Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0

1424164

https://www.phoenixcontact.com/us/products/1424164

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Bus system flush-type socket, Ethernet CAT6$_A$ (10 Gbps) CAT6$_A$, 8-position, PUR, water blue RAL 5021, shielded, Flush-type female connector, straight, M12-SPEEDCON, X-coded, on free cable end, Cable connection, cable length: 5 m, Ethernet 10 Gbit, Alternative product in accordance with RoHS II without Exemption 6c (Pb <0.1%) 1239449

Your advantages

- Pre-assembled with cables in various standard lengths for immediate use
- Customer-specific assemblies and cable lengths can be supplied
- Sealed on the cable side for optimum tightness of seal
- Cable designs for all common networks and fieldbuses
- For high transmission safety: shield connection to the housing with optional EMC nut

Commercial Data

Item number	1424164
Packing unit	1 pc
Minimum order quantity	1 pc
Note	Made to Order (non-returnable)
Sales Key	A11
Product Key	ABQCED
Catalog Page	Page 403 (C-2-2019)
GTIN	4046356692649
Weight per Piece (including packing)	270.1 g
Weight per Piece (excluding packing)	249.1 g
Customs tariff number	85444290
Country of origin	DE

Technical Data

Notes

Notes on operation	The electrical and mechanical data specified assume that the connector pair is correctly locked and mounted. If the connector is unlocked and if there is a danger of contamination, the connector must be sealed using a protective cap > IP54. Influences arising from litz wires, cables or PCB assembly must also be taken into consideration.

Safety note

Safety note	WARNING: The connectors may not be plugged in or disconnected under load. Ignoring the warning or improper use may damage persons and/or property.
	• WARNING: Commission properly functioning products only. The products must be regularly inspected for damage. Decommission defective products immediately. Replace damaged products. Repairs are not possible.
	• WARNING: Only electrically qualified personnel may install and operate the product. They must observe the following safety notes. The qualified personnel must be familiar with the basics of electrical engineering. They must be able to recognize and prevent danger. The relevant symbol on the packaging indicates that only personnel familiar with electrical engineering are allowed to install and operate the product.
	• The products are suitable for applications in plant, controller, and electrical device engineering.
	• When operating the connectors in outdoor applications, they must be separately protected against environmental influences.
	• Assembled products may not be manipulated or improperly opened.
	• Only use mating connectors that are specified in the technical data of the standards listed (e.g. the ones listed in the product accessories online at phoenixcontact.com/products).
	• When using the product in direct connection with third-party manufacturers, the user is responsible.
	• For operating voltages > 50 V AC, conductive connector housings must be grounded
	• Ensure that when laying the cable, the tensile load on the connectors does not exceed the upper limit specified in the standards.
	• Observe the corresponding technical data. You will find information: o On the product o On the packing label o In the supplied documentation o Online at phoenixcontact.com/products under the product
	• Only use tools recommended by Phoenix Contact
	• Use a protective cap to protect connectors that are not in use. The suitable accessories are available online in the accessory section of the product at phoenixcontact.com/products
	• Ensure that the protective or functional ground has been properly connected.

	• VDE 0100/1.97 § 411.1.3.2 and DIN EN 60 204/11.98 § 14.1.3 are applicable when combining several circuits in a cable and/or connector
	• The connector warms up in normal operation. Depending on the ambient conditions, the surface of the connector can continue to warm up. In this case, the user is responsible for posting warnings (e.g. DIN EN ISO 13732-1:2008-12).

Product properties

Product type	Data cable preassembled
Number of positions	8
Application	Railway applications
No. of cable outlets	1
Shielded	yes
Coding	X - data

Insulation characteristics

Overvoltage category	III
Degree of pollution	3

Interfaces

Bus system	Ethernet
Signal type/category	Ethernet CAT6$_A$, 10 Gbps
	Ethernet CAT6$_A$, 10 Gbps

Electrical properties

Rated surge voltage	0.8 kV
Contact resistance	≤ 3 mΩ
Insulation resistance	≥ 100 MΩ
Nominal voltage U_N	50 V AC
	60 V DC
Nominal current I_N	0.5 A (Plug/socket in accordance with IEC 61076-2-101, cable technical data is to be observed)
Transmission medium	Copper

Material specifications

Flammability rating according to UL 94	V0
Sealing material	FKM
Contact material	CuZn
Contact surface material	Au
Contact carrier material	PPA
Cable gland material	Zinc die-cast, nickel-plated

Connection data

Connection technology

Connection method	Cable connection

Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0

1424164

https://www.phoenixcontact.com/us/products/1424164

Conductor connection	
Type of contact	Crimp contacts
Connection method	Cable connection

Connector

Insertion/withdrawal cycles	≥ 100

Connection 1

Head design	Flush-type female connector
Head cable outlet	straight
Head thread type	M12
Head locking type	SPEEDCON
Coding	X-coded

Connection 2

Head design	free cable end

Cable / line

Cable length	5 m
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]
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	6.4 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

Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0

1424164

https://www.phoenixcontact.com/us/products/1424164

Nominal voltage, cable	≤ 100 V
Test voltage Core/Core	700 V (50 Hz, 1 min.)
Test voltage Core/Shield	700 V (50 Hz, 1 min.)
Minimum bending radius, fixed installation	4 x D
Minimum bending radius, flexible installation	8 x D
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)
	36.3 dB (at 400 MHz)
	34.8 dB (at 500 MHz)
Power-summated 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 loss (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 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
Cable type		Ethernet 10 Gbit
Signal type/category		Ethernet CAT6$_A$, 10 Gbps
Outer sheath, material		PUR
External sheath, color		water blue RAL 5021

Ambient conditions

Degree of protection	IP65
	IP67
Degree of protection	IP65/IP67
Ambient temperature (operation)	-25 °C ... 85 °C (Plug / socket)
	-40 °C ... 85 °C (without mechanical actuation)

Standards and regulations

M12

Standards/specifications	IEC 61076-2-109

Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0

1424164

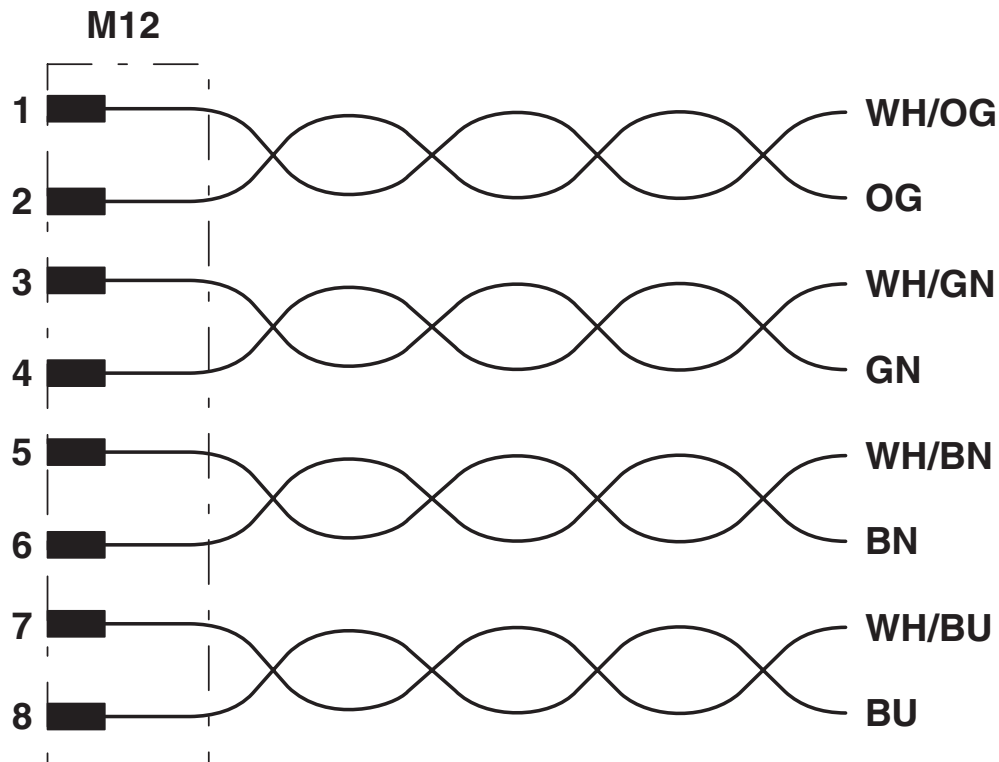https://www.phoenixcontact.com/us/products/1424164

Drawings

Dimensional drawing
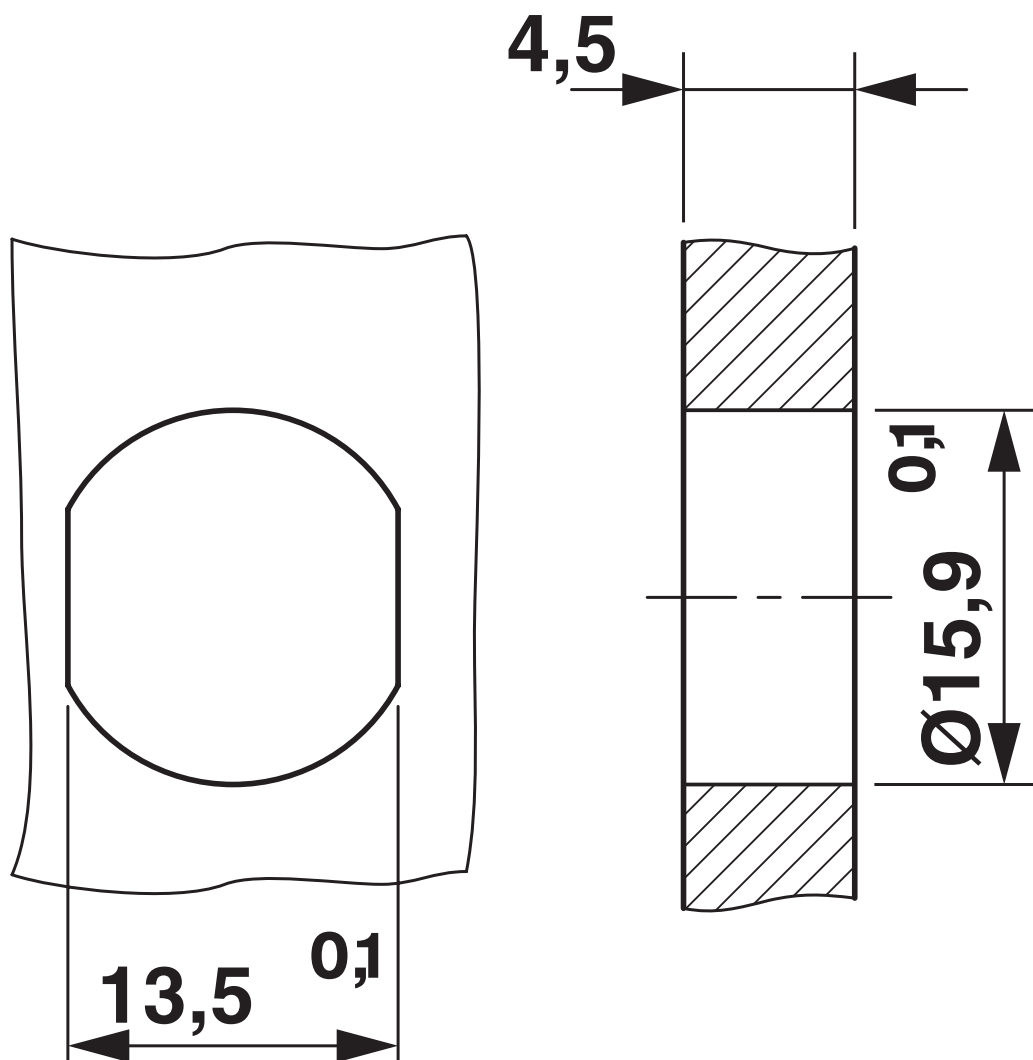
Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0
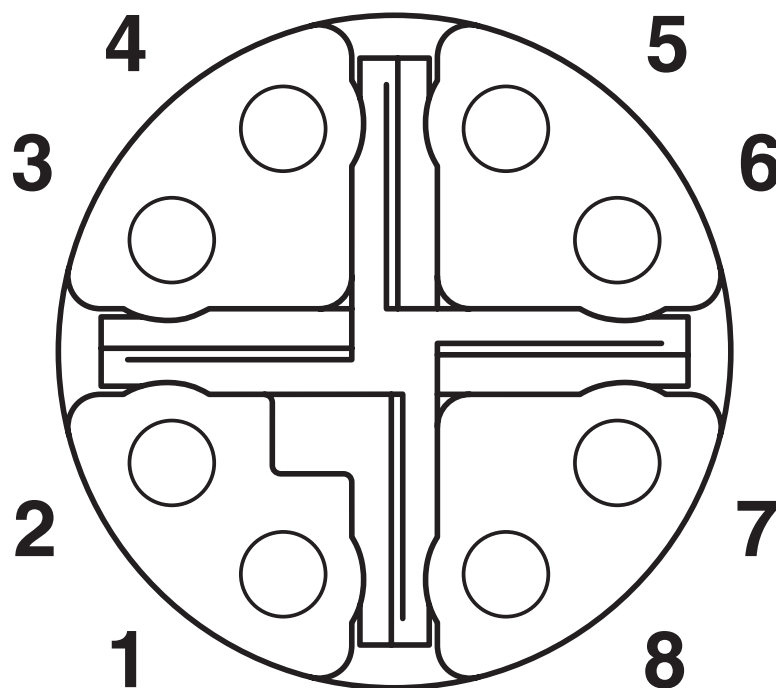
Circuit diagram

Schematic diagram
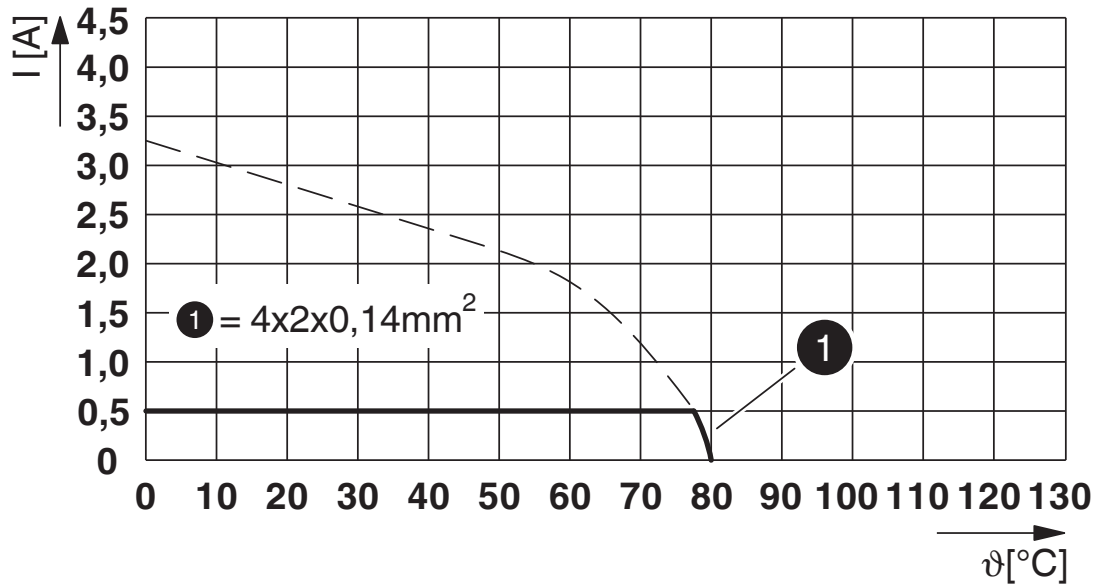

M12 socket pin assignment, 8-pos, view of socket side

Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0

1424164

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Diagram

I = current strength, T = ambient temperature

Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0

1424164

https://www.phoenixcontact.com/us/products/1424164

Approvals

cUL Recognized
Approval ID: E335024-20120308

	Nominal Voltage U_N	Nominal Current I_N	Cross Section AWG	Cross Section mm^2
	60 V	0.5 A	-	-

UL Recognized
Approval ID: E335024-20120308

	Nominal Voltage U_N	Nominal Current I_N	Cross Section AWG	Cross Section mm^2
	60 V	0.5 A	-	-

EAC
Approval ID: 19060508

cULus Recognized

Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0

1424164

https://www.phoenixcontact.com/us/products/1424164

Classifications

ECLASS

ECLASS-9.0	27060308
ECLASS-10.0.1	27060308
ECLASS-11.0	27440103

ETIM

ETIM 8.0	EC003570

UNSPSC

UNSPSC 21.0	39121400

Environmental Product Compliance

REACh SVHC	Lead 7439-92-1

China RoHS	Environmentally Friendly Use Period = 50 years
	For information on hazardous substances, refer to the manufacturer's declaration available under "Downloads"

Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0

1424164

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Accessories

Screw plug

Screw plug - PROT-M12 - 1680539

https://www.phoenixcontact.com/us/products/1680539

An M12 screw plug for the unoccupied M12 sockets of the sensor/actuator cable, boxes and flush-type connectors

Screw plug

Screw plug - PROT-M12 SH - 1503302

https://www.phoenixcontact.com/us/products/1503302

An M12 screw plug for the unoccupied M12 sockets of the shielded sensor/actuator cable, boxes and flush-type connectors

Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0

1424164

https://www.phoenixcontact.com/us/products/1424164

Sealing cap

Sealing cap - PROT-M12 MS-M - 1414148

https://www.phoenixcontact.com/us/products/1414148

An M12 screw plug for the unoccupied M12 sockets of the shielded sensor/actuator cable, boxes and flush-type connectors

Screw plug

Screw plug - PROT-M12 FB - 1555538

https://www.phoenixcontact.com/us/products/1555538

M12 high-grade steel screw plug, for unoccupied M12 sockets of the sensor/actuator cables, boxes and flush-type connectors for the food industry

Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0

1424164

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Screw plug

Screw plug - PROT-M12 MS-PA-CHAIN - 1430899

https://www.phoenixcontact.com/us/products/1430899

M12 sealing cap with fixing band, for sensor cables, for free M12 sockets

Cable-cutting tool

Cable-cutting tool - CUTFOX 12 - 1212128

https://www.phoenixcontact.com/us/products/1212128

Cable cutter, for copper and aluminum up to 12 mm diameter (up to 35 mm^2)

Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0

1424164

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Diagonal cutter

Diagonal cutter - CUTFOX-S VDE - 1212207

https://www.phoenixcontact.com/us/products/1212207

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

Stripping tool

Stripping tool - VS-CABLE-STRIP-VARIO - 1657407

https://www.phoenixcontact.com/us/products/1657407

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

Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0

1424164

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Diagonal cutter

Diagonal cutter - MICROFOX-SP-1 - 1212487

https://www.phoenixcontact.com/us/products/1212487

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

Stripping tool

Stripping tool - WIREFOX 4 - 1212156

https://www.phoenixcontact.com/us/products/1212156

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

Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0

1424164

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Stripping tool

Stripping tool - WIREFOX-E 4 - 1212704

https://www.phoenixcontact.com/us/products/1212704

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

Stripping tool

Stripping tool - WIREFOX 10 - 1212150

https://www.phoenixcontact.com/us/products/1212150

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

Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0

1424164

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Protective hose adapter

Protective hose adapter - WP-CTA POM 13,0 BK - 1422884

https://www.phoenixcontact.com/us/products/1422884

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

Protective hose

Protective hose - WP-PA HF 13,0 BK - 3240681

https://www.phoenixcontact.com/us/products/3240681

Protective hose, material: PA 6, filament: without, UV-resistant: yes, flexible, degree of protection: IP68, color: black, inflammability class in acc. with UL 94: V0, inner diameter: 10 mm, Total length: 50 m

Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0

1424164

https://www.phoenixcontact.com/us/products/1424164

Protective hose

Protective hose - WP-PA HF-HB 13,0 BK - 3240839

https://www.phoenixcontact.com/us/products/3240839

Protective hose, material: PA 6, filament: without, UV-resistant: yes, flexible, degree of protection: IP68, color: black, inflammability class in acc. with UL 94: HB, inner diameter: 10 mm, Total length: 50 m

Data connector

Data connector - SACC-M12MSX-8QO SH ETH - 1411043

https://www.phoenixcontact.com/us/products/1411043

Data connector, Ethernet CAT6$_A$ (10 Gbps), 8-position, halogen-free, shielded, Plug straight M12 SPEEDCON, Coding: X, Insulation displacement connection, knurl material: Zinc die-cast, nickel-plated, external cable diameter 5 mm ... 9.7 mm

Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0

1424164

https://www.phoenixcontact.com/us/products/1424164

Conductor connectors

Conductor connectors - SACC-CC-8QO SH ETH - 1414412

https://www.phoenixcontact.com/us/products/1414412

Cable connector, Ethernet $CAT6_A$ (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

Data connector

Data connector - VS-08-M12MS-10G-P SCO - 1417430

https://www.phoenixcontact.com/us/products/1417430

Data connector, Ethernet $CAT6_A$ (10 Gbps), 8-position, shielded, Plug straight M12 SPEEDCON, Coding: X, Piercecon®, knurl material: Zinc die-cast, nickel-plated, external cable diameter 4 mm ... 8 mm

Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0

1424164

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Data connector

Data connector - VS-08-M12MR-10G-P SCO - 1417443

https://www.phoenixcontact.com/us/products/1417443

Data connector, Ethernet CAT6$_A$ (10 Gbps), 8-position, shielded, Plug angled M12 SPEEDCON, Coding: X, Piercecon$^®$, knurl material: Zinc die-cast, nickel-plated, external cable diameter 4 mm ... 8 mm

Data connector

Data connector - SACC-M12MSX-8CT-CL SH - 1422844

https://www.phoenixcontact.com/us/products/1422844

Data connector, Ethernet CAT6$_A$ (10 Gbps), PROFINET CAT6$_A$ (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

Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0

1424164

https://www.phoenixcontact.com/us/products/1424164

Data connector

Data connector - SACC-M12MRX-8CT-CL SH - 1422845

https://www.phoenixcontact.com/us/products/1422845

Data connector, Ethernet CAT6$_A$ (10 Gbps), PROFINET CAT6$_A$ (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

RJ45 connector

RJ45 connector - VS-08-RJ45-10G/Q - 1419001

https://www.phoenixcontact.com/us/products/1419001

RJ45 connector, IP20, CAT6$_A$, 8-pos., with QUICKON fast connection technology, for 26 ... 24 AWG 1-wire and 7-wire conductors, color: black

Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0

1424164

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RJ45 connector

RJ45 connector - CUC-IND-C1ZNI-S/R4IE8 - 1421607

https://www.phoenixcontact.com/us/products/1421607

RJ45 connector, type: RJ45, degree of protection: IP20, number of positions: 8, 1 Gbps, CAT5 (IEC 11801:2002), material: Zinc die-cast, connection method: IDC fast connection, connection cross section: AWG 26- 24, cable outlet: straight, color: green, Ethernet

RJ45 connector

RJ45 connector - CUC-IND-C1ZNI-T/R4IE8 - 1421877

https://www.phoenixcontact.com/us/products/1421877

RJ45 connector, type: RJ45, degree of protection: IP20, number of positions: 8, 1 Gbps, CAT5 (IEC 11801:2002), material: Zinc die-cast, connection method: IDC fast connection, connection cross section: AWG 26- 24, cable outlet: angled, Ethernet

Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0

1424164

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RJ45 connector

RJ45 connector - CUC-IND-C1ZNI-B/R4IE8 - 1421876

https://www.phoenixcontact.com/us/products/1421876

RJ45 connector, type: RJ45, degree of protection: IP20, number of positions: 8, 1 Gbps, CAT5 (IEC 11801:2002), material: Zinc die-cast, connection method: IDC fast connection, connection cross section: AWG 26- 24, cable outlet: angled, Ethernet

RJ45 connector

RJ45 connector - CUC-V06-C1PGY-S/R4CEA:1 - 1414406

https://www.phoenixcontact.com/us/products/1414406

RJ45 connector, type: RJ45, degree of protection: IP67, 10 Gbps, CAT6$_A$, material: PA, connection method: Crimp connection, connection cross section: AWG 24- 27, cable outlet: straight, color: gray, Ethernet/PROFINET

Bus system flush-type socket - VS-FSBPXS-OE-94F/5,0

1424164

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RJ45 connector

RJ45 connector - CUC-V06-C1PBK-S/R4CEA:1 - 1414410

https://www.phoenixcontact.com/us/products/1414410

RJ45 connector, type: RJ45, degree of protection: IP67, number of positions: 8, 10 Gbps, $CAT6_A$, material: PA, connection method: Crimp connection, connection cross section: AWG 24- 27, cable outlet: straight, color: black, Ethernet/PROFINET

RJ45 connector

RJ45 connector - VS-PPC-C1-RJ45-POBK-8I10G - 1422205

https://www.phoenixcontact.com/us/products/1422205

RJ45 connector, IP67, with push/pull interlocking (Version 14), plastic housing, for 10 Gbps, for 24 ... 27 AWG stranded conductors