtime | 5.3 ns/m |
| Signal speed | 0.66 c |
| Conductor structure signal line | 7x 0.25 mm |
| AWG signal line | 22 |
| Conductor cross-section | 4x 0.34 mm ² |
| Wire diameter incl. insulation | 1.55 mm |
| External cable diameter | 6.50 mm ±0.2 mm |
| Outer sheath, material | PVC |
| External sheath, color | green RAL 6018 |
| Conductor material | Tin-plated Cu litz wires |
| Material wire insulation | PE |
| Single wire, color | white, yellow, blue, orange |
| Thickness, outer sheath | approx. 0.90 mm |
| Overall twist | Star quad |
| Shielding | Aluminum-coated foil, tinned copper braided shield |
| Optical shield covering | 85 % |
| Insulation resistance | ≥ 500 MΩ*km |
| Coupling resistance | ≤ 20.00 mΩ/m (at 10 MHz) |

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| | |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------|
| Loop resistance | ≤ (per km) |
| Wave impedance | 100 Ω ±15 Ω (at 100 MHz) |
| Nominal voltage, cable | 600 V |
| Test voltage Core/Core | 2000 V (50 Hz, 1 min.) |
| Test voltage Core/Shield | 2000.00 V (50 Hz, 1 min.) |
| Minimum bending radius, fixed installation | 3 x D |
| Minimum bending radius, flexible installation | 7 x D |
| Smallest bending radius, fixed installation | 20 mm |
| Smallest bending radius, movable installation | 46 mm |
| 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) |

EtherCAT® drag chain CAT5 [93H]

| | |
|---------------------------------|------------------------------------------------------------------|
| Cable weight | 61 kg/km |
| Number of positions | 4 |
| Shielded | yes |
| Cable type | EtherCAT® drag chain CAT5 [93H] EtherCAT® drag chain CAT5 93H |
| Conductor structure | 1x4xAWG22/7, SF/TQ |
| Signal runtime | 5.3 ns/m |
| Signal speed | 0.66 c |
| Conductor structure signal line | 7x 0.25 mm |
| AWG signal line | 22 |
| Conductor cross-section | 4x 0.34 mm ² |
| Wire diameter incl. insulation | 1.5 mm |
| External cable diameter | 6.50 mm ±0.2 mm |
| Outer sheath, material | PUR |
| External sheath, color | green RAL 6018 |
| Conductor material | Tin-plated Cu litz wires |
| Material wire insulation | PE |
| Single wire, color | white, yellow, blue, orange |
| Thickness, outer sheath | approx. 0.90 mm |
| Overall twist | Star quad |
| Shielding | Aluminum-coated foil, tinned copper braided shield |
| Optical shield covering | 85 % |
| Insulation resistance | ≥ 500 MΩ*km |
| Coupling resistance | ≤ 20.00 mΩ/m (at 10 MHz) |
| Loop resistance | ≤ (per km) |
| Wave impedance | 100 Ω ±15 Ω (at 1 ... 100 MHz) |
| Nominal voltage, cable | 600 V (UL rating) |
| Test voltage Core/Core | 2000 V (50 Hz, 1 min.) |

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| | |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Test voltage Core/Shield | 2000.00 V (50 Hz, 1 min.) |
| Minimum bending radius, fixed installation | 5 x D |
| Minimum bending radius, flexible installation | 7.5 x D |
| Smallest bending radius, fixed installation | 33 mm |
| Smallest bending radius, movable installation | 49 mm |
| Dynamic load capacity (bending) | Max. bending cycles: 3000000, Bending radius: 100 mm, Traversing path: 10 m, Traversing rate: 4 m/s, Acceleration: 4 m/s ² |
| Dynamic load capacity (torsion) | Torsion: ±30 °/m |
| Flame resistance | according to IEC 60332-1-2 |
| Resistance to oil | in accordance with DIN EN 60811-2-1 |
| Other resistance | UV resistant |
| Special properties | Electrical properties in accordance with EN 50288-2-2 |
| Ambient temperature (operation) | -40 °C ... 70 °C (cable, fixed installation) -40 °C ... 70 °C (Cable, flexible installation) |

Standards and regulations

M12

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

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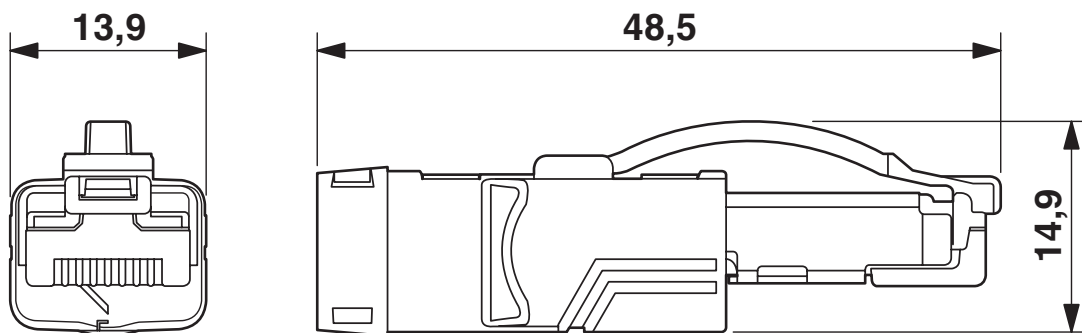
Drawings

Dimensional drawing



M12 x 1 socket, straight, shielded

Dimensional drawing



RJ45 connector, IP20

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Schematic diagram



Pin assignment M12 socket, 4-pos., D-coded, female side

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Schematic diagram



Connector pin assignment plug RJ45

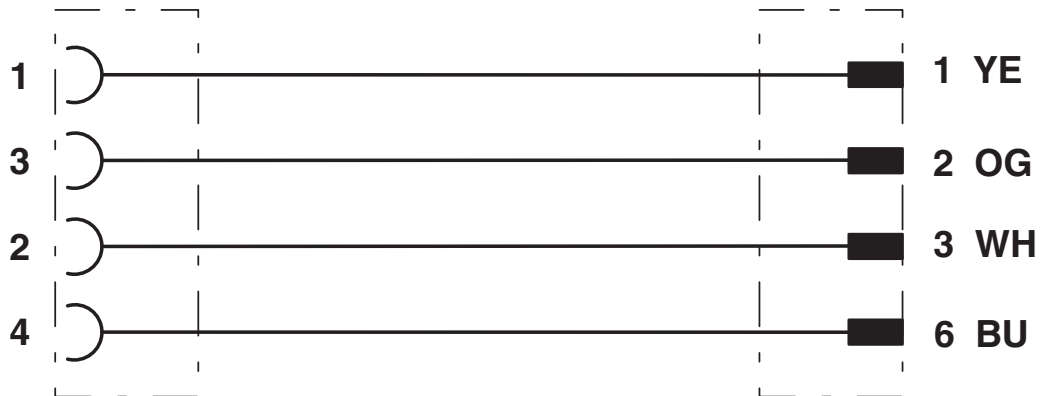
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Circuit diagram



Contact assignment of the M12 socket and the RJ45 plug

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Classifications

ECLASS

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

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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% |
|-------------------------------------|----------------------------|

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