

# NBC-M12MSX/20,0-94F/R4AC CMC - Network cable



1440656

<https://www.phoenixcontact.com/us/products/1440656>

Please be informed that the data shown in this PDF document is generated from our online catalog. Please find the complete data in the user documentation. Our general terms of use for downloads are valid.

Network cable, Ethernet CAT6<sub>A</sub> (10 Gbps), 8-position, PUR halogen-free, water blue RAL 5021, Plug straight M12, coding: X / IP65, on Plug straight RJ45 / IP20, cable length: 20 m



## Commercial data

Item number	1440656
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	BF04
Product key	BF1CMJ
Catalog page	Page 304 (PC-2011)
GTIN	4046356504577
Weight per piece (including packing)	974 g
Weight per piece (excluding packing)	800 g
Customs tariff number	85444290
Country of origin	PL

## Technical data

### Product properties

Product type	Data cable preassembled
Application	Standard
Sensor type	Ethernet
Number of positions	8
Number of slots	1
Shielded	yes
Coding	X

### Insulation characteristics

Overvoltage category	I
Degree of pollution	1

### Interfaces

Signal type/category	Ethernet CAT6 <sub>A</sub> , 10 Gbps
----------------------	--------------------------------------

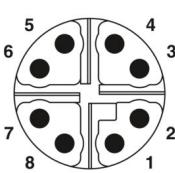
### Electrical properties

Nominal voltage $U_N$	48 V AC
	60 V DC
Nominal current $I_N$	0.5 A
Transmission medium	Copper
Transmission characteristics (category)	CAT6 <sub>A</sub>

### Mechanical properties

Mechanical data	
Insertion/withdrawal cycles	$\geq 100$

### Connector

Connection 1	
Dimensional drawing	
	Pin assignment of M12 plug, 8-pos., X-coded, pin side view
Type	M12, straight, 8-position, AST, Keying: X
Number of positions	8
Shielded	yes
Signal type/category	Ethernet CAT6 <sub>A</sub> , 10 Gbps
	CC-Link IE CAT6 <sub>A</sub> , 10 Gbps

# NBC-M12MSX/20,0-94F/R4AC CMC - Network cable

1440656

<https://www.phoenixcontact.com/us/products/1440656>



Insertion/withdrawal cycles	≥ 100
Insulation resistance	≥ 100 Ω
Overshoot category	II
Degree of pollution	3
Tightening torque	0.4 Nm (M12 connector)
Contact material	CuZn
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 61076-2-109

## Connection 2

Dimensional drawing	
	Connector pin assignment plug RJ45
Type	RJ45 Pin, straight, 8-position
Number of positions	8
Signal type/category	Ethernet CAT6A, 10 Gbps CC-Link IE CAT6A, 10 Gbps
Insertion/withdrawal cycles	≥ 750
Insulation resistance	≥ 100 Ω
Overshoot category	II
Degree of pollution	2
Contact material	CuSn
Contact surface material	Ni/Au
Contact carrier material	PC
Flammability rating according to UL 94	V2
Degree of protection	IP20 (RJ45 connector)
Ambient temperature (operation)	-25 °C ... 60 °C

## Cable/line

Cable length	20 m
--------------	------

# NBC-M12MSX/20,0-94F/R4AC CMC - Network cable

1440656

<https://www.phoenixcontact.com/us/products/1440656>



Ethernet 10 Gbit [94F]

Dimensional drawing



Cable weight	42 kg/km
UL AWM Style	20963 (80°C/30 V)
Number of positions	8
Shielded	yes
Cable type	Ethernet 10 Gbit [94F]
Conductor structure	4x2xAWG26/7; S/FTP
Signal runtime	5.13 ns/m
Conductor structure signal line	7x 0.16 mm
AWG signal line	26
Conductor cross section	4x 2x 0.14 mm <sup>2</sup>
Wire diameter incl. insulation	1.04 mm
External cable diameter	6.40 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/blue-blue, white/orange-orange, white/green-green, white/brown-brown
Thickness, outer sheath	0.65 mm
Twisted pairs	2 cores to the pair
Type of pair shielding	Aluminum-lined foil
Overall twist	4 pairs for core
Optical shield covering	70 %
Insulation resistance	≥ 500 MΩ*km
Loop resistance	≤ 290.00 Ω/km
Wave impedance	100 Ω ±5 Ω (at 100 MHz)
Cable capacity	47 nF/km
Nominal voltage, cable	≤ 100 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	26 mm
Smallest bending radius, movable installation	52 mm

# NBC-M12MSX/20,0-94F/R4AC CMC - Network cable



1440656

<https://www.phoenixcontact.com/us/products/1440656>

Tensile strength	≤ 100 N
Near end crosstalk attenuation (NEXT)	75.3 dB (with 1 MHz) 66.3 dB (at 4 MHz) 61.8 dB (at 8 MHz) 60.3 dB (at 10 MHz) 57.2 dB (at 16 MHz) 55.8 dB (at 20 MHz) 54.3 dB (at 25 MHz) 52.8 dB (at 31.25 MHz) 48.4 dB (at 62.5 MHz) 45.3 dB (at 100 MHz) 40.8 dB (at 200 MHz) 39.3 dB (at 250 MHz) 38.1 dB (at 300 MHz) 38.1 dB (at 400 MHz) 38.1 dB (at 500 MHz)
Power-summed near end crosstalk attenuation (PSNEXT)	72.3 dB (with 1 MHz) 63.3 dB (at 4 MHz) 58.8 dB (at 8 MHz) 57.3 dB (at 10 MHz) 54.2 dB (at 16 MHz) 52.8 dB (at 20 MHz) 51.3 dB (at 25 MHz) 49.9 dB (at 31.25 MHz) 45.4 dB (at 62.5 MHz) 42.3 dB (at 100 MHz) 37.8 dB (at 200 MHz) 36.3 dB (at 250 MHz) 35.1 dB (at 300 MHz) 33.3 dB (at 400 MHz) 31.8 dB (at 500 MHz)
Return attenuation (RL)	20 dB (with 1 MHz) 23 dB (at 4 MHz) 24.5 dB (at 8 MHz) 25 dB (at 10 MHz) 25 dB (at 16 MHz) 25 dB (at 20 MHz) 24.2 dB (at 25 MHz) 23.3 dB (at 31.25 MHz) 20.7 dB (at 62.5 MHz) 19 dB (at 100 MHz) 16.4 dB (at 200 MHz) 15.6 dB (at 250 MHz) 15.6 dB (at 300 MHz)

# NBC-M12MSX/20,0-94F/R4AC CMC - Network cable

1440656

<https://www.phoenixcontact.com/us/products/1440656>



Shield attenuation	15.6 dB (at 400 MHz) 15.6 dB (at 500 MHz) 3.1 dB (with 1 MHz) 5.7 dB (at 4 MHz) 8 dB (at 8 MHz) 8.9 dB (at 10 MHz) 11.2 dB (at 16 MHz) 12.6 dB (at 20 MHz) 14.1 dB (at 25 MHz) 15.8 dB (at 31.25 MHz) 22.5 dB (at 62.5 MHz) 28.7 dB (at 100 MHz) 41.4 dB (at 200 MHz) 46.6 dB (at 250 MHz) 51.4 dB (at 300 MHz) 60.1 dB (at 400 MHz) 67.9 dB (at 500 MHz) ≥ 80.00 dB (at 30 ... 100 MHz)
Halogen-free	according to IEC 60754-1
Flame resistance	according to IEC 60332-1-2
Resistance to oil	in accordance with DIN 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

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP65 (M12 connector) IP67 (M12 connector) IP20 (RJ45 connector)
----------------------	---

# NBC-M12MSX/20,0-94F/R4AC CMC - Network cable

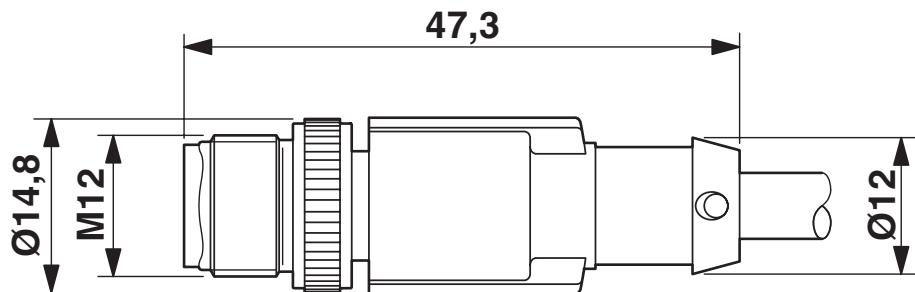


1440656

<https://www.phoenixcontact.com/us/products/1440656>

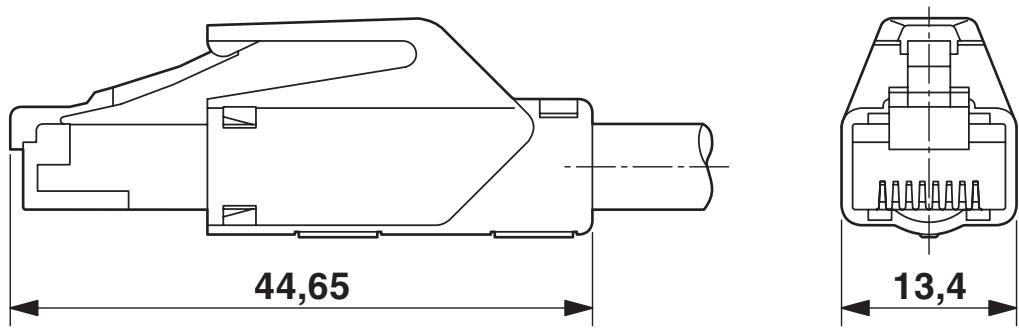
## Drawings

Dimensional drawing



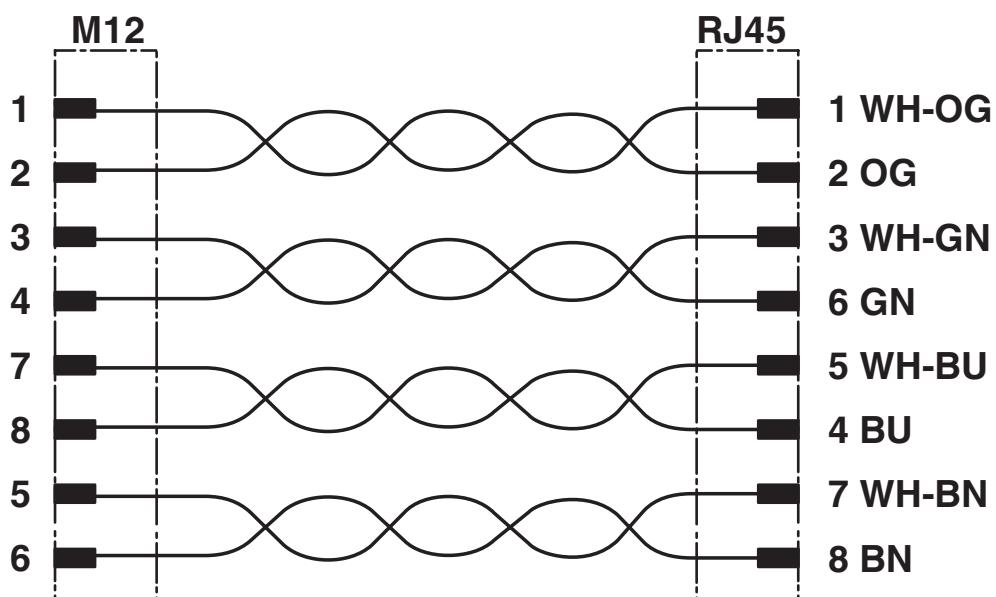
M12 connector dimensional drawing

Dimensional drawing

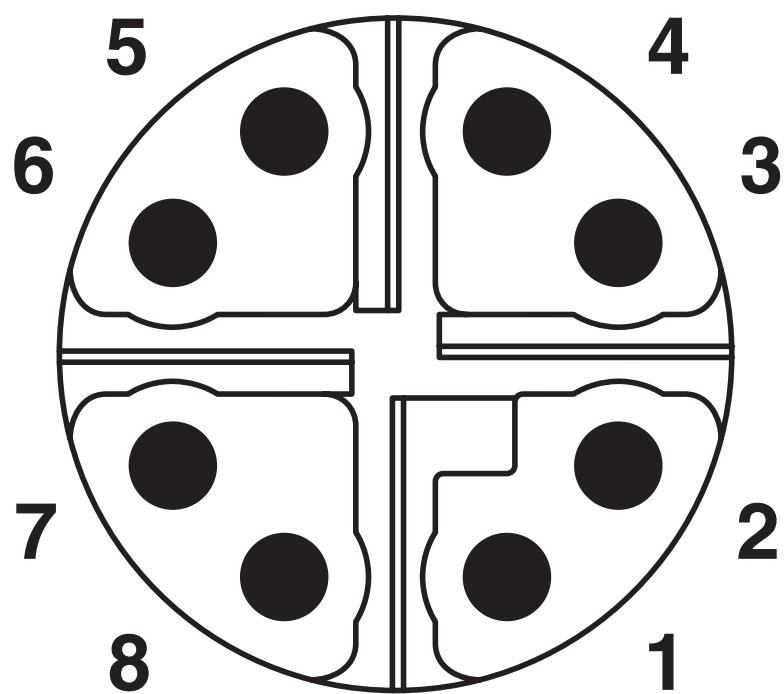


RJ45 connector dimensional drawing

Circuit diagram



Schematic diagram



M12 Cat6<sub>A</sub>, 8-pos. plug pin assignment, pin side view

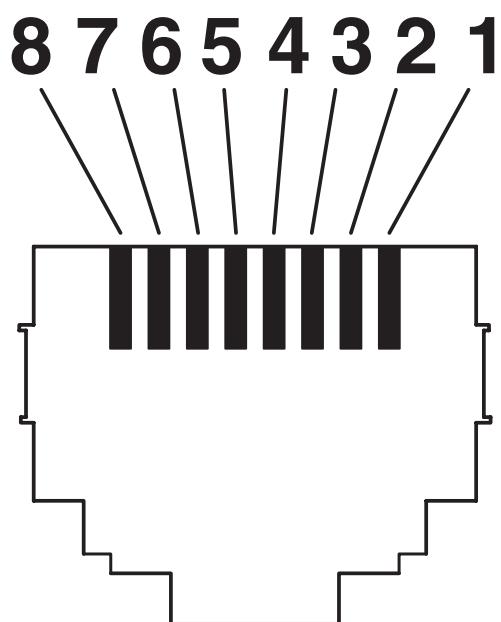
# NBC-M12MSX/20,0-94F/R4AC CMC - Network cable

1440656

<https://www.phoenixcontact.com/us/products/1440656>



Schematic diagram



Connector pin assignment plug RJ45

1440656

<https://www.phoenixcontact.com/us/products/1440656>

## Approvals

ⓘ To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1440656>

<b>UL Listed</b> 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> 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	-	-

**cULus Listed**

## Classifications

### ECLASS

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

### ETIM

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

### UNSPSC

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

# NBC-M12MSX/20,0-94F/R4AC CMC - Network cable

1440656

<https://www.phoenixcontact.com/us/products/1440656>



## 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%
-------------------------------------	----------------------------

Phoenix Contact 2024 © - all rights reserved

<https://www.phoenixcontact.com>

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