

# NBC-M12MSD/ 2,0-93E/M12MSD - Network cable



1407377

<https://www.phoenixcontact.com/us/products/1407377>

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

## Commercial data

Item number	1407377
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	BF04
Product key	BF1CJI
Catalog page	Page 199 (C-6-2019)
GTIN	4046356775052
Weight per piece (including packing)	119.8 g
Weight per piece (excluding packing)	112.94 g
Customs tariff number	85444290
Country of origin	PL

## Technical data

### Notes

General	Further products with variable cable type and variable cable length can be found in the accessories section
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### Product properties

Product type	Data cable preassembled
Application	Standard
Sensor type	Ethernet
Number of positions	4
No. of cable outlets	1
Shielded	yes
Coding	D

### Insulation characteristics

Overvoltage category	II
Degree of pollution	3

### 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 $I_N$	4 A
Transmission medium	Copper
Transmission characteristics (category)	CAT5 (IEC 11801:2002)

### Material specifications

Flammability rating according to UL 94	V0
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### Connector

Connection 1	
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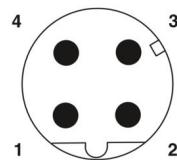
# NBC-M12MSD/ 2,0-93E/M12MSD - Network cable



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## Dimensional drawing



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

## Type

M12 Plug, straight, 4-position, shielded (Advanced Shielding Technology), Keying: D

## Number of positions

4

## Shielded

yes

## Shielding

Advanced Shielding Technology

## Signal type/category

Ethernet CAT5 (IEC 11801), 100 Mbps

## Insertion/withdrawal cycles

≥ 100

## Insulation resistance

≥ 100 MΩ

## Overshoot category

II

## Degree of pollution

3

## Tightening torque

0.4 Nm

## Contact material

CuSn

## Contact surface material

Ni/Au

## Contact carrier material

PA 6.6

## Material for screw connection

Zinc die-cast, nickel-plated

## Seal material

FKM

## Flammability rating according to UL 94

V0

## Degree of protection

IP65

IP67

## Ambient temperature (operation)

-25 °C ... 85 °C

## Standard designation

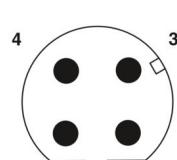
M12 connector

## Standards/regulations

IEC 61076-2-101

## Connection 2

## Dimensional drawing



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

## Type

M12 Plug, straight, 4-position, shielded (Advanced Shielding Technology), Keying: D

## Number of positions

4

## Shielded

yes

## Shielding

Advanced Shielding Technology

## Signal type/category

Ethernet CAT5 (IEC 11801), 100 Mbps

## Insertion/withdrawal cycles

≥ 100

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Insulation resistance	$\geq 100 \text{ M}\Omega$
Overtoltage category	II
Degree of pollution	3
Tightening torque	0.4 Nm
Contact material	CuSn
Contact surface material	Ni/Au
Contact carrier material	PA 6.6
Material for screw connection	Zinc die-cast, nickel-plated
Seal material	FKM
Flammability rating according to UL 94	V0
Degree of protection	IP65
	IP67
Ambient temperature (operation)	-25 °C ... 85 °C
Standard designation	M12 connector
Standards/regulations	IEC 61076-2-101

## Cable/line

Cable length	2 m
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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	6.40 mm $\pm 0.2$ mm
Outer sheath, material	PUR
External sheath, color	water blue RAL 5021
Conductor material	Bare Cu litz wires

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Material wire insulation	Foamed PE
Single wire, color	white/orange-orange, white/green-green
Thickness, outer sheath	1.20 mm
Twisted pairs	2 cores to the pair
Overall twist	Two pairs with two fillers to the core
Optical shield covering	70 %
Insulation resistance	$\geq 500 \text{ M}\Omega\text{-km}$
Coupling resistance	$\leq 100.00 \text{ m}\Omega/\text{m}$ (at 10 MHz)
Loop resistance	$\leq 290.00 \Omega/\text{km}$
Wave impedance	$100 \Omega \pm 5 \Omega$ (at 100 MHz)
Cable capacity	approx. 45 nF/km (at 1 kHz)
Nominal voltage, cable	$\leq 100 \text{ V}$ (Peak value, not for high-power applications)
Test voltage Core/Core	700 V (50 Hz, 1 min.)
Test voltage Core/Shield	700.00 V (50 Hz, 1 min.)
Current carrying capacity of cable	2.00 A (according to DIN VDE 0891-1)
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	$\leq 80 \text{ N}$
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) 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)

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

## Standards and regulations

M12

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

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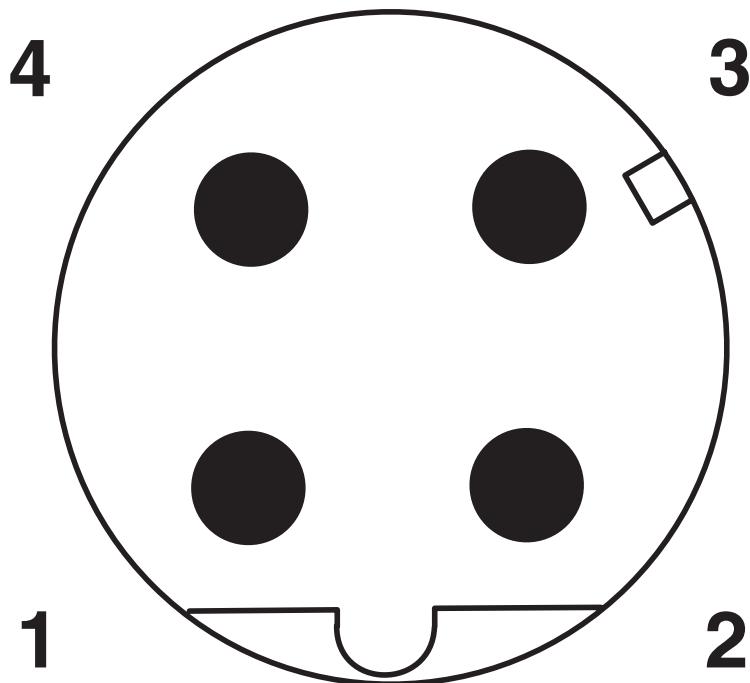
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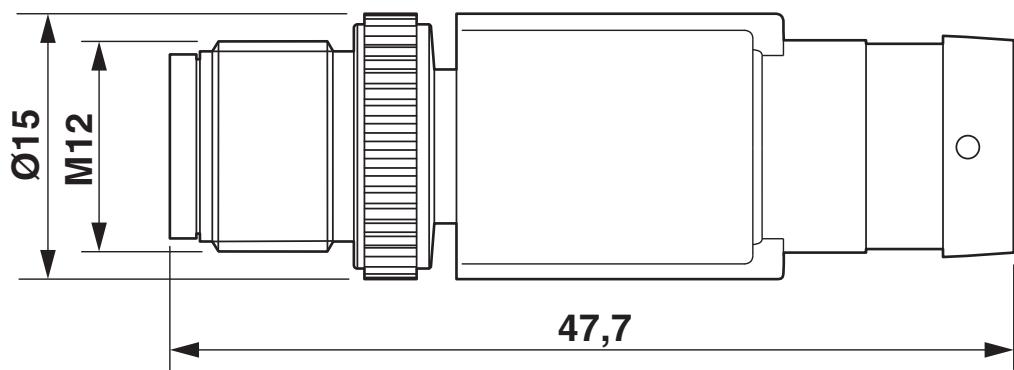
## Drawings

Schematic diagram



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

Dimensional drawing



Plug, M12 x 1, straight, shielded

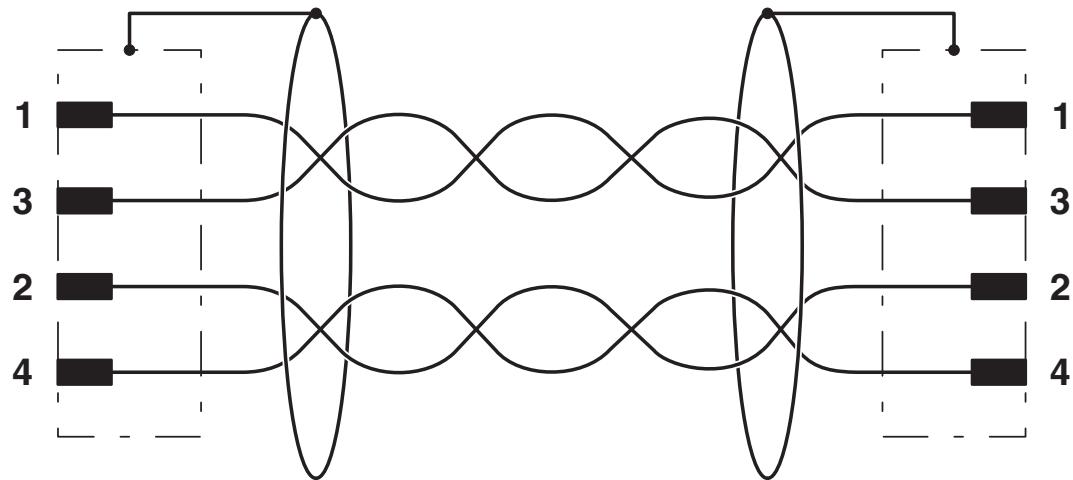
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Circuit diagram



# NBC-M12MSD/ 2,0-93E/M12MSD - Network cable

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## Approvals

ⓘ To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1407377>



### UL Listed

Approval ID: FILE E 335024

	Nominal voltage $U_N$	Nominal current $I_N$	Cross section AWG	Cross section $mm^2$
	30 V	4 A	-	-



### cUL Listed

Approval ID: FILE E 335024

	Nominal voltage $U_N$	Nominal current $I_N$	Cross section AWG	Cross section $mm^2$
	30 V	4 A	-	-



### EAC-RoHS

Approval ID: RU D-DE.HB35.B.00387

### cULus Listed

## Classifications

### ECLASS

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

### ETIM

ETIM 9.0	EC001855
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### UNSPSC

UNSPSC 21.0	26121600
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## Environmental product compliance

### EU RoHS

Fulfills EU RoHS substance requirements	Yes, No exemptions
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### 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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## Accessories

### NBC-M12MSD-M12MSD/.../... - Network cable

1408706

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Network cable, Ethernet CAT5 (100 Mbps), 4-position, PUR halogen-free, water blue RAL 5021, shielded (Advanced Shielding Technology), Plug straight M12, coding: D / IP67, on Plug straight M12, coding: D / IP67, cable length: Free input (0.2 ... 40.0 m)



### NBC-M12MSD-M12MRD/.../... - Network cable

1408700

<https://www.phoenixcontact.com/us/products/1408700>

Network cable, Ethernet CAT5 (100 Mbps), 4-position, PUR halogen-free, water blue RAL 5021, shielded (Advanced Shielding Technology), Plug straight M12, coding: D / IP67, on Plug angled M12, coding: D / IP67, cable length: Free input (0.2 ... 40.0 m)



# NBC-M12MSD/ 2,0-93E/M12MSD - Network cable



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## NBC-M12MSD-M12FSD/.../... - Network cable

1408692

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Network cable, Ethernet CAT5 (100 Mbps), 4-position, PUR halogen-free, water blue RAL 5021, shielded (Advanced Shielding Technology), Plug straight M12, coding: D / IP67, on Socket straight M12, coding: D / IP67, cable length: Free input (0.2 ... 40.0 m)

## NBC-M12MSD-M12FRD/.../... - Network cable

1408684

<https://www.phoenixcontact.com/us/products/1408684>



Network cable, Ethernet CAT5 (100 Mbps), 4-position, PUR halogen-free, water blue RAL 5021, shielded (Advanced Shielding Technology), Plug straight M12, coding: D / IP67, on Socket angled M12, coding: D / IP67, cable length: Free input (0.2 ... 40.0 m)

## NBC-M12MSD/ 2,0-93E/M12MSD - Network cable

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### NBC-M12MRD-M12MRD/.../... - Network cable

1408699

<https://www.phoenixcontact.com/us/products/1408699>



Network cable, Ethernet CAT5 (100 Mbps), 4-position, PUR halogen-free, water blue RAL 5021, shielded, Plug angled M12 SPEEDCON, coding: D / IP67, on Plug angled M12 SPEEDCON, coding: D / IP67, cable length: Free input (0.2 ... 40.0 m)

### NBC-M12MRD-M12FSD/.../... - Network cable

1408691

<https://www.phoenixcontact.com/us/products/1408691>



Network cable, Ethernet CAT5 (100 Mbps), 4-position, PUR halogen-free, water blue RAL 5021, shielded, Plug angled M12 SPEEDCON, coding: D / IP67, on Socket straight M12 SPEEDCON, coding: D / IP67, cable length: Free input (0.2 ... 40.0 m)

## NBC-M12MSD/ 2,0-93E/M12MSD - Network cable

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### NBC-M12MRD-M12FRD/.../... - Network cable

1408683

<https://www.phoenixcontact.com/us/products/1408683>



Network cable, Ethernet CAT5 (100 Mbps), 4-position, PUR halogen-free, water blue RAL 5021, shielded, Plug angled M12 SPEEDCON, coding: D / IP67, on Socket angled M12 SPEEDCON, coding: D / IP67, cable length: Free input (0.2 .. 40.0 m)

### PROT-M12 FS-PA-CHAIN - Sealing cap

1430873

<https://www.phoenixcontact.com/us/products/1430873>

M12 sealing cap made of plastic with fixing band, for sensor cables, for free M12 plugs



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### SAC-M12-EXCLIP-M - Locking clip

1558988

<https://www.phoenixcontact.com/us/products/1558988>

Locking clip for the pin side of sensor/actuator cables with M12 connector and M12 connectors for assembly, for knurl diameter: 15 mm or for Allen key with a wrench size of 14 mm, prevents the disconnection of plug-in connections without tools



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### TSD 04 SAC - Torque screwdriver

1208429

<https://www.phoenixcontact.com/us/products/1208429>

Torque screwdriver, with preset torque of 0.4 Nm and 4 mm hexagonal drive for M12 connectors



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## TSD-M 1,2NM - Torque screwdriver

1212224

<https://www.phoenixcontact.com/us/products/1212224>

Torque screw driver, accuracy as per EN ISO 6789 standard, adjustable from 0.3 - 1.2 Nm



## TSD-M SAC-BIT ADAPTER - Adapter insert

1212600

<https://www.phoenixcontact.com/us/products/1212600>

Adapter bit for TSD-M...torque tools, E6.3-1/4" drive with 4 mm hexagon to accommodate SAC bits



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## SAC BIT M12-D15 - Tool

1208432

<https://www.phoenixcontact.com/us/products/1208432>



Nut for assembling sensor/actuator cables with M12 connector and M12 connectors for assembly, with a knurl diameter of 15 mm, for 4 mm hexagonal drive

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