

# NBC-M12MRX/2,0-94F - Network cable



1080717

<https://www.phoenixcontact.com/in/products/1080717>

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Network cable, Ethernet CAT6<sub>A</sub> (10 Gbps) CAT6<sub>A</sub> (10 Gbps), 8-position, PUR halogen-free, water blue RAL 5021, shielded (Advanced Shielding Technology), Plug angled M12, coding: X / IP67, on free cable end, cable length: 2 m

## Commercial data

Item number	1080717
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	*****
Product key	AF1CMJ
Catalog page	Page 403 (C-2-2019)
GTIN	4055626805627
Weight per piece (including packing)	129.3 g
Weight per piece (excluding packing)	119.1 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
No. of cable outlets	1
Shielded	yes
Coding	X

### Interfaces

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

### Signaling

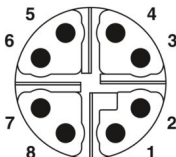
Status display	no
Status display present	No

### 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>

### Connector

#### Connection 1

Dimensional drawing	 <p>Pin assignment of M12 plug, 8-pos., X-coded, pin side view</p>
Type	M12 Plug, angled, 8-position, shielded (Advanced Shielding Technology), Keying: X
Number of positions	8
Shielded	yes
Shielding	Advanced Shielding Technology
Signal type/category	Ethernet CAT6 <sub>A</sub> , 10 Gbps
Insertion/withdrawal cycles	≥ 100
Insulation resistance	≥ 100 Ω

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Overvoltage category	II
Degree of pollution	3
Tightening torque	0.4 Nm (M12 connector)
Material Contact	CuZn
Material Contact surface	Ni/Au
Material Contact carrier	PA 6.6
Material Screw connection	Die-cast zinc, nickel-plated
Material Grip body	TPU, hardly inflammable, self-extinguishing
Material Seal	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

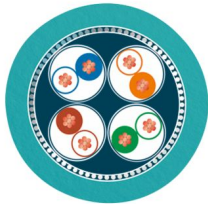
## Connection 2

Type	free cable end
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## Cable/line

Cable length	2 m
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## 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 mm²
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

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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	$\geq 500 \text{ M}\Omega \cdot \text{km}$
Loop resistance	$\leq 290.00 \text{ }\Omega/\text{km}$
Wave impedance	$100 \text{ }\Omega \pm 5 \text{ }\Omega$ (at 100 MHz)
Cable capacity	47 nF/km
Nominal voltage, cable	$\leq 100 \text{ V}$
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
Tensile strength	$\leq 100 \text{ N}$
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)
Power-summated near end crosstalk attenuation (PSNEXT)	38.1 dB (at 400 MHz)
	38.1 dB (at 500 MHz)
	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)

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	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)
	15.6 dB (at 400 MHz)
	15.6 dB (at 500 MHz)
Shield attenuation	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
	in accordance with UN ECE-R 118.03
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)

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Ambient temperature (installation)	-20 °C ... 80 °C
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## Environmental and real-life conditions

### Ambient conditions

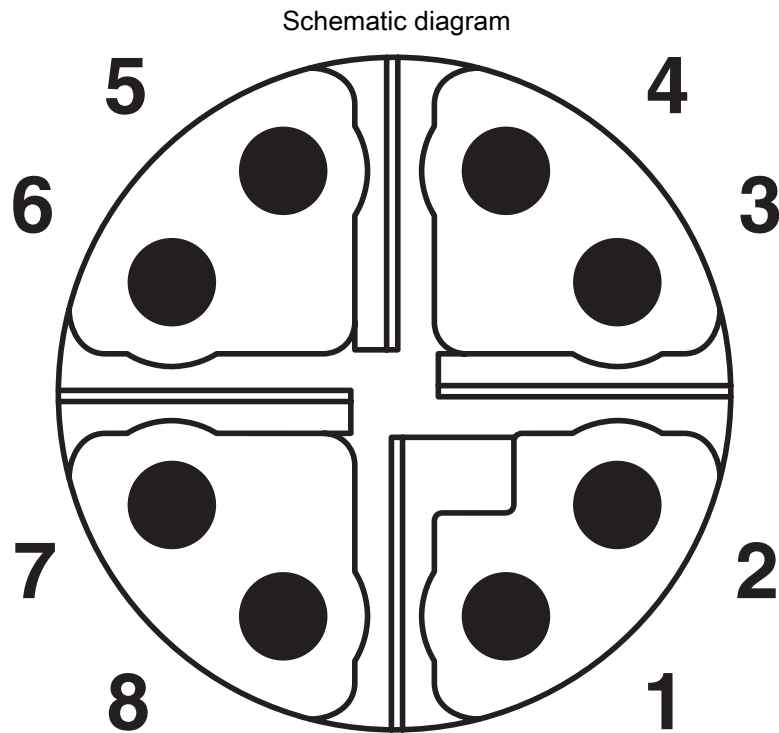
Degree of protection	IP65
	IP67

## Standards and regulations

### M12

Standard designation	M12 connector
Standards/specifications	IEC 61076-2-109

## Drawings

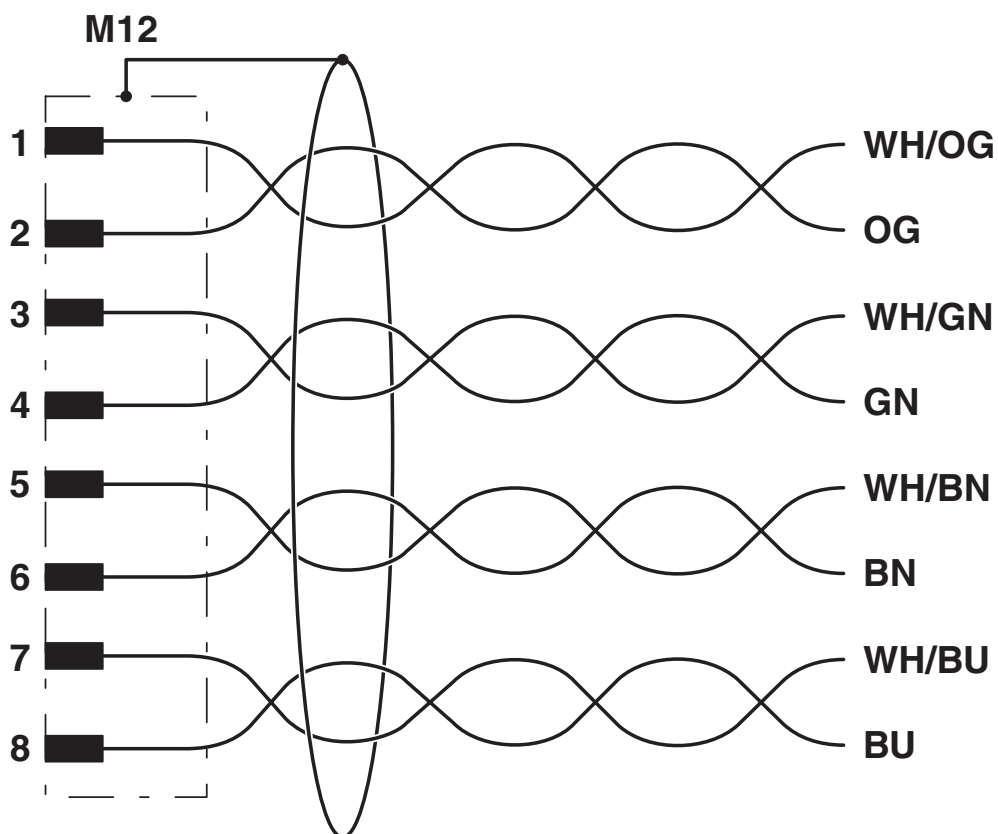


Pin assignment of M12 plug, 8-pos., X-coded, pin side view

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Circuit diagram



Contact assignment of the M12 plug

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/in/products/1080717>

cUL Recognized Approval ID: FILE E 335024				
	Nominal voltage $U_N$	Nominal current $I_N$	Cross section AWG	Cross section $\text{mm}^2$
	30 V	0.5 A	-	-

UL Recognized Approval ID: FILE E 335024				
	Nominal voltage $U_N$	Nominal current $I_N$	Cross section AWG	Cross section $\text{mm}^2$
	30 V	0.5 A	-	-

cULus Recognized				
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## 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
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%
EF3.0 Climate Change	
CO2e kg	2.332 kg CO2e

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## Accessories

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

1430873

<https://www.phoenixcontact.com/in/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/in/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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## WP-CTA POM 13,0 BK - Protective hose adapter

1422884

<https://www.phoenixcontact.com/in/products/1422884>



Protective hose adapter, for corrugated hoses with a nominal size of 13 (10 x 13), corrugated in parallel

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## WP-PA HF 13,0 BK - Protective hose

3240681

<https://www.phoenixcontact.com/in/products/3240681>



Protective hose, material: PA 6, UV-resistant: yes, flexible, degree of protection: IP68, color: black, flammability rating in acc. with UL 94: V0, inside diameter: 10 mm, Total length: 50 m

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## WP-PA HF-HB 13,0 BK - Protective hose

3240839

<https://www.phoenixcontact.com/in/products/3240839>



Protective hose, material: PA 6, UV-resistant: yes, flexible, degree of protection: IP68, color: black, flammability rating in acc. with UL 94: HB, inside diameter: 10 mm, Total length: 50 m

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## SACC-M12MSX-8QO SH ETH - Data connector

1411043

<https://www.phoenixcontact.com/in/products/1411043>



Data connector, Ethernet CAT6<sub>A</sub> (10 Gbps), 8-position, halogen-free, shielded, Plug straight M12, coding: X, Insulation displacement connection, knurl material: Zinc die-cast, nickel-plated, external cable diameter 5 mm ... 9.7 mm

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## SACC-M12FSX-8QO SH ETH - Data connector

1414586

<https://www.phoenixcontact.com/in/products/1414586>



Data connector, Ethernet CAT6<sub>A</sub> (10 Gbps), 8-position, halogen-free, shielded, Socket straight M12, coding: X, Insulation displacement connection, knurl material: Zinc die-cast, nickel-plated, external cable diameter 5 mm ... 9.7 mm

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## SACC-CC-8QO SH ETH - Conductor connector

1414412

<https://www.phoenixcontact.com/in/products/1414412>



Cable connector, Ethernet CAT6<sub>A</sub> (10 Gbps), 8-pos., halogen-free, shielded, insulation displacement connection, housing material: zinc die-cast, nickel-plated, outer cable diameter of 5 mm ... 9.7 mm

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## VS-08-M12MS-10G-P SCO - Data connector

1417430

<https://www.phoenixcontact.com/in/products/1417430>



Data connector, Ethernet CAT6<sub>A</sub> (10 Gbps), 8-position, shielded, Plug straight M12 SPEEDCON, coding: X, Piercecon® fast connection, knurl material: Zinc die-cast, nickel-plated, external cable diameter 4 mm ... 8 mm

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## VS-08-M12MR-10G-P SCO - Data connector

1417443

<https://www.phoenixcontact.com/in/products/1417443>



Data connector, Ethernet CAT6<sub>A</sub> (10 Gbps), 8-position, shielded, Plug angled M12 SPEEDCON, coding: X, Piercecon® fast connection, knurl material: Zinc die-cast, nickel-plated, external cable diameter 4 mm ... 8 mm

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## SACC-M12MSX-8CT-CL SH - Data connector

1422844

<https://www.phoenixcontact.com/in/products/1422844>



Data connector, Ethernet CAT6<sub>A</sub> (10 Gbps), PROFINET CAT6<sub>A</sub> (10 Gbps), 8-position, shielded, Plug straight M12, coding: X, Crimp connection, knurl material: Zinc die-cast, tin-plated, external cable diameter 6.5 mm ... 10 mm, without crimp contacts

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## SACC-M12MRX-8CT-CL SH - Data connector

1422845

<https://www.phoenixcontact.com/in/products/1422845>



Data connector, Ethernet CAT6<sub>A</sub> (10 Gbps), PROFINET CAT6<sub>A</sub> (10 Gbps), 8-position, shielded, Plug angled M12, coding: X, Crimp connection, knurl material: Zinc die-cast, tin-plated, external cable diameter 6.5 mm ... 10 mm, without crimp contacts

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## VS-08-RJ45-10G/Q - RJ45 connector

1419001

<https://www.phoenixcontact.com/in/products/1419001>



RJ45 connector, design: RJ45, degree of protection: IP20, number of positions: 8, 10 Gbps, CAT6<sub>A</sub>, material: Plastic, connection method: Insulation displacement connection, connection cross section: AWG 26- 24, cable outlet: straight, color: black, Ethernet

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## CUC-IND-C1ZNI-S/R4IE8 - RJ45 connector

1421607

<https://www.phoenixcontact.com/in/products/1421607>



RJ45 connector, design: RJ45, degree of protection: IP20, number of positions: 8, 1 Gbps, CAT5, material: Metal, connection method: Insulation displacement connection, connection cross section: AWG 26- 24, cable outlet: straight, color: green, Ethernet

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## CUC-IND-C1ZNI-T/R4IE8 - RJ45 connector

1421877

<https://www.phoenixcontact.com/in/products/1421877>



RJ45 connector, design: RJ45, degree of protection: IP20, number of positions: 8, 1 Gbps, CAT5, material: Metal, connection method: Insulation displacement connection, connection cross section: AWG 26- 24, cable outlet: angled, Ethernet

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## CUC-IND-C1ZNI-B/R4IE8 - RJ45 connector

1421876

<https://www.phoenixcontact.com/in/products/1421876>



RJ45 connector, design: RJ45, degree of protection: IP20, number of positions: 8, 1 Gbps, CAT5, material: Metal, connection method: Insulation displacement connection, connection cross section: AWG 26- 24, cable outlet: angled, Ethernet

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## CUC-V06-C1PGY-S/R4CEA:1 - RJ45 connector

1414406

<https://www.phoenixcontact.com/in/products/1414406>



RJ45 connector, design: RJ45, degree of protection: IP67, number of positions: 2, 10 Gbps, CAT6<sub>A</sub>, material: Plastic, connection method: Crimp connection, connection cross section: AWG 24- 27, cable outlet: straight, color: gray, Ethernet/PROFINET

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## CUC-V06-C1PBK-S/R4CEA:1 - RJ45 connector

1414410

<https://www.phoenixcontact.com/in/products/1414410>



RJ45 connector, design: RJ45, degree of protection: IP67, number of positions: 8, 10 Gbps, CAT6<sub>A</sub>, material: Plastic, connection method: Crimp connection, connection cross section: AWG 24- 27, cable outlet: straight, color: black, Ethernet/PROFINET

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## VS-PPC-C1-RJ45-POBK-8I10G - RJ45 connector

1422205

<https://www.phoenixcontact.com/in/products/1422205>



RJ45 connector, degree of protection: IP65/IP67, number of positions: 8, 10 Gbps, CAT6<sub>A</sub>, material: Plastic, connection method: Crimp connection, connection cross section: AWG 27- 24, cable outlet: straight, color: black, Ethernet

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## TSD 04 SAC - Torque screwdriver

1208429

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



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

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

1212600

<https://www.phoenixcontact.com/in/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/in/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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## CUTFOX 12 - Cable-cutting tool

1212128

<https://www.phoenixcontact.com/in/products/1212128>



**Cable cutter**, for copper and aluminum up to 12 mm diameter (up to 35 mm<sup>2</sup>)

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## CUTFOX-S VDE - Diagonal cutter

1212207

<https://www.phoenixcontact.com/in/products/1212207>



Diagonal cutter for hard (piano wire) and soft wires, VDE 1000 V AC/1500 V DC tested

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## VS-CABLE-STRIP-VARIO - Stripping tool

1657407

<https://www.phoenixcontact.com/in/products/1657407>

Stripping tool, for the multi-level stripping of shielded cables



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## MICROFOX-SP-1 - Diagonal cutter

1212487

<https://www.phoenixcontact.com/in/products/1212487>



Electronic diagonal cutter, tapered head, without chamfer, with opening spring, non-reflective phosphate-treated surface, punched version

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## WIREFOX 4 - Stripping tool

1212156

<https://www.phoenixcontact.com/in/products/1212156>



Stripping tool, for cables and conductors (especially for rubber and silicone insulations) from 0.1 - 4 mm<sup>2</sup>, self-adjusting, stripping length of up to 18 mm, cutting capacity of up to 10 mm<sup>2</sup> stranded/1.5 mm<sup>2</sup> solid, replaceable stripping blade

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## WIREFOX-E 4 - Stripping tool

1212704

<https://www.phoenixcontact.com/in/products/1212704>



Stripping tool, for cables and conductors (especially for rubber and silicone insulations) from 0.1 - 4 mm<sup>2</sup>, self-adjusting, stripping length of up to 18 mm, cutting capacity of up to 10 mm<sup>2</sup> stranded/1.5 mm<sup>2</sup> solid, replaceable stripping blade

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## WIREFOX 10 - Stripping tool

1212150

<https://www.phoenixcontact.com/in/products/1212150>



Stripping tool, for cables and conductors from 0.02 - 10 mm<sup>2</sup>, self-adjusting, stripping length of up to 18 mm, cutting capacity of up to 10 mm<sup>2</sup> stranded/1.5 mm<sup>2</sup> solid, replaceable stripping blade

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