# Network cable - VS-MSD-IP20-93E/3,0 - 1403499

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Network cable, Ethernet CAT5 (100 Mbps), 4-position, PUR, water blue RAL 5021, shielded, Plug straight M12 / IP67, coding: D, on Plug straight RJ45 / IP20, cable length: 3 m

RoHS

Ethernet

## Key Commercial Data

| | |
|---|---|
| Packing unit | 1 pc |
| GTIN | 4 046356 656191 |
| GTIN | 4046356656191 |

## Technical data

### Dimensions

| | |
|---|---|
| Length of cable | 3 m |

### Ambient conditions

| | |
|---|---|
| Degree of protection | IP20 (RJ45 connector) |
| | IP67 (M12 connector) |

### General data

| | |
|---|---|
| Rated voltage | 48 V AC |
| | 60 V DC |
| Number of positions | 4 |
| Signal type/category | Ethernet CAT5 (IEC 11801), 100 Mbps |
| Overvoltage category | I |
| Degree of pollution | 3 |
| Housing material | TPU/PA |
| Degree of protection | IP67/IP20 |
| Transmission characteristics (category) | CAT5 |

### Characteristics head 1

| | |
|---|---|
| Head type | Plug straight M12 / IP67 |

# Network cable - VS-MSD-IP20-93E/3,0 - 1403499

## Technical data

### Characteristics head 1

| | |
|---|---|
| No. of positions (pin connector pattern) | 4 |
| Coding | D (Data) |
| Color | black |
| Material (component) | CuZn (Contact) |
| | Ni/Au (Contact surface) |
| | TPU GF (Contact carriers) |
| | TPU, hardly inflammable, self-extinguishing (Grip) |
| | Zinc die-cast, nickel-plated (Screw connection) |
| Shielded | yes |
| Insertion/withdrawal cycles | ≥ 100 |
| Torque | 0.4 Nm |
| Ambient temperature (operation) | -25 °C ... 90 °C |
| Shielded | yes |
| Outer sheath, material | PUR |
| External sheath, color | water blue RAL 5021 |
| Type type, plug side | Plug straight |
| Type type, socket side | Plug, straight |

### Characteristics head 2

| | |
|---|---|
| Head type | Plug straight RJ45 / IP20 |
| No. of positions (pin connector pattern) | 4 (8) |
| Color | gray |
| | gray / black |
| Material (component) | CuSn (Contact) |
| | Ni/Au (Contact surface) |
| | PC (Contact carriers) |
| | PA (Housing) |
| Shielded | yes |
| Insertion/withdrawal cycles | ≥ 750 |
| Ambient temperature (operation) | -40 °C ... 60 °C |

### Standards and Regulations

| | |
|---|---|
| Flammability rating according to UL 94 | V2 |

### 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 mm² |
| AWG signal line | 26 |

# Network cable - VS-MSD-IP20-93E/3,0 - 1403499

## Technical data

### Cable

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

# Network cable - VS-MSD-IP20-93E/3,0 - 1403499

## Technical data

### Cable

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

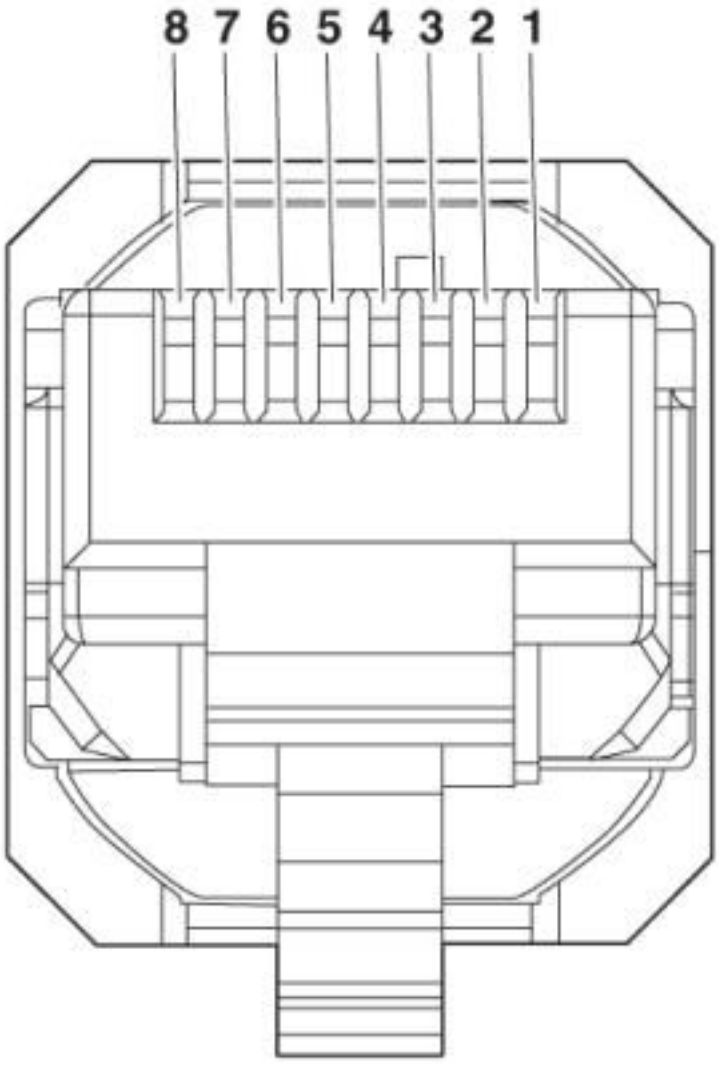
### Environmental Product Compliance

| | |
|---|---|
| REACh SVHC | Lead 7439-92-1 |
| China RoHS | Environmentally Friendly Use Period = 50 years |
| | For details about hazardous substances go to tab “Downloads”, Category “Manufacturer's declaration” |

## Drawings

# Network cable - VS-MSD-IP20-93E/3,0 - 1403499

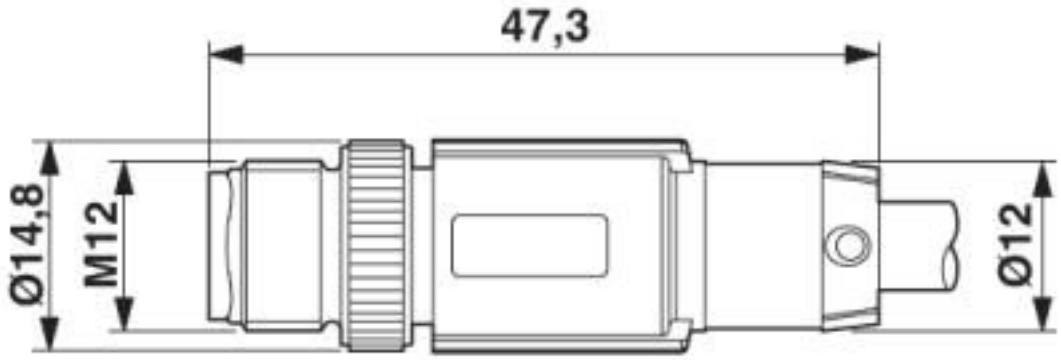
Schematic diagram




Connector pin assignment plug RJ45

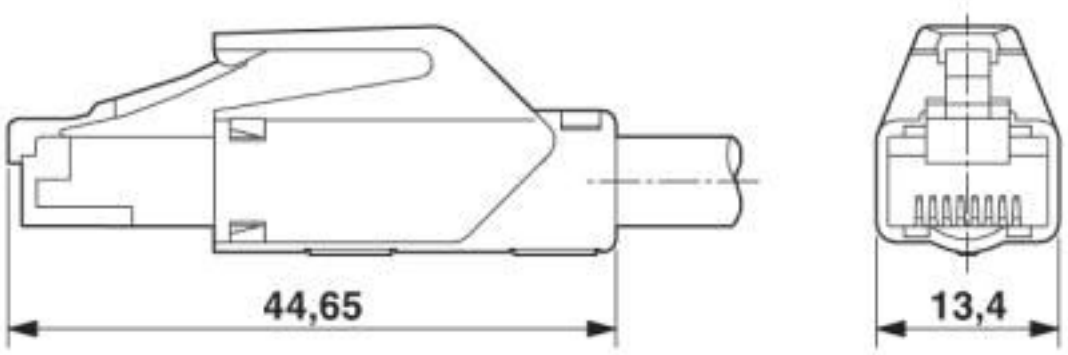
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Dimensional drawing



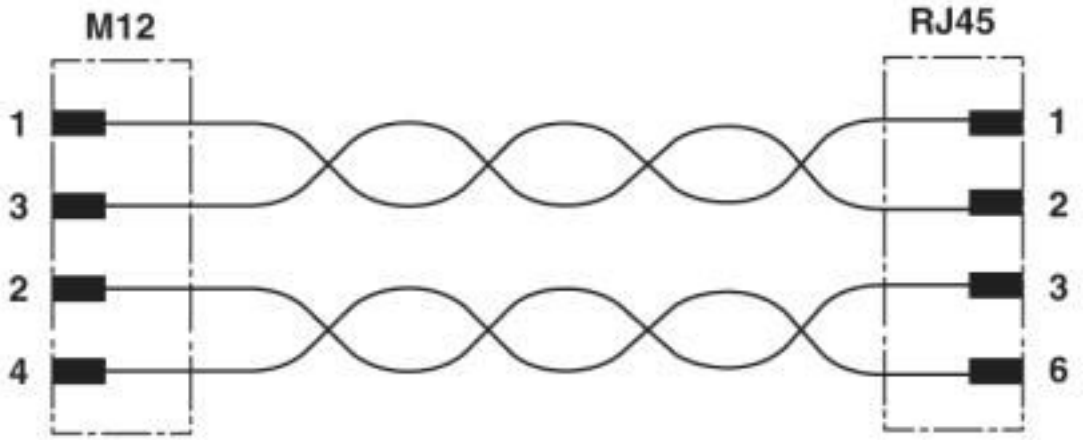

Plug, M12 x 1, straight, shielded

Dimensional drawing



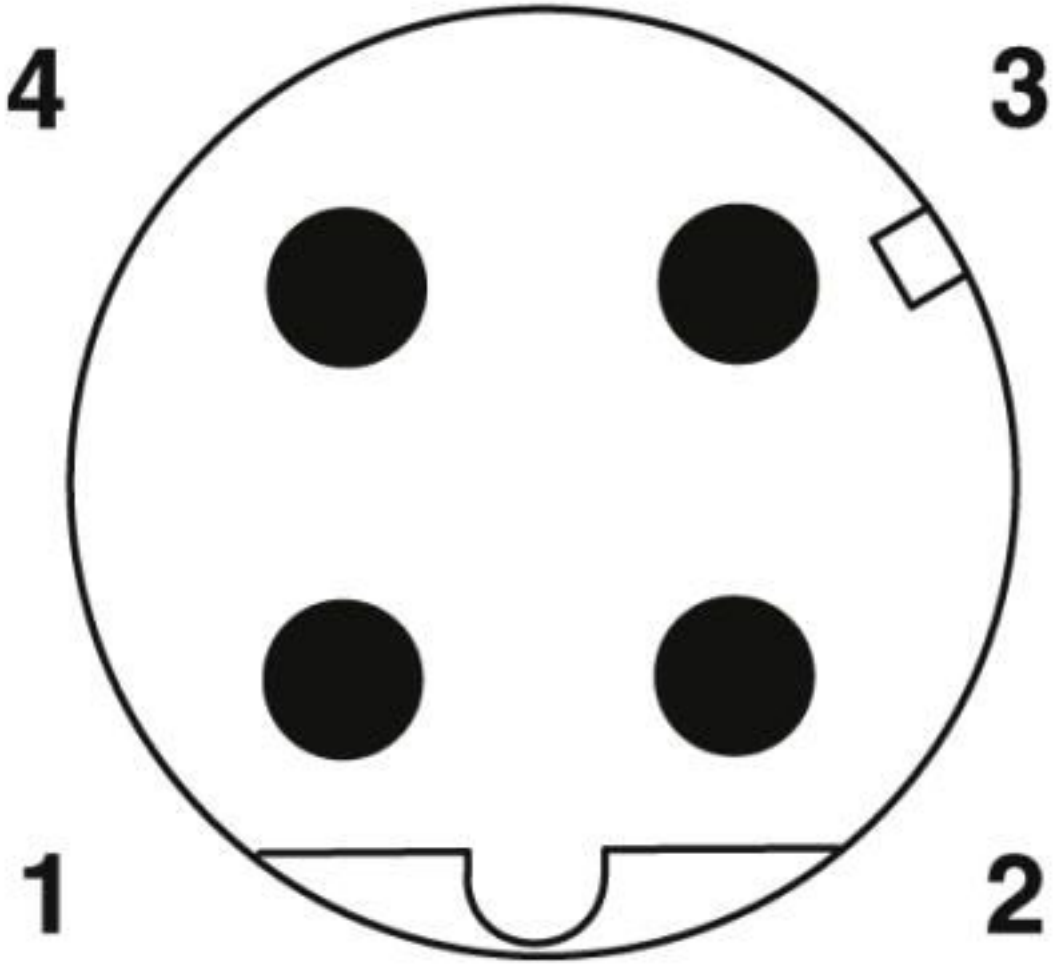

RJ45 connector, IP20

Circuit diagram



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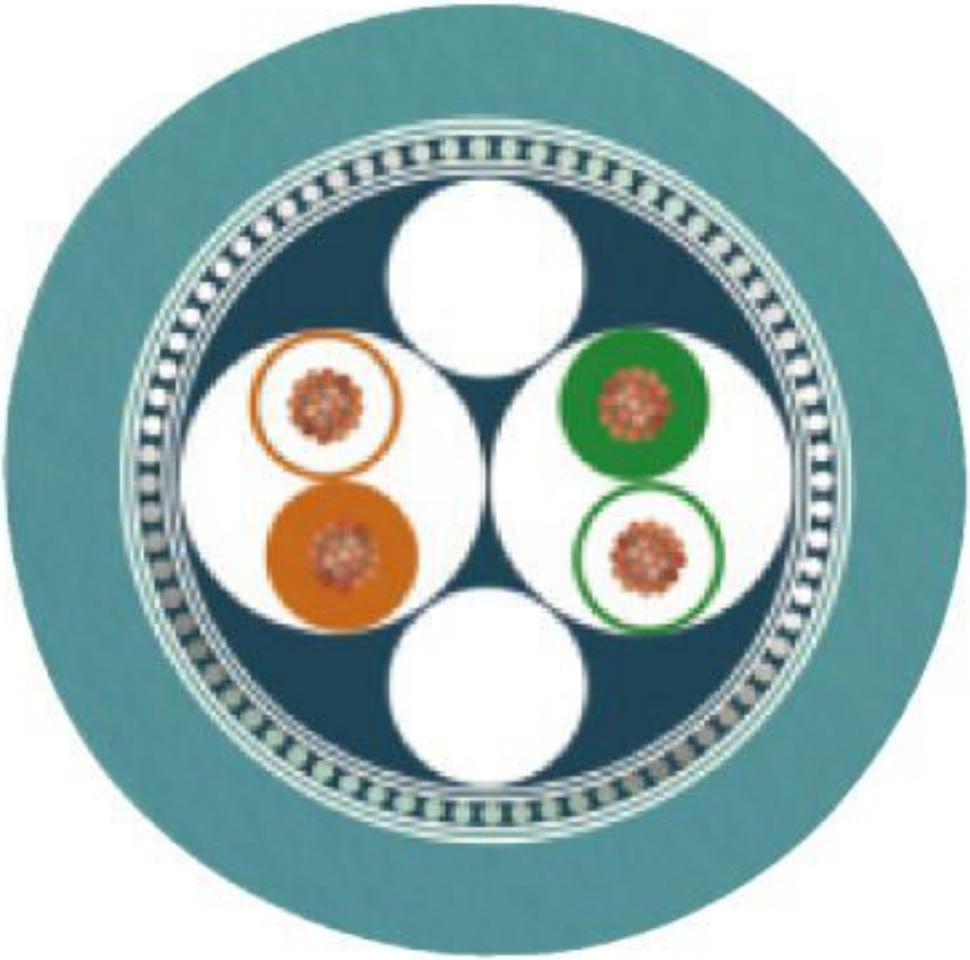
Schematic diagram




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

# Network cable - VS-MSD-IP20-93E/3,0 - 1403499

Cable cross section



Ethernet flexible CAT5, 2-pair [93E]

## Classifications

### eCl@ss

| | |
|---|---|
| eCl@ss 10.0.1 | 27060308 |
| eCl@ss 4.0 | 24010400 |
| eCl@ss 4.1 | 24010400 |
| eCl@ss 5.0 | 19030300 |
| eCl@ss 5.1 | 19030300 |
| eCl@ss 6.0 | 27061800 |
| eCl@ss 7.0 | 27061801 |
| eCl@ss 8.0 | 27061801 |
| eCl@ss 9.0 | 27060308 |

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## Classifications

### ETIM

| | |
|---|---|
| ETIM 4.0 | EC000830 |
| ETIM 5.0 | EC002599 |
| ETIM 6.0 | EC001262 |
| ETIM 7.0 | EC001262 |

### UNSPSC

| | |
|---|---|
| UNSPSC 6.01 | 26121609 |
| UNSPSC 7.0901 | 26121609 |
| UNSPSC 11 | 26121609 |
| UNSPSC 12.01 | 26121609 |
| UNSPSC 13.2 | 26121604 |
| UNSPSC 18.0 | 26121604 |
| UNSPSC 19.0 | 26121604 |
| UNSPSC 20.0 | 26121604 |
| UNSPSC 21.0 | 26121604 |

## Approvals

### Approvals

Approvals

EAC-RoHS

Ex Approvals

### Approval details

| | | |
|---|---|---|
| EAC-RoHS | EAC | RU D-DE.HB35.B.00385 |

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