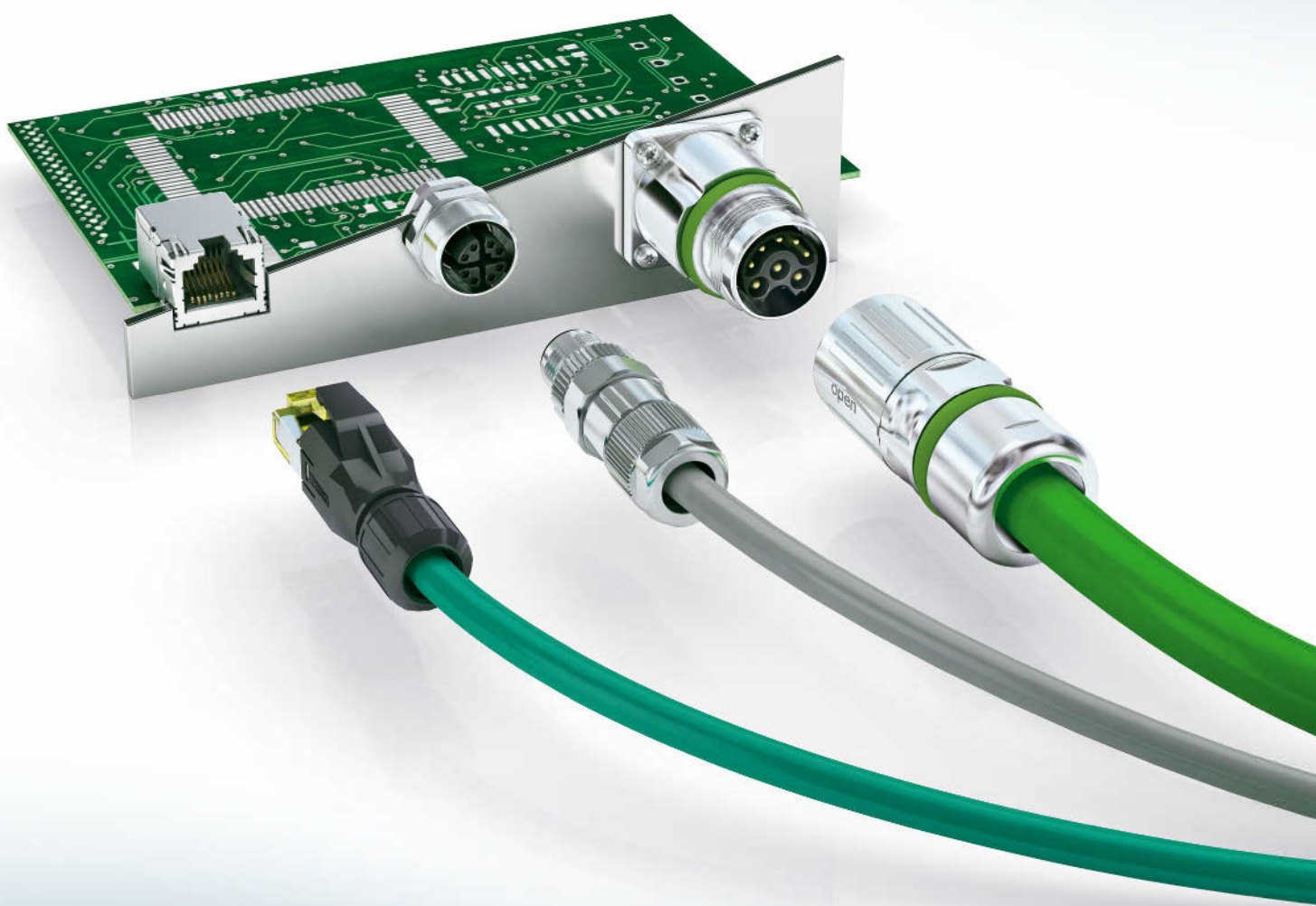


Connection Technology for Field Devices

2013 / 2014

2





PCB connection technology and electronics housing

- PCB terminal blocks and plug-in connectors
- Electronics housing



Connection technology for field devices



Modular terminal blocks

- Modular terminal blocks



Sensor/actuator cabling and industrial plug-in connectors

- Sensor/actuator cabling
- Cables and connectors
- Plug-in connectors



Marking systems, tools, and mounting material

- Marking and labeling
- Tools
- Installation and mounting material



Surge protection and power supply units

- Lightning monitoring system
- Surge protection and interference filters
- Power supply units and UPS
- Protective devices



Interface technology and switching devices

- Electronic switching devices and motor control
- Measurement and control technology • Monitoring
- Relay modules • System cabling for controllers



Control technology, I/O systems and automation infrastructure

- Ethernet networks • Functional safety • HMIs and industrial PCs • I/O systems
- Industrial lighting and signaling • Industrial communication technology
- Fieldbus components and systems • Wireless data communication
- Process infrastructure • Software • Controllers

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Connection technology for field devices from Phoenix Contact

COMBICON control

Connection technology for measurement and control technology and I/O modules: PCB terminal blocks and plug-in connectors with 2.54 to 7.62 mm pitch, screw, spring-cage, and insulation displacement connection, wave soldering.

See Catalog 1



COMBICON high density & data

Plug-in connectors in miniature format - fast insulation displacement, spring, and pierce connection technology, T-branches for easy bus connections.

See Catalog 1



COMBICON power

Connection technology for power electronics: PCB terminal blocks and plug-in connectors for currents up to 125 A, screw and spring-cage connection, panel feed-throughs.

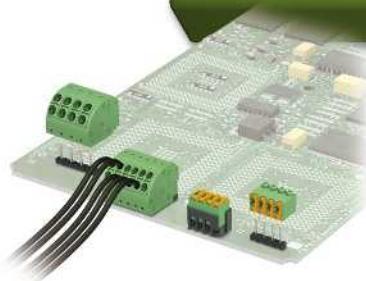
See Catalog 1



COMBICON compact

Device connections for building technology and LED applications: PCB terminal blocks and plug-in connectors with 2.5 to 7.5 mm pitch, screw and spring-cage connection as well as pin strips.

See Catalog 1

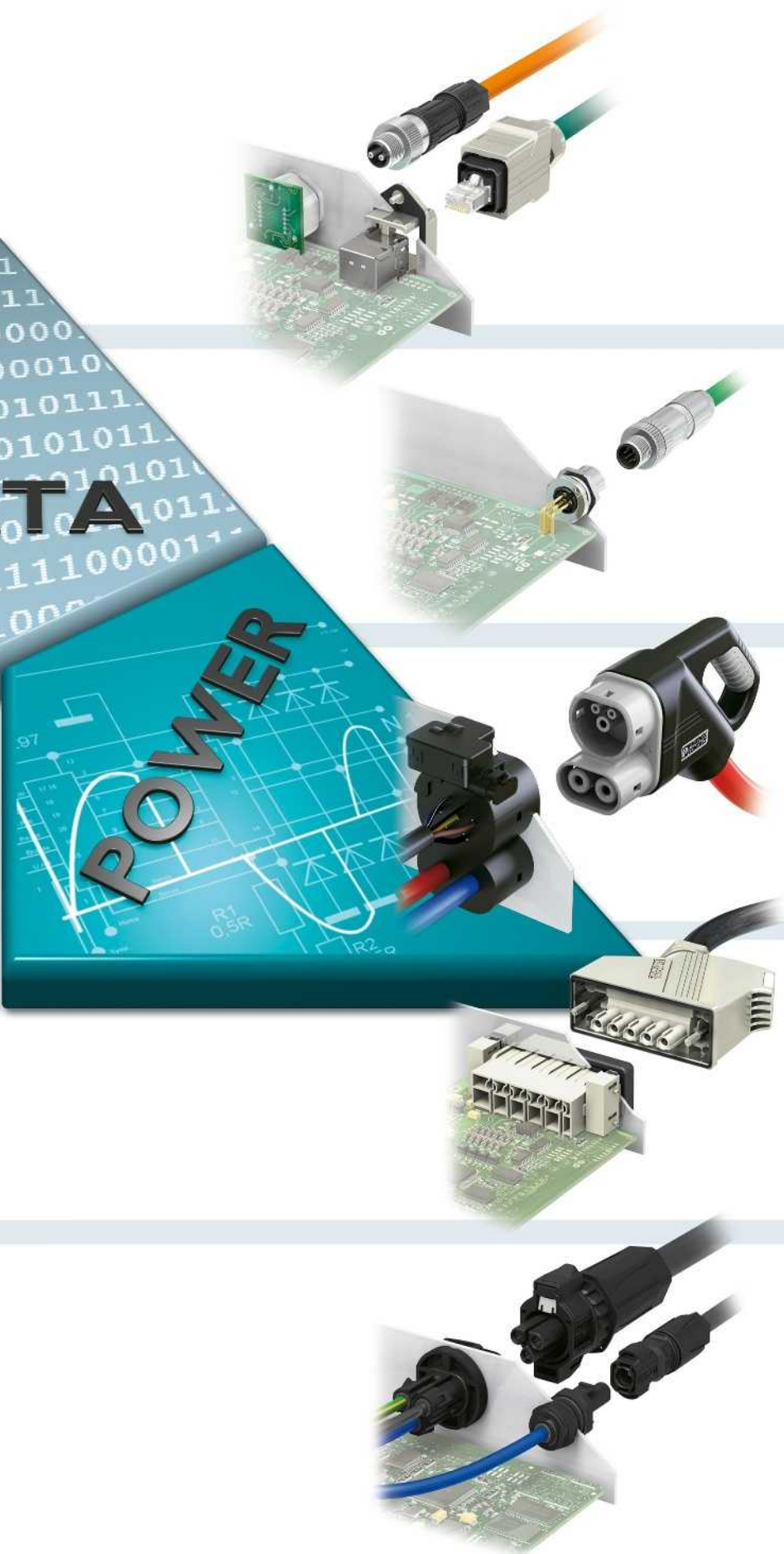


Housing

Plastic and aluminum electronics housing: component housing and panel mounting bases for industrial electronics, component housing for building installation, innovative bus connections between housing.

See Catalog 1





PLUSCON data

Plug-in connectors, panel feed-throughs, and cables for fieldbuses and networks.

See 61

PLUSCON circular

Flush-type plug-in connectors, plug-in connectors for assembly, and cables from M5 to M58 for signals, data, and power.

For M5 to M12, see 223

For M17 to M58, see 303

PLUSCON power

Plug-in charging systems for electromobility up to 400 A and plug-in connectors for power electronics up to 150 A.

See 431

PLUSCON device

Rectangular plug-in connectors with modular contact system for signals, power, and fiber optics with IP67 protection and available in various sizes.

See 19

PLUSCON solar

AC and DC connection systems for photovoltaic modules, inverters, and micro inverters.

See 417

Connection technology for field devices from Phoenix Contact



Individual connection solutions

Customer-specific adaptation of standard products

Found a product in our catalogs that meets your technical requirements, but you'd prefer a tailored solution? No problem – our Solution Center will be happy to provide you with support in implementing your requirements. Whether it's individual colors, special printing, a specific number of contacts or complete cable assembly – just let us know what you want.



Ideas transformed into innovative products

Phoenix Contact has been producing high-quality products for worldwide use for over 80 years.

Benefit from our extensive development, manufacturing, and process expertise for your individual solution. Together with you, we can transform great ideas into innovative products.

Intelligent solutions in housing and connection technology increasingly require custom concepts.

As a manufacturer, you can develop products with us that meet the requirements of today's markets, such as high quality, individual design, and great customer benefits at a reasonable price.

You will have the entire expertise of the Phoenix Contact Group at your disposal. From our own tool shop and machine building through plastic injection molding and metal production to expertise in electronics production, we offer a depth of manufacturing that enables us to implement even demanding projects and complex products within a short development period.

Our own laboratory carries out testing throughout the process, handles the necessary qualifications and, of course, international approvals.

As a manufacturer, you can focus on your core competencies and benefit from our expertise as specialists in connection and housing technology.

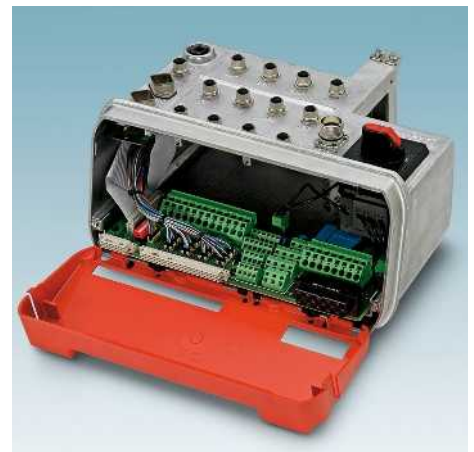
Great products need great ideas and experience. Together with the expertise of Phoenix Contact, you can implement your individual solution - right from the initial idea to cost-effective series production.

Our products and services range from customer-specific PCB connection technology with screw, spring-cage or IDC fast connection, in all conceivable designs and colors...

...through corresponding electronics housing in special designs in the color and size of your choice, together with the appropriate connection technology...

...individual field cabling, with plug-in connectors with shielding for high data transmission rates, splash-proof housing for harsh industrial environments...

...to complete solutions consisting of, for example, splash-proof housing including the appropriate connection technology for signal, data, and power transmission, plus the ideal PCB connection.



Connection technology for field devices from Phoenix Contact

Our service – added value for you

Phoenix Contact doesn't just offer the right products, it also provides a professional service for all aspects of connection technology for field devices and field cabling. Wherever you are in the world, Phoenix Contact's global network means that you can rely on our service. Being at home all over the world and speaking the language of the user is what we understand by customer proximity. Proximity that ensures the best service for our partners. We live up to this with more than 40 customer-oriented subsidiaries and around 30 representatives in other countries.



Personal consultation and support

As our customer, you are always the focus of attention at Phoenix Contact, whether during consultation or as part of after sales support. Expert and personal consultation forms the basis of this approach. Even though we live in the age of the Internet, personal interaction with our customers is of great importance to us.

Our team of highly motivated staff are available to you at locations around the world.



Reliable delivery service

It goes without saying that our products are delivered reliably and on time. In addition to our optimized delivery service, we offer numerous options for making the purchasing process more efficient and transparent.

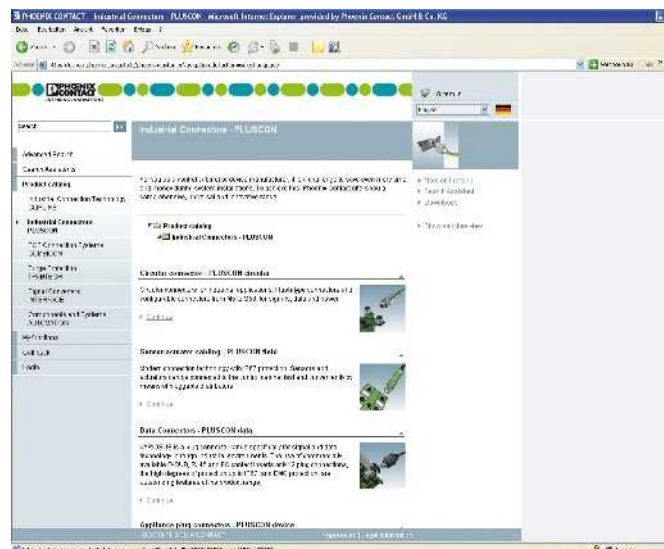
With warehouses in key industrial locations throughout the world, we ensure that you receive your products from Phoenix Contact cost-effectively and within the required delivery time.

Online catalog

The online catalog provides comprehensive, up-to-date information in 7 languages for more than 22,000 products from Phoenix Contact. Here you can find product-specific information such as technical data, notes on approvals, dimensional drawings, 3D data, etc. At the click of the mouse, you can easily generate a product data sheet in PDF format.

In over 15 countries, e-shop functions complete the online catalog. Following successful registration, you can therefore access your prices and delivery schedules at any time and you also have the option of placing orders directly online.

www.phoenixcontact.net/products

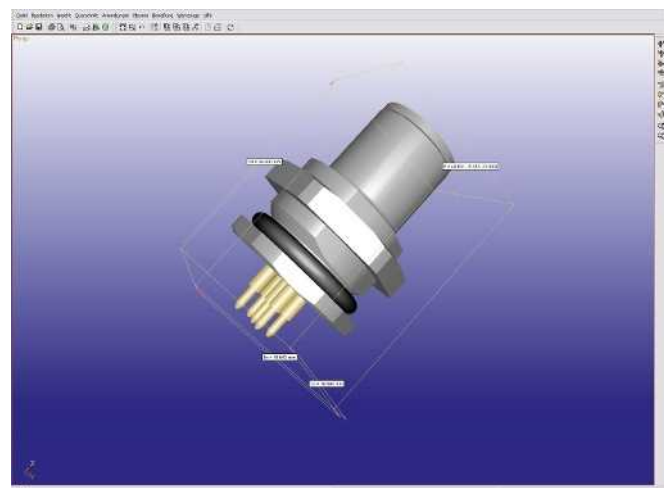


Quickly find product-specific information in the online catalog

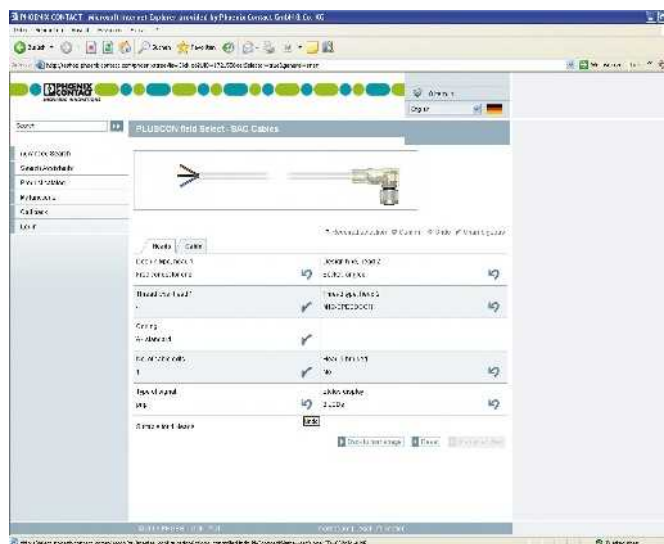
Online search assistants

Online search assistants help you to search systematically and quickly for products from our extensive range of plug-in connectors. By selecting electrical values and other product properties, you are taken directly to the products that meet your requirements.

- COMBICON select
PCB connection and electronics housing
- PLUSCON field select
Sensor/actuator cabling
- PLUSCON data select
Data plug-in connectors for fieldbuses and networks



Easy download of 3D data



User-friendly product search with PLUSCON field select

Fast connection technology from Phoenix Contact

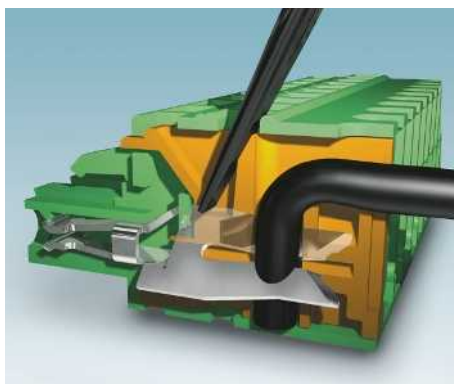
QUICKON - proven fast connection technology

The secret behind QUICKON at Phoenix Contact is the tried-and-tested IDC connection technology. The term "IDC" stands for Insulation Displacement Connection - a form of insulation displacement contacting.

The key advantage is the lack of conductor preparation, which can save 60 - 80% of the usual connection time compared to spring-cage or screw connections.

In the field of automotive engineering, telecommunications, and household appliances, this type of fast contacting has been established for many years, but now Phoenix Contact has made it suitable for industrial applications. This includes contacts which can accommodate both solid and stranded conductors, which cover a large range of cross sections, which penetrate various wire insulations, and which function reliably and permanently under harsh industrial conditions.

For geometric reasons, two different types of contact have emerged:



1. Flat contacts are characterized by their space-saving and cost-effective design.

Advantages of QUICKON

- Time-saving connection
- High degree of reliability thanks to defined contact force
- Can be connected multiple times using standard tools

Individual conductors are simply inserted into the wiring space without preparation and pushed into the IDC terminal block by a screw or lever mechanism. Here the wire insulation is displaced without damaging or weakening the copper litz wires in any impermissible way, and a force-defined and thereby user-independent and gas-tight contact is established. The contact resistance values lie between the values for spring-cage or screw connections.



2. Tube contacts cover an even greater cross section range.

Notes on IDC fast connection technology

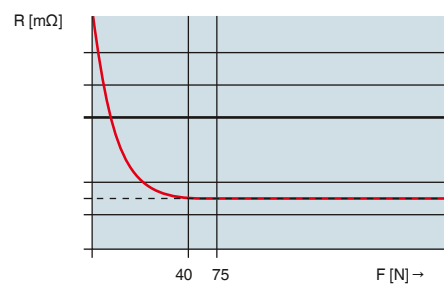
The specified cross section range must be observed.

If the conductors are too thin, the insulation will not be correctly displaced since the contact gap is too large, and if the conductors are too thick, it will either not be possible to connect them at all, or the system may be damaged as a result of excessive wiring forces.

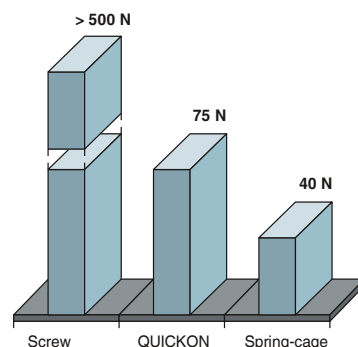
QUICKON connections should not be installed at extremely low or high ambient temperatures.

Furthermore, the specified wire insulation must be observed or approved by Phoenix Contact on request. Extremely hard insulation materials, such as Teflon, or very viscoplastic insulation, such as silicone, can only be wired with IDC contacts specifically designed for this purpose. Solid and stranded conductors make very good contact. In the case of highly stranded Category 6 conductors, the minimum litz wire diameter must be observed.

Contact resistance



Contact force



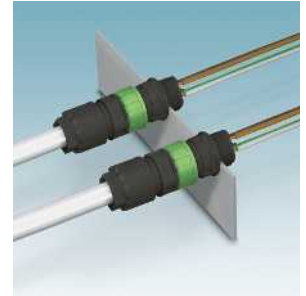
The positive properties and strong market acceptance of QUICKON have encouraged Phoenix Contact to develop a whole range of different products. This range covers numerous modular terminal blocks, PCB plugs, industrial plug-in connectors, and various customer-specific integrations within a cross section range from 0.14 mm² to 6.0 mm².



Heavy-duty plug-in connectors



Sensor/actuator boxes



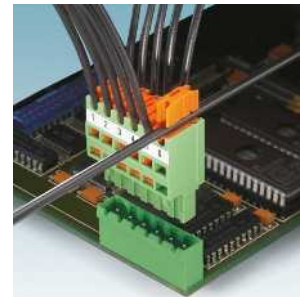
Power distributors



M8 and M12 plug-in connectors



Time savings with
QUICKON fast connection



PCB plug-in connectors



Modular terminal blocks



A series plug-in connectors



Special solutions



T-distributors



RJ45 plug-in connectors

Rapid interlock system from Phoenix Contact



SPEEDCON is the logical development of the M12 plug-in connector system that has been established and accepted for many years. Following the principle of "Plug & Turn", the connection time for M12 plug-in connectors is reduced by 90%.

The SPEEDCON rapid interlock system is 100% compatible with all M12 connections available on the market. It goes without saying that the SPEEDCON plug-in connectors meet all accepted standards and requirements for current M12 plug-in connector systems.



Complete product range

The following pages contain a complete range of SPEEDCON products, consisting of molded cables, plug-in connectors for assembly, flush-type plug-in connectors, adapters, and passive distributor boxes. I/O modules with SPEEDCON connection can be found in the AUTOMATION catalog.

SPEEDCON system partners

A number of well-known and international companies have been won over by the advantages and benefits of the SPEEDCON rapid interlock system and are now fully reliant on the new standard in the M12 world.

Amphenol

BERNSTEIN
safe solutions

binder

BIZERBA

CONINVERS
A Company of the Phoenix Contact Group

FANUC

FESTO

**INTER
CONTROL**

LITZE

Leuze electronic

MATROX
IMAGING

menerga
KLIMATISIERUNG

Mercedes-Benz

Miele

numatics

PEPPERL+FUCHS

p-u-l-s-o-l-t-r-o-n-i-c

Rexroth
Bosch Group

SCHUBERT

SEW
EURODRIVE

SICK
Sensor Intelligence.
SIEMENS

SVC

TRUMPF

ThyssenKrupp Fahrtreppen
Ein Unternehmen von ThyssenKrupp Elevator
ThyssenKrupp

Your advantages of using the SPEEDCON rapid interlock system

Compatibility

SPEEDCON is 100% compatible with all current M12 plug-in connector systems. The user does not have to learn anything new, since the "Plug & Turn" principle has been retained.

Fast assembly

Just half a turn and SPEEDCON creates a perfect plug-in connection. The assembly time is reduced by 90% as a result.

Safe operation

SPEEDCON has all the electrical and mechanical properties required of conventional M12 plug-in connector systems.



Classic – SPEEDCON



Insert



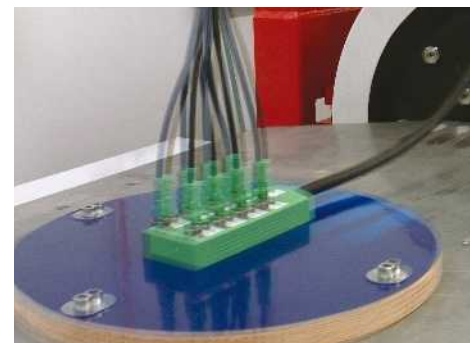
Temperature



SPEEDCON – Classic



1/2 turn



Vibration and shock



SPEEDCON – SPEEDCON



Done!



Noxious gases

DKE

DIN

VDE

IEC

UL US LISTED

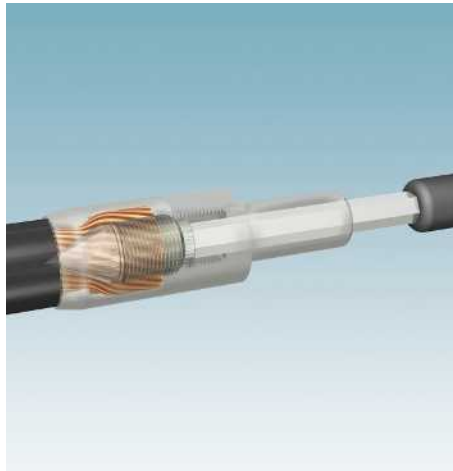
UL US

- Pin assignment, requirements, and testing according to **IEC 61076-2-101**
- IP65/IP67/IP69K protection according to EN 60529
- Vibration and shock resistance according to IEC 60512-6d



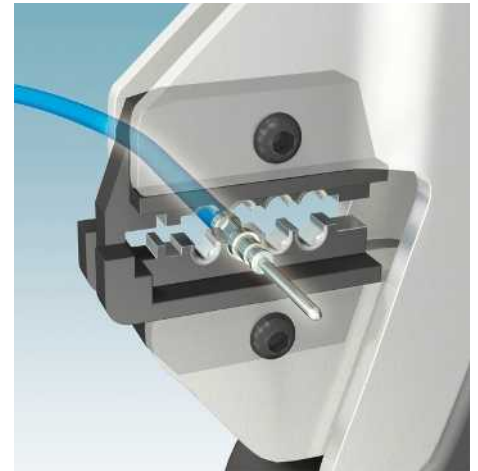
Screw connection

The screw connection is the most universal and globally accepted conductor connection technology. An important characteristic is the maintenance-free conductor contact. It is not necessary to tighten the terminal screw again. All kinds of copper cables can be clamped without pretreatment, thereby making gas-tight and reliable contact. The wire protector, which protects the individual litz wires from damage, is located between the screw and the conductor. It also performs a screw locking function to prevent release due to vibrations and temperature fluctuations. Splicing protection can be implemented in the form of ferrules. With a screw connection, several wires may also be clamped under one screw. The current-carrying parts of the screw connections are made of high-grade, strain-crack, and corrosion-proof copper alloys.



Axial screw connection

With this method, the wire end to be contacted is guided into the connection area of the pin or socket contact. A cone-shaped prong (part of the contact) is then screwed into the stranded wire from the front. The strands of the wire are radially pressed against the contact wall. This results in a gas-tight connection with long-term stability between the wire and contact. It is important that the specified tightening torque is observed. The prong is pressed in using a hexagon key which is applied to the front of the contact. This connection technology combines the advantages of screw and crimp connection. It requires very little space, is easy to execute, and only requires a standard Allen key.



Crimp connection

The crimp connection impresses with its small space requirements and its cost-effective creation in series production. For a reliable connection, it is essential that the conductor cross section, the crimp contact, and the crimping tool are compatible. Furthermore, the crimping process must be monitored during large-scale production as the crimping tools are subject to a certain degree of wear.

Crimp connections can be established with the aid of crimping pliers or crimp machines through specific deformation of the crimping ranges of the contact. The requirements for crimp connections are defined in DIN EN 60352-2. Proof of the quality of a crimp connection can be seen in the tensile strength of the connection and crack-free deformation of the crimp contact. Crimping must not result in impermissible elongation of crimp contacts, as this would prevent them from latching correctly in the contact carrier. The contact is released using a contact removal tool. Assembly tools are also available for very thin conductors.



Spring-cage connection

The spring-cage connection contains a steel spring which pushes the stripped conductor against a power rail. The terminal point is opened with a standard screwdriver. After the conductor has been inserted into the clamping space, the screwdriver is removed and the conductor automatically makes contact. The contact force is independent of the user and a vibration-proof, gas-tight connection with long-term stability is established. The front connection provides an additional advantage. The conductor and screwdriver come in parallel from the same direction and are always within the user's field of vision. Contact inserts can thereby also be connected or re-wired even when mounted. All kinds of copper cables can be clamped without pretreatment, thereby making gas-tight and reliable contact. Splicing protection can also be implemented in the form of a ferrule.



Push-in connection

Stranded conductors with ferrules or solid conductors can be quickly and easily inserted directly into the connection without tools. The contact spring is formed in such a way that it opens automatically when the conductor is pushed in and thereby provides the required pressure force against the current bar for a gas-tight, vibration and shock-proof connection. With the aid of the orange pusher, the terminal block can be opened manually so that conductors with smaller cross sections can also be securely connected. To release the conductor, the orange pusher features a confusion-free and defined operating element. The conductive metals are made from high-grade copper alloys. All metal parts of the connection are made of corrosion-resistant materials.



QUICKON fast connection for single wires

The QUICKON connection is equipped with an IDC insulation displacement contact. The term "IDC" stands for Insulation Displacement Connection. With this connection method, a non-stripped wire with insulation is positioned in front of the gap of the insulation displacement contact and then pushed into the blade gap through insulation displacement. In so doing, the wire insulation is severed and a gas-tight contact is made between the wire and the contact. This can save at least 60% of connection time.

The connection force is independent of the user and completely reliable provided the permitted conductor cross sections and connection conditions are observed. Solid and stranded conductors can be rewired up to 10 times. However, the wire end should be cut off before connecting again.

QUICKON connections have proven themselves in numerous applications for Phoenix Contact over recent years, such as plug-in connectors, for COMBICON, and modular terminal blocks to CEE plug-in equipment from 0.14 to 6.0 mm².

Circular plug-in connectors – PLUSCON device



Panel mounting plug-in connectors
Page 24



Sleeve plug-in connectors
Page 32



Contact carriers and contacts
Page 38



Screw connections and accessories
Page 42

Data plug-in connectors - PLUSCON data



RJ45 plug-in connectors for Industrial Ethernet with IP20/IP67 protection
Page 78



M12 plug-in connector for Industrial Ethernet
Page 88



Assembled network cables
Page 97



Patch panels, terminal outlets
Page 114



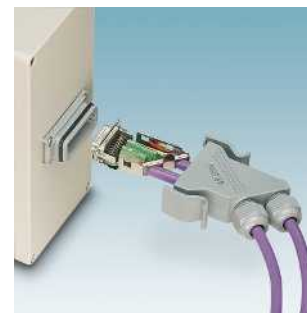
Power plug-in connectors for network cabling
Page 124



Fiber optic network plug-in connectors
Page 126



Assembled fiber optic cables
Page 138



D-SUB-based fieldbus plug-in connectors
Page 184



M12 flush-type plug-in connectors, plugs, and cables for fieldbuses
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Cable range
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IP20/IP67 USB plug-in connector
Page 205



D-SUB-based plug-in connectors
Page 185

M5 - M12 circular plug-in connectors - PLUSCON circular



M5 device plug-in connectors
Front mounting Page 224
Rear mounting Page 224



M8 device plug-in connectors
Front mounting Page 225
Rear mounting Page 226



M12 device plug-in connectors with litz wire
Front mounting Page 232
Rear mounting Page 242



M12 device plug-in connectors with square flange
Page 236



M12 device plug-in connectors for PCB mounting, wave soldering processes
Page 246



M12 device plug-in connectors for PCB mounting, THR
Page 256



7/8" device plug-in connectors with litz wire
Front mounting Page 265
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M12 device plug-in connectors, stainless steel design
Page 268



M8 plug-in connectors for assembly with insulation displacement connection
Page 272



M8 plug-in connectors for assembly with screw and solder connection
Page 273



M12 plug-in connectors for assembly with Piercecon® connection
Page 275



M12 plug-in connectors for assembly with insulation displacement connection
Page 278



M12 plug-in connectors for assembly, screw and spring-cage connection, shielded and unshielded
Page 279



7/8" plug-in connectors for assembly with screw connection
Page 285



M12 power device plug-in connectors
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M12 power plug-in connectors and cables for assembly
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M17 - M58 circular plug-in connectors - PLUSCON circular



M17 - signal plug-in connectors
Page 308



M23 - signal plug-in connectors
Page 324



M23 - feedback plug-in connectors
Page 340



M17 - power plug-in connectors
Page 352



M23 - power plug-in connectors
Page 368



M40 - power plug-in connectors
Page 380



M58 - power plug-in connectors
Page 390



Signal/power plug-in connectors,
plastic molded
Page 394



Tools and accessories
Page 404

Photovoltaic plug-in connectors - PLUSCON solar



SUNCLIX panel feed-throughs and DC plug-in connectors

Page 420



SUNCLIX assembled cables

Page 425



SUNCLIX mini - plug-in connectors and module junction boxes

Page 426



Spring-cage terminal blocks for PCB connection

Page 428

Charging plug-in connector systems - PLUSCON power



Combined AC/DC charging system

Page 435



Type 2 charging cables

Page 436



Type 2 and GB sockets

Page 438



GB charging cables

Page 440



Rectangular plug-in connectors

Direct PCB connection and elimination of a panel mounting base – these are some of the outstanding features of the modular, compact, IP67 plug-in connector system.

This range is particularly suitable for use in devices, as well as terminal boxes and control cabinets in harsh industrial environments. Thanks to the modular structure and the numerous contact inserts, from signal to power connections with 70 A, VARIOCON provides proven solutions, particularly in the field of electrical drive technology.

The modular contact inserts with screw and PCB connection form the basis of the range, in addition to fixed contact inserts with crimp connection for turned and rolled contacts. The universal screw connections feature a high degree of reliability, low contact resistance, and a compact design. The contact insert modules are consistently touch proof and can be coded to prevent incorrect connection. The direct PCB connection saves you a complete jumpering level and enables controlled and space-saving device assembly.

Sleeve housing is available in plastic and seawater-resistant die-cast aluminum. The robust screw locking prevents the plug-in connectors from being unintentionally opened and protects them against mechanical disturbances such as shock and vibration.

Note:

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 a plug-in connector.

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Accessories	49
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Derating diagrams and dimensional drawings	54

Rectangular plug-in connectors

Product range overview



VARIOCON is suitable for use in devices, terminal boxes, and control cabinets.

Thanks to its modular structure and the variety of contact inserts from fiber optics to power connections, the range offers virtually unlimited application possibilities.

The range is based on modular contact inserts with screw and PCB connection, as well as fixed contact inserts with crimp connection for turned and rolled contacts. The variable structure enables the optimum and therefore inexpensive customization of the plug-in connector to suit individual applications.

Housing for direct wall mounting is available in various versions:

Plastic housing made of tough polyamide and aluminum housing with seawater-resistant surface and conductive seal. Together with EMC cable glands, these housings offer outstanding protection against electromagnetic interference fields.

Six good reasons to use VARIOCON device plug-in connectors in industrial applications

The advantages	Your benefits
1. Modularity of the contact inserts and housing	– Tailored solution for contact inserts by combining power up to 70 A, signal up to 40 positions, and fiber optics – Space savings thanks to compact design – Free choice of housing designs: plastic, metal, and EMC protection
2. No panel mounting base required	– Reduced assembly time – IP67 protection with just one housing seal – Outstanding EMC protection
3. Robust housing screw locking for startup and servicing	– Resistant to mechanical disturbances (vibration, shock) – Protected against unintentional opening of the plug-in connection – Space savings compared to levers
4. COMBICON screw connection technology	– High degree of reliability – Touch-proof – Low contact resistance – Compact design – Can be coded to prevent incorrect connection – Can be used universally
5. Direct PCB connection in the device	– Jumpering level eliminated – Controlled assembly by means of soldering-in – Space-saving installation
6. Power crimp connection	– Easiest means of wall mounting by snapping-in – Cost-effective as no panel mounting frame or panel mounting flange required – Controlled factory installation

The product range

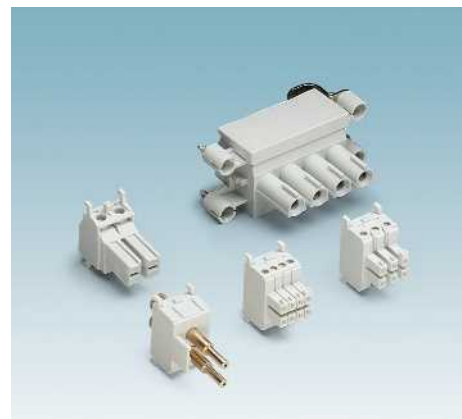
Modular contact inserts

VARIOCON Modular enables power and signal transmission to be combined in a single plug-in connector.

The contact system is based on the proven COMBICON connection technology with tension sleeve principle and coding options. The panel mounting side can be supplied with screw connection or alternatively with direct PCB connection.

The connection capacity ranges from 4-pos./70 A/690 V to 40-pos./10 A/160 V.

For data transmission, additional fiber optic modules are available.



from page 24

Crimp contact carriers

The crimp contact carriers are available as pin or socket contact carriers and meet the requirements for high-position plug-in connections.

Turned and rolled crimp contacts from the proven HEAVYCON D series (EN 175301-801) are available for 15, 30, 50, and 65-pos. crimp contact carriers, plus 2 leading PE connections each.

All the advantages of crimp technology, such as machine pre-assembly or partial assembly, are available with VARIOCON Crimp.



from page 38

Sleeve housing and supporting base elements

Sleeve housing is available in plastic and seawater-resistant die-cast aluminum:

VARIOCON sleeve housing is sealed directly to the mounting panel with two locking screws. This locking method saves space, is easily accessible from above, is vibration-resistant, and meets the requirements of IP65/IP66/IP67 protection (IP68 on request).

Versions with an easy-grip knurled screw are available for tool-free attachment.



from page 31

Accessories

Half cable glands with Pg16 and Pg21 threads are available for VARIOCON housing. Alternatively, housing is also available with M20 and M25 threads.

With the VC adapter plates, VARIOCON plug-in connectors can also be easily used in standard panel cutouts for heavy-duty industrial plug-in connectors.

Protective covers protect the contact inserts when they are not plugged in.

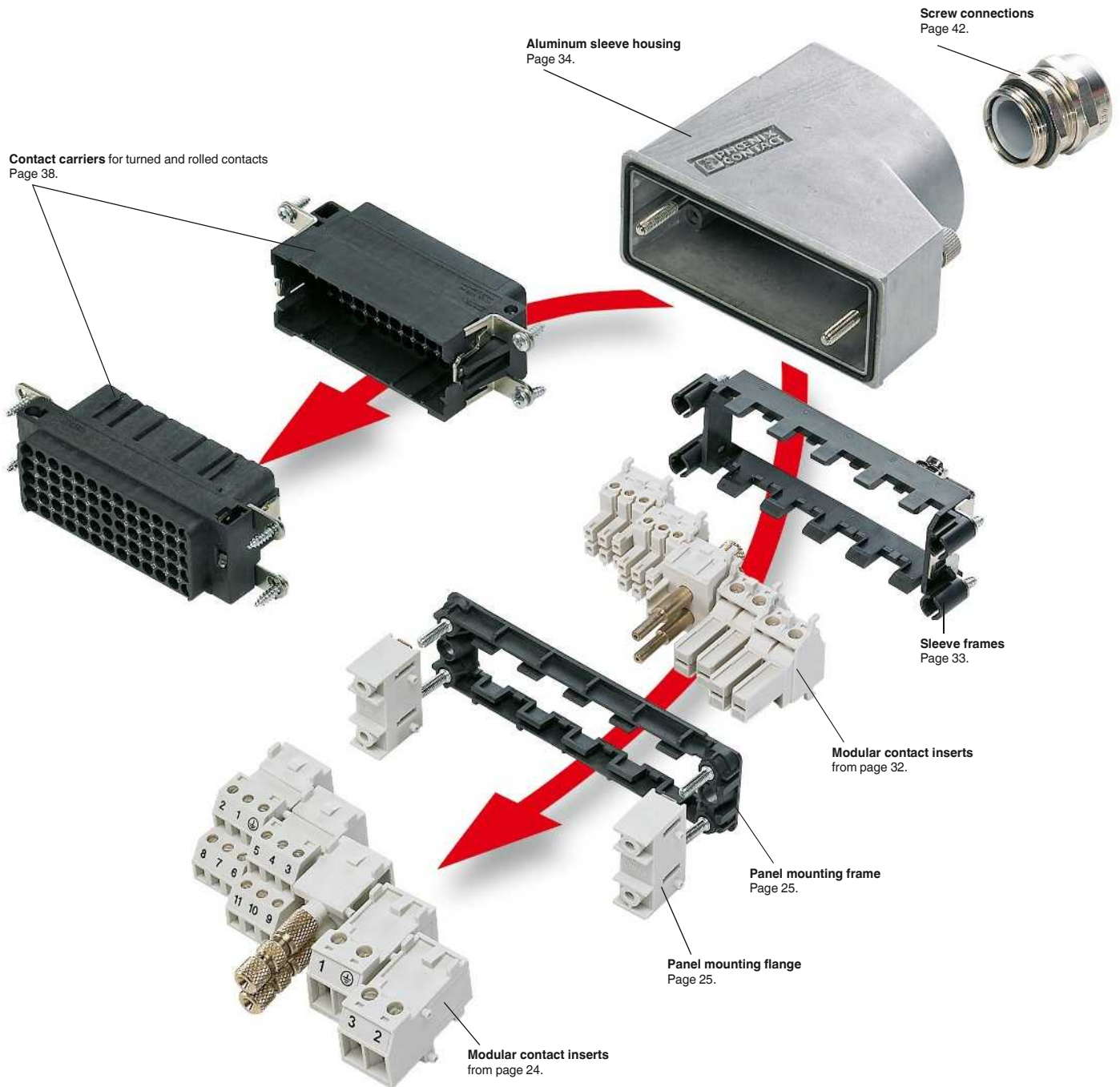


from page 42

Modular plug-in connector

The key advantage of VARIOCON plug-in connectors is that a panel mounting base with mounting brackets is not required. The panel mounting plug-in connector is mounted directly on the device panel as a panel feed-through without a panel mounting base. Optional contact inserts with screw connection, crimp connection, and PCB connection are available. The PCB versions are available for parallel (180°) and perpendicular positioning (90°) of the PCB to the housing panel. The sleeve plug-in connector consists of sleeve housing, sleeve contact inserts, and sleeve frame.

Sleeve housing is available in plastic and seawater-resistant die-cast aluminum. The aluminum housings have an electrically conductive seal. In combination with the EMC cable glands, they possess outstanding shield attenuation. The easy and secure mounting principle applies to both the sleeve and housing side. The contact insert modules are snapped into the frame in the desired order and then screwed to the housing or the sleeve.



Rectangular plug-in connector configurator

The VARIOCON Select software enables rapid and targeted configuration of modular contact inserts to form a plug-in connector system. The contact inserts are available with different numbers of positions and rated data. They can also be combined in any order. The modularity of the contact inserts and housing allow you to configure tailored combinations of power up to 70 A, signal up to 40 positions, and fiber optics to form a modular plug-in connector. There is a choice of plastic and aluminum housing. In combination with EMC screw connections,

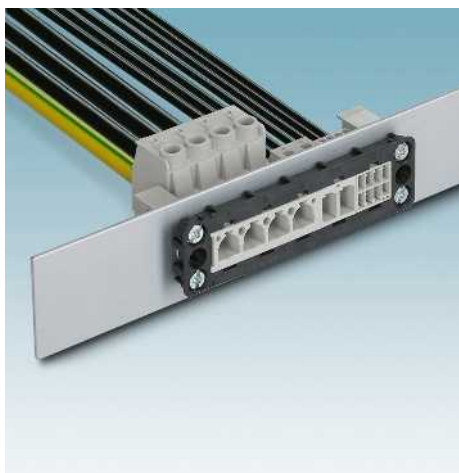
the aluminum housing offers safe protection against electromagnetic interference fields.



Rectangular plug-in connectors

Panel mounting plug-in connectors

Panel feed-through with screw connection



- One panel mounting frame and two panel mounting flanges are required for each connector
- Contact insert sets make logistics easier
- Positions are consecutively marked with PE and from 1 to n.
- On the panel mounting frame, each module position is labeled from A-E

Advantages:

- Proven COMBICON technology
- Can be coded to prevent confusion of connectors
- Suitable for universal connection
- Compact design

Notes:

- The hinged cover on the power contact inserts must be closed after assembly to maintain insulation data
- VARIOCON contact insert modules meet the requirements of DIN EN 61984 (connectors without switching capacity)
- They should, therefore, only be operated under no load condition
- All inserts are protected against finger contact according to DIN EN 60529
- They fulfil the requirements of BGV A2 accident prevention regulations
- An insertion bridge EB3-10/ST (Order No. 5020823) is available for the power contact insert modules
- The power contact inserts cannot be used in VC supporting elements for space reasons

Notes:

- For dimensional drawings, refer to page 54
- For drilling diagrams, see page 55
- For accessories, refer to page 50



Contact insert sets

Technical data

	VC-AR...S2...	VC-AR...S6...	VC-AR...S8...
Rated voltage	400	250	160
Rated current	20	10	10
Connection cross section	0.2 ... 4	0.14 ... 1.5	0.14 ... 1.5
Insertion/withdrawal cycles	≥ 100	≥ 100	≥ 100

Ordering data

Description	Design	Module slots	Number of positions Incl. PE	Type	Order No.	Pcs. / Pkt.
Contact insert set , consisting of: frame, four mounting screws and pre-assembled 2-pos. modules with screw connection, six coding profiles				VC-AR1/2M-S22-SET	1607298	5
				VC-AR2/3M-S222-SET	1607311	5
				VC-AR3/4M-S2222-SET	1607322	5
				VC-AR4/5M-S22222-SET	1607335	5
Contact insert set , consisting of: frame, four mounting screws and pre-assembled 6-pos. modules with screw connection, six coding profiles				VC-AR1/2M-S66-SET	1607346	5
				VC-AR2/3M-S666-SET	1607359	5
				VC-AR3/4M-S6666-SET	1607370	5
				VC-AR4/5M-S66666-SET	1607383	5
Contact insert set , consisting of: frame, four mounting screws and pre-assembled 8-pos. modules with screw connection, six coding profiles				VC-AR1/2M-S888-SET	1607394	5
				VC-AR2/3M-S8888-SET	1607407	5
				VC-AR3/4M-S88888-SET	1607418	5
				VC-AR4/5M-S888888-SET	1607431	5
Power contact insert module , for panel mounting frame, with screw connection						
				VC2	3	4
				VC3	4	5
				VC4	5	7
Contact insert module , marking on screw connection:						
					1	2
					1	6
					1	8
Contact insert module , marking on screw connection:						
PE, 2					1	2
PE, 2 ... 6					1	6
PE, 2 ... 8					1	8
Panel mounting frame , for panel feed-throughs and for VARIOCON supporting base elements at voltages < 42 V						
				VC1	2	
				VC2	3	
				VC3	4	
				VC4	5	
EMC shield adapter , for EMC connectors						
				VC1	2	
				VC2	3	
				VC3	4	
				VC4	5	
Panel-mounting flange for screw locking, for wall thicknesses of 1-5 mm, 2 pcs. per panel feed-through required, not for supporting base element						



Power contact insert modules



Contact insert modules

Panel mounting frame,
panel mounting flange

Technical data

690
70
0.5 mm² ... 16 mm²
≥ 500

Technical data

VC-AMS 2	VC-AMS 6	VC-AMS 8
400	250	160
20	10	10
0.2 ... 4	0.14 ... 1.5	0.14 ... 1.5
≥ 100	≥ 100	≥ 100

Technical data

-
-
-
-

Ordering data

Type	Order No.	Pcs. / Pkt.
------	-----------	-------------

Ordering data

Type	Order No.	Pcs. / Pkt.
------	-----------	-------------

Ordering data

Type	Order No.	Pcs. / Pkt.
------	-----------	-------------

VC-AMS 4	1607745	5
VC-AMS 5	1607748	5
VC-AMS 7	1607751	5

VC-AMS 2	1853528	50
VC-AMS 6	1854019	50
VC-AMS 8	1854022	50

VC-AMS 2-PE	1583542	50
VC-AMS 6-PE	1583555	50
VC-AMS 8-PE	1583568	50

VC-AR1/2M	1852972	5
VC-AR2/3M	1852985	5
VC-AR3/4M	1852998	5
VC-AR4/5M	1853007	5

VC-AR1-EMV	1853214	5
VC-AR2-EMV	1853227	5
VC-AR3-EMV	1853230	5
VC-AR4-EMV	1853243	5

VC-AF	1852862	50
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Panel mounting plug-in connectors

A close-up photograph of a green printed circuit board (PCB) mounted on a silver metal plate. The PCB features a black RJ45 port with a white plastic insert. The metal plate has two screws visible on the right side. The background is a light blue gradient.

- VARIOCON contact insert modules meet the requirements of DIN EN 61984 (connectors without switching capacity)
- They should, therefore, only be operated under no load condition
- All inserts are protected against finger contact according to DIN EN 60529
- They fulfil the requirements of BGV A2 accident prevention regulations

For dimensional drawings, refer to page 54
For drilling diagrams, see page 55
For accessories, refer to page 50



Power contact insert modules 90°

Technical data

Rated voltage	[V]	690
Rated current	[A]	63
Insertion/withdrawal cycles		≥ 50

Ordering data

Description	Design	Module slots	Number of positions Incl. PE	Type	Order No.	Pcs. / Pkt.
Power contact insert module						
	VC2	3	4	VC-AML 4	1607509	10
	VC3	4	5	VC-AML 5	1607523	5
	VC4	5	7	VC-AML 7	1607537	5
Power contact insert module, with capacitive PE contact						
	VC2	3	4	VC-AML 4-PEA	1607516	5
	VC3/-4		5	VC-AML 5-PEA	1607530	5
	VC4		7	VC-AML 7-PEA	1607544	5
Contact insert module, marking on screw connection:						
		1	2			
		1	6			
		1	8			
Contact insert module, marking on screw connection:						
		1	2			
		1	6			
		1	8			
Panel mounting frame, for panel feed-throughs and for VARIOCON supporting base elements at voltages < 42 V						
	VC1	2				
	VC2	3				
	VC3	4				
	VC4	5				
EMC shield adapter, for EMC connectors						
	VC1	2				
	VC2	3				
	VC3	4				
	VC4	5				
Panel-mounting flange for screw locking, for wall thicknesses of 1-5 mm, 2 pcs. per panel feed-through required, not for supporting base element						



Contact insert modules 90°



Contact insert modules 180°



Panel mounting frame,
panel mounting flange

Technical data		
VC-AML 2	VC-AML 6	VC-AML 8
400	250	160
20	10	10
≥ 100	≥ 100	≥ 100

Ordering data		
Type	Order No.	Pcs. / Pkt.

VC-AML 2	1852859	50
VC-AML 6	1853531	50
VC-AML 8	1852833	50

Technical data		
VC-AMLV 2	VC-AMLV 6	VC-AMLV 8
400	250	160
20	10	10
≥ 100	≥ 100	≥ 100

Ordering data		
Type	Order No.	Pcs. / Pkt.

VC-AMLV 2	1884979	50
VC-AMLV 6	1884872	50
VC-AMLV 8	1884885	50

Technical data		
-		
-		
-		

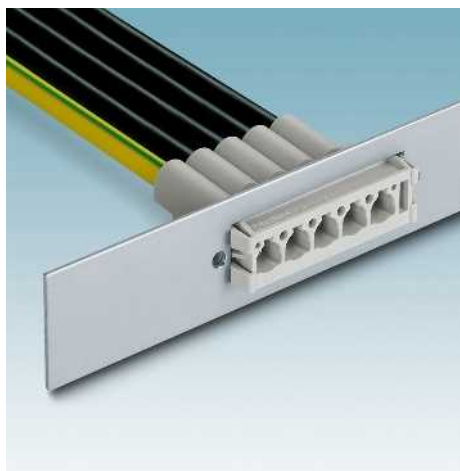
Ordering data		
Type	Order No.	Pcs. / Pkt.

VC-AR1/2M	1852972	5
VC-AR2/3M	1852985	5
VC-AR3/4M	1852998	5
VC-AR4/5M	1853007	5
VC-AR1-EMV	1853214	5
VC-AR2-EMV	1853227	5
VC-AR3-EMV	1853230	5
VC-AR4-EMV	1853243	5
VC-AF	1852862	50

Rectangular plug-in connectors

Panel mounting plug-in connectors

Panel feed-through with power crimp connection



Notes:

- 16 mm² contacts can only be crimped by machine.
- For mounting cutout, see page 56
- For accessories, refer to page 50



POWER crimp contact inserts

Advantages:

- No need for panel mounting frame
- No need for panel mounting flange
- Simply snap into the VC-AR... panel cutout and you're done!
- Crimp contacts are released using flat-bladed screwdriver

Typical applications

- Motors
- Inverter AC output
- Power supplies

Notes:

- VARIOCON contact insert modules meet the requirements of DIN EN 61984 (connectors without switching capacity)
- They should, therefore, only be operated under no load condition
- All inserts are protected against finger contact according to DIN EN 60529
- They fulfil the requirements of BGV A2 accident prevention regulations
- Combination with other VC modules is not possible

Technical data

Rated voltage	[V]	690
Rated current	[A]	70
Insertion/withdrawal cycles		≥ 50

Ordering data

Description	Design	Number of positions Incl. PE	Type	Order No.	Pcs. / Pkt.
Contact carriers for pin crimp contacts, for snapping into mounting panel					
	VC2	4	VC-AMC 4	1583877	5
	VC3	5	VC-AMC 5	1583878	5
Crimp contacts, for conductor cross section: 4 mm ² 10 mm ² 16 mm ²					
Crimp contacts, taped, for conductor cross section: 4 mm ² 10 mm ²					
Crimping tool, for crimp contacts					
IPCC 16-4...		1			
IPCC 16-10...		1			



Power crimp contacts



Crimping tool

Technical data		
4 mm ²	10 mm ²	16 mm ²
-	-	-
32	50	60
>= 25	>= 25	≥ 50

Ordering data		
Type	Order No.	Pcs. / Pkt.
IPCC 16- 4-MT	1733385	100
IPCC 16-10-MT	1733372	100
IPCC 16-16-MT	1733367	100
IPCC 16- 4-MT BAND	1761467	3800
IPCC 16-10-MT BAND	1761470	2700

Technical data		
-	-	-
-	-	-
-	-	-
Ordering data		
Type	Order No.	Pcs. / Pkt.
CRIMPFOX PCC 16 CS 4QMM	1743427	1
CRIMPFOX PCC 16 CS 10QMM	1743430	1

Rectangular plug-in connectors

Panel mounting plug-in connectors

Supporting base elements and contact inserts with screw connection

- The panel mounting bases are designed for panel feed-throughs and create space in the interior of the device.
- Box mounting elements make it possible for the plug-in wiring to be directly on the device panel.
- Coupling housings are suitable for free-hanging connections where jumpering is necessary in the field.



Contact insert modules



Panel mounting frames with PE

Notes:	
For dimensional drawings, refer to page 54	
For drilling diagrams, see page 55	
For accessories, refer to page 50	

				Technical data			Technical data		
				VC-AMS 2	VC-AMS 6	VC-AMS 8			
Rated voltage			[V]	400	250	160	-		
Rated current			[A]	20	10	10	-		
Material data									
Housing material				-	-	-	-		
Housing surface material				-	-	-	-		
Degree of protection				-	-	-	-		
Connection cross section			[mm²]	0.2 ... 4	0.14 ... 1.5	0.14 ... 1.5	0.5 mm² ... 4 mm² (for PE conductor)		
Insertion/withdrawal cycles				≥ 100	≥ 100	≥ 100	-		
				Ordering data			Ordering data		
Description	Design	Module slots	Number of positions Incl. PE	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Contact insert module, marking on screw connection:									
		1	2	VC-AMS 2	1853528	50			
		1	6	VC-AMS 6	1854019	50			
		1	8	VC-AMS 8	1854022	50			
Contact insert module, marking on screw connection:									
PE, 2		1	2	VC-AMS 2-PE	1583542	50			
PE, 2 ... 6		1	6	VC-AMS 6-PE	1583555	50			
PE, 2 ... 8		1	8	VC-AMS 8-PE	1583568	50			
Panel mounting frame, with PE, for VARIOCON supporting base elements with voltages > 42 V									
	VC1	2					VC-AR1/2M-PEA	1607761	1
	VC2	3					VC-AR2/3M-PEA	1607774	1
	VC3	4					VC-AR3/4M-PEA	1607787	1
	VC4	5					VC-AR4/5M-PEA	1607790	1
Housing, metal, powder-coated									
	VC1	2							
	VC2	3							
	VC3	4							
	VC4	5							
				Accessories			Accessories		
Marker labels, unprinted, 5-section, for individual labeling with B-STIFT or CMS system (25 labels per pack), white									



**Panel mounting base
with open bottom**



**Box mounting base
with fixing holes**



**Coupling housing
with enclosed bottom**

Technical data

VC-MP-A...
-
-

Zinc die-cast
Powder coating
IP65/IP66/IP67
-
-

Ordering data

Type	Order No.	Pcs. / Pkt.
VC-MP-A1	1884403	5
VC-MP-A2	1884416	5
VC-MP-A3	1884429	5
VC-MP-A4	1884432	5

Accessories

VC-BZS WH	1852875	5
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Technical data

VC-MP-S...
-
-

Zinc die-cast
Powder coating
IP65/IP66/IP67
-
-

Ordering data

Type	Order No.	Pcs. / Pkt.
VC-MP-S1	1884720	5
VC-MP-S2	1884733	5
VC-MP-S3	1884746	5
VC-MP-S4	1884759	5

Accessories

VC-BZS WH	1852875	5
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Technical data

VC-MP-K...
-
-

Zinc die-cast
Powder coating
IP65/IP66/IP67
-
-

Ordering data

Type	Order No.	Pcs. / Pkt.
VC-MP-K1	1884568	5
VC-MP-K2	1884571	5
VC-MP-K3	1884584	5
VC-MP-K4	1884597	5

Accessories

VC-BZS WH	1852875	5
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Rectangular plug-in connectors

Sleeve plug-in connectors

Sleeve frames and contact inserts



- Contact insert sets make logistics easier
- Positions are consecutively marked with PE and from 1 to n.
- On the panel mounting frame, each module position is labeled from A-E

Advantages:

- Proven COMBICON technology
- Can be coded to prevent confusion of connectors
- Suitable for universal connection
- Compact design

Notes:

- The hinged cover on the power contact inserts must be closed after assembly to maintain insulation data
- VARIOCON contact insert modules meet the requirements of DIN EN 61984 (connectors without switching capacity)
- They should, therefore, only be operated under no load condition
- All inserts are protected against finger contact according to DIN EN 60529
- They fulfil the requirements of BGV A2 accident prevention regulations
- An insertion bridge EB3-10/ST (Order No. 5020823) is available for the power contact insert modules
- The power contact inserts cannot be used in VC supporting elements for space reasons

Notes:

For dimensional drawings, refer to page 54
For accessories, refer to page 50



Contact insert sets

Technical data

	VC-TR...S2...	VC-TR...S6...	VC-TR...S8...
Rated voltage	400	250	160
Rated current	20	10	10
Connection cross section	0.2 ... 4	0.14 ... 1.5	0.14 ... 1.5
Insertion/withdrawal cycles	≥ 100	≥ 100	≥ 100

Ordering data

Description	Design	Module slots	Number of positions Incl. PE
-------------	--------	--------------	------------------------------

Contact insert set, consisting of: frame, four mounting screws and pre-assembled 2-pos. modules with screw connection, six coding profiles

VC1	2	4
VC2	3	6
VC3	4	8
VC4	5	10

Contact insert set, consisting of: frame, four mounting screws and pre-assembled 6-pos. modules with screw connection, six coding profiles

VC1	2	12
VC2	3	18
VC3	4	24
VC4	5	30

Contact insert set, consisting of: frame, four mounting screws and pre-assembled 8-pos. modules with screw connection, six coding profiles

VC1	2	16
VC2	3	24
VC3	4	32
VC4	5	40

Sleeve contact insert module, with PE conductor connection to the metal sleeve housing and integrated sleeve frame

VC2	4
VC3	5
VC4	7

Sleeve contact insert module, with PE conductor connection to the metal sleeve housing

One extra module	VC3	3	4
Two extra modules	VC4	3	4
One extra module	VC4	4	5

Contact insert module, marking on screw connection:

1 ... 2	1	2
1 ... 6	1	6
1 ... 8	1	8

Contact insert module, marking on screw connection:

PE, 2	1	2
PE, 2 ... 6	1	6
PE, 2 ... 8	1	8

Sleeve frame, with PE, for contact insert modules in metal sleeves and operating voltages > 42 V

VC1	2
VC2	3
VC3	4
VC4	5

Type	Order No.	Pcs. / Pkt.
VC-TR1/2M-PEA-S22-SET	1607143	5
VC-TR2/3M-PEA-S222-SET	1607154	5
VC-TR3/4M-PEA-S2222-SET	1607167	5
VC-TR4/5M-PEA-S22222-SET	1607178	5
VC-TR1/2M-PEA-S66-SET	1607191	5
VC-TR2/3M-PEA-S666-SET	1607202	5
VC-TR3/4M-PEA-S6666-SET	1607215	5
VC-TR4/5M-PEA-S66666-SET	1607226	5
VC-TR1/2M-PEA-S888-SET	1607239	5
VC-TR2/3M-PEA-S888-SET	1607250	5
VC-TR3/4M-PEA-S8888-SET	1607263	5
VC-TR4/5M-PEA-S88888-SET	1607274	5



Power contact insert modules



Contact insert modules



Hood frames with PE

Technical data

690
70
0.5 mm² ... 16 mm²
≥ 50

Technical data

VC-TFS 2	VC-TFS 6	VC-TFS 8
400	250	160
20	10	10
0.2 ... 4	0.14 ... 1.5	0.14 ... 1.5
≥ 100	≥ 100	≥ 100

Technical data

-
-
0.5 mm² ... 4 mm² (for PE conductor)
-

Ordering data

Type	Order No.	Pcs. / Pkt.
VC-TFS 4-PEA	1607467	5
VC-TFS 5-PEA	1607474	5
VC-TFS 7-PEA	1607481	5
VC-TFS 4/1M-PEA	1607488	5
VC-TFS 4/2M-PEA	1607495	5
VC-TFS 5/1M-PEA	1607502	5

Ordering data

Type	Order No.	Pcs. / Pkt.
VC-TFS 2	1852846	50
VC-TFS 6	1853476	50
VC-TFS 8	1852820	50
VC-TFS 2-PE	1583513	50
VC-TFS 6-PE	1583526	50
VC-TFS 8-PE	1583536	50

Ordering data

Type	Order No.	Pcs. / Pkt.
VC-TR1/2M-PEA	1607059	5
VC-TR2/3M-PEA	1607062	5
VC-TR3/4M-PEA	1607075	5
VC-TR4/5M-PEA	1607088	5

Rectangular plug-in connectors

Sleeve plug-in connectors

Sleeve housing



- There is no need for a panel mounting base with standard panel feed-throughs.
- Seal housing directly to the wall with two attachment screws.

This screw locking is:

- Space-saving
- Easily accessible from above
- Vibration-resistant
- Conformant with requirements for protection up to IP69K
- Knurled head screw for fixing without tools
- Cylinder head screw for operation with standard bladed screwdriver

Advantages:

- Angled cable outlet so the cable can be routed as desired, from the side and straight
- Aluminum housing with extended cabling space for high-position and power contact inserts
- This allows space for M32 cable glands
- Housings with two cable inlets are available

For EMC applications:

- Conductive seals
- Mounting panel must also be conductive

Notes:

For dimensional drawings, see from page 58

For cable glands, see from page 42



Die-cast aluminum sleeve housing with metric cable outlet

Technical data

Cylinder head locking

IP65/IP68/IP69K
NBR, conductive

Knurled head locking

IP65/IP68/IP69K
NBR, conductive

Ordering data

Order No.

Pcs. / Pkt.

Order No.

Pcs. / Pkt.

Cylinder head locking

Knurled head locking

Sleeve housing, with metric cable outlet and screw locking

VC1	M20 x 1.5
VC1	M25 x 1.5
VC2	M20 x 1.5
VC2	M25 x 1.5
VC3	M25 x 1.5
VC3	M25/M20 x 1.5
VC3	M32 x 1.5
VC4	M25 x 1.5
VC4	M25/M20 x 1.5
VC4	M32 x 1.5

1583597	5
1583607	5
1583636	5
1583649	5
1583678	5
1583681	5
1583694	5
1583733	5
1583746	5
1583759	5

1583610	5
1583623	5
1583652	5
1583665	5
1583704	5
1583717	5
1583720	5
1583762	5
1583775	5
1583788	5

Sleeve housing, with metric cable outlet and screw locking

VC1	M20
VC2	M25
VC3	M25
VC4	M25

Sleeve housing, with Pg screw connection gland and screw locking

VC1	Pg16
VC2	Pg21
VC3	Pg21
VC4	Pg21

Sleeve housing, black, locking screws with Allen screw head, housing material:

PA	VC2	Pg29
PBT	VC3	Pg29

Sleeve housing, plastic, locking screws with plus/minus head

VC2	6 x 20.5 mm
VC2	7.5 x 29.5 mm
VC2	6 x 24 mm
VC2	9 x 35 mm



Polyamide sleeve housing
with metric cable outlet



Polyamide sleeve housing,
with Pg screw connection gland



Special types



Technical data			
Cylinder head locking		Knurled head locking	
IP65		IP65	
EPDM		EPDM	
Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
Cylinder head locking		Knurled head locking	

Technical data			
Cylinder head locking		Knurled head locking	
IP67		IP67	
EPDM		EPDM	
Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
Cylinder head locking		Knurled head locking	

Technical data			
Power sleeve housing		Flat-ribbon cable sleeve housing	
IP65, IP67, IP68		IP54	
NBR		EPDM	
Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
Power sleeve housing		Flat-ribbon cable sleeve housing	

1852935	5	1855097	5
1852948	5	1855107	5
1852961	5	1855120	5
1852974	5	1855133	5

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1852930	5	1855092	5
1852943	5	1855102	5
1852956	5	1855115	5
1852969	5	1855128	5

1583880	1		
1424368	1		

1607703	10
1607680	10
1607677	10
1607693	10

Rectangular plug-in connectors

Contact carriers and contacts

FO contact insert modules with screw connection



The fiber optic modules of VARIOCON enable optical signal transmission over distances of up to 50 m by using polymer fiber optic cables.

Quick-assembly on the connector side and passive panel feed-through make assembly possible in 2 minutes, even in the field.

The single core is stripped, fixed in the ferrule with the knurled screw and then polished for the optical connection.

Coding:

The FO contact insert modules can be additionally protected against incorrect plugging with the red CP-HCC 4 coding profiles (Order No. 1600027).

Instructions for the fiber optic module

- Do not exceed the permissible bending radii for fiber optics
- Follow the instructions on the package slip when handling individual conductors
- Using a passive coupling reduces the transmission range by approx. 10 m

Notes:

Other fiber optic accessories and cables can be found from page 126



Contact insert module ferrules with F-SMA screw connection

Material data	
Contact material	Nickel silver
Contact carrier material	PA
Inflammability class in acc. with UL 94	V0
Mechanical data	
Connection profile	F-SMA type 905, IEC 874-2
Torque value knurled screw	0.1 Nm (hand tight)
Connection data	
Stripping length	12 [mm]
Cable type	Polymer fiber (980 / 1000 µm)
Insertion/withdrawal cycles	> 100
Attenuation	< 3 dB
Temperature data	
Ambient temperature (operation)	-20 °C ... 70 °C

Technical data

Nickel silver
PA
V0
F-SMA type 905, IEC 874-2
0.1 Nm (hand tight)

12 [mm]
Polymer fiber (980 / 1000 µm)
> 100
< 3 dB

-20 °C ... 70 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
VC-TFOS 2	1855814	10

Description
Contact insert module , for sleeve frames
Contact insert module , for panel mounting frames for accommodating VC-FSMA-M ... quick mounting connectors
FSMA connector , for polymer fiber cable, for contact carrier module VC-AFOS 2, (2 pcs. each as set)
FSMA connector set , with bend protection sleeve for polymer fiber cable, for contact carrier module VC-AFOS 2, (2 pcs. each as set)

Accessories

Stripping tool for FO cables
Polisher , metal, for repeated preparation of VARIOCON fiber optic ferrules
Polymer fiber polishing set for quick mounting connectors, comprising polishing pads and polishing disks

PSM-FO-STRIP	2744199	1
VC-POLISHER/M FSMA	1884982	1
PSM-SET-FSMA-POLISH	2799348	1



Mounting contact insert



F-SMA quick mounting plug for polymer fiber cables



F-SMA quick mounting plug for polymer fiber cables



Technical data

Nickel silver
PA
V0

F-SMA type 905, IEC 874-2
0.1 Nm (hand tight)

12
Polymer fiber (980 / 1000 µm)
> 100
< 3 dB

-20 °C ... 70 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
VC-AFOS 2	1885240	10

Accessories



Technical data

Nickel silver
-
-

F-SMA type 905, IEC 874-2
0.1 Nm (hand tight)

12
Polymer fiber (980 / 1000 µm)
> 100
< 3 dB

-20 °C ... 70 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
VC-FSMA-M-2 SET	1855432	1

Accessories

PSM-FO-STRIP	2744199	1
VC-POLISHER/M FSMA	1884982	1
PSM-SET-FSMA-POLISH	2799348	1



Technical data

Nickel silver
-
-

F-SMA type 905, IEC 874-2
0.1 Nm (hand tight)

-
Polymer fiber (980 / 1000 µm)
> 100
< 3 dB

-20 °C ... 70 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
VC-FSMA-M-KT-2 SET	1855703	1

Accessories

PSM-FO-STRIP	2744199	1
VC-POLISHER/M FSMA	1884982	1
PSM-SET-FSMA-POLISH	2799348	1

Rectangular plug-in connectors

Contact carriers and contacts

Contact carriers for turned and rolled crimp contacts



- 15, 30, 50, and 65 positions are available, in accordance with housing sizes VC 1 - VC 4
- Pin and socket contacts can be used on both the connector and device sides
- Contact carriers additionally have two pre-mating protective ground contacts
- Connection data is 250 V/10 A and corresponds to that of the HEAVYCON DD series.
- Use of turned and even rolled contacts
- Contact types meet the requirements of IEC 60352/DIN EN 60352

Safety note:

- PE conductor must always be connected to the directly opposite positions
- Connectors may only be operated when not under load.



Pin contact carrier for turned and rolled contacts



Technical data

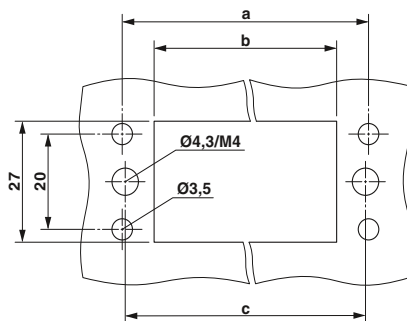
Electrical data in acc. with IEC 61076-2-101		
Rated voltage	[V]	250
Rated surge voltage	[kV]	4
Rated current	[A]	10
Surge voltage category / pollution degree		III / 2
Material data		
Contact carrier material		PA-GF
Connection data		
Stripping length	[mm]	8
Connection cross section	[mm ²]	0.14 mm ² ... 1.5 mm ² (stranded)
Connection cross section	AWG	22 ... 16
Temperature data		
Ambient temperature (operation)		-40 °C ... 125 °C

Ordering data

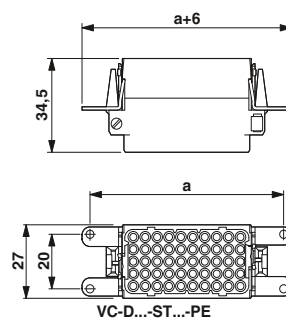
Description	Design	Number of positions Incl. PE	Type	Order No.	Pcs. / Pkt.
Contact carrier , with four ST 2,9 fastening screws					
	VC1	15	VC-D1-ST15-PE	1855018	10
	VC2	30	VC-D2-ST30-PE	1855021	10
	VC3	50	VC-D3-ST50-PE	1855034	10
	VC4	65	VC-D4-ST65-PE	1855047	10
Mounting flange , to screw the contact insert to the housing panel					
			VC-D-AF	1855319	20
Coding pins , with ST2,9 thread for sleeve housings, to prevent identical plug-in connectors from being confused					
			VC-CB-T	1607884	10
Coding pins , with M3 thread for VC panel mounting bases, to prevent identical plug-in connectors from being confused					
			VC-CB-A	1607888	10

Design	Number of positions	a [mm]	b [mm]	c [mm]
VC 1	15	42.8	31.5	40.0
VC 2	30	57.8	46.5	55.0
VC 3	50	72.8	61.5	70.0
VC 4	65	87.8	76.5	85.0

Dimensions table



Mounting cutout for VC-D...-PE



VC-D...-ST...-PE



Socket contact carrier,
for turned contacts



Socket carrier,
for rolled contacts



Technical data

250
4
10
III / 2
PA-GF
8
0.14 mm² ... 1.5 mm² (stranded)
22 ... 16
-40 °C ... 125 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
VC-D1-BU15-PE	1855050	10
VC-D2-BU30-PE	1855063	10
VC-D3-BU50-PE	1855076	10
VC-D4-BU65-PE	1855089	10
VC-D-AF	1855319	20
VC-CB-T	1607884	10
VC-CB-A	1607888	10

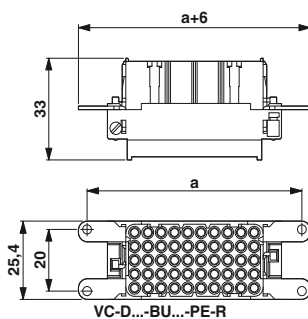
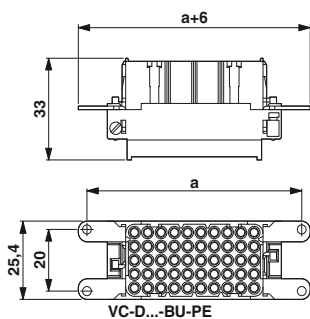


Technical data

250
4
10
III / 2
PA-GF
8
0.14 mm² ... 1.5 mm² (stranded)
22 ... 16
-40 °C ... 125 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
VC-D1-BU15-PE-R	1884801	10
VC-D2-BU30-PE-R	1884791	10
VC-D3-BU50-PE-R	1884788	10
VC-D4-BU65-PE-R	1884775	10
VC-D-AF	1855319	20
VC-CB-T	1607884	10
VC-CB-A	1607888	10



Rectangular plug-in connectors

Contact carriers and contacts

Crimp contacts

The quality of a crimp connection is specified in DIN EN 60352 Part 2. The single most important criterion for the reliability of a crimp connection is the holding force of the litz wires in the crimp contact. DIN EN 60352-2 describes the extraction force of the cores from the crimp contact in relation to the conductor cross section.

Notes:
For voltages less than 5 V and currents less than 5 mA, gold-plated contacts are recommended.
Crimping pliers can be found in Catalog 4, in the "Heavy-duty plug-in connectors" section.



Turned crimp contacts,
Ø 1.6 mm, for VC-D contact carriers



Rolled crimp contacts, taped,
Ø 1.6 mm, for VC-D...R contact carriers,
contact entry from left



Material data
Contact material
Stripping length of the individual wire
Insertion/withdrawal cycles
Ambient temperature (operation)

Technical data	
Hard silver-plated	Hard gold-plated
Copper alloy	Copper alloy
8 mm (6 mm in case of 2.5 mm ²)	8 mm (6 mm in case of 2.5 mm ²)
≥ 500	≥ 500
-40 °C ... 125 °C	-40 °C ... 125 °C

Technical data	
CK1,6-BR-0,5...	CK1,6-BR-1,5...
Copper alloy	Copper alloy
3 mm +1	3.5 mm +1
≥ 500	≥ 500
-40 °C ... 125 °C	-40 °C ... 125 °C

Description
Turned socket contacts , silver-plated contact surface, for conductor cross section: 0.14 mm ² ... 0.37 mm ² /26 ... 22 AWG 0.50 mm ² / AWG 20 0.75 mm ² / AWG 18 0.75 mm ² ... 1.00 mm ² / AWG 18 1.50 mm ² / AWG 16 2.50 mm ² / AWG 14 Turned pin contacts , silver-plated contact surface, for conductor cross section: 0.14 mm ² ... 0.37 mm ² / AWG 26 ... 22 0.50 mm ² / AWG 20 0.75 mm ² / AWG 18 0.75 mm ² ... 1.00 mm ² / AWG 18 1.50 mm ² / AWG 16 2.50 mm ² / AWG 14 Turned socket contacts , gold-plated contact surface, for conductor cross section: 0.14 mm ² ... 0.37 mm ² /26 ... 22 AWG 0.50 mm ² / AWG 20 0.75 mm ² / AWG 18 0.75 mm ² ... 1.00 mm ² / AWG 18 1.50 mm ² / AWG 16 2.50 mm ² / AWG 14 Turned pin contacts , gold-plated contact surface, for conductor cross section: 0.14 mm ² ... 0.37 mm ² / AWG 26 ... 22 0.50 mm ² / AWG 20 0.75 mm ² / AWG 18 0.75 mm ² ... 1.00 mm ² / AWG 18 1.50 mm ² / AWG 16 2.50 mm ² / AWG 14 Rolled pin contacts , silver-plated contact surface, for conductor cross section: 0.14 mm ² ... 0.50 mm ² / AWG 26 ... 20 0.50 mm ² ... 1.50 mm ² / AWG 20 ... 16 Rolled socket contacts , silver-plated contact surface, for conductor cross section: 0.14 mm ² ... 0.50 mm ² / AWG 26 ... 20 0.50 mm ² ... 1.50 mm ² / AWG 20 ... 16 POF fiber optic contact , turned, for VC-D contact carriers
Socket
Plug

Ordering data		
Type	Order No.	Pcs. / Pkt.
CK1,6-ED-0,37BU AG	1663394	100
CK1,6-ED-0,50BU AG	1663404	100
CK1,6-ED-0,75BU AG	1663417	100
CK1,6-ED-1,00BU AG	1663420	100
CK1,6-ED-1,50BU AG	1663433	100
CK1,6-ED-2,50BU AG	1663446	100
CK1,6-ED-0,37ST AG	1663336	100
CK1,6-ED-0,50ST AG	1663349	100
CK1,6-ED-0,75ST AG	1663352	100
CK1,6-ED-1,00ST AG	1663365	100
CK1,6-ED-1,50ST AG	1663378	100
CK1,6-ED-2,50ST AG	1663381	100
CK1,6-ED-0,37BU AU	1674969	100
CK1,6-ED-0,50BU AU	1674480	100
CK1,6-ED-0,75BU AU	1672440	100
CK1,6-ED-1,00BU AU	1674943	100
CK1,6-ED-1,50BU AU	1674930	100
CK1,6-ED-2,50BU AU	1674985	100
CK1,6-ED-0,37ST AU	1674901	100
CK1,6-ED-0,50ST AU	1672453	100
CK1,6-ED-0,75ST AU	1674914	100
CK1,6-ED-1,00ST AU	1674888	100
CK1,6-ED-1,50ST AU	1674875	100
CK1,6-ED-2,50ST AU	1674927	100

Ordering data		
Type	Order No.	Pcs. / Pkt.
CK1,6-BR-0,50ST AG	1884157	2000
CK1,6-BR-1,50ST AG	1884144	2000
CK1,6-BR-0,50BU AG	1884186	2000
CK1,6-BR-1,50BU AG	1884173	2000



**Crimp contacts for fiber optic cables,
polymer fibers (POF)**



Technical data
Nickel silver
-
≥ 500
-

[illegible]



Plastic cable screw connections are easy to install and cover a wide range of conductor diameters, thanks to the clamping cage principle combined with excellent strain relief. They are suitable for universal application in mechanical and plant engineering, in measuring and control technology, in automation and electrical engineering and in robot construction.

- Full screw connection for use in housing with thread
- High strain relief forces and high cable diameter ranges thanks to clamping cage principle
- Brass screw connections for especially high demands in terms of stability and safety
- EMC screw connections offer an easy way of connecting shielded cables
- Easy to assemble thanks to highly elastic contact springs
- AS-Interface screw connections are available for inserting AS-Interface cables



Plastic gland



Technical data

Material data
Cable gland material
Material, insert
Seal material
Material, O-ring
Inflammability class according to UL 94
Mechanical data
Degree of protection
Temperature data
Ambient temperature (operation)

Polyamide
-
Neoprene
-
V2
IP68, to 5 bar
-20 °C ... 100 °C

Ordering data

Description	Thread type
Plastic gland, gray, for cable diameter [mm]:	
8 mm ... 13 mm	M20
11 mm ... 17 mm	M25
15 mm ... 21 mm	M32
Metal gland, for conductor diameter [mm]:	
9 mm ... 13 mm	M20
11 mm ... 16 mm	M20
11 mm ... 16 mm	M25
14 mm ... 21 mm	M25
14 mm ... 21 mm	M32
19 mm ... 27 mm	M32
EMC screw connection, for conductor diameter [mm]:	
7 mm ... 12.5 mm	M20
9 mm ... 16.5 mm	M25
11 mm ... 21 mm	M32
Metal gland, for AS-Interface flat-ribbon conductor	
Thread type: M20	M20
Thread type: M25	M25
Special cable screw connection M25, brass With 10 mm and 11 mm hole	M25

Type	Order No.	Pcs. / Pkt.
HC-K-KV-M20(8-13)	1690626	25
HC-K-KV-M25(11-17)	1690639	25
HC-K-KV-M32(15-21)	1690642	10



Metal gland



EMC gland



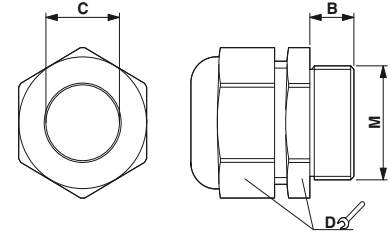
Technical data	
Nickel-plated brass	Nickel-plated brass
PA	PA
Neoprene	TPE
NBR	NBR
-	-
IP68, to 5 bar	IP65
-20 °C ... 100 °C	-20 °C ... 100 °C

Ordering data		
Type	Order No.	Pcs. / Pkt.
HC-M-KV-M20(9-13)	1690561	25
HC-M-KV-M20(11-16)	1645998	25
HC-M-KV-M25(11-16)	1690574	25
HC-M-KV-M25(14-21)	1646007	25
HC-M-KV-M32(14-21)	1690587	10
HC-M-KV-M32(19-27)	1646010	10
HC-M-KV-M20(1ASI)	1584017	10
HC-M-KV-M25(1ASI)	1584020	10
HC-M-KV-M25(1X10/1X11)	1580228	10

Technical data	
Nickel-plated brass	
PA	
Neoprene	
NBR	
-	
IP68, to 5 bar	
-20 °C ... 100 °C	

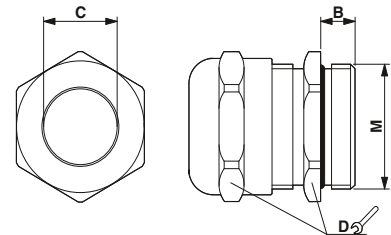
Ordering data		
Type	Order No.	Pcs. / Pkt.
HC-EMV-KV-M20(7-12,5)	1690503	25
HC-EMV-KV-M25(9-16,5)	1690516	25
HC-EMV-KV-M32(11-21)	1690529	25

Type	Dimensions [mm]		Thread	
	B	C	M	D
HC-K-KV-M20...	8	13.5	20	24
HC-K-KV-M25...	8	17.5	25	29
HC-K-KV-M32...	10	21.5	32	36



Dimensional drawing: HC-K-KV-M...

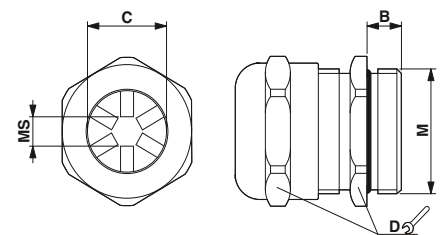
Type	Dimensions [mm]		Thread	
	B	C	M	D
HC-M-KV-M20(9-13)	6	13.3	20	22
HC-M-KV-M20(11-16)	6	16.2	20	27
HC-M-KV-M25(11-16)	7	17.3	25	27
HC-M-KV-M25(14-21)	7	21.2	25	34
HC-M-KV-M32(14-21)	8	21.3	32	34
HC-M-KV-M32(19-27)	8	27.5	32	43
HC-M-KV-M20(1ASI)	6	-	20	22
HC-M-KV-M25(1ASI)	7	-	25	27
HC-M-KV-M25(1X10X11)	7	-	25	34



Dimensional drawing: HC-M-KV-M...

Type	Dimensions [mm]				
	B	C	M	MS ¹⁾	D
HC-EMV-KV-M20...	8	12.5	20	5	24
HC-EMV-KV-M25...	8	16.5	25	7.5	29
HC-EMV-KV-M32...	9	21.0	32	9	36

¹⁾ Minimum shield diameter



Dimensional drawing: HC-EMV-KV-M...

Rectangular plug-in connectors

Screw connections and accessories

Pg16 cable glands for one cable



**Screw connection
with plastic pressure screw**



**Screw connection
with brass pressure screw,
EMC screw connections with iris spring**



Technical data

Material data	
Sealing material	TPE
Cable gland material	-
Material, pressure screw	Polyamide
Degree of protection	IP67
Torque	5.00 [Nm]
Ambient temperature (operation)	-20 °C ... 100 °C

Ordering data

Description	Cable Ø [mm]
-------------	--------------

Cable screw connection gland, for adapting the Pg half screw connections to metric cable entry, M25

Half screw connection Pg16, consisting of rubber seal with a hole and a pressure screw, for type VC1 housing

4 ... 6.5	VC-K-KV-PG16(4- 6,5)
5 ... 8	VC-K-KV-PG16(5- 8)
6,5 ... 9.5	VC-K-KV-PG16(6,5- 9,5)
7 ... 10.5	VC-K-KV-PG16(7-10,5)
9 ... 13	VC-K-KV-PG16(9-13)
11,5 ... 15.5	VC-K-KV-PG16(11,5-15,5)
Elongated hole	VC-K-KV-PG16 7/14
	VC-K-KV-PG16 3X7

EMC half screw connection Pg16, for metal housing, consisting of rubber seal, iris spring, cone disc and pressure screw, for type VC1 housing, shield diameter:

6.5 mm	6.5 ... 9.5
8.5 mm	7 ... 10.5
10.5 mm	9 ... 13

Closing cap, for closing unused bore holes in multiple seals and cable glands

Ø 3 mm	SEALING PLUG 3X12 RD
Ø 5 mm	SEALING PLUG 5X12 RD
Ø 6 mm	SEALING PLUG 6X16 RD
Ø 7 mm	SEALING PLUG 7X16 RD
Ø 8 mm	SEALING PLUG 8X16 RD
Ø 12 mm	SEALING PLUG 12X22 RD

Technical data

Material data	
Sealing material	TPE
Cable gland material	-
Material, pressure screw	Nickel-plated brass
Degree of protection	IP67
Torque	7.50
Ambient temperature (operation)	-40 °C ... 125 °C

Ordering data

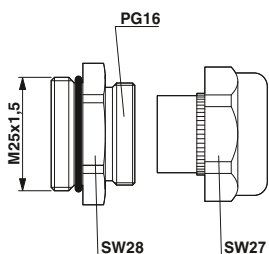
Type	Order No.	Pcs. / Pkt.
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VC-M-KV-PG16/M25 ST	1644407	10
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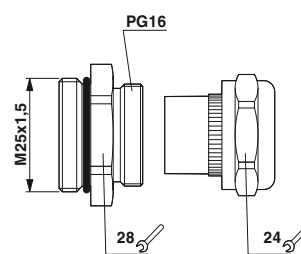
VC-M-KV-PG16(4- 6,5)	1853942	5
VC-M-KV-PG16(5- 8)	1853955	5
VC-M-KV-PG16(6,5- 9,5)	1853968	5
VC-M-KV-PG16(7-10,5)	1853971	5
VC-M-KV-PG16(9-13)	1853984	5
VC-M-KV-PG16(11,5-15,5)	1854857	5
VC-M-KV-PG16 2X6/1X7	1885512	5
VC-M-KV-PG16 3X7	1885525	5

VC-EMV-KV-PG16(6,5- 9,5/ 6,5)	1854132	1
VC-EMV-KV-PG16(7-10,5/ 8,5)	1854161	1
VC-EMV-KV-PG16(9-13/10,5)	1854174	1

SEALING PLUG 3X12 RD	1400238	10
SEALING PLUG 5X12 RD	1400253	10
SEALING PLUG 6X16 RD	1400254	10
SEALING PLUG 7X16 RD	1400255	10
SEALING PLUG 8X16 RD	1400257	10
SEALING PLUG 12X22 RD	1400260	10



VC-M-KV-PG16/M25 ST / VC-K-KV-PG16...



VC-M-KV-PG16/M25 ST / VC-M-KV-PG16...

Pg21 cable glands for one cable



Screw connection
with plastic pressure screw



Screw connection
with brass pressure screw,
EMC screw connections with iris spring



Technical data

Material data	
Sealing material	TPE
Cable gland material	-
Material, pressure screw	Polyamide
Degree of protection	IP67
Torque [Nm]	7.50
Ambient temperature (operation)	-20 °C ... 100 °C

Ordering data

Description	Cable Ø [mm]
-------------	--------------

Cable screw connection gland, for adapting the Pg half screw connections to metric cable entry, M32

Half screw connection Pg21, consisting of rubber seal with a hole and a pressure screw, for type VC2 ... VC4 housing

7 ... 10.5
9 ... 13
11.5 ... 15.5
14 ... 18
17 ... 20.5
20 x 7

Elongated hole

EMC half screw connection Pg21, for metal housing, consisting of rubber seal, iris spring, cone disc and pressure screw, for type VC2 ... VC4 housing, shield diameter:

9.5 mm	9 ... 13
12 mm	9 ... 13
13.5 mm	11.5 ... 15.5
14.5 mm	14 ... 18

Dummy screw connection, rubber seal without hole

Closing cap, for closing unused bore holes in multiple seals and cable glands

Ø 3 mm
Ø 5 mm
Ø 6 mm
Ø 7 mm
Ø 8 mm
Ø 12 mm
Ø 13 mm

Type	Order No.	Pcs. / Pkt.
VC-M-KV-PG21/M32 ST	1644397	10
VC-K-KV-PG21(7-10,5)	1853890	5
VC-K-KV-PG21(9-13)	1853900	5
VC-K-KV-PG21(11,5-15,5)	1853913	5
VC-K-KV-PG21(14-18)	1853926	5
VC-K-KV-PG21(17-20,5)	1853939	5
VC-K-KV-PG21(20X7)	1885198	5

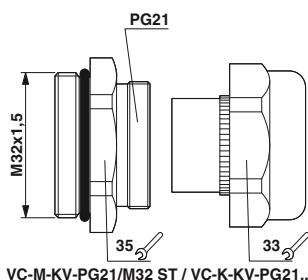
VC-K-KV-PG21-O	1885363	5
SEALING PLUG 3X12 RD	1400238	10
SEALING PLUG 5X12 RD	1400253	10
SEALING PLUG 6X16 RD	1400254	10
SEALING PLUG 7X16 RD	1400255	10
SEALING PLUG 8X16 RD	1400257	10
SEALING PLUG 12X22 RD	1400260	10
SEALING PLUG 13X22 RD	1400265	10

Technical data

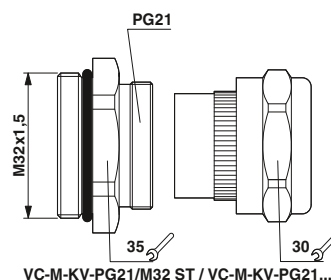
TPE
-
Nickel-plated brass
IP67
10.00
-40 °C ... 125 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
VC-M-KV-PG21/M32 ST	1644397	10
VC-M-KV-PG21(7-10,5)	1853997	5
VC-M-KV-PG21(9-13)	1854006	5
VC-M-KV-PG21(11,5-15,5)	1854035	5
VC-M-KV-PG21(14-18)	1854048	5
VC-M-KV-PG21(17-20,5)	1854051	5
VC-M-KV-PG21(20X 7)	1885305	5
VC-EMV-KV-PG21(9-13/ 9,5)	1854200	1
VC-EMV-KV-PG21(9-13/12)	1854213	1
VC-EMV-KV-PG21(11,5-15,5/13,5)	1854242	1
VC-EMV-KV-PG21(14-18/14,5)	1854255	1
VC-M-KV-PG21- 0	1854983	5
SEALING PLUG 3X12 RD	1400238	10
SEALING PLUG 5X12 RD	1400253	10
SEALING PLUG 6X16 RD	1400254	10
SEALING PLUG 7X16 RD	1400255	10
SEALING PLUG 8X16 RD	1400257	10
SEALING PLUG 12X22 RD	1400260	10
SEALING PLUG 13X22 RD	1400265	10



VC-M-KV-PG21/M32 ST / VC-K-KV-PG21...



VC-M-KV-PG21/M32 ST / VC-M-KV-PG21...

Rectangular plug-in connectors

Screw connections and accessories

Pg16 cable glands for several cables

The screw connection glands allow multiple grommets to be used.



Screw connection
with plastic pressure screw



Screw connection
with brass pressure screw

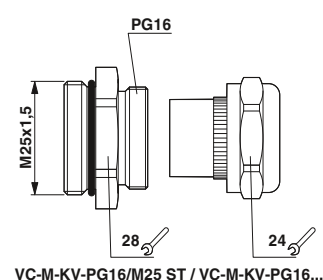
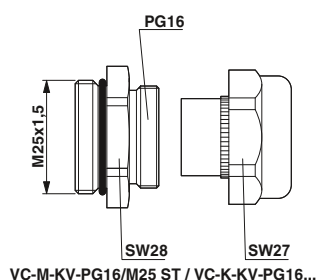


Technical data		
VC-K-KV.../...	VC-M-KV...ST	
-	Brass, nickel-plated	
TPE	-	
-	NBR	
IP65	-	
-20 °C ... 100 °C		
-		
Ordering data		
Type	Order No.	Pcs. / Pkt.
VC-M-KV-PG16/M25 ST	1644407	10
VC-K-KV-PG16 1X3/1X8	1885376	5
VC-K-KV-PG16 1X3/1X9	1885389	5
VC-K-KV-PG16 1X6/1X8	1885392	5
VC-K-KV-PG16 1X5/1X9	1885402	5
VC-K-KV-PG16 1X3/2X8	1885415	5
VC-K-KV-PG16 1X5/2X6	1885428	5
VC-K-KV-PG16 2X6/1X7	1885431	5
VC-K-KV-PG16 3X7	1885444	5
SEALING PLUG 3X12 RD	1400238	10
SEALING PLUG 5X12 RD	1400253	10
SEALING PLUG 6X16 RD	1400254	10
SEALING PLUG 7X16 RD	1400255	10
SEALING PLUG 8X16 RD	1400257	10
SEALING PLUG 12X22 RD	1400260	10
SEALING PLUG 13X22 RD	1400265	10



Technical data		
VC-M-KV.../...	VC-M-KV...ST	
Brass, nickel-plated	Brass, nickel-plated	
TPE	-	
-	NBR	
IP65	-	
-40 °C ... 125 °C		
-		
Ordering data		
Type	Order No.	Pcs. / Pkt.
VC-M-KV-PG16/M25 ST	1644407	10
VC-M-KV-PG16 1X3/1X8	1885457	5
VC-M-KV-PG16 1X3/1X9	1885460	5
VC-M-KV-PG16 1X6/1X8	1885473	5
VC-M-KV-PG16 1X5/1X9	1885486	5
VC-M-KV-PG16 1X3/2X8	1885499	5
VC-M-KV-PG16 1X5/2X6	1885509	5
VC-M-KV-PG16 2X6/1X7	1885512	5
VC-M-KV-PG16 3X7	1885525	5
SEALING PLUG 3X12 RD	1400238	10
SEALING PLUG 5X12 RD	1400253	10
SEALING PLUG 6X16 RD	1400254	10
SEALING PLUG 7X16 RD	1400255	10
SEALING PLUG 8X16 RD	1400257	10
SEALING PLUG 12X22 RD	1400260	10
SEALING PLUG 13X22 RD	1400265	10

Material data	Cable Ø [mm]
Material	
Sealing material	
Material, O-ring	
Degree of protection	
Temperature data	
Ambient temperature (operation)	
Description	
Cable screw connection gland, for adapting the Pg half screw connections to metric cable entry, M25	
Half screw connection Pg16, consisting of rubber seal with several holes and a pressure screw, for type VC1 housing and HEAVYCON, further types upon request	
	1 x 3 / 1 x 8
	1 x 3 / 1 x 9
	1 x 6 / 1 x 8
	1 x 5 / 1 x 9
	1 x 3 / 2 x 8
	1 x 5 / 2 x 6
	2 x 6 / 1 x 7
	3 x 7
Closing cap, for closing unused bore holes in multiple seals and cable glands	
Ø 3 mm	
Ø 5 mm	
Ø 6 mm	
Ø 7 mm	
Ø 8 mm	
Ø 12 mm	
Ø 13 mm	



Pg21 cable glands for several cables

The screw connection glands allow multiple grommets to be used.



Screw connection
with plastic pressure screw



Screw connection
with brass pressure screw



Technical data	
VC-K-KV.../...	VC-M-KV...ST
Material	PA
Sealing material	TPE
Material, O-ring	-
Degree of protection	NBR
Temperature data	-
Ambient temperature (operation)	-20 °C ... 100 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
VC-M-KV-PG21/M32 ST	1644397	10
VC-K-KV-PG21 1X6/2X9	1885538	5
VC-K-KV-PG21-1X8,5/1X12	1885279	5
VC-K-KV-PG21-2X4,5/1X13	1885282	5
VC-K-KV-PG21 2X6/2X8	1885554	5
VC-K-KV-PG21 2X7,2/1X10,5	1885567	5
VC-K-KV-PG21 3X7	1885570	5
VC-K-KV-PG21 3X9	1885583	5
VC-K-KV-PG21 4X6,5	1885596	5
VC-K-KV-PG21 4X8	1885606	5
SEALING PLUG 3X12 RD	1400238	10
SEALING PLUG 5X12 RD	1400253	10
SEALING PLUG 6X16 RD	1400254	10
SEALING PLUG 7X16 RD	1400255	10
SEALING PLUG 8X16 RD	1400257	10
SEALING PLUG 12X22 RD	1400260	10
SEALING PLUG 13X22 RD	1400265	10



Technical data	
VC-M-KV.../...	VC-M-KV...ST
Material	Brass, nickel-plated
Sealing material	TPE
Material, O-ring	-
Degree of protection	NBR
Temperature data	-
Ambient temperature (operation)	-40 °C ... 125 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
VC-M-KV-PG21/M32 ST	1644397	10
VC-M-KV-PG21 1X6/2X9	1885619	5
VC-M-KV-PG21-1X8,5/1X12	1854970	5
VC-M-KV-PG21 2X6/2X8	1885635	5
VC-M-KV-PG21 2X7,2/1X10,5	1885648	5
VC-M-KV-PG21 3X7	1885651	5
VC-M-KV-PG21 3X9	1885664	5
VC-M-KV-PG21 4X6,5	1885677	5
VC-M-KV-PG21 4X8	1885680	5
SEALING PLUG 3X12 RD	1400238	10
SEALING PLUG 5X12 RD	1400253	10
SEALING PLUG 6X16 RD	1400254	10
SEALING PLUG 7X16 RD	1400255	10
SEALING PLUG 8X16 RD	1400257	10
SEALING PLUG 12X22 RD	1400260	10
SEALING PLUG 13X22 RD	1400265	10

Material data
Material
Sealing material
Material, O-ring
Degree of protection
Temperature data
Ambient temperature (operation)

Description	Cable Ø [mm]
-------------	--------------

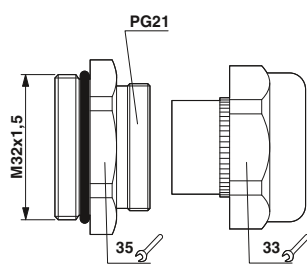
Cable screw connection gland, for adapting the Pg half screw connections to metric cable entry, M32

Half screw connection Pg21, consisting of rubber seal, several holes and a pressure screw, for type VC2 ... VC4 and HEAVYCON housing, additional types available on request

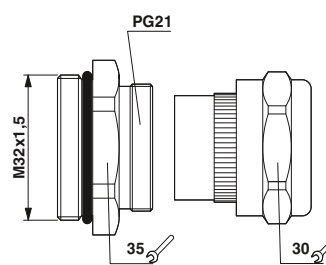
1 x 6 / 2 x 9
1 x 8,5 / 1 x 12
2 x 4,5 / 1 x 13
2 x 6 / 2 x 8
2 x 7,2 / 1 x 10,5
3 x 7
3 x 9
4 x 6,5
4 x 8

Closing cap, for closing unused bore holes in multiple seals and cable glands

Ø 3 mm
Ø 5 mm
Ø 6 mm
Ø 7 mm
Ø 8 mm
Ø 12 mm
Ø 13 mm



VC-M-KV-PG21/M32 ST / VC-K-KV-PG21...



VC-M-KV-PG21/M32 ST / VC-M-KV-PG21...

Rectangular plug-in connectors

Screw connections and accessories

Protective covers

- Easy to assemble
- Contact inserts are protected when not plugged in



Protective cover for panel mounting bases and sleeve housings



Protective cover for panel mounting frame

Material
Inflammability class in acc. with UL 94
Degree of protection
Temperature data
Ambient temperature (operation)

PA
V0
IP50

-40 °C ... 80 °C

Technical data

Ordering data

Description	Design	Type	Order No.	Pcs. / Pkt.
Protective covers, for sleeve housings	VC1	VC-SD-T1	1886728	5
	VC2	VC-SD-T2	1886731	5
	VC3	VC-SD-T3	1886744	5
	VC4	VC-SD-T4	1886757	5
Protective cover, for the panel mounting side	VC1	VC-SD-A1	1886760	5
	VC2	VC-SD-A2	1886773	5
	VC3	VC-SD-A3	1886786	5
	VC4	VC-SD-A4	1886799	5
Protective cover, for panel mounting frame	VC1			
	VC2			
	VC3			
	VC4			

PA
V0
IP40

-40 °C ... 80 °C

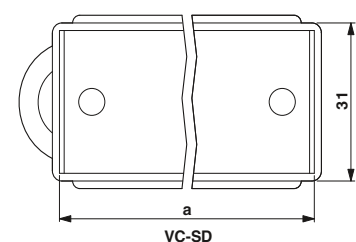
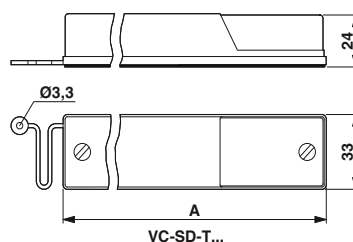
Technical data

Ordering data

Type	Order No.	Pcs. / Pkt.
VC-SD1	1853670	5
VC-SD2	1853683	5
VC-SD3	1853696	5
VC-SD4	1853706	5

Type	A [mm]	a [mm]
VC-SD...1	59	53.5
VC-SD...2	74	68.5
VC-SD...3	89	83.5
VC-SD...4	104	98.5

Dimensions table



Adapter plates for modular contact inserts

Notes:

For dimensional drawings, refer to page 58



The adapter plates can be used to mount VARIOCON plug-in connectors on the popular panel cutouts of the HEAVYCON B series.

Material
Sealing material
Degree of protection

V2A
NBR
IP65



Adapter plates for modular contact inserts

Technical data

Ordering data

Description	Design
Adapter plates , 2 mm thick, for HEAVYCON-B16 panel cutouts, incl. flat gasket	VC1
	VC2
	VC3
Adapter plates , 2 mm thick, for HEAVYCON-B24 panel cutouts, incl. flat gasket	VC1
	VC2
	VC3
	VC4

Type	Order No.	Pcs. / Pkt.
HC-B 16-ADP-VC-1	1885758	5
HC-B 16-ADP-VC-2	1885761	5
HC-B 16-ADP-VC-3	1885774	5
HC-B 24-ADP-VC-1	1885813	5
HC-B 24-ADP-VC-2	1885826	5
HC-B 24-ADP-VC-3	1885839	5
HC-B 24-ADP-VC-4	1885842	5

Adapter plates for crimp contact carriers

Notes:

For dimensional drawings, refer to page 58

Material
Sealing material
Degree of protection

V2A
NBR
IP65



Adapter plates for crimp inserts

Technical data

Ordering data

Description	Design
Adapter plates , 2 mm thick, for HEAVYCON-B16 panel cutouts, incl. flat gasket	VC1
	VC2
	VC3
Adapter plates , 2 mm thick, for HEAVYCON-B24 panel cutouts, incl. flat gasket	VC1
	VC2
	VC3
	VC4

Type	Order No.	Pcs. / Pkt.
HC-B 16-ADP-VC-C1	1885787	5
HC-B 16-ADP-VC-C2	1885790	5
HC-B 16-ADP-VC-C3	1885800	10
HC-B 24-ADP-VC-C1	1885855	5
HC-B 24-ADP-VC-C2	1885868	5
HC-B 24-ADP-VC-C3	1885871	5
HC-B 24-ADP-VC-C4	1885884	5

Rectangular plug-in connectors

Screw connections and accessories

Accessories



Ordering data			
Description	Type	Order No.	Pcs. / Pkt.
Dummy modules ① for panel mounting connectors for sleeve connectors	VC-A 2-BM VC-T 2-BM	1607815 1607813	50 50
Replacement profile gasket , for sleeve housings and supporting base elements of type: VC1 VC2 VC3 VC4 ②	VC-T1-PR-D1 VC-T2-PR-D1 VC-T3-PR-D1 VC-T4-PR-D1	1607832 1607835 1607838 1607841	50 50 50 50
FSMA connector set , with bend protection sleeve for polymer fiber cable, for contact carrier module VC-AFOS 2, (2 pcs. each as set) ③	VC-FSMA-M-KT-2 SET	1855703	1
FSMA connector , for polymer fiber cable, for contact carrier module VC-AFOS 2, (2 pcs. each as set) ④	VC-FSMA-M-2 SET	1855432	1
Polisher , metal, for repeated preparation of VARIOCON fiber optic ferrules ⑤	VC-POLISHER/M FSMA	1884982	1
Polymer fiber polishing set for quick mounting connectors, comprising polishing pads and polishing disks - For F-SMA connectors ⑥	PSM-SET-FSMA-POLISH	2799348	1
Stripping tool for FO cables ⑦ - stripping tool for individual elements	PSM-FO-STRIP	2744199	1
Electronic diagonal cutter , round head, with chamfer, with opening spring ⑧	MICROFOX-SB	1212489	1
Replacement screws ⑨ for panel mounting frames for sleeve frames	VC-AR-S VC-TR-S	1607829 1607826	50 50
Coding pins , to prevent identical connectors from being confused ⑩ Coding bolts with ST 2.9 thread for sleeve housings Coding bolts with M3 thread for panel mounting bases Coding profile, for VC-...6 and VC-...8 Coding profile	VC-CB-T VC-CB-A CP-MSTB CP-HCC 4	1607884 1607888 1734634 1600027	10 10 100 100
Marker labels, unprinted , 5-section, for individual labeling with B-STIFT or CMS system (25 labels per pack), white ⑪	VC-BZS WH	1852875	5
Plastic label sheet , self-adhesive double-layer plastic labels, material thickness: 0.8 mm, with rounded corners, radius: 2 mm ⑫ 1 sheet = 32 labels	GPE 22X22 SR/R	0806628	10

Corrugated pipe, corrugated pipe screw connections

Using the Corrugated pipe screw connection, any number of wires or single cores can be led to one plug-in connector.

To disassemble the Corrugated pipe screw connection, the matching WR-OEF... Corrugated pipe opener is necessary.



Corrugated pipe



Corrugated pipe screw connections, seals, and N/C contacts



Material
Inflammability class according to UL 94
Degree of protection
Temperature data
Ambient temperature (operation)

PA
HB
-
-40 °C ... 110 °C

Description

Corrugated pipe, design:
Pg16, bending radius: 35 mm
Pg21 / M25, bending radius: 40 mm
Pg29 / M32, bending radius: 55 mm
M40, bending radius: 60 mm

Pg Corrugated pipe screw connection, for Corrugated pipes to lead individual conductors and wires into the housings of HEAVYCON industrial connectors,
Design:
Pg16
Pg21
Pg29

Metric Corrugated pipe screw connection, for insertion of individual conductors and wires in the housings of the HEAVYCON industrial connectors,
Design:
M25
M32
M40

Seal, outside, to increase protection type to IP66,
Design:
Pg16
Pg21 / M25
Pg29 / M32
M40

Opener for Corrugated pipe, to corrugated pipe screw connection, design:
Pg16
Pg21 / M25
Pg29 / M32
M40

Technical data

Ordering data

Type	Order No.	Pcs. / Pkt.
WR/PG16-50M	1666841	1
WR/PG21-50M	1666867	1
WR/PG29-25M	1666854	1
WR/M40-25M	1644889	1

Technical data

PA
HB
IP65

-40 °C ... 110 °C

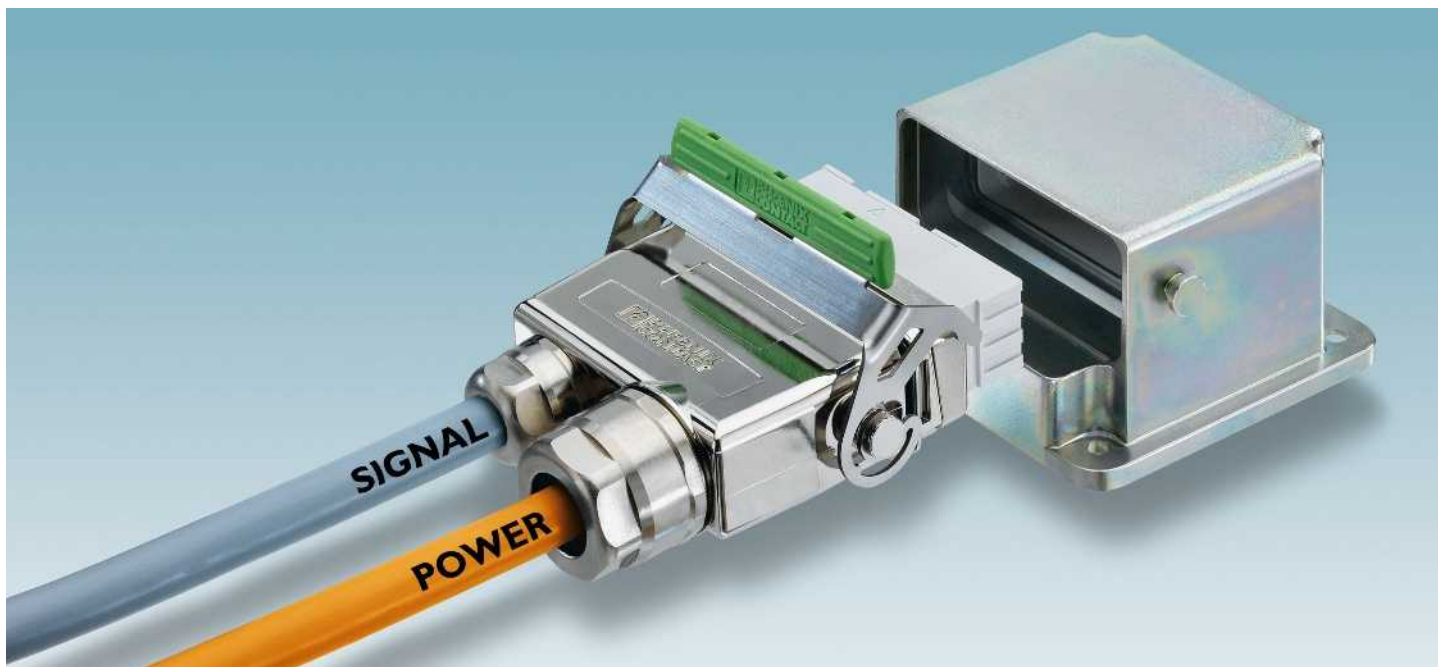
Ordering data

Type	Order No.	Pcs. / Pkt.
HC-WRV-PG16	1666812	10
HC-WRV-PG21	1666825	10
HC-WRV-PG29	1666838	10
HC-WRV-M25	1644902	10
HC-WRV-M32	1644915	10
HC-WRV-M40	1644850	10
WR-DA-PG16	1686685	5
WR-DA-PG21	1686698	5
WR-DA-M32/PG29	1644847	5
WR-DA-M40	1644876	5
WR-OEF-PG16	1853638	5
WR-OEF-PG21	1853612	5
WR-OEF-PG29	1853641	5
WR-OEF-M40	1644892	5

Rectangular plug-in connectors

Hybrid plug-in connectors

Hybrid plug-in connector for motor connection



Are motor terminal boxes the cheapest option?

Not always! When considered as a whole, a sophisticated connector concept is quite capable of replacing the motor terminal box.

The increasing automation of machines and systems, the demand for the best possi-

ble system availability and the need for a quick, uncomplicated startup are calling for new connector concepts.

The motor connectors from the DUPLICON series can save a huge amount of time:

The new hybrid plug-in connector combines signals and power in parallel in the

same housing. The two cables are connected to the contact insert using the push-in connection method without tools, quickly, and above all, reliably.

The housing on the motor side has an M12 thread for an external brake cable gland.



Thanks to the robust locking latch, the motor connection can be isolated in seconds. There is no need to call out a skilled electrical engineer.



With a motor connector, the star-delta bridge of the motor is located in the sleeve housing. In the event of changes to the wiring, the motor does not need to be opened in order to replace the bridges of the terminal board. Now, only the sleeve needs to be lifted and the star-delta bridge piece rotated.

The rewiring is complete.



Protection against mismating - the coding of the connector - is implemented by plastic profiles. Laborious and time-consuming coding using metal bolts is thus eliminated. coding is performed in a matter of moments by the simple placement of plastic profiles.

Hybrid plug-in connector for motor connection

- Panel mounting base also available with third-party logo
- Other flange dimensions on request
- Crimp contacts can be removed without tool

Notes:

Connectors may only be operated when not under load.

For dimensional drawings, connector pin assignments, and flange drawing, see page 59



**Sleeve connector,
3-pos. + PE power contacts /
4-pos. control contacts**



**Panel mounting base,
6-pos. + PE power contacts /
4-pos. control contacts**



Technical data		
	Power contacts	Control contacts
Electrical data according to DIN EN 61984:2001		
Rated voltage	400/800 V	250 V
Rated current	16.5 A	2.5 A
Surge voltage category / pollution degree		III / 3
Material data		
Housing material	GD-Zn	
Locking latch material	Stainless steel	
Contact material	Copper alloy	Copper alloy
Contact surface material	Ag	Au
Contact carrier material	PA	PA
Inflammability class according to UL 94	V0	V0
External cable diameter	7 mm ... 14.5 mm (Unshielded cable)	4 mm ... 8.3 mm (Unshielded cable)
External cable diameter	9 mm ... 14.5 mm (Shielded cable)	4 mm ... 8.3 mm (Shielded cable, 4 mm min. shield diameter)
Mechanical data		
Conductor cross section	0.5 mm ² ... 2.5 mm ²	0.5 mm ² ... 1.5 mm ²
Connection cross section AWG	20 ... 14	20 ... 16
Insertion/withdrawal cycles		≥ 100
Degree of protection		IP67
Temperature data		
Ambient temperature (operation)	-30 °C ... 100 °C	-30 °C ... 100 °C

Ordering data		
Type	Order No.	Pcs. / Pkt.
HC-MOT-TML-SET	1409066	1

Accessories		
HC-MOT-SD-FLT-KU-IP54	1409134	10
HC-MOT-ST/DR-BR	1409150	10
CP-HCC 4	1600027	100



Technical data		
	Power contacts	Control contacts
Electrical data according to DIN EN 61984:2001		
Rated voltage	400/800 V	250 V
Rated current	16.5 A	2.5 A
Surge voltage category / pollution degree		III / 3
Material data		
Housing material	GD-Zn	
Locking latch material	-	
Contact material	Copper alloy	Copper alloy
Contact surface material	Au	Au
Contact carrier material	PA	PA
Inflammability class according to UL 94	V0	V0
External cable diameter		
Conductor cross section	0.35 mm ² ... 2.5 mm ²	0.14 mm ² ... 1 mm ²
Connection cross section AWG	20 ... 14	26 ... 18
Insertion/withdrawal cycles		≥ 100
Degree of protection		IP67
Temperature data		
Ambient temperature (operation)	-30 °C ... 100 °C	-30 °C ... 100 °C

Ordering data		
Type	Order No.	Pcs. / Pkt.
HC-MOT-AFL-SET	1409053	1

Accessories		
HC-MOT-SD-L-KU	1409147	10
CK2,0-ED-1,0ST AU	1409118	100
CK2,0-ED-2,5ST AU	1409095	100
CK1,0-ED-0,5ST AU	1409121	100
CK1,0-ED-1,0ST AU	1409082	100
CRIMPFOX-TC MP-1	1212620	1
CP-HCC 4	1600027	100

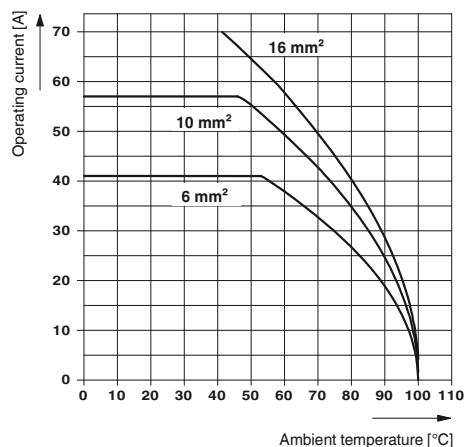
Description
Motor connector for three-phase drive , metal housing with EMC sleeves incl. push-in contact insert, with screw connections (power and control circuit), with filler plugs in the control cable screw connection, 4-pos. control circuit, with star-delta bridge, with IP54 protective cover
Plug-in connector on motor side , EMC metal housing attachment incl. crimp contact insert, with flat gasket and coated protective cover, without crimp contacts, housing with coatable thick-layer passivation

Protective cover for the sleeve housing, IP54
Coated protective cover for the housing on the motor side
Star-delta replacement bridge
Turned power crimp contacts , for connection cross section: 0.25 - 1.0 mm ² , pin 1.0 - 2.5 mm ² , pin
Turned signal crimp contacts , for connection cross section: 0.14 - 0.5 mm ² , pin 0.50 - 1.0 mm ² , pin
Crimping pliers
Coding profile , prevents similar connectors from being mixed up

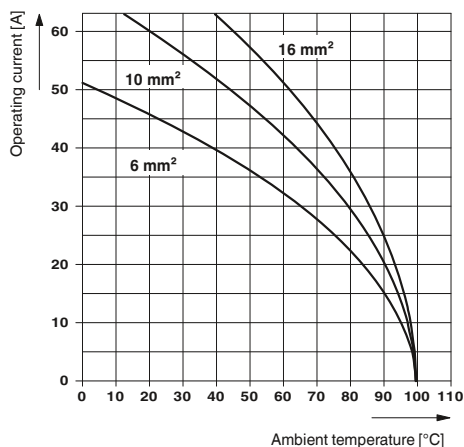
Rectangular plug-in connectors

Derating diagrams and dimensional drawings

Power inserts Derating diagrams

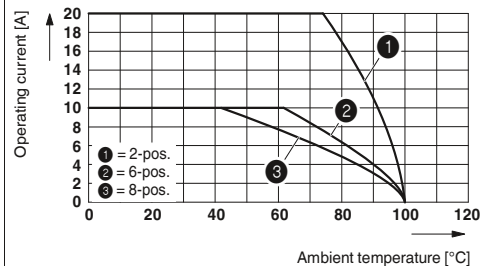


Derating diagram: VC-AMS 4



Derating diagram: VC-AML 4

Contact inserts Derating diagrams



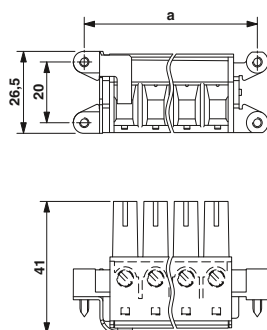
Derating diagram

Dimensional drawings of power contact inserts

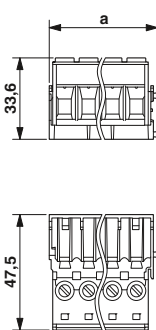
Type	Dimension a [mm]
VS-TFS 4...	57.8
VS-TFS 5...	72.8
VS-TFS 7...	87.5

Type	Dimension a [mm]
VS-AMS 4...	45
VS-AMS 5...	60
VS-AMS 7...	75

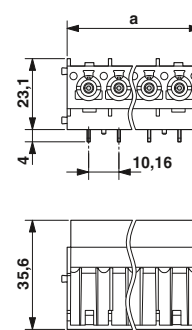
Type	Dimension a [mm]
VS-AML 4...	45
VS-AML 5...	60
VS-AML 7...	75



Dimensional drawing: VC-TFS...



Dimensional drawing: VC-AMS...

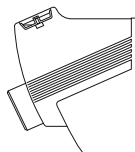


Dimensional drawing: VC-AML...

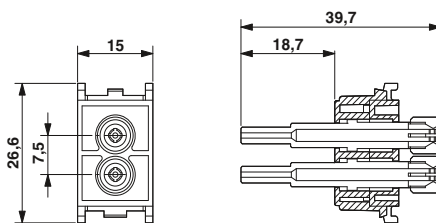
Fiber optic contact insert modules with screw connection

Recommended slots in the sleeve frame

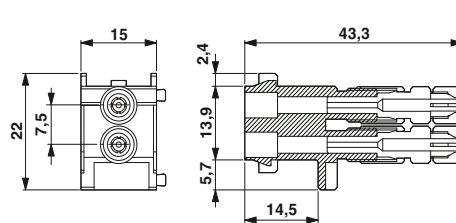
Sleeve frame size	VC-TFOS 2 module at position
1	1
2	1
3	1 and/or 2
4	2



Pos. 1
Pos. 2

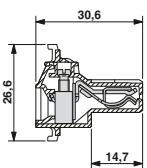


Dimensional drawing: VC-TFOS 2

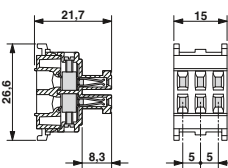


Dimensional drawing: VC-AFOS 2

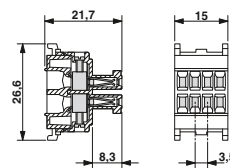
Dimensional drawings of contact inserts



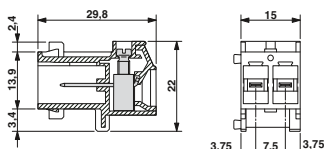
VC-TFS 2



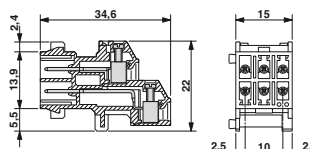
VC-TFS 6



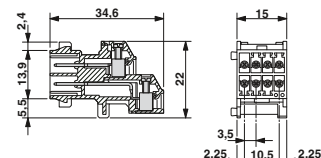
VC-TFS 8



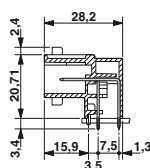
VC-AMS 2



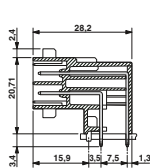
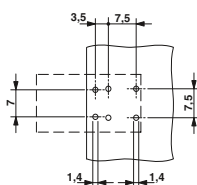
VC-AMS 6



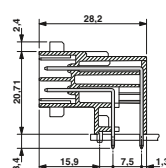
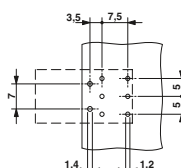
VC-AMS 8



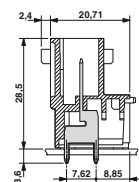
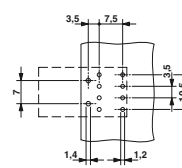
VC-AML 2



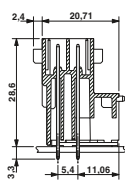
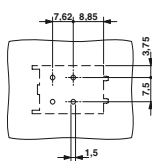
VC-AML 6



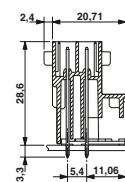
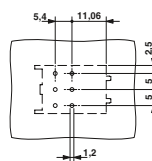
VC-AML 8



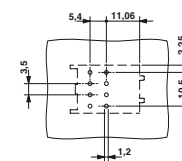
VC-AMLV 2



VC-AMLV 6

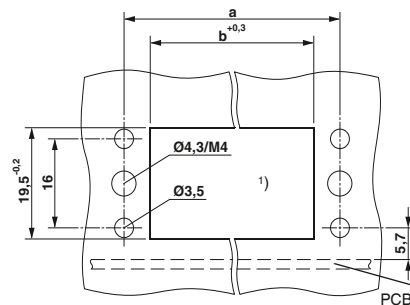
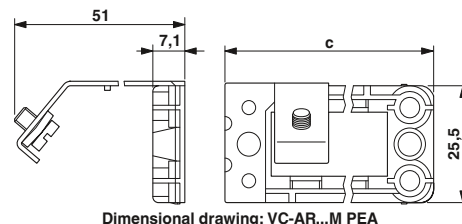
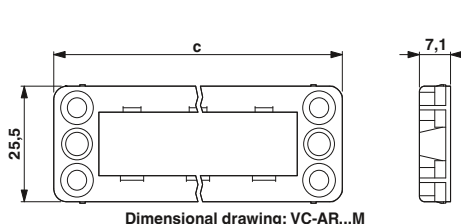


VC-AMLV 8

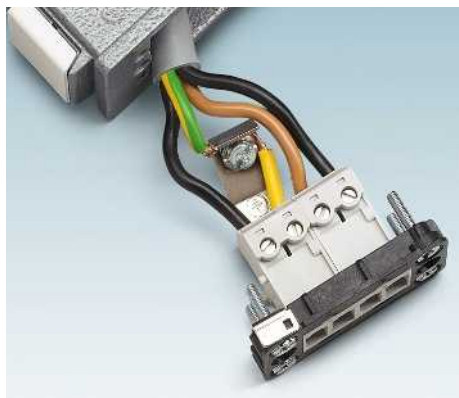
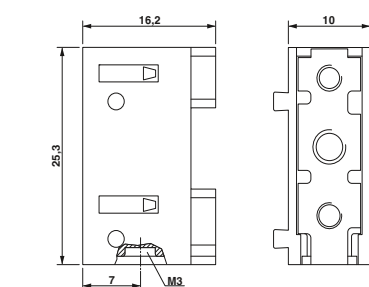


Panel mounting frame

Panel mounting frame type	Dimensions [mm]		
	a	b	c
VC-AR1/2M...	40.0	32.4	50.6
VC-AR2/3M...	55.0	47.4	65.6
VC-AR3/4M...	70.0	62.4	80.6
VC-AR4/5M...	85.0	77.4	95.6

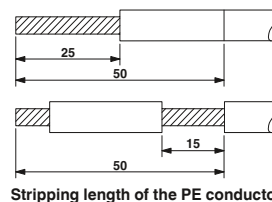


1) M3 and M4, if VC-AF is not needed.



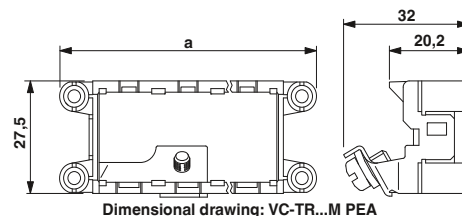
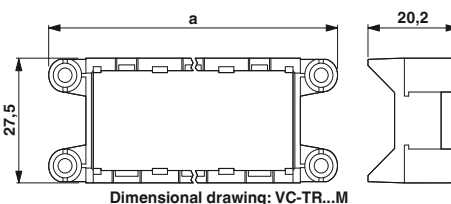
Assembly instructions:

Supporting base elements must be grounded at operating voltages > 42 V. The VC-AR...M-PEA frame has a PE sheet with a PE connection for this purpose. Strip 25 mm off the PE conductor and cut the insulation at 50 mm. Push the cut insulation forward by 15 mm. Connect the PE conductor to the contact of the module and clamp it to the PE sheet under the PE screw (see photo).



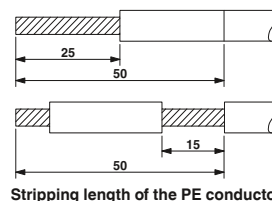
Sleeve frames

Sleeve frame type	Design	a [mm]
VC-TR1/2M...	VC 1	50.2
VC-TR2/3M...	VC 2	65.2
VC-TR3/4M...	VC 3	80.2
VC-TR4/5M...	VC 4	95.2

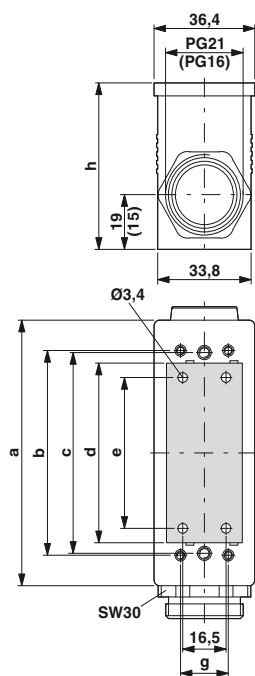


Assembly instructions:

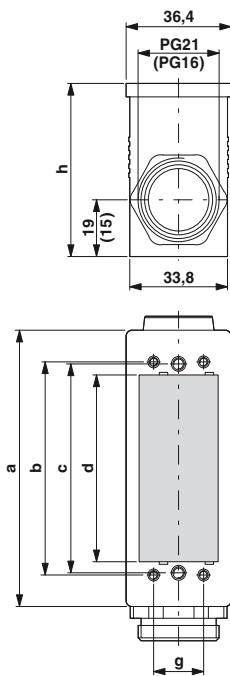
Metal sleeves must be grounded at operating voltages > 42 V. The VC-TR...M-PEA frame has a PE sheet with a PE connection for this purpose. Strip 25 mm off the PE conductor and cut the insulation at 50 mm. Push the cut insulation forward by 15 mm. Connect the PE conductor to the contact of the module and clamp it to the PE sheet under the PE screw (see photo).



Supporting base element



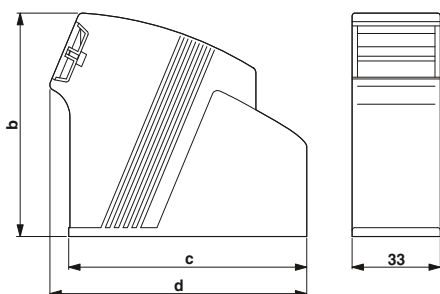
Box mounting base
Base with 4 fixing holes



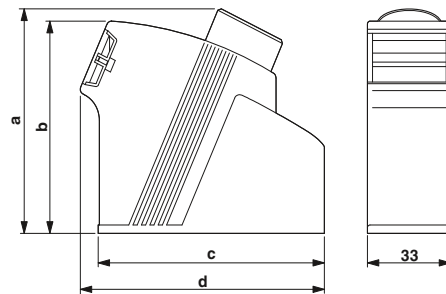
Coupling housing
Enclosed base

Dimensions VC-M...	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	g [mm]	h [mm]	Cable gland
Size 1	62.6	42.8	40	33	22.6	16	49	Pg16
Size 2	77.6	57.8	55	48	37.6	16	55	Pg21
Size 3	92.6	72.8	70	63	52.6	16	58	Pg21
Size 4	107.6	87.8	85	78	67.6	16	61	Pg21

Sleeve housing with metric cable entry

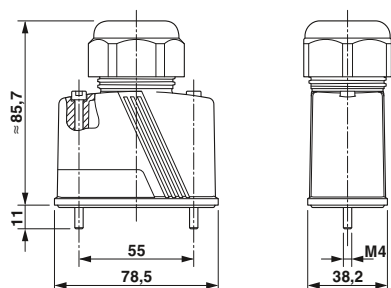


Sleeve housing with Pg cable outlet

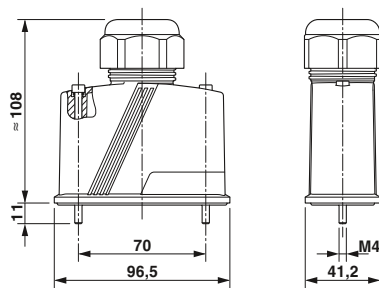


Sleeve housing		Dimensions [mm]			
Design	Width [mm]	a	b	c	d
VC 1	33	71	65	59	66
VC 2	33	73	65	74	81
VC 3	33	79	75	89	96
VC 4	33	79	75	104	111

Sleeve housing special designs



Power sleeve housing, VC2 design

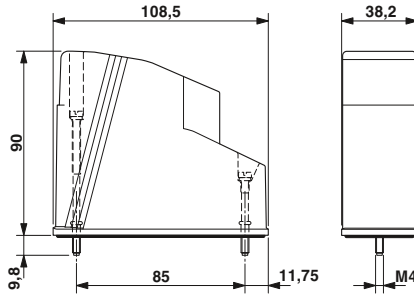
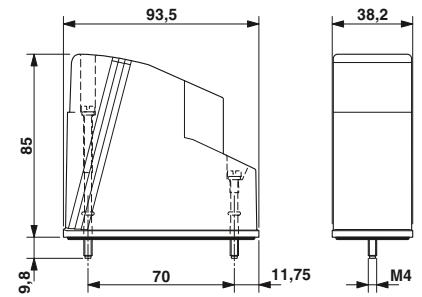
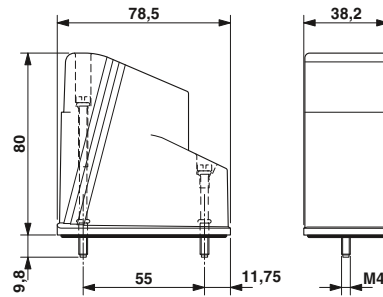
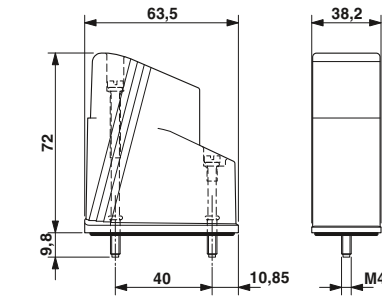


Power sleeve housing, VC3 design

Rectangular plug-in connectors

Derating diagrams and dimensional drawings

Sleeve housing, with metric cable entry, EMC-compatible



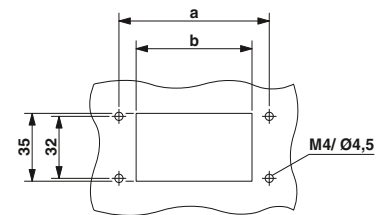
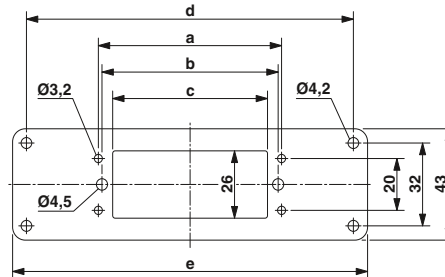
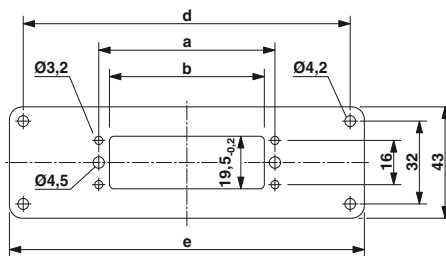
Dimensional drawings of adapter plates

Type	a [mm]	b [mm]	d [mm]	e [mm]
HC-B 16-ADP-VC-1	40.0	32.0	114	103
HC-B 16-ADP-VC-2	55.0	47.0	114	103
HC-B 16-ADP-VC-3	70.0	62.0	114	103
HC-B 24-ADP-VC-1	40.0	32.0	141	130
HC-B 24-ADP-VC-2	55.0	47.0	141	130
HC-B 24-ADP-VC-3	70.0	62.0	141	130
HC-B 24-ADP-VC-4	85.0	77.0	141	130

Type	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]
HC-B 16-ADP-VC-C1	42.8	40.0	31.5	114	103
HC-B 16-ADP-VC-C2	57.8	55.0	46.5	114	103
HC-B 16-ADP-VC-C3	72.8	70.0	61.5	114	103
HC-B 24-ADP-VC-C1	42.8	40.0	31.5	141	130
HC-B 24-ADP-VC-C2	57.8	55.0	46.5	141	130
HC-B 24-ADP-VC-C3	72.8	70.0	61.5	141	130
HC-B 24-ADP-VC-C4	87.8	85.0	76.5	141	130

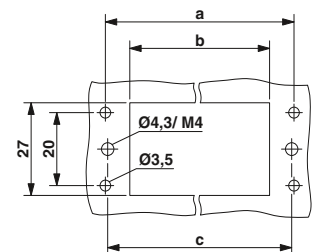
Type	a [mm]	b [mm]
VC-B 6-ADP...	70.0	52.0
VC-B 10-ADP...	83.0	65.0
VC-B 16-ADP...	103.0	86.0

Dimension table: VC-B...-ADP/2DSUB...

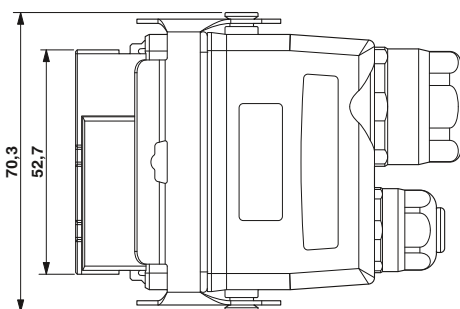
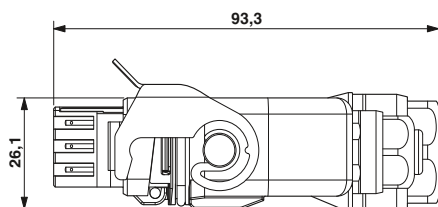


Type	a [mm]	b [mm]	c [mm]
VC-C1-ADP...	42.8	32.4	40.0
VC-C2-ADP...	57.8	47.4	55.0
VC-C3-ADP...	72.8	62.4	70.0

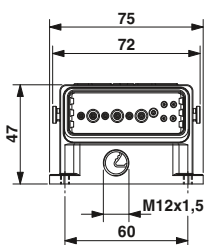
Dimension table: VC-C...-ADP/2DSUB...



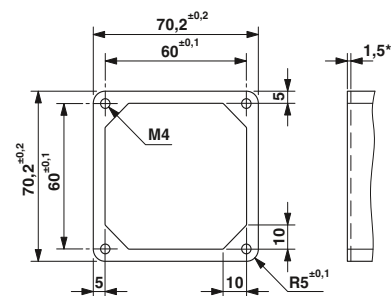
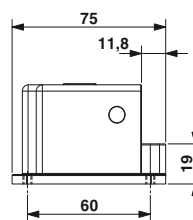
Hybrid plug-in connectors



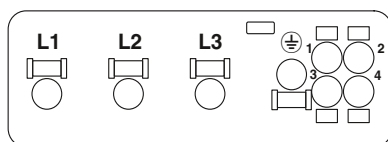
Dimensional drawing: sleeve plug-in connector



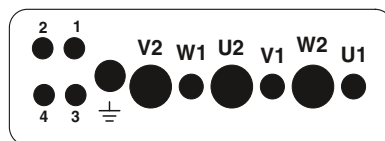
Dimensional drawing: panel mounting base



Dimensional drawing: flange
(1.5* = min. interface dimensions up to this height).



Pin assignment: socket
(connection side)



Pin assignment: pin
(connection side)



Data plug-in connectors and cables

Standardized data interfaces are increasingly being used in industrial applications as part of the decentralization of complex manufacturing systems and the increasing need for rapid information and data exchange. Industrial conditions place high demands on plug-in connectors, the connection technology, and cabling, which are completely different from office environments. Conventional fieldbuses include INTERBUS and PROFIBUS, Industrial Ethernet, PROFINET, and USB. With PLUSCON data, Phoenix Contact offers components suitable for industrial applications with IP20 and IP65/IP67 protection for these communication interfaces.

Complete installation system

The product range consists of plug-in connectors, panel feed-throughs, assembled cables, patch panels, terminal outlets, plus corresponding accessories and thereby forms a complete installation system. PLUSCON data is suitable for use in field and industrial hall cabling inside the control cabinet and for integration in devices with a high degree of protection.

Easy field assembly

User-friendly fast connection technologies are available for plug-in connector assembly, even under the harshest industrial conditions. RJ45, M12 QUICKON, and M12 Piercecon® can be assembled for Ethernet and PROFINET cabling without the need for special tools.

Copper and fiber optic

The SCRJ fiber optic plug-in connectors with IP20 and IP67 protection, which are particularly suitable for Industrial Ethernet and PROFINET, are available for all standard fiber types and are also equipped with established fast connection technologies. The assembly tool sets contain all the tools and materials needed for field assembly.

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System overview - fieldbuses	64
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M12 flush-type plug-in connectors	188
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USB plug-in connectors	205
D-SUB-based plug-in connectors	206

Industrial Ethernet

Ethernet

Ethernet

Ethernet

Ethernet



Area of application

Ethernet M8 (4-pos.)
All industrial environments

Ethernet M12 (4-pos.)
All industrial environments

Ethernet M12 (8-pos.)
All industrial environments

Ethernet M12/10G (8-pos.)
All industrial environments

Topology

Star, tree or line topology

Star, tree or line topology

Star, tree or line topology

Star, tree or line topology

Data transmission

Up to 100 Mbps

Up to 100 Mbps

Up to 1 Gbps

Up to 10 Gbps

Special plug-in connectors

M12 with shield crossover

Pin assignment

Signal des.	Plug-in connector		Signal des.	Plug-in connector		Signal des.	Plug-in connector		Signal des.	Plug-in connector	
	RJ45	M8		RJ45	M12		RJ45	M12		RJ45	M12
TD+	1	1	TD+	1	1	D1+	1	6	D1+	1	1
TD-	2	4	TD-	2	3	D1-	2	4	D1-	2	2
RD+	3	2	RD+	3	2	D3-	5	1	D3-	5	7
RD-	6	3	RD-	6	4	D3+	4	7	D3+	4	8
						D2+	3	5	D2+	3	3
						D2-	6	8	D2-	6	4
						D4+	7	2	D4+	7	5
						D4-	8	3	D4-	8	6

Signal designation, wire assignment

Wire color		Signal	Wire color		Signal	Wire color		Signal	Wire color		Signal
YE		TD+	WHOG		TD+	WHOG		D1+	WHOG		D1+
OG		TD-	OG		TD-	OG		D1-	OG		D1-
WH		RD+	WHGN		RD+	WHBU		D3-	WHBU		D3-
BU		RD-	GN		RD-	BU		D3+	BU		D3+
						WHGN		D2+	WHGN		D2+
						GN		D2-	GN		D2-
						WHBN		D4+	WHBN		D4+
						BN		D4-	BN		D4-

Segment length

Up to 100 m from hub/switch to termination device

Up to 100 m from hub/switch to termination device

Up to 100 m from hub/switch to termination device

Up to 100 m from hub/switch to termination device

User organization

Standardization of cabling

ISO/IEC 24702

ISO/IEC 24702

ISO/IEC 24702

ISO/IEC 24702

Plug-in connector pin assignments

Plug	Socket	Plug	Socket	Plug	Socket	Plug	Socket
M8, 4-pos.		M12, 4-pos., D-coded		M12, 8-pos., A-coded		M12, 8-pos., X-coded	
Plug	Socket	Plug	Socket	Plug	Socket	Plug	Socket
RJ45, 8-pos.		RJ45, 8-pos.		RJ45, 8-pos.		RJ45, 8-pos.	

Topology

See page page 66

See page 66

See page 66

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Ethernet

EtherNet/IP™



PROFINET



EtherCAT



sercos III



VARAN



Ethernet hybrid M12 (8-pos.)
All industrial environments

Automation applications in
industrial control technology

Production, process automa-
tion in the automotive industry

Automation technology

Motion control applications

Automation technology

Star, tree or line topology

Usually active star topology

Star, line, tree, and ring
structures. Hybrid forms also
supported.

Line, tree, star, and combina-
tions of these

Line, ring, and hierarchical,
cascaded network structures

Tree, line, and star topology

Up to 100 Mbps

Up to 100 Mbps

100 Mbps to 1 Gbps

100 Mbps, upgrade to Gigabit
Ethernet possible

Fast Ethernet with 100 Mbps

Up to Gigabit Ethernet

M12 with Y-shield

2+4 power/Ethernet connection
technology (IP65 and IP67)

Signal des.	Plug-in connector	Signal des.	Plug-in connector		Signal des.	Plug-in connector		Signal des.	Plug-in connector		Signal des.	Plug-in connector		Signal des.	Plug-in connector	
	M12		RJ45	M12		RJ45	M12		RJ45	M12		RJ45	M12		RJ45	M12
TD+	1	TD+	1	1	TD+	1	1	TD+	1	1	TD+	1	1	TD+	2	3
TD-	2	TD-	2	3	TD-	2	3	TD-	2	3	TD-	2	3	TD-	1	2
RD+	3	RD+	3	2	RD+	3	2	RD+	3	2	RD+	3	2	RD+	3	5
RD-	4	RD-	6	4	RD-	6	4	RD-	6	4	RD-	6	4	RD-	6	8

Wire color	Signal	Wire color	Signal	Wire color	Signal	Wire color	Signal	Wire color	Signal	Wire color	Signal
WHOG	TD+	WHOG	TD+	YE	TD+	YE	TD+	YE	TD+	n. c.	
OG	TD-	OG	TD-	OG	TD-	OG	TD-	OG	TD-	OG	TD-
WHGN	RD+	WHBU	RD+	WH	RD+	WH	RD+	WH	RD+	WHOG	TD+
GN	RD-	BU	RD-	BU	RD-	BU	RD-	BU	RD-	n. c.	
BU		WHGN	RD+							WHGN	RD+
WH		GN	RD-							BU	RD-
BN		WHBN	RD-							BN	RD-
BK		BN								GN	RD-

Up to 100 m from hub/switch to
termination device

Up to 100 m from hub/switch to
termination device

Up to 100 m from hub/switch to
termination device

Up to 100 m from hub/switch to
termination device

Up to 100 m from hub/switch to
termination device

Up to 100 m from hub/switch to
termination device

www.odva.org

IEC 61784-5-2

www.profibus.com

IEC 61784-5-3

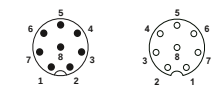
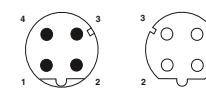
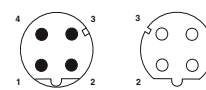
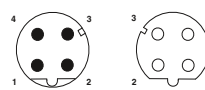
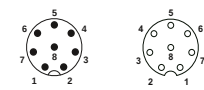
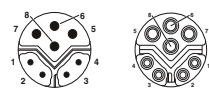
www.ethercat.org

IEC 61784-5-12

www.sercos.de

IEC 61784-5-16

www.varan-bus.net



Plug Socket

Plug Socket

Plug Socket

Plug Socket

Plug Socket

Plug Socket

M12, hybrid, 8-pos.,
Y-coded

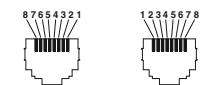
M12, 8-pos., A-coded

M12, 4-pos., D-coded

M12, 4-pos., D-coded

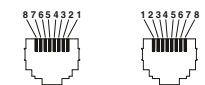
M12, 4-pos., D-coded

M12, 8-pos., A-coded



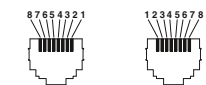
Plug Socket

RJ45, 8-pos.



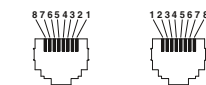
Plug Socket

RJ45, 8-pos.



Plug Socket

RJ45, 8-pos.



Plug Socket

RJ45, 8-pos.



Plug Socket

RJ45, 8-pos.

See page 66

See page 72

See page 74

See page 76

See
phoenixcontact.net/products

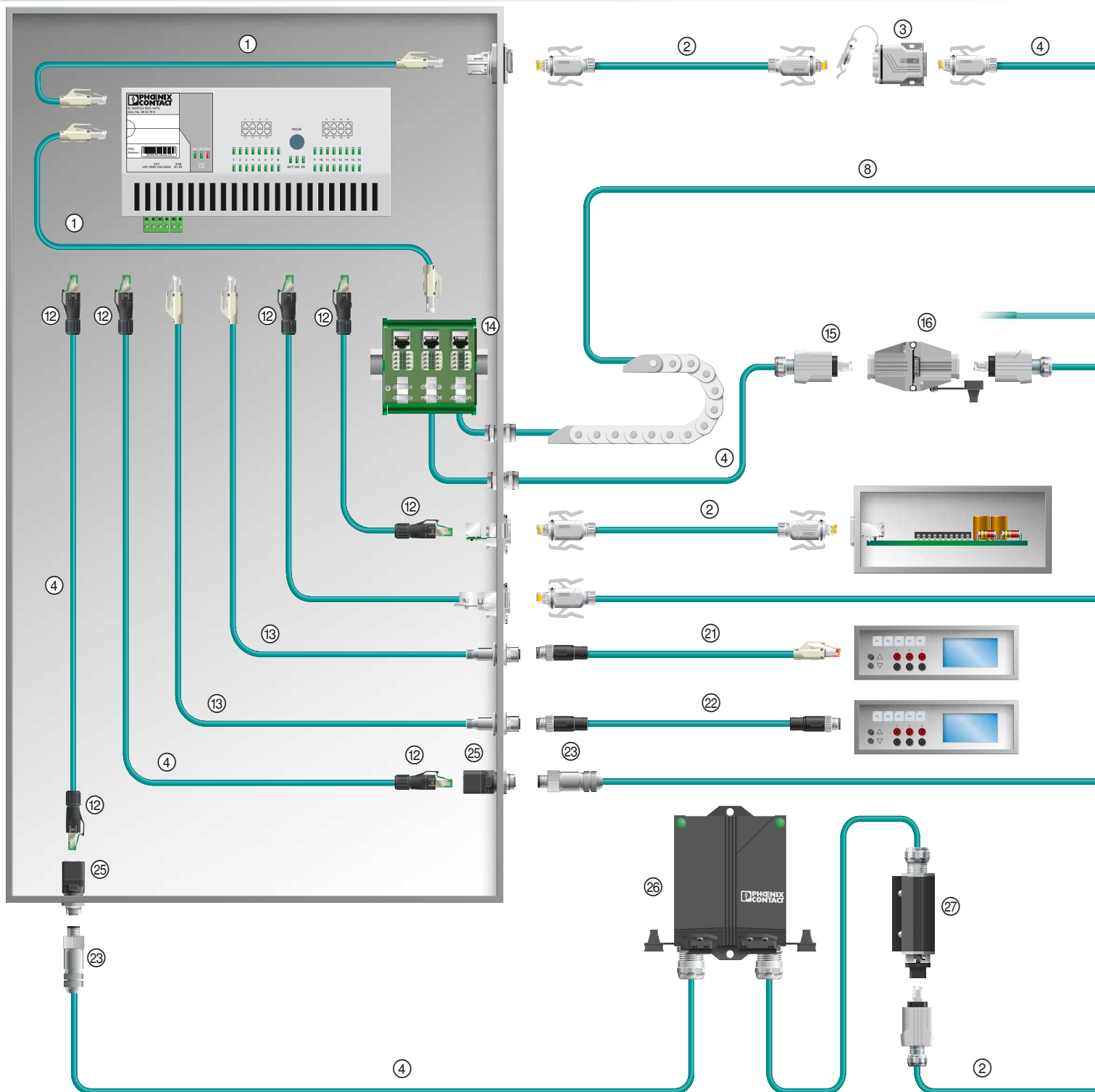
See
phoenixcontact.net/products

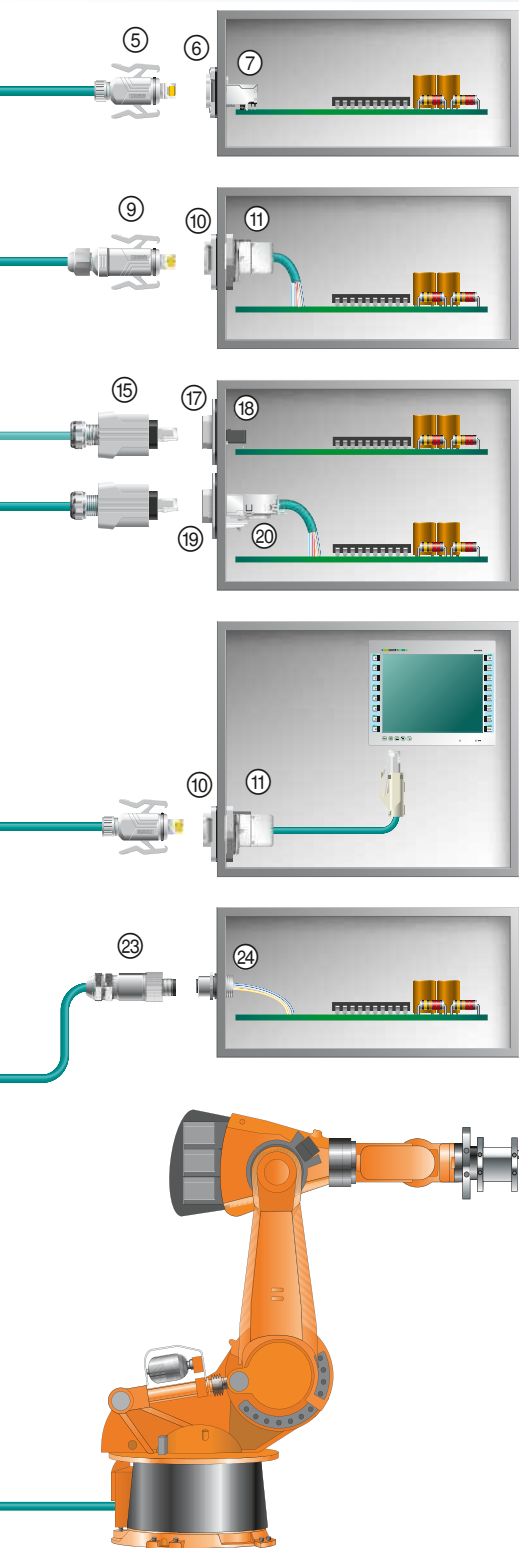
Data plug-in connectors

System overview - fieldbuses

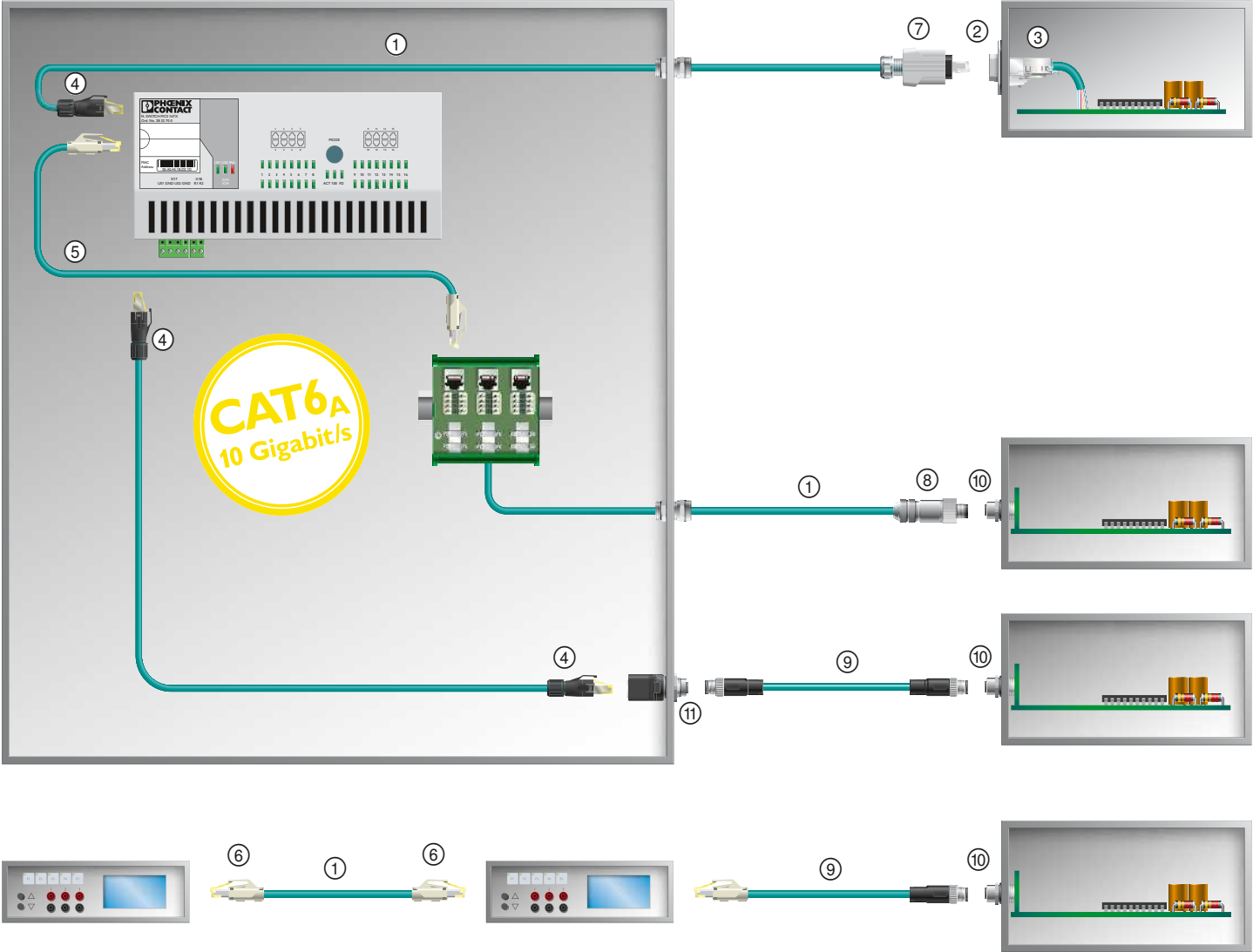
	INTERBUS	PROFIBUS DP	PROFIBUS PA	DeviceNet™																																																																																			
																																																																																							
Area of application	Sensor/actuator level, process automation, monitoring PC	Distributed I/O devices for networking several controllers	Process automation for potentially explosive areas (Ex zone 0 and 1)	Automation technology																																																																																			
Topology	Active ring structure	Line, tree, ring or star depending on the physical network design	Line, tree or ring	Line																																																																																			
Data transmission	Between 500 kbps and 16 Mbps depending on the segment length	Up to 12 Mbps	Up to 31.25 kbps	Up to 500 kbaud																																																																																			
Special plug-in connectors																																																																																							
Pin assignment	<table><tr><th>Signal designation</th><th colspan="2">Plug-in connector</th></tr><tr><td></td><th>D-SUB 9</th><th>M12</th></tr><tr><td>DQ</td><td>1</td><td>1</td></tr><tr><td>DO</td><td>6</td><td>2</td></tr><tr><td>DI</td><td>2</td><td>3</td></tr><tr><td>DI</td><td>7</td><td>4</td></tr><tr><td>COM</td><td>3</td><td>5</td></tr></table>	Signal designation	Plug-in connector			D-SUB 9	M12	DQ	1	1	DO	6	2	DI	2	3	DI	7	4	COM	3	5	<table><tr><th>Signal designation</th><th colspan="2">Plug-in connector</th></tr><tr><td></td><th>D-SUB 9</th><th>M12</th></tr><tr><td>A cable</td><td>8</td><td>2</td></tr><tr><td>B cable</td><td>3</td><td>4</td></tr></table>	Signal designation	Plug-in connector			D-SUB 9	M12	A cable	8	2	B cable	3	4	<table><tr><th>Signal designation</th><th colspan="2">Plug-in connector</th></tr><tr><td></td><th>M12</th><th></th></tr><tr><td>DATA+</td><td>1</td><td></td></tr><tr><td>DATA-</td><td>3</td><td></td></tr><tr><td>Shield</td><td>4</td><td></td></tr></table>	Signal designation	Plug-in connector			M12		DATA+	1		DATA-	3		Shield	4		<table><tr><th>Signal designation</th><th colspan="4">Plug-in connector</th></tr><tr><td></td><th>COMBICON</th><th>M12</th><th>7/8"</th><th>M8</th></tr><tr><td>CAN_L</td><td>2</td><td>5</td><td>5</td><td>5</td></tr><tr><td>CAN_H</td><td>4</td><td>4</td><td>4</td><td>3</td></tr><tr><td>V+</td><td>5</td><td>2</td><td>2</td><td>2</td></tr><tr><td>V-</td><td>1</td><td>3</td><td>3</td><td>4</td></tr><tr><td>Drain</td><td>3</td><td>1</td><td>1</td><td>1</td></tr></table>	Signal designation	Plug-in connector					COMBICON	M12	7/8"	M8	CAN_L	2	5	5	5	CAN_H	4	4	4	3	V+	5	2	2	2	V-	1	3	3	4	Drain	3	1	1	1
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	Shield on housing	Shield on housing	Shield on pin	Shield on pin																																																																																			
Segment length	400 m segment length between two devices; max. 13 km total length	Up to 1200 m with copper installation, up to 15 km with fiber optic installation	Max. 1900 m	Up to 500 m																																																																																			
User organization	www.interbusclub.com	www.profibus.com	www.profibus.com	www.odva.org																																																																																			
Standardization of cabling	IEC 61158	IEC 61158/IEC 61784	IEC 61158/IEC 61784	IEC 61158 IEC 61784-1 CPF 2/3																																																																																			
Plug-in connector pin assignments	<table><tr><td></td><td></td></tr><tr><td>Plug</td><td>Socket</td></tr><tr><td colspan="2">M12, 5-pos., B-coded</td></tr></table> <table><tr><td></td><td></td></tr><tr><td>Plug</td><td>Socket</td></tr><tr><td colspan="2">D-SUB 9</td></tr></table>			Plug	Socket	M12, 5-pos., B-coded				Plug	Socket	D-SUB 9		<table><tr><td></td><td></td></tr><tr><td>Plug</td><td>Socket</td></tr><tr><td colspan="2">M12, 5-pos., B-coded</td></tr></table> <table><tr><td></td><td></td></tr><tr><td>Plug</td><td>Socket</td></tr><tr><td colspan="2">D-SUB 9</td></tr></table>			Plug	Socket	M12, 5-pos., B-coded				Plug	Socket	D-SUB 9		<table><tr><td></td><td></td></tr><tr><td>Plug</td><td>Socket</td></tr><tr><td colspan="2">M12, 3-pos., A-coded</td></tr></table>			Plug	Socket	M12, 3-pos., A-coded		<table><tr><td></td><td></td></tr><tr><td>Plug</td><td>Socket</td></tr><tr><td colspan="2">M8, 5-pos., B-coded</td></tr></table> <table><tr><td></td><td></td></tr><tr><td>Plug</td><td>Socket</td></tr><tr><td colspan="2">M12, 5-pos., A-coded</td></tr></table> <table><tr><td></td><td></td></tr><tr><td>Plug</td><td>Socket</td></tr><tr><td colspan="2">7/8" 16UNF, 5-pos.</td></tr></table>			Plug	Socket	M8, 5-pos., B-coded				Plug	Socket	M12, 5-pos., A-coded				Plug	Socket	7/8" 16UNF, 5-pos.																																				
																																																																																							
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Topology	See page 172	See page 174	See page 175	See page 178																																																																																			

CANopen®	AS-Interface	FOUNDATION Fieldbus	USB	CC-Link																																																																																																		
																																																																																																						
Automation technology and for networking within complex devices	Sensor/actuator level	Process automation	All industrial environments	Production level applications																																																																																																		
Line or tree (when using repeaters)	Bus, star, ring, and tree structures	Point-to-point line (with branch lines), tree structure, combination of all topologies	Star topology, the connection is established at the star nodes via hubs	Bus, multi-drop, T-branching, star																																																																																																		
10 kbaud to 1 Mbaud	167 kbps	H1: 31.25 kbps, IEC physical transmission channel, incl. Ex bus H2: 1.0 and 2.5 Mbps data rate, via two-wire cable or fiber optics	Up to 480 Mbps	Up to 10 Mbps																																																																																																		
<table><tr><th>Signal designation</th><th colspan="5">Plug-in connector</th></tr><tr><th></th><th>COMBICON</th><th>D-SUB 9</th><th>M12</th><th>RJ45</th><th>7/8"</th></tr><tr><td>CAN_L</td><td>2</td><td>2</td><td>5</td><td>2</td><td>5</td></tr><tr><td>CAN_H</td><td>4</td><td>7</td><td>4</td><td>1</td><td>4</td></tr><tr><td>V+</td><td>5</td><td>9</td><td>2</td><td>8</td><td>2</td></tr><tr><td>V-</td><td>1</td><td>3</td><td>3</td><td>3</td><td>3</td></tr><tr><td>Drain</td><td>3</td><td>4</td><td>1</td><td>6</td><td>1</td></tr></table>	Signal designation	Plug-in connector						COMBICON	D-SUB 9	M12	RJ45	7/8"	CAN_L	2	2	5	2	5	CAN_H	4	7	4	1	4	V+	5	9	2	8	2	V-	1	3	3	3	3	Drain	3	4	1	6	1	<table><tr><th>Signal designation</th><th>Plug-in connector</th></tr><tr><th></th><th>M12</th></tr><tr><td>AS-i+</td><td>1</td></tr><tr><td>AS-i-</td><td>3</td></tr></table>	Signal designation	Plug-in connector		M12	AS-i+	1	AS-i-	3	<table><tr><th>Signal designation</th><th colspan="2">Plug-in connector</th></tr><tr><th></th><th>M12</th><th>7/8"</th></tr><tr><td>DATA+</td><td>2</td><td>1</td></tr><tr><td>DATA-</td><td>1</td><td>4</td></tr><tr><td>Shield</td><td>3</td><td>3</td></tr></table>	Signal designation	Plug-in connector			M12	7/8"	DATA+	2	1	DATA-	1	4	Shield	3	3	<table><tr><th>Signal designation</th><th colspan="2">Plug-in connector</th></tr><tr><th></th><th>M12, MINI - USB</th><th>USB</th></tr><tr><td>V_{BUS}</td><td>1</td><td>1</td></tr><tr><td>D-</td><td>2</td><td>2</td></tr><tr><td>D+</td><td>3</td><td>3</td></tr><tr><td>ID</td><td>4</td><td></td></tr><tr><td>GND</td><td>5</td><td>4</td></tr></table>	Signal designation	Plug-in connector			M12, MINI - USB	USB	V _{BUS}	1	1	D-	2	2	D+	3	3	ID	4		GND	5	4	<table><tr><th>Signal designation</th><th>Plug-in connector</th></tr><tr><th></th><th>M12</th></tr><tr><td>SLD</td><td>1</td></tr><tr><td>DS</td><td>2</td></tr><tr><td>DG</td><td>3</td></tr><tr><td>DA</td><td>4</td></tr></table>	Signal designation	Plug-in connector		M12	SLD	1	DS	2	DG	3	DA	4
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Up to 1000 m depending on the transmission speed; can be increased by using repeaters	Max. 100 m cable length, 300 m with termination resistors, 500 m with repeaters	Max. 1900 m; max. 9500 m when using repeaters depending on the selected cable	5 m per segment	Max. 1200 m; max. 13.2 km with repeaters																																																																																																		
www.can-cia.de	www.as-interface.net	www.fieldbus.org	www.usb.org	www.clpa-europe.com																																																																																																		
EN 50325-4	EN 50295 and IEC 62026-2	IEC 1158, IEC 61158	Not specified	IEC 61784-1 CPF 8																																																																																																		
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M12, 5-pos., A-coded	M12, 4-pos., A-coded	M12, 4-pos., A-coded	USB, 4-pos.	M12, 4-pos., A-coded																																																																																																		
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7/8" 16UNF, 5-pos.		7/8" 16UNF, 4-pos.	M12 mini-USB, 5-pos.																																																																																																			
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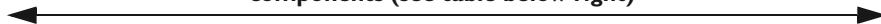




No.	Designation	Page
①	Assembled Ethernet cable with RJ45 plug-in connectors, IP20	100
②	Assembled Ethernet cable with RJ45 plug-in connectors, IP67	100
③	RJ45 coupling, IP67, version 6	119
④	Ethernet cable, by the meter	96
⑤	RJ45 plug-in connector, IP67, version 6, consisting of sleeve housing and pin insert	82
⑥	RJ45 panel mounting frame, IP67, version 6, for PCB socket inserts	83
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⑨	RJ45 plug-in connector, IP67, for assembly without special tools	82
⑩	RJ45 panel mounting frame, IP67, for keystones, version 6	84
⑪	RJ45 keystone socket inserts	84
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⑭	RJ45 patch panel for the DIN rail	120
⑮	RJ45 plug-in connector, IP67, push/pull, version 14, for assembly without special tools	80
⑯	RJ45 field couplings, IP67	119
⑰	RJ45 panel mounting frame, IP67, push/pull, for PCB socket inserts, version 14	85
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⑲	RJ45 panel mounting frame, IP67, for the Freenet system, version 14	83
⑳	RJ45 socket inserts for the Freenet system	83
㉑	Assembled Ethernet cable with RJ45 and M12 plug-in connectors	98
㉒	Assembled Ethernet cable with M12 plug-in connectors	98
㉓	M12 plug-in connector, shielded, for assembly without special tools	88
㉔	M12 flush-type plug-in connector	92
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㉗	RJ45 multi-port robot interface	117



No.	Designation	Page
①	Ethernet cable, by the meter, for 10 Gbps	96
②	RJ45 panel mounting frame, IP67, for the Freenet system, version 14	83
③	RJ45 socket inserts for the Freenet system	83
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⑤	Assembled Ethernet cable for 10 Gbps	102
⑥	RJ45 plug-in connector, IP20, consisting of sleeve housing and pin insert for 10 Gbps	78
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⑪	Control cabinet feed-through, CAT6 _A , M12, 8-pos., X-coded to RJ45 socket	94

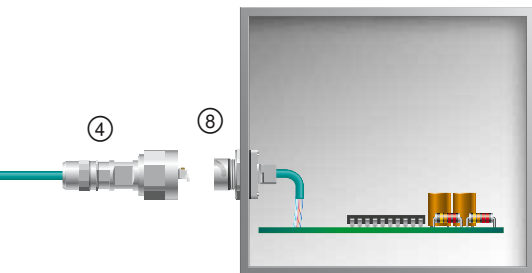
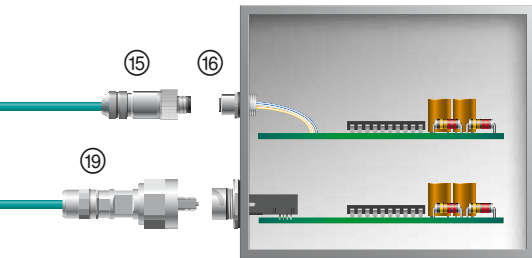
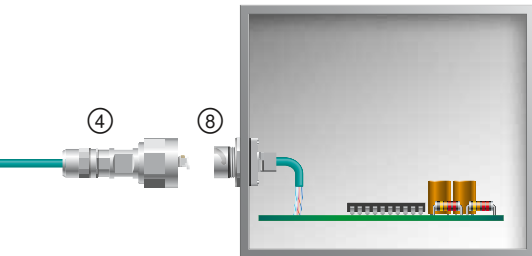


No.	Designation	Page		
		POF	HCS	GOF
①	Adapter cable, SCRJ/IP20 to FSMA (with POF/HCS) or SCRJ/IP20 to SC duplex (with GOF)			
②	Patch panel, SCRJ/IP20, for DIN rail mounting	134	134	134
③	Assembled industrial cable, assembled at both ends with SCRJ/IP20 plug-in connectors	138	152	156
④	SCRJ socket insert for panel mounting frames	From 127	From 130	From 132
⑤	SCRJ/IP67 panel mounting frames	From 127	From 130	From 132
⑥	Assembled fiber optic round cable with SCRJ plug-in connectors, IP67	From 138	From 148	From 156
⑦	IP67 terminal outlet with 2 SCRJ/IP67 slots and integrated SCRJ socket inserts	134	134	134
⑧	Industrial cable for fixed indoor installation	From 138	From 148	From 156
⑨	IP68 cable gland	From 42	From 42	From 42
⑩	SCRJ plug-in connector, IP20	127	130	132
⑪	Panel feed-through assembled with the cable	126		
⑫	M12 plug-in connector	126		
⑬	M12 transceiver	126		

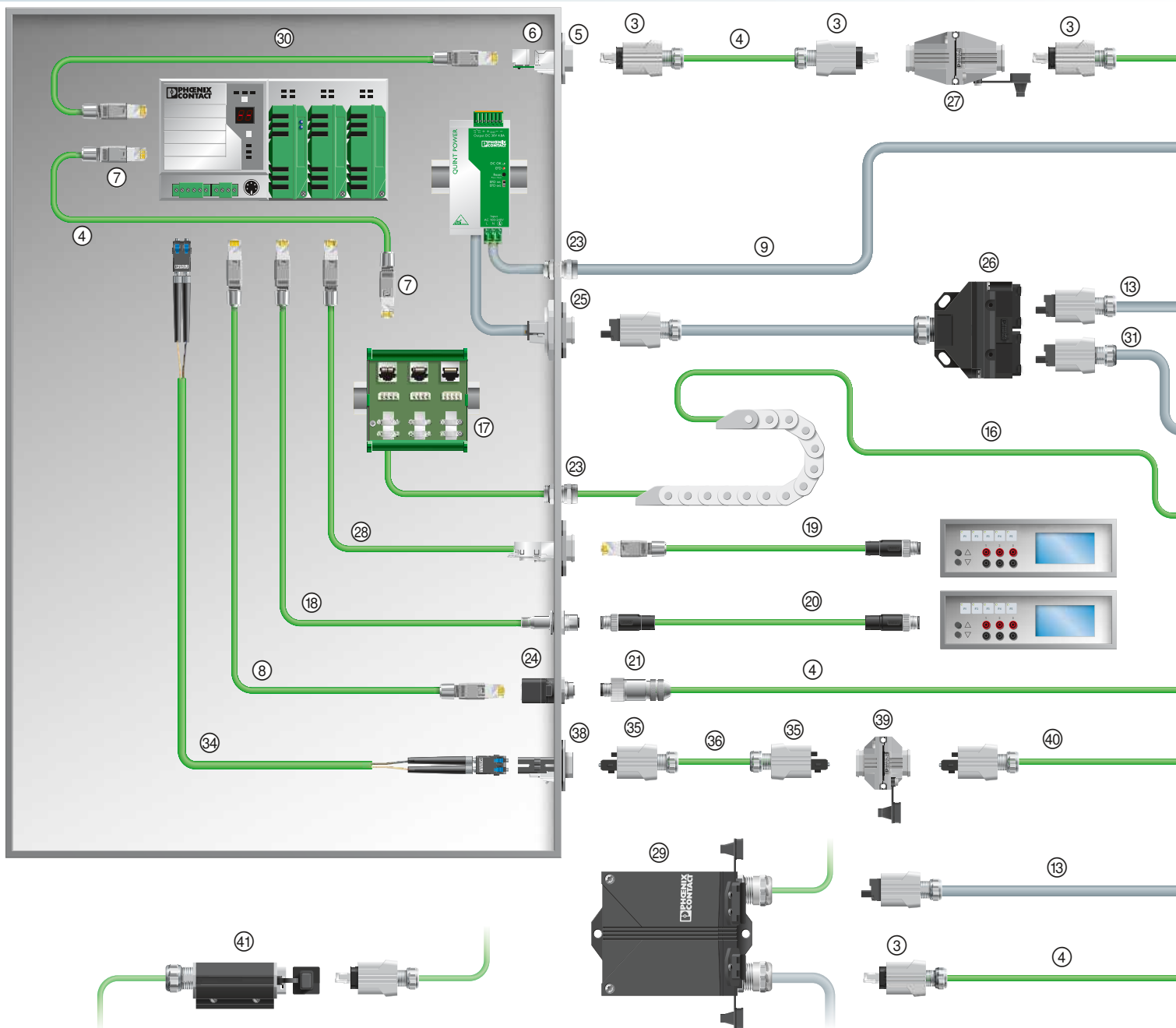
Standard	Transmission speed	Fiber type	Wavelength	Length
–	10 Mbps	POF 980/1000 µm	660 nm	50 m*
–	10 Mbps	HCS 200/230 µm	660 nm	300 m
IEC 61784-5-3 (PROFINET)	100 Mbps	POF 980/1000 µm	660 nm	50 m*
IEC 61784-5-3 (PROFINET)	100 Mbps	HCS 200/230 µm	660 nm	100 m
100Base-SX	100 Mbps	GOF 50/125 µm	850 nm	3800 m
100Base-FX	100 Mbps	GOF 50/125 µm	1300 nm	10,000 m
1000Base-SX	1000 Mbps	GOF 50/125 µm	850 nm	550 m
1000Base-LX	1000 Mbps	GOF 50/125 µm	1300 nm	550 m

* minus 10 meters per passive coupling, e.g., patch panel, panel feed-through or terminal outlet

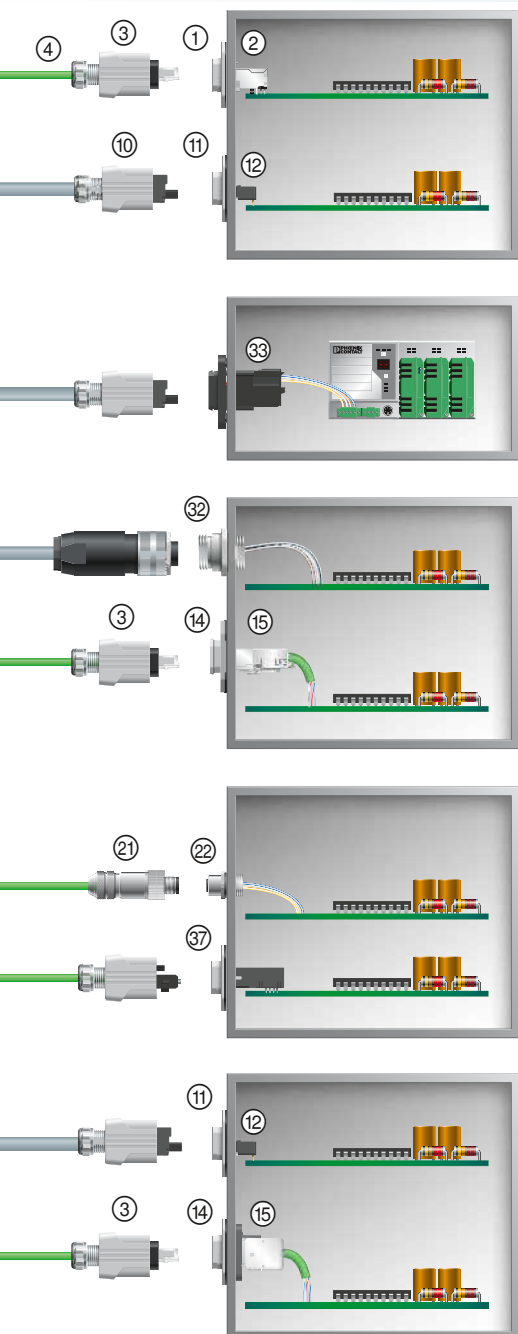




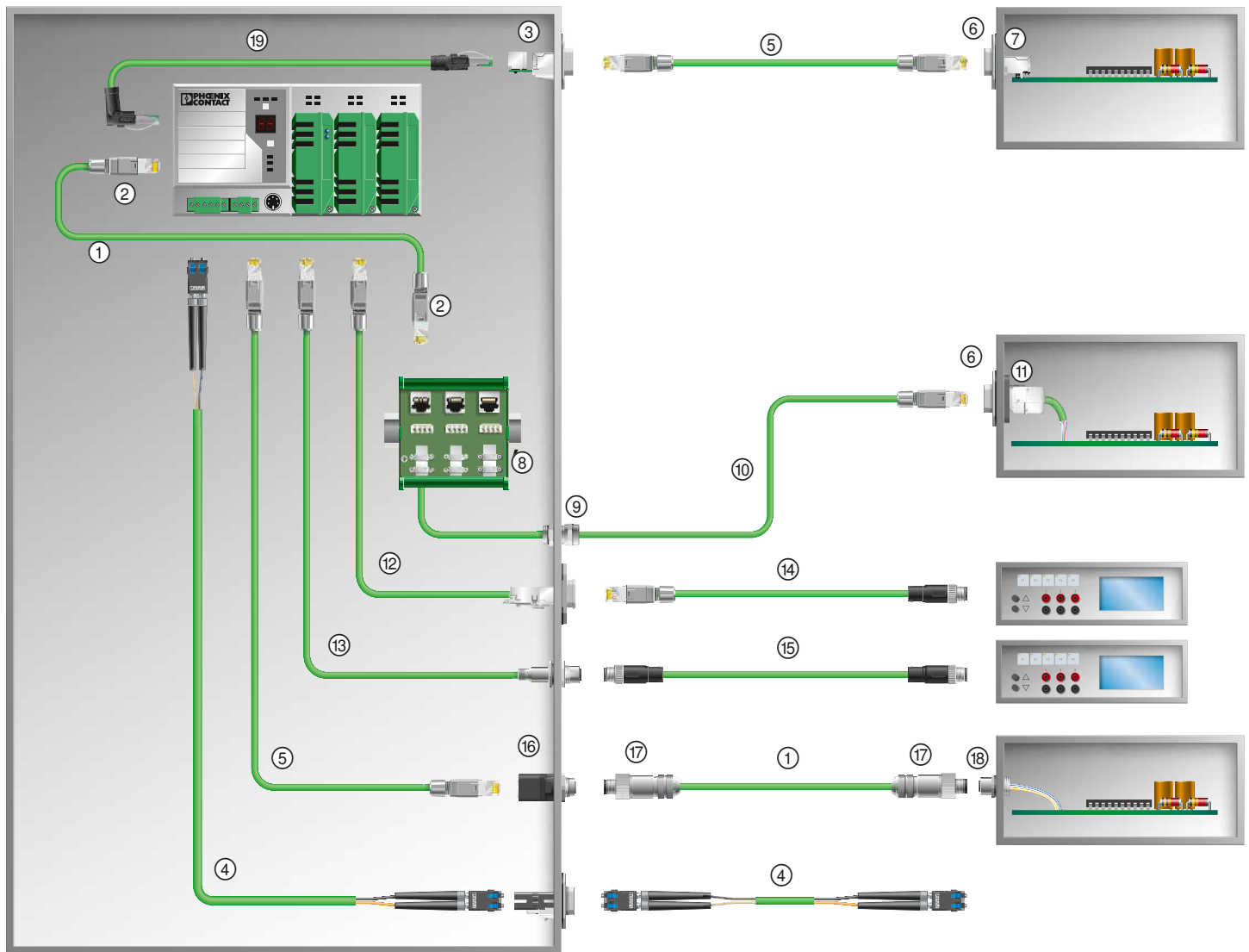
No.	Designation	Page
①	Cables for flexible installation, by the meter	96
②	RJ45 plug-in connector, IP20, for tool-free assembly	78
③	RJ45 panel feed-through, IP67, socket/socket	86
④	RJ45 plug-in connector, IP67, with bayonet locking	82
⑤	Assembled cables with RJ45 plug-in connectors, IP20	100
⑥	RJ45 patch panel, IP20, for DIN rail mounting	120
⑦	Cables for continuous motion applications, suitable for use with drag chain, by the meter	96
⑧	RJ45 panel feed-through, IP67, with cable connection	86
⑨	IP68 cable gland	42
⑩	M12 plug-in connector, with Ethernet cable and assembled RJ45 plug-in connector	98
⑪	Assembled cable with M12 plug-in connectors, IP65/IP67	98
⑫	Assembled cables with RJ45 plug-in connector and free cable end	98
⑬	Assembled cable with M12 flush-type socket to free cable end	98
⑭	Control cabinet feed-through, M12/RJ45, 180°	94
⑮	M12 plug-in connector, IP65/IP67, shielded, for tool-free assembly	89
⑯	M12 flush-type plug-in connector, with litz wires	92
⑰	Assembled fiber optic cable with SCRJ plug-in connector, IP20	144
⑱	SCRJ panel mounting frame, IP67, with bayonet locking, with SCRJ coupling	129
⑲	SCRJ plug-in connector, IP67, with bayonet locking	129
⑳	Fiber optic cable, for flexible installation, by the meter	137
㉑	Terminal outlets, IP65/IP67	118



No.	Designation	Page	
		POF	HCS
34	Assembled fiber optic cable with SCRJ plug-in connector, IP20	144	148
35	SCRJ push/pull plug-in connector, IP67, with fast connection technology	128	131
36	PROFINET fiber optic cable, for flexible installation, by the meter	144	148
37	SCRJ panel mounting frame, IP67, for push/pull interlocking, for transceivers for PCB mounting	128	128
38	SCRJ panel mounting frame, IP67, for push/pull interlocking, with SCRJ coupling, Freenet system	128	128
39	SCRJ coupling, IP67, for push/pull interlocking	136	136
40	Assembled fiber optic cable with SCRJ plug-in connector, IP67	144	148



No.	Designation	Page
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⑧	Assembled cables with RJ45 plug-in connectors, IP20	106
⑨	Power cables, for flexible installation, by the meter	See Catalog 4
⑩	MSTB push/pull plug-in connector, IP67, for 24 V, 5-pos., for free assembly	124
⑪	MSTB panel mounting frame, IP67, for 24 V, for push/pull interlocking	124
⑫	MSTB contact insert for 24 V, for PCB mounting	124
⑬	Assembled 24 V cable with MSTB push/pull plug-in connectors, IP67	See Catalog 4
⑭	RJ45 panel mounting frame, IP67, for push/pull interlocking	83
⑮	RJ45 socket insert, with cable connection, for tool-free assembly, Freenet	83
⑯	PROFINET cables, for continuous motion applications, suitable for use with drag chain, by the meter	105
⑰	RJ45 patch panel, IP20, for DIN rail mounting	120
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⑲	M12 plug-in connector, with PROFINET cable and assembled RJ45 plug-in connector	106
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㉑	M12 plug-in connector, IP65/IP67, shielded, for tool-free assembly	89
㉒	M12 flush-type plug-in connector, with litz wires	92
㉓	IP68 cable gland	42
㉔	Control cabinet feed-through, M12/RJ45, 180°	94
㉕	MSTB panel mounting frame, IP67, for 24 V, for push/pull interlocking, with contact insert for conductor connection	124
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㉗	Multi-port data coupling	119
㉘	Assembled cables with RJ45 plug-in connector and socket, IP20	106
㉙	Terminal outlet with 1 x RJ45, 1 x power connection, IP67, for push/pull interlocking	118
㉚	PROFINET patch cable, RJ45 to RJ45, IP20	106
㉛	Assembled 24 V cable with MSTB push/pull plug-in connector, IP67, and 7/8" circular plug-in connector	See Catalog 4
㉜	Flush-type plug-in connector, 5-pos., 7/8"	266
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㉞	Multi-port robot interface	117



No.	Designation	Page
①	EtherCAT cable, by the meter	108
②	RJ45 plug-in connector, IP20, for tool-free assembly	78
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④	Assembled fiber optic cable with SCRJ plug-in connector, IP20	144
⑤	Assembled cable with RJ45 plug-in connectors, IP20	108
⑥	RJ45 panel mounting frame, IP20	79
⑦	RJ45 socket insert, for PCB mounting	85
⑧	RJ45 patch panel, IP20, for DIN rail mounting	120
⑨	IP68 cable gland	42
⑩	Assembled cable with RJ45 plug-in connector to free cable end	108
⑪	RJ45 socket insert, with cable connection	83
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⑬	Assembled cable with M12 flush-type socket to free cable end	108
⑭	Assembled cable with RJ45 plug to M12 plug	108
⑮	Assembled cable with M12 plug-in connectors	108
⑯	Control cabinet panel feed-through, M12/RJ45, 180°	94
⑰	M12 plug-in connector, shielded, for tool-free assembly	89
⑱	M12 flush-type plug-in connector, with litz wires	92
⑲	EtherCAT patch cable, RJ45 to RJ45, IP20	108

Data plug-in connectors

Network components - RJ45 plug-in connectors

RJ45 plug-in connector, IP20



Ethernet



**RJ45 plug-in connector
with fast connection technology,
for up to 10 Gbps**



Ethernet



**RJ45 pin inserts,
CAT6_A and CAT5**

Electrical data	
Transmission characteristics (category)	
Surge voltage category	
Material data	
Housing material	
Contact material	
Inflammability class according to UL 94	
Pollution degree	
External cable diameter	
Insertion/withdrawal cycles	
Temperature data	
Ambient temperature (operation)	

Technical data	
VS-08-RJ45-10G/Q	VS-...-RJ45-...-Q...
CAT6 _A	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
I	I
PA 6.6	PA 6.6
CuSn	CuSn
V2	V2
2	2
4.5 mm ... 8 mm	4.5 mm ... 8 mm
≥ 750	≥ 750
-20 °C ... 70 °C	-20 °C ... 70 °C

Technical data	
VS-08-RJ45-10G/C	VS-08-ST-H...-RJ45
CAT6 _A	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
I	I
-	-
Phosphor bronze	Copper alloy
V2	V2
-	2
-	-
-	≥ 750
-25 °C ... 60 °C	-25 °C ... 60 °C

Ordering data	
Type	Order No.
Pcs. / Pkt.	
VS-08-RJ45-10G/Q	1419001
VS-08-RJ45-Q	1402420
VS-PN-RJ45-5-Q/IP20	1658435
VS-08-RJ45-10G/C	1418853
VS-08-ST-H11-RJ45	1652716
VS-08-KS-H/GY	1654743
VS-08-KS-H/GN	1654756

Ordering data	
Type	Order No.
Pcs. / Pkt.	
VS-08-RJ45-10G/Q	1419001
VS-08-RJ45-Q	1402420
VS-PN-RJ45-5-Q/IP20	1658435
VS-08-RJ45-10G/C	1418853
VS-08-ST-H11-RJ45	1652716
VS-08-KS-H/GY	1654743
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VS-08-RJ45-10G/C	1418853
VS-08-ST-H11-RJ45	1652716
VS-08-KS-H/GY	1654743
VS-08-KS-H/GN	1654756

Accessories	
VS-CABLE-STRIP-VARIO	1657407
VS-08-RJ45-FOLIEN-SET	1417184

Accessories	
VS-CABLE-STRIP-VARIO	1657407
VS-08-RJ45-FOLIEN-SET	1417184

Accessories	
VS-CT-RJ45-H	1653265
VS-CABLE-STRIP-VARIO	1657407

RJ45 panel mounting frames with IP20 and socket inserts



Ethernet

**RJ45 socket inserts
and IP20 panel mounting frame,
modular system, keystone**

Technical data	
Electrical data	VS-08-BU-RJ45-6/KA/LSA VS-08-A-RJ45/MOD-1-IP20
Rated current	2 A -
Transmission characteristics (category)	CAT6 -
Material data	
Housing material	Nickel-plated brass PA
Contact material	Copper alloy -
Inflammability class according to UL 94	V0 V0
Mechanical data	
No. of pos.	8 -
Connection method	LSA -
Conductor cross section	0.13 mm ² ... 0.32 mm ² (solid) -
Connection cross section AWG	26 ... 22 (solid) -
Temperature data	
Ambient temperature (operation)	-20 °C ... 70 °C -40 °C ... 80 °C
Ordering data	
Description	Type Order No. Pcs. / Pkt.
RJ45 socket insert , 8-pos., shielded, socket to socket	
CAT5	VS-08-BU-RJ45/BU 1689064 5
RJ45 socket insert , 8-pos., shielded, with cable connection	
CAT6	VS-08-BU-RJ45-6/KA/LSA 1653168 5
RJ45 panel mounting frame , single, for modular socket inserts (keystone), without mounting screws	
	VS-08-A-RJ45/MOD-1-IP20 1689433 5
Accessories	
Split-core tool , for connecting the copper wires to the LSA Plus strips	CT-WZ/A 2765505 1
Stripping tool , for multiple-stage repositioning of shielded conductors	VS-CABLE-STRIP-VARIO 1657407 1

Data plug-in connectors

Network components - RJ45 plug-in connectors

RJ45 plug-in connector, version 14, IP65/IP67

Ethernet



RJ45 plug-in connector, version 14, push/pull, 10 Gbps

Ethernet



RJ45 plug-in connector, version 14, push/pull, fast connection technology

Technical data		Technical data	
Electrical data	VS-PPC-C1-...-8/10G	VS-PPC-C1-...-PG9-8Q5	VS-PPC-C1-...-PG9-4Q5
Nominal voltage U_N	50 V	50 V	50 V
Rated current	1.75 A	1.75 A	1.75 A
Transmission characteristics (category)	CAT6 _A	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
Surge voltage category	I	I	I
Material data			
Housing material	Zinc die-cast	Zinc die-cast	Zinc die-cast
Contact material	Copper alloy	Copper alloy	Copper alloy
Inflammability class according to UL 94	V0	V0	V0
Pollution degree	2	2	2
Connection data			
Connection method	IDC fast connection	IDC fast connection	IDC fast connection
Connection cross section AWG	26 ... 24 (solid)	26 ... 22 (solid)	26 ... 22 (solid)
Connection cross section AWG	26 ... 24 (7-wire)	26 ... 22 (stranded)	26 ... 22 (stranded)
External cable diameter	5 mm ... 8 mm	5 mm ... 8 mm	5 mm ... 8 mm
Insertion/withdrawal cycles	≥ 250	≥ 250	≥ 500
Temperature data			
Ambient temperature (operation)	-40 °C ... 70 °C	-40 °C ... 70 °C	-40 °C ... 70 °C
Ordering data		Ordering data	
Description	Type	Order No.	Pcs. / Pkt.
Push/pull plug-in connector (version 14) for 10 Gbps, with RJ45 crimp connection, for 26 ... 24 AWG stranded conductors, 5.0 mm ... 8.0 mm cable diameter	VS-PPC-C1-RJ45-MNNA-8I10G	1422108	1
	VS-PPC-C1-RJ45-POBK-8I10G	1422205	1
Metal housing			
Plastic housings			
Push/pull plug-in connector (version 14) optimized for use in environments subject to EMI, with RJ45 QUICKON fast connection technology, for 5.0 mm ... 8.0 mm cable diameter			
4-pos., 22 AWG 1-wire and 7-wire conductors			
8-pos., 26 ... 24 AWG 1-wire and 7-wire conductors			
Push/pull plug-in connector (version 14) for 1 Gbps, 8-pos., with RJ45 QUICKON fast connection technology, for 26 ... 24 AWG 1 and 7-wire conductors, 5.0 mm ... 8.0 mm cable diameter			
Metal housing			
Plastic housings			
Push/pull plug-in connector (version 14) for 1 Gbps, 4-pos., PROFINET with RJ45 QUICKON fast connection technology, for 22 AWG 1-wire and 7-wire conductors, 5.0 mm ... 8.0 mm cable diameter			
Metal housing			
Plastic housings			
Protective cover, IP65 , with push/pull interlocking, for covering the contact insert in the push/pull connector for RJ45 and SCRJ, plastic	VS-PPC-F1-PC-POBK	1405316	1
Shielding foil set , 25 pcs., replacement for RJ45 and M12-QUICKON connectors	VS-08-RJ45-FOLIEN-SET	1417184	1
Stripping tool , for multiple-stage repositioning of shielded conductors	VS-CABLE-STRIP-VARIO	1657407	1
Accessories		Accessories	
	VS-PPC-F1-PC-POBK	1405316	1
	VS-08-RJ45-FOLIEN-SET	1417184	1
	VS-CABLE-STRIP-VARIO	1657407	1

RJ45 plug-in connector, version 4, IP65/IP67



RJ45 plug-in connector



RJ45 socket insert

	Technical data			Technical data		
Electrical data						
Transmission characteristics (category)	CAT6 _A			-		
Material data				-		
Housing material	Plastic			-		
Inflammability class according to UL 94	V0			V0		
Mechanical data						
No. of pos.	8			8		
Connection method	Crimp connection			-		
Connection cross section AWG	28 ... 24 (stranded)			-		
Temperature data						
Ambient temperature (operation)	-40 °C ... 70 °C			-40 °C ... 70 °C		
	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
RJ45 plug-in connector , IP67, with push/pull interlocking (version 4), plastic housing, for 10 Gbps, for 24 ... 28 AWG stranded conductors	CUC-V04-RJ45-POBK-8	1407413	1			
RJ45 socket insert , 1-way, for PCB mounting, CAT5e, 8-pos., shielded				CUC-V04-BU-180	1407409	1
Straight solder pins				CUC-V04-BU-90	1407408	1
Angled solder pins						
Panel mounting frame				CUC-V04-F-POBK-180	1407410	1
For 180° socket insert				CUC-V04-F-POBK-90	1407411	1
For 90° socket insert						
Panel mounting frame set				CUC-V04-F-BU/BU-RJ45	1407412	1
Socket / Socket						
	Accessories			Accessories		
Stripping tool , for multiple-stage repositioning of shielded conductors	VS-CABLE-STRIP-VARIO	1657407	1			
Electronic diagonal cutter , tapered head, without chamfer, with opening spring, non-reflective phosphate-treated surface, punched version	MICROFOX-SP-1	1212487	1			
Crimping pliers , for assembling the RJ45 plug-in connectors	FL CRIMPTOOL	2744869	1			

Data plug-in connectors

Network components - RJ45 plug-in connectors

RJ45 plug-in connector, version 6 and version 1, IP65/IP67

Ethernet



RJ45 plug-in connector, version 6



RJ45 plug-in connector, version 1

	Technical data	Technical data				
	VS-08-RJ45-5-Q/IP67...	VS-V1-C-RJ45-MNNA-PG9-8-I-5-S				
Electrical data						
Rated voltage	50 V	50 V				
Rated current	1.75 A	1.75 A				
Transmission characteristics (category)	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)				
Surge voltage category	I	I				
Material data						
Housing material	PA	Zinc die-cast				
Contact material	Copper alloy	-				
Inflammability class according to UL 94	V0	V0				
Pollution degree	2	2				
Connection data						
Connection method	IDC fast connection	IDC connection				
Connection cross section AWG	26 ... 22 (solid)	27 ... 24 (stranded)				
Connection cross section AWG	26 ... 22 (stranded)	-				
External cable diameter	5 mm ... 8 mm	5 mm ... 10 mm				
Insertion/withdrawal cycles	≥ 1000	750				
Temperature data						
Ambient temperature (operation)	-20 °C ... 70 °C	-40 °C ... 70 °C				
	Ordering data	Ordering data				
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
RJ45 plug-in connector , 8-pos., with QUICKON fast connection technology, for AWG 26 ... 22 Military gray RAL 7042 Deep black RAL 9005	VS-08-RJ45-5-Q/IP67	1656990	1			
	VS-08-RJ45-5-Q/IP67-BK	1658493	1			
RJ45 pin insert , 8-pos., shielded, IDC connection technology, for 27 ... 26 AWG litz wires, with strain relief CAT5 CAT6	VS-08-ST-H11-RJ45	1652716	5			
	VS-08-ST-H21-RJ45	1652729	5			
RJ45 pin insert , 8-pos., shielded, IDC pierce connection, for litz wires AWG 27 ... 24, with strain relief CAT6 RJ45 pin insert , CAT6 _A , 10 Gbps	VS-08-ST-H21P-RJ45	1404388	5			
	VS-08-RJ45-10G/C	1418853	5			
RJ45 sleeve housing for pin insert VS-08-ST-H...-RJ45, with push/pull interlocking for panel mounting frames, for cable diameters 5.0 mm ... 8.5 mm Military gray RAL 7042 Deep black RAL 9005	VS-08-T-H-RJ45/IP67	1652732	5			
	VS-08-T-H-RJ45/IP67-BK	1658671	5			
RJ45 plug-in connector , IP67, with bayonet locking, metal housing, CAT5e, 8-pos., IDC connection method, for 26 AWG 7-wire conductors, for cable diameter 5.0 mm ... 8.0 mm				VS-V1-C-RJ45-MNNA-PG9-8-I-5-S	1419182	1
	Accessories	Accessories				
Stripping tool , for multiple-stage repositioning of shielded conductors	VS-CABLE-STRIP-VARIO	1657407	1	VS-CABLE-STRIP-VARIO	1657407	1
Protective cover , IP67, plastic, for covering the contact insert in the RJ45, LC, and SCRJ connector				VS-V1-C-PC-POBK	1419183	1
Crimp tool , pliers with die, for VS-08-ST-H...-RJ45	VS-CT-RJ45-H	1653265	1			

IP65/IP67 RJ45 panel mounting frame and Freenet socket inserts



Ethernet



Push/pull, version 14,
Freenet system

Ethernet



Version 6,
Freenet system

Electrical data	
Nominal voltage U_N	50 V
Rated current	1 A
Housing material	Polycarbonate
Contact material	CuSn
Inflammability class according to UL 94	V0
No. of pos.	8
Connection method	IDC
Insertion/withdrawal cycles	≥ 750
Temperature data	
Ambient temperature (operation)	-10 °C ... 60 °C

Technical data	
VS-08-BU-RJ45/10G-F	VS-PPC-F1-RJ45-MNNA-1R-F
50 V	-
1 A	-
Polycarbonate	Zinc die-cast
CuSn	-
V0	V0
8	-
IDC	-
≥ 750	-
-10 °C ... 60 °C	-40 °C ... 70 °C

Description
RJ45 Freenet socket insert , 8-pos., shielded, with cable connection 10 Gbps, CAT6 _A
RJ45 Freenet socket insert , 8-pos., shielded, with cable connection 1 Gbps, CAT5
RJ45 Freenet socket insert , 8-pos., shielded, socket to socket 1 Gbps, CAT5
RJ45 Freenet panel mounting frame , version 14, IP65/IP67, for rectangular mounting cutout, with seal, without mounting screws
Metal housing Plastic housings
RJ45 Freenet panel mounting frame , version 14, IP65/IP67, for round mounting cutout, with seal and central nut
Metal housing
Freenet panel mounting frame , version 6, for round mounting cutout, with seal, without mounting screws
Military gray RAL 7042 Deep black RAL 9005

Ordering data			
Type	Order No.	Pcs. / Pkt.	
VS-08-BU-RJ45/10G-F	1424009	1	
VS-08-BU-RJ45-5-F/PK	1652936	1	
VS-08-BU/BU-RJ45-F	1405617	1	
VS-PPC-F1-RJ45-MNNA-1R-F	1405358	1	
VS-PPC-F1-RJ45-POBK-1R-F	1608197	1	
VS-PPC-F1-RJ45-MNNA-1C-F	1405222	1	

Protective cover for version 6 panel mounting frame Military gray RAL 7042 Deep black RAL 9005
Protective cover For data port
Stripping tool , for multiple-stage repositioning of shielded conductors

Accessories			
VS-PPC-C1-PC-ROBK-L	1405293	1	
VS-CABLE-STRIP-VARIO	1657407	1	

Technical data	
VS-08-BU-RJ45-5-F/PK	VS-A-F-IP67
50 V	-
1 A	-
-	PA
Copper alloy	-
V0	V0
8	-
IDC	-
≥ 750	≥ 1000
-20 °C ... 70 °C	-40 °C ... 80 °C

Ordering data			
Type	Order No.	Pcs. / Pkt.	
VS-08-BU-RJ45/10G-F	1424009	1	
VS-08-BU-RJ45-5-F/PK	1652936	1	
VS-08-BU/BU-RJ45-F	1405617	1	
VS-A-F-IP67	1653744	5	
VS-A-F-IP67-BK	1658668	5	

Accessories			
VS-08-SD-F	1652606	5	
VS-08-SD-F-BK	1658066	5	
VS-CABLE-STRIP-VARIO	1657407	1	

IP65/IP67 RJ45 panel mounting frame and socket inserts

Ethernet



Version 6,
keystone

Technical data

	VS-08-BU-RJ45-6/KA/LSA	VS-08-A-RJ45/MOD-1-IP67
Electrical data		
Rated voltage	250 V	-
Rated current	2 A	-
Transmission characteristics (category)	CAT6	-
Housing material	Nickel-plated brass	PA
Contact material	Copper alloy	-
Inflammability class according to UL 94	V0	V0
No. of pos.	8	-
Connection method	LSA	-
Connection cross section AWG	26 ... 22 (solid)	-
Insertion/withdrawal cycles	≥ 1000	≥ 1000
Temperature data		
Ambient temperature (operation)	-20 °C ... 70 °C	-40 °C ... 80 °C

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
RJ45 socket insert , 8-pos., shielded, with cable connection			
CAT6	VS-08-BU-RJ45-6/KA/LSA	1653168	5
RJ45 socket insert , 8-pos., shielded, socket to socket			
CAT5	VS-08-BU-RJ45/BU	1689064	5
CAT6	VS-08-BU-RJ45-6-MOD/BU	1653155	5
RJ45 keystone panel mounting frame , version 6, for round mounting cutout, with seal and central nut			
Military gray RAL 7042	VS-08-A-RJ45/MOD-1-R-IP67	1689844	1
Deep black RAL 9005	VS-08-A-RJ45/MOD-1-R-IP67 BK	1658053	5
RJ45 keystone panel mounting frame , version 6, with rectangular mounting cutout, with seal, without mounting screws			
Military gray RAL 7042	VS-08-A-RJ45/MOD-1-IP67	1689080	5
Deep black RAL 9005	VS-08-A-RJ45/MOD-1-IP67-BK	1658642	5

Accessories

Stripping tool , for multiple-stage repositioning of shielded conductors	VS-CABLE-STRIP-VARIO	1657407	1
Protective cover for version 6 panel mounting frame			
Military gray RAL 7042	VS-08-SD-F	1652606	5
Deep black RAL 9005	VS-08-SD-F-BK	1658066	5

IP65/IP67 RJ45 panel mounting frame and socket inserts



Push/pull, version 14,
with PCB connection

Ethernet



Version 6,
with PCB connection

Electrical data	
Rated voltage	125 V
Rated current	1 A
Housing material	Copper alloy
Contact material	Copper alloy
Inflammability class according to UL 94	V0
No. of pos.	8
Insertion/withdrawal cycles	≥ 750
Temperature data	
Ambient temperature (operation)	-25 °C ... 80 °C

Technical data	
VS-08-BU-RJ45-6/...	VS-PPC-F1-RJ45-MNNA-1R-PHA
125 V	-
1 A	-
Copper alloy	Zinc die-cast
Copper alloy	-
V0	V0
8	-
≥ 750	≥ 500
-25 °C ... 80 °C	-40 °C ... 70 °C

Description
RJ45 socket insert , for PCB assembly, CAT6, 8-pos., shielded, with angled solder pins, 1x
RJ45 socket insert , for PCB mounting, CAT5, 8-pos., shielded, with angled solder pins
RJ45 socket insert , single, for PCB mounting, CAT6, 8-pos., shielded
Straight solder pins
Angled solder pins
RJ45 panel mounting frame , version 14, IP65/IP67, for rectangular mounting cutout, with seal, without mounting screws
Metal housing
Plastic housings
RJ45 panel mounting frame , version 6, for rectangular mounting cutout, with seal, without mounting screws
Military gray RAL 7042
Deep black RAL 9005

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-08-BU-RJ45-10G/LH-1	1420401	1
VS-08-BU-RJ45-6/LV-1	1653090	5
VS-08-BU-RJ45-6/LH-1	1653087	5
VS-PPC-F1-RJ45-MNNA-1R-PHA	1608029	1
VS-PPC-F1-RJ45-P0BK-1R-PHA	1657847	1

Stripping tool
for multiple-stage repositioning of shielded conductors
Protective cover
For data port
Protective cover for version 6 panel mounting frame
Military gray RAL 7042
Deep black RAL 9005

Accessories		
VS-CABLE-STRIP-VARIO	1657407	1
VS-PPC-C1-PC-ROBK-L	1405293	1

Technical data	
VS-08-BU-RJ45/LP-1	VS-08-A-RJ45/LP-1-IP67...
150 V	-
1.5 A	-
-	PA
Copper alloy	-
V0	V0
8	-
≥ 750	≥ 1000
-40 °C ... 85 °C	-40 °C ... 80 °C

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-08-BU-RJ45/LP-1	1688586	5
VS-08-BU-RJ45-6/LV-1	1653090	5
VS-08-BU-RJ45-6/LH-1	1653087	5
VS-08-A-RJ45/LP-1-IP67	1689446	5
VS-08-A-RJ45/LP-1-IP67-BK	1658655	5

Accessories		
VS-CABLE-STRIP-VARIO	1657407	1
VS-08-SD-F	1652606	5
VS-08-SD-F-BK	1658066	5

IP65/IP67 RJ45 panel mounting frame including socket inserts



RJ45 panel mounting frame with socket insert, version 1



RJ45 panel mounting frame with socket insert, version 1

Electrical data

Transmission characteristics (category)
Housing material
Inflammability class according to UL 94
No. of pos.
Connection cross section AWG
Insertion/withdrawal cycles
Temperature data
Ambient temperature (operation)

Technical data		
CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)		
Zinc die-cast		
V0		
8		
-		
750		
-40 °C ... 70 °C		

Ordering data

Description

RJ45 panel mounting frame, IP67, for bayonet locking, metal, with socket/socket contact insert, for round mounting cutout, with seal, without mounting screws

RJ45 panel mounting frame, IP67, for bayonet locking, metal, with contact insert for cable connection, for round mounting cutout, with seal, without mounting screws

Type	Order No.	Pcs. / Pkt.
VS-V1-F-RJ45-MNNA-1-C-S-JJ-S	1419184	1

Accessories

Protective cover, IP67, plastic, for covering the contact insert in the RJ45, LC, and SCRJ panel mounting frame

VS-V1-F-PC-POBK	1419186	1
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Technical data

CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
Zinc die-cast
V0
8
26 ... 22 (stranded)
750
-40 °C ... 70 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
VS-V1-F-RJ45-MNNA-1-C-S-JI-S	1419185	1

Accessories

VS-V1-F-PC-POBK	1419186	1
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M12 plug-in connector, for assembly

Ethernet



M12 plug-in connector, 10 Gbps, Piercecon® connection

Ethernet



M12 plug-in connector, 100 Mbps, screw connection



Technical data

VS-08-M12...-10G-P SCO

Electrical data

Nominal voltage U_N
Rated current
Transmission characteristics (category)
Material contact / contact surface
Material of grip body
Inflammability class according to UL 94
No. of pos.
Connection method
Connection cross section AWG
Insertion/withdrawal cycles
Temperature data
Ambient temperature (operation)

48 V
0.5 A
CAT6_A
CuSn / Ni/Au
Zinc die-cast, nickel-plated
V0
8
Piercecon®
26
≥ 100
-40 °C ... 85 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
VS-08-M12MS-10G-P SCO	1417430	1
VS-08-M12MR-10G-P SCO	1417443	1

Accessories

VS-CABLE-STRIP-VARIO	1657407	1
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Technical data

SACC-M12MSD-4CON-...-SH

60 V
4 A
CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
CuZn / Au
Zinc die-cast, nickel-plated
HB
4
Screw connection
24 ... 18
≥ 100
-40 °C ... 85 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
SACC-M12MSD-4CON-PG 7-SH	1521258	1
SACC-M12MSD-4CON-PG 9-SH	1521261	1

Accessories

VS-CABLE-STRIP-VARIO	1657407	1
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Description

Plug-in connector, CAT6_A, plug, 8-pos., shielded, X-coded, cable diameter: 4 mm ... 8 mm

straight
angled

Plug-in connector, Pg7 screw connection, 4-pos., D-coded, cable diameter: 4 mm ... 6 mm
Plug, straight

Plug-in connector, Pg9 screw connection, 4-pos., D-coded, cable diameter: 4 mm ... 8 mm
Plug, straight

Stripping tool, for multiple-stage repositioning of shielded conductors

EtherCAT
Technology Group

**CAT5/CAT5e**90 | PHOENIX CONTACT

M12 flush-type plug-in connector, solder connection



X-coded

Ethernet



Y-coded

Electrical data

Nominal voltage U_N
Rated current
Transmission characteristics (category)
Contact material
Material of grip body
Inflammability class according to UL 94
No. of pos.
Insertion/withdrawal cycles
Temperature data
Plug / socket

Technical data

SACC-DSI-FSX-8CON...
48 V
0.5 A
CAT6 _A
CuZn
Zinc die-cast, nickel-plated
V0
8
≥ 100
-40 ... 85

Ordering data

Description

Flush-type socket , CAT6 _A , Ethernet, one-piece, 8-pos., M12 SPEEDCON, with straight solder connection, rear/screw mounting with: M16 fastening thread Pg9 fastening thread
Hybrid flush-type plug-in connector for the reflow soldering process , with straight solder connection, 4 x power contacts, 4 x signal contacts, rear mounting, SPEEDCON
Socket Hybrid flush-type plug-in connector for the wave soldering process , with straight solder connection, 4 x power contacts, 4 x signal contacts, rear mounting, SPEEDCON
Socket Contact carrier, two-piece , CAT6 _A , Ethernet, 8-pos., rear mounting, with angled solder connection
Hybrid contact carrier, two-piece , Ethernet, 8-pos., rear/screw mounting, with angled solder connection

Type	Order No.	Pcs. / Pkt.
SACC-DSI-FSX-8CON-M16-L180 SCO	1424177	20
SACC-DSI-FSX-8CON-PG9-L180 SCO	1404741	20
SACC-CI-M12FSX-8CON-L90	1424180	20

Technical data

VS-08-DSIV-L180-HYB SCO
30 V (Data)
0.5 A (Data) / 6 A (Power)
CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
CuZn
Zinc die-cast, nickel-plated
V0
8
≥ 100
-40 ... 85

Ordering data

Type	Order No.	Pcs. / Pkt.
VS-08-DSIV-L180-HYB SCO	1456666	20
SACC-DSI-FSY-8CON-M16-L180 SCO	1407503	20
SACC-CI-M12FSY-8CON-L90	1424193	20

Data plug-in connectors

Network components - M12 plug-in connectors

M12 flush-type plug-in connector, with 0.5 m litz wires



Front mounting, D-coded



Rear mounting, D-coded

Electrical data	
Nominal voltage U_N	
Rated current	
Transmission characteristics (category)	
Contact material	
Material of grip body	
Inflammability class according to UL 94	
Connection method	
Insertion/withdrawal cycles	
Temperature data	
Plug / socket	[°C]



Technical data		
SACC-E-...-4CON-M16/0,5 SCO		
250 V		
4 A		
CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)		
CuZn		
Zinc die-cast, nickel-plated		
V0		
Individual wires		
≥ 100		
Ordering data		
-25 ... 85		



Technical data		
SACC-DSI-FSD-4CON...		
250 V		
4 A		
CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)		
CuZn		
Zinc die-cast, nickel-plated		
V0		
Individual wires		
≥ 100		
Ordering data		
-25 ... 85		

Description
Bus system flush-type socket, PROFINET , 4-pos., M12 SPEEDCON, D-coded, front/screw mounting with M16 thread, with 0.5 m TPE litz wire, 4 x 0.34 mm ²
Socket
Bus system flush-type socket, PROFINET , 4-pos., M12 SPEEDCON, D-coded, front/screw mounting with M16 thread, can be positioned, with 0.5 m TPE litz wire, 4 x 0.34 mm ²
Socket
Bus system flush-type socket, PROFINET , 4-pos., M12 SPEEDCON, D-coded, rear/screw mounting with Pg9 thread, with 0.5 m TPE litz wire, 4 x 0.34 mm ²
Socket

Type	Order No.	Pcs. / Pkt.
SACC-E-FSD-4CON-M16/0,5 SCO	1535202	1
SACC-EC-FSD-4CON-M16/0,5 SCO	1535215	1

Type	Order No.	Pcs. / Pkt.
SACC-DSI-FSD-4CON-PG9/0,5 SCO	1551529	1

M12 flush-type plug-in connector, with Ethernet cable



Ethernet, X-coded,
cable type: 94F

Ethernet



Ethernet hybrid, Y-coded,
cable type: 94I

Electrical data

Nominal voltage U_N
Rated current
Transmission characteristics (category)
Contact material
Material of grip body
Inflammability class according to UL 94
Insertion/withdrawal cycles

Temperature data

Plug / socket	[°C]
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Technical data

VS-FSBPXS-OE-94F...

48 V
0.5 A
CAT6 _A
CuZn
Zinc die-cast, nickel-plated
V0
≥ 100

-40 ... 90

Ordering data

Description	Cable length
-------------	--------------

Assembled Ethernet cable, CAT6_A, shielded, 4-pair, 26* AWG stranded (7-wire), RAL 5021 (water blue), M12 flush-type socket, rear/screw mounting with M16 fastening thread to free cable end

0.5 m	VS-FSBPXS-OE-94F/0,5
1 m	VS-FSBPXS-OE-94F/1,0
2 m	VS-FSBPXS-OE-94F/2,0
5 m	VS-FSBPXS-OE-94F/5,0

Assembled Ethernet cable, hybrid, shielded, 4 x 26 AWG (data) and 4 x 20 AWG (power), RAL 9005 (black), M12 flush-type socket, rear/screw mounting with M16 fastening thread to free cable end

0.5 m
1 m
2 m
5 m

Technical data

VS-FSBPYS-OE-94I...

30 V (Power and data)
6 A (Power) / 0.5 A (Data)
CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
CuZn
Zinc die-cast, nickel-plated
V0
≥ 100

-40 ... 85

Ordering data

Type	Order No.	Pcs. / Pkt.
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VS-FSBPYS-OE-94I/0,5 SCO	1407504	1
VS-FSBPYS-OE-94I/1,0 SCO	1407505	1
VS-FSBPYS-OE-94I/2,0 SCO	1407506	1
VS-FSBPYS-OE-94I/5,0 SCO	1407507	1

Data plug-in connectors

Network components - M12 plug-in connectors

Control cabinet feed-through/ bulkhead, M12/RJ45



Ethernet



Bulkhead, 10 Gbps



Ethernet



Bulkhead, 100 Mbps and 1 Gbps



Technical data

VS-BH-M12FSX-10G-RJ45/...

Electrical data
Nominal voltage U_N
Rated current
Transmission characteristics (category)

60 V
0.5 A
CAT6_A

Contact material
Material of grip body
Inflammability class according to UL 94
Connection method
Insertion/withdrawal cycles
Temperature data

Copper alloy
PA
V0
-
≥ 100

Plug / socket [°C] -25 ... 85

Ordering data

Description

Control cabinet feed-through, CAT6_A, M12, 8-pos.,
X-coded to RJ45 socket
90° socket outlet
180° socket outlet

Control cabinet feed-through, M12, 8-pos.,
A-coded to RJ45 socket
90° socket outlet
180° socket outlet

Control cabinet feed-through, M12, 4-pos.,
D-coded to RJ45 socket
90° socket outlet
180° socket outlet

Type

Order No.

Pcs. /
Pkt.

VS-BH-M12FSX-10G-RJ45/90
VS-BH-M12FSX-10G-RJ45/180

1404548
1404549

1
1

Technical data

VS-BH-M12FS-8CON-RJ45...

VS-BH-M12FSD-RJ45...

50 V
1 A
CAT5 (IEC 11801:2002),
CAT5e (TIA 568B:2001)
Copper alloy
PA
V0
-
≥ 100

50 V
1 A
CAT5 (IEC 11801:2002),
CAT5e (TIA 568B:2001)
Copper alloy
-
V0
-
-

-25 ... 85

-

Ordering data

Type

Order No.

Pcs. /
Pkt.

VS-BH-M12FS-8CON-RJ45/ 90
VS-BH-M12FS-8CON-RJ45/180

1405057
1405060

1
1

VS-BH-M12FSD-RJ45/90
VS-BH-M12FSD-RJ45/180

1657261
1657494

1
1

Data plug-in connectors

Network components - assembled cables

**Network cables,
sold by the meter,
Ethernet, shielded**

Ethernet



2-pair, twisted pair

Ethernet



4-pair, twisted pair

Description	Ordering data			Type	Ordering data		
	Type	Order No.	Pcs. / Pkt.		Type	Order No.	Pcs. / Pkt.
PUR stranded - blue, 2 x 2 x 26 AWG, CAT5e, SF/UTP							
100 m cable ring	VS-OE-OE-93E-100,0	1416295	1				
Variable cable length	VS-OE-OE-93E/...	1417320	1				
PUR solid - blue, 4 x 2 x 24 AWG, CAT5e, SF/UTP							
100 m cable ring					VS-OE-OE-94A-100,0	1416305	1
Variable cable length					VS-94A/...	1416415	1
PUR stranded - blue, 4 x 2 x 26 AWG, CAT5e, SF/UTP							
100 m cable ring					VS-OE-OE-94B-100,0	1416567	1
Variable cable length					VS-OE-OE-94B/...	1417333	1
PUR suitable for use with drag chain - blue, 4 x 2 x 26 AWG, CAT5e, S/UTP							
100 m cable ring					VS-OE-OE-94C-100,0	1416318	1
Variable cable length					VS-OE-OE-94C/...	1417346	1
PVC stranded, outdoor - black, 4 x 2 x 26 AWG, CAT5e, SF/UTP							
100 m cable ring					VS-OE-OE-94D-100,0	1416334	1
Variable cable length					VS-94D/...	1416444	1
FRNC solid - blue, 4 x 2 x 23 AWG, CAT6 _A , S/FTP							
100 m cable ring					VS-OE-OE-94E-100,0	1416350	1
Variable cable length					VS-94E/...	1416460	1

Ordering example for cables with variable cable lengths:

For a network cable type **94A** with a cable length of 34.0 m, the ordering data is as follows:

Order No.	Length [m] Max. 100 m
1416415	34.0
	Increment: 1.0 m ... 100 m = 1.0 m

Assembled cables, Ethernet, 4-pos., shielded



Ethernet

Open cable end



M8 plug



RJ45 plug, IP20



OE

M8MS

R4AC

M8 plug



M8 socket



M8MS

M8FS

Ordering data

Ordering data

Order No.

Order No.

1 m 1407344

2 m 1407345

5 m 1407346

10 m 1407347

Variable 1408719

Variable 1408716

1 m 1407348

2 m 1407349

5 m 1407350

10 m 1407351

Variable 1408718

Variable 1408715

1 m 1407352

2 m 1407353

5 m 1407354

10 m 1407355

Variable 1408717

Variable 1408714

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the **93B** cable type and are available from stock.

Ordering data for cables with variable cable lengths:

For a network cable, type **93B**, fitted with a **straight M8 plug** at one end and an **RJ45 plug with IP20 protection** at the other end, and **4.5 m** in length, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 100 m	
1408717	93B	4.5	
Minimum order amount = 25		Increments: 0.2 ... 3 m = 0.1 m > 3 m = 0.5 m	
Pin M8	RJ45	Wire color	Signal
1	1	YE	TD+
4	2	OG	TD-
2	3	WH	RD+
3	6	BU	RD-

Technical data

PROFINET [93B]

CAT5 (IEC 11801:2002),
CAT5e (TIA 568B:2001)

Transmission characteristics (category)

Cable structure
Conductor cross section
Conductor structure for signal
AWG signal line
Cable diameter
Conductor resistance
Type of shield

1x4xAWG22/7; SF/TQ
4x 0.34 mm²
7x 0.25 mm

22
6.5 mm
≤ 120 Ω/km

Aluminum-coated foil, tin-plated copper braided shield

Conductor material
Outer sheath material
Color of outer sheath
Color, single wire

Tin-plated Cu litz wires
PVC
Green RAL 6018
White, yellow, blue, orange

Ambient temperature

Fixed installation [°C]
Flexible installation [°C]

-40 ... 70
-40 ... 70

Data plug-in connectors

Network components - assembled cables

Assembled cables, Ethernet, 4-pos., shielded



Ethernet

Open cable end



OE

RJ45 plug, IP20



R4AC

RJ45 plug, version 6



R4MC

RJ45 plug, version 14,
metal



R4RC

RJ45 plug, version 14,
plastic



R4QC

M12 plug, SPEEDCON



MSD SCO

M12 plug, SPEEDCON



MRD SCO

RJ45 plug, IP20



R4AC

Ordering data

Order No.

1 m 1405633

RJ45 plug,
version 6



R4MC

Ordering data

Order No.

2 m 1405675

RJ45 plug,
version 14,
metal



R4RC

Ordering data

Order No.

5 m 1405743

1 m 1408933
2 m 1408934
5 m 1408935
10 m 1408936

2 m 1405921

5 m 1405992

1 m 1408937
2 m 1408938
5 m 1408939
10 m 1408940

1 m 1408941
2 m 1408942
5 m 1408943
10 m 1408945

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the **93E** cable type and are available from stock.

Ordering data for cables with variable cable lengths:

For a network cable, type **93E**, fitted with a **straight M12 plug** at one end and an **RJ45 plug with IP20 protection** at the other end, and **4.5 m in length**, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 100 m
1408712	93E	4.5
Minimum order amount = 25		Increments: 0.2 ... 3 m = 0.1 m > 3 m = 0.5 m

Cable description	Cable type	Pin		Wire color		Signal
PUR stranded - blue, 2 x 2, CAT5e	93E	M12	RJ45			
		1	1	WHOG		TD+
		3	2	OG		TD-
		2	3	WHGN		RD+
		4	6	GN		RD-

RJ45 plug, version 14, plastic	M12 plug, SPEEDCON	M12 plug, SPEEDCON	M12 socket, SPEEDCON	M12 socket, SPEEDCON	M12 flush-type socket, rear mounting
					
R4QC	MSD SCO	MRD SCO	FSD SCO	FRD SCO	FSDBP
Ordering data	Ordering data	Ordering data	Ordering data	Ordering data	Ordering data
Order No.	Order No.	Order No.	Order No.	Order No.	Order No.
5 m	1 m	1407356	1 m	1407380	2 m
	2 m	1407357	2 m	1407381	
	5 m	1407358	5 m	1407382	
	10 m	1407359	10 m	1407383	
	Variable	1408713	Variable	1408697	
5 m	1 m	1407360	1 m	1407384	2 m
	2 m	1407361	2 m	1407385	
	5 m	1407362	5 m	1407386	
	10 m	1407363	10 m	1407387	
	Variable	1408712	Variable	1408696	
	1 m	1407364	1 m	1407388	2 m
	2 m	1407365	2 m	1407389	
	5 m	1407366	5 m	1407390	
	10 m	1407367	10 m	1407391	
	Variable	1408710	Variable	1408695	
	1 m	1407368	1 m	1407392	2 m
	2 m	1407369	2 m	1407393	
	5 m	1407370	5 m	1407394	
	10 m	1407371	10 m	1407395	
	Variable	1408709	Variable	1408694	
1 m	1 m	1407372	1 m	1407396	2 m
2 m	2 m	1407373	2 m	1407397	
5 m	5 m	1407374	5 m	1407398	
10 m	10 m	1407375	10 m	1407399	
	Variable	1408707	Variable	1408693	
	1 m	1407376	1 m	1407400	
	2 m	1407377	2 m	1407401	
	5 m	1407378	5 m	1407402	
	10 m	1407379	10 m	1407403	
	Variable	1408706	Variable	1408692	
		Variable	Variable	Variable	
		Variable	Variable	Variable	
		Variable	Variable	Variable	

Technical data

Ethernet [93E]

Transmission characteristics (category)

CAT5 (IEC 11801:2002),
CAT5e (TIA 568B:2001)

Cable structure

2x2xAWG26/7; SF/UTP

Conductor cross section

2x 2x 0.14 mm²

Conductor structure for signal

7x 0.16 mm

AWG signal line

26

Cable diameter

6.4 mm

Conductor resistance

≤ 290 Ω/km (at 20 °C)

Type of shield

Aluminum-coated foil, tin-plat-
ed copper braided shield

Conductor material

Bare Cu litz wires

Outer sheath material

PUR

Color of outer sheath

water blue RAL 5021

Color, single wire

white/orange-orange,
white/green-green

Ambient temperature

Fixed installation

[°C]

-20 ... 80

Flexible installation

[°C]

-20 ... 80

Data plug-in connectors

Network components - assembled cables

Assembled cables, Ethernet, 8-pos., shielded



Ethernet

Open cable end



OE

RJ45 plug, IP20



R4AC

RJ45 plug, version 6



R4MC

RJ45 plug, version 14,
metal



R4RC

RJ45 plug, version 14,
plastic



R4QC

M12 plug, SPEEDCON



MS SCO

M12 plug, SPEEDCON



MR SCO

RJ45 plug, IP20



R4AC

Ordering data

Order No.

5 m 1407699

1 m 1408950
2 m 1408951
5 m 1408952
10 m 1408953

RJ45 plug,
version 6



R4MC

Ordering data

Order No.

5 m 1407725

5 m 1407932

1 m 1408955
2 m 1408956
5 m 1408954
10 m 1408958

RJ45 plug,
version 14,
metal



R4RC

Ordering data

Order No.

5 m 1407783

5 m 1407990

1 m 1408961
2 m 1408962
5 m 1408959
10 m 1408963

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the **94B** cable type and are available from stock.

Ordering data for cables with variable cable lengths:

For a network cable, type **94C**, fitted with a **straight M12 plug** at one end and an **RJ45 plug with IP20 protection** at the other end, and **4.5 m in length**, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 100 m
1408681	94C	4.5
Minimum order amount = 25		Increments: 0.2 ... 3 m = 0.1 m > 3 m = 0.5 m

Cable description		Cable type		Pin	Wire color		Signal
				M12	RJ45		
PUR stranded - blue, 4 x 2, CAT5e		94B		6	1	WHOG	D1+
				4	2	OG	D1-
PUR suitable for use with drag chain - blue, 4 x 2, CAT5e		94C		1	5	WHBU	D3+
				7	4	BU	D3-
				5	3	WHGN	D2+
				8	6	GN	D2-
				2	7	WHBN	D4+
				3	8	BN	D4-

RJ45 plug, version 14, plastic	M12 plug, SPEEDCON	M12 plug, SPEEDCON	M12 socket, SPEEDCON	M12 socket, SPEEDCON	M12 flush-type socket, rear mounting
					
R4QC	MS SCO	MR SCO	FS SCO	FR SCO	FSBP
Ordering data	Ordering data	Ordering data	Ordering data	Ordering data	Ordering data
Order No.	Order No.	Order No.	Order No.	Order No.	Order No.
5 m 1407819	1 m 1407404 2 m 1407405 5 m 1407406 10 m 1407407 Variable 1408682	Variable 1408675	1 m 1407439 2 m 1407440 5 m 1407441 10 m 1407442 Variable 1408665	Variable 1408657	5 m 1407877
5 m 1412024	1 m 1407414 2 m 1407415 5 m 1407416 10 m 1407417 Variable 1408681	Variable 1408674	1 m 1407443 2 m 1407444 5 m 1407445 10 m 1407446 Variable 1408664	Variable 1408655	5 m 1412082
	1 m 1407422 2 m 1407423 5 m 1407424 10 m 1407425 Variable 1408679	Variable 1408671	1 m 1407451 2 m 1407452 5 m 1407453 10 m 1407454 Variable 1408662	Variable 1408653	5 m 1412231
	1 m 1407426 2 m 1407427 5 m 1407428 10 m 1407429 Variable 1408678	Variable 1408670	1 m 1407455 2 m 1407456 5 m 1407457 10 m 1407458 Variable 1408661	Variable 1408652	5 m 1412503
1 m 1408965 2 m 1408966 5 m 1408964 10 m 1408967	1 m 1407430 2 m 1407431 5 m 1407432 10 m 1407433 Variable 1408677	Variable 1408668	1 m 1407459 2 m 1407460 5 m 1407461 10 m 1407462 Variable 1408660	Variable 1408651	5 m 1412590
	1 m 1407434 2 m 1407435 5 m 1407436 10 m 1407438 Variable 1408676	Variable 1408667	1 m 1407463 2 m 1407464 5 m 1407465 10 m 1407466 Variable 1408659	Variable 1408650	
		Variable 1408666	Variable 1408658	Variable 1408649	

	Technical data	Technical data
	Ethernet [94B]	Ethernet [94C]
Transmission characteristics (category)	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
Cable structure	4x2xAWG26/7; SF/UTP	4x2xAWG26/19; S-UTP
Conductor cross section	4x 2x 0.14 mm ²	4x 2x 0.14 mm ²
Conductor structure for signal	7x 0.16 mm	19x 0.10 mm
AWG signal line	26	26
Cable diameter	6.4 mm	6.9 mm
Conductor resistance	≤ 290 Ω/km (at 20 °C)	≤ 290 Ω/km (at 20 °C)
Type of shield	Aluminum-coated foil, tin-plated copper braided shield	Tin-plated copper braided shield
Conductor material	Bare Cu litz wires	Bare Cu litz wires
Outer sheath material	PUR	PUR
Color of outer sheath	water blue RAL 5021	water blue RAL 5021
Color, single wire	white/blue-blue, white/orange-orange, white/green-green, white/brown-brown	white/blue-blue, white/orange-orange, white/green-green, white/brown-brown
Ambient temperature		
Fixed installation	[°C] -40 ... 80	-20 ... 80
Flexible installation	[°C] -40 ... 80	-20 ... 80

Data plug-in connectors

Network components - assembled cables

Assembled cables,
Ethernet, 8-pos., shielded, CAT6_A



Ethernet

Open cable end



OE

RJ45 plug, IP20



R4AC

RJ45 plug, version 14,
metal



R4RC

RJ45 plug, version 14,
plastic



R4QC

M12 plug, SPEEDCON



MSX SCO

RJ45 plug, IP20



M12 plug,
SPEEDCON



R4AC

Ordering data

Order No.

1 m	1418866
2 m	1408360
5 m	1418879
10 m	1408367

MSX SCO

Ordering data

Order No.

1 m	1407467
2 m	1407468
5 m	1407469
10 m	1407470
Variable	1408648

1 m	1407471
2 m	1407472
5 m	1407473
10 m	1407474
Variable	1408647

1 m	1407475
2 m	1407476
5 m	1407477
10 m	1407478
Variable	1408646

1 m	1407479
2 m	1407480
5 m	1407481
10 m	1407482
Variable	1408645

1 m	1407483
2 m	1407484
5 m	1407485
10 m	1407486
Variable	1408644

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the **94F** cable type and are available from stock.

Ordering data for cables with variable cable lengths:

For a network cable, type **94F**, fitted with a **straight M12 plug** at one end and an **RJ45 plug with IP20 protection** at the other end, and **4.5 m in length**, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 100 m
1408647	94F	4.5
Minimum order amount = 25		
Increments: 0.2 ... 3 m = 0.1 m > 3 m = 0.5 m		

Cable description		Cable type		Pin		Wire color		Signal
				M12	RJ45			
PUR stranded - blue, 4 x 2, CAT6 _A		94F		1	1	WHOG		D1+
				2	2	OG		D1-
				7	5	WHBU		D3+
				8	4	BU		D3-
				3	3	WHGN		D2+
				4	6	GN		D2-
				5	7	WHBN		D4+
				6	8	BN		D4-

	Technical data
	Ethernet [94F]
Transmission characteristics (category)	CAT6 _A
Cable structure	4x2xAWG26/7; S/FTP
Conductor cross section	4x 2x 0.14 mm ²
Conductor structure for signal	7x 0.16 mm
AWG signal line	26
Cable diameter	6.4 mm
Conductor resistance	≤ 290 Ω/km (at 20 °C)
Type of shield	Tin-plated copper braided shield
Type of pair shielding	Aluminum-lined foil
Conductor material	Bare Cu litz wires
Outer sheath material	PUR
Color of outer sheath	water blue RAL 5021
Color, single wire	white/blue-blue, white/orange-orange, white/green-green, white/brown-brown
Ambient temperature	
Fixed installation	[°C] -20 ... 80
Flexible installation	[°C] -20 ... 80

Data plug-in connectors

Network components - assembled cables

Assembled cables, Ethernet hybrid, 4+4-pos., shielded



Ethernet



M12 plug, SPEEDCON



MSY SCO

Ordering data

Order No.

Open cable end



OE

M12 plug, SPEEDCON



MSY SCO

1 m	1407487
2 m	1407488
5 m	1407489
10 m	1407490
Variable	1408642

1 m	1407491
2 m	1407492
5 m	1407493
10 m	1407494
Variable	1408641

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the **94H** cable type and are available from stock.

Ordering data for cables with variable cable lengths:

For a network cable, type **94H**, fitted with a **straight M12 plug** at one end and an **RJ45 plug with IP20 protection** at the other end, and **4.5 m** in length, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 100 m
1408717	94H	4.5
Minimum order amount = 25		
Increments: 0.2 ... 3 m = 0.1 m > 3 m = 0.5 m		

Pin M12	Wire color	Signal
1	WHOG	TD+
2	OG	TD-
3	WHGN	RD+
4	GN	RD-
5	BU	
6	WH	
7	BN	
8	BK	

Transmission characteristics (category)

Cable structure	
Conductor cross section for signal	[mm²]
Conductor structure for signal	
AWG signal line	
Conductor cross section for power	[mm²]
Conductor structure for power	
AWG power supply	
Cable diameter	
Type of shield	

Conductor material	
Outer sheath material	
Color of outer sheath	
Color, single wire	

Ambient temperature

Fixed installation	[°C]
Flexible installation	[°C]

Technical data

Ethernet hybrid [94H]

CAT5 (IEC 11801:2002),
CAT5e (TIA 568B:2001)

1x4xAWG26+1x4xAWG20
0.15
19x 0.10 mm
26
0.6
19x 0.20 mm
20
7.6 mm
Tin-plated copper
braided shield
Bare Cu litz wires
PUR
Black RAL 9005
White/orange-orange, white/green-green, white, blue, brown, black

**Network cables,
sold by the meter,
PROFINET, shielded**



4-wire, star quad

Ordering data			
Description	Type	Order No.	Pcs. / Pkt.
PVC solid - green , 1 x 4 x 22 AWG, CAT5e, SF/TQ, type A			
100 m cable ring	VS-OE-OE-93A-100,0	1416392	1
Variable cable length	VS-93A/...	1416486	1
PVC stranded - green , 1 x 4 x 22 AWG, CAT5e, SF/TQ, type B			
100 m cable ring	VS-OE-OE-93B-100,0	1416389	1
Variable cable length	VS-OE-OE-93B/...	1417362	1
PUR suitable for use with drag chain - green, 1 x 4 x 22 AWG, CAT5e, SF/TQ, type C			
100 m cable ring	VS-OE-OE-93C-100,0	1416376	1
Variable cable length	VS-OE-OE-93C/...	1417491	1
PUR suitable for use with robots - green, 1 x 4 x 22 AWG, CAT5e, S/TQ			
100 m cable ring	VS-OE-OE-93R-100,0	1416363	1
Variable cable length	VS-OE-OE-93R/...	1417388	1
RADOX® for railway applications - black, 1 x 4 x 22 AWG, CAT5e, SF/TQ			
Variable cable length	VS-OE-OE-937/...	1402687	1

**Ordering example for cables
with variable cable lengths:**

For a network cable type **93A** with a cable length of 34.0 m, the ordering data is as follows:

Order No.	Length [m] Max. 100 m
1416486	34.0
	Increment: 1.0 m ... 100 m = 1.0 m

Data plug-in connectors

Network components - assembled cables

Assembled cables, PROFINET, 4-pos., shielded



**PROFI
NET**

Open cable end



OE

RJ45 plug, IP20



R4AC

RJ45 plug, IP20



R4ACR

RJ45 plug, version 14, metal



R4RC

RJ45 plug, version 14, plastic



R4QC

M12 plug, SPEEDCON



MSD SCO

M12 plug, SPEEDCON



MRD SCO

RJ45 plug, IP20



R4AC

Ordering data

Order No.

RJ45 plug, IP20



R4ACR

Ordering data

Order No.

RJ45 plug, version 14, metal



R4RC

Ordering data

Order No.

5 m 1416162

1 m 1408968
2 m 1408969
5 m 1408970
10 m 1408971

1 m 1418248
2 m 1418277

5 m 1416138

1 m 1409002
2 m 1409003
5 m 1409004
10 m 1409005

1 m 1408974
2 m 1408975
5 m 1408972
10 m 1408976

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the **93B** cable type and are available from stock.

Ordering data for cables with variable cable lengths:

For a network cable, type **93C**, fitted with a **straight M12 plug** at one end and an **RJ45 plug with IP20 protection** at the other end, and **4.5 m in length**, the ordering data is as follows:

Cable description		Cable type	Pin		Wire color		Signal
			M12	RJ45			
PVC stranded - green, 1 x 4, CAT5e		93B	1	1	YE		TD+
PUR suitable for use with drag chain - green, 1 x 4, CAT5e		93C	3	2	OG		TD-
PUR for robot applications - green, 1 x 4, CAT5e		93R	2	3	WH		RD+
RADOX® for railway applications - black, 1 x 4, CAT5e		937	4	6	BU		RD-
PUR stranded - green, 1 x 4, CAT5e		93M					

Order No.	Cable type	Length [m] Max. 100 m
1408639	93C	4.5
Minimum order amount = 25		Increments: 0.2 ... 3 m = 0.1 m > 3 m = 0.5 m

Network components - assembled cables

RJ45 plug, version 14, plastic		M12 plug, SPEEDCON		M12 plug, SPEEDCON		M12 socket, SPEEDCON		M12 socket, SPEEDCON		M12 flush-type socket, rear mounting	
											
R4QC		MSD SCO		MRD SCO		FSD SCO		FRD SCO		FSDBP	
Ordering data		Ordering data		Ordering data		Ordering data		Ordering data		Ordering data	
Order No.		Order No.		Order No.		Order No.		Order no.		Order No.	
5 m	1416168	1 m	1407495	Variable	1408633	1 m	1407528	Variable	1408615	1 m	1437779
		2 m	1407496			2 m	1407529			2 m	1437782
		5 m	1407497			5 m	1407530			5 m	1437795
		10 m	1407498			10 m	1407531				
		Variable	1408640			Variable	1408623				
5 m	1416141	1 m	1407499	Variable	1408632	1 m	1407532	Variable	1408613		
		2 m	1407500			2 m	1407533				
		5 m	1407501			5 m	1407534				
		10 m	1407502			10 m	1407535				
		Variable	1408639			Variable	1408622				
		1 m	1407508	Variable	1408631	1 m	1407536	Variable	1408612		
		2 m	1407509			2 m	1407537				
		5 m	1407510			5 m	1407538				
		10 m	1407511			10 m	1407539				
		Variable	1408638			Variable	1408621				
		1 m	1407516	Variable	1408628	1 m	1407544	Variable	1408610		
		2 m	1407517			2 m	1407545				
		5 m	1407518			5 m	1407546				
		10 m	1407519			10 m	1407547				
		Variable	1408636			Variable	1408619				
1 m	1408978	1 m	1407520	Variable	1408626	1 m	1407548	Variable	1408609		
2 m	1408979	2 m	1407521			2 m	1407549				
5 m	1408977	5 m	1407522			5 m	1407551				
10 m	1408980	10 m	1407523			10 m	1407552				
		Variable	1408635			Variable	1408618				
		1 m	1407524	Variable	1408625	1 m	1407553	Variable	1408608		
		2 m	1407525			2 m	1407554				
		5 m	1407526			5 m	1407555				
		10 m	1407527			10 m	1407556				
		Variable	1408634			Variable	1408617				
				Variable	1408624			Variable	1408616		
								Variable	1408607		

	Technical data	Technical data	Technical data	Technical data
	PROFINET [93B]	PROFINET [93C]	PROFINET [93R]	PROFINET [937]
Transmission characteristics (category)	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
Cable structure	1x4AWG22/7; SF/TQ	1x4AWG22/7; SF/TQ	1x4AWG22/19; S/TQ	1x4AWG22/7; SF/TQ
Conductor cross section	4x 0.34 mm ²	4x 0.34 mm ²	4x 0.38 mm ²	4x 0.34 mm ²
Conductor structure for signal	7x 0.25 mm	7x 0.25 mm	19x 0.16 mm	7x 0.25 mm
AWG signal line	22	22	22	22
Cable diameter	6.5 mm	6.5 mm	6.5 mm	6.6 mm
Conductor resistance	≤ 120 Ω/km	≤ 120 Ω/km	≤ 120 Ω/km	≤ 54 Ω/km
Type of shield	Aluminum-coated foil, tin-plated copper braided shield	Aluminum-coated foil, tin-plated copper braided shield	Tin-plated copper braided shield	Plastic-coated aluminum foil, tin-plated copper braided shield
Conductor material	Tin-plated Cu litz wires	Tin-plated Cu litz wires	Tin-plated Cu litz wires	Silver-plated Cu litz wires
Outer sheath material	PVC	PUR	PUR	RADOX® GWK S
Color of outer sheath	Green RAL 6018	Green RAL 6018	Green RAL 6018	Black RAL 9005
Color, single wire	White, yellow, blue, orange	White, yellow, blue, orange	White, yellow, blue, orange	White, yellow, blue, orange
Ambient temperature				
Fixed installation	[°C] -40 ... 70	-40 ... 70	-40 ... 80	-40 ... 90
Flexible installation	[°C] -40 ... 70	-40 ... 70	-40 ... 80	-25 ... 90

Data plug-in connectors

Network components - assembled cables

Assembled cables, EtherCAT, 4-pos., shielded



Open cable end



OE

RJ45 plug, IP20



R4AC

RJ45 plug, IP20



R4ACR

M12 plug, SPEEDCON



MSD SCO

M12 plug, SPEEDCON



MRD SCO

RJ45 socket, Freenet



F4AC

RJ45 plug, IP20



R4AC

Ordering data

Order No.

1 m	1408981
2 m	1408982
5 m	1408983
10 m	1408984

RJ45 plug, IP20



R4ACR

Ordering data

Order No.

1 m	1402505
2 m	1402508
1 m	1409006
2 m	1409007
5 m	1409014
10 m	1409015

M12 plug,
SPEEDCON



MSD SCO

Ordering data

Order No.

1 m	1407557
2 m	1407558
5 m	1407559
10 m	1407560
Variable	1408600
1 m	1407561
2 m	1407562
5 m	1407563
10 m	1407564
Variable	1408599
1 m	1407565
2 m	1407566
5 m	1407567
10 m	1407568
Variable	1408598
1 m	1407569
2 m	1407570
5 m	1407571
10 m	1407572
Variable	1408597

2 m	1419142
-----	---------

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the **93G** cable type and are available from stock.

Ordering data for cables with variable cable lengths:

For a network cable, type **93H**, fitted with a **straight M12 plug** at one end and an **RJ45 plug with IP20 protection** at the other end, and **4.5 m** in length, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 100 m
1408599	93H	4.5
Minimum order amount = 25		Increments: 0.2 ... 3 m = 0.1 m > 3 m = 0.5 m

Cable description		Cable type		Pin		Wire color		Signal
				M12	RJ45			
PVC stranded - green, 1 x 4, CAT5e		93G		1	1	YE		TD+
				3	2	OG		TD-
PUR suitable for use with drag chain - green, 1 x 4, CAT5e		93H		2	3	WH		RD+
				4	6	BU		RD-

M12 plug, SPEEDCON	M12 socket, SPEEDCON	M12 socket, SPEEDCON	M12 flush-type socket, rear mounting
			
MRD SCO	FSD SCO	FRD SCO	FSDBP
Ordering data	Ordering data	Ordering data	Ordering data
Order No.	Order No.	Order No.	Order No.
			1 m 1419135
			2 m 1419136
			5 m 1419137
Variable 1408596	Variable 1408590	Variable 1408584	
			2 m 1419146
Variable 1408595	Variable 1408589	Variable 1408583	
Variable 1408594	Variable 1408587	Variable 1408582	
Variable 1408593	Variable 1408586	Variable 1408581	
Variable 1408592	Variable 1408585	Variable 1408580	

	Technical data	Technical data
	EtherCAT [93G]	EtherCAT [93H]
Transmission characteristics (category)	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
Cable structure	1x4xAWG22/7; SF/TQ	1x4xAWG22/7; SF/TQ
Conductor cross section	4x 0.34 mm ²	4x 0.34 mm ²
Conductor structure for signal	7x 0.25 mm	7x 0.25 mm
AWG signal line	22	22
Cable diameter	6.5 mm	6.5 mm
Conductor resistance	≤ 120 Ω/km	≤ 120 Ω/km
Type of shield	Aluminum-coated foil, tin-plated copper braided shield	Aluminum-coated foil, tin-plated copper braided shield
Conductor material	Tin-plated Cu litz wires	Tin-plated Cu litz wires
Outer sheath material	PVC	PUR
Color of outer sheath	Green RAL 6018	Green RAL 6018
Color, single wire	White, yellow, blue, orange	White, yellow, blue, orange
Ambient temperature		
Fixed installation	[-40 ... 70 °C]	-40 ... 70
Flexible installation	[-40 ... 70 °C]	-40 ... 70

Ethernet RJ45, patch cables

Ethernet



RJ45 plug, IP20, straight



RJ45 plug, IP20, angled



RJ45 plug, IP20, straight



RJ45 plug, IP20, angled



Ordering data

Order No.

0.3 m	1417993
0.5 m	1418028
1 m	1418057
2 m	1418109
5 m	1418141

Ordering data

Order No.

0.3 m	1418002
0.5 m	1418031
1 m	1418070
2 m	1418125
5 m	1418154

0.3 m	1418015
0.5 m	1418044
1 m	1418099
2 m	1418138
5 m	1418167

Notes:

For information about the cable qualities, see page 200

Pin	Wire color	Signal
RJ45 ^{*)}	RJ45 ^{*)}	
1	WHOG	D1+
2	OG	D1-
5	WHBU	D3+
4	BU	D3-
3	WHGN	D2+
6	GN	D2-
7	WHBN	D4+
8	BN	D4-

*) RJ45 assignment according to TIA568B

Transmission characteristics (category)

Cable structure
Conductor cross section
Conductor structure for signal
AWG signal line
Cable diameter
Conductor resistance

Type of shield

Conductor material
Outer sheath material
Color of outer sheath
Color, single wire

Ambient temperature

Fixed installation	[°C]
Flexible installation	[°C]

Technical data

Ethernet cable

CAT6 _A
4x2xAWG26/7; S/FTP
4x 2x 0.14 mm ²
7x 0.16 mm
26
6.4 mm
≤ 290 Ω/km (at 20 °C)

Tin-plated copper
braided shield
Bare Cu litz wires
PUR
water blue RAL 5021
white/blue-blue,
white/orange-orange,
white/green-green,
white/brown-brown

RJ45 patch cables

Ethernet



RJ45 patch cables for IP20 applications

		Technical data			
		FL CAT5 PATCH 0,3	FL CAT6 PATCH 0,3		
Cable, properties					
External diameter		5.5 mm	5.5 mm		
Single wire, material		Cu litz wire	Cu litz wire		
Individual wires per module		8	8		
Single wire, cross section		0.14 mm ²	0.14 mm ²		
Outer sheath, material		LSFROH	LSFROH		
Smallest bending radius, fixed installation		30 mm	30 mm		
Shielding		SF/UTP	S/FTP		
Connector					
Volume resistance		≤ 0.003 Ω (IEC 60603-7)	≤ 0.003 Ω (IEC 60603-7)		
General data					
Ambient temperature (operation)		-10 °C ... 60 °C	-10 °C ... 60 °C		
Ordering data					
Description		Type	Order No.	Pcs. / Pkt.	
Patch cable, CAT5, pre-assembled		0.3 m	FL CAT5 PATCH 0,3	2832250	10
		0.5 m	FL CAT5 PATCH 0,5	2832263	10
		1 m	FL CAT5 PATCH 1,0	2832276	10
		1.5 m	FL CAT5 PATCH 1,5	2832221	10
		2 m	FL CAT5 PATCH 2,0	2832289	10
		3 m	FL CAT5 PATCH 3,0	2832292	10
		5 m	FL CAT5 PATCH 5,0	2832580	10
		7.5 m	FL CAT5 PATCH 7,5	2832616	10
		10 m	FL CAT5 PATCH 10,0	2832629	10
Patch cable, CAT6, pre-assembled		0.3 m	FL CAT6 PATCH 0,3	2891181	10
		0.5 m	FL CAT6 PATCH 0,5	2891288	10
		1 m	FL CAT6 PATCH 1,0	2891385	10
		1.5 m	FL CAT6 PATCH 1,5	2891482	10
		2 m	FL CAT6 PATCH 2,0	2891589	10
		3 m	FL CAT6 PATCH 3,0	2891686	10
		5 m	FL CAT6 PATCH 5,0	2891783	10
		7.5 m	FL CAT6 PATCH 7,5	2891880	10
		10 m	FL CAT6 PATCH 10	2891877	10
		12.5 m	FL CAT6 PATCH 12,5	2891369	5
		15 m	FL CAT6 PATCH 15,0	2891372	5
		20 m	FL CAT6 PATCH 20,0	2891576	5



Dust protection
for SFN switches and patch fields



Security lock
for SFN switches and patch fields

Description	Ordering data			Ordering data		
	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Dust protection with color coding , for SFN switch and angled patch connector						
- Black	FL DUST CVR BK	2891107	10			
- Blue	FL DUST CVR BU	2891204	10			
- Brown	FL DUST CVR BN	2891301	10			
- Yellow	FL DUST CVR YE	2891408	10			
- Gray	FL DUST CVR GY	2891505	10			
- Green	FL DUST CVR GN	2891602	10			
- Red	FL DUST CVR RD	2891709	10			
- Violet	FL DUST CVR VT	2891806	10			
- White	FL DUST CVR WH	2891903	10			
Security frame for SFN switch and patch fields						
- Green				FL PLUG GUARD GN	2891615	20
- Red				FL PLUG GUARD RD	2891712	20
- White				FL PLUG GUARD WH	2891819	20
Locking element for security frame FL PLUG GUARD...						
- Locking element				FL PORT GUARD	2891220	20
- Key				FL PLUG GUARD KEY	2891327	1
Color coding for FL CAT ...PATCH...						
- Black						
- Blue						
- Brown						
- Yellow						
- Gray						
- Green						
- Red						
- Violet						
Security element for FL CAT ...PATCH...						
- Security element						
Lockable security element for FL PATCH...						
- Security element, lockable						
- Key						





**Color coding
for RJ45 FL patch cables**



**Security element
for RJ45 FL patch cables**



**Lockable security element
for RJ45 FL patch cables**

Ordering data		
Type	Order No.	Pcs. / Pkt.
FL PATCH CCODE BK	2891194	20
FL PATCH CCODE BU	2891291	20
FL PATCH CCODE BN	2891495	20
FL PATCH CCODE YE	2891592	20
FL PATCH CCODE GY	2891699	20
FL PATCH CCODE GN	2891796	20
FL PATCH CCODE RD	2891893	20
FL PATCH CCODE VT	2891990	20

Ordering data		
Type	Order No.	Pcs. / Pkt.
FL PATCH SAFE CLIP	2891246	20

Ordering data		
Type	Order No.	Pcs. / Pkt.
FL PATCH GUARD	2891424	20
FL PATCH GUARD KEY	2891521	1



Data plug-in connectors

Network components - patch panels, terminal outlets, couplings

Modular distribution panel



19" mounting frame



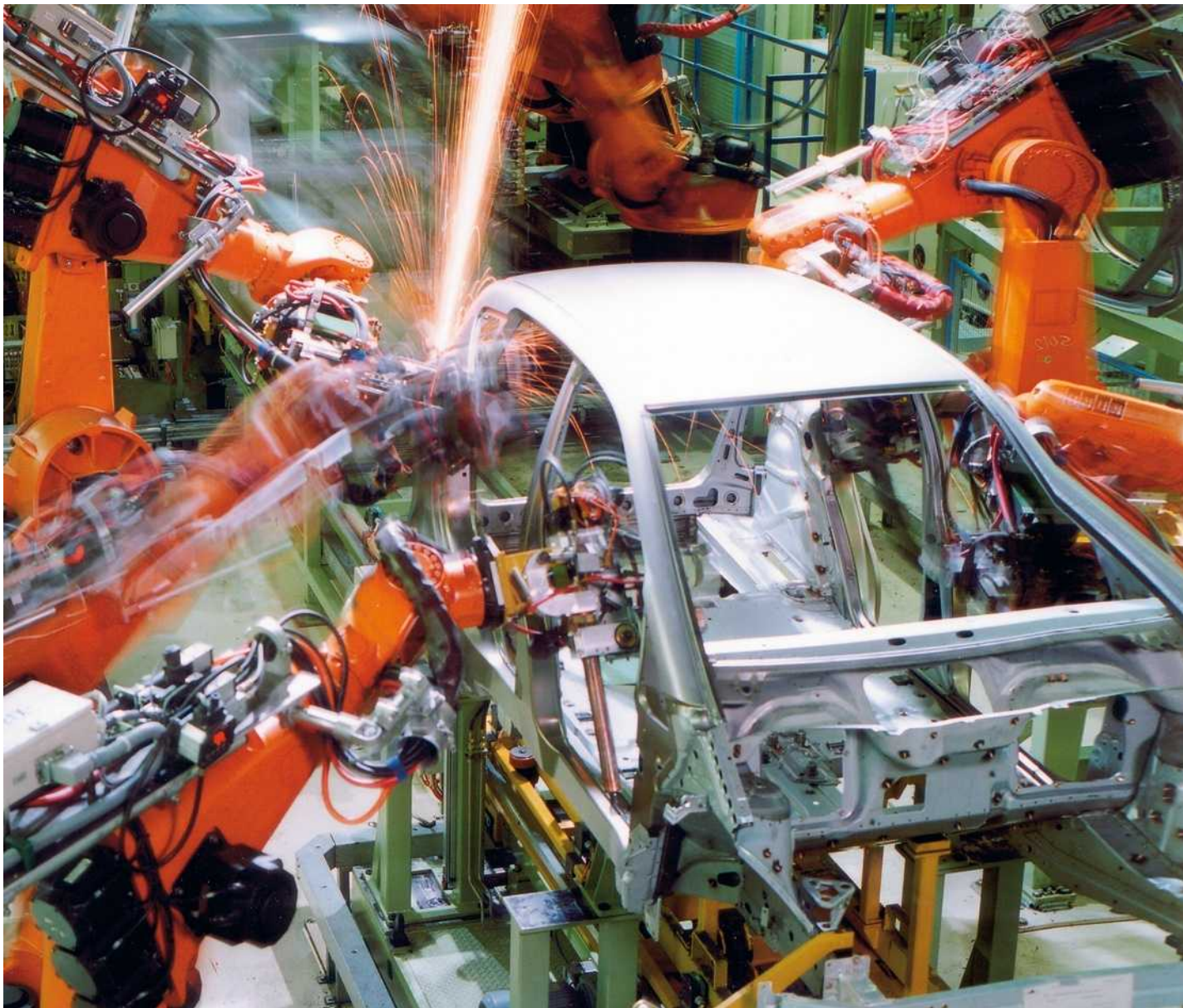
Assembled modules
for 19" mounting frames

	Technical data			Technical data		
Electrical data	CUC-PP-FRAME-19			CUC-PP-MODUL-RJ45:6-RJ45:6/...		
Transmission characteristics (category)	-			CAT6 _A		
Material data						
Housing material	Steel, powder-coated			Stainless steel		
Inflammability class according to UL 94	V0			V0		
Connection data						
Connection method	-			-		
Connection cross section AWG	-			-		
External cable diameter	-			18 mm		
Insertion/withdrawal cycles	-			≥ 750		
Temperature data						
Ambient temperature (operation)	-20 °C ... 60 °C			-20 °C ... 60 °C		
Ordering data				Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
19" frame, empty, for using 8 modules (RJ45)	CUC-PP-FRAME-19	1407986	1			
Jumpering panel	CUC-PP-PATCHBAY	1407994	1			
RJ45 module, 6 x RJ45 to 6 x RJ45, CAT6 _A , can be unlocked from the front, variable length				CUC-PP-MODUL-RJ45:6-RJ45:6/...	1407995	1
Dummy frame, size of one module, for use in the frame				CUC-PP-MODUL-COVER	1407988	1
Accessories				Accessories		
Screw set, fixing material for the frame	CUC-PP-FRAME-SCREWSET	1407989	1			
Cable binder, fixing material for module cable routing				CUC-PP-MODUL-CABLEFIXSET	1407991	1

Ordering example for modules of variable length:

For an RJ45 module with a cable length of 25.0 m, the ordering data is as follows:

Order No.	Length [m]
1407995	25
	Increment: 1.0 m ... 80 m = 0.5 m



The EMC-protected installation concept facilitates easy and EMC-safe cabling with hose packs from the control cabinet to the robot head based on the cabling guidelines for PROFINET.



The integrated installation system significantly reduces assembly effort and consists of cascable individual components that are coordinated with one another for flexible connection of the hose packs.



Particularly in the field of welding robots or conveyor systems, it is important to use a consistent shielding concept for installation in order to prevent interference on the data cables.

Copper-based,
EMC-safe installation systemsPROFI
NETPush/pull robot interface,
with RJ45 and power insertsPROFI
NETPush/pull robot interface,
with RJ45 inserts

Electrical data
Transmission characteristics (category)
Material data
Housing material
Connection data
Connection method
Connection cross section AWG
Cable cross section
Insertion/withdrawal cycles
Temperature data
Ambient temperature (operation)

Technical data		
VS-MP-PPC/CG-PO/10G		
CAT6 _A		
Aluminum alloy		
-		
-		
5 mm ... 8 mm (Data cable gland)		
> 1000 (Data)		
-40 °C ... 70 °C		

Description
Multi-port connection , for passive PROFINET cabling to robots, including mounting foot, for cable diameter :
5 mm ... 8 mm
7 mm ... 10.5 mm
Multi-port power connection : push/pull power, for passive PROFINET cabling to robots, including mounting foot
Multi-port power coupling : for passive PROFINET cabling to robots, including mounting foot
Multi-port data coupling : for passive PROFINET cabling to robots, including mounting foot
Metal housing

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-MP-PPC/CG-PO/10G	1403682	1
VS-MP-PPC/CG-XL-PO/10G	1403688	1
VS-MP-PPC/CG-PO	1403681	1
VS-MP-PPC/PPC-PO	1403684	1

Protective cover
For data port
For power port
Stripping tool , for multiple-stage repositioning of shielded conductors

Accessories		
VS-PPC-C1-PC-ROBK-L	1405293	1
VS-PPC-C2-PC-ROBK-L	1405303	1
VS-CABLE-STRIP-VARIO	1657407	1

Technical data		
VS-MP-PPC/CG-10G		
CAT6 _A		
Aluminum alloy		
-		
-		
5 mm ... 8 mm (Data cable gland)		
> 1000 (Data)		
-40 °C ... 70 °C		

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-MP-PPC/CG-10G	1403678	1
VS-MP-PPC/CG-XL-10G	1403686	1
VS-MP-PPC/PPC-1G	1403685	1

Accessories		
VS-PPC-C1-PC-ROBK-L	1405293	1
VS-PPC-C2-PC-ROBK-L	1405303	1
VS-CABLE-STRIP-VARIO	1657407	1

RJ45 terminal outlets, IP65/IP67

Ethernet

PROFI
NET

sercos
the automation bus



Terminal outlet
with RJ45 slots

Ethernet

PROFI
NET

sercos
the automation bus



Terminal outlet
with M12 slots

Electrical data
Transmission characteristics (category)
Material data
Housing material

Mechanical data
Color
Degree of protection

Technical data		
VS-TO-RO-MCBK-F141...		
CAT6		
Aluminum cast alloy, powder-coated		
black		
IP65/67		

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-TO-RO-MCBK-F1411/1411	1404281	1
VS-TO-RO-MCBK-F1418/1418	1404278	1
VS-TO-RO-MCBK-F1411/1413	1404333	1

Technical data		
VS-TO-RO-MCBK-F142...		
CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)		
Aluminum cast alloy, powder-coated		
black		
IP65/67		

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-TO-RO-MCBK-F1422/1422	1404304	1
VS-TO-RO-MCBK-F1421/1421	1404294	1

Description

Terminal outlet, IP65/IP67, 2 slots, version 14,
with protective plugs, 2 cable entries
Push/pull with 2 x RJ45

Terminal outlet, RJ45, IP65/67, 2 slots version 6,
with protective plugs, 2 cable entries
2 x RJ45

Terminal outlet, IP65/IP67, 2 slots, version 14,
with protective plugs, 2 cable entries
Push/pull with 1 x power and 1 x RJ45

Terminal outlet, M12, IP65/67, 2 slots,
with protective plugs, 2 cable entries
M12 with 2 x sockets, 8-pos., A-coded
M12 with 2 x socket, 4-pos., D-coded

RJ45 couplings, IP65/IP67

Ethernet

RJ45 coupling, version 6,
with protective cover
PROFI
NET
RJ45 push/pull coupling, version 14,
with protective cover

Technical data

VS-08-KU-IP67

Electrical data

Rated voltage

50 V

Rated current

1 A

Transmission characteristics (category)

CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)

Material data

Housing material

PBT

Contact material

Copper alloy

Inflammability class according to UL 94

V0

Mechanical data

No. of pos.

8

Degree of protection

IP67

Temperature data

Ambient temperature (operation)

-10 °C ... 60 °C

Ordering data

Description

RJ45 coupling, IP67, CAT5e, with protective cover

Military gray RAL 7042

Deep black RAL 9005

Multi-port data coupling; for passive PROFINET cabling to robots, including mounting foot

Metal housing

Type

Order No.

Pcs. /
Pkt.

VS-08-KU-IP67

1689268

1

VS-08-KU-IP67-BK

1658684

1

Technical data

VS-PPC-J-1-RJ45-MNBK

-

-

CAT5

Aluminum alloy

-

-

-

IP65

-

Ordering data

Type

Order No.

Pcs. /
Pkt.

VS-MP-PPC/PPC-1G

1403685

1

Data plug-in connectors

Network components - patch panels, terminal outlets, couplings

RJ45 patch panel, IP20

Ethernet

PROFI
NET



Patch panel, 1 port,
with various connection types

Ethernet

PROFI
NET



Patch panel with IDC fast connection

Technical data

FL-PP-RJ45-...

Electrical data
Rated voltage
Rated current
Transmission characteristics (category)
Material data
Housing material
Contact material
Inflammability class according to UL 94
Mechanical data
No. of pos.
Color
Degree of protection
Connection method
Conductor cross section
Connection cross section AWG
Temperature data
Ambient temperature (operation)

-
-
-
PVC/PA
-
-
-
green
IP20
-
-
-

-25 °C ... 70 °C

Ordering data

Description

Patch panel, one RJ45 socket to 8 IDC connection terminal blocks (1:1 assignment), CAT5e, 10/100/1000 Mbps, DIN rail mounting, IP20, option of shield contacting on DIN rail via jumpers

Patch panel, one RJ45 socket to 8 screw connection terminal blocks (1:1 assignment), CAT5e, 10/100/1000 Mbps, DIN rail mounting, IP20, option of shield contacting on DIN rail via jumpers

Patch panel, two RJ45 sockets (1:1 assignment), CAT5e, 10/100/1000 Mbps, DIN rail mounting, IP20, option of shield contacting on DIN rail via jumpers

Patch panel, one RJ45 socket to 8 spring-cage connection terminal blocks (1:1 assignment), CAT5e, 10/100/1000 Mbps, DIN rail mounting, IP20, option of shield contacting on DIN rail via jumpers

RJ45 patch panel, DIN rail mounting, IP20, CAT6

for 1 Gbps

Type	Order No.	Pcs. / Pkt.
FL-PP-RJ45-LSA	2901645	1
FL-PP-RJ45-SC	2901643	1
FL-PP-RJ45/RJ45	2901646	1
FL-PP-RJ45-SCC	2901642	1

Technical data

VS-PP-F-RJ45-CAT6

50 V
1 A
CAT6
PC-GF
Copper alloy
V0
8
gray
IP20
IDC fast connection
0.2 mm ² ... 0.32 mm ²
24 ... 22

-10 °C ... 60 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
VS-PP-F-RJ45-CAT6	1658118	1

Patch fields

Ethernet




**Patch fields
with Freenet RJ45 sockets**

Ethernet interface
Interface
Number of ports
Weight
Width
Height
Depth
Degree of protection
Ambient temperature (operation)
Housing material

Technical data		
	FL PF 2TX CAT5E	FL PF 8TX CAT5E
	Ethernet (RJ45)	
	2	8
	125 g	260 g
	38 mm	124 mm
	112 mm	135 mm
	88 mm	140 mm
	IP20	
	0 °C ... 55 °C (no condensation)	
	Metal	

Description
Patch field, 2 RJ45 network connections
- CAT5e
- CAT6
Patch field, 8 RJ45 network connections
- CAT5e
- CAT6

Ordering data			
Type	Order No.	Pcs. / Pkt.	
FL PF 2TX CAT5E	2891165	1	
FL PF 2TX CAT 6	2891068	1	
FL PF 8TX CAT5E	2891178	1	
FL PF 8TX CAT 6	2891071	1	

Data plug-in connectors

Network components - patch panels, terminal outlets, couplings

RJ45 patch panel and terminal outlet, IP20

EtherCAT
Technology Group

SERCOS
the automation bus

PROFIBUS
NET

Ethernet



RJ45 patch panel for 19" rack and matching socket inserts

EtherCAT
Technology Group

SERCOS
the automation bus

PROFIBUS
NET

Ethernet



IP20 terminal outlets for surface and flush-type mounting, plus corresponding RJ45 socket inserts

	Technical data	
Electrical data	VS-PP-19-1HE-16-F	VS-08-BU-RJ45-5-F/PK
Rated voltage	-	50 V
Rated current	-	1 A
Transmission characteristics (category)	-	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
Material data	PC-GF	-
Housing material	-	Copper alloy
Contact material	V0	V0
Inflammability class according to UL 94		
Mechanical data		
No. of pos.	-	8
Color	gray	-
Degree of protection	IP20	IP20
Connection method	-	IDC
Conductor cross section	-	0.2 mm ² ... 0.32 mm ² (solid)
Connection cross section AWG	-	24 ... 22 (solid)
Temperature data		
Ambient temperature (operation)	5 °C ... 55 °C	-20 °C ... 70 °C

	Ordering data		
Description	Type	Order No.	Pcs. / Pkt.
Patch panel , 19" mounting, IP20, 16 slots for Freenet contact inserts	VS-PP-19-1HE-16-F	1652994	1
Terminal outlet , IP20, with slots for Freenet contact inserts			
Flush-type socket, two slots			
Surface-mounted socket, two slots			
RJ45 Freenet socket insert , 8-pos., shielded, socket to socket			
1 Gbps, CAT5	VS-08-BU/RJ45-F	1405617	1
RJ45 Freenet socket insert , 8-pos., shielded, with cable connection			
1 Gbps, CAT5	VS-08-BU-RJ45-5-F/PK	1652936	1
10 Gbps, CAT6 _A	VS-08-BU-RJ45/10G-F	1424009	1

	Technical data	
Electrical data	VS-TO-OW-2-F-9010	VS-08-BU-RJ45-6-F/PK
Rated voltage	-	50 V
Rated current	-	1 A
Transmission characteristics (category)	-	CAT6
Material data	PC+ABS	-
Housing material	-	Copper alloy
Contact material	HB	V0
Inflammability class according to UL 94		
Mechanical data		
No. of pos.	-	8
Color	Pure white RAL 9010	-
Degree of protection	IP20	IP20
Connection method	-	IDC
Conductor cross section	-	0.14 mm ² ... 0.35 mm ²
Connection cross section AWG	-	26 ... 22 (7-wire)
Temperature data		
Ambient temperature (operation)	5 °C ... 55 °C	-20 °C ... 70 °C

	Ordering data		
Description	Type	Order No.	Pcs. / Pkt.
Flush-type socket , two slots			
Surface-mounted socket , two slots			
RJ45 Freenet socket insert , 8-pos., shielded, socket to socket			
1 Gbps, CAT5	VS-TO-IW-2-F-9010	1653016	1
RJ45 Freenet socket insert , 8-pos., shielded, with cable connection	VS-TO-OW-2-F-9010	1653003	1
1 Gbps, CAT5			
10 Gbps, CAT6 _A			
RJ45 Freenet socket insert , 8-pos., shielded, with cable connection			
1 Gbps, CAT5	VS-08-BU-RJ45-5-F/PK	1652936	1
10 Gbps, CAT6 _A	VS-08-BU-RJ45/10G-F	1424009	1

Data plug-in connectors

Network components - power plug-in connectors and cables

Power plug-in connectors and panel mounting frames, IP65/IP67



Push/pull plug-in connector, version 14, IP65/67, with spring-cage fast connection technology



Socket inserts and push/pull panel mounting frames, for PCB connection

Electrical data
Rated current
Material data
Housing material
Inflammability class according to UL 94
Conductor cross section
Connection cross section AWG
Insertion/withdrawal cycles
Temperature data
Ambient temperature (operation)

Technical data		
VS-PPC-C2-MSTB-MNNA...		
16 A		
Zinc die-cast		
V0		
0.75 mm ² ... 2.5 mm ²		
18 ... 13		
≤ 100		
-40 °C ... 70 °C		

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-PPC-C2-MSTB-MNNA-P13-A5-SP	1608074	1
VS-PPC-C2-MSTB-POBK-P13-A5-SP	1657892	1
VS-PPC-C2-MSTB-POBK-P13-B5-SP	1608236	1

Description
MSTB plug-in connector, IP67 , with push/pull interlocking, 5-pos., with a spring-cage connection, for cable diameter 9.0 mm ... 13.0 mm
Metal housing, 24 V
Plastic housing, 24 V
Plastic housing, 400 V
MSTB contact insert , for PCB mounting, 24 V, 5-pos., RAL 9005 (black), for panel mounting frame VS-PPC-F2-MSTB-...-1R-P
Angled solder pins
Straight solder pins
MSTB contact insert , for PCB mounting, 400 V, 5-pos., RAL 3000 (red), for panel mounting frame VS-PPC-F2-MSTB-...-1R-P
Angled solder pins
Straight solder pins
MSTB panel mounting frame, IP67 , for push/pull interlocking, for PCB connection, for rectangular assembly opening, with gasket, without mounting screws
Metal housing
Plastic housings
MSTB panel mounting frame, IP67 , for push/pull interlocking, with an integrated contact insert for conductor connection, spring-cage connection, for rectangular mounting cutout, with seal, without mounting screws
24 V, plastic
400 V, plastic
24 V, metal
400 V, metal
MSTB panel mounting frame, IP67 , for push/pull interlocking, metal, with an integrated contact insert for conductor connection, spring-cage connection, for round mounting cutout, with seal, without mounting screws
24 V
400 V
Protective cover, IP67 , to cover the contact insert in the push-pull panel mounting frame for power
Metal housing
Protective cover for push/pull panel mounting frame
Protective cover
For power port
Protective cap, IP65 , with push/pull Interlocking for covering the contact insert in the push/pull connector for power, plastic

Technical data		
VS-MSTBA...-BK-A	VS-PPC-F2-MSTB-MNNA...	
16 A	-	
-	Zinc die-cast	
V0	V0	
-	-	
-	-	
≥ 100	≥ 500	
-40 °C ... 70 °C	-40 °C ... 80 °C	

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-MSTBAH 2,5/ 5-GB-5,08-BK-A	1657915	50
VS-MSTBVA 2,5/ 5-GB-5,08-BK-A	1609565	50
VS-MSTBAH 2,5/ 5-GB-5,08-RD-B	1609549	50
VS-MSTBVA 2,5/ 5-GB-5,08-RD-B	1609581	50
VS-PPC-F2-MSTB-MNNA-1R-P	1608087	1
VS-PPC-F2-MSTB-POBK-1R-P	1608281	1
VS-PPC-F2-MSTB-POBK-1R-SPSA5	1608294	1
VS-PPC-F2-MSTB-POBK-1R-SPSB5	1608304	1
VS-PPC-F2-MSTB-MNNA-1R-SPSA5	1608249	1
VS-PPC-F2-MSTB-MNNA-1R-SPSB5	1608252	1
VS-PPC-F2-MSTB-MNNA-1C-SPSA5	1405248	1
VS-PPC-F2-MSTB-MNNA-1C-SPSB5	1405167	1
VS-PPC-C2-PC67-MNNA	1404045	1
VS-PPC-C2-PC-ROBK	1405125	1
VS-PPC-C2-PC-ROBK-L	1405303	1
VS-PPC-F2-PC-POBK	1405329	1

POWER distributors, IP67



Push/pull Y-distributor



Power H-distributor

Electrical data
Rated voltage
Rated current
Material data
Housing material
Mechanical data
No. of pos.
Degree of protection
Temperature data
Ambient temperature (operation)

Technical data		
VS-PPC-J-1220-1227-1020-0,2		
Rated voltage	24 V	
Rated current	16 A	
Material data	Aluminum, die-cast	
Housing material	Aluminum, die-cast	
Mechanical data	5	
No. of pos.	IP65/67	
Degree of protection	IP65/67	
Temperature data	-40 °C ... 70 °C (cable, fixed installation)	
Ambient temperature (operation)	-40 °C ... 70 °C	

Description
PROFINET Y-distributor with assembled power cable, 5-pos., IP65/IP67, MSTB connector with metal housing to 2 x sockets in metal housing, conductor length:
0.2 m
Variable
PROFINET Y-distributor with assembled power cable, 5-pos., IP65/IP67, 7/8" connector with metal housing to 2 x sockets in metal housing, conductor length:
0.2 m
Variable
Power H-distributor , 4 x MSTB contact inserts, metal housing, without mounting screws

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-PPC-J-1220-1227-1020-0,2	1404799	1
VS-PPC-J-1220-1227-1020-...	1405484	1
VS-PPC-J-1226-1227-1021-0,2	1404812	1
VS-PPC-J-1226-1227-1021-...	1405497	1

Mounting foot for power distributors, plastic

Accessories		
VS-PPC-J-M	1405390	1

Technical data		
VS-PPC-J-4X-1227		
Rated voltage	24 V	
Rated current	16 A	
Material data	Zinc die-cast	
Housing material	Zinc die-cast	
Mechanical data	5	
No. of pos.	IP65/67	
Degree of protection	IP65/67	
Temperature data	-40 °C ... 70 °C	
Ambient temperature (operation)	-40 °C ... 70 °C	

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-PPC-J-4X-1227	1405387	1

Accessories		
VS-PPC-J-M	1405390	1

Ordering example for products with variable cable:

For a distributor with a cable length of 34.5 m, the order data is as follows:

Order No.	Length [m]
1405484	34.5
	Increment: 0.5 m;
	Maximum length: 50 m

Data plug-in connectors

Network components - fiber optic Plug-in connectors

Fiber optic plug-in connectors, cables, and panel feed-throughs for POF, HCS, and GOF, IP65/IP67

Ethernet



M12 optic plug-in connectors



M12 transceiver

Technical data				Technical data				
Material data								
Ferrule material	Copper alloy						-	
Inflammability class according to UL 94	V0						V0	
Degree of protection	IP65/67						IP65/67	
External cable diameter	-						-	
Temperature data								
Ambient temperature (operation)	-20 °C ... 70 °C						-20 °C ... 70 °C	
Ordering data				Ordering data				
Description		Type	Order No.	Pcs. / Pkt.	Type		Order No.	Pcs. / Pkt.
Assembled fiber optic cable , round cable, M12 FO to M12 FO, for installation inside buildings, length: 5 m								
For 980/1000 µm POF fiber		FOC-PN-B-1000/M12-C/M12-C/5	1416680	1				
For 200/230 µm HCS fiber		FOC-HCS-GI-1005/M12-C/M12-C/5	1416693	1				
Assembled fiber optic cable , round cable, M12 FO to SCRJ/IP20, for installation inside housing, length: 5 m								
For 980/1000 µm POF fiber		FOC-PN-B-1000/M12-C/SCRJ/5	1416648	1				
For 200/230 µm HCS fiber		FOC-HCS-GI-1005/M12-C/SCRJ/5	1416651	1				
M12 fiber optic transceiver , duplex, for POF fiber, for PCB mounting, M16 fastening thread, with sealing cap								
Wavelength: 650 nm					FOC-M12-MNNA-TC-650		1416716	1
M12 fiber optic coupling , duplex, suitable for all fibers, with wall bracket, IP65 protection					FOC-M12-BU/BU		1416677	1
Repair set , 10 replacement ferrules for M12 fiber optic plug-in connectors in plastic box								
For 980/1000 µm POF fiber		FOC-M12-RS-POF	1406421	1				
For 200/230 µm HCS fiber		FOC-M12-RS-HCS	1406422	1				

Fiber optic plug-in connectors, panel mounting frames, and couplings for POF, IP20 and IP65/IP67

Ethernet



SCRJ plug-in connector, version 6, for 980/1000 µm polymer fibers

Ethernet



SCRJ panel mounting side, version 6, for 980/1000 µm polymer fibers

	Technical data			Technical data		
Material data	VS-SCRJ-...-IP20	VS-SCRJ-...-IP67		VS-SCRJ-GOF-BU/BU		
Housing material	PBT	PA		PBT		
Ferrule material	Copper alloy	Copper alloy		Zirconia ceramics		
Inflammability class according to UL 94	V0	V0		V0		
Color	black	gray		-		
Degree of protection	IP20	IP67		IP20		
Insertion/withdrawal cycles	≥ 1000	≥ 1000		≥ 500		
Temperature data						
Ambient temperature (operation)	-20 °C ... 70 °C	-20 °C ... 70 °C		-25 °C ... 70 °C		
	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
SCRJ fiber optic plug-in connector, duplex, with fast connection	VS-SCRJ-POF-FA-IP20	1654879	1			
	VS-SCRJ-POF-FA-IP67	1657009	1			
Connector set for polymer fibers (diameter of the individual elements: 2.2 mm), for self-assembly, with bend protection						
- F-SMA set, 4 connectors	PSM-SET-FSMA/4-KT	2799720	1			
- SCRJ set, 2 duplex connectors	PSM-SET-SCRJ-DUP/2-POF	2708656	1			
SCRJ socket insert, duplex, for panel mounting frame VARIOSUB IP67, can be used for glass, multi-mode, HCS and polymer						
- 1x SCRJ/SCRJ (duplex)				VS-SCRJ-GOF-BU/BU	1652978	1
VS-SCRJ panel mounting frame, for use with an AVAGO transceiver, type: AFBR 5978Z				VS-SCRJ-A-TC-IP67	1658545	1
Freenet panel mounting frame, version 6, for round mounting cutout, with seal, without mounting screws						
Military gray RAL 7042				VS-A-F-IP67	1653744	5
Deep black RAL 9005				VS-A-F-IP67-BK	1658668	5
	Accessories			Accessories		
Protective cover for version 6 panel mounting frame						
Military gray RAL 7042				VS-08-SD-F	1652606	5
Deep black RAL 9005				VS-08-SD-F-BK	1658066	5
SCRJ cutting tool set, for polymer fiber, for field assembly of SCRJ/IP20 and SCRJ/IP67 push/pull plug-in connectors with fast connection technology, consisting of stripping tool, aramid scissors, SCRJ cutting tool, microscope	TF-SCRJ-POF KONF SET	1405246	1			
Protective cover SCRJ/IP67, for covering the SCRJ pin insert on the SCRJ/IP67 sleeve housing	VS-SCRJ-PC	1653757	5			

Fiber optic connectors, panel mounting frames and couplings for POF, push/pull

Ethernet



SCRJ plug-in connector, version 14,
for 980/1000 µm polymer fibers

Ethernet



SCRJ panel mounting side, version 14,
for 980/1000 µm polymer fibers

Material data
Housing material
Ferrule material
Inflammability class according to UL 94
Color
Degree of protection
Insertion/withdrawal cycles
Temperature data
Ambient temperature (operation)

Technical data	
Metal housing	Plastic housing
Zinc die-cast	PA-GF
Copper alloy	Copper alloy
V0	V0
silver	black
IP65/67	IP65/67
≥ 500	≥ 500
-40 °C ... 70 °C	-20 °C ... 70 °C

Technical data	
Metal housing	Plastic housing
Zinc die-cast	PA-GF
-	-
V0	V0
silver	black
IP65/67	IP65/67
≥ 500	≥ 500
-40 °C ... 80 °C	-40 °C ... 80 °C

Description
SCRJ fiber OPTIC plug-in connector , IP67, with push/pull interlocking, duplex, with fast connection technology
Metal housing
Plastic housings
SCRJ panel mounting frame , IP67, for push/pull interlocking, for rectangular mounting cutout, for AVAGO transceiver (type: AFBR5978Z) on PCB, with seal, without mounting screws
Metal housing
Plastic housings
SCRJ panel mounting frame , IP67, for push/pull interlocking, with Freenet system, for rectangular mounting cutout, with seal, without mounting screws
Metal housing
Plastic housings
SCRJ panel mounting frame , IP67, for push/pull Interlocking, metal, with Freenet system, for round mounting cutout, with seal

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-PPC-C1-SCRJ-MNNA-PG9-A4D-C	1608032	1
VS-PPC-C1-SCRJ-POBK-PG9-A4D-C	1657850	1

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-PPC-F1-SCRJ-MNNA-1RP	1608061	1
VS-PPC-F1-SCRJ-POBK-1RP	1657889	1
VS-PPC-F1-SCRJ-MNNA-1RF	1405374	1
VS-PPC-F1-SCRJ-POBK-1RF	1608210	1
VS-PPC-F1-SCRJ-MNNA-1C-F	1405235	1

Protective cover
For data port
SCRJ cutting tool set , for polymer fiber, for field assembly of SCRJ/IP20 and SCRJ/IP67 push/pull plug-in connectors with fast connection technology, consisting of stripping tool, aramid scissors, SCRJ cutting tool, microscope
Scrj polishing tool SET , for polymer fiber, for field assembly of scrj/ip20 and SCRJ/IP67 plug-in connectors with fast connection system
Protective cover , IP65, with push/pull interlocking, for covering the contact insert in the push/pull connector for RJ45 and SCRJ, plastic

Accessories		
TF-SCRJ-POF KONF SET	1405246	1
VS-SCRJ-POF-KONFTOOL-POLISH	1658820	1
VS-PPC-F1-PC-POBK	1405316	1

Accessories		
VS-PPC-C1-PC-ROBK-L	1405293	1

Fiber optic plug-in connectors and panel feed-throughs, version 1, for POF, IP65/IP67



SCRJ plug-in connector, version 1



Fiber optic panel mounting frame, version 1

Material data
Housing material
Color
Degree of protection
Insertion/withdrawal cycles
Temperature data
Ambient temperature (operation)

Technical data		
VS-V1-C-...-A4A-G		
Zinc die-cast		
silver		
IP67		
500		
-40 °C ... 70 °C		

Description
SCRJ fiber optic plug-in connector , IP67, with bayonet locking, metal housing, duplex, with adhesive connection technology, for 5.0 mm ... 8.0 mm cable diameter
For POF fiber
SCRJ panel mounting frame , IP67, for bayonet locking, metal, SCRJ to 2 x SC, for round mounting cutout, with seal, without mounting screws, with coupling for:
Multi-mode, PCF, and POF

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-V1-C-SCRJ-MNNA-PG9-A4A-G	1419189	1

Protective cover , IP67, plastic, for covering the contact insert in the RJ45, LC, and SCRJ connector
Protective cover , IP67, plastic, for covering the contact insert in the RJ45, LC, and SCRJ panel mounting frame

Accessories		
VS-V1-C-PC-POBK	1419183	1

Technical data		
VS-V1-F-...-C-S-A1		
Zinc die-cast		
-		
IP67		
500		
-40 °C ... 70 °C		

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-V1-F-SCRJ-MNNA-PG9-C-S-A1	1420197	1

Accessories		
VS-V1-F-PC-POBK	1419186	1

Data plug-in connectors

Network components - fiber optic plug-in connectors

Fiber optic plug-in connectors, panel mounting frames, and couplings for HCS, IP20 and IP65/IP67

Ethernet



SCRJ plug-in connector, version 6, for 200/230 µm HCS fibers

Ethernet



SCRJ panel mounting side, version 6, for 200/230 µm HCS fibers

	Technical data			Technical data		
	VS-SCRJ-...-IP20	VS-SCRJ-...-IP67		VS-SCRJ-GOF-BU/BU		
Material data						
Housing material	PBT	PA		PBT		
Ferrule material	Copper alloy	Copper alloy		Zirconia ceramics		
Inflammability class according to UL 94	V0	V0		V0		
Color	black	gray		-		
Degree of protection	IP20	IP67		IP20		
Insertion/withdrawal cycles	≥ 1000	≥ 1000		≥ 500		
Temperature data						
Ambient temperature (operation)	-20 °C ... 70 °C	-20 °C ... 70 °C		-25 °C ... 70 °C		
	Ordering data			Ordering data		
	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
SCRJ fiber optic plug-in connector, IP20 , duplex, with fast connection technology, for 200/230 µm HCS fiber For single wire diameter: 2.9 mm Connector set for HCS fibers (diameter of the individual elements: 2.9 mm), for self-assembly, with bend protection - F-SMA set, 4 connectors - B-FOC (ST®) set, 4 connectors - SCRJ set, 2 duplex connectors SCRJ fiber optic plug-in connector, IP67 , duplex, with fast connection technology, for HCS fiber 200/230 µm, for individual wire diameter 2.9 mm, for cable cross section 5.0 mm ... 8.5 mm	VS-SCRJ-HCS-FA-IP20	1654866	1			
	PSM-SET-FSMA/4-HCS	2799487	1			
	PSM-SET-B-FOC/4-HCS	2708481	1			
	PSM-SET-SCRJ-DUP/2-HCS	2313070	1			
SCRJ socket insert , duplex, for panel mounting frame VARIOSUB IP67, can be used for glass, multi-mode, HCS and polymer - 1x SCRJ/SCRJ (duplex) VS-SCRJ panel mounting frame , for use with an AVAGO transceiver, type: AFBR 5978Z	VS-SCRJ-HCS-FA-IP67	1657012	1			
				VS-SCRJ-GOF-BU/BU	1652978	1
Freenet panel mounting frame , version 6, for round mounting cutout, with seal, without mounting screws Military gray RAL 7042 Deep black RAL 9005				VS-SCRJ-A-TC-IP67	1658545	1
				VS-A-F-IP67	1653744	5
				VS-A-F-IP67-BK	1658668	5
	Accessories			Accessories		
	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Protective cover for version 6 panel mounting frame Military gray RAL 7042 Deep black RAL 9005 Protective cover SCRJ/IP67 , for covering the SCRJ pin insert on the SCRJ/IP67 sleeve housing HCS (GI) DIY case for SCRJ and SC duplex quick mounting connectors, stripping blade, stripping pliers, aramid yarn scissors, fiber stripper, fiber cleaving tool, and microscope	VS-SCRJ-PC	1653757	5	VS-08-SD-F	1652606	5
	PSM-HCS-KONFTOOL/SC-RJ	2708876	1	VS-08-SD-F-BK	1658066	5
				PSM-HCS-KONFTOOL/SC-RJ	2708876	1

Fiber optic plug-in connectors, panel mounting frames, and couplings for HCS, IP20 and IP65/IP67

Ethernet

PROFI
NET



SCRJ plug-in connector, version 14,
for 200/230 µm HCS fibers

Ethernet

PROFI
NET



SCRJ plug-in connector, version 14,
for 200/230 µm HCS fibers

Material data
Housing material
Ferrule material
Inflammability class according to UL 94
Color
Degree of protection
Insertion/withdrawal cycles
Temperature data
Ambient temperature (operation)

Technical data	
Metal housing	Plastic housing
Zinc die-cast	PA-GF
Copper alloy	Copper alloy
V0	V0
silver	black
IP65/67	IP65/67
≥ 500	≥ 500
-40 °C ... 70 °C	-20 °C ... 70 °C

Description
SCRJ fiber optic plug-in connector, IP67 , with push/pull interlocking, duplex, with fast connection technology
Metal housing
Plastic housings
SCRJ fiber optic plug-in connector, IP20 , duplex, with fast connection technology, for 200/230 µm HCS fiber
For single wire diameter: 2.2 mm
Connector set for PROFINET HCS fibers (diameter of the individual elements: 2.2 mm), for self-assembly, with bend protection
- SC duplex set, 2 duplex connectors
- B-FOC (ST®) set, 4 connectors
- SCRJ set, 2 duplex connectors
SCRJ panel mounting frame, IP67 , for push/pull interlocking, for rectangular mounting cutout, for AVAGO transceiver (type: AFBR5978Z) on PCB, with seal, without mounting screws
Metal housing
Plastic housings
SCRJ panel mounting frame, IP67 , for push/pull Interlocking, with Freenet system, for rectangular mounting cutout, with seal, without mounting screws
Metal housing
Plastic housings
SCRJ panel mounting frame, IP67 , for push/pull Interlocking, metal, with Freenet system, for round mounting cutout, with seal

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-PPC-C1-SCRJ-MNNA-PG9-A3C-C	1608045	1
VS-PPC-C1-SCRJ-POBK-PG9-A3C-C	1657863	1
VS-SCRJ-HCS-FA-IP20-PN	1404087	1
PSM-SET-SC-DUPLEX/2-HCS/PN	2313779	1
PSM-SET-B-FOC/4-HCS/PN	2313782	1
PSM-SET-SCRJ-DUP/2-HCS/PN	2313546	1
VS-PPC-F1-SCRJ-MNNA-1RP	1608061	1
VS-PPC-F1-SCRJ-POBK-1RP	1657889	1
VS-PPC-F1-SCRJ-MNNA-1RF	1405374	1
VS-PPC-F1-SCRJ-POBK-1RF	1608210	1
VS-PPC-F1-SCRJ-MNNA-1C-F	1405235	1

Protective cover
For data port
Protective cover, IP65 , with push/pull interlocking, for covering the contact insert in the push/pull connector for RJ45 and SCRJ, plastic
HCS (GI) DIY case for SCRJ and SC duplex quick mounting connectors, stripping blade, stripping pliers, aramid yarn scissors, fiber stripper, fiber cleaving tool, and microscope

Accessories		
VS-PPC-F1-PC-POBK	1405316	1
PSM-HCS-KONFTOOL/SC-RJ	2708876	1

Technical data		
Metal housing	Plastic housing	
Zinc die-cast	PA-GF	
-	-	
V0	V0	
silver	black	
IP65/67	IP65/67	
≥ 500	≥ 500	
-40 °C ... 80 °C	-40 °C ... 80 °C	
Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-PPC-F1-SCRJ-MNNA-1RP	1608061	1
VS-PPC-F1-SCRJ-POBK-1RP	1657889	1
VS-PPC-F1-SCRJ-MNNA-1RF	1405374	1
VS-PPC-F1-SCRJ-POBK-1RF	1608210	1
VS-PPC-F1-SCRJ-MNNA-1C-F	1405235	1
Accessories		
VS-PPC-C1-PC-ROBK-L	1405293	1

Data plug-in connectors

Network components - fiber optic plug-in connectors

Fiber optic plug-in connectors, panel mounting frames, and couplings for GOF, IP20 and IP65/IP67

Ethernet



SCRJ plug-in connector, version 6, for 50/125 µm multi-mode fiberglass

Ethernet



SCRJ panel mounting side, version 6, for 50/125 µm multi-mode fiberglass

Material data
Housing material
Ferrule material
Inflammability class according to UL 94
Color
Degree of protection
Insertion/withdrawal cycles
Temperature data
Ambient temperature (operation)

Technical data	
VS-SCRJ-...-IP20	VS-SCRJ-...-IP67
PBT	PA
Zirconia ceramics	Zirconia ceramics
V0	V0
black	gray
IP20	IP67
≥ 1000	≥ 1000
-20 °C ... 70 °C	-20 °C ... 70 °C

Technical data	
VS-SCRJ-GOF-BU/BU	
PBT	
Zirconia ceramics	
V0	
-	
IP20	
≥ 500	
-25 °C ... 70 °C	

Description
SCRJ fiber optic plug-in connector , duplex, with fast connection technology, for fiberglass multi-mode 50/125 µm, for individual wire diameter 2.9 mm
IP20
IP67
SC duplex fiber optic plug-in connector , IP20, with fast connection technology
SCRJ socket insert , duplex, for panel mounting frame VARIOSUB IP67, can be used for glass, multi-mode, HCS and polymer
- 1x SCRJ/SCRJ (duplex)
VS-SCRJ panel mounting frame , for use with an AVAGO transceiver, type: AFB8 5978Z
Freenet panel mounting frame , version 6, for round mounting cutout, with seal, without mounting screws
Military gray RAL 7042
Deep black RAL 9005

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-SCRJ-GOF-FA-IP20	1657070	1
VS-SCRJ-GOF-FA-IP67	1657083	1
VS-SCDU-GOF-FA-IP20	1658529	1

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-SCRJ-GOF-BU/BU	1652978	1
VS-SCRJ-A-TC-IP67	1658545	1
VS-A-F-IP67	1653744	5
VS-A-F-IP67-BK	1658668	5

Assembly tool set for fiberglass, for field assembly of SCRJ and SC duplex plug-in connectors, with fast connection technology
EU version
US version
Protective cover for version 6 panel mounting frame
Military gray RAL 7042
Deep black RAL 9005
Protective cover SCRJ/IP67 , for covering the SCRJ pin insert on the SCRJ/IP67 sleeve housing

Accessories		
VS-GOF-FA-KONFTOOL-EU	1658228	1
VS-GOF-FA-KONFTOOL-US	1658231	1
VS-SCRJ-PC	1653757	5

Accessories		
VS-08-SD-F	1652606	5
VS-08-SD-F-BK	1658066	5

Fiber optic plug-in connectors and panel mounting frames, version 1, for GOF, IP65/IP67



Fiber optic plug-in connector, version 1



Fiber optic panel mounting frame, version 1

Material data
Housing material
Inflammability class according to UL 94
Color
Degree of protection
Insertion/withdrawal cycles
Temperature data
Ambient temperature (operation)

Technical data		
VS-V1-C-SCRJ-MNNA-PG9...		
Zinc die-cast		
V0		
silver		
IP67		
500		
-40 °C ... 70 °C		

Description
SCRJ fiber optic plug-in connector , IP67, with bayonet locking, metal housing, duplex, with adhesive connection technology, for 5.0 mm ... 8.0 mm cable diameter
For multi-mode fiber
For single mode fiber
LC fiber optic connector , IP67, with bayonet locking, metal housing, duplex, with adhesive connection technology, for 5.0 mm ... 8.0 mm cable diameter
For multi-mode fiber
For single mode fiber
SCRJ panel mounting frame , IP67, for bayonet locking, metal, SCRJ to 2 x SC, for round mounting cutout, with seal, without mounting screws, with coupling for:
Multi-mode, PCF, and POF
Single mode
LC panel mounting frame , IP67, for bayonet locking, metal, for round mounting cutout, with seal, without mounting screws, with coupling for:
Multi-mode
Single mode

Ordering data			
Type	Order No.	Pcs. / Pkt.	
VS-V1-C-SCRJ-MNNA-PG9-A1-G	1419187	1	
VS-V1-C-SCRJ-MNNA-PG9-B1-G	1419188	1	
VS-V1-C-LC-MNNA-PG9-A1-G	1419190	1	
VS-V1-C-LC-MNNA-PG9-B1-G	1419191	1	

Accessories		
VS-V1-C-PC-POBK	1419183	1

Protective cover , IP67, plastic, for covering the contact insert in the RJ45, LC, and SCRJ connector
Protective cover , IP67, plastic, for covering the contact insert in the RJ45, LC, and SCRJ panel mounting frame

Technical data		
VS-V1-F-SCRJ-MNNA-PG9-C-S...		
Zinc die-cast		
V0		
-		
IP67		
500		
-40 °C ... 70 °C		

Ordering data			
Type	Order No.	Pcs. / Pkt.	
VS-V1-F-SCRJ-MNNA-PG9-C-S-A1	1420197	1	
VS-V1-F-SCRJ-MNNA-PG9-C-S-B1	1420207	1	
VS-V1-F-LC-MNNA-PG9-C-S-A1	1420210	1	
VS-V1-F-LC-MNNA-PG9-C-S-B1	1420223	1	

Accessories		
VS-V1-F-PC-POBK	1419186	1

Fiber optic patch panel



Patch panel, SCRJ, socket/socket, for polymer fibers, HCS fibers, and multi-mode fiberglass



Patch panel for 19" rack and matching socket inserts

Ordering data

Description
SCRJ patch panel , DIN rail mounting, IP20, 1 slot
Patch panel , 19" mounting, IP20, 16 slots for Freenet contact inserts

Type	Order No.	Pcs. / Pkt.
VS-PP-F-SCRJ	1658121	1

Ordering data

Type	Order No.	Pcs. / Pkt.
VS-PP-19-1HE-16-F	1652994	1

Fiber optic terminal outlet



IP20 outlet boxes



IP65/IP67 terminal outlet, with SCRJ and power slots

Ordering data

Description
Terminal outlet , IP20, with slots for Freenet contact inserts
Surface-mounted socket, two slots
Flush-type socket, two slots
Surface-mounted socket, six slots
Terminal outlet, SCRJ/power , IP65/67, push/pull, 2 slots version 14, with protective plugs, 2 cable entries
Terminal outlet, SCRJ , IP65/67, push/pull, 2 slots version 14, with protective plugs, 2 cable entries

Type	Order No.	Pcs. / Pkt.
VS-TO-OW-2-F-9010	1653003	1
VS-TO-IW-2-F-9010	1653016	1
VS-TO-OW-6-F-9010	1653029	1

Ordering data

Type	Order No.	Pcs. / Pkt.
VS-TO-RO-MCBK-F1417/1413	1404346	1
VS-TO-RO-MCBK-F1417/1417	1404320	1

Installation system for fiber optics, IP56/IP67




Push/pull robot interface,
with SCRJ and power inserts




Push/pull robot interface,
with SCRJ inserts

Material data
Housing material
Connection data
Connection profile
Insertion/withdrawal cycles
Temperature data
Ambient temperature (operation)

Description
Multi-port connection , for passive PROFINET cabling to robots, including mounting foot, for cable diameter :
5 mm ... 8 mm 7 mm ... 10.5 mm
Multi-port power connection : push/pull power, for passive PROFINET cabling to robots, including mounting foot
Multi-port power coupling : for passive PROFINET cabling to robots, including mounting foot

Protective cover
For data port
For power port
Stripping tool , for multiple-stage repositioning of shielded conductors

Technical data	
VS-MP-PPC/CG-PO/FO	VS-MP-PPC/CG-PO
Aluminum alloy	Aluminum alloy
Data/power: SCRJ/5-pos. ≥ 500 (Data) // ≤ 100 (Power)	Power: 5-pos. ≤ 100 (Power)
-40 °C ... 70 °C	-40 °C ... 70 °C

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-MP-PPC/CG-PO/FO	1404321	1
VS-MP-PPC/CG-XL-PO/FO	1404325	1
VS-MP-PPC/CG-PO	1403681	1
VS-MP-PPC/PPC-PO	1403684	1

Accessories		
VS-PPC-C1-PC-ROBK-L	1405293	1
VS-PPC-C2-PC-ROBK-L	1405303	1
VS-CABLE-STRIP-VARIO	1657407	1

Technical data	
VS-MP-PPC/CG-FO	
Aluminum alloy	
Data: SCRJ ≥ 500 (Data)	
-40 °C ... 70 °C	

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-MP-PPC/CG-FO	1404319	1
VS-MP-PPC/CG-XL-FO	1404324	1

Accessories		
VS-CABLE-STRIP-VARIO	1657407	1

Fiber optic couplings

Ethernet



SCRJ coupling



Couplings for connecting FO cables

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
SCRJ coupling , for terminal outlets VS-TO-... and 19" patch panels VS-PP-19-1HE-16-F and front plate VS-SI-FP-2F						
Coupling ; set, consisting of: - 2 x F-SMA/F-SMA - 2 x B-FOC (ST®)/B-FOC (ST®) - 1 x SCRJ/SCRJ (duplex) - 1 x LC/LC (duplex, multi-mode fiber) - 1 x LC/LC (duplex, single mode fiber) - 1 x SC duplex/SC duplex	VS-SCRJ-GOF-KU	1654358	1	PSM-SET-FSMA-LINK/2 PSM-SET-BFOC-LINK/2 VS-SCRJ-GOF-BU/BU FL MM PATCH COUPLER LC-LC FL SM PATCH COUPLER LC-LC FL COUPLER SC-DUPLEX	2799416 2799429 1652978 2700312 2700313 2901788	1 1 1 1 1 1

Coupling, version 14, IP65/IP67

Ethernet



Description	Ordering data		
	Type	Order No.	Pcs. / Pkt.
SCRJ push/pull coupling , IP67, metal, with protective cover, color: nickel-plated	VS-PPC-J-1-SCRJ-MNBK	1405206	1

Fiber optic outdoor cables, sold by the meter

- Robust round cable for outdoor installation
- Ozone and UV resistant
- Watertight lengthwise
- Integrated vapor barrier and rodent-proof scrim



GOF fiber type



PCF fiber type

	Technical data		Technical data			
	FOC-OE-OE-GB01/...	FOC-OE-OE-GB02/...	FOC-OE-OE-GB03/...	FOC-OE-OE-HB01/...		
Cable data						
Cable abbreviation in accordance with IEC 61977:2010	02-G50/FJ(ZNG)H-...22	02-G50/FJ(ZN)Z-...22	04-G50/FJ(ZNG)H-...22	02-H200/VJ(ZNG)H-...22		
Fibers	50/125 µm OM2	50/125 µm OM2	50/125 µm OM2	200/230 µm		
Attenuation, typical	2.7 dB/km (at 850 nm); 0.8 dB/km (at 1300 nm)	2.7 dB/km (at 850 nm); 0.8 dB/km (at 1300 nm)	2.7 dB/km (at 850 nm); 0.8 dB/km (at 1300 nm)	10 dB/km (at 660 nm), 8 dB/km (at 850 nm)		
Outer sheath						
Material	PE	PUR	PE	PE		
Color	black	black	black	black		
Strain relief elements	Aramid/glass fibers	Non-metallic, aramid fiber	Aramid/glass fibers	Aramid/glass fibers		
Diameter	7.5 mm	7.5 - 8 mm	9 mm	7.5 mm		
Individual wire						
Color	Black/orange	Black/orange	Black/orange	Black/orange		
Diameter	2.2 mm	2.2 mm	2.15 mm	2.2 mm		
Strain relief elements	Non-metallic, aramid fibers	Non-metallic, aramid fibers	Non-metallic, aramid fibers	Non-metallic, aramid fibers		
General data						
Weight	59.00 kg/km	46.00 kg/km	90.00 kg/km	67.00 kg/km		
Ambient temperature (operation)	-40 °C ... 70 °C	-40 °C ... 85 °C	-40 °C ... 70 °C	-20 °C ... 70 °C		
Ambient temperature (storage/transport)	-45 °C ... 70 °C	-45 °C ... 85 °C	-40 °C ... 70 °C	-25 °C ... 70 °C		
Ambient temperature (installation)	-20 °C ... 60 °C	-20 °C ... 60 °C	-20 °C ... 60 °C	-10 °C ... 60 °C		
Halogen-free as per:	According to IEC 60754-1/2	According to IEC 60754-1/2	According to IEC 60754-1/2	According to IEC 60754-1/2		
	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
GOF outdoor cable, 2-wire, full breakout cable for fixed installation	FOC-OE-OE-GB01/...	1406429	1			
GOF outdoor cable, 2-wire, full breakout cable for flexible installation	FOC-OE-OE-GB02/...	1406430	1			
GOF outdoor cable, 4-wire, full breakout cable for fixed installation	FOC-OE-OE-GB03/...	1406431	1			
PCF outdoor cable, 2-wire, full breakout cable for fixed installation				FOC-OE-OE-HB01/...	1406432	1

Ordering example for cables with variable cable lengths:

For fiber optic outdoor cable type **GB02** with a cable length of 34.0 m, the ordering data is as follows:

Order No.	Length [m] Max. 1000 m
1406430	34.0
	Increment: 1.0 m ... 1000 m = 1.0 m

- Universal installation cable for fixed installation indoors
- 2.2 mm individual wires made from extremely hard-wearing polyamide chloride (PA)
- Halogen-free, ozone and UV resistant
- Robust polyurethane (PUR) outer cable sheath

	Free end	FSMA plug, IP20	SCRJ plug, IP20
			
	OE	FSMA	SCRJ
	Ordering data	Ordering data	Ordering data
	Order No.	Order No.	Order No.
Free end			
	OE		
FSMA plug, IP20			
	FSMA		
SCRJ plug, IP20			
	SCRJ		
B-FOC (ST®) plug, IP20			
	BFOC		
SCRJ plug, IP67			
	IP67		
Push/pull SCRJ, plastic			
	PPCPL		
Push/pull SCRJ, metal			
	PPCME		

For a **POF cable**, fitted with an **SCRJ plug** at one end and a **plastic SCRJ push/pull plug-in connector** at the other end, and **15 m** in length, the ordering data is as follows:

Order No.	Plug 1	Plug 2	Length [m]
1402188	SCRJ	PPCPL	15
Length:		Min. 0.5 m Max. 100 m	
Increment:		0.25 m 1 m	1 m ... 5 m 5 m ... 100 m

For a **POF cable 70 m in length**, the ordering data is as follows:

Order No.	Length [m]
2744319	/ 70

Length:	Min. 0.5 m Max. 500 m/cable drum	
Increment:	0.25 m 1 m	1 m ... 5 m 5 m ... 500 m

Network components - assembled fiber optic cables

B-FOC (ST®) plug, IP20	SCRJ plug, IP67	Push/pull SCRJ, plastic	Push/pull SCRJ, metal
			
BFOC	IP67	PPCPL	PPCME
Ordering data	Ordering data	Ordering data	Ordering data
Order No.	Order No.	Order no.	Order No.

Variable 2901553	Variable 1402188	Variable 1402188	Variable 1402188
Variable 2901553	Variable 1402188	Variable 1402188	Variable 1402188

Variable 2901553	Variable 1402188	Variable 1402188	Variable 1402188
Variable 2901553	Variable 1402188	Variable 1402188	Variable 1402188

Variable 1402188	Variable 1402188	Variable 1402188	Variable 1402188
Variable 1402188	Variable 1402188	Variable 1402188	Variable 1402188

Variable 1402188	Variable 1402188	Variable 1402188	Variable 1402188
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Cable data	Technical data
Cable abbreviation in accordance with IEC 61977:2010	J-V11Y 4Y2P 980/1000 160A 10
Fibers	Polymer fiber, 980/1000 µm
Attenuation, typical	230 dB/km (at 660 nm)
Outer sheath	
Material	PUR
Color	red
Diameter	5.5 - 6.5 mm
Strain relief elements	Non-metallic, aramid fiber
Individual wire	
Material	PA
Color	black/orange
Diameter	2.2 mm ±0.07 mm
General data	
Weight	33 kg/km
Ambient temperature (operation)	-20 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Ambient temperature (installation)	-5 °C ... 50 °C
Halogen-free as per:	According to IEC 60754-2

- Robust installation cable for fixed installation indoors
- Dimensioned for higher requirements in respect of tensile load and lateral pressure
- 2.2 mm individual wires made from extremely hard-wearing polyamide chloride (PA)
- Halogen-free, ozone and UV resistant
- Reinforced polyurethane (PUR) outer cable sheath

	Free end	FSMA plug, IP20	SCRJ plug, IP20
			
	OE	FSMA	SCRJ
	Ordering data	Ordering data	Ordering data
	Order No.	Order No.	Order No.
Free end			
			
OE			
FSMA plug, IP20	By the meter 2744322		
		Variable 2901548	Variable 2901548
FSMA			
SCRJ plug, IP20	Variable 2901548	Variable 2901548	Variable 2901548
			
SCRJ			
B-FOC (ST®) plug, IP20	Variable 2901548	Variable 2901548	Variable 2901548
			
BFOC			
SCRJ plug, IP67	Variable 2901548	Variable 2901548	Variable 2901548
			
IP67			
Push/pull SCRJ, plastic	Variable 1402185	Variable 1402185	Variable 1402185
			
PPCPL			
Push/pull SCRJ, metal	Variable 1402185	Variable 1402185	Variable 1402185
			
PPCME			

For a **POF cable**, fitted with an **SCRJ plug** at one end and a **plastic SCRJ push/pull plug-in connector** at the other end, and **15 m** in length, the ordering data is as follows:

Order No.	Plug 1	Plug 2	Length [m]
1402185	SCRJ	PPCPL	15
Length:		Min. 0.5 m Max. 100 m	
Increment:		0.25 m 1 m ... 5 m 1 m 5 m ... 100 m	

For a **POF cable 70 m in length**, the ordering data is as follows:

Order No.	Length [m]
2744322	/ 70

Length:	Min. 0.5 m Max. 500 m/cable drum	
Increment:	0.25 m 1 m	1 m ... 5 m 5 m ... 500 m

Network components - assembled fiber optic cables

B-FOC (ST®) plug, IP20	SCRJ plug, IP67	Push/pull SCRJ, plastic	Push/pull SCRJ, metal
			
BFOC	IP67	PPCPL	PPCME
Ordering data	Ordering data	Ordering data	Ordering data
Order No.	Order No.	Order No.	Order No.

Variable 2901548	Variable 1402185	Variable 1402185	Variable 1402185
Variable 2901548	Variable 1402185	Variable 1402185	Variable 1402185

Variable 2901548	Variable 1402185	Variable 1402185	Variable 1402185
Variable 2901548	Variable 1402185	Variable 1402185	Variable 1402185

Variable 1402185	Variable 1402185	Variable 1402185	Variable 1402185
Variable 1402185	Variable 1402185	Variable 1402185	Variable 1402185

Variable 1402185	Variable 1402185	Variable 1402185	Variable 1402185
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Cable data		Technical data
Cable abbreviation in accordance with IEC 61977:2010		J-V11Y 4Y2P 980/1000 160A
Fibers		10 Polymer fiber, 980/1000 µm
Attenuation, typical		230 dB/km (at 660 nm)
Outer sheath		
Material		PUR
Color		red
Diameter		7.5 - 8.5 mm
Strain relief elements		Non-metallic, aramid fiber
Individual wire		
Material		PA
Color		black/orange
Diameter		2.2 mm ±0.07 mm
General data		
Weight		54 kg/km
Ambient temperature (operation)		-20 °C ... 70 °C
Ambient temperature (storage/transport)		-40 °C ... 80 °C
Ambient temperature (installation)		-5 °C ... 50 °C
Halogen-free as per:		According to IEC 60754-2

Data plug-in connectors

Network components - assembled fiber optic cables

Highly flexible POF cable for free assembly, type RUGGED-FLEX-1013



- Highly flexible round cable for use in trailing cables or drag chains
- Dimensioned for an alternating bending frequency of up to 5,000,000 cycles
- 2.2 mm individual wires made from extremely hard-wearing polyamide chloride (PA)
- Halogen-free, ozone and UV resistant
- Robust Polyurethane (PUR) outer cable sheath

	Free end	FSMA plug, IP20	SCRJ plug, IP20	
	OE	FSMA	SCRJ	
	Ordering data	Ordering data	Ordering data	
	Order No.	Order No.	Order No.	
Free end				
	OE			
FSMA plug, IP20				
	FSMA			
SCRJ plug, IP20				
	SCRJ			
B-FOC (ST®) plug, IP20				
	BFOC			
SCRJ plug, IP67				
	IP67			
Push/pull SCRJ, plastic				
	PPCPL			
Push/pull SCRJ, metal				
	PPCME			
	By the meter	2744335		
	Variable	2901549	Variable	2901549
	Variable	2901549	Variable	2901549
	Variable	2901549	Variable	2901549
	Variable	2901549	Variable	2901549
	Variable	2901549	Variable	2901549
	Variable	2901549	Variable	2901549
	Variable	1402187	Variable	1402187
	Variable	1402187	Variable	1402187
	Variable	1402187	Variable	1402187
	Variable	1402187	Variable	1402187

Ordering example for configured cable:

For a POF cable, fitted with an SCRJ plug at one end and a plastic SCRJ push/pull plug-in connector at the other end, and 15 m in length, the ordering data is as follows:

Order No.	Plug 1	Plug 2	Length [m]
1402187	SCRJ	PPCPL	15
Length: Min. 0.5 m Max. 100 m			
Increment: 0.25 m 1 m 1 m 5 m ... 100 m			

Ordering example for cable sold by the meter:

For a POF cable 70 m in length, the ordering data is as follows:

Order No.	Length [m]
2744335	70
Length: Min. 0.5 m Max. 500 m/cable drum	
Increment: 0.25 m 1 m 1 m 5 m ... 500 m	

Network components - assembled fiber optic cables

B-FOC (ST®) plug, IP20	SCRJ plug, IP67	Push/pull SCRJ, plastic	Push/pull SCRJ, metal
			
BFOC	IP67	PPCPL	PPCME
Ordering data	Ordering data	Ordering data	Ordering data
Order No.	Order No.	Order No.	Order No.

Variable 2901549	Variable 1402187	Variable 1402187	Variable 1402187
Variable 2901549	Variable 1402187	Variable 1402187	Variable 1402187

Variable 2901549	Variable 1402187	Variable 1402187	Variable 1402187
Variable 2901549	Variable 1402187	Variable 1402187	Variable 1402187

Variable 1402187	Variable 1402187	Variable 1402187	Variable 1402187
Variable 1402187	Variable 1402187	Variable 1402187	Variable 1402187

Variable 1402187	Variable 1402187	Variable 1402187	Variable 1402187
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Cable data	Technical data
Cable abbreviation in accordance with IEC 61977:2010	J-V11Y 4Y2P 980/1000 180A
Fibers	10 Polymer fiber, 980/1000 µm
Attenuation, typical	275 dB/km (at 660 nm)
Outer sheath	
Material	PUR
Color	red
Diameter	7.5 - 8.5 mm
Strain relief elements	Non-metallic, aramid fiber
Individual wire	
Material	PA
Color	black/orange
Diameter	2.2 mm ±0.07 mm
General data	
Weight	54 kg/km
Ambient temperature (operation)	-20 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Ambient temperature (installation)	-5 °C ... 50 °C
Halogen-free as per:	According to IEC 60754-2

Data plug-in connectors

Network components - assembled fiber optic cables

PROFINET B POF cable for free assembly, type PN-B-1000



- Universal installation cable for fixed installation indoors
- 2.2 mm individual wires made from extremely hard-wearing polyamide chloride (PA)
- Halogen-free, ozone and UV resistant
- Robust polyurethane (PUR) outer cable sheath
- PROFINET type B

Ethernet



Free end



FSMA plug, IP20



SCRJ plug, IP20



B-FOC (ST®) plug, IP20



Push/pull SCRJ, plastic



Push/pull SCRJ, metal



Free end	FSMA plug, IP20	SCRJ plug, IP20
OE	FSMA	SCRJ
Ordering data	Ordering data	Ordering data
Order No.	Order No.	Order No.
By the meter 2313397	Variable 2901551	Variable 2901551
Variable 2901551	Variable 2901551	Variable 2901551
Variable 2901551	Variable 2901551	Variable 2901551
Variable 2901551	Variable 2901551	Variable 2901551
Variable 2901551	Variable 2901551	Variable 2901551
Variable 2901551	Variable 2901551	Variable 2901551
Variable 1402172	Variable 1402172	Variable 1402172
Variable 1402172	Variable 1402172	Variable 1402172
Variable 1402172	Variable 1402172	Variable 1402172

Ordering example for configured cable:

For a POF cable, fitted with an SCRJ plug at one end and a plastic SCRJ push/pull plug-in connector at the other end, and 15 m in length, the ordering data is as follows:

Order No.	Plug 1	Plug 2	Length [m]
1402172	SCRJ	PPCPL	15
Length: Min. 0.5 m Max. 100 m			
Increment: 0.25 m 1 m 1 m 5 m ... 5 m 5 m ... 100 m			

Ordering example for cable sold by the meter:

For a POF cable 70 m in length, the ordering data is as follows:

Order No.	Length [m]
2313397	70
Length: Min. 0.5 m Max. 500 m/cable drum	
Increment: 0.25 m 1 m 1 m 5 m ... 5 m 5 m ... 500 m	

B-FOC (ST®) plug, IP20	Push/pull SCRJ, plastic	Push/pull SCRJ, metal
		
BFOC	PPCPL	PPCME
Ordering data	Ordering data	Ordering data
Order No.	Order No.	Order No.

Variable	2901551	Variable	1402172	Variable	1402172
Variable	2901551	Variable	1402172	Variable	1402172

Variable	2901551	Variable	1402172	Variable	1402172
Variable	2901551	Variable	1402172	Variable	1402172

Variable	1402172	Variable	1402172	Variable	1402172
Variable	1402172	Variable	1402172	Variable	1402172

Cable data	Technical data
Cable abbreviation in accordance with IEC 61977:2010	J-V11Y 4Y2P 980/1000 160A 10
Fibers	Polymer fiber, 980/1000 µm
Attenuation, typical	230 dB/km (at 660 nm)
Outer sheath	
Material	PUR
Color	Green
Diameter	7.5 - 8.5 mm
Strain relief elements	Non-metallic, aramid fiber
Individual wire	
Material	PA
Color	Black and orange with arrow labeling
Diameter	2.2 mm ±0.07 mm
General data	
Weight	49 kg/km
Ambient temperature (operation)	-20 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Ambient temperature (installation)	5 °C ... 50 °C
Halogen-free as per:	According to IEC 60754-2

Data plug-in connectors

Network components - assembled fiber optic cables

Highly flexible PROFINET C POF cable for free assembly, type PN-C-1003



- Highly flexible round cable for use in trailing cables or drag chains
- Dimensioned for an alternating bending frequency of up to 5,000,000 cycles
- 2.2 mm individual wires made from extremely hard-wearing polyamide chloride (PA)
- Halogen-free, ozone and UV resistant
- Robust polyurethane (PUR) outer cable sheath
- PROFINET type C

Ethernet



Free end



OE

FSMA plug, IP20



FSMA

SCRJ plug, IP20



SCRJ

B-FOC (ST®) plug, IP20



BFOC

Push/pull SCRJ, plastic



PPCPL

Push/pull SCRJ, metal



PPCME

Free end



OE

Ordering data

Order No.

FSMA plug,
IP20



FSMA

Ordering data

Order no.

SCRJ plug,
IP20



SCRJ

Ordering data

Order No.

By the meter 2313407

Variable

2901552

Variable

2901552

Variable

2901552

Variable

2901552

Variable

2901552

Variable

2901552

Variable

2901552

Variable

2901552

Variable

2901552

Variable

2901552

Variable

2901552

Variable

1402175

Variable

1402175

Variable

1402175

Variable

1402175

Variable

1402175

Variable

1402175

Ordering example for configured cable:

For a POF cable, fitted with an SCRJ plug at one end and a plastic SCRJ push/pull plug-in connector at the other end, and 15 m in length, the ordering data is as follows:

Order No.	Plug 1	Plug 2	Length [m]
1402175	SCRJ	PPCPL	15

Length:	Min. 0.5 m Max. 100 m		
Increment:	0.25 m 1 m	1 m ... 5 m 5 m ... 100 m	

Ordering example for cable sold by the meter:

For a POF cable 70 m in length, the ordering data is as follows:

Order No.	Length [m]
2313407	70

Length:	Min. 0.5 m Max. 500 m/cable drum		
Increment:	0.25 m 1 m	1 m ... 5 m 5 m ... 500 m	

B-FOC (ST®) plug, IP20	Push/pull SCRJ, plastic	Push/pull SCRJ, metal
		
BFOC	PPCPL	PPCME
Ordering data	Ordering data	Ordering data
Order No.	Order No.	Order No.

Variable 2901552	Variable 1402175	Variable 1402175
Variable 2901552	Variable 1402175	Variable 1402175

Variable 2901552	Variable 1402175	Variable 1402175
Variable 2901552	Variable 1402175	Variable 1402175

Variable 1402175	Variable 1402175	Variable 1402175
Variable 1402175		Variable 1402175

Cable data	Technical data
Cable abbreviation in accordance with IEC 61977:2010	J-V11Y 4Y2P 980/1000 180A 10
Fibers	Polymer fiber, 980/1000 µm
Attenuation, typical	275 dB/km (at 660 nm)
Outer sheath	
Material	PUR
Color	Green
Diameter	7.5 - 8.5 mm
Strain relief elements	Non-metallic, aramid fiber
Individual wire	
Material	PA
Color	Black and orange with arrow labeling
Diameter	2.2 mm ±0.07 mm
General data	
Weight	51 kg/km
Ambient temperature (operation)	-20 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 80 °C
Ambient temperature (installation)	5 °C ... 50 °C
Halogen-free as per:	According to IEC 60754-2

Universal PROFINET B HCS cables for assembly



- Universal installation cable for fixed installation indoors
- 2.2 mm individual wires made from extremely hard-wearing polyvinyl chloride (PVC)
- Halogen-free, ozone and UV resistant
- PVC outer cable sheath
- PROFINET type B

Free end		SCRJ plug, IP20		SC duplex plug, IP20	
OE		SCRJ		SCDUP	
Ordering data		Ordering data		Ordering data	
Order No.		Order No.		Order No.	
Free end		Variable		Variable	
		1408459		1408460	
SCRJ plug, IP20		1408458		1408461	
SC duplex plug, IP20		Variable		Variable	
		1408466		1408467	
				Variable	
B-FOC (ST®) plug, IP20				1408471	
Push/pull SCRJ, plastic					
Push/pull SCRJ, metal					

Ordering example:

For an HCS cable with two SCRJ plugs with IP20 protection and 70 m in length, the ordering data is as follows:

Order No.	Length [m]
1408466	70

Length:	Min. 1 m
	Max. 2000 m/cable drum
Increment:	0.25 m
	1 m
	5 m ... 2000 m

B-FOC (ST®) plug, IP20	Push/pull SCRJ, plastic	Push/pull SCRJ, metal
		
BFOC	PPCPL	PPCME
Ordering data	Ordering data	Ordering data
Order No.	Order No.	Order No.

Variable 1408462	Variable 1408463	Variable 1408464
Variable 1408468	Variable 1408469	Variable 1408470

Variable 1408472	Variable 1408473	Variable 1408474
Variable 1408475	Variable 1408476	Variable 1408480

Variable 1408477	Variable 1408479
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Cable data	Technical data
Cable abbreviation in accordance with IEC 61977:2010	AT-V(ZN)YY 2K200/230 HCS
Fibers	HCS, 200/230 µm
Attenuation, typical	10 dB/km (at 660 nm), 8 dB/km (at 850 nm)
Outer sheath	
Material	PVC
Color	Green
Diameter	6.7 - 7.7 mm
Strain relief elements	Non-metallic, aramid fiber
Individual wire	
Material	PVC
Color	Black and orange with arrow labeling
Diameter	2.2 mm ±0.1 mm
Strain relief elements	Non-metallic, aramid fibers
General data	
Weight	45 kg/km
Ambient temperature (operation)	-40 °C ... 90 °C
Ambient temperature (storage/transport)	-40 °C ... 90 °C
Ambient temperature (installation)	-5 °C ... 50 °C
Halogen-free as per:	-

Data plug-in connectors

Network components - assembled fiber optic cables

PROFINET C HCS broadband cable (GI) for free assembly, type PN-C-HCS-GI-1005



- Highly flexible round cable for use in trailing cables or drag chains
- Robust installation cable for indoor use
- Gradient index fiber for maximum power requirements in respect of transmission bandwidth
- Can be used in 10/100/1000 Mbps Ethernet systems
- 2.2 mm individual wires made from polyvinyl chloride (PVC)
- Halogen-free, ozone and UV resistant
- Robust polyurethane (PUR) outer cable sheath
- Highly tear-resistant aramid strain relief elements
- PROFINET type C

Ethernet



Free end



FSMA plug, IP20



SCRJ plug, IP20



SC duplex plug, IP20



B-FOC (ST®) plug, IP20



LC plug



Push/pull SCRJ, plastic



Push/pull SCRJ, metal



Free end	FSMA plug, IP20	SCRJ plug, IP20
OE	FSMA	SCRJ
Ordering data	Ordering data	Ordering data
Order No.	Order No.	Order No.
By the meter 2313410	Variable 2901554	Variable 2901554
Variable 2901554	Variable 2901554	Variable 2901554
Variable 2901554	Variable 2901554	Variable 2901554
Variable 2901554	Variable 2901554	Variable 2901554
Variable 2901554	Variable 2901554	Variable 2901554
Variable 2901554	Variable 2901554	Variable 2901554
Variable 2901554	Variable 2901554	Variable 2901554
Variable 1402189	Variable 1402189	Variable 1402189
Variable 1402189	Variable 1402189	Variable 1402189

Ordering example for configured cable:

For an HCS cable fitted with an SCRJ plug at one end and an SCRJ push/pull plastic plug-in connector at the other end, and 15 m in length, the ordering data is as follows

Order No.	Connector 1	Connector 2	Length [m]
1402189	SCRJ	PPCPL	15

Length:	Min. 1 m	Max. 2000 m
Increment:	0.25 m	1 m ... 5 m
	1 m	5 m ... 2000 m

Ordering example for cable sold by the meter:

For an HCS cable 70 m in length, the ordering data is as follows:

Order No.	Length [m]
2313410	70

Length:	Min. 1 m	Max. 2000 m/cable drum
Increment:	0.25 m	1 m ... 5 m
	1 m	5 m ... 2000 m

Network components - assembled fiber optic cables

SC duplex plug, IP20	B-FOC (ST®) plug, IP20	LC plug	Push/pull SCRJ, plastic	Push/pull SCRJ, metal
				
SCDUP	BFOC	LC	PPCPL	PPCME
Ordering data	Ordering data	Ordering data	Ordering data	Ordering data
Order No.	Order No.	Order No.	Order No.	Order No.

Variable	2901554	Variable	2901554	Variable	2901554	Variable	1402189	Variable	1402189
Variable	2901554	Variable	2901554	Variable	2901554	Variable	1402189	Variable	1402189

Variable	2901554	Variable	2901554	Variable	2901554	Variable	1402189	Variable	1402189
Variable	2901554	Variable	2901554	Variable	2901554	Variable	1402189	Variable	1402189

Variable	2901554	Variable	2901554	Variable	2901554	Variable	1402189	Variable	1402189
Variable	2901554	Variable	2901554	Variable	2901554	Variable	1402189	Variable	1402189

Variable	1402189	Variable	1402189	Variable	1402189	Variable	1402189	Variable	1402189
Variable	1402189	Variable	1402189	Variable	1402189	Variable	1402189	Variable	1402189

Technical data	
Cable data	
Cable abbreviation in accordance with IEC 61977:2010	J-V(ZN)12Y(ZN)11Y 2GK200/230 GI-HCS HCS gradient index, 200/230 µm 18 dB/km (at 660 nm), 12 dB/km (at 850 nm)
Fibers	
Attenuation, typical	
Outer sheath	
Material	PUR
Color	Green
Diameter	7.5 - 8.5 mm
Strain relief elements	Non-metallic, aramid fiber
Individual wire	
Material	PVC
Color	Black and orange with arrow labeling
Diameter	2.2 mm ±0.1 mm
Strain relief elements	Non-metallic, aramid fibers
General data	
Weight	52 kg/km
Ambient temperature (operation)	-20 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 70 °C
Ambient temperature (installation)	-5 °C ... 50 °C
Halogen-free as per:	According to IEC 60754-2

Data plug-in connectors

Network components - assembled fiber optic cables

Robust HCS cable
for free assembly,
type HCS-RUGGED-1014



- Robust installation cable for indoor use
- Highly tear-resistant aramid strain relief elements
- 2.9 mm individual wires made from highly flexible FRNC material
- Halogen-free, ozone and UV resistant
- Robust polyurethane (PUR) outer cable sheath

	Free end	FSMA plug, IP20	SCRJ plug, IP20
	OE	FSMA	SCRJ
Ordering data	Ordering data	Ordering data	Ordering data
Order No.	Order No.	Order No.	Order No.
Free end			
	OE		
FSMA plug, IP20			
	FSMA		
SCRJ plug, IP20			
	SCRJ		
SC duplex plug, IP20			
	SCDUP		
B-FOC (ST®) plug, IP20			
	BFOC		
LC plug			
	LC		
Push/pull SCRJ, plastic			
	PPCPL		
Push/pull SCRJ, metal			
	PPCME		
SCRJ plug, IP67			
	IP67		

Ordering example for configured cable:

For an HCS cable fitted with an SCRJ plug at one end and an SCRJ push/pull plastic plug-in connector at the other end, and 15 m in length, the ordering data is as follows

Order No.	Connector 1	Connector 2	Length [m]
1402191	SCRJ	PPCPL	15
Length:	Min. 1 m Max. 2000 m		
Increment:	0.25 m 1 m	1 m ... 5 m 5 m ... 2000 m	

Ordering example for cable sold by the meter:

For an HCS cable 70 m in length, the ordering data is as follows:

Order No.	Length [m]
2799885	70
Length:	Min. 1 m Max. 2000 m/cable drum
Increment:	0.25 m 1 m
	1 m ... 5 m 5 m ... 2000 m

Network components - assembled fiber optic cables

SC duplex plug, IP20	B-FOC (ST®) plug, IP20	LC plug	Push/pull SCRJ, plastic	Push/pull SCRJ, metal	SCRJ plug, IP67
					
SCDUP	BFOC	LC	PPCPL	PPCME	IP67
Ordering data	Ordering data	Ordering data	Ordering data	Ordering data	Ordering data
Order No.	Order No.	Order No.	Order no.	Order No.	Order No.

Variable 2901555	Variable 2901555	Variable 2901555	Variable 1402191	Variable 1402191	Variable 1402191
Variable 2901555	Variable 2901555	Variable 2901555	Variable 1402191	Variable 1402191	Variable 1402191

Variable 2901555	Variable 2901555	Variable 2901555	Variable 1402191	Variable 1402191	Variable 1402191
Variable 2901555	Variable 2901555	Variable 2901555	Variable 1402191	Variable 1402191	Variable 1402191

Variable 2901555	Variable 2901555	Variable 2901555	Variable 1402191	Variable 1402191	Variable 1402191
Variable 2901555	Variable 2901555	Variable 2901555	Variable 1402191	Variable 1402191	Variable 1402191

Variable 1402191	Variable 1402191	Variable 1402191	Variable 1402191	Variable 1402191	Variable 1402191
Variable 1402191	Variable 1402191	Variable 1402191	Variable 1402191	Variable 1402191	Variable 1402191

Variable 1402191	Variable 1402191	Variable 1402191	Variable 1402191	Variable 1402191	Variable 1402191
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Technical data	
Cable data	
Cable abbreviation in accordance with IEC 61977:2010	I-VH11Y 2K200/230 HCS
Fibers	HCS, 200/230 µm
Attenuation, typical	10 dB/km (at 660 nm), 8 dB/km (at 850 nm)
Outer sheath	
Material	PUR
Color	orange
Diameter	7.5 - 8.5 mm
Individual wire	
Material	FRNC material
Color	Red/green
Diameter	2.9 mm ±0.1 mm
Strain relief elements	Non-metallic, aramid fibers
General data	
Weight	54 kg/km
Ambient temperature (operation)	-40 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 70 °C
Ambient temperature (installation)	-20 °C ... 60 °C

Data plug-in connectors

Network components - assembled fiber optic cables

Outdoor cables
for free assembly,
type HCSO-1015



- Robust round cable for laying outdoors
- Longitudinally water-tight
- Integrated vapor barrier and rodent-proof scrim
- 2.9 mm individual wires made from highly flexible FRNC material
- Ozone and UV resistant
- Extremely robust polyethylene outer cable sheath

	Free end	FSMA plug, IP20	SCRJ plug, IP20
	OE	FSMA	SCRJ
	Ordering data	Ordering data	Ordering data
	Order No.	Order No.	Order no.
Free end			
	OE		
FSMA plug, IP20			
	FSMA		
SCRJ plug, IP20			
	SCRJ		
SC duplex plug, IP20			
	SCDUP		
B-FOC (ST®) plug, IP20			
	BFOC		
LC plug			
	LC		
By the meter	2799445	Variable	Variable
		2901557	2901557
Variable	2901557	Variable	Variable
		2901557	2901557
Variable	2901557	Variable	Variable
		2901557	2901557
Variable	2901557	Variable	Variable
		2901557	2901557
Variable	2901557	Variable	Variable
		2901557	2901557

Ordering example for configured cable:

For an HCS cable fitted with an SCRJ plug at one end and an IP20 B-FOC(ST®) plug at the other end, and 15 m in length, the ordering data is as follows:

Order No.	Connector 1	Connector 2	Length [m]
2901557	SCRJ	BFOC	15
Length:	Min. 1 m Max. 1000 m		
Increment:	0.25 m 1 m	1 m ... 5 m 5 m ... 1000 m	

Ordering example for cable sold by the meter:

For an HCS cable 70 m in length, the ordering data is as follows:

Order No.	Length [m]
2799445	70
Length:	Min. 1 m Max. 1000 m/cable drum
Increment:	0.25 m 1 m ... 5 m 1 m 5 m ... 1000 m

SC duplex plug, IP20	B-FOC (ST®) plug, IP20	LC plug
		
SCDUP	BFOC	LC
Ordering data	Ordering data	Ordering data
Order No.	Order No.	Order No.

Variable	2901557	Variable	2901557	Variable	2901557
Variable	2901557	Variable	2901557	Variable	2901557

Variable	2901557	Variable	2901557	Variable	2901557
Variable	2901557	Variable	2901557	Variable	2901557

Variable	2901557	Variable	2901557	Variable	2901557
Variable	2901557	Variable	2901557	Variable	2901557

Cable data		Technical data
Cable abbreviation in accordance with IEC 61977:2010		AT-VQHB2Y 2K200/230 10A17+8B20
Fibers		HCS, 200/230 µm
Attenuation, typical		10 dB/km (at 660 nm), 8 dB/km (at 850 nm)
Outer sheath		PE
Material		black
Color		10 - 11 mm
Diameter		Non-metallic, aramid fiber
Strain relief elements		Glass fibers
Rodent protection		IEC 60794-1-2
Lengthwise waterproofing		
Individual wire		FRNC material
Material		Red/green
Color		2.9 mm ±0.1 mm
Diameter		Non-metallic, aramid fibers
Strain relief elements		
General data		
Weight		97 kg/km
Ambient temperature (operation)		-20 °C ... 70 °C
Ambient temperature (storage/transport)		-25 °C ... 70 °C
Ambient temperature (installation)		-5 °C ... 50 °C
Halogen-free as per:		According to IEC 60754-2

Network components - assembled fiber optic cables

SC duplex plug, IP20	B-FOC (ST®) plug, IP20	LC plug	Push/pull SCRJ, plastic	Push/pull SCRJ, metal	SCRJ plug, IP67
					
SCDUP	BFOC	LC	PPCPL	PPCME	IP67
Ordering data	Ordering data	Ordering data	Ordering data	Ordering data	Ordering data
Order No.	Order No.	Order No.	Order No.	Order No.	Order No.

Variable 2901558	Variable 2901558	Variable 2901558	Variable 1402193	Variable 1402193	Variable 1402193
Variable 2901558	Variable 2901558	Variable 2901558	Variable 1402193	Variable 1402193	Variable 1402193

Variable 2901558	Variable 2901558	Variable 2901558	Variable 1402193	Variable 1402193	Variable 1402193
Variable 2901558	Variable 2901558	Variable 2901558	Variable 1402193	Variable 1402193	Variable 1402193

Variable 2901558	Variable 2901558	Variable 2901558	Variable 1402193	Variable 1402193	Variable 1402193
Variable 2901558	Variable 2901558	Variable 2901558	Variable 1402193	Variable 1402193	Variable 1402193

Variable 1402193	Variable 1402193	Variable 1402193	Variable 1402193	Variable 1402193	Variable 1402193
Variable 1402193	Variable 1402193	Variable 1402193	Variable 1402193	Variable 1402193	Variable 1402193

Variable 1402193	Variable 1402193	Variable 1402193	Variable 1402193	Variable 1402193	Variable 1402193
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Cable data		Technical data
Cable abbreviation in accordance with IEC 61977:2010		I-V(ZN)H11Y 2G50/125 2,5B600+0,7F1200
Fibers		Fiberglass, 50/125 µm
Attenuation, typical		2.5 dB/km (at 850 nm), 0.7 dB/km (at 1300 nm)
Outer sheath		PUR
Material		orange
Color		7.5 - 8.5 mm
Diameter		
Individual wire		FRNC material
Material		Red/green
Color		2.9 mm ±0.1 mm
Diameter		
General data		50 kg/km
Weight		-20 °C ... 70 °C
Ambient temperature (operation)		-25 °C ... 70 °C
Ambient temperature (storage/transport)		-5 °C ... 50 °C
Ambient temperature (installation)		According to IEC 60754-2
Halogen-free as per:		

Data plug-in connectors

Network components - assembled fiber optic cables

Outdoor multi-mode fiberglass cables for free assembly, type GDO-1017



- Robust round cable for laying outdoors
- Longitudinally water-tight
- Integrated vapor barrier and rodent-proof scrim
- 2.9 mm individual wires made from highly flexible FRNC material
- Ozone and UV resistant
- Extremely robust polyethylene outer cable sheath

Free end	FSMA plug, IP20	SCRJ plug, IP20
OE	FSMA	SCRJ
Ordering data	Ordering data	Ordering data
Order No.	Order No.	Order No.
Free end		
OE		
FSMA plug, IP20		
FSMA		
SCRJ plug, IP20		
SCRJ		
SC duplex plug, IP20		
SCDUP		
B-FOC (ST®) plug, IP20		
BFOC		
LC plug		
LC		

Ordering example for configured cable:

For a fiberglass cable fitted with an SCRJ plug at one end and an IP20 B-FOC(ST®) plug at the other end, and 15 m in length, the ordering data is as follows:

Order No.	Connector 1	Connector 2	Length [m]
2901559	SCRJ	BFOC	15
Length: Min. 1 m Max. 1000 m			
Increment: 1 m 1 m ... 1000 m			

Ordering example for cable sold by the meter:

For a fiberglass cable 70 m in length, the ordering data is as follows:

Order No.	Length [m]
2799432	70
Length: Min. 1 m Max. 1000 m/cable drum	
Increment: 1 m 1 m ... 1000 m	

SC duplex plug, IP20	B-FOC (ST®) plug, IP20	LC plug
		
SCDUP	BFOC	LC
Ordering data	Ordering data	Ordering data
Order No.	Order No.	Order No.

Variable	2901559	Variable	2901559	Variable	2901559
Variable	2901559	Variable	2901559	Variable	2901559

Variable	2901559	Variable	2901559	Variable	2901559
Variable	2901559	Variable	2901559	Variable	2901559

Variable	2901559	Variable	2901559	Variable	2901559
Variable	2901559	Variable	2901559	Variable	2901559

Cable data		Technical data
Cable abbreviation in accordance with IEC 61977:2010		AT-VQH(BN)2Y 2G50/125 2,5B600+0,7F1200
Fibers		Fiberglass, 50/125 µm
Attenuation, typical		2.5 dB/km (at 850 nm), 0.7 dB/km (at 1300 nm)
Outer sheath		PE
Material		black
Color		10 - 11 mm
Diameter		Non-metallic, aramid fiber
Strain relief elements		Glass fibers
Rodent protection		IEC 60794-1-2
Lengthwise waterproofing		
Individual wire		FRNC material
Material		Red/green
Color		2.9 mm ±0.1 mm
Diameter		Non-metallic, aramid fibers
Strain relief elements		
General data		
Weight		97 kg/km
Ambient temperature (operation)		-25 °C ... 70 °C
Ambient temperature (storage/transport)		-30 °C ... 70 °C
Ambient temperature (installation)		-5 °C ... 50 °C
Halogen-free as per:		According to IEC 60754-2

Network components - assembled fiber optic cables

Zip cord fiberglass cable for assembly, OM2

- Fiber optic cable for indoor installation
- Ideal for use in distributor systems and for connecting termination devices
- 2.8 mm single elements made from halogen-free and flame-retardant material
- UL approval type OFNR (riser) for USA and Canada

SCRJ plug, IP20		SC duplex plug, IP20		B-FOC (ST®) plug, IP20	
					
SCRJ		SCDUP		BFOC	
Ordering data		Ordering data		Ordering data	
Order No.		Order no.		Order No.	
2 m	1400697	2 m	1400690	2 m	1400706
Variable	1405703	Variable	1405700	Variable	1405710
SCRJ plug, IP20		2 m		2 m	
Variable		1400685		Variable	
Variable		1405697		Variable	
Variable		1405708		2 m	
2 m		1404768		Variable	
Variable		1405712		2 m	
2 m		1400701		Variable	
Variable		1405691		Variable	
Variable		1405706			

Ordering example for configured cable:

For a zip cord fiberglass cable, fitted with an IP20 SC duplex plug at one end and an SCRJ plug at the other end, and 15 m in length, the ordering data is as follows:

Order No.	Length [m]
1405700	15

Length:	Min. 1 m Max. 1000 m
Increment:	1 m 1 m ... 1000 m

LC plug



LC

Ordering data

Order No.

2 m	1400682
-----	---------

Variable	1405694
----------	---------

2 m	1400604
-----	---------

Variable	1405688
----------	---------

Technical data

Cable data

Cable abbreviation in accordance with IEC 61977:2010

Fibers

Attenuation, typical

I-V(ZN)H

50/125 µm OM2

2.7 dB/km (at 850 nm);
0.8 dB/km (at 1300 nm)

Outer sheath

Material

Color

Diameter

Strain relief elements

Individual wire

Material

Color

Diameter

General data

Weight

Ambient temperature (operation)

Ambient temperature (storage/transport)

Ambient temperature (installation)

Halogen-free as per:

-

orange

2.8 - 5.7 mm

-

-

-

900 µm

15.80 kg/km

-10 °C ... 70 °C

-25 °C ... 70 °C

-5 °C ... 50 °C

According to IEC 60754-1/2

Network components - assembled fiber optic cables

Zip cord fiberglass cable for assembly, OM3

- Fiber optic cable for indoor installation
- Ideal for use in distributor systems and for connecting termination devices
- 2.8 mm single elements made from halogen-free and flame-retardant material
- UL approval type OFNR (riser) for USA and Canada
- Low-bend fiber
- Data rate: up to 10 Gbps up to 300 m

SCRJ plug, IP20		SC duplex plug, IP20		B-FOC (ST®) plug, IP20	
					
SCRJ		SCDUP		BFOC	
Ordering data		Ordering data		Ordering data	
Order No.		Order No.		Order No.	
2 m	1400699	2 m	1400691	2 m	1400711
Variable	1405704	Variable	1405701	Variable	1405711
SCRJ plug, IP20		2 m	1400688	2 m	1400705
		Variable	1405698	Variable	1405709
SC duplex plug, IP20		2 m	1400673	2 m	1400702
		Variable	1405692	Variable	1405707
LC					

Ordering example for configured cable:

For a zip cord fiberglass cable, fitted with an IP20 SC duplex plug at one end and an SCRJ plug at the other end, and 15 m in length, the ordering data is as follows:

Order No.	Length [m]
1405701	15

Length:	Min. 1 m Max. 1000 m
Increment:	1 m 1 m ... 1000 m

LC plug



LC

Ordering data

Order No.

2 m	1400683
-----	---------

Variable	1405695
----------	---------

2 m	1400621
-----	---------

Variable	1405695
----------	---------

Technical data

Cable data

Cable abbreviation in accordance with IEC 61977:2010

Fibers

Attenuation, typical

I-V(ZN)H

Fiberglass, 50/125 µm

2.5 dB/km (at 850 nm),
0.7 dB/km (at 1300 nm)

Outer sheath

Material

Color

Diameter

Strain relief elements

Individual wire

Material

Color

Diameter

General data

Weight

Ambient temperature (operation)

Ambient temperature (storage/transport)

Ambient temperature (installation)

Halogen-free as per:

-

Aqua

2.8 - 5.7 mm

-

-

-

900 µm

15.80 kg/km

-10 °C ... 70 °C

-25 °C ... 70 °C

-5 °C ... 50 °C

According to IEC 60754-1/2

Data plug-in connectors

Network components - assembled fiber optic cables

Zip cord fiberglass cable for assembly, OM4

- Fiber optic cable for indoor installation
- Ideal for use in distributor systems and for connecting termination devices
- 2.8 mm single elements made from halogen-free and flame-retardant material
- UL approval type OFNR (riser) for USA and Canada
- Low-bend fiber
- Data rate: up to 10 Gbps up to 550 m

	SCRJ plug, IP20		SC duplex plug, IP20		LC plug	
						
	SCRJ		SCDUP		LC	
Ordering data	Ordering data		Ordering data		Ordering data	
	Order No.		Order No.		Order No.	
SCRJ plug, IP20	2 m	1400700	2 m	1400695	2 m	1400684
	Variable	1405705	Variable	1405702	Variable	1405696
SC duplex plug, IP20			2 m	1400689		
			Variable	1405699		
LC plug			2 m	1400681	2 m	1400622
			Variable	1405693	Variable	1405690

SCRJ plug, IP20



SCRJ

SC duplex plug, IP20



SCDUP

LC plug



LC

Ordering example for configured cable:

For a zip cord fiberglass cable, fitted with an IP20 SC duplex plug at one end and an SCRJ plug at the other end, and 15 m in length, the ordering data is as follows:

Order No.	Length [m]
1405702	15

Length:	Min. 1 m	Max. 1000 m
Increment:	1 m	1 m ... 1000 m

Cable data

Cable abbreviation in accordance with IEC 61977:2010
Fibers
Attenuation, typical

Outer sheath

Material
Color
Diameter

Strain relief elements

Individual wire

Material
Color
Diameter

General data

Weight
Ambient temperature (operation)
Ambient temperature (storage/transport)
Ambient temperature (installation)
Halogen-free as per:

Technical data

I-V(ZN)H
Fiberglass, 50/125 µm
2.5 dB/km (at 850 nm),
0.7 dB/km (at 1300 nm)

-
Violet
2.8 - 5.7 mm

-

-
900 µm

15.80 kg/km
-10 °C ... 70 °C
-25 °C ... 70 °C
-5 °C ... 50 °C
According to IEC 60754-1/2

Zip cord fiberglass cable for assembly, OM1

- Fiber optic cable for indoor installation
- Ideal for use in distributor systems and for connecting termination devices
- 2.8 mm single elements made from halogen-free and flame-retardant material
- UL approval type OFNR (riser) for USA and Canada

FSMA plug, IP20	
	
FSMA	
Ordering data	
Order No.	
FSMA plug, IP20	
	Variable 1406532
SC duplex plug, IP20	
	Variable 1406536
SCDUP	
B-FOC (ST®) plug, IP20	
	Variable 1406535
BFOC	

Ordering example for configured cable:

For a zip cord fiberglass cable, fitted with an IP20 FSMA plug at one end and an IP20 SC duplex plug at the other end, and 15 m in length, the ordering data is as follows:

Order No.	Length [m]
1406536	15

Length:	Min. 1 m Max. 1000 m
Increment:	1 m 1 m ... 1000 m

Technical data	
Cable data	
Cable abbreviation in accordance with IEC 61977:2010	I-V(ZN)H
Fibers	62.5/125 µm
Attenuation, typical	3.2 dB/km (at 850 nm); 0.9 dB/km (at 1300 nm)
Outer sheath	
Material	-
Color	orange
Diameter	2.8 - 5.7 mm
Strain relief elements	-
Individual wire	
Material	-
Color	-
Diameter	900 µm
General data	
Weight	15.80 kg/km
Ambient temperature (operation)	-10 °C ... 70 °C
Ambient temperature (storage/transport)	-25 °C ... 70 °C
Ambient temperature (installation)	-5 °C ... 50 °C
Halogen-free as per:	A0 according to IEC 60754-1/2

Fiber optics patch cables

Plugs:

- LC
- SC duplex
- SCRJ
- B-FOC (ST®)

Fixed lengths:

- 1 m
- 2 m
- 5 m

Fiber types:

- Multi-mode fiberglass (MM)
- Single-mode fiberglass (SM)

Sheath colors:

- Multi-mode: orange
- Single mode: yellow

Technical data:

- Halogen-free
- Flame-retardant
- No corrosive or toxic fumes
- External dimensions: 2.8 mm x 5.7 mm



LC plug

Cable, properties					
Individual wire diameter		2.8 mm			
Outer sheath, material		FRNC			
Outer sheath, strain relief elements		Non-metallic, aramid fiber			
Lateral pressure, long-term		60 N/cm			
Tensile strength short-term/long-term		600 N			
Halogen-free		According to IEC 60754-2			
General data					
Ambient temperature (storage/transport)		-25 °C ... 70 °C			
Ambient temperature (installation)		-5 °C ... 50 °C			
Ambient temperature (operation)		-5 °C ... 70 °C			
Ordering data					
Description		Length of cable	Type	Order No.	Pcs. / Pkt.
FO patch cable with multi-mode fiberglass (OM2)					
- LC plug to LC, SC duplex, B-FOC or SCRJ plug					
		1 m	FL MM PATCH 1,0 LC-LC	2989158	1
		2 m	FL MM PATCH 2,0 LC-LC	2989255	1
		5 m	FL MM PATCH 5,0 LC-LC	2901799	1
FO patch cable with multi-mode fiberglass (OM2)					
- SC duplex plug to SC duplex, B-FOC or SCRJ plug					
		1 m			
		2 m			
		5 m			
FO patch cable with multi-mode fiberglass (OM2)					
- B-FOC plug to B-FOC or SCRJ plug					
		1 m			
		2 m			
		5 m			
FO patch cable with multi-mode fiberglass (OM2)					
- SCRJ plug to SCRJ plug					
		1 m			
		2 m			
		5 m			
FO patch cable with single-mode fiberglass (OS1)					
- LC plug to LC, SC duplex or B-FOC plug					
		1 m	FL SM PATCH 1,0 LC-LC	2989187	1
		2 m	FL SM PATCH 2,0 LC-LC	2989284	1
		5 m	FL SM PATCH 5,0 LC-LC	2901826	1
FO patch cable with single-mode fiberglass (OS1)					
- SC duplex plug to SC duplex or B-FOC plug					
		1 m			
		2 m			
		5 m			
FO patch cable with single-mode fiberglass (OS1)					
- B-FOC plug to B-FOC plug					
		1 m			
		2 m			
		5 m			



SC duplex plug



B-FOC plug



SCRJ plug

Technical data
2.8 mm
FRNC
Non-metallic, aramid fiber
60 N/cm
600 N
According to IEC 60754-2
-25 °C ... 70 °C
-5 °C ... 50 °C
-5 °C ... 70 °C

Technical data
2.8 mm
FRNC
Non-metallic, aramid fiber
60 N/cm
600 N
According to IEC 60754-2
-25 °C ... 70 °C
-5 °C ... 50 °C
-5 °C ... 70 °C

Technical data
2.8 mm
FRNC
Non-metallic, a7ramid fiber
60 N/cm
600 N
According to IEC 60754-2
-25 °C ... 70 °C
-5 °C ... 50 °C
-5 °C ... 70 °C

Ordering data		
Type	Order No.	Pcs. / Pkt.
FL MM PATCH 1,0 LC-SC	2989161	1
FL MM PATCH 2,0 LC-SC	2989268	1
FL MM PATCH 5,0 LC-SC	2901800	1
FL MM PATCH 1,0 SC-SC	2901805	1
FL MM PATCH 2,0 SC-SC	2901807	1
FL MM PATCH 5,0 SC-SC	2901808	1
FL SM PATCH 1,0 LC-SC	2989190	1
FL SM PATCH 2,0 LC-SC	2989297	1
FL SM PATCH 5,0 LC-SC	2901827	1
FL SM PATCH 1,0 SC-SC	2901829	1
FL SM PATCH 2,0 SC-SC	2901830	1
FL SM PATCH 5,0 SC-SC	2901831	1

Ordering data		
Type	Order No.	Pcs. / Pkt.
FL MM PATCH 1,0 LC-ST	2989174	1
FL MM PATCH 2,0 LC-ST	2989271	1
FL MM PATCH 5,0 LC-ST	2901801	1
FL MM PATCH 1,0 SC-ST	2901809	1
FL MM PATCH 2,0 SC-ST	2901810	1
FL MM PATCH 5,0 SC-ST	2901811	1
FL MM PATCH 1,0 ST-ST	2901815	1
FL MM PATCH 2,0 ST-ST	2901816	1
FL MM PATCH 5,0 ST-ST	2901817	1
FL SM PATCH 1,0 LC-ST	2989242	1
FL SM PATCH 2,0 LC-ST	2989349	1
FL SM PATCH 5,0 LC-ST	2901828	1
FL SM PATCH 1,0 SC-ST	2901832	1
FL SM PATCH 2,0 SC-ST	2901833	1
FL SM PATCH 5,0 SC-ST	2901834	1
FL SM PATCH 1,0 ST-ST	2901836	1
FL SM PATCH 2,0 ST-ST	2901837	1
FL SM PATCH 5,0 ST-ST	2901838	1

Ordering data		
Type	Order No.	Pcs. / Pkt.
FL MM PATCH 1,0 LC-SCRJ	2901802	1
FL MM PATCH 2,0 LC-SCRJ	2901803	1
FL MM PATCH 5,0 LC-SCRJ	2901804	1
FL MM PATCH 1,0 SC-SCRJ	2901812	1
FL MM PATCH 2,0 SC-SCRJ	2901813	1
FL MM PATCH 5,0 SC-SCRJ	2901814	1
FL MM PATCH 1,0 ST-SCRJ	2901820	1
FL MM PATCH 2,0 ST-SCRJ	2901821	1
FL MM PATCH 5,0 ST-SCRJ	2901822	1
FL MM PATCH 1,0 SCRJ-SCRJ	2901823	1
FL MM PATCH 2,0 SCRJ-SCRJ	2901824	1
FL MM PATCH 5,0 SCRJ-SCRJ	2901825	1

Data plug-in connectors

Network components - accessories

Accessories for processing fiber optics



Description	Ordering data			Type	Ordering data		
	Type	Order No.	Pcs. / Pkt.		Type	Order No.	Pcs. / Pkt.
Ceramic blade	FOC-TOOL-CERAMIC-BLADE	1407019	1				
Solvent dispenser , 100 ml, lockable pump dispenser					FOC-TOOL-DISPENSER	1406995	1

Polishing fiber optic plug-in connectors



Description	Ordering data			Type	Ordering data		
	Type	Order No.	Pcs. / Pkt.		Type	Order No.	Pcs. / Pkt.
Polishing film , silicon carbide 15 µm	FOC-POLISHINGFILM-SK-15.0	1407034	1				
Polishing film , AlO ₂ ³ 1 µm	FOC-POLISHINGFILM-AO-01.0	1407037	1				
3 µm	FOC-POLISHINGFILM-AO-03.0	1407039	1				
Polishing film , diamond 0.1 µm	FOC-POLISHINGFILM-D-00.1	1407046	1				
1 µm	FOC-POLISHINGFILM-D-01.0	1407042	1				
9 µm	FOC-POLISHINGFILM-D-09.0	1407044	1				
Polishing disc 1.25 mm, for LC					FOC-POLISHINGDISC-1.25	1407024	1
2.50 mm, for ST, SC, FC					FOC-POLISHINGDISC-2.50	1407021	1

Cleaning tools for fiber optic connection technology



Description	Ordering data			Type	Ordering data		
	Type	Order No.	Pcs. / Pkt.		Type	Order No.	Pcs. / Pkt.
Ferrule cleaner , approx. 500 cleaning cycles							
1.25 mm, for LC	FOC-TOOL-FERRULECLEANER-1.25	1407032	1				
2.50 mm, for ST, SC, FC	FOC-TOOL-FERRULECLEANER-2.50	1407029	1				
Stick cleaner for couplings and plug end faces							
1.25 mm, for LC					FOC-TOOL-STICKCLEANER-1.25	1407000	1
2.50 mm, for ST, SC, FC					FOC-TOOL-STICKCLEANER-2.50	1407002	1

Data plug-in connectors

Network components - accessories

Tool for processing fiber optics



Description

Fiber stripper, for stripping the coating from 250 µm to 125 µm

For 1 fiber

For 2 fibers

T-stripper

18 ... 10 AWG/1.0 mm ... 2.6 mm

30 ... 22 AWG/0.25 mm ... 0.64 mm

Electrician's scissors, high cutting performance thanks to micro-serrated cutting area, suitable for copper, aluminum, Kevlar fibers, and plastic, two-component non-slip soft-grip handles, ergonomic design, adjustable screw joint

Ordering data

Type	Order No.	Pcs. / Pkt.
FOC-TOOL-STRIPPING-1HOLE-250	1407004	1
FOC-TOOL-STRIPPING-2HOLE-250	1407008	1

Accessories

CUTFOX-ES	1212621	1
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Ordering data

Type	Order No.	Pcs. / Pkt.
FOC-TOOL-STRIPPING-T-1	1407016	1
FOC-TOOL-STRIPPING-T-2	1407014	1

Accessories

CUTFOX-ES	1212621	1
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Tools for FO cabling, POF

Ethernet

**PROFI
NET**



Ethernet

**PROFI
NET**



Ordering data

Type	Order No.	Pcs. / Pkt.
VS-SCRJ-POF-KONFTOOL-POLISH	1658820	1
VS-SCRJ-POF-POLISH	1656673	1

Description

Scrj polishing tool set, for polymer fiber, for field assembly of scrj/ip20 and SCRJ/IP67 plug-in connectors7 with fast connection system

Refill set for VS-SCRJ-POF-KONFTOOL-POLISH, consisting of two polishers and a polishing disc

- For SCRJ connectors

SCRJ cutting tool set, for polymer fiber, for field assembly of SCRJ/IP20 and SCRJ/IP67 push/pull plug-in connectors with fast connection technology, consisting of stripping tool, aramid scissors, SCRJ cutting tool, microscope

Cutting tool, SCRJ, for polymer fiber

Sheath stripping tool, for polymer fiber

Ordering data

Type	Order No.	Pcs. / Pkt.
TF-SCRJ-POF KONF SET	1405246	1
CUTFOX-SCRJ-POF	1405247	1
WIREFOX-PN POF	1405249	1

Tools for FO cabling, HCS



Assembly tool for fiber optics

Description
HCS (GI) DIY case for SCRJ and SC duplex quick mounting connectors, stripping blade, stripping pliers, aramid yarn scissors, fiber stripper, fiber cleaving tool, and microscope - For SCRJ/SC duplex connectors HCS (GI) DIY case for B-FOC (ST®) quick mounting connectors, stripping blade, stripping pliers, aramid yarn scissors, fiber stripper, fiber cleaving tool, and microscope - For B-FOC (ST®) connectors HCS DIY case for F-SMA quick mounting connectors, comprising stripping blade, stripping pliers, aramid yarn scissors, fiber stripper, fiber cleaving tool, and microscope - For F-SMA connectors

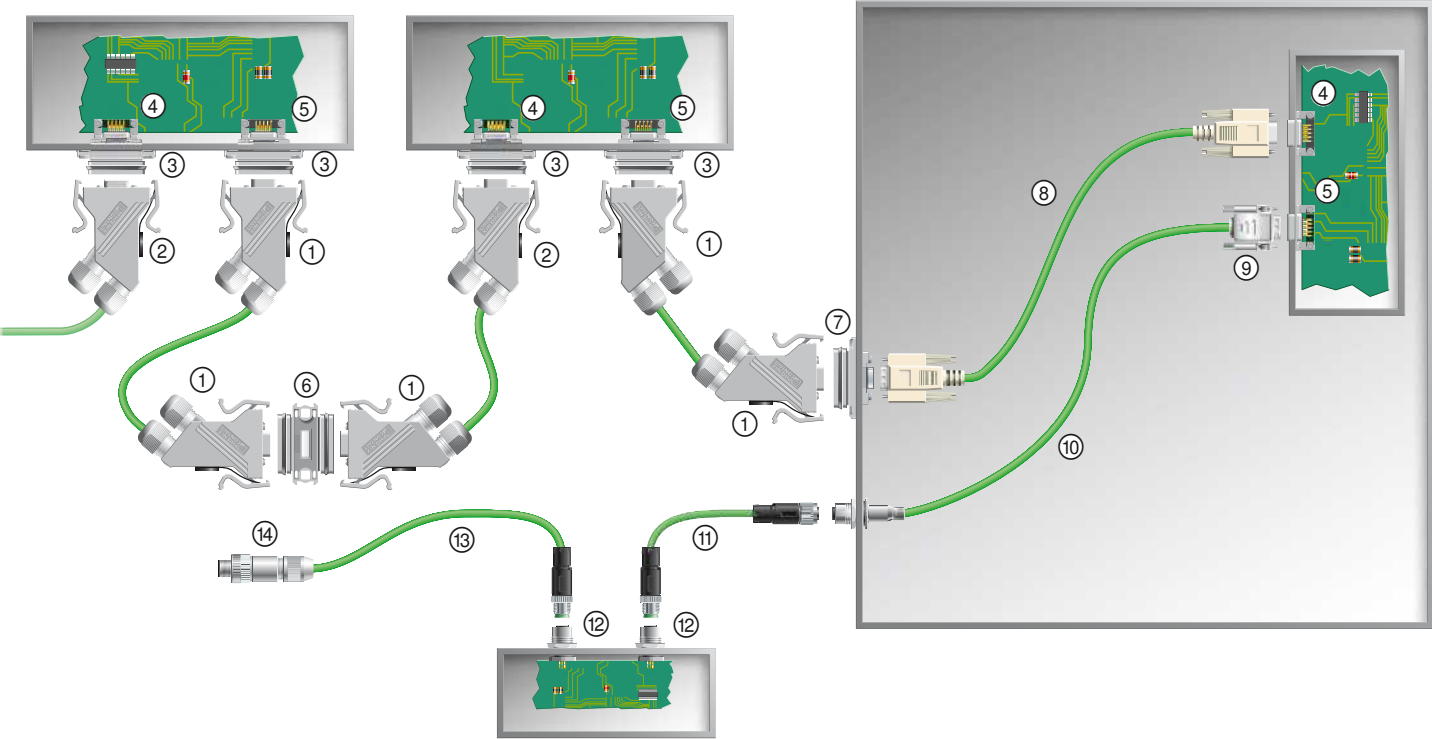
Ordering data		
Type	Order No.	Pcs. / Pkt.
PSM-HCS-KONFTOOL/SC-RJ	2708876	1
PSM-HCS-KONFTOOL/B-FOC	2708465	1
PSM-HCS-KONFTOOL	2799526	1

Tools for FO cabling, GOF

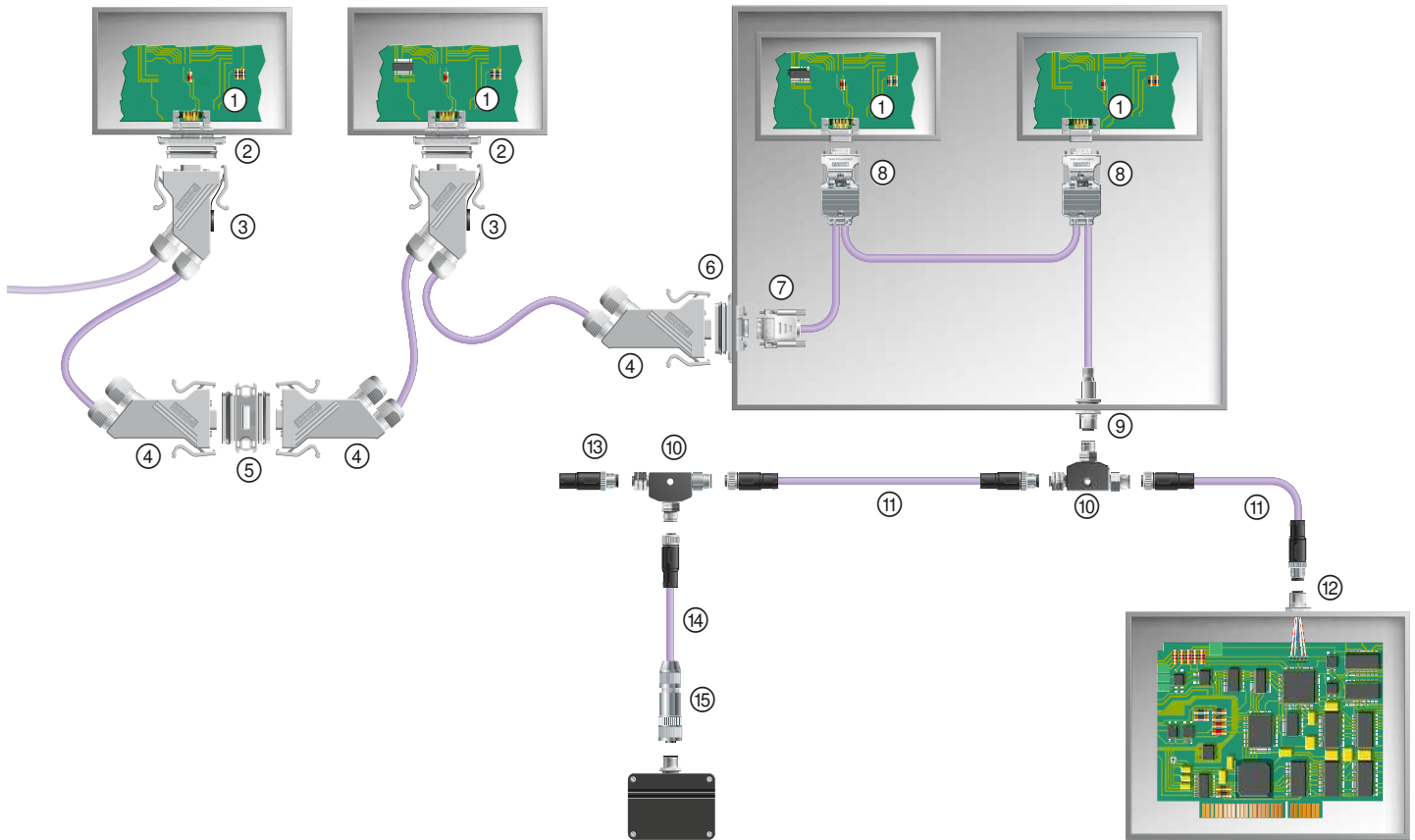


Description
Assembly tool set for fiberglass , for the field assembly of the SCRJ and SC-Duplex connectors, with a fast connection technology EU version US version Consumables for VS-GOF-FA-KONFTOOL-... Glue cartridge

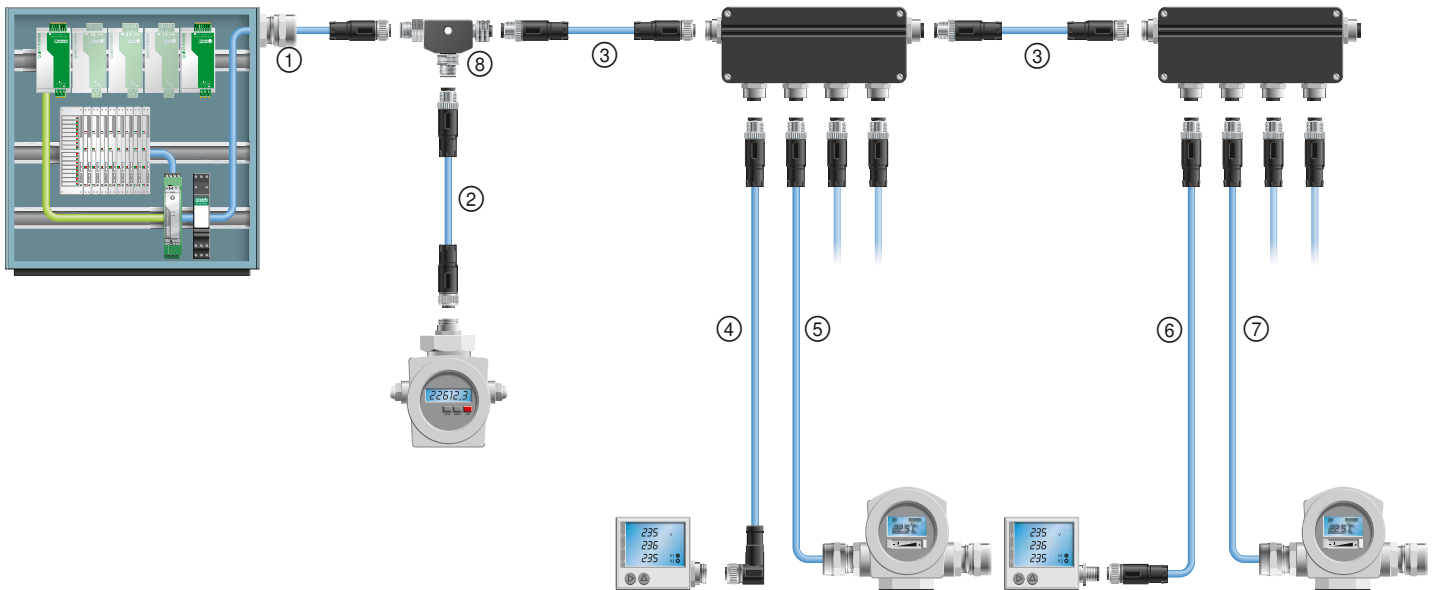
Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-GOF-FA-KONFTOOL-EU	1658228	1
VS-GOF-FA-KONFTOOL-US	1658231	1
VS-GOF-FA-KONFTOOL-ADHESIVE	1658244	1



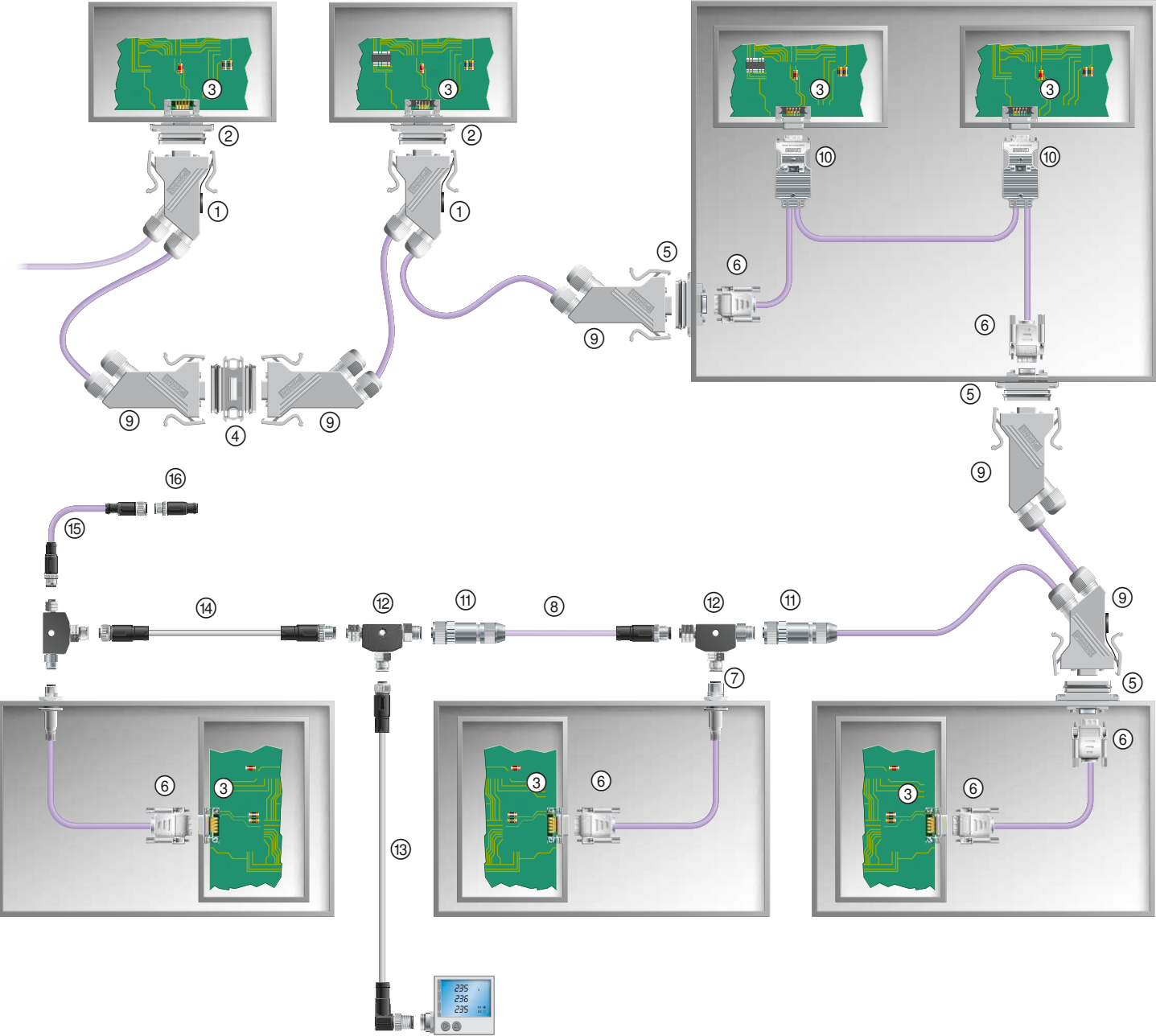
No.	Designation	Page
①	IP67 D-SUB complete plug-in connectors, pin	184
②	IP67 D-SUB complete plug-in connectors, socket	184
③	IP67 D-SUB panel mounting frames for D-SUB contact inserts	206
④	D-SUB contact inserts, pin	206
⑤	D-SUB contact inserts, socket	206
⑥	IP67 D-SUB coupling, socket/socket	185
⑦	IP67 D-SUB panel mounting frames with integrated D-SUB gender changer, socket/socket	185
⑧	Assembled D-SUB cable with D-SUB plug-in connectors, IP20	218
⑨	IP20 D-SUB sleeve housing and D-SUB contact insert, pin	219
⑩	M12 panel feed-through with INTERBUS cable and free cable end	190
⑪	Assembled INTERBUS cable with M12 plug-in connectors	See Catalog 4
⑫	M12 panel feed-through with solder connection	188
⑬	Assembled INTERBUS cable with M12 plug-in connector and free cable end	See Catalog 4
⑭	M12 plug-in connector for free assembly	186



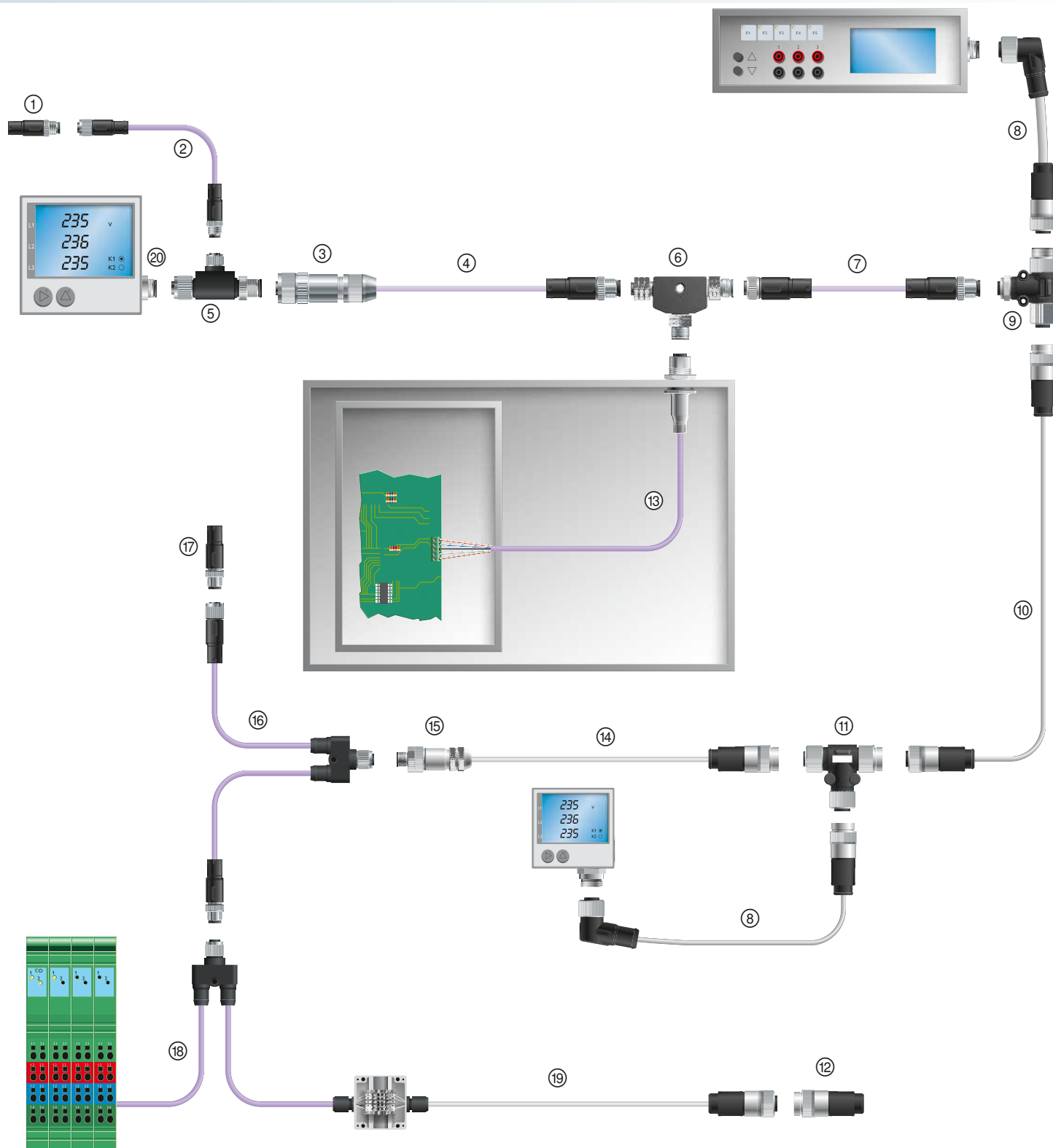
No.	Designation	Page
①	D-SUB contact inserts	206
②	IP67 D-SUB panel mounting frames for D-SUB contact inserts	206
③	IP67 D-SUB complete plug-in connectors	184
④	IP67 D-SUB sleeve housing with accessories and D-SUB contact insert	206
⑤	IP67 D-SUB coupling	185
⑥	IP67 D-SUB panel mounting frames with integrated D-SUB gender changer	185
⑦	IP20 D-SUB sleeve housing and D-SUB contact insert	219
⑧	IP20 D-SUB complete plug-in connectors	219
⑨	M12 panel feed-through with fieldbus cable and free cable end	191
⑩	M12 T-piece	See Catalog 4
⑪	Assembled fieldbus cable with straight M12 plug-in connector and straight M12 socket	See Catalog 4
⑫	Flush-type plug-in connector	189
⑬	PROFIBUS M12 termination resistor	See Catalog 4
⑭	Assembled fieldbus cable with straight M12 socket and free cable end	See Catalog 4
⑮	M12 plug-in connector, for free assembly	186



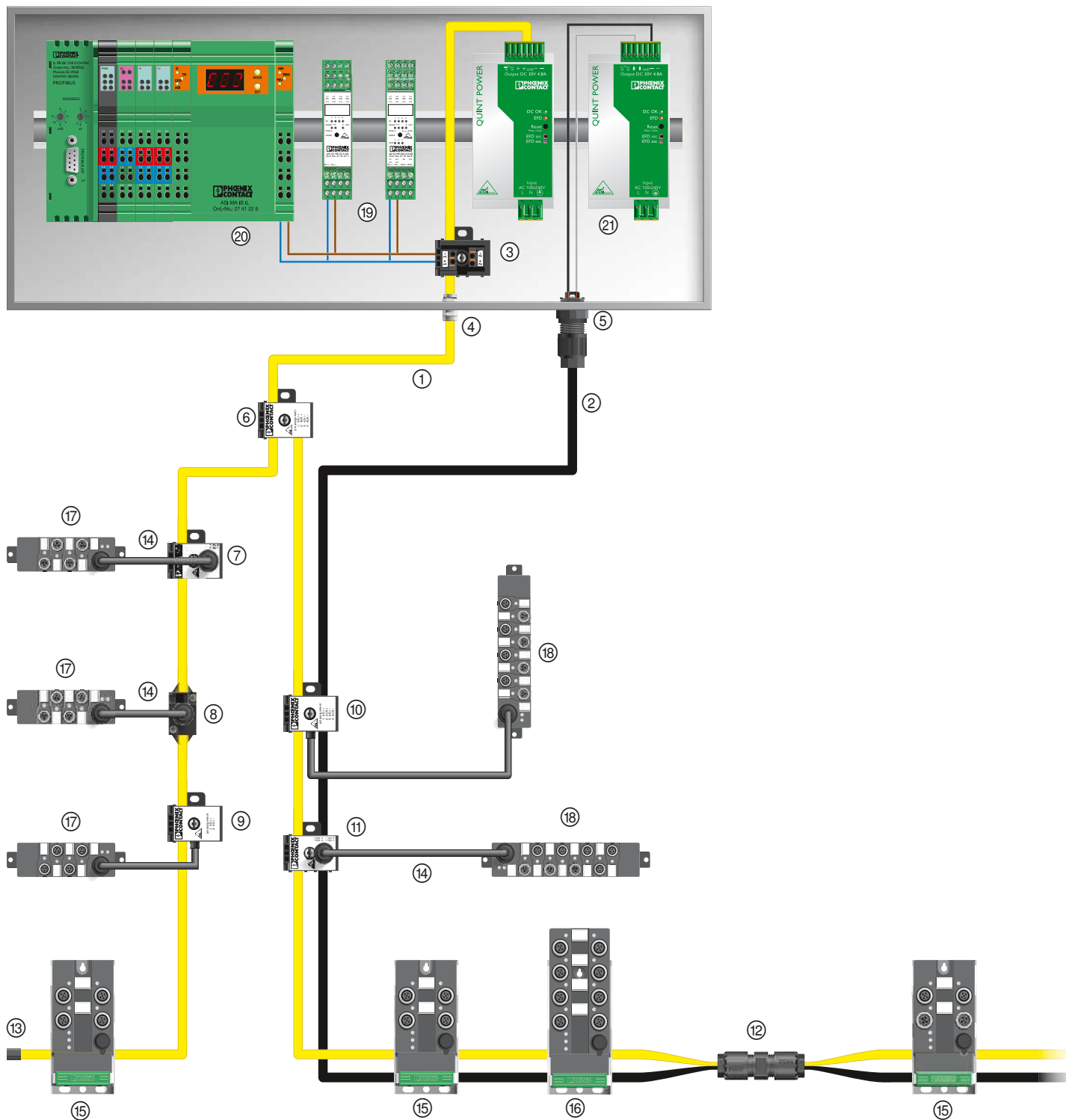
No.	Designation	Page
①	Assembled cable with straight M12 socket and free cable end, 2 m	See Catalog 4
②	Assembled cable with straight M12 socket and straight M12 plug, 1 m	See Catalog 4
③	Assembled cable with straight M12 socket and straight M12 plug, 5 m	See Catalog 4
④	Assembled cable with straight M12 plug and angled M12 socket, 5 m	See Catalog 4
⑤	Assembled cable with straight M12 plug and free cable end, 5 m	See Catalog 4
⑥	Assembled cable with straight M12 socket and straight M12 plug, 2 m	See Catalog 4
⑦	Assembled cable with straight M12 plug and free cable end, 20 m	See Catalog 4
⑧	M12 T-distributor	See Catalog 4



No.	Designation	Page
①	IP67 D-SUB complete plug-in connectors	184
②	IP67 D-SUB panel mounting frames for D-SUB contact inserts	206
③	D-SUB contact inserts	206
④	IP67 D-SUB coupling	185
⑤	IP67 D-SUB panel mounting frames with integrated D-SUB gender changer	185
⑥	IP20 D-SUB sleeve housing and D-SUB contact insert	219
⑦	M12 panel feed-through with fieldbus cable and free cable end	192
⑧	Assembled fieldbus cable with M12 plug-in connector and free cable end	See Catalog 4
⑨	IP67 D-SUB sleeve housing with accessories and D-SUB contact insert	206
⑩	IP20 D-SUB complete plug-in connectors	219
⑪	M12 plug-in connectors, for assembly	187
⑫	M12 T-piece	See Catalog 4
⑬	Assembled cable with angled M12 plug-in connector to straight M12 socket, 5 m	See Catalog 4
⑭	Assembled cable with straight M12 plug-in connector to straight M12 socket, 2 m	See Catalog 4
⑮	Termination resistor	See Catalog 4
⑯	Assembled fieldbus cable with M8 plug-in connector and M8 socket	See Catalog 4

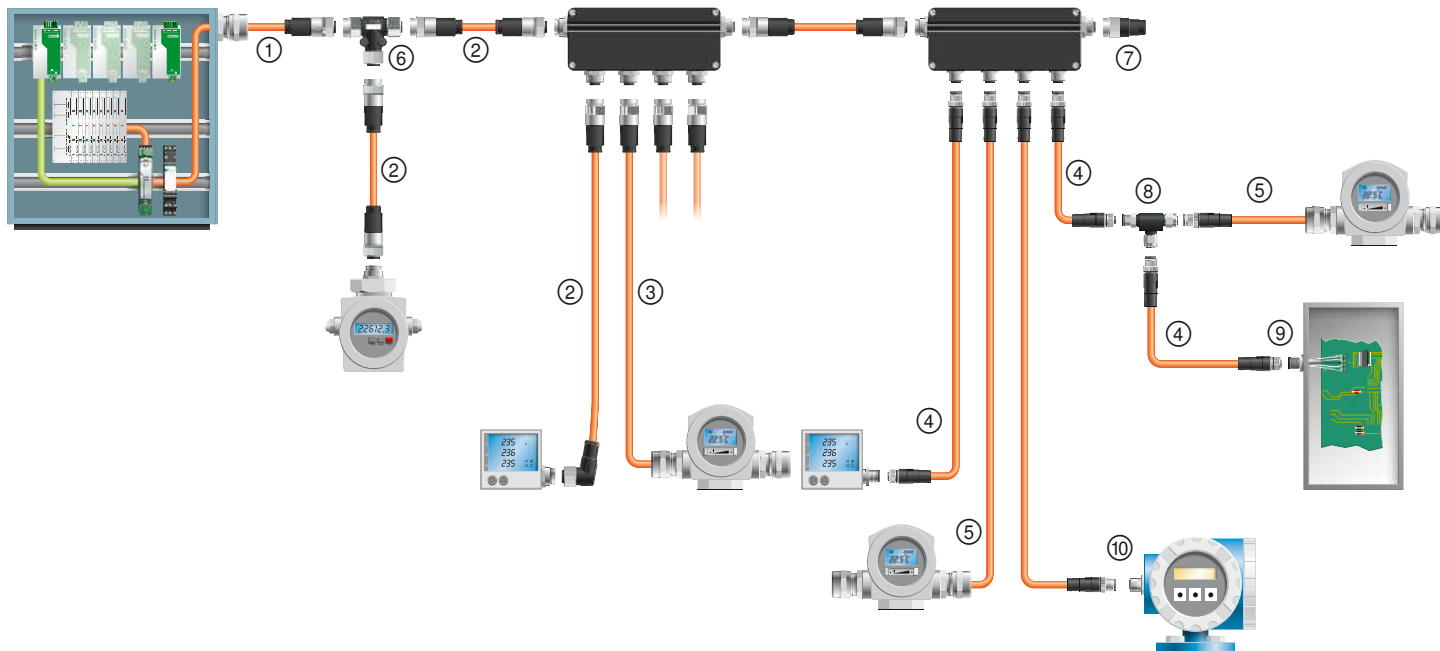


No.	Designation	Page
①	M8 termination resistor	See Catalog 4
②	Assembled fieldbus cable with straight M8 plug to straight M8 socket	See Catalog 4
③	M12 plug-in connector for free assembly, socket	186
④	Assembled fieldbus cable with M12 plug and free cable end	See Catalog 4
⑤	Bus system T-distributor, M8 socket to M12 plug and M12 socket	See Catalog 4
⑥	Bus system T-distributor, M12 socket to M12 plug and M12 socket	See Catalog 4
⑦	Assembled fieldbus cable with straight M12-SPEEDCON plug to straight M12-SPEEDCON socket	See Catalog 4
⑧	Assembled trunk cable with angled 7/8" plug to straight 7/8" socket	See Catalog 4
⑨	Bus system T-distributor, 5-pos., M12 socket to 7/8" socket and 7/8" plug, 7/8", stainless steel knurl	See Catalog 4
⑩	Assembled trunk cable with straight 7/8" plug to straight 7/8" socket	See Catalog 4
⑪	Bus system T-distributor, 5-pos., 7/8" socket to 7/8" socket and 7/8" plug, stainless steel knurl	See Catalog 4
⑫	Termination resistor, 7/8" plug	See Catalog 4
⑬	M12 flush-type plug-in connector	190
⑭	Assembled trunk cable with straight 7/8" plug and free cable end	See Catalog 4
⑮	M12 plug-in connector for free assembly, plug	186
⑯	Y-distributor, bus system cable, straight M12-SPEEDCON socket to straight M12-SPEEDCON plug and straight M12-SPEEDCON socket	See Catalog 4
⑰	M12 termination resistor	See Catalog 4
⑱	Y-distributor, bus system cable, straight M12-SPEEDCON socket and 2 free cable ends	See Catalog 4
⑲	7/8" assembled drop cable, straight 7/8" socket and free cable end	See Catalog 4
⑳	M12 panel feed-through with solder connection	188



No.	Designation	Page
①	AS-Interface flat-ribbon conductor, yellow	See Catalog 4
②	AS-Interface flat-ribbon conductor, black	See Catalog 4
③	AS-Interface distributor, 4-pos., with spring-cage terminal blocks up to 1.5 mm ²	See Catalog 4
④	Metal screw connection for an AS-Interface flat-ribbon conductor	See Catalog 4
⑤	Panel feed-through with QUICKON fast connection technology for accommodating up to two AS-Interface flat-ribbon conductors	See Catalog 4
⑥	AS-Interface H-distributor for the distribution of AS-Interface flat-ribbon conductors	See Catalog 4
⑦	AS-Interface distributor, 2-pos., with straight, A-coded M12 socket	See Catalog 4
⑧	AS-Interface distributor, 2-pos., with straight, A-coded M12 socket	See Catalog 4
⑨	AS-Interface distributor, 2-pos., with round cable and molded, A-coded M12 socket	See Catalog 4
⑩	AS-Interface distributor, 4-pos., with round cable and molded, A-coded M12 socket	See Catalog 4
⑪	AS-Interface distributor, 4-pos., with straight, A-coded M12 socket	See Catalog 4
⑫	Cable connector with QUICKON fast connection technology for connecting up to four AS-Interface flat-ribbon conductors	See Catalog 4
⑬	End clip for AS-Interface flat-ribbon conductor	See Catalog 4
⑭	Assembled round cable with M12 plug-in connectors	See Catalog 4
⑮	AS-Interface digital M12 I/O devices, 4 slots, IP65/IP67	See Catalog 4
⑯	AS-Interface digital M12 I/O devices, 8 slots, IP65/IP67	See Catalog 4
⑰	AS-Interface digital M8 input devices, 4 slots, IP65/IP67	See Catalog 4
⑱	AS-Interface digital M8 I/O devices, 8 slots, IP65/IP67	See Catalog 4
⑲	AS-Interface digital I/O devices, ME-Line, IP20	.
⑳	AS-Interface gateway for Inline Modular, IP20	.
㉑	Power supply unit, primary-switched	.

*) Further AS-Interface components for the control cabinet can be found in Catalog 8.



No.	Designation	Page
①	Assembled FOUNDATION Fieldbus cable with 7/8" socket and free cable end	See Catalog 4
②	Assembled FOUNDATION Fieldbus cable with 7/8" plug and 7/8" socket	See Catalog 4
③	Assembled FOUNDATION Fieldbus cable with 7/8" plug and free cable end	See Catalog 4
④	Assembled FOUNDATION Fieldbus cable with M12 plug and M12 socket	See Catalog 4
⑤	Assembled FOUNDATION Fieldbus cable with M12 plug and free cable end	See Catalog 4
⑥	FOUNDATION Fieldbus 7/8" T-distributor	See Catalog 4
⑦	FOUNDATION Fieldbus 7/8" termination resistor	See Catalog 4
⑧	FOUNDATION Fieldbus M12 distributor	See Catalog 4
⑨	FOUNDATION Fieldbus M12 system flush-type plug-in connector	193
⑩	FOUNDATION Fieldbus M12 flush-type plug	193

Data plug-in connectors

Fieldbus components - D-SUB plug-in connectors

D-SUB plug-in connectors, IP67



D-SUB complete plug-in connector for INTERBUS with IP67 protection



D-SUB plug-in connector set, IP67, consisting of: sleeve housing, panel mounting frame, and accessories, shielded design

	Technical data		Technical data
Electrical data			
Rated voltage	63 V	-	
Rated current	1 A	-	
Surge voltage category	II	-	
Material data			
Housing material	PA	PA	
Contact material	Copper alloy	-	
Contact surface material	Gold over nickel	-	
Contact carrier material	PBTP	-	
Inflammability class according to UL 94	V0	V0	
Mechanical data			
No. of pos.	9	9	
Color	gray	gray	
Pollution degree	2	2	
Degree of protection	IP67	IP67	
Connection method	Screw connection	-	
Conductor cross section	0.14 mm ² ... 0.5 mm ²	-	
Connection cross section AWG	26 ... 20	-	
Insertion/withdrawal cycles	≥ 200	≥ 1000	
Temperature data			
Ambient temperature (operation)	-20 °C ... 70 °C	-40 °C ... 80 °C	
	Ordering data		Ordering data
Description	Type	Order No.	Pcs. / Pkt.
D-SUB complete plug-in connector , for INTERBUS, shell size 1, screw connection, shielded			
Plug	VS-09-IBS-ST	1689271	1
Socket	VS-09-IBS-BU	1689284	1
D-SUB complete plug-in connector , for PROFIBUS, shell size 1, plug, shielded			
Screw connection	VS-09-PROFIBUS-SC	1654549	1
Spring-cage connection	VS-09-PROFIBUS-SP	1654345	1
D-SUB complete plug-in connector , for CANopen®, shell size 1, socket, screw connection, shielded			
Socket	VS-09-CAN	1689307	1
D-SUB panel mounting frame , for accommodating D-SUB contact inserts			
D-SUB 09			
D-SUB EMC shroud , for the IP67 panel mounting frame, for shield contacting to the housing panel			
D-SUB 09			
D-SUB plug-in connector set			
D-SUB 09			
	Type	Order No.	Pcs. / Pkt.
	VS-09-A	1688366	5
	VS-09-A-EMV-S	1688463	5
	VS-09-SET-EMV	1689158	1



Screw connection
Fixing: 2.5 mm hole



D-SUB panel mounting frame IP67,
with integrated gender changer

	Technical data			Technical data		
Electrical data						
Rated voltage	60 V			125 V	125 V	
Rated current	5 A			5 A	5 A	
Surge voltage category	III			III	III	
Material data						
Housing material	-			PA	PA	
Contact material	Copper alloy			Copper alloy	Copper alloy	
Contact surface material	Gold over nickel			Hard gold-plated over nickel	Hard gold-plated over nickel	
Contact carrier material	PBTP			Polyester GF	Polyester GF	
Inflammability class according to UL 94	V0			V0	V0	
Mechanical data						
No. of pos.	9			9	9	
Color	-			gray	gray	
Pollution degree	2			2	2	
Degree of protection	IP20			IP67	IP67	
Connection method	Screw connection			-	-	
Conductor cross section	0.14 mm² ... 0.5 mm²			-	-	
Connection cross section AWG	26 ... 20			-	-	
Insertion/withdrawal cycles	≥ 200			≥ 200	≥ 200	
Temperature data						
Ambient temperature (operation)	-20 °C ... 80 °C			-40 °C ... 80 °C	-40 °C ... 80 °C	
	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
D-SUB contact insert						
Plug	VS-09-ST-DSUB/10-MPT-0,5	1688379	10			
Socket	VS-09-BU-DSUB/9-MPT-0,5	1688395	10			
D-SUB panel mounting frame, with integrated gender changer, shielded						
D-SUB 09, pin/pin				VS-09-A-GC-ST/ST	1689705	5
D-SUB 09, socket/socket				VS-09-A-GC-BU/BU	1689695	5
D-SUB coupling, with integrated gender changer, shielded						
D-SUB 09, pin/pin				VS-09-KU-ST/ST	1689640	5
D-SUB 09, socket/socket				VS-09-KU-BU/BU	1689637	5

Data plug-in connectors

Fieldbus components - M12 plug-in connectors

M12 plug-in connector, shielded



M12 plug-in connectors
that can be assembled for INTERBUS



M12 plug-in connectors
that can be assembled for PROFIBUS

M12 circular plug-in connector according to:

Pollution degree
Degree of protection
Connection method

Electrical data

Rated voltage
Rated current
Volume resistance
Insulation resistance

Material data

Contact material
Contact surface material
Contact carrier material
Inflammability class according to UL 94

Coding

No. of pos.

Temperature data

Plug / socket

[°C]

Technical data

Spring-cage connection

IEC 61076-2-101

3

IP67

Spring-cage conn.

Screw connection

IEC 61076-2-101

3

IP67

Screw connection

Technical data

Spring-cage connection

IEC 61076-2-101

3

IP67

Spring-cage conn.

Screw connection

IEC 61076-2-101

3

IP67

Screw connection

60 V

4 A

≤ 8 mΩ

≥ 100 MΩ

CuSn

Ni/Au

TPU

V0

B - inverse

2

-40 ... 85

60 V

4 A

≤ 3 mΩ

≥ 100 MΩ

CuSn

Au

PA 66

HB

B - inverse

5

-40 ... 85

60 V

4 A

≤ 3 mΩ

≥ 100 MΩ

CuSn

Au

PA 66

HB

B - inverse

5

-40 ... 85

Ordering data

Order No. Pcs. / Pkt.

Order No. Pcs. / Pkt.

Spring-cage connection

Screw connection

1432826 1

1507777 1

1432800 1

1507764 1

1432839 1

1432813 1

Ordering data

Order No. Pcs. / Pkt.

Order No. Pcs. / Pkt.

Spring-cage connection

Screw connection

1432868 1

1507777 1

1432842 1

1507764 1

1432871 1

1432855 1

Plug-in connector

Socket, straight

Plug, straight

Socket, angled

Plug, angled

M12 plug-in connector, shielded



M12 plug-in connectors
that can be assembled for DeviceNet™



M12 plug-in connectors
that can be assembled for CC-Link



Technical data			
Spring-cage connection		Screw connection	
IEC 61076-2-101		IEC 61076-2-101	
3		3	
IP67		IP67	
Spring-cage conn.		Screw connection	
60 V		60 V	
4 A		4 A	
≤ 8 mΩ		≤ 3 mΩ	
≥ 100 MΩ		≥ 100 MΩ	
CuSn		CuSn	
Ni/Au		Au	
TPU		PA 66	
V0		HB	
A - standard		A - standard	
-40 ... 85		-40 ... 85	

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
Spring-cage connection		Screw connection	
1432787	1	1508365	1
1432761	1	1508352	1
1432790	1		
1432774	1		



Technical data			
Spring-cage connection			
IEC 61076-2-101			
3			
IP67			
Spring-cage conn.			
60 V			
4 A			
≤ 8 mΩ			
≥ 100 MΩ			
CuSn			
Ni/Au			
PA 66			
V0			
A - standard			
-40 ... 85			

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
Spring-cage connection			
1559770	1		
1559767	1		

M12 circular plug-in connector according to:

Pollution degree
Degree of protection
Connection method

Electrical data

Rated voltage
Rated current
Volume resistance
Insulation resistance

Material data

Contact material
Contact surface material
Contact carrier material
Inflammability class according to UL 94
Coding

Temperature data

Plug / socket

[°C]

Description

Plug-in connector

Socket, straight
Plug, straight
Socket, angled
Plug, angled

Data plug-in connectors

Fieldbus components - M12 flush-type plug-in connectors

Flush-type plug-in connector, one-piece, rear mounting



M12 flush-type plug-in connector with solder connection



M12 flush-type plug-in connector with solder connection

M12 circular plug-in connector according to:

Pollution degree
Degree of protection
Connection method

Electrical data

Rated voltage
Rated current
Volume resistance
Insulation resistance

Material data

Material contact / contact surface
Contact carrier material
Inflammability class according to UL 94
Coding

Temperature data

Plug / socket

[°C]

Technical data

Without shield contact

IEC 61076-2-101

3

IP67

Solder pins

60 V

4 A

≤ 3 mΩ

≥ 100 MΩ

CuZn / Au

PA 66

V0

B - inverse

-25 ... 85

With shield contact

IEC 61076-2-101

3

IP67

Solder pins

60 V

4 A

≤ 3 mΩ

≥ 100 MΩ

CuZn / Ni/Au

PA 66

V0

B - inverse

-25 ... 85

Technical data

Without shield contact

IEC 61076-2-101

3

IP67

Solder pins

60 V

4 A

≤ 3 mΩ

≥ 100 MΩ

CuZn / Au

PA 66

V0

A - standard

-25 ... 85

With shield contact

IEC 61076-2-101

3

IP67

Solder pins

60 V

4 A

≤ 3 mΩ

≥ 100 MΩ

CuZn / Au

PA 66

V0

A - standard

-25 ... 85

Ordering data

Description

Order No.

Pcs. / Pkt.

Order No.

Pcs. / Pkt.

Order No.

Pcs. / Pkt.

Order No.

Pcs. / Pkt.

Without shield contact

With shield contact

Without shield contact

With shield contact

Flush-type plug-in connector, Pg9 fastening thread

Socket

Plug

1543647

20

1553022

20

1553051

20

1542761

20

1542745

20

1553019

20

1553048

20

Flush-type plug-in connector, M12 fastening thread

Plug

1551846

20

1552971

20

1551833

20

1552968

20

EMC hexagonal nuts with fine toothing, for all flush-type plug-in connectors with:

Pg9 fastening thread

1440177

10

1440177

10

1440177

10

1440177

10

M12 fastening thread

1440151

10

1440151

10

1440151

10

1440151

10

Flush-type plug-in connector, two-piece, rear mounting



M12 flush-type plug-in connector with solder connection



M12 flush-type plug-in connector with solder connection



Technical data	
Wave soldering	THR process
IEC 61076-2-101	IEC 61076-2-101
3	3
IP67	IP67
Solder pins	THR solder connection
60 V	60 V
4 A	4 A
≤ 3 mΩ	≤ 3 mΩ
≥ 100 MΩ	≥ 100 MΩ
CuZn / Ni/Au	CuZn / Au
PA 66	PPA
HB	V0
-25 ... 85	-25 ... 85

Ordering data	
Order No.	Pcs. / Pkt.
Wave soldering	
1437180	10
1437203	10
THR process	
1542635	60
1552188	60
1436576	10
1436615	10



Technical data	
Wave soldering	THR process
IEC 61076-2-101	IEC 61076-2-101
3	3
IP67	IP67
Solder pins	THR solder connection
60 V	60 V
4 A	4 A
≤ 3 mΩ	≤ 3 mΩ
≥ 100 MΩ	≥ 100 MΩ
CuZn / Au	CuZn / Au
PA 66	PPA
HB	V0
-25 ... 85	-25 ... 85

Ordering data	
Order No.	Pcs. / Pkt.
Wave soldering	
1694237	10
1694211	10
THR process	
1434879	60
1439968	60
1438024	10
1438037	10

M12 circular plug-in connector according to:

Pollution degree
Degree of protection
Connection method

Electrical data

Rated voltage
Rated current
Volume resistance
Insulation resistance

Material data

Material contact / contact surface
Contact carrier material
Inflammability class according to UL 94

Temperature data

Plug / socket [°C]

Description

Flush-type plug-in connector, M12 fixing, straight contacts

Socket

Plug

Flush-type plug-in connector, M12 fixing, angled contacts

Socket

Plug

Data plug-in connectors

Fieldbus components - M12 flush-type plug-in connectors

Flush-type plug-in connector, with pre-assembled cable, type 900



Rear mounting



Front mounting, can be positioned



Technical data	
M16 fastening thread	Pg9 fastening thread
IEC 61076-2-101	IEC 61076-2-101
3	3
IP67	IP67
60 V	60 V
4 A	4 A
≤ 3 mΩ	≤ 3 mΩ
≥ 100 MΩ	≥ 100 MΩ
CuZn / Ni/Au	CuZn / Ni/Au
PA 66	PA 66
V0	V0
-25 ... 85	-25 ... 85

Ordering data	
Order No.	Pcs. / Pkt.
M16 fastening thread	Pg9 fastening thread
1534546	1437601
1534504	1437643
1534559	1437614
1534517	1437656
1534562	1437627
1534520	1437669
1534575	1437630
1534533	1437672
1440164	1440177



Technical data	
M16 fastening thread	
IEC 61076-2-101	-
3	-
IP67	-
60 V	-
4 A	-
≤ 3 mΩ	-
≥ 100 MΩ	-
CuZn / Ni/Au	- / -
PA 66	-
V0	-
-25 ... 85	-
Ordering data	
Order No.	Pcs. / Pkt.
M16 fastening thread	
1529742	1
1529629	1
1529755	1
1530223	1
1529768	1
1529726	1
1529771	1
1529739	1

M12 circular plug-in connector according to:

Pollution degree

Degree of protection

Electrical data

Rated voltage

Rated current

Volume resistance

Insulation resistance

Material data

Material contact / contact surface

Contact carrier material

Inflammability class according to UL 94

Temperature data

Plug / socket

[°C]

Description

Cable length

Flush-type plug-in connector, B-coded, with bus system cable, 6-wire, shielded, PUR halogen-free, green outer cable sheath, 3 x 2 x 0.25 mm²

Socket	0.5 m
Plug	0.5 m
Socket	1 m
Plug	1 m
Socket	2 m
Plug	2 m
Socket	5 m
Plug	5 m

EMC hexagonal nuts with fine toothing, for all flush-type plug-in connectors with:

M16 fastening thread

Pg9 fastening thread

Flush-type plug-in connector, with pre-assembled cable, type 910

PROFI
BUS



Rear mounting

PROFI
BUS



Front mounting,
can be positioned



Technical data	
M16 fastening thread	Pg9 fastening thread
IEC 61076-2-101	IEC 61076-2-101
3	3
IP67	IP67
60 V	60 V
4 A	4 A
≤ 3 mΩ	≤ 3 mΩ
≥ 100 MΩ	≥ 100 MΩ
CuZn / Ni/Au	CuZn / Ni/Au
PA 66	PA 66
V0	V0
-25 ... 85	-25 ... 85

Ordering data	
Order No.	Pcs. / Pkt.
M16 fastening thread	Pg9 fastening thread

1534384	1	1437449	1
1534342	1	1437481	1
1534397	1	1437452	1
1534355	1	1437494	1
1534407	1	1437465	1
1534368	1	1437504	1
1534410	1	1437478	1
1534371	1	1437517	1
1440164	10	1440177	10



Technical data	
M16 fastening thread	
IEC 61076-2-101	-
3	-
IP67	-
60 V	-
4 A	-
≤ 3 mΩ	-
≥ 100 MΩ	-
CuZn / Ni/Au	- / -
PA 66	-
V0	-
-25 ... 85	-

Ordering data	
Order No.	Pcs. / Pkt.
M16 fastening thread	

1525597	1
1525555	1
1525607	1
1525568	1
1519574	1
1519561	1
1525610	1
1525571	1

M12 circular plug-in connector according to:

Pollution degree

Degree of protection

Electrical data

Rated voltage

Rated current

Volume resistance

Insulation resistance

Material data

Material contact / contact surface

Contact carrier material

Inflammability class according to UL 94

Temperature data

Plug / socket

[°C]

Description Cable length

Flush-type plug-in connector, B-coded, with bus system cable,
2-wire, shielded, PUR halogen-free, violet outer cable sheath,
1 x 2 x 0.25 mm²

Socket	0.5 m
Plug	0.5 m
Socket	1 m
Plug	1 m
Socket	2 m
Plug	2 m
Socket	5 m
Plug	5 m

EMC hexagonal nuts with fine toothing, for all flush-type plug-in
connectors with:

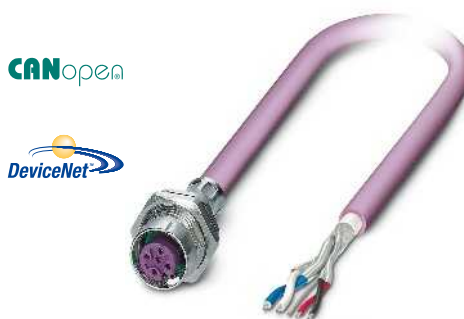
M16 fastening thread

Pg9 fastening thread

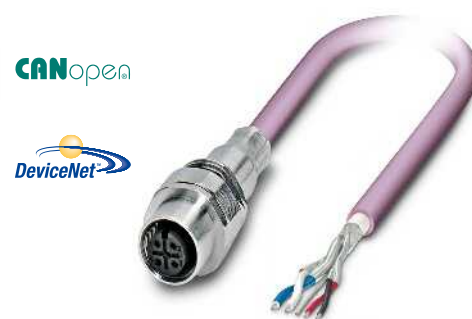
Data plug-in connectors

Fieldbus components - M12 flush-type plug-in connectors

Flush-type plug-in connector, with pre-assembled cable, type 920



Rear mounting



Front mounting, can be positioned

M12 circular plug-in connector according to:

Pollution degree

Degree of protection

Electrical data

Rated voltage

Rated current

Volume resistance

Insulation resistance

Material data

Material contact / contact surface

Contact carrier material

Inflammability class according to UL 94

Temperature data

Plug / socket [°C]



Technical data	
M16 fastening thread	Pg9 fastening thread
IEC 61076-2-101	IEC 61076-2-101
3	3
IP67	IP67
60 V	60 V
4 A	4 A
≤ 3 mΩ	≤ 3 mΩ
≥ 100 MΩ	≥ 100 MΩ
CuZn / Ni/Au	CuZn / Ni/Au
PA 66	PA 66
V0	V0
-25 ... 85	-25 ... 85



Technical data	
M16 fastening thread	
IEC 61076-2-101	-
3	-
IP67	-
60 V	-
4 A	-
≤ 3 mΩ	-
≥ 100 MΩ	-
CuZn / Ni/Au	- / -
PA 66	-
V0	-
-25 ... 85	-

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
M16 fastening thread		Pg9 fastening thread	

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
M16 fastening thread			

Flush-type plug-in connector, A-coded, with bus system cable, 4-wire, shielded, PUR halogen-free, violet outer cable sheath, 2 x 0.34 mm²; 2 x 0.25 mm²

Socket	0.5 m
Plug	0.5 m
Socket	1 m
Plug	1 m
Socket	2 m
Plug	2 m
Socket	5 m
Plug	5 m

1534465	1	1437520	1
1534423	1	1437562	1
1534478	1	1437533	1
1534436	1	1437575	1
1534481	1	1437546	1
1534449	1	1437588	1
1534494	1	1437559	1
1534452	1	1437591	1

1525678	1
1525623	1
1525681	1
1525636	1
1525694	1
1525649	1
1525704	1
1525652	1

EMC hexagonal nuts with fine toothing, for all flush-type plug-in connectors with:

M16 fastening thread

Pg9 fastening thread

1440164	10	1440177	10
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M12 flush-type plug-in connector, shielded

With 0.5 m long litz wires,
front mounting



With solder pins,
rear mounting

**Technical data**

M12 circular plug-in connector according to:	IEC 61076-2-101
Pollution degree	3
Degree of protection	IP67
Connection method	Individual wires
Electrical data	
Rated voltage	250 V
Rated current	4 A
Volume resistance	≤ 3 mΩ
Insulation resistance	≥ 100 MΩ
Material data	
Material contact / contact surface	CuZn / Ni/Au
Contact carrier material	PA66 GF
Inflammability class according to UL 94	V0
Temperature data	
Plug / socket	-25 ... 85 [°C]

Ordering data

Description	Coding	Type	Order No.	Pcs. / Pkt.
Device plug-in connectors				
Socket	A - standard	SACC-E-M12FS-4CON-PG9/0,5 FFVA	1431429	1
Plug	A - standard	SACC-E-M12MS-4CON-PG9/0,5 FFVA	1431432	1

**Technical data**

IEC 61076-2-101
3
IP67/IP69K
Solder pins
60 V
4 A
≤ 3 mΩ
≥ 100 MΩ
CuZn / Au
PA 66
V0
-25 ... 85

Ordering data

Type	Order No.	Pcs. / Pkt.
SACC-DSI-M12FS-5CON-L180 VA	1554733	20
SACC-DSI-M12MS-5CON-L180 VA	1554746	20

Data plug-in connectors

Cable range

Symbol key



With UL Style



Suitable for use with drag chain



Resistant to welding sparks



UV resistant



Extremely flame-retardant



High temperature resistance



Good oil resistance



Good resistance to chemicals



Suitable for torsional stress



Halogen-free



Transmission properties

INTERBUS cable – type 900



INTERBUS cable for highly flexible use in dry and humid areas and harsh industrial environments. The remote bus cable is certified in accordance with the requirements of the INTERBUS Club under No. 117.

The cable is halogen-free and flame-retardant according to VDE 0482, Part 265-2-1/ IEC 332-1. The wire insulation of the inner conductor is made from polyethylene.

Outer sheath material PVC

Minimum bending radius 7.5 x D
Tested at 20 ... 25°C

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
900 PVC Green	6-pos.	M12	3 x 2 x 0.25 mm ² 32 x 0.1 mm		Yellow, green, white, brown, pink, gray	PE	-30°C ... 70°C	190

PROFIBUS cable – type 910



PROFIBUS cable, suitable for use in drag chains in harsh industrial environments. The cable is also oil resistant.

Outer sheath material PUR

Number of bending cycles 5 million
Minimum bending radius 10 x D
Traverse path 10 m
Acceleration 7 m/s²
Speed 180 m/min.
Tested at 20 ... 25°C

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
910 PUR Violet	2-pos.	M12	1 x 2 x 24 AWG 19 x 0.15 mm		Green, red	PE	-40°C ... 80°C	191

DeviceNet™/CANopen® cable – type 920



DeviceNet™/CANopen® cable for flexible installation. The cable is suitable for use with drag chain and in harsh industrial environments. The cable is also oil resistant.

Outer sheath material	PUR
Number of bending cycles	5 million
Minimum bending radius	10 x D
Traverse path	10 m
Acceleration	7 m/s²
Speed	180 m/min.
Tested at	20 ... 25°C

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
920 PUR Violet	4-pos.	M12, M8	1 x 2 x 22 AWG 19 x 0.15 mm + 1 x 2 x 24 AWG 19 x 0.15 mm		Red, black, blue, white	PO, PE	-40°C ... 80°C	192

DeviceNet™/CANopen® cable - type 923



DeviceNet™/CANopen® cable for flexible installation. The cable is suitable for use with drag chain and in harsh industrial environments. The cable is also oil resistant.

Outer sheath material	PUR
Number of bending cycles	5 million
Minimum bending radius	10 x D
Traverse path	10 m
Acceleration	7 m/s²
Speed	180 m/min.
Tested at	20 ... 25°C

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
923 PUR Gray	4-pos.	M12, 7/8"	1 x 2 x 22 AWG 19 x 0.15 mm + 1 x 2 x 24 AWG 19 x 0.15 mm		Red, black, blue, white	PO, PE	-40°C ... 80°C	See Catalog 4

DeviceNet™ cable - type 928



DeviceNet™/CANopen® cable for fixed installation. The cable is suitable for use in harsh industrial environments. The cable is also oil resistant.

Outer sheath material	PVC
Minimum bending radius	10 x D

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
928 PVC Gray	4-pos.	7/8"	1 x 2 x 18 AWG 19 x 0.26 mm + 1 x 2 x 15 AWG 19 x 0.34 mm		Red, black, blue, white	PVC	Fixed: -40°C ... 80°C	See Catalog 4

Data plug-in connectors

Cable range

FOUNDATION Fieldbus cable – type 960

FOUNDATION Fieldbus/PROFIBUS PA cable – type 961



FOUNDATION Fieldbus cable for fixed installation. The cable is UV resistant and flame-retardant according to UL 1685. This makes it suitable for use both outdoors and indoors.

Cable type 961 is available in a blue version designed specifically for use in the Ex area.

Outer sheath material PVC

Minimum bending radius 10 x D

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
960 PVC Orange	2-pos.	7/8", M12	2 x 20 AWG 7 x 0.3 mm		Blue, orange	PO	-30°C ... 105°C	See Catalog 4
961 PVC Blue	2-pos.	7/8", M12	2 x 20 AWG 7 x 0.3 mm		Blue, orange	PO	-30°C ... 105°C	See Catalog 4

CC-Link cable – type 990



CC-Link cable for fixed indoor installation. The cable is flame-retardant according to UL 1685.

Outer sheath material PVC

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
990 PVC Red	3-pos.	M12	3 x 22 AWG 7 x 0.28 mm		White, blue, yellow	Foam PE	-30°C ... 60°C	See: phoenix contact.net/ products

PROFINET cable – type 93A



PROFINET cable for fixed installation. The cable is flame-retardant and its transmission properties meet CAT5e.

Outer sheath material PVC

Minimum bending radius 7.5 x D

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
93A PVC Green	4-pos.	M12, RJ45	4 x 22 AWG single-strand		White, yellow, blue, orange	PE	-25°C ... 80°C	105

PROFINET cable – type 93B

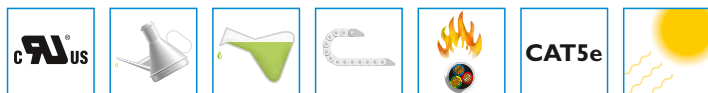
PROFINET cable for flexible installation. The cable is oil resistant. It is UV resistant according to UL 1581 Sec. 1200 and therefore also suitable for outdoor use.

The cable's transmission properties meet CAT5e.

Outer sheath material PVC

Minimum bending radius 7 x D
Tested at 20 ... 25°C

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
93B PVC Green	4-pos.	M12, RJ45	4 x 22 AWG 7 x 0.25 mm		White, yellow, blue, orange	PE	-40°C ... 70°C	97 105 106

PROFINET cable – type 93C

PROFINET cable for use in drag chains. The cable is halogen-free and oil resistant. It is UV resistant and therefore also suitable for outdoor use. The cable's transmission properties meet CAT5e.

Outer sheath material PUR

Number of bending cycles 3 million
Minimum bending radius 7.5 x D
Traverse path 10 m
Acceleration 4 m/s²
Speed 4 m/s
Tested at 20 ... 25°C

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
93C PUR Green	4-pos.	M12, RJ45	4 x 22 AWG 7 x 0.25 mm		White, yellow, blue, orange	PE	-40°C ... 70°C	105 106

PROFINET cable – type 93R

PROFINET cable for robot applications. The cable is oil resistant. It is UV resistant according to UL 1581 Sec. 1200 and therefore also suitable for outdoor use.

The cable's transmission properties meet CAT5e.

Outer sheath material PUR

Torsion angle ±180°
Torsion cycles 1 million

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
93R PUR Green	4-pos.	M12, RJ45	4 x 22 AWG 19 x 0.15 mm		White, yellow, blue, orange	PE	-40°C ... 80°C	105 106

Data plug-in connectors

Cable range

PROFINET cable – type 937



PROFINET cable for railway applications. The cable is oil resistant. It meets fire safety standard BS6853.

The cable's transmission properties meet CAT5e.

Outer sheath material RADOX® GKW S

Minimum bending radius 6 x D

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
937 RADOX® Black	4-pos.	M12, RJ45	4 x 22 AWG 7 x 0.25 mm		White, yellow, blue, orange	RADOX®	-40°C ... 90°C	105 106

EtherCAT cable - type 93G



EtherCAT cable for flexible installation. The cable is oil resistant. It is UV resistant according to UL 1581 Sec. 1200 and is therefore also suitable for use in harsh industrial environments.

The cable's transmission properties meet CAT5e.

Outer sheath material PVC

Minimum bending radius 7 x D
Tested at 20 ... 25°C

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
93G PVC Green	4-pos.	M12, PP, RJ45	4 x 22 AWG 7 x 0.25 mm		White, yellow, blue, orange	PE	-40°C ... 70°C	108

sercos III cable - type 93K



sercos III cable for flexible installation. The cable is oil resistant. It is UV resistant according to UL 1581 Sec. 1200 and is therefore also suitable for use in harsh industrial environments.

The cable's transmission properties meet CAT5e.

Outer sheath material PVC

Minimum bending radius 7 x D
Tested at 20 ... 25°C

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
93K PVC Red	4-pos.	M12, PP, RJ45	4 x 22 AWG 7 x 0.25 mm		White, yellow, blue, orange	PE	-40°C ... 70°C	See: phoenix contact.net/ products

Ethernet cable – type 93E



Ethernet cable for flexible use. The cable is halogen-free and oil resistant. Its transmission properties meet CAT5e.

Outer sheath material PUR

Minimum bending radius 5 x D

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
93E PUR Blue	4-pos.	M12, RJ45	2 x 2 x 26 AWG 7 x 0.25 mm		White/orange-orange, white/green-green	PE	-20°C ... 80°C	96 98

Ethernet cable – type 94A



Ethernet cable for fixed installation. The cable's transmission properties meet CAT5e.

Outer sheath material PUR

Minimum bending radius 7 x D
Tested at 20 ... 25°C

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
94A PUR Blue	8-pos.	M12, PP, RJ45	4 x 2 x 24 AWG single-strand Twisted pair		White/blue-blue, white/orange-orange, white/green-green, white/brown-brown	PE	-20°C ... 70°C	96

Ethernet cable – type 94B



Ethernet cable for flexible installation. The cable is resistant to oil and chemicals and is flame-retardant. The cable's transmission properties meet CAT5e.

Outer sheath material PUR

Minimum bending radius 5 x D

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
94B PUR Blue	8-pos.	M12, RJ45	4 x 2 x 26 AWG 7 x 0.25 mm		White/blue-blue, white/orange-orange, white/green-green, white/brown-brown	PE	-40°C ... 80°C	96 100

Data plug-in connectors

Cable range

Ethernet cable – type 94P



Ethernet cable for flexible installation. The cable is flame-retardant and halogen-free. The cable's transmission properties meet CAT5e.

Outer sheath material PUR

Minimum bending radius 90 mm (mobile)
50 mm (fixed installation)

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
94P PUR Blue	8-pos.	M12, RJ45	4 x 2 x 26 AWG 7 x 0.16 mm		White-blue, blue, white-orange, orange, white-green, green, white-brown, brown	PE	-20°C ... 70°C	110

Ethernet cable – type 94C



Ethernet cable for universal use in drag chains. The cable is resistant to oil and chemicals and is flame-retardant. The cable's transmission properties meet CAT5e.

Outer sheath material PUR

Minimum bending radius 5 x D

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
94C PUR Blue	8-pos.	M12, RJ45	4 x 2 x 26 AWG 19 x 0.10 mm		White-blue, blue, white-orange, orange, white-green, green, white-brown, brown	PP	-20°C ... 80°C	96 100

Ethernet cable – type 94D



Ethernet cable for flexible installation. The cable is oil resistant. It is UV resistant according to UL 1581 Sec. 1200 and therefore also suitable for outdoor use. The cable's transmission properties meet CAT5e.

Outer sheath material PVC

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
94D PVC Black	8-pos.	M12, PP, RJ45	4 x 2 x 26 AWG 7 x 0.16 mm Twisted pair		White-blue, blue, white-orange, orange, white-green, green, white-brown, brown	PP	-40°C ... 80°C	96

Ethernet cable – type 94E



Ethernet cable for fixed installation. The cable is resistant to oil and chemicals and is flame-retardant. It is also halogen-free and its transmission properties meet CAT6_A.

Outer sheath material **PUR**

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
94E PUR Blue	8-pos.	M12, PP, RJ45	4 x 2 x 23 AWG single-strand Twisted pair		White-blue, blue, white-orange, orange, white-green, green, white-brown, brown	PE	-20°C ... 80°C	96

Ethernet cable – type 94F



Ethernet cable for flexible installation. The cable is resistant to oil and chemicals and is flame-retardant. It is also halogen-free and its transmission properties meet CAT6_A.

Outer sheath material **PUR**

Minimum bending radius **10 x D**

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
94F PUR Blue	8-pos.	M12, PP, RJ45	4 x 2 x 26 AWG 7 x 0.16 mm Twisted pair		White-blue, blue, white-orange, orange, white-green, green, white-brown, brown	PE	-20°C ... 80°C	102

Ethernet hybrid cable – type 94H



Ethernet hybrid cable for use in drag chains. The cable has four wires for data transmission and four wires for power supply. It is oil resistant and flame-retardant. It is also halogen-free and its transmission properties meet CAT5e.

Outer sheath material **PUR**

Number of bending cycles **2 million**
Minimum bending radius **10 x D**
Traverse path **4.5 m**
Acceleration **3 m/s²**
Speed **3 m/s**

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
94H PUR Black	8-pos.	M12	1 x 4 x 26 AWG 19 x 0.15 mm 1 x 4 x 20 AWG 19 x 0.6 mm		White-orange, orange, white-green, green, white, blue, brown, black	PP	-40°C ... 90°C	104

Data plug-in connectors

Cable range

VARAN cable – type 970

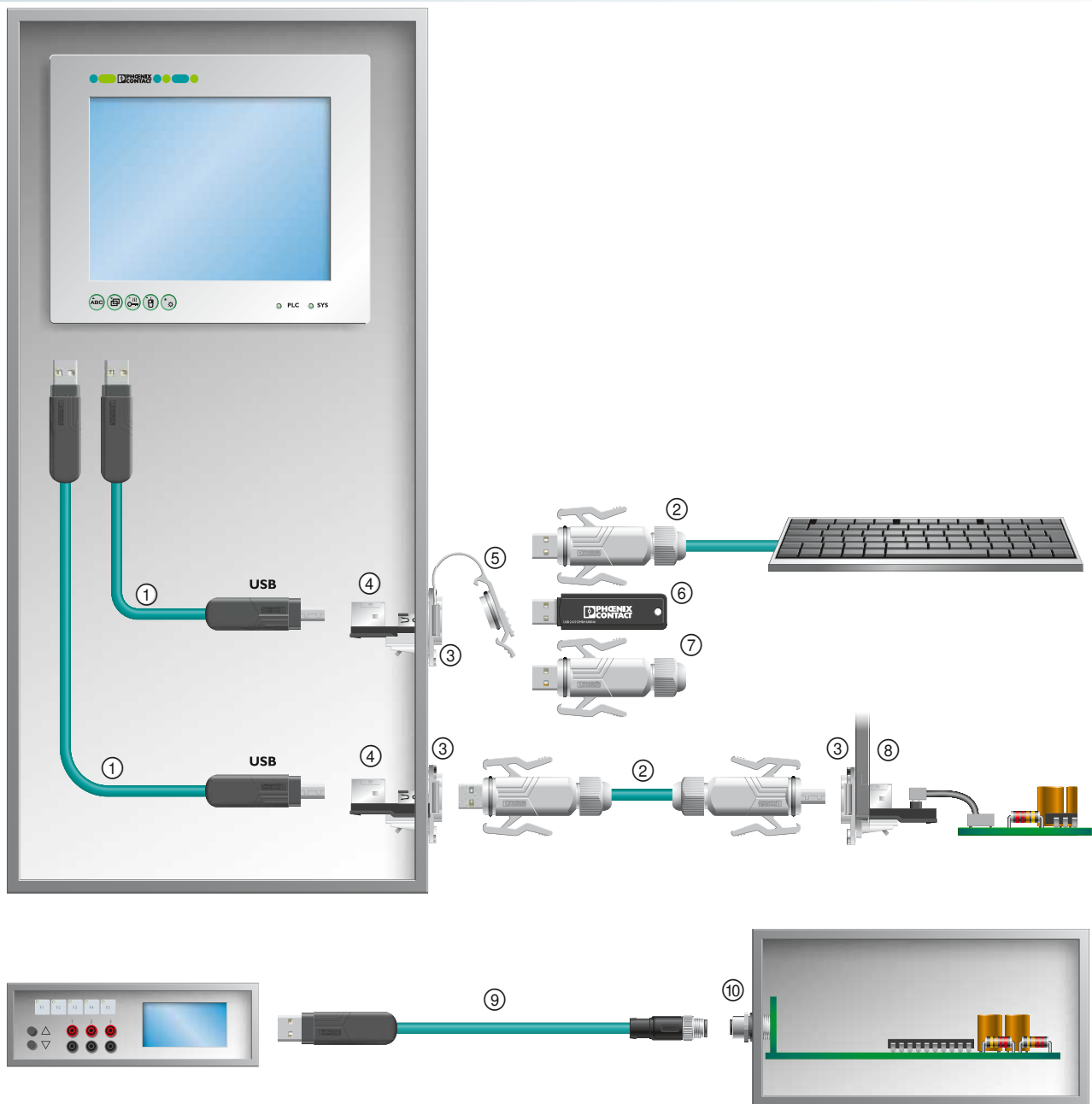


VARAN cable for flexible installation. The cable is resistant to oil and chemicals and is flame-retardant. The cable's transmission properties meet CAT5e.

Outer sheath material Santoprene

Minimum bending radius 7.5 x D
Tested at 20 ... 25°C

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
970 Santoprene Black	6-pos.	M12, PP, RJ45	1 x 2 x 22 AWG 19 x 0.1 mm + 2 x 2 x 26 AWG 19 x 0.1 mm		Brown, blue White-orange, orange, white-green, green	PE	-40°C ... 80°C	See: phoenix contact.net/ products



No.	Designation	Page
①	Assembled USB cables	See Catalog 4
②	Assembled USB cables, IP65/IP67	See Catalog 4
③	Panel mounting frame with IP65/IP67 protection for Freenet system, version 6	205
④	Socket-socket modules for Freenet system	205
⑤	Protective cover for the panel mounting frame with IP65/IP67 protection	205
⑥	USB memory stick with IP20 protection	205
⑦	USB memory stick with IP67 protection	205
⑧	USB socket insert with pin plug connection	205
⑨	Assembled USB cables with M12 mini-USB	See Catalog 4
⑩	M12 flush-type plug-in connector, mini-USB, for PCB mounting	See Catalog 4

Panel feed-throughs, memory sticks, protective cover

Panel feed-throughs can be implemented with the IP67 panel mounting frame and the USB socket inserts. The USB memory sticks with IP67 protection enable wireless data transmission in rough industrial environments.



Mini-B USB, M12 fastening threads, wave soldered contacts, integrated shield contact



USB socket inserts and panel mounting frames, IP67, Freetnet system

	Technical data			Technical data			
	VS-EC-MSDB SH SCO			VS-04-BUA-BUB-F/IP67		VS-04-MS-IP20	
Electrical data							
Rated voltage	-			30 V		-	
Transmission speed	-			480 Mbps		480 Mbps	
Material data							
Housing material	-			PC		-	
Inflammability class according to UL 94	V0			V0		-	
Mechanical data							
No. of pos.	4			4		4	
Degree of protection	IP67			IP20		IP20	
Insertion/withdrawal cycles	≥ 100			≥ 1000		-	
Temperature data							
Ambient temperature (operation)	-25 °C ... 85 °C (Plug / socket)			-15 °C ... 65 °C		-15 °C ... 60 °C	
Ordering data				Ordering data			
Description	Cable length	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Sensor/actuator flush-type connector, mini-B USB, M12 SPEEDCON , with straight solder connection		VS-EC-MSDB SH SCO	1440711	20			
USB socket insert , 4-pos., USB socket type A to USB socket type B, can be plugged in both directions					VS-04-BUA-BUB-F/IP67	1653838	1
USB socket insert , 4-pos., USB socket to flat-ribbon cable terminal strip, 2.54 pitch							
Socket, type A					VS-04-BUA-FK-F/IP67	1653854	1
Socket, type B					VS-04-BUB-FK-F/IP67	1653867	1
USB cable , assembled on one side with USB connectors							
Connector type: A, length: 0.3 m	0.3 m				VS-04-C-SDA/PH/0,3	1405552	1
Connector type: B, length: 0.3 m	0.3 m				VS-04-C-SDB/PH/0,3	1405565	1
Connector type: A to B, length: 1.8 m	1.8 m				VS-04-C-SDA/SDB/1,8	1405578	1
Freenet panel mounting frame , version 6, for round mounting cutout, with seal, without mounting screws							
Military gray RAL 7042					VS-A-F-IP67	1653744	5
USB memory stick , USB 2.0							
IP20					VS-04-MS-IP20	1402490	1
IP67					VS-04-MS-IP67	1402489	1
Protective cover for version 6 panel mounting frame							
Military gray RAL 7042					VS-08-SD-F	1652606	5

Data plug-in connectors

D-SUB-based plug-in connectors

				Screw connection			Solder connection								
							Straight solder cups								
															
				VS-...-ST-DSUB/...-MPT-0,5 VS-...-BU-DSUB/...-MPT-0,5			VS-...-ST-DSUB-EG VS-...-BU-DSUB-EG			VS-...-ST-DSUB-HD-EG VS-...-BU-DSUB-HD-EG					
Shell size 1 to 3				D-SUB contact insert Fixing: 2.5 mm hole			D-SUB contact insert Fixing: 3 mm hole			D-SUB contact insert, high-position Fixing: 3 mm hole					
Type	Order No.			No. of positions	Pin	Socket	No. of positions	Pin	Socket	No. of positions	Pin	Socket			
	IP67 panel mounting frame														
	VS-09-A	1688366		9	1688379	1688395	9	1688793	1688803	15	1655111	1655108			
	VS-15-A	1688036		15	1688078	1688094	15	1688874	1688887	26	1655179	1655166			
	VS-25-A	1689750		25	1689789	1689776	25	1689899	1689909	44	1655234	1655221			
	IP20 sleeve housing														
	VS-09-T-20-1-S-A	1655661		9	-	-	9	1688793	1688803	15	1655111	1655108			
	VS-15-T-20-1-S-A	1655687		15	-	-	15	1688874	1688887	26	1655179	1655166			
	VS-25-T-20-1-S-A	1655700		25	-	-	25	1689899	1689909	44	1655234	1655221			
	VS-09-T-20-1-S-S	1655658		9	-	-	9	1688793	1688803	15	1655111	1655108			
	VS-15-T-20-1-S-S	1655674		15	-	-	15	1688874	1688887	26	1655179	1655166			
	VS-25-T-20-1-S-S	1655690		25	-	-	25	1689899	1689909	44	1655234	1655221			
	IP67 sleeve housing														
	VS-09-T-2M16	1688353		9	1688379	1688395	9	1688793	1688803	15	1655111	1655108			
	VS-15-T-2PG11	1688052		15	1688078	1688094	15	1688874	1688887	26	1655179	1655166			
	VS-25-T-2M20	1689792		25	1689789	1689776	25	1689899	1689909	44	1655234	1655221			
	VS-09-SET-STD	1689145	Panel mounting frame	9	1688379	1688395	9	1688793	1688803	15	1655111	1655108			
	VS-15-SET-STD	1689129	Sleeve housing	9	1688379	1688395	9	1688793	1688803	15	1655111	1655108			
			Panel mounting frame	15	1688078	1688094	15	1688874	1688887	26	1655179	1655166			
	VS-25-SET-STD	1652198	Sleeve housing	15	1688078	1688094	15	1688874	1688887	26	1655179	1655166			
			Panel mounting frame	25	1689789	1689776	25	1689899	1689909	44	1655234	1655221			
	VS-09-SET-EMV	1689158	Panel mounting frame	9	1688379	1688395	9	1688793	1688803	15	1655111	1655108			
			Sleeve housing	9	1688379	1688395	9	1688793	1688803	15	1655111	1655108			
	VS-15-SET-EMV	1689132	Panel mounting frame	15	1688078	1688094	15	1688874	1688887	26	1655179	1655166			
			Sleeve housing	15	1688078	1688094	15	1688874	1688887	26	1655179	1655166			
	VS-25-SET-EMV	1652208	Panel mounting frame	25	1689789	1689776	25	1689899	1689909	44	1655234	1655221			
			Sleeve housing	25	1689789	1689776	25	1689899	1689909	44	1655234	1655221			

Note:
The EMC inner sleeve of the IP67 sleeve housing cannot be used on the panel mounting side.

Signal transmission																		
	Solder connection									Crimp connection								
	Angled solder pins									Contact carriers for crimp contacts								
																		
	VS-...-ST-DSUB-ER VS-...-BU-DSUB-ER			VS-...-ST-DSUB-HD-ER VS-...-BU-DSUB-HD-ER			VS-...-ST-DSUB-LH-B VS-...-BU-DSUB-LH-B			VS-...-ST-DSUB-CD-...G VS-...-BU-DSUB-CD-...G			VS-...-ST-DSUB-CD-... VS-...-BU-DSUB-CD-...			VS-...-ST-DSUB-HD-CD-B VS-...-BU-DSUB-HD-CD-B		
	D-SUB contact insert Fixing: 4-40 UNC thread and solder pins			D-SUB contact insert, high-position. Fixing: 4-40 UNC thread and solder pins			D-SUB contact insert Fixing: 2.5 mm hole and solder metal plate			D-SUB contact carrier Fixing: 4-40 UNC thread			D-SUB contact carrier Fixing: 3 mm hole			D-SUB contact carrier, high-position Fixing: 3 mm hole		
	No. of positions	Pin	Socket	No. of positions	Pin	Socket	No. of positions	Pin	Socket	No. of positions	Pin	Socket	No. of positions	Pin	Socket	No. of positions	Pin	Socket
	9	1688382	1688405	15	1655098	1656136	9	1654785	1654798	9	1688832	1688845	9	1688858	1688861	15	1655137	1655124
	15	1688081	1688120	26	1655153	1655140	15	1654808	1654811	15	1688913	1688926	15	1688939	1688942	26	1655195	1655182
	25	1689873	1689886	44	1655218	1655205	25	1654824	1654837	25	1689938	1689941	25	1689954	1689967	44	1655250	1655247
	9	-	-	15	-	-	9	1654785	1654798	9	-	-	9	1688858	1688861	15	1655137	1655124
	15	-	-	26	-	-	15	1654808	1654811	15	-	-	15	1688939	1688942	26	1655195	1655182
	25	-	-	44	-	-	25	1654824	1654837	25	-	-	25	1689954	1689967	44	1655250	1655247
	9	-	-	15	-	-	9	1654785	1654798	9	-	-	9	1688858	1688861	15	1655137	1655124
	15	-	-	26	-	-	15	1654808	1654811	15	-	-	15	1688939	1688942	26	1655195	1655182
	25	-	-	44	-	-	25	1654824	1654837	25	-	-	25	1689954	1689967	44	1655250	1655247
	9	-	-	15	-	-	9	1654785	1654798	9	-	-	9	1688858	1688861	15	1655137	1655124
	15	-	-	26	-	-	15	1654808	1654811	15	-	-	15	1688939	1688942	26	1655195	1655182
	25	-	-	44	-	-	25	1654824	1654837	25	-	-	25	1689954	1689967	44	1655250	1655247
	9	1688382	1688405	15	1655098	1656136	9	1654785	1654798	9	1688832	1688845	9	1688858	1688861	15	1655137	1655124
	9	-	-	15	-	-	9	1654785	1654798	9	-	-	9	1688858	1688861	15	1655137	1655124
	15	1688081	1688120	26	1655153	1655140	15	1654808	1654811	15	1688913	1688926	15	1688939	1688942	26	1655195	1655182
	15	-	-	26	-	-	15	1654808	1654811	15	-	-	15	1688939	1688942	26	1655195	1655182
	25	1689873	1689886	44	1655218	1655205	25	1654824	1654837	25	1689938	1689941	25	1689954	1689967	44	1655250	1655247
	25	-	-	44	-	-	25	1654824	1654837	25	-	-	25	1689954	1689967	44	1655250	1655247
	9	1688382	1688405	15	1655098	1656136	9	1654785	1654798	9	1688832	1688845	9	1688858	1688861	15	1655137	1655124
	9	-	-	15	-	-	9	1654785	1654798	9	-	-	9	1688858	1688861	15	1655137	1655124
	15	1688081	1688120	26	1655153	1655140	15	1654808	1654811	15	1688913	1688926	15	1688939	1688942	26	1655195	1655182
	15	-	-	26	-	-	15	1654808	1654811	15	-	-	15	1688939	1688942	26	1655195	1655182
	25	1689873	1689886	44	1655218	1655205	25	1654824	1654837	25	1689938	1689941	25	1689954	1689967	44	1655250	1655247
	25	-	-	44	-	-	25	1654824	1654837	25	-	-	25	1689954	1689967	44	1655250	1655247

Note:

For crimp contacts, see page 216.

Data plug-in connectors

D-SUB-based plug-in connectors

				Signal transmission									
				Flat-ribbon cable connection			Gender changer						
													
				VS-...-ST-DSUB-FK VS-...-BU-DSUB-FK			VS-...-GC-ST/ST VS-...-GC-BU/BU			No. of positions 2PK/3PK/5PK			
Shell size 1 to 3				D-SUB contact insert Fixing: 3 mm hole			D-SUB contact insert Fixing: 4-40 UNC thread			D-SUB contact carrier Fixing: 3 mm hole			
Type	Order No.			No. of positions	Pin	Socket	No. of positions	Pin	Socket	No. of positions	Pin	Socket	
	IP67 panel mounting frame												
	VS-09-A	1688366		9	1688816	1688829	9	1652651	1688722	2PK	1688418	1688421	
	VS-15-A	1688036		15	1688890	1688900	15	1652677	1652664	3PK	1688201	1688214	
	VS-25-A	1689750		25	1689912	1689925	25	1652693	1652680	5PK	1689970	1689983	
	VS-25-A	1689750											
	IP20 sleeve housing												
	VS-09-T-20-1-S-A	1655661		9	-	-	9	-	-	2PK	-	-	
	VS-15-T-20-1-S-A	1655687		15	-	-	15	-	-	3PK	-	-	
	VS-25-T-20-1-S-A	1655700		25	-	-	25	-	-	5PK	-	-	
	VS-25-T-20-1-S-A	1655700											
	VS-09-T-20-1-S-S	1655658		9	-	-	9	-	-	2PK	-	-	
	VS-15-T-20-1-S-S	1655674		15	-	-	15	-	-	3PK	-	-	
	VS-25-T-20-1-S-S	1655690		25	-	-	25	-	-	5PK	-	-	
	VS-25-T-20-1-S-S	1655690											
	VS-25-T-20-1-S-S	1655690											
	IP67 sleeve housing												
	VS-09-T-2M16	1688353		9	-	-	9	-	-	2PK	1688418	1688421	
	VS-15-T-2PG11	1688052		15	-	-	15	-	-	3PK	1688201	1688214	
	VS-25-T-2M20	1689792		25	-	-	25	-	-	5PK	1689970	1689983	
	VS-25-T-2M20	1689792											
	VS-09-SET-STD	1689145	Panel mounting frame	9	1688816	1688829	9	1652651	1688722	2PK	1688418	1688421	
			Sleeve housing	9	-	-	9	-	-	2PK	1688418	1688421	
	VS-15-SET-STD	1689129	Panel mounting frame	15	1688890	1688900	15	1652677	1652664	3PK	1688201	1688214	
			Sleeve housing	15	-	-	15	-	-	3PK	1688201	1688214	
	VS-25-SET-STD	1652198	Panel mounting frame	25	1689912	1689925	25	1652693	1652680	5PK	1689970	1689983	
			Sleeve housing	25	-	-	25	-	-	5PK	1689970	1689983	
	VS-25-SET-STD	1652198	Panel mounting frame										
			Sleeve housing										
	VS-09-SET-EMV	1689158	Panel mounting frame	9	1688816	1688829	9	1652651	1688722	2PK	1688418	1688421	
			Sleeve housing	9	-	-	9	-	-	2PK	-	-	
	VS-15-SET-EMV	1689132	Panel mounting frame	15	1688890	1688900	15	1652677	1652664	3PK	1688201	1688214	
			Sleeve housing	15	-	-	15	-	-	3PK	-	-	
	VS-25-SET-EMV	1652208	Panel mounting frame	25	1689912	1689925	25	1652693	1652680	5PK	1689970	1689983	
			Sleeve housing	25	-	-	25	-	-	5PK	-	-	
	VS-25-SET-EMV	1652208	Panel mounting frame										
			Sleeve housing										

Note:
The EMC inner sleeve of the IP67 sleeve housing cannot be used on the panel mounting side.

Note:
When installing the gender changer in the front plate of the VARIOSUB service interface, VS-SI-SCREW-GC screws (1656961) should be used.

Power and signal transmission									Power					
	Angled solder pins						Angled solder pins			Angled solder pins			Screw connection	
														
	No. of positions 2PK/3PK/5PK			No. of positions 1PK-4S/2PK-5S/4PK-5S/3PK-10S						No. of positions 3/5				
	VS-...-ST-DSUB-...P-LH VS-...-BU-DSUB-...P-LH			VS-...-ST-DSUB-...P-...S VS-...-BU-DSUB-...P-...S			VS-...-ST-DSUB-...P-...S-LH VS-...-BU-DSUB-...P-...S-LH			VS-PSC 1,5/...-M PE VS-PSC 1,5/...-M			PSC 1,5/...-F	
	D-SUB contact carrier Fixing: 4-40 UNC thread and solder pins			D-SUB contact insert Fixing: 3 mm hole			D-SUB contact insert Fixing: 4-40 UNC thread and solder pins			D-SUB contact insert Fixing: M3 thread and solder pins			D-SUB contact insert Fixing: 3 mm hole	
	No. of positions	Pin	Socket	No. of positions	Pin	Socket	No. of positions	Pin	Socket	No. of positions	Pin	Pin with PE	No. of positions	Socket
	2PK	1655292	1655289	1PK-4S	1689006	1689019	1PK-4S	1655315	1655302	3	1689310	1689336	3	-
	3PK	1655331	1655328	2PK-5S	1688227	1688230	2PK-5S	1655360	1655344	5	1688825	1689323	5	-
	5PK	1655441	1655438	3PK-10S	1689996	1690008	3PK-10S	1655425	1655412					
				4PK-5S	1655386	1655373	4PK-5S	1655409	1655399					
	2PK	-	-	1PK - 4S	-	-	1PK - 4S	-	-	3	-	-	3	1841909
	3PK	-	-	2PK - 5S	-	-	2PK - 5S	-	-	5	-	-	5	1841912
	5PK	-	-	3PK - 10S	-	-	3PK - 10S	-	-					
				4PK - 5S	-	-	4PK - 5S	-	-					
	2PK	-	-	1PK - 4S	-	-	1PK - 4S	-	-	3	-	-	3	1841909
	3PK	-	-	2PK - 5S	-	-	2PK - 5S	-	-	5	-	-	5	1841912
	5PK	-	-	3PK - 10S	-	-	3PK - 10S	-	-					
				4PK - 5S	-	-	4PK - 5S	-	-					
	2PK	-	-	1PK - 4S	1689006	1689019	1PK - 4S	-	-	3	-	-	3	1841909
	3PK	-	-	2PK - 5S	1688227	1688230	2PK - 5S	-	-	5	-	-	5	1841912
	5PK	-	-	3PK - 10S	1689996	1690008	3PK - 10S	-	-					
				4PK - 5S	1655386	1655373	4PK - 5S	-	-					
	2PK	1655292	1655289	1PK - 4S	1689006	1689019	1PK - 4S	1655315	1655302	3	1689310	1689336	3	-
	2PK	-	-	1PK - 4S	1689006	1689019	1PK - 4S	-	-	3	-	-	3	1841909
	3PK	1655331	1655328	2PK - 5S	1688227	1688230	2PK - 5S	1655360	1655344	5	1688825	1689323	5	-
	3PK		-	2PK - 5S	1688227	1688230	2PK - 5S	-	-	5	-	-	5	1841912
	5PK	1655441	1655438	3PK - 10S	1689996	1690008	3PK - 10S	1655425	1655412					
	5PK	-	-	3PK - 10S	1689996	1690008	3PK - 10S	-	-					
				4PK - 5S	1655386	1655373	4PK - 5S	1655409	1655399					
				4PK - 5S	1655386	1655373	4PK - 5S	-	-					
	2PK	1655292	1655289	1PK - 4S	1689006	1689019	1PK - 4S	1655315	1655302	3	1689310	1689336	3	-
	2PK	-	-	1PK - 4S	-	-	1PK - 4S	-	-	3	-	-	3	1841909
	3PK	1655331	1655328	2PK - 5S	1688227	1688230	2PK - 5S	1655360	1655344	5	1688825	1689323	5	-
	3PK		-	2PK - 5S	-	-	2PK - 5S	-	-	5	-	-	5	1841912
	5PK	1655441	1655438	3PK - 10S	1689996	1690008	3PK - 10S	1655425	1655412					
	5PK	-	-	3PK - 10S	-	-	3PK - 10S	-	-					
				4PK - 5S	1655386	1655373	4PK - 5S	1655409	1655399					
				4PK - 5S	-	-	4PK - 5S	-	-					

Data plug-in connectors

D-SUB-based plug-in connectors

Contact inserts



Screw connection
Fixing: 2.5 mm hole



Straight solder cups
Fixing: 3 mm hole

			Technical data			Technical data		
			VS-...-MPT-0,5			VS-...-EGVS-...-HD-EG		
Electrical data								
Rated voltage			60 V			125 V		
Rated current			5 A			5 A		
Surge voltage category			III			III		
Material data								
Contact material			Copper alloy			Copper alloy		
Contact surface material			Gold over nickel			Hard gold-plated over nickel		
Contact carrier material			PBTP			Polyester GF		
Inflammability class according to UL 94			V0			V0		
Mechanical data								
Pollution degree			2			2		
Conductor cross section			0.14 mm² ... 0.5 mm²			0.5 mm²		
Connection cross section AWG			26 ... 20			20		
Insertion/withdrawal cycles			≥ 200			≥ 200		
Connection method			Screw connection			Solder cup		
Temperature data								
Ambient temperature (operation)			-20 °C ... 80 °C			-55 °C ... 125 °C		
			Ordering data			Ordering data		
Description			Design			No. of pos.		
			Type			Order No.		
			Pcs. / Pkt.					
D-SUB contact insert								
Plug			09			9		
Socket			09			9		
Plug			15			15		
Socket			15			15		
Plug			25			25		
Socket			25			25		
D-SUB contact insert								
Plug			09			9		
Socket			09			9		
Plug			15			15		
Socket			15			15		
Plug			25			25		
Socket			25			25		
D-SUB contact insert, high density								
Plug			09			15		
Socket			09			15		
Plug			15			26		
Socket			15			26		
Plug			25			44		
Socket			25			44		
D-SUB contact insert								
Plug			09			9		
Socket			09			9		
Plug			15			15		
Socket			15			15		
Plug			25			25		
Socket			25			25		



Angled solder pins
Fixing: 4-40 UNC threads
and solder pins



Angled solder pins
Fixing: 2.5 mm bore hole
and solder metal plate

Technical data			Technical data		
VS-...-ER	VS-...-HD-ER		VS-...-LH-...		
125 V	60 V		125 V		
5 A	3 A		5 A		
III	III		III		
Copper alloy	Copper alloy		Copper alloy		
Hard gold-plated over nickel	Hard gold-plated over nickel		Gold over nickel		
Polyester GF	Polyester GF		PBT-GF		
V0	V0		V0		
2	2		2		
-	-		-		
-	-		-		
≥ 200	≥ 200		≥ 200		
Solder connection	Solder connection		Solder connection		
-55 °C ... 125 °C	-55 °C ... 125 °C		-55 °C ... 125 °C		
Ordering data			Ordering data		
Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
VS-09-ST-DSUB-ER	1688382	10			
VS-09-BU-DSUB-ER	1688405	10			
VS-15-ST-DSUB-ER	1688081	10			
VS-15-BU-DSUB-ER	1688120	10			
VS-25-ST-DSUB-ER	1689873	10			
VS-25-BU-DSUB-ER	1689886	10			
VS-09-ST-DSUB-HD-ER	1655098	10			
VS-09-BU-DSUB-HD-ER	1656136	10			
VS-15-ST-DSUB-HD-ER	1655153	10			
VS-15-BU-DSUB-HD-ER	1655140	10			
VS-25-ST-DSUB-HD-ER	1655218	10			
VS-25-BU-DSUB-HD-ER	1655205	10			
			VS-09-ST-DSUB-LH-B	1654785	10
			VS-09-BU-DSUB-LH-B	1654798	10
			VS-15-ST-DSUB-LH-B	1654808	10
			VS-15-BU-DSUB-LH-B	1654811	10
			VS-25-ST-DSUB-LH-B	1654824	10
			VS-25-BU-DSUB-LH-B	1654837	10

Data plug-in connectors

D-SUB-based plug-in connectors

Contact carriers, inserts and gender changers



D-SUB crimp inserts,
with thread



D-SUB crimp inserts,
with bore hole

	Technical data			Technical data										
	VS-...-CD-...			VS-...-CD-B VS-...-HD-CD-B										
Electrical data														
Rated voltage	125 V			125 V 60 V										
Rated current	5 A			5 A 3 A										
Surge voltage category	III			III III										
Material data														
Contact material	-			-										
Contact surface material	-			-										
Contact carrier material	Polyester GF			Polyester GF										
Inflammability class according to UL 94	V0			V0										
Mechanical data														
Pollution degree	2			2										
Insertion/withdrawal cycles	≥ 500			≥ 500 ≥ 500										
Connection method	Crimp connection			Crimp connection Crimp connection										
Temperature data														
Ambient temperature (operation)	-55 °C ... 125 °C			-55 °C ... 125 °C										
Ordering data						Ordering data								
Description			Design	No. of pos.	Type	Order No.	Pcs. / Pkt.	Type			Order No.	Pcs. / Pkt.		
D-SUB contact support														
Plug		09	9	VS-09-ST-DSUB-CD-G	1688832	10	VS-09-ST-DSUB-CD-B	1688858	10					
Socket		09	9	VS-09-BU-DSUB-CD-G	1688845	10	VS-09-BU-DSUB-CD-B	1688861	10					
Plug		15	15	VS-15-ST-DSUB-CD-MG	1688913	10	VS-15-ST-DSUB-CD-OG	1688939	10					
Socket		15	15	VS-15-BU-DSUB-CD-MG	1688926	10	VS-15-BU-DSUB-CD-OG	1688942	10					
Plug		25	25	VS-25-ST-DSUB-CD-G	1689938	10	VS-25-ST-DSUB-CD-B	1689954	10					
Socket		25	25	VS-25-BU-DSUB-CD-G	1689941	10	VS-25-BU-DSUB-CD-B	1689967	10					
D-SUB contact carrier, high density														
Plug		09	15				VS-09-ST-DSUB-HD-CD-B	1655137	10					
Socket		09	15				VS-09-BU-DSUB-HD-CD-B	1655124	10					
Plug		15	26				VS-15-ST-DSUB-HD-CD-B	1655195	10					
Socket		15	26				VS-15-BU-DSUB-HD-CD-B	1655182	10					
Plug		25	44				VS-25-ST-DSUB-HD-CD-B	1655250	10					
Socket		25	44				VS-25-BU-DSUB-HD-CD-B	1655247	10					
D-SUB contact insert														
Plug		09	9											
Socket		09	9											
Plug		15	15											
Socket		15	15											
Plug		25	25											
Socket		25	25											
D-SUB gender changer														
Plug/plug	D-SUB 9		9											
Socket / Socket	D-SUB 9		9											
Plug/plug	D-SUB 15		15											
Socket / Socket	D-SUB 15		15											
Plug/plug	D-SUB 25		25											
Socket / Socket	D-SUB 25		25											
Accessories						Accessories								
Crimp contacts						See page 216								
Crimp contact, high-pos.						See page 216 See page 216								



D-SUB
with flat-ribbon cable connection



Gender changer

Technical data
VS-...-FK
125 V
5 A
III
Copper alloy
Hard gold-plated over nickel
Polyester GF
V0
2
≥ 200
Flat-ribbon cable connection
-55 °C ... 125 °C

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-09-ST-DSUB-FK	1688816	10
VS-09-BU-DSUB-FK	1688829	10
VS-15-ST-DSUB-FK	1688890	10
VS-15-BU-DSUB-FK	1688900	10
VS-25-ST-DSUB-FK	1689912	10
VS-25-BU-DSUB-FK	1689925	10

Accessories

Technical data
VS-...-GC-...
125 V
5 A
III
Copper alloy
Hard gold-plated over nickel
Polyester GF
V0
2
≥ 200
Gender changer
-55 °C ... 125 °C

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-09-GC-ST/ST	1652651	10
VS-09-GC-BU/BU	1688722	10
VS-15-GC-ST/ST	1652677	10
VS-15-GC-BU/BU	1652664	10
VS-25-GC-ST/ST	1652693	10
VS-25-GC-BU/BU	1652680	10

Accessories

Data plug-in connectors

D-SUB-based plug-in connectors

Combination contact carriers and inserts



For power contacts,
fixing: 3 mm hole



For power contacts,
fixing: 4-40 UNC threads
and solder pins

			Technical data			Technical data		
			VS-...-DSUB-...P			VS-...-DSUB-...P-LH		
Electrical data			-			-		
Rated voltage			-			-		
Rated current			-			-		
Surge voltage category			-			-		
Material data			-			-		
Contact material			Gold over nickel			Gold over nickel		
Contact surface material			PBTP			PBTP		
Contact carrier material			V0			V0		
Inflammability class according to UL 94			-			-		
Mechanical data			-			-		
Pollution degree			≥ 500			≥ 500		
Insertion/withdrawal cycles			Accommodation of combined contact			Accommodation of combined contact		
Connection method			-			-		
Temperature data			-55 °C ... 125 °C			-55 °C ... 125 °C		
Ambient temperature (operation)								
			Ordering data			Ordering data		
Description	Design	No. of pos.	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
D-SUB contact support								
Plug	09	2 PK	VS-09-ST-DSUB-2P	1688418	10	VS-09-ST-DSUB-2P-LH	1655292	10
Socket	09	2 PK	VS-09-BU-DSUB-2P	1688421	10	VS-09-BU-DSUB-2P-LH	1655289	10
Plug	15	3 PK	VS-15-ST-DSUB-3P	1688201	10	VS-15-ST-DSUB-3P-LH	1655331	10
Socket	15	3 PK	VS-15-BU-DSUB-3P	1688214	10	VS-15-BU-DSUB-3P-LH	1655328	10
Plug	D-SUB 25	5 PK	VS-25-ST-DSUB-5P	1689970	10	VS-25-ST-DSUB-5P-LH	1655441	10
Socket	D-SUB 25	5 PK	VS-25-BU-DSUB-5P	1689983	10	VS-25-BU-DSUB-5P-LH	1655438	10
D-SUB contact insert								
Plug	09	1 PK 4 S						
Socket	09	1 PK 4 S						
Plug	15	2 PK 5 S						
Socket	15	2 PK 5 S						
Plug	25	3 PK 10 S						
Socket	25	3 PK 10 S						
Plug	25	4 PK 5 S						
Socket	25	4 PK 5 S						
D-SUB contact insert								
Plug	09	3						
Pin with capacitive PE	09	3						
Socket	09	3						
Plug	15	5						
Pin with capacitive PE	15	5						
Socket	15	5						
			Accessories			Accessories		
Power contacts			See page 217			See page 217		



For power contacts,
with signal contacts (solder cups),
fixing: 3 mm hole



For power contacts,
with signal contacts (angled solder pins),
fixing: 4-40 UNC threads



Socket insert
with angled solder connection,
pin insert with screw connection

Technical data		
VS-...-DSUB-...P-...S		
250 V		
5 A		
III		
Copper alloy		
Gold over nickel		
PBTP		
V0		
2		
≥ 200		
Solder cup		
-55 °C ... 125 °C		

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-09-ST-DSUB-1P-4S	1689006	10
VS-09-BU-DSUB-1P-4S	1689019	10
VS-15-ST-DSUB-2P-5S	1688227	10
VS-15-BU-DSUB-2P-5S	1688230	10
VS-25-ST-DSUB-3P-10S	1689996	10
VS-25-BU-DSUB-3P-10S	1690008	10
VS-25-ST-DSUB-4P-5S	1655386	10
VS-25-BU-DSUB-4P-5S	1655373	10

Accessories		
See page 217		

Technical data		
VS-...-DSUB-...P-...S-LH		
250 V		
5 A		
III		
Copper alloy		
Gold over nickel		
PBTP		
V0		
2		
≥ 200		
Solder connection		
-55 °C ... 125 °C		

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-09-ST-DSUB-1P-4S-LH	1655315	10
VS-09-BU-DSUB-1P-4S-LH	1655302	10
VS-15-ST-DSUB-2P-5S-LH	1655360	10
VS-15-BU-DSUB-2P-5S-LH	1655344	10
VS-25-ST-DSUB-3P-10S-LH	1655425	10
VS-25-BU-DSUB-3P-10S-LH	1655412	10
VS-25-ST-DSUB-4P-5S-LH	1655409	10
VS-25-BU-DSUB-4P-5S-LH	1655399	10

Accessories		
See page 217		

Technical data		
VS-PSC 1,5/3-M		
250 V		
8 A		
III		
Copper alloy		
Tin-plated		
PA		
V0		
3		
≥ 100		
PCB connection		
-20 °C ... 80 °C		

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-PSC 1,5/3-M	1689310	10
VS-PSC 1,5/3-M PE	1689336	10
PSC 1,5/ 3-F	1841909	50
VS-PSC 1,5/5-M	1688825	10
VS-PSC 1,5/5-M PE	1689323	10
PSC 1,5/ 5-F	1841912	50

Accessories		

Data plug-in connectors

D-SUB-based plug-in connectors

Signal contacts



Contacts
for standard D-SUB contact carriers



Contacts
for high-density D-SUB contact carriers

Electrical data
Rated voltage
Rated current
Contact material
Contact surface material
Mechanical data
Connection method
Conductor cross section
Connection cross section AWG
Insertion/withdrawal cycles
Temperature data
Ambient temperature (operation)

Technical data	
AWG 28 ... 24	AWG 24 ... 20
125 V	125 V
5 A	5 A
Copper alloy	Copper alloy
Hard gold-plated over nickel	Hard gold-plated over nickel
Crimp connection	Crimp connection
0.08 mm ² ... 0.2 mm ²	0.2 mm ² ... 0.5 mm ²
28 ... 24	24 ... 20
≥ 200	≥ 200
-55 °C ... 125 °C	-55 °C ... 125 °C

Technical data
VS-...-CD-HD-1,0/13,5/0,37
60 V
3 A
Copper alloy
Hard gold-plated over nickel
Crimp connection
0.34 mm ²
22
≥ 200
-55 °C ... 125 °C

Description
Turned pin crimp contacts , for D-SUB contact inserts with standard contact density, gold-plated surface
AWG 28 ... 24
AWG 24 ... 20
Turned crimp contacts VS 1,0
Gold-plated
Turned crimp contacts , for D-SUB contact inserts with high density, gold-plated surface
AWG 22, plug
AWG 22, socket

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-ST-CD-1,0/14,8/0,2	1688971	30
VS-ST-CD-1,0/14,8/0,5	1688968	30
VS-BU-CD-1,0/14,4/0,2	1688997	30
VS-BU-CD-1,0/14,4/0,5	1688984	30

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-ST-CD-HD-1,0/13,5/0,37	1655276	100
VS-BU-CD-HD-1,0/13,5/0,37	1655263	100

Crimping pliers
- For rolled D-SUB contacts, high-density, 0.08 mm ² - 0.5 mm ² , incl. contact locator
Insertion/extraction tool, for fitting and removing D-SUB standard signal contacts
Insertion/extraction tool, for fitting and removing D-SUB high-density signal contacts

Accessories		
CRIMPFOX-DSUB 5	1212111	1
VS-IET-DSUB-SIGNAL-STD	1658794	1

Accessories		
CRIMPFOX-DSUB 5	1212111	1
VS-IET-DSUB-SIGNAL-HD	1658503	1

Power contacts

With straight solder cups
or angled solder pins

With screw connection

	Technical data		Technical data	
	VS-.../2,6	VS-.../4,6	VS-...SC-2,6	
Electrical data				
Rated voltage	-	-	-	
Rated current	20 A	40 A	40 A	
Material data				
Contact material	Copper alloy	Copper alloy	Copper alloy	
Contact surface material	Hard gold-plated over nickel	Hard gold-plated over nickel	Hard gold-plated over nickel	
Mechanical data				
Connection method	Solder cup	Solder cup	Screw connection	
Conductor cross section	2 mm² ... 3.5 mm²	4.5 mm² ... 8.5 mm²	0.75 mm² ... 2 mm²	
Connection cross section AWG	14 ... 12	10 ... 8	18 ... 14	
Insertion/withdrawal cycles	≥ 500	≥ 500	≥ 500	
Temperature data				
Ambient temperature (operation)	-55 °C ... 155 °C	-55 °C ... 155 °C	-55 °C ... 155 °C	
Ordering data				
Description	Type	Order No.	Pcs. / Pkt.	
Ordering data				
Description	Type	Order No.	Pcs. / Pkt.	
Accessories				
Removal tool	HC-M4-KOAX-EWZ	1676747	1	

Data plug-in connectors

D-SUB-based plug-in connectors

Assembled cables and housing with IP20 and IP67 protection



Assembled D-SUB cable, IP20,
plug to socket



D-SUB sleeve housing, IP20,
with 4-40 UNC knurl screws

		Technical data			Technical data		
		VS-...-DSUB-20-LI...			VS-....T-20-1-S...		
Electrical data							
Rated voltage		125 V			-		
Rated current		1 A			-		
Material data							
Housing material		PVC			ABS		
Housing surface material		-			Metal-plated		
Contact material		Copper alloy			-		
Contact surface material		Gold-plated			-		
Inflammability class according to UL 94		-			V0		
Mechanical data							
Color		-			Bare metallic		
Degree of protection		IP20			IP20		
External cable diameter		-			4 mm ... 8.5 mm		
Insertion/withdrawal cycles		≥ 50			-		
Temperature data							
Ambient temperature (operation)		0 °C ... 70 °C			0 °C ... 70 °C		
		Ordering data			Ordering data		
Description	Cable length	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Assembled D-SUB cable, shielded, stranded (7-wire), plug to socket							
D-SUB 09	1 m	VS-09-DSUB-20-LI-1,0	1656233	1			
D-SUB 09	2 m	VS-09-DSUB-20-LI-2,0	1656246	1			
D-SUB 09	5 m	VS-09-DSUB-20-LI-5,0	1656259	1			
D-SUB 15	1 m	VS-15-DSUB-20-LI-1,0	1656262	1			
D-SUB 15	2 m	VS-15-DSUB-20-LI-2,0	1656275	1			
D-SUB 15	5 m	VS-15-DSUB-20-LI-5,0	1656288	1			
D-SUB 25	1 m	VS-25-DSUB-20-LI-1,0	1656291	1			
D-SUB 25	2 m	VS-25-DSUB-20-LI-2,0	1656301	1			
D-SUB 25	5 m	VS-25-DSUB-20-LI-5,0	1656314	1			
D-SUB sleeve housing, shielded							
D-SUB 09, straight design					VS-09-T-20-1-S-S	1655658	1
D-SUB 09, angled design					VS-09-T-20-1-S-A	1655661	1
D-SUB 15, straight design					VS-15-T-20-1-S-S	1655674	1
D-SUB 15, angled design					VS-15-T-20-1-S-A	1655687	1
D-SUB 25, straight design					VS-25-T-20-1-S-S	1655690	1
D-SUB 25, angled design					VS-25-T-20-1-S-A	1655700	1
D-SUB sleeve housing							
D-SUB 09, M16 design							
D-SUB 15, Pg11 design							
D-SUB 25, M20 design							
D-SUB cap nut with line seal, for sleeve housing VARIOSUB IP67, design / line Ø:							
M16 / 3 mm ... 6 mm							
M16 / 5 mm ... 9 mm							
Pg11 / 3 mm ... 7 mm							
Pg11 / 5 mm ... 10 mm							
M20 / 5 mm ... 13 mm							
EMC inner sleeve, for shielding for sleeve housing VARIOSUB IP67							
For D-SUB 09 sleeve housing							
For D-SUB 15 sleeve housing							
For D-SUB 25 sleeve housing							
D-SUB protective cover, IP54 protection, for panel mounting frame and sleeve housing VARIOSUB IP67							
D-SUB 09							
D-SUB 15							
D-SUB 25							



**IP67 D-SUB sleeve housing
and IP54 protective cover**



Accessories for IP67 D-SUB sleeve housing

Technical data			Technical data		
VS-09-T-2M16		VS-...-SD	VS-M16(3-6)		VS-...TI-...EMV
-		-	-		-
-		-	-		-
PA		PA	PA		Nickel silver
-		-	-		-
-		-	-		-
-		-	-		-
V0		V0	V0		-
gray		gray	gray		Bare metallic
IP67		IP54	IP67		-
3 mm ... 9 mm		-	3 mm ... 6 mm		-
≥ 1000		≥ 1000	-		-
-40 °C ... 80 °C		-40 °C ... 80 °C	-40 °C ... 80 °C		-40 °C ... 80 °C
Ordering data			Ordering data		
Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
VS-09-T-2M16	1688353	5			
VS-15-T-2PG11	1688052	5			
VS-25-T-2M20	1689792	5			
			VS-M16 (3-6)	1688450	5
			VS-M16 (5-9)	1688447	5
			VS-PG11 (3- 7)	1688117	5
			VS-PG11 (5-10)	1688104	5
			VS-M20 (5-13)	1652127	5
			VS-09-TI-2EMV	1688476	5
			VS-15-TI-2EMV	1688065	5
			VS-25-TI-2 EMV	1689802	5
VS-09-SD	1887086	5			
VS-15-SD	1887099	5			
VS-25-SD	1652211	5			

Data plug-in connectors

D-SUB-based plug-in connectors

IP67 housing sets, gender changer, and IP67 couplings



IP67 D-SUB panel mounting frame and EMC shroud



IP67 D-SUB connector set consisting of:
sleeve housing, panel mounting frame, and
accessories

	Technical data			Technical data		
	VS-...A...			VS-09-SET-STD		
Electrical data						
Rated voltage	-			-		
Rated current	-			-		
Material data						
Housing material	PA			PA		
Contact material	-			-		
Contact surface material	-			-		
Seal material	Flat gasket: NBR; profile gasket: EPDM			Flat gasket: NBR; profile gasket: EPDM		
Inflammability class according to UL 94	V0			V0		
Mechanical data						
Color	gray			gray		
Degree of protection	IP67			IP67		
External cable diameter	-			3 mm ... 9 mm		
Temperature data						
Ambient temperature (operation)	-40 °C ... 80 °C			-40 °C ... 80 °C		
	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
D-SUB panel mounting frame, for accommodating D-SUB contact inserts						
D-SUB 09	VS-09-A	1688366	5			
D-SUB 15	VS-15-A	1688036	5			
D-SUB 25	VS-25-A	1689750	5			
D-SUB EMC shroud, for the IP67 panel mounting frame, for shield contacting to the housing panel						
D-SUB 09	VS-09-A-EMV-S	1688463	5			
D-SUB 15	VS-15-A-EMV-S	1688049	5			
D-SUB 25	VS-25-A-EMV-S	1689763	5			
D-SUB connector set						
D-SUB 09				VS-09-SET-STD	1689145	1
D-SUB 15				VS-15-SET-STD	1689129	1
D-SUB 25				VS-25-SET-STD	1652198	1
D-SUB panel mounting frame, with integrated gender changer, shielded						
D-SUB 09, pin/pin						
D-SUB 09, socket/socket						
D-SUB 15, pin/pin						
D-SUB 15, socket/socket						
D-SUB 25, pin/pin						
D-SUB 25, socket/socket						
D-SUB coupling, with integrated gender changer, shielded						
D-SUB 09, pin/pin						
D-SUB 09, socket/socket						
D-SUB 15, pin/pin						
D-SUB 15, socket/socket						
D-SUB 25, pin/pin						
D-SUB 25, socket/socket						
	Accessories			Accessories		
D-SUB protective cover, IP54 protection, for panel mounting frame and sleeve housing VARIOSUB IP67						
D-SUB 09	VS-09-SD	1887086	5	VS-09-SD	1887086	5
D-SUB 15	VS-15-SD	1887099	5	VS-15-SD	1887099	5
D-SUB 25	VS-25-SD	1652211	5	VS-25-SD	1652211	5



**IP67 D-SUB panel mounting frame
with integrated gender changer**



**IP67 D-SUB coupling
with integrated gender changer**

Technical data
VS-...-KU-...
125 V
5 A
PA
Copper alloy
Hard gold-plated over nickel
EPDM
V0
gray
IP67
-
-40 °C ... 80 °C

Ordering data		
Type	Order No.	Pcs. / Pkt.
VS-09-KU-ST/ST	1689640	5
VS-09-KU-BU/BU	1689637	5
VS-15-KU-ST/ST	1689666	5
VS-15-KU-BU/BU	1689653	5
VS-25-KU-ST/ST	1689682	5
VS-25-KU-BU/BU	1689679	5

Accessories		
VS-09-SD	1887086	5
VS-15-SD	1887099	5
VS-25-SD	1652211	5



M5 to M12 circular plug-in connectors

Sensor/actuator device plug-in connectors

A comprehensive range of M5, M8, and M12 flush-type plug-in connectors and panel feed-throughs has emerged as a result of the various requirements for sensor/actuator device connection technology in industrial environments. Customer-specific developments enable optimum adaptation to individual device concepts.

Sensor/actuator plug-in connectors for assembly

Safe and efficient assembly is of utmost importance in field wiring. The 5 selection options of the connection technology enable precise adaptation to the respective application or requirements in the field. The plug-in connectors for assembly are available in various versions, unshielded and EMC-compliant.

Sensor/actuator device plug-in connectors

M5, front/rear mounting	224
M8, front mounting	225
M8, rear mounting	226
M12, front mounting	232
M12, rear mounting	242
M12, rear mounting, two-piece	252
M12, for fieldbus systems	260
M12, plastic	263
M12, control cabinet feed-throughs	264
M12, stainless steel	268
7/8", front mounting	265
7/8", rear mounting	266

Sensor/actuator plug-in connectors for assembly

M8 plug-in connectors	272
M12 plug-in connectors	275
7/8" plug-in connectors	285

M12 power plug-in connectors

Device plug-in connectors with litz wires	286
Two-piece device plug-in connectors for reflow processes	288
Plug-in connectors for assembly	289
SPEEDCON power cable	290

Accessories

Pin assignments	298
-----------------	-----

M5 to M12 circular plug-in connectors

M5/M8 sensor/actuator device plug-in connectors

M5, front/rear mounting

Notes:

Flat nut recommended for housing wall thicknesses < 2.5 mm.



Front mounting,
with 0.5 m long litz wires



Rear mounting, one-piece, straight,
for wave soldering processes



Technical data

	3-pos.	4-pos.
General data		
M5 circular plug-in connector according to:	IEC 61076-2-105	IEC 61076-2-105
Pollution degree	3	3
Degree of protection	IP67	IP67
Connection method	Individual wires	Individual wires
Electrical data		
Rated voltage	60 V	60 V
Rated current	1 A	1 A
Volume resistance	≤ 3 mΩ	≤ 3 mΩ
Material data		
Material contact / contact surface	CuSn / Au	CuSn / Au
Contact carrier material	PA 66	PA 66
Inflammability class according to UL 94	HB	HB
Cable type	TPE litz wire	TPE litz wire
Temperature data		
Plug / socket	-25 ... 85	-25 ... 85

Ordering data

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
3-pos.		4-pos.	
1530605	1	1530618	1
1530582	1	1530595	1

Accessories

SACC-E-MU-M 5	1535901	100
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Technical data

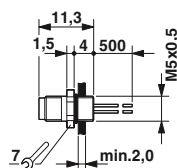
	3-pos.	4-pos.
General data		
M5 circular plug-in connector according to:	IEC 61076-2-105	IEC 61076-2-105
Pollution degree	3	3
Degree of protection	IP67	IP67
Connection method	Solder pins	Solder pins
Electrical data		
Rated voltage	60 V	60 V
Rated current	1 A	1 A
Volume resistance	≤ 3 mΩ	≤ 3 mΩ
Material data		
Material contact / contact surface	CuSn / Au	CuSn / Au
Contact carrier material	PA 66	PA 66
Inflammability class according to UL 94	HB	HB
Cable type	-	-
Temperature data		
Plug / socket	-25 ... 80	-25 ... 85

Ordering data

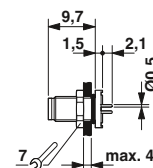
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
3-pos.		4-pos.	
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1530621	20	1530634	20

Accessories

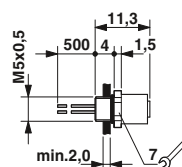
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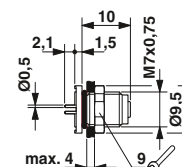
M5 flush-type plug



M5 flush-type plug, one-piece



M5 flush-type socket



M5 flush-type socket, one-piece

**M8, front mounting,
with 0.5 m long litz wires**



M8, 3, 4, 5-pos.



M8, 6, 8-pos.



Technical data			
3-pos.	4-pos.	5-pos.	
IEC 61076-2-104	IEC 61076-2-104	IEC 61076-2-104	
3	3	3	
IP67	IP67	IP67	
Individual wires	Individual wires	Individual wires	
60 V	30 V	30 V	
4 A	4 A	3 A	
≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ	
Cu alloy / Au	Cu alloy / Au	Cu alloy / Au	
PA 66	PA 66	PA 66	
HB	HB	HB	
TPE litz wire	TPE litz wire	PVC litz wire	
-25 ... 85	-25 ... 85	-25 ... 85	

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
3-pos.		4-pos.		5-pos.	
1500350	1	1500363	1		
1500334	1	1500347	1		
				1424233	1
				1424234	1

Accessories		
SACC-E-MU-M 8	1504071	100



Technical data			
6-pos.	8-pos.		
IEC 61076-2-104	IEC 61076-2-104	-	
3	3	-	
IP67	IP67	-	
Individual wires	Individual wires	-	
30 V	30 V	-	
2 A	1.5 A	-	
≤ 3 mΩ	≤ 3 mΩ	-	
Cu alloy / Au	Cu alloy / Au	- / -	
PA 66	PA 66	-	
HB	HB	-	
TPE litz wire	PVC litz wire	-	
-25 ... 85	-25 ... 85	-	

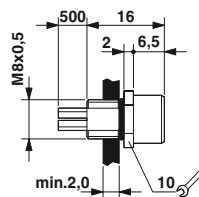
Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
6-pos.		8-pos.			
1542677	1	1424231	1		
1542664	1	1424232	1		

Accessories		
SACC-E-MU-M 8	1504071	100

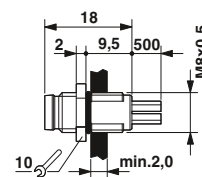
General data	
M8 circular plug-in connector according to:	
Pollution degree	
Degree of protection	
Connection method	
Electrical data	
Rated voltage	
Rated current	
Volume resistance	
Material data	
Material contact / contact surface	
Contact carrier material	
Inflammability class according to UL 94	
Cable type	
Temperature data	
Plug / socket	[°C]

Description	Coding
Device plug-in connectors	
Socket	A - standard
Plug	A - standard
Socket	B - inverse
Plug	B - inverse

Flat nut, with:
M8 thread



M8 flush-type socket



M8 flush-type plug

M5 to M12 circular plug-in connectors

M5/M8 sensor/actuator device plug-in connectors

M8, rear mounting, one-piece, straight, for wave soldering processes



M8, 3, 4-pos.



M8, 6, 8-pos.



Technical data

General data	
M8 circular plug-in connector according to:	
Pollution degree	3
Degree of protection	IP67
Connection method	Solder pins
Electrical data	
Rated voltage	60 V
Rated current	4 A
Volume resistance	$\leq 3 \text{ m}\Omega$
Material data	
Material contact / contact surface	CuSn / Au
Contact carrier material	PA 66
Inflammability class according to UL 94	HB
Temperature data	
Plug / socket	[°C]

3-pos.	4-pos.
IEC 61076-2-104	IEC 61076-2-104
3	3
IP67	IP67
Solder pins	Solder pins
60 V	30 V
4 A	4 A
$\leq 3 \text{ m}\Omega$	$\leq 3 \text{ m}\Omega$
CuSn / Au	CuSn / Au
PA 66	PA 66
HB	HB
-25 ... 85	-25 ... 85

Ordering data

Description	Coding
Device plug-in connectors	
Socket	A - standard
Plug	A - standard

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
3-pos.		4-pos.	
1694363	20	1694376	20
1694334	20	1694347	20

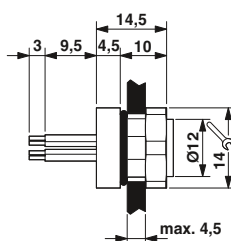


Technical data

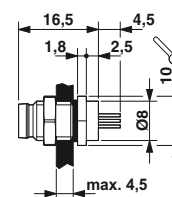
6-pos.	8-pos.
IEC 61076-2-104	IEC 61076-2-104
3	3
IP67	IP67
Solder pins	Solder pins
30 V	30 V
1.5 A	1.5 A
$\leq 3 \text{ m}\Omega$	$\leq 3 \text{ m}\Omega$
CuSn / Au	CuSn / Au
PA 66	PA 66
HB	HB
-25 ... 85	-25 ... 85

Ordering data

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
6-pos.		8-pos.	
1436534	20	1424237	20
1436521	20	1424238	20



M8 flush-type socket



M8 flush-type plug

**M8, rear mounting,
with 0.5 m long litz wires**



3, 4-pos.



6, 8-pos.



Technical data		
	3-pos.	4-pos.
General data		
M8 circular plug-in connector according to:	IEC 61076-2-104	IEC 61076-2-104
Pollution degree	3	3
Degree of protection	IP67	IP67
Connection method	Individual wires	Individual wires
Electrical data		
Rated voltage	60 V	30 V
Rated current	4 A	4 A
Volume resistance	≤ 3 mΩ	≤ 3 mΩ
Material data		
Material contact / contact surface	Cu alloy / Au	Cu alloy / Au
Contact carrier material	PUR / PA66	PUR / PA66
Inflammability class according to UL 94	HB	HB
Cable type	TPE litz wire	TPE litz wire
Temperature data		
Plug / socket	-25 ... 85	-25 ... 85
Cable, fixed installation	-25 ... 90	-25 ... 90

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
3-pos.		4-pos.	
1453478	1	1453481	1
1456080	1	1456093	1
1453449	1	1453452	1

Accessories		
SACC-E-MU-M 8	1504071	100

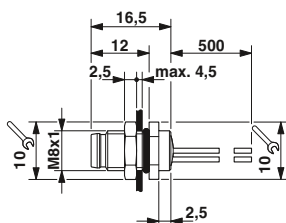


Technical data		
	6-pos.	8-pos.
General data		
M8 circular plug-in connector according to:	IEC 61076-2-104	IEC 61076-2-104
Pollution degree	3	3
Degree of protection	IP67	IP67
Connection method	Individual wires	Individual wires
Electrical data		
Rated voltage	30 V	30 V
Rated current	2 A	1.5 A
Volume resistance	≤ 3 mΩ	≤ 3 mΩ
Material data		
Material contact / contact surface	Cu alloy / Au	Cu alloy / Au
Contact carrier material	PUR / PA66	PUR / PA66
Inflammability class according to UL 94	HB	HB
Cable type	TPE litz wire	PVC litz wire
Temperature data		
Plug / socket	-25 ... 85	-25 ... 85
Cable, fixed installation	-25 ... 90	-25 ... 85

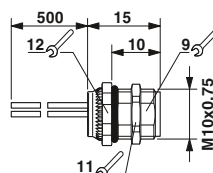
Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
6-pos.		8-pos.	
1453494	1	1424230	1
1456103	1	1424229	1
1453465	1		

Accessories		
SACC-E-MU-M 8	1504071	100

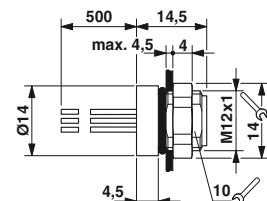
Description	Coding
Flush-type plug-in connector, M8 fastening thread	
Plug	A - standard
Flush-type plug-in connector, M10 fastening thread	
Socket	A - standard
Flush-type plug-in connector, M12 fastening thread	
Socket	A - standard
Flat nut, with: M8 thread	



M8 flush-type plug, M8 fastening thread



M8 flush-type socket, M10 fastening thread



M8 flush-type socket, M12 fastening thread

M5 to M12 circular plug-in connectors

M5/M8 sensor/actuator device plug-in connectors

**M8, rear mounting, two-piece,
for wave soldering processes, shielded**

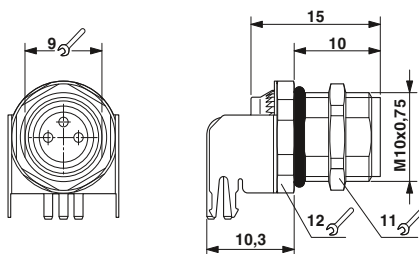


Angled, 3, 4-pos.

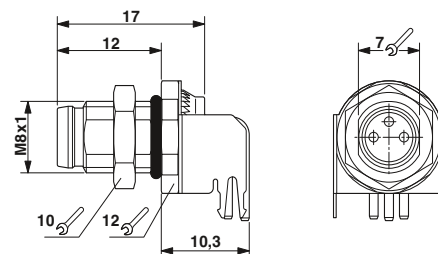


Angled, 5, 6-pos.

	Technical data		Technical data	
	3-pos.	4-pos.	5-pos.	6-pos.
General data				
M8 circular plug-in connector according to:	IEC 61076-2-104	IEC 61076-2-104	IEC 61076-2-104	IEC 61076-2-104
Pollution degree	3	3	3	3
Degree of protection	IP67	IP67	IP67	IP67
Connection method	Solder pins	Solder pins	Solder pins	Solder pins
Electrical data				
Rated voltage	30 V	30 V	30 V	30 V
Rated current	4 A	4 A	3 A	1.5 A
Volume resistance	$\leq 3 \text{ m}\Omega$	$\leq 3 \text{ m}\Omega$	$\leq 3 \text{ m}\Omega$	$\leq 3 \text{ m}\Omega$
Material data				
Material contact / contact surface	Cu alloy / Au	Cu alloy / Au	Cu alloy / Au	Cu alloy / Au
Contact carrier material	PA 66	PA 66	PA 66	PA 66
Inflammability class according to UL 94	HB	HB	HB	HB
Temperature data				
Plug / socket	-25 ... 85	-25 ... 85	-25 ... 85	-25 ... 85
	[°C]			
	Ordering data		Ordering data	
	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	3-pos.		4-pos.	
Device plug-in connectors				
Socket	A - standard	1456145 20	1456158 20	
Plug	A - standard	1456035 20	1456048 20	
Socket	B - inverse			1424243 20
Plug	B - inverse			1424244 20
			1424239 20	
			1424240 20	



M8 flush-type socket, angled



M8 flush-type plug, angled

**M8, rear mounting, two-piece,
for wave soldering processes, shielded**



Straight, 3, 4, 5-pos.



Straight, 6, 8-pos.



Technical data			
3-pos.	4-pos.	5-pos.	
General data			
M8 circular plug-in connector according to:	IEC 61076-2-104	IEC 61076-2-104	IEC 61076-2-104
Pollution degree	3	3	3
Degree of protection	IP67	IP67	IP67
Connection method	Solder pins	Solder pins	Solder pins
Electrical data			
Rated voltage	60 V	30 V	30 V
Rated current	4 A	4 A	3 A
Volume resistance	≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ
Material data			
Material contact / contact surface	Cu alloy / Au	Cu alloy / Au	Cu alloy / Au
Contact carrier material	PA 66	PA 66	PA 66
Inflammability class according to UL 94	HB	HB	HB
Temperature data			
Plug / socket	-25 ... 85	-25 ... 85	-25 ... 85

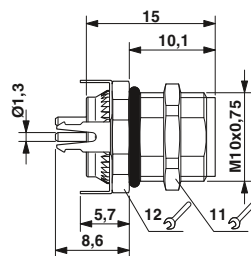
Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
3-pos.		4-pos.		5-pos.	
1456116	20	1456129	20		
1455997	20	1456019	20		
				1424241	20
				1424242	20



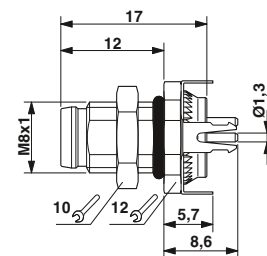
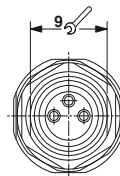
Technical data			
6-pos.	8-pos.		
General data			
IEC 61076-2-104	IEC 61076-2-104	-	-
3	3	-	-
IP67	IP67	-	-
Solder pins	Solder pins	-	-
Electrical data			
30 V	30 V	-	-
1.5 A	1.5 A	-	-
≤ 3 mΩ	≤ 3 mΩ	-	-
Material data			
Cu alloy / Au	Cu alloy / Au	- / -	-
PA 66	PA 66	-	-
HB	HB	-	-
Temperature data			
-25 ... 85	-25 ... 85	-	-

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
6-pos.		8-pos.			
1456132	20	1424235	20		
1456022	20	1424236	20		

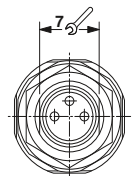
Description	Coding
Device plug-in connectors	
Socket	A - standard
Plug	A - standard
Socket	B - inverse
Plug	B - inverse



M8 flush-type socket, straight



M8 flush-type plug, straight,



M5 to M12 circular plug-in connectors

M5/M8 sensor/actuator device plug-in connectors

M8, rear mounting, two-piece,
for wave soldering processes,
unshielded

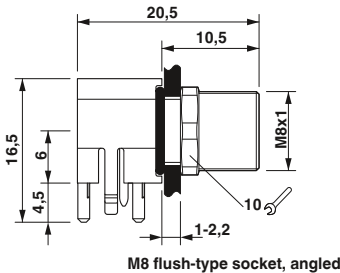


Angled, 3, 4-pos.

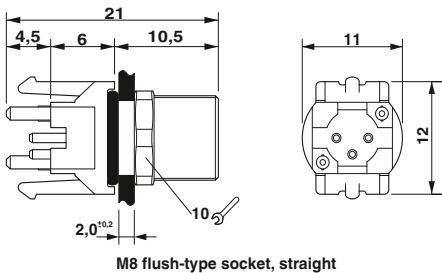


Straight, 3, 4-pos.

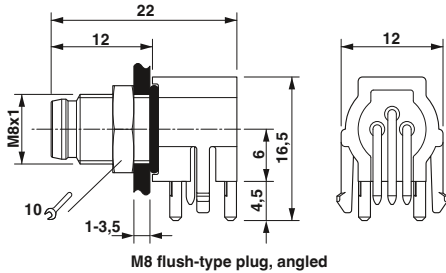
Technical data			Technical data		
3-pos.		4-pos.	3-pos.		4-pos.
General data			General data		
M8 circular plug-in connector according to:		IEC 61076-2-104	M8 circular plug-in connector according to:		IEC 61076-2-104
Pollution degree		3	Pollution degree		3
Degree of protection		IP67	Degree of protection		IP67
Connection method		Solder pins	Connection method		Solder pins
Electrical data			Electrical data		
Rated voltage		60 V	Rated voltage		30 V
Rated current		4 A	Rated current		4 A
Volume resistance		≤ 3 mΩ	Volume resistance		≤ 3 mΩ
Material data			Material data		
Material contact / contact surface		CuSn / Au	Material contact / contact surface		CuSn / Au
Contact carrier material		PA 66	Contact carrier material		PA 66
Inflammability class according to UL 94		HB	Inflammability class according to UL 94		HB
Temperature data			Temperature data		
Plug / socket		-25 ... 85	Plug / socket		-25 ... 85
		[°C]			
Ordering data			Ordering data		
Order No.		Pcs. / Pkt.	Order No.		Pcs. / Pkt.
3-pos.		4-pos.	3-pos.		4-pos.
Description		Coding	Description		Coding
Device plug-in connectors			Device plug-in connectors		
Socket		A - standard	Socket		A - standard
Plug		A - standard	Plug		A - standard
1524788		20	1526169		20
1440070		20	1440096		20
1524776		20	1524789		20



M8 flush-type socket, angled



M8 flush-type socket, straight



M8 flush-type plug, angled

M5 to M12 circular plug-in connectors

M12 sensor/actuator device plug-in connectors, front mounting

**Pg9 fastening thread,
with 0.5 m long litz wires**



4, 5, 8-pos.



Can be positioned, 4, 5, 8-pos.



Technical data			
	4-pos.	5-pos.	8-pos.
General data			
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
Pollution degree	3	3	3
Degree of protection	IP67	IP67	IP67
Connection method	Individual wires	Individual wires	Individual wires
Electrical data			
Rated voltage	250 V	60 V	30 V
Rated current	4 A	4 A	2 A
Volume resistance	≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ
Material data			
Material contact / contact surface	CuZn / Ni/Au	CuZn / Ni/Au	CuZn / Ni/Au
Contact carrier material	PA66	PA66	PA66
Inflammability class according to UL 94	V0	V0	V0
Cable type	TPE litz wire	TPE litz wire	TPE litz wire
Temperature data			
Plug / socket	-25 ... 85	-25 ... 85	-25 ... 85

Ordering data					
Description	Coding	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		4-pos.		5-pos.	

Device plug-in connectors	
Socket	A - standard
Plug	A - standard
Socket	B - inverse
Plug	B - inverse

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
1693788	1	1671098	1	1513758	1
1693762	1	1671111	1	1513774	1

Accessories			
SACC-E-MU-PG9	1504084	100	

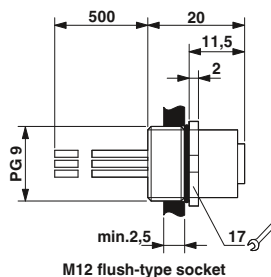


Technical data			
	4-pos.	5-pos.	8-pos.
General data			
IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
Pollution degree	3	3	3
Degree of protection	IP67	IP67	IP67
Connection method	Individual wires	Individual wires	Individual wires
Electrical data			
Rated voltage	250 V	60 V	30 V
Rated current	4 A	4 A	2 A
Volume resistance	≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ
Material data			
Material contact / contact surface	CuZn / Ni/Au	CuZn / Ni/Au	CuZn / Ni/Au
Contact carrier material	PA66	PA66	PA66
Inflammability class according to UL 94	V0	V0	V0
Cable type	TPE litz wire	TPE litz wire	TPE litz wire
Temperature data			
Plug / socket	-25 ... 85	-25 ... 85	-25 ... 85

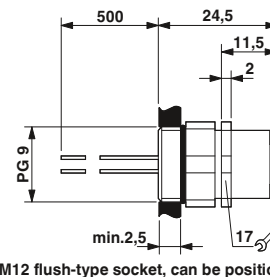
Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
1693791	1	1671108	1	1513761	1
1693775	1	1671124	1	1513787	1
		1515044	1		
		1515057	1		

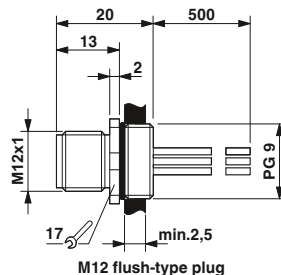
Accessories			



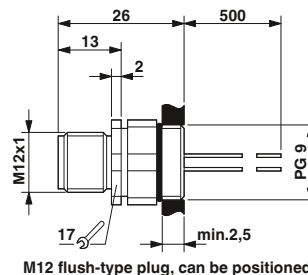
M12 flush-type socket



M12 flush-type socket, can be positioned



M12 flush-type plug



M12 flush-type plug, can be positioned

**M16 fastening thread,
with 0.5 m long litz wires**



4, 5, 8-pos.



12, 17-pos.



Technical data		
4-pos.	5-pos.	8-pos.
General data		
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101
Pollution degree	3	3
Degree of protection	IP67	IP67
Connection method	Individual wires	Individual wires
Electrical data		
Rated voltage	250 V	60 V
Rated current	4 A	4 A
Volume resistance	≤ 3 mΩ	≤ 3 mΩ
Material data		
Material contact / contact surface	CuZn / Ni/Au	CuZn / Ni/Au
Contact carrier material	PA 66	PA 66
Inflammability class according to UL 94	V0	V0
Cable type	TPE litz wire	TPE litz wire
Temperature data		
Plug / socket	-25 ... 85	-25 ... 85

Ordering data		
Order No.	Pcs. / Pkt.	Order No.
4-pos.	5-pos.	8-pos.
1523434	1	1520039
1523450	1	1520055
1535202	1	1523492
1551558	1	
		1520000
		1520013

Accessories		
SACC-E-MU-M16	1504097	100



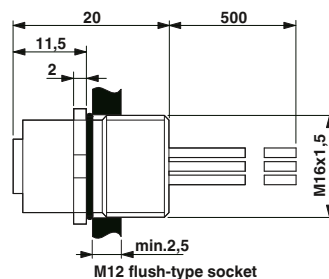
Technical data		
12-pos.	17-pos.	
General data		
IEC 61076-2-101	IEC 61076-2-101	-
3	3	-
IP67	IP67	-
Individual wires	Individual wires	-
Electrical data		
30 V	30 V	-
1.5 A	1.5 A	-
≤ 3 mΩ	≤ 3 mΩ	-
Material data		
CuZn / Ni/Au	CuZn / Ni/Au	- / -
PA 66	PA 66	-
V0	V0	-
TPE litz wire	TPE litz wire	-
Temperature data		
-25 ... 85	-25 ... 85	-

Ordering data		
Order No.	Pcs. / Pkt.	Order No.
12-pos.	17-pos.	
1556252	1	1556294
1556265	1	1556304

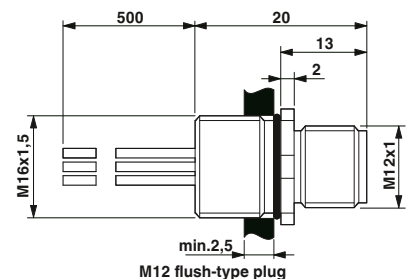
Accessories		
SACC-E-MU-M16	1504097	100

Description	Coding
Device plug-in connectors	
Socket	A - standard
Plug	A - standard
Socket	D - data
Plug	D - data
Socket	B - inverse
Plug	B - inverse

Flat nut, with:	
M16 thread	



M12 flush-type socket



M12 flush-type plug

M5 to M12 circular plug-in connectors

M12 sensor/actuator device plug-in connectors, front mounting

M16 fastening thread,
with 0.5 m long litz wires,
can be positioned



Can be positioned, 4, 5-pos.



Can be positioned, 8-pos.



Technical data

General data	
M12 circular plug-in connector according to:	IEC 61076-2-101
Pollution degree	3
Degree of protection	IP67
Connection method	Individual wires
Electrical data	
Rated voltage	250 V
Rated current	4 A
Volume resistance	≤ 3 mΩ
Material data	
Material contact / contact surface	CuZn / Ni/Au
Contact carrier material	PA 66
Inflammability class according to UL 94	V0
Cable type	TPE litz wire
Temperature data	
Plug / socket	-25 ... 85 [°C]

4-pos.

5-pos.



Ordering data

Description	Coding
Device plug-in connectors	
Socket	A - standard
Plug	A - standard
Socket	D - data
Plug	D - data
Socket	B - inverse
Plug	B - inverse

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
4-pos.		5-pos.	
1523447	1	1520042	1
1523463	1	1520068	1
1535215	1		
1552256	1		
		1519998	1
		1520026	1



Technical data

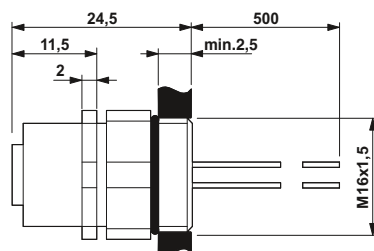
General data	
M12 circular plug-in connector according to:	IEC 61076-2-101
Pollution degree	3
Degree of protection	IP67
Connection method	Individual wires
Electrical data	
Rated voltage	30 V
Rated current	2 A
Volume resistance	≤ 3 mΩ
Material data	
Material contact / contact surface	CuZn / Ni/Au
Contact carrier material	PA 66
Inflammability class according to UL 94	V0
Cable type	TPE litz wire
Temperature data	
Plug / socket	-25 ... 85

8-pos.

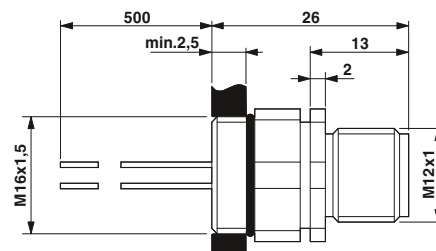


Ordering data

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
8-pos.			
1523489	1		
1523502	1		



M12 flush-type socket, can be positioned



M12 flush-type plug, can be positioned

M20 fastening thread, with 0.5 m long litz wires

– Housing material: brass, nickel-plated

N



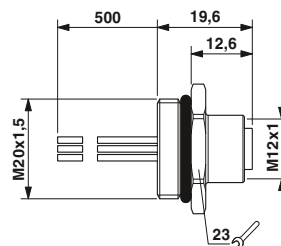
4, 5, 8-pos.

Technical data

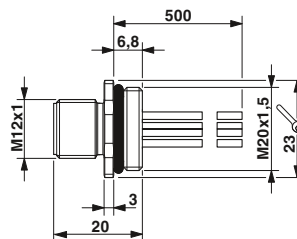
	4-pos.	5-pos.	8-pos.
General data			
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
Pollution degree	3	3	3
Degree of protection	IP67/IP69K	IP67/IP69K	IP67/IP69K
Connection method	Individual wires	Individual wires	Individual wires
Electrical data			
Rated voltage	250 V	60 V	30 V
Rated current	4 A	4 A	2 A
Volume resistance	$\leq 3 \text{ m}\Omega$	$\leq 3 \text{ m}\Omega$	$\leq 3 \text{ m}\Omega$
Material data			
Material contact / contact surface	CuZn / Au	CuZn / Au	CuZn / Au
Contact carrier material	PA 66	PA 66	PA 66
Inflammability class according to UL 94	V0	V0	V0
Cable type	TPE litz wire	TPE litz wire	TPE litz wire
Temperature data			
Plug / socket	[°C]	[°C]	[°C]
Cable, fixed installation	-25 ... 85	-25 ... 85	-25 ... 85
	-25 ... 90	-25 ... 90	-25 ... 90

Ordering data

Description	Coding	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		4-pos.		5-pos.		8-pos.	
Device plug-in connectors							
Socket	A - standard	1408436	1	1408454	1	1408453	1
Plug	A - standard	1408451	1	1408446	1	1408442	1



M12 flush-type socket



M12 flush-type plug

M5 to M12 circular plug-in connectors

M12 sensor/actuator device plug-in connectors, front mounting

One-piece, 20 mm square flange,
with 0.5 m long litz wires

- 4 x fixing hole, 3.2 mm
- With form seal for M3 screws



4, 5, 8-pos.



12, 17-pos.



Technical data

General data	4-pos.	5-pos.	8-pos.
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
Pollution degree	3	3	3
Degree of protection	IP67	IP67	IP67
Connection method	Individual wires	Individual wires	Individual wires
Electrical data			
Rated voltage	250 V	60 V	30 V
Rated current	4 A	4 A	2 A
Volume resistance	≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ
Material data			
Material contact / contact surface	CuZn / Ni/Au	CuZn / Ni/Au	CuZn / Ni/Au
Contact carrier material	PA 66	PA 66	PA 66
Inflammability class according to UL 94	V0	V0	V0
Cable type	TPE litz wire	TPE litz wire	TPE litz wire
Temperature data			
Plug / socket	-25 ... 85	-25 ... 85	-25 ... 85

Ordering data

Description	Coding	Order No.	Pcs. / Pkt.
Device plug-in connectors			
Socket	A - standard	1419797	1
Plug	A - standard	1419784	1
Socket	D - data	1441639	1
Plug	D - data	1441626	1
Socket	B - inverse		
Plug	B - inverse		

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
4-pos.		5-pos.		8-pos.	
1419797	1	1441655	1	1441697	1
1419784	1	1441642	1	1441684	1
1441639	1				
1441626	1				
		1441671	1		
		1441668	1		

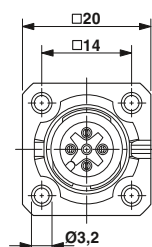


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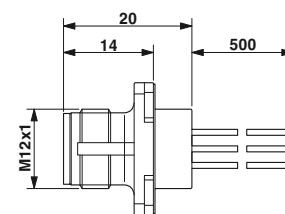
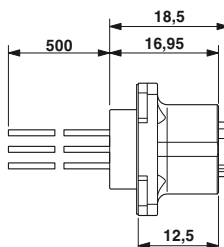
General data	12-pos.	17-pos.	
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101	-
Pollution degree	3	3	-
Degree of protection	IP67	IP67	-
Connection method	Individual wires	Individual wires	-
Electrical data			
Rated voltage	30 V	30 V	-
Rated current	1.5 A	1.5 A	-
Volume resistance	≤ 3 mΩ	≤ 3 mΩ	-
Material data			
Material contact / contact surface	CuZn / Ni/Au	CuZn / Ni/Au	- / -
Contact carrier material	PA 66	PA 66	-
Inflammability class according to UL 94	V0	V0	-
Cable type	TPE litz wire	TPE litz wire	-
Temperature data			
Plug / socket	-25 ... 85	-25 ... 85	-

Ordering data

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
12-pos.		17-pos.			
1441710	1	1441736	1		
1441707	1	1441723	1		



M12 flush-type socket, square flange



M12 flush-type plug, square flange

One-piece, 25 mm square flange, with 0.5 m long litz wires

- 4 x fixing hole, 2.7 mm
- With form seal for M2.5 screws



4, 5, 8-pos.



12, 17-pos.



Technical data			
4-pos.	5-pos.	8-pos.	
General data			
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
Pollution degree	3	3	3
Degree of protection	IP67	IP67	IP67
Connection method	Individual wires	Individual wires	Individual wires
Electrical data			
Rated voltage	250 V	60 V	30 V
Rated current	4 A	4 A	2 A
Volume resistance	≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ
Material data			
Material contact / contact surface	CuZn / Ni/Au	CuZn / Ni/Au	CuZn / Ni/Au
Contact carrier material	PA 66	PA 66	PA 66
Inflammability class according to UL 94	V0	V0	V0
Cable type	TPE litz wire	TPE litz wire	TPE litz wire
Temperature data			
Plug / socket	-25 ... 85	-25 ... 85	-25 ... 85

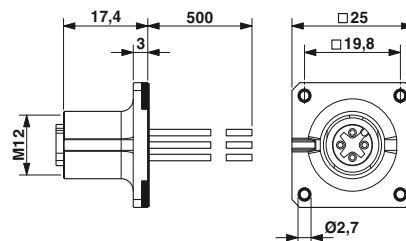
Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
4-pos.		5-pos.		8-pos.	
1420003	1	1440986	1	1441574	1
1419991	1	1440973	1	1441561	1
1440960	1				
1440957	1				
		1441558	1		
		1440999	1		



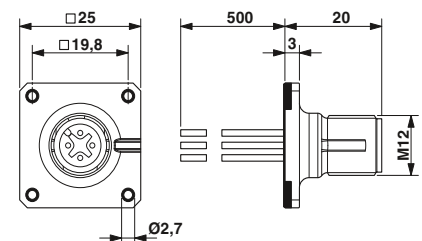
Technical data			
12-pos.	17-pos.		
General data			
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101	-
Pollution degree	3	3	-
Degree of protection	IP67	IP67	-
Connection method	Individual wires	Individual wires	-
Electrical data			
Rated voltage	30 V	30 V	-
Rated current	1.5 A	1.5 A	-
Volume resistance	≤ 3 mΩ	≤ 3 mΩ	-
Material data			
Material contact / contact surface	CuZn / Ni/Au	CuZn / Ni/Au	- / -
Contact carrier material	PA 66	PA 66	-
Inflammability class according to UL 94	V0	V0	-
Cable type	TPE litz wire	TPE litz wire	-
Temperature data			
Plug / socket	-25 ... 85	-25 ... 85	-

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
12-pos.		17-pos.			
1441590	1	1441613	1		
1441587	1	1441600	1		

Description	Coding
Device plug-in connectors	
Socket	A - standard
Plug	A - standard
Socket	D - data
Plug	D - data
Socket	B - inverse
Plug	B - inverse



M12 flush-type socket, square flange



M12 flush-type plug, square flange

M5 to M12 circular plug-in connectors

M12 sensor/actuator device plug-in connectors, front mounting

**Modular, 25 mm square flange,
pre-assembled**



**Flange housing,
housing bore holes 3.2 mm**



Technical data

General data			
M12 circular plug-in connector according to:	IEC 61076-2-101	-	-
Pollution degree	-	-	-
Degree of protection	-	-	-
Connection method	-	-	-
Electrical data			
Rated voltage	-	-	-
Rated current	-	-	-
Volume resistance	-	-	-
Material data			
Material contact / contact surface	- / -	- / -	- / -
Contact carrier material	-	-	-
Cable gland material	Zinc die-cast, nickel-plated	-	-
Inflammability class according to UL 94	-	-	-
Cable type	-	-	-
Temperature data			
Plug / socket	[-25 ... 85	-	-
Cable, fixed installation	[-25 ... 85	-	-

Ordering data

Description	Coding	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
Square flange housing, with O-ring		1419959	10				
Assembled contact carrier and insulating body, with 0.5 m litz wires and crimp contacts							
Plug	A - standard						
Plug	D - data						
Plug	B - inverse						



**With 0.5 m long litz wires,
assembled contact carrier
and insulating body**

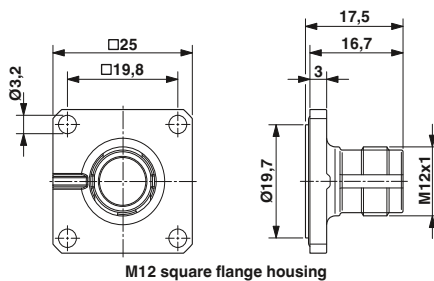


Technical data

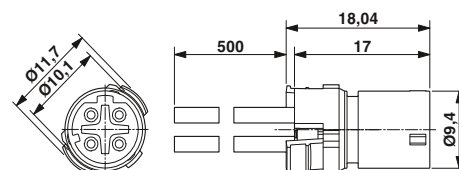
4-pos.	5-pos.	8-pos.
IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
3	3	3
IP67	IP67	IP67
Crimp contacts	Crimp contacts	Crimp contacts
250 V	60 V	30 V
4 A	4 A	2 A
≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ
CuZn / Au	CuZn / Au	CuZn / Au
PA 66	PA 66	PA 66
-	-	-
V0	V0	V0
TPE litz wire	TPE litz wire	TPE litz wire
-25 ... 85	-25 ... 85	-25 ... 85
-25 ... 85	-25 ... 85	-25 ... 85

Ordering data

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
4-pos.		5-pos.		8-pos.	
1440805	1	1440818	1	1457827	1
1440821	1	1440759	1		



M12 square flange housing



M12 contact carrier, with litz wires

**Modular, 25 mm square flange,
for free assembly**



**Flange housing,
housing bore holes 3.2 mm**



**Contact carriers
and insulating bodies for assembly**



Technical data

General data			
M12 circular plug-in connector according to:	IEC 61076-2-101	-	-
Pollution degree	-	-	-
Degree of protection	-	-	-
Connection method	-	-	-
Electrical data			
Rated voltage	-	-	-
Rated current	-	-	-
Volume resistance	-	-	-
Material data			
Contact carrier material	-	-	-
Cable gland material	Zinc die-cast, nickel-plated	-	-
Inflammability class according to UL 94	-	-	-
Temperature data			
Plug / socket	-25 ... 85	-	-

Ordering data

Description	Coding	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
Square flange housing, with O-ring		1419959	10				
Contact carriers and insulating bodies							
Plug	A - standard						
Plug	D - data						
Plug	B - inverse						

Crimp contacts, for 4 and 5-pos. contact carriers, contact material: CuZn, surface: gold-plated, connection cross section: 0.08 mm² ... 0.34 mm²

Contact Ø: 1.0 mm

Crimp contacts, for 8-pos. contact carriers, contact material: CuZn, surface: gold-plated, connection cross section: 0.08 mm² ... 0.34 mm²

Contact Ø: 0.8 mm

Crimping pliers



Technical data

4-pos.	5-pos.	8-pos.
IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
3	3	3
IP67	IP67	IP67
Crimp contacts	Crimp contacts	Crimp contacts
250 V	60 V	30 V
4 A	4 A	2 A
≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ
PA 66	PA 66	PA 66
-	-	-
V0	V0	V0
-25 ... 85	-25 ... 85	-25 ... 85

Ordering data

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
4-pos.		5-pos.		8-pos.	
1440931	10	1419988	10	1440928	10
1440944	10	1440915	10		

1452356 100

1452356 100

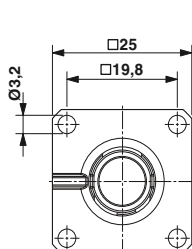
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Accessories

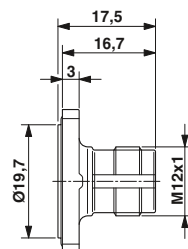
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Accessories

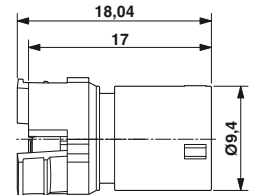
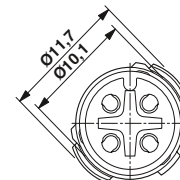
CRIMPFOX-TC MP	1212510	1
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M12 square flange housing



M12 contact carrier



M5 to M12 circular plug-in connectors

M12 sensor/actuator device plug-in connectors, front mounting

One-piece, 20 mm square flange,
for wave soldering processes

- M12 PCB connector for direct soldering
with integrated torsion protection and
shield connection

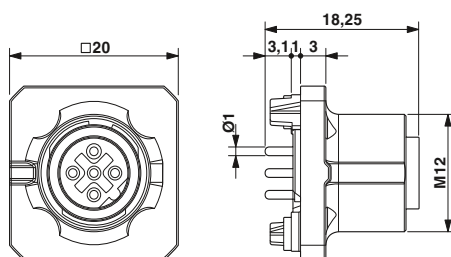


4, 5-pos.

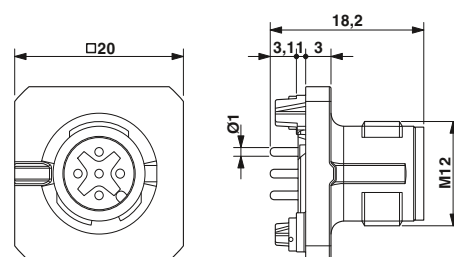


8-pos.

	Technical data		Technical data	
	4-pos.	5-pos.	8-pos.	
General data				
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101	-
Pollution degree	3	3	3	-
Degree of protection	IP67	IP67	IP67	-
Connection method	Solder pins	Solder pins	Solder pins	-
Electrical data				
Rated voltage	250 V	60 V	30 V	-
Rated current	4 A	4 A	2 A	-
Volume resistance	≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ	-
Material data				
Material contact / contact surface	CuZn / Au	CuZn / Au	CuZn / Au	- / -
Contact carrier material	PA 66	PA 66	PA 66	-
Inflammability class according to UL 94	V0	V0	V0	-
Temperature data				
Plug / socket	-25 ... 85	-25 ... 85	-25 ... 85	-
	[°C]			
	Ordering data		Ordering data	
	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	4-pos.		5-pos.	
Device plug-in connectors				
Socket	A - standard	1456420 10	1456446 10	1408573 10
Plug	A - standard	1456417 10	1456433 10	1408574 10
Socket	D - data	1456404 10		
Plug	D - data	1456394 10		
Socket	B - inverse		1456462 10	
Plug	B - inverse		1456459 10	



M12 flush-type socket, square flange (4/5-pos. version)



M12 flush-type plug, square flange (4/5-pos. version)

Contact carrier, plastic,
with solder cups or with litz wires



Solder connection, 5, 8-pos.



With 0.5 m long litz wires, 5, 8-pos.



Technical data		
	5-pos.	8-pos.
General data		
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101
Pollution degree	3	3
Degree of protection	IP67	IP67
Connection method	Solder cup	Solder cup
Electrical data		
Rated voltage	60 V	30 V
Rated current	4 A	2 A
Volume resistance	$\leq 3 \text{ m}\Omega$	$\leq 3 \text{ m}\Omega$
Material data		
Material contact / contact surface	CuZn / Au	CuZn / Au
Contact carrier material	PA 66	PA 66
Inflammability class according to UL 94	HB	HB
Cable type	-	-
Temperature data		
Plug / socket	$[-25 \dots 85]$	$[-25 \dots 85]$
Cable, fixed installation	$[-25 \dots 85]$	$[-25 \dots 85]$

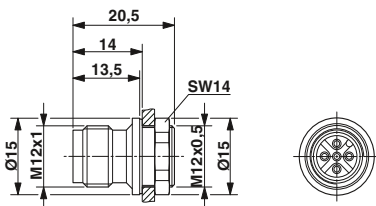
Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
5-pos.		8-pos.	
1436398	20	1436408	20
1436437	20	1436440	20



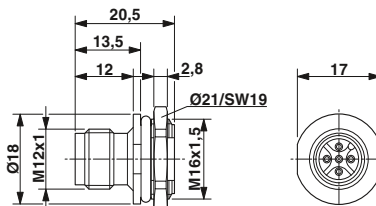
Technical data		
	5-pos.	8-pos.
General data		
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101
Pollution degree	3	3
Degree of protection	IP67	IP67
Connection method	Individual wires	Individual wires
Electrical data		
Rated voltage	60 V	30 V
Rated current	4 A	2 A
Volume resistance	$\leq 3 \text{ m}\Omega$	$\leq 3 \text{ m}\Omega$
Material data		
Material contact / contact surface	CuZn / Au	CuZn / Au
Contact carrier material	PA 66	PA 66
Inflammability class according to UL 94	HB	HB
Cable type	TPE litz wire	TPE litz wire
Temperature data		
Plug / socket	$[-25 \dots 85]$	$[-25 \dots 85]$
Cable, fixed installation	$[-25 \dots 90]$	$[-25 \dots 90]$

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
5-pos.		8-pos.	
1436411	1	1436424	1

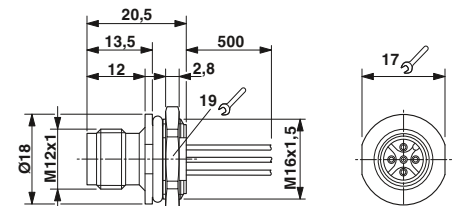
Description	Coding
Flush-type plug-in connector, M16 fastening thread	
Plug	A - standard
Flush-type plug-in connector, M12 fastening thread	
Plug	A - standard



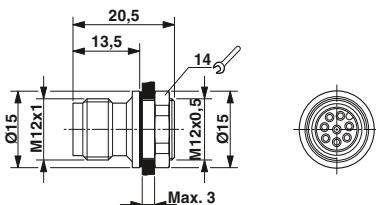
M12 pin, M12 fastening thread, solder cups



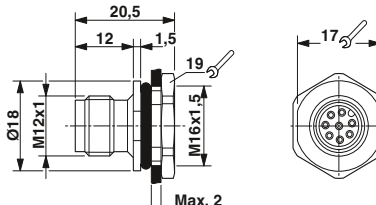
M12 pin, M16 fastening thread, solder cups



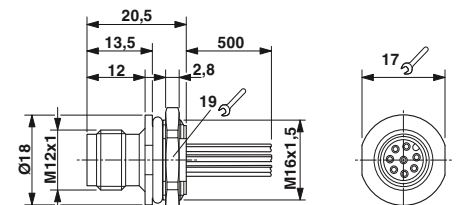
M12 pin, M16 fastening thread



M12 pin, M12 fastening thread, solder cups



M12 pin, M16 fastening thread, solder cups



M12 pin, M16 fastening thread

M5 to M12 circular plug-in connectors

M12 sensor/actuator device plug-in connectors, rear mounting

Pg9 fastening thread,
with 0.5 m long litz wires



4, 5, 8-pos.



12, 17-pos.



Technical data			
	4-pos.	5-pos.	8-pos.
General data			
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
Pollution degree	3	3	3
Degree of protection	IP67	IP67	IP67
Connection method	Individual wires	Individual wires	Individual wires
Electrical data			
Rated voltage	250 V	60 V	30 V
Rated current	4 A	4 A	2 A
Volume resistance	≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ
Material data			
Material contact / contact surface	CuZn / Au	CuZn / Au	CuZn / Au
Contact carrier material	PA 66	PA 66	PA 66
Inflammability class according to UL 94	V0	V0	V0
Cable type	TPE litz wire	TPE litz wire	TPE litz wire
Temperature data			
Plug / socket [°C]	-25 ... 85	-25 ... 85	-25 ... 85
Cable, fixed installation [°C]	-25 ... 85	-25 ... 85	-25 ... 85

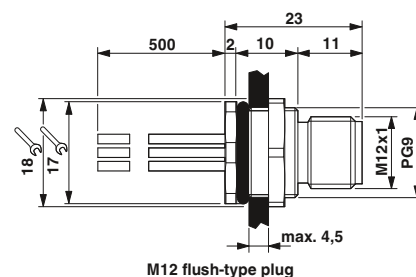
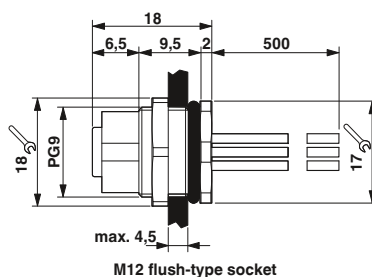


Technical data			
	12-pos.	17-pos.	
General data			
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101	-
Pollution degree	3	3	-
Degree of protection	IP67	IP67	-
Connection method	Individual wires	Individual wires	-
Electrical data			
Rated voltage	30 V	30 V	-
Rated current	1.5 A	1.5 A	-
Volume resistance	≤ 3 mΩ	≤ 3 mΩ	-
Material data			
Material contact / contact surface	CuZn / Au	CuZn / Au	- / -
Contact carrier material	PA 66	PA 66	-
Inflammability class according to UL 94	V0	V0	-
Cable type	TPE litz wire	TPE litz wire	-
Temperature data			
Plug / socket [°C]	-25 ... 85	-25 ... 85	-
Cable, fixed installation [°C]	-25 ... 85	-25 ... 85	-

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
4-pos.		5-pos.		8-pos.	
1556621	1	1542729	1	1542732	1
1556618	1	1542703	1	1542716	1
1551529	1				
1551532	1				
		1543676	1		
		1543663	1		

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
12-pos.		17-pos.			
1430446	1	1430462	1		
1430459	1	1430475	1		

Description	Coding
Device plug-in connectors	
Socket	A - standard
Plug	A - standard
Socket	D - data
Plug	D - data
Socket	B - inverse
Plug	B - inverse



M12 fastening thread, with 0.5 m long litz wires



4, 5, 8-pos.



12, 17-pos.



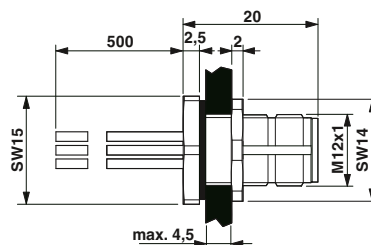
Technical data			
4-pos.	5-pos.	8-pos.	
IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101	
3	3	3	
IP67	IP67	IP67	
Individual wires	Individual wires	Individual wires	
250 V	60 V	30 V	
4 A	4 A	2 A	
≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ	
CuZn / Au	CuZn / Au	CuZn / Au	
PA 66	PA 66	PA 66	
V0	V0	V0	
TPE litz wire	TPE litz wire	TPE litz wire	
-25 ... 85	-25 ... 85	-25 ... 85	
-25 ... 85	-25 ... 85	-25 ... 85	

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
4-pos.		5-pos.	
1551875	1	1551888	1
1551901	1	1551891	1



Technical data			
12-pos.	17-pos.		
IEC 61076-2-101	IEC 61076-2-101	-	
3	3	-	
IP67	IP67	-	
Individual wires	Individual wires	-	
30 V	30 V	-	
1.5 A	1.5 A	-	
≤ 3 mΩ	≤ 3 mΩ	-	
CuZn / Au	CuZn / Au	- / -	
PA 66	PA 66	-	
V0	V0	-	
TPE litz wire	TPE litz wire	-	
-25 ... 85	-25 ... 85	-	
-25 ... 85	-25 ... 85	-	

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
12-pos.		17-pos.	
1437122	1	1437135	1



M12 flush-type plug, M12 fastening thread

M5 to M12 circular plug-in connectors

M12 sensor/actuator device plug-in connectors, rear mounting

M16 fastening thread, with 0.5 m long litz wires



4, 5, 8-pos.



12, 17-pos.



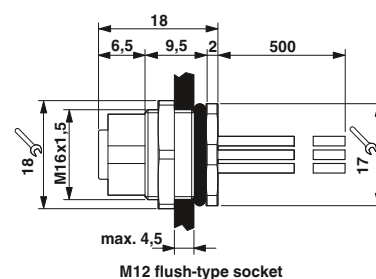
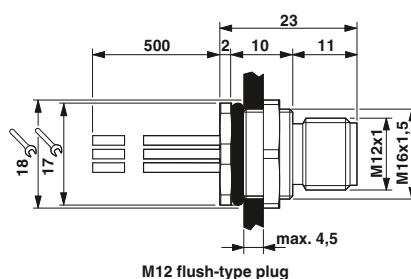
Technical data			
	4-pos.	5-pos.	8-pos.
General data			
M12 circular plug-in connector According to:	IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
Pollution degree	3	3	3
Degree of protection	IP67	IP67	IP67
Connection method	Individual wires	Individual wires	Individual wires
Electrical data			
Rated voltage	250 V	60 V	30 V
Rated current	4 A	4 A	2 A
Volume resistance	≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ
Material data			
Material contact / contact surface	CuZn / Au	CuZn / Au	CuZn / Au
Contact carrier material	PA 66	PA 66	PA 66
Inflammability class according to UL 94	V0	V0	V0
Cable type	TPE litz wire	TPE litz wire	TPE litz wire
Temperature data			
Plug / socket [°C]	-25 ... 85	-25 ... 85	-25 ... 85
Cable, fixed installation [°C]	-25 ... 85	-25 ... 85	-25 ... 85



Technical data			
	12-pos.	17-pos.	
General data			
M12 circular plug-in connector According to:	IEC 61076-2-101	IEC 61076-2-101	-
Pollution degree	3	3	-
Degree of protection	IP67	IP67	-
Connection method	Individual wires	Individual wires	-
Electrical data			
Rated voltage	30 V	30 V	-
Rated current	1.5 A	1.5 A	-
Volume resistance	≤ 3 mΩ	≤ 3 mΩ	-
Material data			
Material contact / contact surface	CuZn / Au	CuZn / Au	- / -
Contact carrier material	PA 66	PA 66	-
Inflammability class according to UL 94	V0	V0	-
Cable type	TPE litz wire	TPE litz wire	-
Temperature data			
Plug / socket [°C]	-25 ... 85	-25 ... 85	-
Cable, fixed installation [°C]	-25 ... 85	-25 ... 85	-

Ordering data					
Description	Coding	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		4-pos.		5-pos.	
Device plug-in connectors					
	A - standard	1419632	1	1419658	1
	A - standard	1419629	1	1419645	1
	D - data	1419616	1		
	D - data	1419603	1		
	B - inverse			1419674	1
Plug	B - inverse			1419661	1

Ordering data					
Description	Coding	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		12-pos.		17-pos.	
Device plug-in connectors					
	A - standard	1419713	1	1419739	1
	A - standard	1419700	1	1419726	1
	D - data				
	D - data				
	B - inverse				



Pg9 fastening thread, one-piece, for wave soldering processes, shielded



Ethernet



Straight, 4, 5, 8-pos.



Straight, 12, 17-pos.



Technical data		
4-pos.	5-pos.	8-pos.
IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
3	3	3
IP67	IP67	IP67
Solder pins	Solder pins	Solder pins
250 V	60 V	30 V
4 A	4 A	2 A
≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ
CuZn / Au	CuZn / Au	CuZn / Au
PA 66	PA 66	PA 66
V0	V0	V0
-25 ... 85	-25 ... 85	-25 ... 85

Ordering data		
Order No.	Pcs. / Pkt.	Order No.
4-pos.	5-pos.	8-pos.

1556841	20	1553019	20	1553860	20
1553006	20	1553048	20	1553873	20
1553035	20	1553022	20	1553051	20

1558522	20	1558548	20	1408771	20
1558535	20	1558551	20		
1558506	20				
1558519	20				
		1558564	20		
		1558577	20		

Accessories		
SACC-PG9-KD-NUT-SH	1440177	10



Technical data		
12-pos.	17-pos.	
IEC 61076-2-101	IEC 61076-2-101	-
3	3	-
IP67	IP67	-
Solder pins	Solder pins	-
30 V	30 V	-
1.5 A	1.5 A	-
≤ 3 mΩ	≤ 3 mΩ	-
CuZn / Au	CuZn / Au	- / -
PA 66	PA 66	-
V0	V0	-
-25 ... 85	-25 ... 85	-

Ordering data		
Order No.	Pcs. / Pkt.	Order No.
12-pos.	17-pos.	

1436770	20	1436806	20
1436783	20	1436819	20

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Accessories		
SACC-PG9-KD-NUT-SH	1440177	10

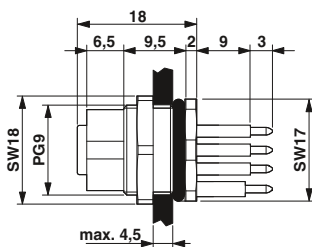
General data	
M12 circular plug-in connector according to:	
Pollution degree	3
Degree of protection	IP67
Connection method	Solder pins
Electrical data	
Rated voltage	250 V
Rated current	4 A
Volume resistance	≤ 3 mΩ
Material data	
Material contact / contact surface	CuZn / Au
Contact carrier material	PA 66
Inflammability class according to UL 94	V0
Temperature data	
Plug / socket	[-25 ... 85] °C

Description	Coding
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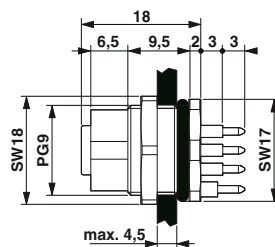
Device plug-in connector, solder pin length: 6 mm	
Socket	A - standard
Plug	A - standard
Socket	D - data
Plug	D - data
Socket	B - inverse
Plug	B - inverse

Device plug-in connector, solder pin length: 12 mm	
Socket	A - standard
Plug	A - standard
Socket	D - data
Plug	D - data
Socket	B - inverse
Plug	B - inverse

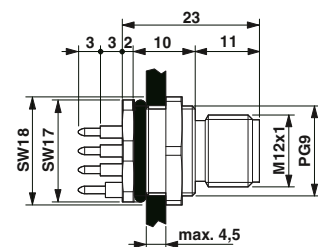
EMC hexagonal nuts with fine toothing, for all flush-type plug-in connectors with:	
Pg9 fastening thread	



M12 flush-type socket, contact length: 12 mm



M12 flush-type socket, contact length: 6 mm



M12 flush-type plug, contact length: 6 mm

M5 to M12 circular plug-in connectors

M12 sensor/actuator device plug-in connectors, rear mounting

**M12 fastening thread, one-piece,
for wave soldering processes**



Straight, 4, 5, 8-pos.



Straight, 12, 17-pos.



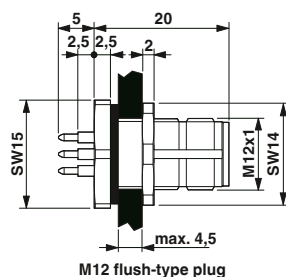
Technical data		
4-pos.	5-pos.	8-pos.
IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
3	3	3
IP67	IP67	IP67
Solder pins	Solder pins	Solder pins
250 V	60 V	30 V
4 A	4 A	2 A
≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ
CuZn / Au	CuZn / Au	CuZn / Au
PA 66	PA 66	PA 66
V0	V0	V0
-25 ... 85	-25 ... 85	-25 ... 85

Ordering data		
Order No.	Pcs. / Pkt.	Order No.
4-pos.		5-pos.
1551820	20	1551833
1551859	20	1551862
		1551846



Technical data		
12-pos.	17-pos.	
IEC 61076-2-101	IEC 61076-2-101	-
3	3	-
IP67	IP67	-
Solder pins	Solder pins	-
30 V	30 V	-
1.5 A	1.5 A	-
≤ 3 mΩ	≤ 3 mΩ	-
CuZn / Au	CuZn / Au	- / -
PA 66	PA 66	-
V0	V0	-
-25 ... 85	-25 ... 85	-

Ordering data		
Order No.	Pcs. / Pkt.	Order No.
12-pos.		17-pos.
1559945	20	1559974



**M12 fastening thread, one-piece,
for wave soldering processes, shielded**



Straight, 4, 5, 8-pos.



Straight, 12, 17-pos.



Technical data			
4-pos.	5-pos.	8-pos.	
IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101	
3	3	3	
IP67	IP67	IP67	
Solder pins	Solder pins	Solder pins	
250 V	60 V	30 V	
4 A	4 A	2 A	
≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ	
CuZn / Au	CuZn / Au	CuZn / Au	
PA 66	PA 66	PA 66	
V0	V0	V0	
-25 ... 85	-25 ... 85	-25 ... 85	

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
4-pos.		5-pos.		8-pos.	
1552955	20	1552968	20	1552997	20
1552984	20				
		1552971	20		

Accessories		
SACC-M12-KD-NUT-SH	1440151	10



Technical data			
12-pos.	17-pos.		
IEC 61076-2-101	IEC 61076-2-101	-	
3	3	-	
IP67	IP67	-	
Solder pins	Solder pins	-	
30 V	30 V	-	
1.5 A	1.5 A	-	
≤ 3 mΩ	≤ 3 mΩ	-	
CuZn / Au	CuZn / Au	- / -	
PA 66	PA 66	-	
V0	V0	-	
-25 ... 85	-25 ... 85	-	

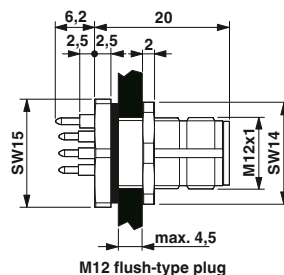
Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
12-pos.		17-pos.			
1437106	20	1437119	20		

Accessories		
SACC-M12-KD-NUT-SH	1440151	10

General data	
M12 circular plug-in connector according to:	
Pollution degree	
Degree of protection	
Connection method	
Electrical data	
Rated voltage	
Rated current	
Volume resistance	
Material data	
Material contact / contact surface	
Contact carrier material	
Inflammability class according to UL 94	
Temperature data	
Plug / socket	[°C]

Description	Coding
Device plug-in connectors	
Plug	A - standard
Plug	D - data
Plug	B - inverse

EMC hexagonal nuts with fine toothing, for all flush-type plug-in connectors with:
M12 fastening thread



M5 to M12 circular plug-in connectors

M12 sensor/actuator device plug-in connectors, rear mounting

M16 fastening thread, one-piece, for wave soldering processes



Straight, 4, 5, 8-pos.



Straight, 12, 17-pos.



General data	
M12 circular plug-in connector according to:	
Pollution degree	
Degree of protection	
Connection method	
Electrical data	
Rated voltage	
Rated current	
Volume resistance	
Material data	
Material contact / contact surface	
Contact carrier material	
Inflammability class according to UL 94	
Temperature data	
Plug / socket	[°C]

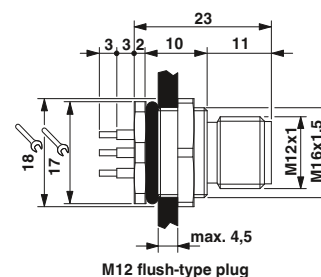
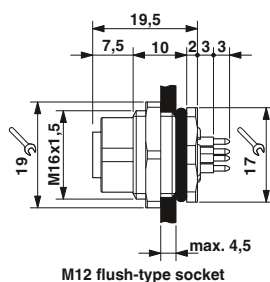
Technical data		
4-pos.	5-pos.	8-pos.
IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
3	3	3
IP67	IP67	IP67
Solder pins	Solder pins	Solder pins
250 V	60 V	30 V
4 A	4 A	2 A
≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ
CuZn / Au	CuZn / Au	CuZn / Au
PA 66	PA 66	PA 66
V0	V0	V0
-25 ... 85	-25 ... 85	-25 ... 85

Technical data		
12-pos.	17-pos.	
IEC 61076-2-101	IEC 61076-2-101	-
3	3	-
IP67	IP67	-
Solder pins	Solder pins	-
30 V	30 V	-
1.5 A	1.5 A	-
≤ 3 mΩ	≤ 3 mΩ	-
CuZn / Au	CuZn / Au	- / -
PA 66	PA 66	-
V0	V0	-
-25 ... 85	-25 ... 85	-

Description	Coding
Device plug-in connectors	
Socket	A - standard
Plug	A - standard
Socket	D - data
Plug	D - data
Socket	B - inverse
Plug	B - inverse

Ordering data		
Order No.	Pcs. / Pkt.	
4-pos.	5-pos.	8-pos.
1419755	20	1441778
1419742	20	1441765
1441752	20	1441804
1441749	20	
		1441794
		1441781

Ordering data		
Order No.	Pcs. / Pkt.	
12-pos.	17-pos.	
1441833	20	1441859
1441820	20	1441846



M16 fastening thread, one-piece, for wave soldering processes, shielded



Straight, 4, 5, 8-pos.



Straight, 12, 17-pos.



Technical data			
4-pos.	5-pos.	8-pos.	
IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101	
3	3	3	
IP67	IP67	IP67	
Solder pins	Solder pins	Solder pins	
250 V	60 V	30 V	
4 A	4 A	2 A	
≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ	
CuZn / Au	CuZn / Au	CuZn / Au	
PA 66	PA 66	PA 66	
V0	V0	V0	
-25 ... 85	-25 ... 85	-25 ... 85	

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
4-pos.		5-pos.		8-pos.	
1419771	20	1441891	20	1441930	20
1419768	20	1441888	20	1441927	20
1441875	20				
1441862	20				
		1441914	20		
		1441901	20		

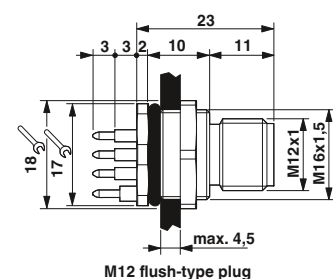
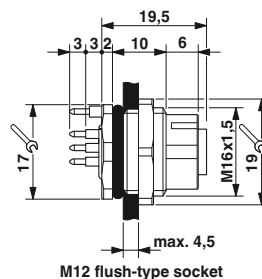
Accessories		
SACC-M16-KD-NUT-SH	1440164	10



Technical data			
12-pos.	17-pos.		
IEC 61076-2-101	IEC 61076-2-101	-	
3	3	-	
IP67	IP67	-	
Solder pins	Solder pins	-	
30 V	30 V	-	
1.5 A	1.5 A	-	
≤ 3 mΩ	≤ 3 mΩ	-	
CuZn / Au	CuZn / Au	- / -	
PA 66	PA 66	-	
V0	V0	-	
-25 ... 85	-25 ... 85	-	

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
12-pos.		17-pos.			
1441956	20	1441972	20		
1441943	20	1441969	20		

Accessories		
SACC-M16-KD-NUT-SH	1440164	10



M5 to M12 circular plug-in connectors

M12 sensor/actuator device plug-in connectors, rear mounting

Contact carrier, two-piece, angled,
for wave soldering processes



Angled, 4, 5, 8-pos.



Angled, shielded, 4, 5, 8-pos.



Technical data			
4-pos.	5-pos.	8-pos.	
IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101	
3	3	3	
IP67	IP67	IP67	
Solder pins	Solder pins	Solder pins	
250 V	60 V	30 V	
4 A	4 A	2 A	
≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ	
CuZn / Au	CuZn / Au	CuZn / Au	
PA 66	PA 66	PA 66	
V0	V0	V0	
-25 ... 85	-25 ... 85	-25 ... 85	

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
4-pos.		5-pos.		8-pos.	

1436628	20	1436644	20	1436990	20
1436660	20	1436686	20	1436987	20

Accessories	
See page 258 onwards	

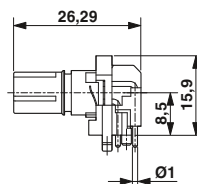


Technical data			
4-pos.	5-pos.	8-pos.	
IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101	
3	3	3	
IP67	IP67	IP67	
Solder pins	Solder pins	Solder pins	
250 V	60 V	30 V	
4 A	4 A	2 A	
≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ	
CuZn / Au	CuZn / Au	CuZn / Au	
PA 66	PA 66	PA 66	
V0	V0	V0	
-25 ... 85	-25 ... 85	-25 ... 85	

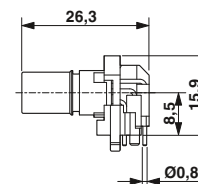
Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
4-pos.		5-pos.		8-pos.	

1432444	20	1432431	20	1437009	20
1439887	20	1439890	20	1437038	20
1432457	20				
1436673	20				
		1432512	20		
		1436699	20		

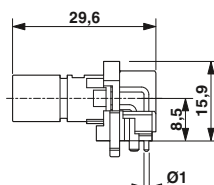
Accessories	
See page 258 onwards	



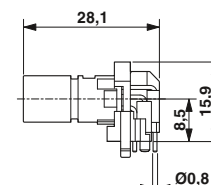
M12 socket contact carrier, angled, 4, 5-pos.



M12 socket contact carrier, angled, 8-pos.



M12 pin contact carrier, angled, 4, 5-pos.



M12 pin contact carrier, angled, 8-pos.

**Contact carrier, two-piece, angled,
for wave soldering processes**

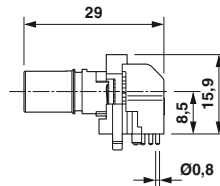


Angled, 12, 17-pos.

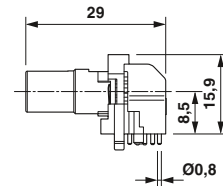


Angled, shielded, 12, 17-pos.

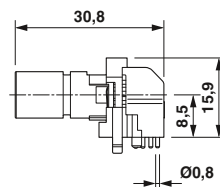
				Technical data							Technical data				
				12-pos.		17-pos.				12-pos.		17-pos.			
General data															
M12 circular plug-in connector according to:				IEC 61076-2-101		IEC 61076-2-101		-		IEC 61076-2-101		IEC 61076-2-101		-	
Pollution degree				3		3		-		3		3		-	
Degree of protection				IP67		IP67		-		IP67		IP67		-	
Connection method				Solder pins		Solder pins		-		Solder pins		Solder pins		-	
Electrical data															
Rated voltage				30 V		30 V		-		30 V		30 V		-	
Rated current				1.5 A		1.5 A		-		1.5 A		1.5 A		-	
Volume resistance				≤ 3 mΩ		≤ 3 mΩ		-		≤ 3 mΩ		≤ 3 mΩ		-	
Material data															
Material contact / contact surface				CuZn / Au		CuZn / Au		- / -		CuZn / Au		CuZn / Au		- / -	
Contact carrier material				PA6T		PA6T		-		PA6T		PA6T		-	
Inflammability class according to UL 94				V0		V0		-		V0		V0		-	
Temperature data															
Plug / socket				-25 ... 85		-25 ... 85		-		-25 ... 85		-25 ... 85		-	
				Ordering data						Ordering data					
Description				Order No.		Pcs. / Pkt.		Order No.		Pcs. / Pkt.		Order No.		Pcs. / Pkt.	
Coding				12-pos.		17-pos.				12-pos.		17-pos.			
Device plug-in connectors															
Socket				A - standard		1424195 20		1424197 20				1424199 20		1424201 20	
Plug				A - standard		1424194 20		1424196 20				1424198 20		1424200 20	
				Accessories						Accessories					
Housing screw connections, SPEEDCON screw versions and press-in versions, for all two-piece THR and wave soldering contact carriers				See page 258 onwards						See page 258 onwards					



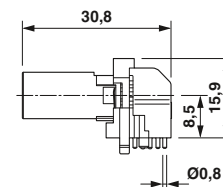
M12 socket contact carrier, angled, 12-pos.



M12 socket contact carrier, angled, 17-pos.



M12 pin contact carrier, angled, 12-pos.



M12 pin contact carrier, angled, 17-pos.

M5 to M12 circular plug-in connectors

M12 sensor/actuator device plug-in connectors, rear mounting

Contact carrier, two-piece,
for wave soldering processes



Straight, 5-pos.



Straight, shielded, 4, 5-pos.



Technical data			
5-pos.			
General data			
M12 circular plug-in connector according to:	IEC 61076-2-101	-	-
Pollution degree	3	-	-
Degree of protection	IP67	-	-
Connection method	Solder pins	-	-
Electrical data			
Rated voltage	60 V	-	-
Rated current	4 A	-	-
Volume resistance	≤ 3 mΩ	-	-
Material data			
Material contact / contact surface	CuZn / Au	- / -	- / -
Contact carrier material	PA 66	-	-
Inflammability class according to UL 94	V0	-	-
Temperature data			
Plug / socket	-25 ... 85	-	-

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
5-pos.					
1551464	20				

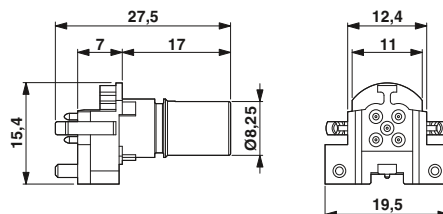
Accessories	
See page 258 onwards	



Technical data			
4-pos.		5-pos.	
General data			
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101	-
Pollution degree	3	3	-
Degree of protection	IP67	IP67	-
Connection method	Solder pins	Solder pins	-
Electrical data			
Rated voltage	250 V	60 V	-
Rated current	4 A	4 A	-
Volume resistance	≤ 3 mΩ	≤ 3 mΩ	-
Material data			
Material contact / contact surface	CuZn / Au	CuZn / Au	- / -
Contact carrier material	PA 66	PA 66	-
Inflammability class according to UL 94	V0	V0	-
Temperature data			
Plug / socket	-25 ... 85	-25 ... 85	-

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
4-pos.		5-pos.			
1551480	20				
		1551477	20		

Accessories	
See page 258 onwards	



M12 socket contact carrier, straight, 4, 5-pos.

M5 to M12 circular plug-in connectors

M12 sensor/actuator device plug-in connectors, rear mounting

Two-piece, for reflow processes,
tray packaging, tape-on-reel packing



Straight, 4, 5, 8-pos.



Straight, 12, 17-pos.



Technical data		
4-pos.	5-pos.	8-pos.
IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
3	3	3
IP67	IP67	IP67
THR solder connection	THR solder connection	THR solder connection
250 V	60 V	30 V
4 A	4 A	2 A
≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ
CuZn / Au	CuZn / Au	CuZn / Au
PPA	PPA	PPA
V0	V0	V0
-25 ... 85	-25 ... 85	-25 ... 85

Ordering data		
Order No.	Pcs. / Pkt.	Order No.
4-pos.	5-pos.	8-pos.
1439942	60	1551448
1437164	60	1552227
1457610	100	1457649
1457490	100	1457526

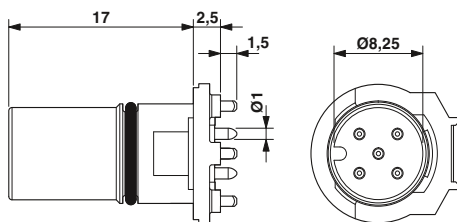
Accessories		
See page 258 onwards		



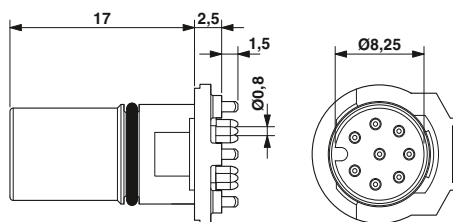
Technical data		
12-pos.	17-pos.	
IEC 61076-2-101	IEC 61076-2-101	-
3	3	-
IP67	IP67	-
THR solder connection	THR solder connection	-
30 V	30 V	-
1.5 A	1.5 A	-
≤ 3 mΩ	≤ 3 mΩ	-
CuZn / Au	CuZn / Au	- / -
PPA	PPA	-
V0	V0	-
-25 ... 85	-25 ... 85	-

Ordering data		
Order No.	Pcs. / Pkt.	Order No.
12-pos.	17-pos.	
1441970	60	1441998
1441985	60	1442007
1457694	100	1457717
1457571	100	1457597

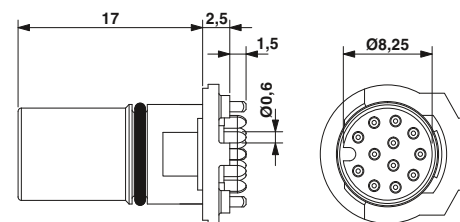
Accessories		
See page 258 onwards		



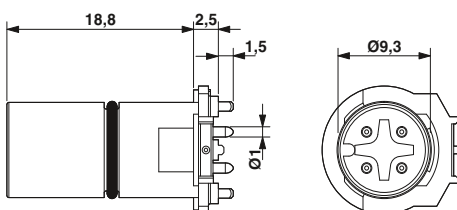
M12 socket contact carrier, straight, 4, 5-pos.



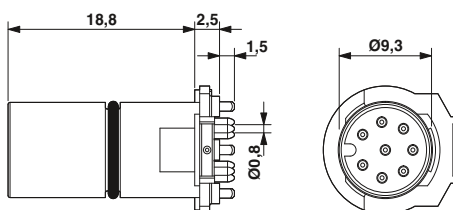
M12 socket contact carrier, straight, 8-pos.



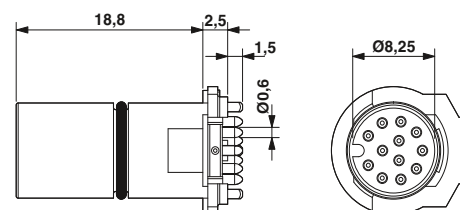
M12 socket contact carrier, straight, 12, 17-pos.



M12 plug contact carrier, straight, 4, 5-pos.



M12 plug contact carrier, straight, 8-pos.



M12 plug contact carrier, straight, 12, 17-pos.

M5 to M12 circular plug-in connectors

M12 sensor/actuator device plug-in connectors, rear mounting

Housing screw connections, screw versions

- For two-piece M12 device plug-in connectors



With O-ring



With flat gasket



Technical data

Material data
Material
Temperature data
Ambient temperature (operation)

Zinc die-cast (nickel-plated)
-25 °C ... 85 °C

Ordering data

Description
Housing screw connections, SPEEDCON screw versions for all two-piece THR and wave soldering contact carriers
Socket
Plug

Type	Order No.	Pcs. / Pkt.
SACC-M12-SCO NUT	1552243	60
SACC-M12-SCO PLUG	1551493	60

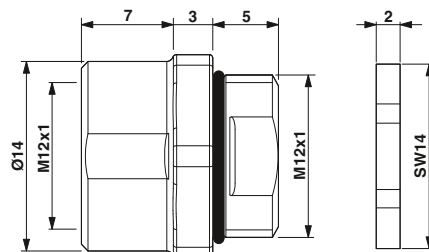


Technical data

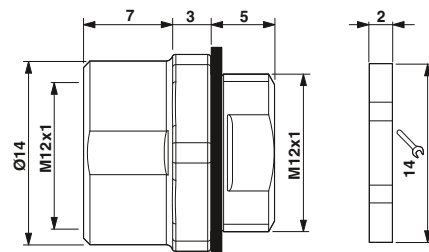
Zinc die-cast (nickel-plated)
-25 °C ... 85 °C

Ordering data

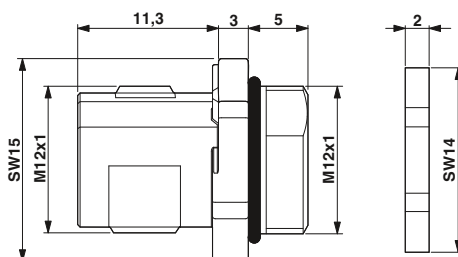
Type	Order No.	Pcs. / Pkt.
SACC-M12-SCO NUT L 90	1432460	10
SACC-M12-SCO PLUG L 90	1436709	10



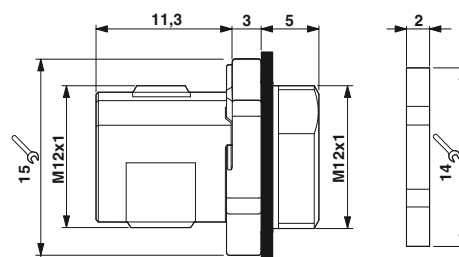
Socket housing screw connection, with O-ring



Socket housing screw connection, with flat gasket



Pin housing screw connection, with O-ring



Pin housing screw connection, with flat gasket

Housing screw connections, press-in versions

- For two-piece M12 device plug-in connectors



M12 socket



M12 pin



Technical data

Material data	
Material	CuZn (nickel-plated)
Temperature data	
Ambient temperature (operation)	-25 °C ... 85 °C

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Housing screw connection , for all two-piece THR and wave soldering contact carriers			
Socket	SACC-M12 NUT PRESS	1437889	10
Plug			

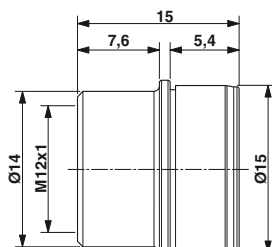


Technical data

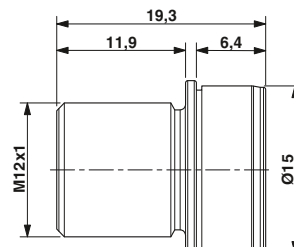
Material data	
Material	CuZn (nickel-plated)
Temperature data	
Ambient temperature (operation)	-25 °C ... 85 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
SACC-M12 PLUG PRESS	1437892	10



Socket housing screw connection



Pin housing screw connection

M12 sensor/actuator device plug-in connectors, rear mounting

EtherCAT

Sercos
the automation bus



Ethernet

**CAT6_A, X-coded**

CAT5/CAT5e

260 | PHOENIX CONTACT

M12 flush-type plug-in connector, solder connection

CAT6_A, X-coded

Ethernet



CAT5e, Y-coded

Technical data				Technical data			
SACC-DSI-FSX-8CON...				VS-08-DSIV-L180-HYB SCO			
Electrical data				30 V (Data)			
Nominal voltage U _N				0.5 A (Data) / 6 A (Power)			
Rated current				CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)			
Transmission characteristics (category)				CuZn			
Contact material				Zinc die-cast, nickel-plated			
Material of grip body				V0			
Inflammability class according to UL 94				8			
No. of pos.				≥ 100			
Insertion/withdrawal cycles				-40 ... 85			
Temperature data				Ordering data			
Plug / socket				Type			
[°C]				Order No.			
				Pcs. / Pkt.			
Description				Type			
Flush-type socket, CAT6 _A , Ethernet, one-piece, 8-pos., M12 SPEEDCON, with straight solder connection, rear/screw mounting with:				VS-08-DSIV-L180-HYB SCO			
M16 fastening thread				1456666			
Pg9 fastening thread				20			
Hybrid flush-type plug-in connector for the reflow soldering process, with straight solder connection, 4 x power contacts, 4 x signal contacts, rear mounting, SPEEDCON				SACC-DSI-FSY-8CON-M16-L180 SCO			
Socket				1407503			
Hybrid flush-type plug-in connector for the wave soldering process, with straight solder connection, 4 x power contacts, 4 x signal contacts, rear mounting, SPEEDCON				20			
Socket				SACC-CI-M12FSX-8CON-L90			
Contact carrier, two-piece, CAT6 _A , Ethernet, 8-pos., rear mounting, with angled solder connection				1424180			
20				Accessories			
Hybrid contact carrier, two-piece, Ethernet, 8-pos., rear/screw mounting, with angled solder connection				See page 258 onwards			
Housing screw connection, SPEEDCON, for all two-piece THR and wave soldering contact carriers				See page 258 onwards			

M5 to M12 circular plug-in connectors

M12 sensor/actuator device plug-in connectors, rear mounting

**M12, two-piece,
for wave soldering processes**

Ethernet

**PROFI
NET**



Straight, 4, 5, 8-pos.



Straight, shielded, 5-pos.



Technical data

General data	
M12 circular plug-in connector according to:	
Pollution degree	3
Degree of protection	IP67
Connection method	Solder pins
Electrical data	
Rated voltage	250 V
Rated current	4 A
Volume resistance	≤ 3 mΩ
Material data	
Material contact / contact surface	CuZn / Au
Contact carrier material	PA 66
Inflammability class according to UL 94	HB
Temperature data	
Plug / socket	[°C]

4-pos.	5-pos.	8-pos.
IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
3	3	3
IP67	IP67	IP67
Solder pins	Solder pins	Solder pins
250 V	60 V	30 V
4 A	4 A	2 A
≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ
CuZn / Au	CuZn / Au	CuZn / Au
PA 66	PA 66	PA 66
HB	HB	HB
-25 ... 85	-25 ... 85	-25 ... 85

Ordering data

Description	Coding
Flush-type plug-in connector, straight	
Socket	A - standard
Plug	A - standard
Socket	D - data
Socket	B - inverse
Plug	B - inverse

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
4-pos.		5-pos.		8-pos.	
		1694237	10	1556854	10
		1694211	10		
1534627	10	1515934	10		
		1514883	10		

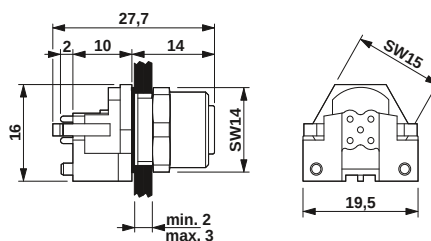


Technical data

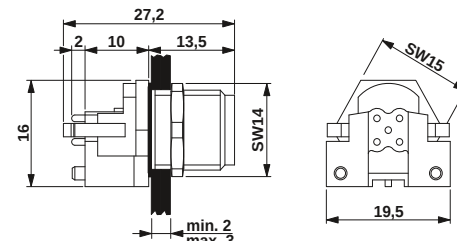
5-pos.		
IEC 61076-2-101	-	-
3	-	-
IP67	-	-
Solder pins	-	-
60 V	-	-
4 A	-	-
≤ 3 mΩ	-	-
CuZn / Au	- / -	- / -
PA 66	-	-
HB	-	-
-25 ... 85	-	-

Ordering data

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
5-pos.					
1437193	10				
1437180	10				
1437203	10				



M12 flush-type socket, straight,



M12 flush-type plug, straight,

Pg9 fastening thread, plastic



Solder connection, 5, 8-pos.



With 0.5 m long litz wires, 5, 8-pos.



Technical data		
	5-pos.	8-pos.
General data		
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101
Pollution degree	3	3
Degree of protection	IP67	IP67
Electrical data		
Rated voltage	60 V	30 V
Rated current	4 A	2 A
Volume resistance	≤ 3 mΩ	≤ 3 mΩ
Material data		
Material contact / contact surface	CuZn / Au	CuZn / Au
Contact carrier material	PA 66	PA 66
Inflammability class according to UL 94	HB	HB
Temperature data		
Plug / socket	[-25 ... 85 °C]	[-25 ... 85 °C]
Cable, fixed installation	[-25 ... 85 °C]	[-25 ... 85 °C]

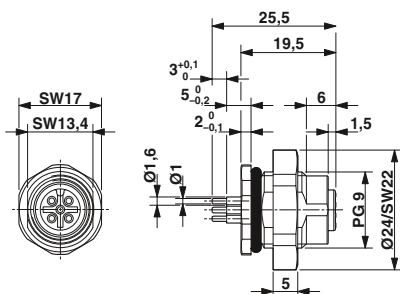
Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
5-pos.		8-pos.	
1436330	20	1436343	20
1436314	20	1436327	20



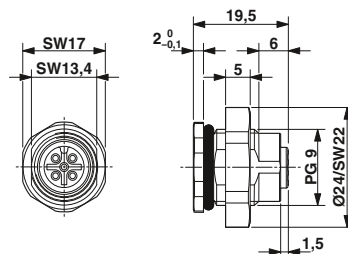
Technical data		
	5-pos.	8-pos.
General data		
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101
Pollution degree	3	3
Degree of protection	IP67	IP67
Electrical data		
Rated voltage	60 V	30 V
Rated current	4 A	2 A
Volume resistance	≤ 3 mΩ	≤ 3 mΩ
Material data		
Material contact / contact surface	CuZn / Au	CuZn / Au
Contact carrier material	PA 66	PA 66
Inflammability class according to UL 94	HB	HB
Temperature data		
Plug / socket	[-25 ... 85 °C]	[-25 ... 85 °C]
Cable, fixed installation	[-25 ... 85 °C]	[-25 ... 85 °C]

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
5-pos.		8-pos.	
1436356	1	1436369	1

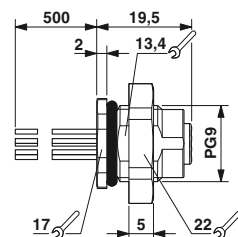
Description	Coding
Flush-type plug-in connector, with solder pins	
Socket	A - standard
Flush-type plug-in connector, with solder cups	
Socket	A - standard
Flush-type plug-in connector, with litz wires	
Socket	A - standard



M12, Pg9 fastening thread, solder pins



M12 socket, Pg9 fastening thread, solder cups



M12 socket, Pg9 fastening thread, with litz wires

M5 to M12 circular plug-in connectors

M12 sensor/actuator device plug-in connectors, rear mounting

Control cabinet feed-through



4, 5, 8-pos.

		Technical data						
		4-pos.	5-pos.		8-pos.			
General data								
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101		IEC 61076-2-101			
Pollution degree		3	3		3			
Degree of protection		IP67	IP67		IP67			
Electrical data								
Rated voltage		60 V	24 V		24 V			
Rated current		4 A	4 A		1.5 A			
Volume resistance		≤ 3 mΩ	≤ 3 mΩ		≤ 3 mΩ			
Material data								
Contact material		CuZn	CuZn		CuZn			
Contact surface material		Au	Au		Au			
Contact carrier material		PA 66	PA 66		PA 66			
Inflammability class according to UL 94		HB	HB		HB			
Temperature data								
Plug / socket		-25 ... 85	-25 ... 85		-25 ... 85			
		[°C]						
Ordering data								
Description		Coding	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
Control cabinet feed-through, M16 fastening thread			4-pos.	5-pos.		8-pos.		
Plug on socket			A - standard		1551671	1	1551697	1
Plug on socket			B - inverse		1551684	1		
Socket to socket			D - data	1424326	1			

Control cabinet feed-through, socket to socket on both sides

Control cabinet feed-through, socket to pin on both sides

**Front mounting,
Pg13.5 fastening thread,
with 0.5 m long litz wires**

Notes:

Flat nut recommended for housing wall thicknesses < 2.5 mm.



3, 4-pos.



5-pos.


Technical data

General data	
Pollution degree	3
Degree of protection	IP67
Connection method	Individual wires
Electrical data	
Rated voltage	250 V
Rated current	12 A
Volume resistance	≤ 5 mΩ
Surge voltage category	II
Material data	
Material contact / contact surface	CuZn / Au
Contact carrier material	PUR
Inflammability class according to UL 94	HB
Cable type	PVC litz wire
Temperature data	
Plug / socket	[°C] -40 ... 85
Cable, fixed installation	[°C] -40 ... 85

Ordering data

Description	Coding
Device plug-in connectors	
Socket	A - standard
Plug	A - standard

Accessories

Flat nut, with:
Pg13.5 thread

SACC-E-MU-PG13,5	1539143	100
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Technical data

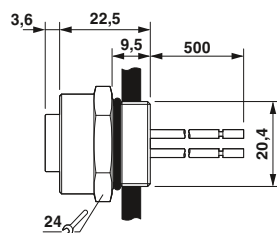
General data	
Pollution degree	3
Degree of protection	IP67
Connection method	Individual wires
Electrical data	
Rated voltage	250 V
Rated current	9 A
Volume resistance	≤ 5 mΩ
Surge voltage category	II
Material data	
Material contact / contact surface	CuZn / Au
Contact carrier material	PUR
Inflammability class according to UL 94	HB
Cable type	PVC litz wire
Temperature data	
Plug / socket	[°C] -40 ... 85
Cable, fixed installation	[°C] -40 ... 85

Ordering data

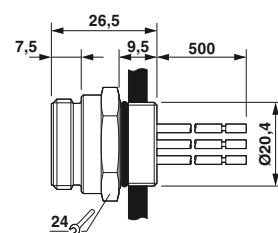
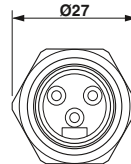
Description	Coding
Device plug-in connectors	
Socket	A - standard
Plug	A - standard

Accessories

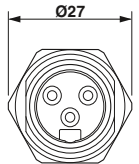
SACC-E-MU-PG13,5	1539143	100
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7/8" flush-type socket



7/8" flush-type plug



M5 to M12 circular plug-in connectors

7/8" sensor/actuator device plug-in connectors, rear mounting

7/8", with 1.0 m long litz wires



3, 4, 5-pos.



3, 4, 5-pos.



Technical data			
	3-pos.	4-pos.	5-pos.
General data			
Pollution degree	3	3	3
Degree of protection	IP67	IP67	IP67
Connection method	Individual wires	Individual wires	Individual wires
Electrical data			
Rated voltage	250 V	250 V	250 V
Rated current	12 A	9 A	9 A
Volume resistance	≤ 5 mΩ	≤ 5 mΩ	≤ 5 mΩ
Surge voltage category	II	II	II
Material data			
Contact material	CuZn	CuZn	CuZn
Contact surface material	Au	Au	Au
Contact carrier material	PUR	PUR	PUR
Inflammability class according to UL 94	HB	HB	HB
Temperature data			
Plug / socket	[-40 ... 85	[-40 ... 85	[-40 ... 85
Cable, fixed installation	[-40 ... 85	[-40 ... 85	[-40 ... 85



Technical data			
	3-pos.	4-pos.	5-pos.
General data			
Pollution degree	3	3	3
Degree of protection	IP67	IP67	IP67
Connection method	Individual wires	Individual wires	Individual wires
Electrical data			
Rated voltage	250 V	250 V	250 V
Rated current	12 A	9 A	9 A
Volume resistance	≤ 5 mΩ	≤ 5 mΩ	≤ 5 mΩ
Surge voltage category	II	II	II
Material data			
Contact material	CuZn	CuZn	CuZn
Contact surface material	Au	Au	Au
Contact carrier material	PUR	PUR	PUR
Inflammability class according to UL 94	HB	HB	HB
Temperature data			
Plug / socket	[-40 ... 85	[-40 ... 85	[-40 ... 85
Cable, fixed installation	[-40 ... 85	[-40 ... 85	[-40 ... 85

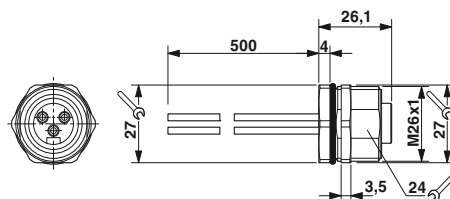
Ordering data

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
3-pos.		4-pos.		5-pos.	
1453782	1	1453795	1	1453805	1

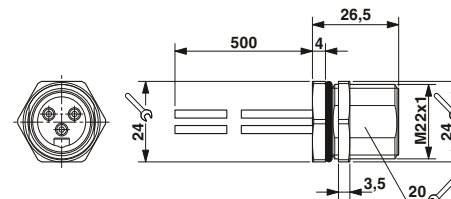
Ordering data

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
3-pos.		4-pos.		5-pos.	
1453753	1	1453766	1	1453799	1

Description	
Flush-type plug-in connector, M26 fastening thread	
Socket	
Flush-type plug-in connector, 7/8" fastening thread	
Plug	



7/8" flush-type socket



7/8" flush-type plug

7/8" rear mounting,
for wave soldering processes



3, 4, 5-pos.



3, 4, 5-pos.



Technical data			
	3-pos.	4-pos.	5-pos.
General data			
Pollution degree	3	3	3
Degree of protection	IP67	IP67	IP67
Connection method	Solder pins	Solder pins	Solder pins
Electrical data			
Rated voltage	250 V	250 V	250 V
Rated current	12 A	9 A	9 A
Volume resistance	≤ 5 mΩ	≤ 5 mΩ	≤ 5 mΩ
Surge voltage category	II	II	II
Material data			
Contact material	CuZn	CuZn	CuZn
Contact surface material	Au	Au	Au
Contact carrier material	PUR	PUR	PUR
Inflammability class according to UL 94	HB	HB	HB
Temperature data			
Plug / socket	-40 ... 85	-40 ... 85	-40 ... 85

Ordering data					
Order No.		Pcs. / Pkt.		Order No.	
3-pos.		4-pos.		5-pos.	

1457830		1		1457843	
1457775		1			

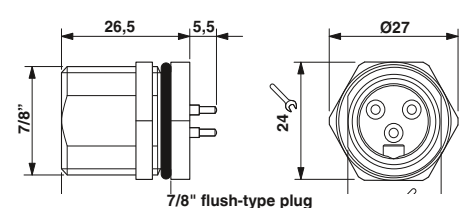
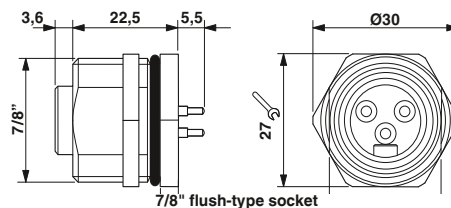


Technical data			
	3-pos.	4-pos.	5-pos.
General data			
Pollution degree	3	3	3
Degree of protection	IP67	IP67	IP67
Connection method	Solder pins	Solder pins	Solder pins
Electrical data			
Rated voltage	250 V	250 V	250 V
Rated current	12 A	9 A	9 A
Volume resistance	≤ 5 mΩ	≤ 5 mΩ	≤ 5 mΩ
Surge voltage category	II	II	II
Material data			
Contact material	CuZn	CuZn	CuZn
Contact surface material	Au	Au	Au
Contact carrier material	PUR	PUR	PUR
Inflammability class according to UL 94	HB	HB	HB
Temperature data			
Plug / socket	-40 ... 85	-40 ... 85	-40 ... 85

Ordering data					
Order No.		Pcs. / Pkt.		Order No.	
3-pos.		4-pos.		5-pos.	

1455007		1		1455010	
1457487		1			

Description	Coding
Flush-type plug-in connector, M26 fastening thread	
Socket	A - standard
Flush-type plug-in connector, 7/8" fastening thread	
Plug	A - standard



M5 to M12 circular plug-in connectors

M12 sensor/actuator device plug-in connectors, stainless steel versions

**Front mounting,
Pg9/M16 fastening thread,
with 0.5 m long litz wires**

– Housing material, stainless steel 1.4404



4, 5, 8-pos.



Can be positioned, 4, 5, 8-pos.



Technical data			
	4-pos.	5-pos.	8-pos.
General data			
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
Pollution degree	3	3	3
Degree of protection	IP67/IP69K	IP67/IP69K	IP67/IP69K
Connection method	Individual wires	Individual wires	Individual wires
Electrical data			
Rated voltage	250 V	60 V	30 V
Rated current	4 A	4 A	2 A
Volume resistance	≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ
Material data			
Material contact / contact surface	CuZn / Au	CuZn / Au	CuZn / Au
Contact carrier material	PA66 GF	PA66 GF	PA66 GF
Inflammability class according to UL 94	V0	V0	V0
Cable type	TPE litz wire	TPE litz wire	TPE litz wire
Temperature data			
Plug / socket	-25 ... 85	-25 ... 85	-25 ... 85

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
4-pos.		5-pos.		8-pos.	

Description	Coding
-------------	--------

Device plug-in connector, Pg9 fastening thread

Socket	A - standard
Plug	A - standard

Device plug-in connector, M16 fastening thread

Socket	A - standard
Plug	A - standard

1555448	1	1699863	1	1554607	1
1554555	1	1554568	1	1554571	1

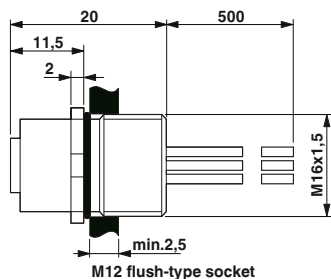
1458855	1	1458871	1	1458842	1
1405233	1	1458868	1	1405221	1



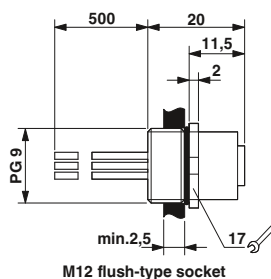
Technical data			
	4-pos.	5-pos.	8-pos.
General data			
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
Pollution degree	3	3	3
Degree of protection	IP67/IP69K	IP67/IP69K	IP67/IP69K
Connection method	Individual wires	Individual wires	Individual wires
Electrical data			
Rated voltage	250 V	60 V	30 V
Rated current	4 A	4 A	2 A
Volume resistance	≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ
Material data			
Material contact / contact surface	CuZn / Au	CuZn / Au	CuZn / Au
Contact carrier material	PA66 GF	PA66 GF	PA66 GF
Inflammability class according to UL 94	V0	V0	V0
Cable type	TPE litz wire	TPE litz wire	TPE litz wire
Temperature data			
Plug / socket	-25 ... 85	-25 ... 85	-25 ... 85

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
4-pos.		5-pos.		8-pos.	

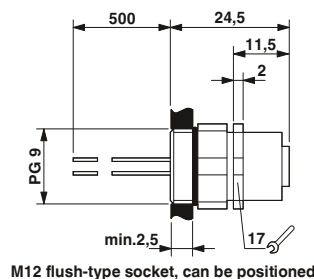
1554649	1	1554652	1	1554665	1
1554610	1	1554623	1	1554636	1



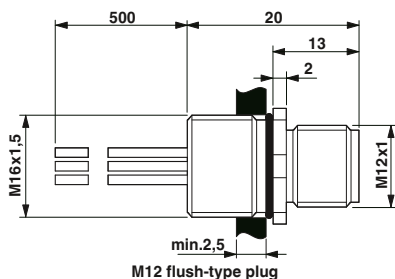
M12 flush-type socket



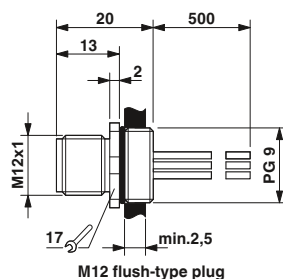
M12 flush-type socket



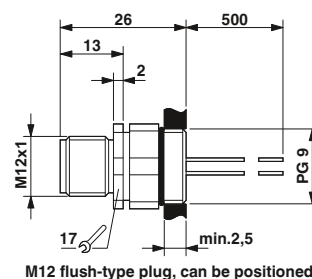
M12 flush-type socket, can be positioned



M12 flush-type plug



M12 flush-type plug



M12 flush-type plug, can be positioned

**Front mounting,
M20 fastening thread,
with 0.5 m long litz wires**

– Housing material, stainless steel 1.4404



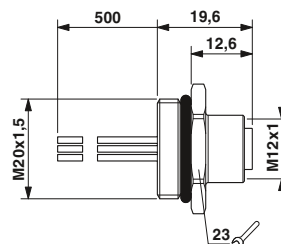
4, 5, 8-pos.

Technical data

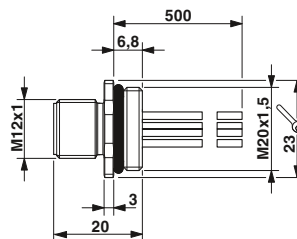
	4-pos.	5-pos.	8-pos.
General data			
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
Pollution degree	3	3	3
Degree of protection	IP67/IP69K	IP67/IP69K	IP67/IP69K
Connection method	Individual wires	Individual wires	Individual wires
Electrical data			
Rated voltage	250 V	60 V	30 V
Rated current	4 A	4 A	2 A
Volume resistance	$\leq 3 \text{ m}\Omega$	$\leq 3 \text{ m}\Omega$	$\leq 3 \text{ m}\Omega$
Material data			
Material contact / contact surface	CuZn / Au	CuZn / Au	CuZn / Au
Contact carrier material	PA 66	PA 66	PA 66
Inflammability class according to UL 94	V0	V0	V0
Cable type	TPE litz wire	TPE litz wire	TPE litz wire
Temperature data			
Plug / socket	-25 ... 85	-25 ... 85	-25 ... 85

Ordering data

Description	Coding	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		4-pos.		5-pos.		8-pos.	
Device plug-in connectors							
Socket	A - standard	1408416	1	1452071	1	1452110	1
Plug	A - standard	1408415	1	1452068	1	1452107	1
Socket	B - inverse			1452097	1		
Plug	B - inverse			1452084	1		



M12 flush-type socket



M12 flush-type plug

M5 to M12 circular plug-in connectors

M12 sensor/actuator device plug-in connectors, stainless steel versions

Device plug-in connector, rear mounting

– Housing material, stainless steel 1.4404



With 0.5 m long litz wires, 4, 5, 8-pos.



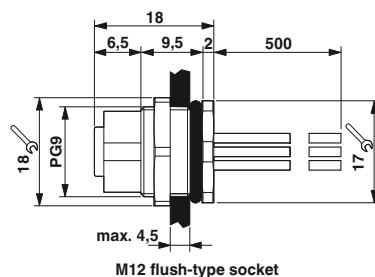
For wave soldering processes, 4, 5, 8-pos.



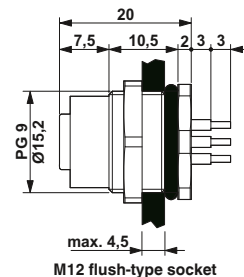
	Technical data		
	4-pos.	5-pos.	8-pos.
General data			
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
Pollution degree	3	3	3
Degree of protection	IP67/IP69K	IP67/IP69K	IP67/IP69K
Connection method	Individual wires	Individual wires	Individual wires
Electrical data			
Rated voltage	250 V	60 V	30 V
Rated current	4 A	4 A	2 A
Volume resistance	$\leq 3 \text{ m}\Omega$	$\leq 3 \text{ m}\Omega$	$\leq 3 \text{ m}\Omega$
Material data			
Material contact / contact surface	CuZn / Au	CuZn / Au	CuZn / Au
Contact carrier material	PA 66	PA 66	PA 66
Inflammability class according to UL 94	V0	V0	V0
Cable type	TPE litz wire	TPE litz wire	TPE litz wire
Temperature data			
Plug / socket	-25 ... 85	-25 ... 85	-25 ... 85
	Ordering data		
	Order No.	Pcs. / Pkt.	Order No.
	4-pos.	5-pos.	8-pos.
Device plug-in connectors			
Socket	1405240	1	1554717
Plug	1405239	1	1554681



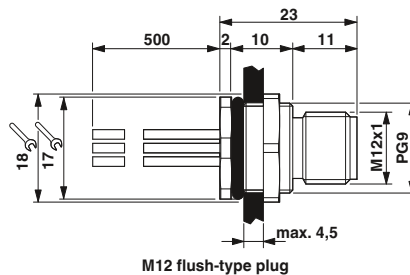
	Technical data		
	4-pos.	5-pos.	8-pos.
General data			
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
Pollution degree	3	3	3
Degree of protection	IP67/IP69K	IP67/IP69K	IP67/IP69K
Connection method	Solder pins	Solder pins	Solder pins
Electrical data			
Rated voltage	250 V	60 V	30 V
Rated current	4 A	4 A	2 A
Volume resistance	$\leq 3 \text{ m}\Omega$	$\leq 3 \text{ m}\Omega$	$\leq 3 \text{ m}\Omega$
Material data			
Material contact / contact surface	CuZn / Au	CuZn / Au	CuZn / Au
Contact carrier material	PA 66	PA 66	PA 66
Inflammability class according to UL 94	V0	V0	V0
Cable type	-	-	-
Temperature data			
Plug / socket	-25 ... 85	-25 ... 85	-25 ... 85
	Ordering data		
	Order No.	Pcs. / Pkt.	Order No.
	4-pos.	5-pos.	8-pos.
Device plug-in connectors			
Socket	1404974	20	1554733
Plug	1404979	20	1554746



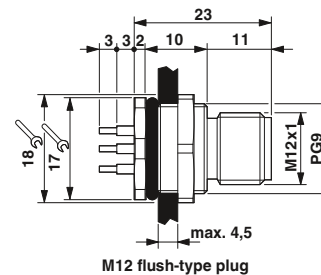
M12 flush-type socket



M12 flush-type socket



M12 flush-type plug



M12 flush-type plug

M5 to M12 circular plug-in connectors

Sensor/actuator plug-in connectors for assembly

M8, insulation displacement connection



0.08 mm² - 0.25 mm², 3, 4-pos.



0.25 mm² - 0.5 mm², 3, 4-pos.



Technical data

	3-pos.	4-pos.
General data		
M8 circular plug-in connector according to:	IEC 61076-2-104	
Pollution degree	3	
Degree of protection	IP65/67	
Connection method	Insulation displacement connection	
Cable diameter	2.5 mm ... 5 mm ± 0.2 mm	
Electrical data		
Rated voltage	60 V	30 V
Rated current	4 A	
Volume resistance	≤ 5 mΩ	
Insulation resistance	≥ 100 MΩ	
Material data		
Material contact / contact surface	CuSn / Ni/Au	
Contact carrier material	TPU GF	
Inflammability class according to UL 94	HB	
Temperature data		
Plug / socket	-25 ... 80	

[°C]

Ordering data

Description	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	3-pos.		4-pos.	
Plug-in connector				
Socket, straight	1441040	1	1441053	1
Plug, straight	1441008	1	1441011	1



Technical data

	3-pos.	4-pos.
General data		
M8 circular plug-in connector according to:	IEC 61076-2-104	
Pollution degree	3	
Degree of protection	IP65/67	
Connection method	Insulation displacement connection	
Cable diameter	2.5 mm ... 5 mm ± 0.2 mm	
Electrical data		
Rated voltage	60 V	30 V
Rated current	4 A	
Volume resistance	≤ 5 mΩ	
Insulation resistance	≥ 100 MΩ	
Material data		
Material contact / contact surface	CuSn / Ni/Au	
Contact carrier material	TPU GF	
Inflammability class according to UL 94	HB	
Temperature data		
Plug / socket	-25 ... 80	

Ordering data

Description	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	3-pos.		4-pos.	
Plug-in connector				
Socket, straight	1441066	1	1441079	1
Plug, straight	1441024	1	1441037	1

M8, screw connections



Unshielded, 3, 4-pos.



Shielded, 3, 4-pos.



Technical data	
3-pos.	4-pos.
IEC 61076-2-104	
3	
IP67	
Screw connection	
3.5 mm ... 5 mm	
0.14 mm ² ... 0.5 mm ²	
60 V	30 V
4 A	
≤ 3 mΩ	
≥ 100 MΩ	
CuZn / Au	
PA	
HB	
-40 ... 85	

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
3-pos.		4-pos.	
1506888	1	1506891	1
1501252	1	1501265	1
1407582	1	1407584	1
1407583	1	1407585	1

Accessories			
Pressure screw and seal, for cable diameters:			
2.5 mm ... 3.5 mm	SACC-M 8-SET/2,2-3,5	1436945	5



Technical data	
3-pos.	4-pos.
IEC 61076-2-104	
3	
IP67	
Screw connection	
3.5 mm ... 5.5 mm	
0.14 mm ² ... 0.5 mm ²	
60 V	30 V
4 A	
≤ 3 mΩ	
≥ 100 MΩ	
CuSn / Au	
PUR / PA66	
HB	
-40 ... 85	

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
3-pos.		4-pos.	
1542907	1	1542910	1
1542884	1	1542897	1

Accessories			
Pressure screw and seal, for cable diameters:			
2.5 mm ... 3.5 mm	SACC-M 8-SET/2,2-3,5	1436945	5

M5 to M12 circular plug-in connectors

Sensor/actuator plug-in connectors for assembly

M8, solder connection



Unshielded, 3, 4-pos.



Shielded, 3, 4-pos.



Technical data			
3-pos.		4-pos.	
IEC 61076-2-104			
3			
IP67			
Solder connection			
3.5 mm ... 5 mm			
0.08 mm² ... 0.25 mm²			
60 V		30 V	
4 A			
≤ 3 mΩ			
≥ 100 MΩ			
CuSn / Au			
PUR / PA66			
V0			
-40 ... 85			
Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
3-pos.		4-pos.	
1529399	1	1513444	1
1699902	1	1554209	1
1681172	1	1681185	1
1681156	1	1681169	1
Accessories			
SACC-M 8-SET/2,2-3,5		1436945	5



Technical data			
3-pos.		4-pos.	
IEC 61076-2-104			
3			
IP67			
Solder connection			
3.5 mm ... 5 mm			
0.08 mm² ... 0.25 mm²			
60 V		30 V	
4 A			
≤ 3 mΩ			
≥ 100 MΩ			
CuSn / Au			
PUR / PA66			
HB			
-40 ... 85			
Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
3-pos.		4-pos.	
1436479	1	1436482	1
1436453	1	1436466	1
1506927	1	1506930	1
1506901	1	1506914	1
Accessories			

M12, solder and Piercecon® connection



Solder connection, 12-pos.



Piercecon® connection, 12, 17-pos.



		Technical data				Technical data				
		Unshielded		Shielded		12-pos.		17-pos.		
General data										
M12 circular plug-in connector according to:		IEC 61076-2-101				IEC 61076-2-101				
Pollution degree		3				3				
Degree of protection		IP67				IP67				
Connection method		Solder connection				Piercecon® fast connection				
Cable diameter		6 mm ... 8 mm				5.4 mm ... 8.2 mm				
Electrical data										
Rated voltage		30 V				30 V				
Rated current		1 A				1.5 A				
Volume resistance		≤ 3 mΩ				≤ 5 mΩ				
Insulation resistance		> 10 GΩ				≥ 100 MΩ				
Material data										
Material contact / contact surface		CuSn / Au				CuZn / Ni/Au				
Contact carrier material		PA				PA				
Inflammability class according to UL 94		-				V0				
Temperature data										
Plug / socket		-25 ... 85				-25 ... 85				
		Ordering data				Ordering data				
Description		Coding	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
			Unshielded		Shielded		12-pos.		17-pos.	
Plug-in connector										
Socket, straight		A - standard	1404420	1	1404411	1	1559631	1	1559644	1
Plug, straight		A - standard	1404419	1	1404410	1	1559592	1	1559602	1
Socket, angled		A - standard	1404423	1	1404413	1				
Plug, angled		A - standard	1404421	1	1404412	1				

M5 to M12 circular plug-in connectors

Sensor/actuator plug-in connectors for assembly

M12 plug-in connector, for assembly

Ethernet



M12 plug-in connector, 10 Gbps, Piercecon® connection

Ethernet



M12 plug-in connector, 100 Mbps, screw connection



Technical data

VS-08-M12...-10G-P SCO

Electrical data
Nominal voltage U_N
Rated current
Transmission characteristics (category)
Material contact / contact surface
Material of grip body
Inflammability class according to UL 94
No. of pos.
Connection method
Connection cross section AWG
Insertion/withdrawal cycles
Temperature data
Ambient temperature (operation)

48 V
0.5 A
CAT6 _A
CuSn / Ni/Au
Zinc die-cast, nickel-plated
V0
8
Piercecon®
26
≥ 100

-40 °C ... 85 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
VS-08-M12MS-10G-P SCO	1417430	1
VS-08-M12MR-10G-P SCO	1417443	1

Accessories

VS-CABLE-STRIP-VARIO	1657407	1
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Technical data

SACC-M12MSD-4CON-...-SH

60 V
4 A
CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
CuZn / Au
Zinc die-cast, nickel-plated
HB
4
Screw connection
24 ... 18
≥ 100

-40 °C ... 85 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
SACC-M12MSD-4CON-PG 7-SH	1521258	1
SACC-M12MSD-4CON-PG 9-SH	1521261	1

Accessories

VS-CABLE-STRIP-VARIO	1657407	1
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Description
Plug-in connector, CAT6 _A , plug, 8-pos., shielded, X-coded, cable diameter: 4 mm ... 8 mm
Straight
Angled
Plug-in connector, Pg7 screw connection, 4-pos., D-coded, cable diameter: 4 mm ... 6 mm
Plug, straight
Plug-in connector, Pg9 screw connection, 4-pos., D-coded, cable diameter: 4 mm ... 8 mm
Plug, straight

Stripping tool, for multiple-stage repositioning of shielded conductors

M5 to M12 circular plug-in connectors

Sensor/actuator plug-in connectors for assembly

M12, insulation displacement connection



0.14 mm² ... 0.34 mm²



0.34 mm² ... 0.75 mm²



Technical data

4-pos.

General data	
M12 circular plug-in connector according to:	IEC 61076-2-101
Pollution degree	3
Degree of protection	IP65/67
Connection method	Insulation displacement connection
Cable diameter	3.5 mm ... 6 mm
Electrical data	
Rated voltage	125 V
Rated current	4 A
Volume resistance	≤ 5 mΩ
Insulation resistance	≥ 100 MΩ
Material data	
Material contact / contact surface	CuSn / Ni/Au
Contact carrier material	TPU
Inflammability class according to UL 94	V0
Temperature data	
Plug / socket	[-25 ... 80 °C]

Ordering data

Description	Coding	Type	Order No.	Pcs. / Pkt.
Plug-in connector , with plastic knurl				
Socket, straight	A - standard	SACC-M12FS-4QO-0,34	1641701	1
Plug, straight	A - standard	SACC-M12MS-4QO-0,34	1641714	1
Plug-in connector , with metal knurl, SPEEDCON				
Socket, straight	A - standard	SACC-FS-4QO-0,34-M SCO	1521588	1
Plug, straight	A - standard	SACC-MS-4QO-0,34-M SCO	1521575	1
Plug-in connector , with metal knurl				
Socket, straight	A - standard	SACC-M12FS-4QO-0,34-M	1641688	1
Plug, straight	A - standard	SACC-M12MS-4QO-0,34-M	1641691	1
Plug-in connector , with stainless steel knurl				
Socket, straight	A - standard	SACC-M12FS-4QO-0,34-VA	1440766	1
Plug, straight	A - standard	SACC-M12MS-4QO-0,34-VA	1440753	1



Technical data

4-pos.

IEC 61076-2-101
3
IP65/67
Insulation displacement connection
4 mm ... 8 mm
250 V
4 A
≤ 5 mΩ
≥ 100 MΩ
CuSn / Ni/Au
TPU
V0
[-25 ... 80 °C]

Ordering data

Type	Order No.	Pcs. / Pkt.
SACC-M12FS-4QO-0,75	1641756	1
SACC-M12MS-4QO-0,75	1641769	1
SACC-FS-4QO-0,75-M SCO	1521601	1
SACC-MS-4QO-0,75-M SCO	1521591	1
SACC-M12FS-4QO-0,75-M	1641772	1
SACC-M12MS-4QO-0,75-M	1641785	1
SACC-M12FS-4QO-0,75-VA	1440782	1
SACC-M12MS-4QO-0,75-VA	1440779	1

M12, spring-cage connections



Unshielded, 4, 5-pos.



Shielded, 4, 5-pos.



Technical data		
	4-pos.	5-pos.
General data	IEC 61076-2-101	
M12 circular plug-in connector according to:	3	
Pollution degree	IP67	
Degree of protection	Spring-cage conn.	
Connection method	4 mm ... 8 mm	
Cable diameter	0.14 mm ² ... 0.5 mm ²	
Connection cross section [mm ²]		
Electrical data		
Rated voltage	250 V	60 V
Rated current	4 A	
Volume resistance	≤ 8 mΩ	
Insulation resistance	≥ 100 MΩ	
Material data		
Material contact / contact surface	CuSn / Ni/Au	
Contact carrier material	TPU	
Inflammability class according to UL 94	V0	
Temperature data		
Plug / socket	-40 ... 85	

Ordering data			
4-pos.		5-pos.	
Description	Coding	Order No.	Pcs. / Pkt.
Plug-in connector , terminal marking: standard color coding and numbering			
Socket, angled	A - standard	1432622	1
Plug, angled	A - standard	1432606	1
Socket, straight	A - standard	1432619	1
Plug, straight	A - standard	1432635	1



Technical data		
	4-pos.	5-pos.
General data	IEC 61076-2-101	
M12 circular plug-in connector according to:	3	
Pollution degree	IP67	
Degree of protection	Spring-cage conn.	
Connection method	4 mm ... 8 mm	
Cable diameter	0.14 mm ² ... 0.5 mm ²	
Connection cross section [mm ²]		
Electrical data		
Rated voltage	60 V	
Rated current	4 A	
Volume resistance	≤ 8 mΩ	
Insulation resistance	≥ 100 MΩ	
Material data		
Material contact / contact surface	CuSn / Ni/Au	
Contact carrier material	TPU	
Inflammability class according to UL 94	V0	
Temperature data		
Plug / socket	-40 ... 85	

Ordering data			
4-pos.		5-pos.	
Description	Coding	Order No.	Pcs. / Pkt.
Plug-in connector , terminal marking: standard color coding and numbering			
Socket, angled	A - standard	1432758	1
Plug, angled	A - standard	1432732	1
Socket, straight	A - standard	1432745	1
Plug, straight	A - standard	1432729	1



Metal knurl, 4, 5, 8-pos.



Metal knurl, 4, 5-pos., with SKINTOP® screw connection



Stainless steel knurl, 4, 5-pos.



Technical data		
4-pos.	5-pos.	8-pos.
IEC 61076-2-101		
3		
IP67		
Screw connection		
0.25 mm² ... 0.75 mm²	0.25 mm² ... 0.5 mm²	
250 V	60 V	30 V
4 A		2 A
≤ 8 mΩ		≤ 3 mΩ
	≥ 100 MΩ	
CuZn / CuSnZn		CuZn / Au
PA 66		
HB		
-40 ... 85		

Technical data		
4-pos.	5-pos.	
IEC 61076-2-101		
3		
IP67		
Screw connection		
0.25 mm² ... 0.75 mm²	- ... -	
250 V	125 V	-
4 A		-
≤ 8 mΩ		-
≥ 100 MΩ		-
CuZn / CuSnZn		- / -
PA 66		-
HB		-
-20 ... 80		

Technical data		
4-pos.	5-pos.	
IEC 61076-2-101		
3		
IP67/IP69K		
Screw connection		
0.25 mm² ... 0.75 mm²	- ... -	
250 V	60 V	-
4 A		-
≤ 3 mΩ		-
≥ 100 MΩ		-
CuZn / Au		- / -
PA 66		-
V0		-
-40 ... 85		

Ordering data		
Order No.	Pcs. / Pkt.	Order No.
4-pos.	5-pos.	8-pos.
1681143	1	1662984
1681101	1	1663129
1681127	1	1662968
1662528	1	1663116
	1681499	1
	1681473	1
	1681486	1
	1681460	1
		1513347
		1513334

Ordering data		
Order No.	Pcs. / Pkt.	Order No.
4-pos.	5-pos.	
1430381	1	1559000
1556870	1	1456466
	1556812	1
	1561742	1
	1556838	1
	1556825	1

Ordering data		
Order No.	Pcs. / Pkt.	Order No.
4-pos.	5-pos.	
1553284	1	1553297
1553200	1	1553213
1553242	1	1553255
1553161	1	1553187
	1553307	1
1553226	1	1553239
1553268	1	1553271
1553174	1	1553190

1404416	1	1404418	1
1404415	1	1404417	1

Accessories		
SACC-M12-SET/2,5-3,5	1436505	5

Accessories		

Accessories		

M5 to M12 circular plug-in connectors

Sensor/actuator plug-in connectors for assembly

M12, screw connection, shielded



Zinc die-cast housing, 4, 5, 8-pos.



Stainless steel housing, 5-pos.



Technical data			
	4-pos.	5-pos.	8-pos.
General data			
M12 circular plug-in connector according to:		IEC 61076-2-101	
Pollution degree		3	
Degree of protection		IP67	
Connection method		Screw connection	
Connection cross section [mm²]		0.25 mm² ... 0.75 mm²	
Electrical data			
Rated voltage		60 V	30 V
Rated current		4 A	2 A
Volume resistance		≤ 3 mΩ	
Insulation resistance		≥ 100 MΩ	
Material data			
Material contact / contact surface		CuZn / Au	
Contact carrier material		PA 66	
Inflammability class according to UL 94		HB	
Temperature data			
Plug / socket		-40 ... 85	

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
4-pos.		5-pos.		8-pos.	
1694279	1	1693429	1		
1694295	1	1694305	1		
1693830	1	1693416	1		
		1430433	1		
		1694282	1		
1515170	1	1694318	1	1511860	1
1501540	1	1694266	1	1511857	1
		1508365	1		
		1508352	1		



Technical data			
	5-pos.		
General data			
IEC 61076-2-101			-
3			-
IP67/IP69K			-
Screw connection			-
0.25 mm² ... 0.75 mm²			- ... -
Electrical data			
60 V			-
4 A			-
≤ 3 mΩ			-
≥ 100 MΩ			-
Material data			
CuZn / Au			- / -
PA 66			-
V0			-
Temperature data			
-40 ... 85			-

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
5-pos.					
1440038	1				
1440012	1				
1440041	1				
1440025	1				

**M12, power plug-in connector,
screw connection**



Metal knurl, 3-pos. + PE, S-coded



Metal knurl, 4-pos., T-coded

	Technical data			Technical data		
General data	3-pos. + PE			4-pos.		
Pollution degree	3			3		
Degree of protection	IP67			IP67		
Connection method	Screw connection			Screw connection		
Connection cross section [mm ²]	0.75 mm ² ... 1.5 mm ²			0.75 mm ² ... 1.5 mm ²		
Electrical data						
Rated voltage	630 V			60 V		
Rated current	12 A			12 A		
Volume resistance	≤ 3 mΩ			≤ 3 mΩ		
Insulation resistance	> 10 GΩ			> 10 GΩ		
Material data						
Material contact / contact surface	CuZn / Au			CuZn / Au		
Contact carrier material	PA 46			PA 46		
Inflammability class according to UL 94	V0			V0		
Temperature data						
Plug / socket	-40 ... 85			-40 ... 85		
	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Plug-in connector, with Pg11 screw connection, cable diameter: 8 mm ... 10 mm						
Socket, straight	SACC-M12FSS-3PECON-PG11-M	1404642	1	SACC-M12FST-3PECON-PG11-M	1404644	1
Plug, straight	SACC-M12MSS-3PECON-PG11-M	1404641	1	SACC-M12MST-3PECON-PG11-M	1404643	1

M5 to M12 circular plug-in connectors

Sensor/actuator plug-in connectors for assembly

M12, DUO plug-in connector, screw connection

Notes:

SPEEDCON and plastic knurls without key areas.



Metal knurl, 4, 5-pos.



SPEEDCON metal knurl/plastic knurl, 5 pos.



Technical data

4-pos.

5-pos.

General data

M12 circular plug-in connector according to:

Pollution degree

Degree of protection

Connection method

Connection cross section [mm²]

Electrical data

Rated voltage

Rated current

Volume resistance

Insulation resistance

Material data

Material contact / contact surface

Contact carrier material

Inflammability class according to UL 94

Temperature data

Plug / socket

[°C]

Ordering data

Description

Coding

Plug-in connector, with Pg11 DUO screw connection, cable diameter: 2 x 3 mm ... 5.2 mm

Socket, straight

Plug, straight

Plug, angled

A - standard

A - standard

A - standard

Order No.

Pcs. / Pkt.

Order No.

Pcs. / Pkt.

4-pos.

5-pos.

1507052

1

1662748

1



Technical data

Metal knurl, SPEEDCON, 5-pos.

Plastic knurl, 5-pos.

IEC 61076-2-101

3

IP67

Screw connection

0.25 mm² ... 0.75 mm²

60 V

4 A

≤ 8 mΩ

≥ 100 MΩ

CuZn / CuSnZn

PA 66

V0

-40 ... 85

-25 ... 85

Ordering data

Order No.

Pcs. / Pkt.

Order No.

Pcs. / Pkt.

Metal knurl, SPEEDCON, 5-pos.

Plastic knurl, 5-pos.

1543016

1

1694596

1

1662285

1

1531044

1

7/8", screw connection



Connection cross section:
1.5 mm², 3, 4, 5-pos.



Connection cross section:
2.5 mm², 5-pos.



Technical data			
	3-pos.	4-pos.	5-pos.
General data			
Pollution degree		3	
Degree of protection		IP67	
Connection method		Screw connection	
Connection cross section		0.34 mm ² ... 1.5 mm ²	
Connection cross section AWG		22 ... 16	
Electrical data			
Rated voltage		250 V	
Rated current	12 A		9 A
Volume resistance		≤ 5 mΩ	
Insulation resistance		≥ 100 MΩ	
Material data			
Material contact / contact surface		CuZn / Au	
Contact carrier material		PUR / PA66	
Inflammability class according to UL 94		HB	
Temperature data			
Plug / socket		-25 ... 85	



Technical data			
	5-pos.		
General data			
Pollution degree	3	-	
Degree of protection	IP67	-	
Connection method	Screw connection	-	
Connection cross section	0.34 mm ² ... 2.5 mm ²	- ... -	-
Connection cross section AWG	22 ... 14	- ... -	-
Electrical data			
Rated voltage	250 V	-	
Rated current	9 A	-	
Volume resistance	≤ 5 mΩ	-	
Insulation resistance	≥ 100 MΩ	-	
Material data			
Material contact / contact surface	CuZn / Au	- / -	
Contact carrier material	PUR / PA66	-	
Inflammability class according to UL 94	HB	-	
Temperature data			
Plug / socket	-25 ... 85	-	

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
3-pos.		4-pos.		5-pos.	

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
5-pos.					

Description
Plug-in connector, with Pg9 screw connection, cable diameter: 6 mm ... 8 mm
Socket, angled
Plug, angled
Socket, straight
Plug, straight
Plug-in connector, with Pg11 screw connection, cable diameter: 8 mm ... 10 mm
Socket, angled
Plug, angled
Socket, straight
Plug, straight
Plug-in connector, with Pg13.5 screw connection, cable diameter: 10 mm ... 12 mm
Socket, angled
Plug, angled
Socket, straight
Plug, straight
Plug-in connector, with Pg16 screw connection, cable diameter: 12 mm ... 14 mm
Socket, straight
Plug, straight

1521478	1	1521494	1	1521517	1
1521465	1	1521481	1	1521504	1
1521300	1	1521342	1	1521384	1
1521287	1	1521326	1	1521668	1
				1456297	1
				1456242	1
				1456271	1
				1456226	1
1521313	1	1521355	1	1521397	1
1521290	1	1521339	1	1521371	1
				1559071	1
				1559039	1

1456307	1				
1456255	1				
1456284	1				
1456213	1				
1456268	1				
1456239	1				

M5 to M12 circular plug-in connectors

M12 power plug-in connectors

M12 power flush-type plug-in connectors, with 0.5 m long litz wires



S-coded, 3-pos. + PE



T-coded, 4-pos.

	Technical data					Technical data			
	Front mounting		Rear mounting			Front mounting		Rear mounting	
General data									
Pollution degree	3		3			3		3	
Degree of protection	IP67		IP67			IP67		IP67	
Connection method	Individual wires		Individual wires			Individual wires		Individual wires	
Electrical data									
Rated voltage	630 V		630 V			60 V		60 V	
Rated current	12 A		12 A			12 A		12 A	
Volume resistance	≤ 3 mΩ		≤ 3 mΩ			≤ 3 mΩ		≤ 3 mΩ	
Insulation resistance	≥ 100 MΩ		≥ 100 MΩ			≥ 100 MΩ		≥ 100 MΩ	
Surge voltage category	III		III			III		III	
Material data									
Material contact / contact surface	CuZn / Au		CuZn / Au			CuZn / Au		CuZn / Au	
Contact carrier material	PA6		PA6			PA6		PA6	
Cable type	PP litz wire		PP litz wire			PP litz wire		PP litz wire	
Temperature data									
Plug / socket	[°C]		-25 ... 85			-25 ... 85		-25 ... 85	
Cable, fixed installation	[°C]		-40 ... 90			-40 ... 90		-40 ... 90	
	Ordering data					Ordering data			
Description	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.		Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	Front mounting		Rear mounting			Front mounting		Rear mounting	
Flush-type plug-in connector, M16 fastening thread									
Socket	1424137	1	1424133	1		1424138	1	1424134	1
Plug	1424139	1	1424132	1		1424140	1	1424136	1
	Accessories					Accessories			
Flat nut, with: M16 thread	SACC-E-MU-M16		1504097	100		SACC-E-MU-M16		1504097	100

**M12 power flush-type plug-in connectors,
modular, 25 mm square flange,
pre-assembled**



Flange housing, 2.7 mm housing bore holes



Pre-assembled contact carrier and insulating body with 0.5 m long litz wires

	Technical data		Technical data	
			S-coded, 3-pos. + PE	T-coded, 4-pos.
General data				
Pollution degree	-	-	3	3
Degree of protection	-	-	IP67	IP67
Connection method	-	-	Individual wires	Individual wires
Electrical data				
Rated voltage	-	-	630 V	60 V
Rated current	-	-	12 A	12 A
Volume resistance	-	-	≤ 3 mΩ	≤ 3 mΩ
Surge voltage category	-	-	III	III
Material data				
Material contact / contact surface	- / -	- / -	CuZn / Au	CuZn / Au
Contact carrier material	-	-	PA6	PA6
Cable gland material	Zinc die-cast, nickel-plated	-	-	-
Cable type	-	-	PP litz wire	PP litz wire
Temperature data				
Plug / socket	[°C]	-40 ... 85	-25 ... 85	-25 ... 85
Cable, fixed installation	[°C]	-	-40 ... 90	-40 ... 90
	Ordering data		Ordering data	
	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
Description				
Square flange housing, with flat gasket			S-coded, 3-pos. + PE	T-coded, 4-pos.
	1424131	10		
Assembled contact carrier and insulating body, with 0.5 m litz wires and crimp contacts				
Plug			1424129	1
			1424130	1

M5 to M12 circular plug-in connectors

M12 power plug-in connectors

M12, power device plug-in connector, two-piece, for reflow processes, rear mounting

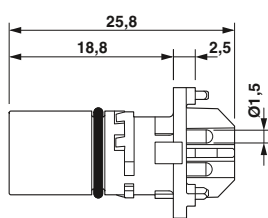


S-coded, 3-pos. + PE

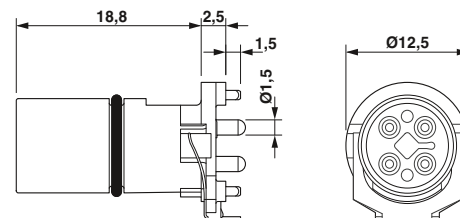


T-coded, 4-pos.

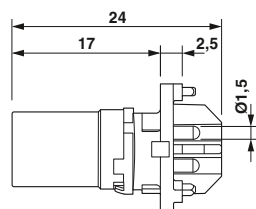
	Technical data			Technical data	
	Plug	Socket		Plug	Socket
General data					
Pollution degree	3	3		3	3
Degree of protection	IP67	IP67		IP67	IP67
Connection method	THR solder connection	THR solder connection		THR solder connection	THR solder connection
Electrical data					
Rated voltage	630 V	630 V		60 V	60 V
Rated current	12 A	12 A		12 A	12 A
Volume resistance	≤ 3 mΩ	≤ 3 mΩ		≤ 3 mΩ	≤ 3 mΩ
Surge voltage category	III	III		III	III
Material data					
Material contact / contact surface	CuZn / Au	CuZn / Au		CuZn / Au	CuZn / Au
Contact carrier material	PA4T	PA4T		PA4T	PA4T
Inflammability class according to UL 94	V0	V0		V0	V0
Temperature data					
Plug / socket	-40 ... 85	-40 ... 85		-40 ... 85	-40 ... 85
	[°C]				
	Ordering data			Ordering data	
	Order No.	Pcs. / Pkt.		Order No.	Pcs. / Pkt.
	Plug	Socket		Plug	Socket
Contact carrier, for reflow processes	1406410	20		1406396	60
Contact carrier, shielded, for reflow processes				1406411	60
				1406397	60
				1406412	60
	Accessories			Accessories	
Housing screw connections, SPEEDCON screw versions and press-in versions, for all two-piece THR and wave soldering contact carriers	See page 258 onwards			See page 258 onwards	



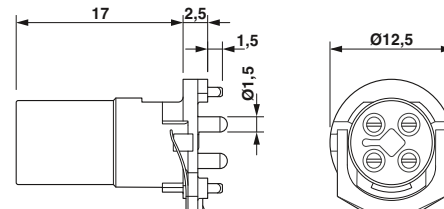
M12 flush-type plug



M12 flush-type plug



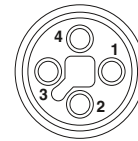
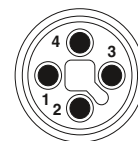
M12 flush-type socket



M12 flush-type socket

**M12, power plug-in connector,
screw connection****S-coded, 3-pos. + PE****T-coded, 4-pos.**

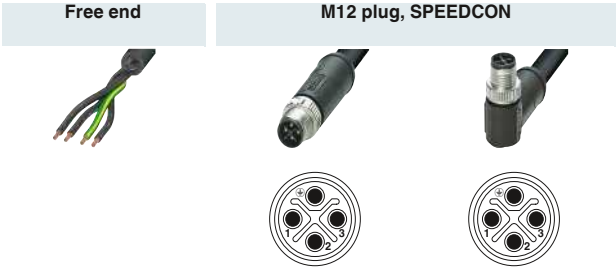
		Technical data			Technical data		
General data							
Pollution degree		3			3		
Degree of protection		IP67			IP67		
Connection method		Screw connection			Screw connection		
Cable diameter		8 mm ... 10 mm			8 mm ... 10 mm		
Connection cross section [mm²]		0.75 mm² ... 1.5 mm²			0.75 mm² ... 1.5 mm²		
Electrical data							
Rated voltage		630 V			60 V		
Rated current		12 A			12 A		
Volume resistance		≤ 3 mΩ			≤ 3 mΩ		
Surge voltage category		III			III		
Material data							
Material contact / contact surface		CuZn / Au			CuZn / Au		
Contact carrier material		PA 46			PA 46		
Temperature data							
Plug / socket		[°C] -40 ... 85			-40 ... 85		
		Ordering data			Ordering data		
Description		Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Plug-in connector, with Pg11 screw connection, cable diameter: 8 mm ... 10 mm		SACC-M12FSS-3PECON-PG11-M	1404642	1	SACC-M12FST-3PECON-PG11-M	1404644	1
Socket, straight		SACC-M12MSS-3PECON-PG11-M	1404641	1	SACC-M12MST-3PECON-PG11-M	1404643	1
Plug, straight							

**Pin assignment of M12 socket, 4-pos., S-coded,
view of socket side****Pin assignment of M12 socket, 4-pos., T-coded,
view of socket side****Pin assignment of M12 plug, 4-pos., S-coded,
view of plug side****Pin assignment of M12 plug, 4-pos., T-coded,
view of plug side**

M5 to M12 circular plug-in connectors

M12 power plug-in connectors

M12-SPEEDCON power cable,
3-pos.+PE, S-coded,
unshielded



Ordering data		Ordering data		Ordering data	
Free end	Order No.	Order No.	Order No.	Order No.	Order No.
		1 m	1408835	1 m	1408839
		2 m	1408836	2 m	1408840
		5 m	1408837	5 m	1408841
		10 m	1408838	10 m	1408842
M12 socket, SPEEDCON, straight					
	1 m	1408843			
	2 m	1408844			
	5 m	1408845			
	10 m	1408846			
M12 socket, SPEEDCON, angled					
	1 m	1408848			
	2 m	1408852			
	5 m	1408853			
	10 m	1408854			

Cable description	Cable type	Color coding		Pin assignment
PUR, halogen-free - black	PUR	BK1	1	1
		BK2	2	2
		BK3	3	3
		GNYE		PE

Technical data	
M12	
Rated voltage	[V] 630
Rated current	[A] 12
Volume resistance	≤ 3 mΩ
Material contact M12	CuZn
Material contact surface M12	Au
Material handle M12	TPU, hardly inflammable, self-extinguishing
Material, knurls	Zinc die-cast, nickel-plated
Degree of protection	IP65 / IP67
Temperature data	
Plug / socket	[°C] -25 ... 85

**M12-SPEEDCON power cable,
3-pos.+PE, S-coded,
shielded**

Free end

M12 plug, SPEEDCON,
360° shielded

Ordering data

Ordering data

Ordering data

Free end

Order No.

Order No.

Order No.



1.5 m

1424104

1.5 m

1424108

3 m

1424105

3 m

1424109

5 m

1424245

5 m

1424110

10 m

1424107

10 m

1424111

M12 socket, SPEEDCON, straight, 360° shielded



1.5 m

1424096

3 m

1424097

5 m

1424098

10 m

1424099

M12 socket, SPEEDCON, angled, 360° shielded



1.5 m

1424100

3 m

1424101

5 m

1424102

10 m

1424103

Cable description

Cable type

Color coding

Pin assignment

PUR, halogen-free - orange

PUR

BK1

1

1

BK2

2

2

BK3

3

3

GNYE

PE

Technical data

Rated voltage

[V]

M12

630

Rated current

[A]

12

Volume resistance

≤ 3 mΩ

Material contact M12

CuZn

Material contact surface M12

Au

Material handle M12

TPU, hardly inflammable,
self-extinguishing

Material, knurls

Zinc die-cast, nickel-plated

Degree of protection

IP65 / IP67

Temperature data

Plug / socket

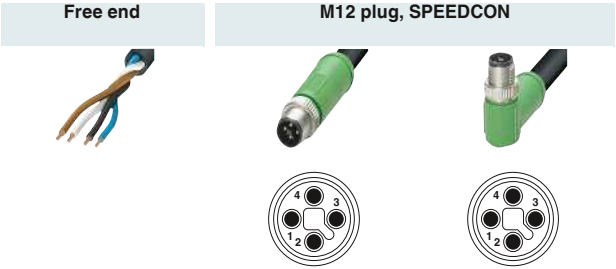
[°C]

-25 ... 85

M5 to M12 circular plug-in connectors

M12 power plug-in connectors

M12-SPEEDCON power cable, 4-pos., T-coded, unshielded



Ordering data		Ordering data		Ordering data	
Free end	Order No.	Order No.	Order No.	Order No.	Order No.
		1 m	1408812	1 m	1408816
		2 m	1408813	2 m	1408819
		5 m	1408814	5 m	1408820
		10 m	1408815	10 m	1408822
M12 socket, SPEEDCON, straight					
		1 m	1408823	1 m	1408808
		2 m	1408824	2 m	1408809
		5 m	1408825	5 m	1408810
		10 m	1408826	10 m	1408811
M12 socket, SPEEDCON, angled					
		1 m	1408827		
		2 m	1408828		
		5 m	1408829		
		10 m	1408830		

Cable description	Cable type	Color coding	Pin assignment
PUR, halogen-free - black	PUR	BN	1
		WH	2
		BK	4
		BU	3

Technical data	
M12	
Rated voltage	[V] 60
Rated current	[A] 12
Volume resistance	≤ 3 mΩ
Material contact M12	CuZn
Material contact surface M12	Au
Material handle M12	TPU, hardly inflammable, self-extinguishing
Material, knurls	Zinc die-cast, nickel-plated
Degree of protection	IP65 / IP67
Temperature data	
Plug / socket	[°C] -25 ... 85

**M12-SPEEDCON power cable,
4-pos., T-coded, shielded**

Free end

M12 plug, SPEEDCON
360° shielded

Ordering data

Ordering data

Ordering data

Free end

Order No.

Order No.

Order No.



1.5 m

1424120

1.5 m

1424124

3 m

1424121

3 m

1424125

5 m

1424122

5 m

1424126

10 m

1424123

10 m

1424127

M12 socket, SPEEDCON, straight, 360° shielded



1.5 m

1424112

3 m

1424113

5 m

1424114

10 m

1424115

M12 socket, SPEEDCON, angled, 360° shielded



1.5 m

1424116

3 m

1424117

5 m

1424118

10 m

1424128

Cable description

Cable type

Color coding

Pin assignment

PUR, halogen-free - black

PUR

BN



1

WH



2

BK



4

BU



3

Technical data

Rated voltage

[V]

60

Rated current

[A]

12

Volume resistance

≤ 3 mΩ

Material contact M12

CuZn

Material contact surface M12

Au

Material handle M12

TPU, hardly inflammable,
self-extinguishing

Material, knurls

Zinc die-cast, nickel-plated

Degree of protection

IP65 / IP67

Temperature data

Plug / socket

[°C]

-25 ... 85

Sealing elements

During transport or in the field, unoccupied plug-in connections must be protected or closed. The screw plugs, sealing caps and closing caps made of plastic or metal are suitable for this purpose. IP65/IP67 protection as well as IP69K protection is thereby achieved.



Description	Ordering data		
	Type	Order No.	Pcs. / Pkt.
M5 screw plug ① For unoccupied M5 sockets of the sensor/actuator cables, boxes and flush-type plug-in connectors	PROT-M5	1533288	10
M8 screw plug ② For unoccupied M8 sockets of the sensor/actuator cables, boxes and flush-type plug-in connectors	PROT-M8	1682540	5
M12 screw plug ③ For the unused M12 sockets of the sensor/actuator cables, boxes and flush-type plug-in connectors	PROT-M12	1680539	5
M12 screw plug with SPEEDCON quick locking ④ For unoccupied M12 sockets of the sensor/actuator cables, boxes and flush-type plug-in connectors	PROT-MS SCO	1553129	5
M12 sealing cap ⑤ For unoccupied M12 plugs of the sensor/actuator cables, flush-type plug-in connectors and I/O devices in the field	PROT-M12 FS	1560251	5
M12 screw plug, metal ⑥ For unoccupied M12 sockets of the shielded sensor/actuator cables, boxes and flush-type plug-in connectors	PROT-M12 SH	1503302	5
M12 sealing cap, metal ⑦ For unoccupied M12 plugs of the sensor/actuator cables, flush-type plug-in connectors and I/O devices in the field	PROT-M12 FS-M	1430488	10
M12 screw plug, stainless steel ⑧ For unused M12 sockets of the sensor/actuator cables, boxes, and flush-type plug-in connectors in the food and outdoor range	PROT-M12 FB	1555538	5
Closing cap ⑨ For Pg9/ Pg11, to close unoccupied connections	Q-PROT 9/11	1670235	10
M16 locking screw ⑩ With flat nut for oval housing cutouts	SACC-M16-SEALING PLUG SET	1453368	10

Sealing elements with holding band or fixing chain

All IP67 interfaces can be closed tightly using the screw plugs and sealing caps in sizes M8, M12 and 7/8". The holding bands are fastened on the cable or the housing and are thus held captive.

The M12 metal protective cap with fixing chain is suitable for all pin versions. It is used in harsh industrial environments or for EMC applications.



Description	Ordering data		
	Type	Order No.	Pcs. / Pkt.
Screw plug made from plastic with retaining strap, for sealing unused sockets ①			
M8 for SAC cables	PROT-M 8 MS-PA-CHAIN	1430860	10
M8 with 3 mm fastening eye	PROT-M 8 MS-PA-CHAIN-EYE-DM3	1441105	10
M8 with 12 mm fastening eye	PROT-M 8 MS-PA-CHAIN-EYE	1441095	10
M12 for SAC cables	PROT-M12 MS-PA-CHAIN	1430899	5
M12 with 15 mm fastening eye	PROT-M12 MS-PA-CHAIN-EYE-DM14	1456200	5
7/8" for SAC cables	PROT-MINMS-PA-CHAIN	1430925	10
Plastic sealing cap with holding band, for closing unoccupied connectors ②			
M8 for SAC cables	PROT-M 8 FS-PA-CHAIN	1430857	10
M8 with 8 mm fastening eye	PROT-M 8 FS-PA-CHAIN-EYE	1441082	10
M12 for SAC cables	PROT-M12 FS-PA-CHAIN	1430873	5
M12 with 12 mm fastening eye	PROT-M12 FS-PA-CHAIN-EYE-DM12	1456187	5
M12 with 15 mm fastening eye	PROT-M12 FS-PA-CHAIN-EYE-DM14	1456190	5
7/8" for SAC cables	PROT-MINFS-PA-CHAIN	1430912	10
Metal sealing cap with fixing chain, for closing unoccupied connectors ③			
M12 with 16 mm fastening eye	PROT-M12 FS-M-CHAIN	1430491	10

Accessories

Accessories for flush-type plug-in connectors

Special fixing nuts are available for EMC-compliant installation of M12 flush-type plug-in connectors on coated or varnished housing surfaces. When tightened, these cut through the surface coating, thus establishing contact between the housing and the connector.

Alternatively, flat gaskets can be used as the seal between the housing panel and the device plug. Flat gaskets are recommended for thin panels, as the housing cutouts do not have to be chamfered.



Ordering data			
Description	Type	Order No.	Pcs. / Pkt.
EMC hexagonal nuts with fine tothing, for all flush-type plug-in connectors with: ①			
M12 fastening thread	SACC-M12-KD-NUT-SH	1440151	10
EMC hexagonal nuts with fine tothing, for all flush-type plug-in connectors with: ②			
M16 fastening thread	SACC-M16-KD-NUT-SH	1440164	10
Pg9 fastening thread	SACC-PG9-KD-NUT-SH	1440177	10
Flat gasket for all flush-type plug-in connectors with: ③			
M16 fastening thread	SACC-M16-SEAL CLM	1430394	10
Pg9 fastening thread	SACC-PG9-SEAL CLM	1556320	10

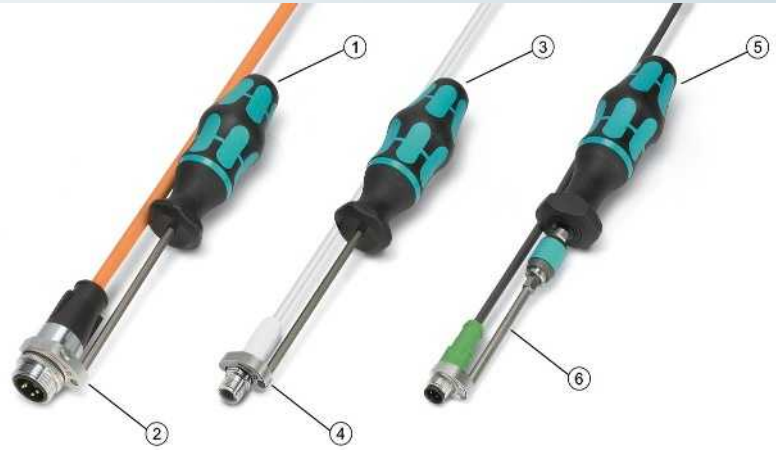
Assembly tools for sensor/actuator cables

To achieve tight plug-in connections, we recommend using assembly tools. M12 and 7/8" circular plug-in connectors can be assembled using a torque screwdriver and plug attachment.

The benefits of the plug attachment become particularly clear when connecting the connectors to the distributor boxes. Thanks to the open design, it enables quick adjustment and installation even when space is at a premium.

The version for M12 connectors with hexagonal stainless steel knurl is also made from stainless steel. This prevents the connector knurls from being contaminated by corrosive materials.

For greater flexibility, screwdrivers with adjustable torque are also available. When used in conjunction with the adapter insert, they can also be used to accommodate the available plug attachments.



Description	
Torque screwdriver ①	
With a preset torque of 0.8 Nm and a 4 mm hexagonal drive	
Nut ②	
For assembling 7/8" plug-in connectors, with 4 mm hexagonal drive	
Torque screwdriver ③	
With preset torque of 0.4 Nm and 4 mm hexagonal drive	
Nut ④	
For mounting M12 plug-in connectors with hexagonal stainless steel knurl, wrench size 14, with 4 mm hexagonal drive	
Torque screwdriver , accuracy according to standard EN ISO 6789 ⑤	
Adjustable from 0.3 - 1.2 Nm	
Adjustable from 1.2 - 3 Nm	
Adjustable from 3 - 6 Nm	
Adapter insert ⑥	
For torque screwdrivers with adjustable torque, for accommodating plug attachments with 4 mm hexagonal drive	

Ordering data		
Type	Order No.	Pcs. / Pkt.
TSD 08 SAC	1212597	1
SAC BIT MIN-D25	1212512	1
TSD 04 SAC	1208429	1
SAC BIT M12-W14	1212513	1
TSD-M 1,2NM	1212224	1
TSD-M 3NM	1212225	1
TSD-M 6NM	1212226	1
TSD-M SAC-BIT ADAPTER	1212600	1

M5 to M12 circular plug-in connectors

Pin assignments

M5 flush-type plug-in connectors

Pin assignments



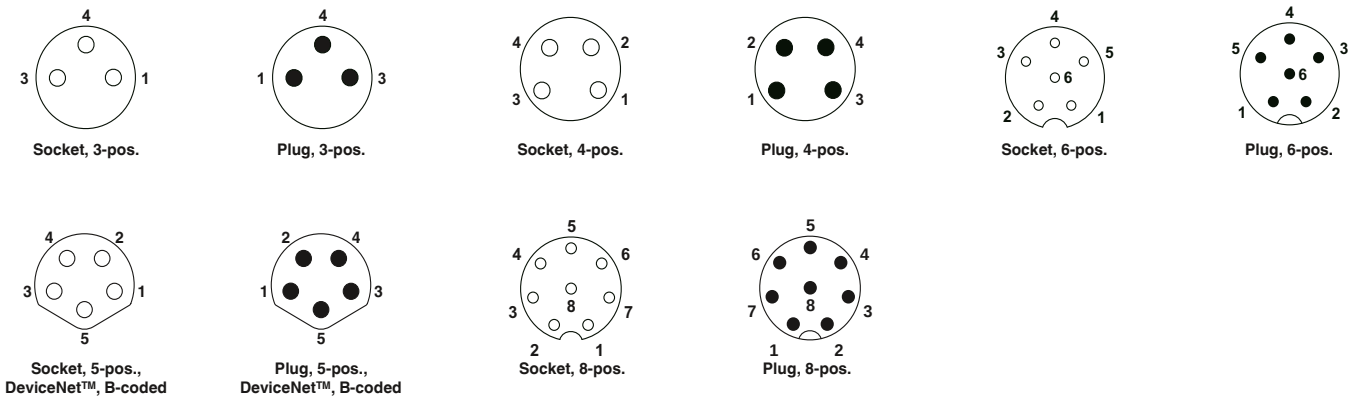
Litz wire colors

Pin	Wire color			
	3-pos.		4-pos.	
1	BN		BN	
2	–		WH	
3	BU		BU	
4	BK		BK	

Assignment: M5 flush-type plugs/sockets

M8 flush-type plug-in connectors

Pin assignments



Litz wire colors

Pin	Wire color							
	3-pos.		4-pos.		6-pos.		8-pos.	
1	BN		BN		BN		WH	
2	–		WH		WH		BN	
3	BU		BU		BU		GN	
4	BK		BK		BK		YE	
5	–		–		GY		GY	
6	–		–		PK		PK	
7	–		–		–		BU	
8	–		–		–		RD	

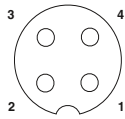
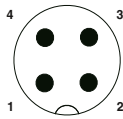
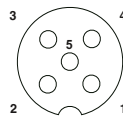
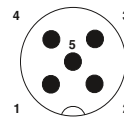
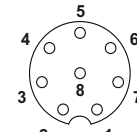
Assignment: M8 flush-type plugs/sockets

Pin	Wire color	Signal DeviceNet™
1	Shield	Drain
2	RD	V+
4	BK	V–
3	WH	CAN_H
5	BU	CAN_L

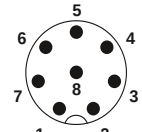
Assignment: CANopen®/DeviceNet™

M12 flush-type plug-in connectors

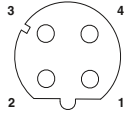
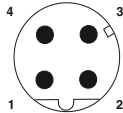
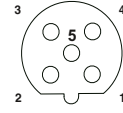
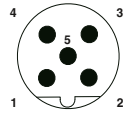
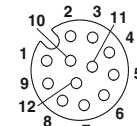
Pin assignments

Socket, 4-pos.,
A-codedPlug, 4-pos.,
A-codedSocket, 5-pos.,
A-codedPlug, 5-pos.,
A-coded

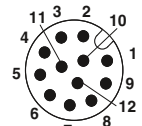
Socket, 8-pos.



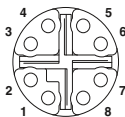
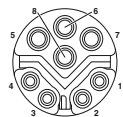
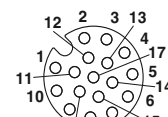
Plug, 8-pos.

Socket, 4-pos.,
D-codedPlug, 4-pos.,
D-codedSocket, 5-pos.,
B-codedPlug, 5-pos.,
B-coded

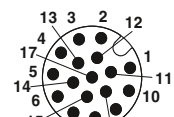
Socket, 12-pos.



Plug, 12-pos.

Socket, 8-pos.,
X-codedSocket, 8-pos.,
Y-coded

Socket, 17-pos.



Plug, 17-pos.

Litz wire colors

Pin	4-pos., A-coded	4-pos., D-coded
1	BN	YE
2	WH	WH
3	BU	OG
4	BK	BU
-	-	-

Assignment: M12 flush-type plugs/sockets

Pin	5-pos., A-coded	5-pos., B-coded
1	BN	BN
2	WH	WH
3	BU	BU
4	BK	BK
5	GY	GY

Assignment: M12 flush-type plugs/sockets

Pin	8-pos.	12-pos.
1	WH	BN
2	BN	BU
3	GN	WH
4	YE	GN
5	GY	PK
6	PK	YE
7	BU	BK
8	RD	GY
9	-	RD
10	-	VT
11	-	GYPK
12	-	RDBU

Assignment: M12 flush-type plugs/sockets

Pin	Wire color	Signal PROFIBUS
1	-	-
2	GN	A cable
3	-	-
4	RD	B cable
5	Filler litz wire	-

Shield on housing

Assignment: PROFIBUS

Pin	Wire color	Signal CANopen®
1	Shield	-
2	RD	-
3	BK	CAN_GND
4	WH	CAN_H
5	BU	CAN_L

Shield on housing

Assignment: CANopen®

Pin	Wire color	Signal DeviceNet™
1	Shield	Drain
2	RD	V+
3	BK	V-
4	WH	CAN_H
5	BU	CAN_L

Shield on housing

Assignment: DeviceNet™

Pin	Wire color	Signal Ethernet
1	WHOG	TD+
2	WHGN	RD+
3	OG	TD-
4	GN	RD-

Shield on housing

Assignment: Ethernet

Pin	Wire color	Signal INTERBUS
1	YE	DO
2	GN	DI
3	GY	DI
4	PK	DI
5	BN	COM
-	WH	NC

Shield on housing

Assignment: INTERBUS

Pin	Wire color	Signal Ethernet
1	WH	D1+
2	OG	D1-
3	WH	D2+
4	GN	D2-
5	WH	D4+
6	BN	D4-
7	WH	D3-
8	BU	D3+

Assignment: Ethernet CAT6_A

Pin	17-pos.
1	BN
2	BU
3	WH
4	GN
5	PK
6	YE
7	BK
8	GY
9	RD
10	VT
11	GYPK
12	RDBU
13	WHGN
14	BNGN
15	WHYE
16	YEBN
17	WHGY

Assignment: M12 flush-type plugs/sockets

M5 to M12 circular plug-in connectors

Pin assignments

M12 power flush-type plug-in connectors

Pin assignments



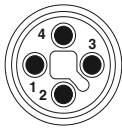
Socket, S-coded, 3+PE



Plug, A-coded, 3+PE



Socket, T-coded, 4-pos.



Plug, T-coded, 4-pos.

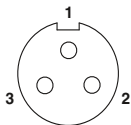
Litz wire colors

Pin	3+PE, S-cod.	Pin	4-pos, T-cod.
1	BK1	1	BN
2	BK2	2	WH
3	BK3	3	BU
PE	GNYE	4	BK

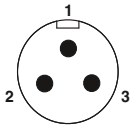
Assignment: M12 flush-type plugs/sockets

7/8" flush-type plug-in connectors

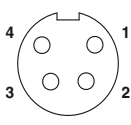
Pin assignments



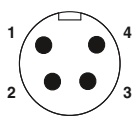
Socket, 3-pos.



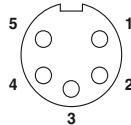
Plug, 3-pos.



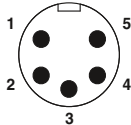
Socket, 4-pos.



Plug, 4-pos.



Socket, 5-pos.



Plug, 5-pos.

Litz wire colors

Pin	3-pos.	4-pos.	5-pos.
1	BK	BK	BK
2	BN	BU	BU
3	BU	BN	GNYE
4	-	WH	BN
5	-	-	WH

Assignment: 7/8" flush-type plugs/sockets

THR processing notes

Information for THR processing	
PCB thickness	Max. 1.6 mm
Residual ring	Recommended: 0.5 mm
Overprinting on soldering mold	Residual ring diameter: 0.2 mm
Soldering mold thickness	150 µm
Soldering profile	IEC 61760-3

Further information	
RoHS conformance	Attained



M17 to M58 circular plug-in connectors

PLUSCON circular is the complete range of electrical circular plug-in connectors designed for use in industrial automation. The wide range of available versions covers sizes M17 to M23, M40, and M58 locking threads.

The product portfolio covers all common applications in industrial environments for signal and power plug-in connectors up to 630 V/150 A. This also includes requirements relating to tightness, vibration resistance, and EMC shielding. These solid metal plugs are particularly suitable for harsh ambient conditions. The circular plug-in connector range is rounded off with a complete portfolio of plastic molded cable plug-in connectors.

Among the numerous applications, the area of electrical drives is worth highlighting. Here, the entire range covers all the power ranges and designs required for wiring from the drive to the control cabinet.

M17 - signal plug-in connectors

Technical data/pin assignments	304
Selection guide	306
Plug-in connectors	308
Crimp contacts	318

M23 - signal plug-in connectors

Technical data/pin assignments	320
Selection guide	322
Plug-in connectors	324
Crimp contacts	334

M23 - feedback plug-in connectors

Technical data/pin assignments	336
Selection guide	338
Plug-in connectors	340
Crimp contacts	346

M17 - power plug-in connectors

Technical data/pin assignments	348
Selection guide	350
Plug-in connectors	352
Crimp contacts	362

M23 - power plug-in connectors

Technical data/pin assignments	364
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Crimp contacts	374

M40 - power plug-in connectors

Technical data/pin assignments	376
Selection guide	378
Plug-in connectors	380
Crimp contacts	385

M58 - power plug-in connectors

Technical data/pin assignments	386
Selection guide	388
Plug-in connectors	390
Crimp contacts	392

Signal/power plug-in connectors, plastic molded	394
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Tools and accessories	404
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M17 to M58 circular plug-in connectors

M17 - signal plug-in connectors

Mechanical and electrical data

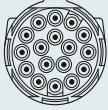
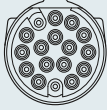
Mechanical data	
Housing material:	Copper zinc alloy (CuZn), die-cast zinc (GD-Zn)
Housing surface:	Nickel-plated/thick layer passivated (can be coated)
Insulating body:	Polyamide (PA 66)
Contact material:	Copper zinc alloy (CuZn)
Contact surface:	Nickel-plated (Ni) with gold coating (Au)
Contact connection method:	Crimp version
Sealing and O-ring:	Fluorocarbon rubber (FKM)
Ambient temperature:	-40°C ... 125°C
Cable entry:	Cable and coupler plug-in connectors for cable outside diameter of 3.5 - 11 mm, shielded (M17 Compact) 5 - 12.5 mm, shielded (M17)
Type of locking:	M17 SPEEDCON rapid interlock system, cable plug-in connector Optionally with M17 x 1 coarse-pitch thread
Mechanical insertion/withdrawal cycles:	Standard: 100, punched-rolled C-HC crimp contacts: up to 500
Protection class:	IP67 in the locked state

Electrical data		
Number of positions	8	17
Contacts	8	17
Contact Ø [mm]	1	0.6
Litz wire cross section, crimp contacts [mm²]	0.06 ... 1.0	0.06 ... 0.5
Litz wire cross section, C-HC crimp contacts [mm²]	0.06 ... 0.56	–
Punched-rolled		
Nominal current per contact at 25°C ¹⁾	3.6	3.6
Specifications according to DIN EN 61984:2009		
Rated voltage [V AC/DC]	60	60
Test/surge voltage [kV AC]	1.5	1.5
Surge voltage category	III	III
Pollution degree ²⁾	3	3
Installation height [m]	Up to 3000	Up to 3000
Cable clamping area ³⁾ max. Ø [mm]	12.5	12.5

¹⁾ The effective current carrying capacity must be determined via a derating curve, if necessary, according to the application.

²⁾ The values specified assume that the plug-in connector pair is correctly locked and is only disconnected for testing and maintenance purposes. If the plug-in connector is unlocked and exposed to ambient conditions, and if there is a danger of contamination, the plug-in connector must be sealed using a protective cap ≥ IP54.

³⁾ The cable clamping areas specified on the following pages may vary depending on the cable material/structure. Selection and testing is the responsibility of the user.

Contact chamber numbering (view of plug-in side)		
Number of positions	Pin	Socket
8-pos. Crimp		
17-pos. Crimp		

Note:
The plug-in connectors can be equipped with pin or socket contacts according to the application.

For reasons of safety, only socket contacts may be used in the live part of the plug.

M17 to M58 circular plug-in connectors

M17 - signal plug-in connectors

Selection guide

M17 signal plug-in connectors, 8 and 17-pos., crimp ranges: 0.06 mm² to 1.0 mm²

- Cable plug-in connectors
- Coupler plug-in connectors
- Device plug-in connectors (device flanges)

The plug-in connectors are supplied fully pre-assembled and are complemented by the respective crimp contacts.

Plug-in connectors with knurled nuts can be optionally equipped with SPEEDCON rapid interlock system or with M17 x 1 coarse-pitch thread. The plug-in connectors with external thread are fully compatible with standard threads and the SPEEDCON rapid interlock system.

The product chart provides an overview of the available components.

Plug-in connector type

Cable plug-in connector

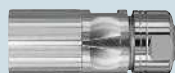
SPEEDCON rapid interlock system, M17 Compact, see page 308.



M17, see page 312.



M17 x 1 standard interlocking, M17, see page 313.



Square mounting flange for M17 cable and coupler plug-in connectors for wall mounting, see page 410.



Shielded

Coupler plug-in connector/panel feed-through

Coupler plug-in connector M17 Compact, see page 309.



Panel feed-through M17 Compact, see page 310.



M17, see page 314.



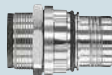
Shielded

Device plug-in connector

Straight, M17 Compact, see page 311.



Straight, with central fastening thread, front mounting, M17, see page 317.



Angled, rotatable, M17, see page 316.



Straight, M17, see page 315.



Straight, with central fastening thread, rear mounting, M17, see page 317.



Shielded

Crimp contacts**Socket contacts**

Turned, see page 319.



Punched-rolled, taped, see page 318.

**Pin contacts**

Turned, see page 319.



Punched-rolled, taped, see page 318.

**Note:**

For reasons of safety, only socket contacts may be used in the live part of the plug.

Tools/accessories**Crimping tools**

Crimping pliers for punched-rolled C-HC crimp contacts, see page 406.



Crimping pliers with digital display for turned crimp contacts, see page 407.

**Tools/accessories**

Contact removal tool for device plug-in connectors with contact carriers for snapping in from the device side, see page 410.



Color rings for individually marking the plug-in connectors, see page 412.



All housing can be fitted with pin or socket crimp contacts

M17 to M58 circular plug-in connectors

M17 - signal plug-in connectors

M17 Compact cable plug-in connector

- High packing density in a compact product
- Individual marking of plug-in connectors with color rings



Cable plug-in connector, socket assembly



Cable plug-in connector, pin assembly

		Ordering data				Ordering data			
Description	Cable clamping area	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		8-pos.		17-pos.		8-pos.		17-pos.	
Cable plug-in connector, with contact carrier, without contacts	3.5 mm ... 5.5 mm	1613370	1	1613288	1	1618641	1	1618682	1
	5 mm ... 9 mm	1613371	1	1613324	1	1618648	1	1618683	1
	9 mm ... 11 mm	1613372	1	1613325	1	1618649	1	1618684	1
		Accessories				Accessories			
Crimp contacts		For socket contacts, see page 318 onwards				For pin contacts, see page 318 onwards			
Color rings, 50 pcs. in set (to be ordered separately)		See page 412				See page 412			



M17 Compact coupler plug-in connector

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Individual marking of plug-in connectors with color rings

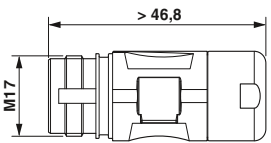


Coupler plug-in connector, socket assembly



Coupler plug-in connector, pin assembly

		Ordering data				Ordering data			
Description	Cable clamping area	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		8-pos.		17-pos.		8-pos.		17-pos.	
Coupler plug-in connector, with contact carrier, without contacts	3.5 mm ... 5.5 mm	1618724	1	1618756	1	1617799	1	1613497	1
	5 mm ... 9 mm	1618725	1	1618757	1	1617813	1	1613896	1
	9 mm ... 11 mm	1618726	1	1618758	1	1617830	1	1614532	1
		Accessories				Accessories			
Crimp contacts		For socket contacts, see page 318 onwards				For pin contacts, see page 318 onwards			
Color rings, 50 pcs. in set (to be ordered separately)		See page 412				See page 412			



M17 to M58 circular plug-in connectors

M17 - signal plug-in connectors

M17 Compact panel feed-through

- Panel feed-throughs suitable for front and rear mounting
- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Individual marking of plug-in connectors with color rings
- **Flange dimensions**
25.7 mm x 25.7 mm

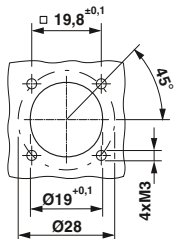
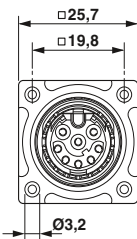
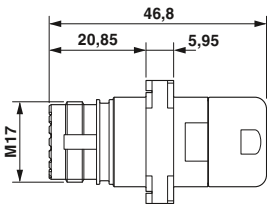


Panel feed-through, socket assembly



Panel feed-through, pin assembly

		Ordering data				Ordering data			
Description	Cable clamping area	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		8-pos.		17-pos.		8-pos.		17-pos.	
Panel feed-through, with contact carrier, without contacts	3.5 mm ... 5.5 mm	1618801	1	1618834	1	1617925	1	1617863	1
	5 mm ... 9 mm	1618802	1	1618835	1	1617929	1	1617872	1
	9 mm ... 11 mm	1618805	1	1618836	1	1617932	1	1617873	1
		Accessories				Accessories			
Crimp contacts		For socket contacts, see page 318 onwards				For pin contacts, see page 318 onwards			
Color rings, 50 pcs. in set (to be ordered separately)		See page 412				See page 412			



Installation dimensions

M17 Compact device plug-in connectors, front mounting

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Individual marking of plug-in connectors with color rings
- **Flange dimensions**
21.6 mm x 21.6 mm

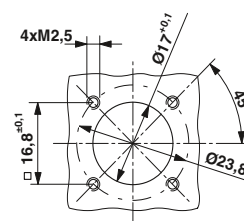
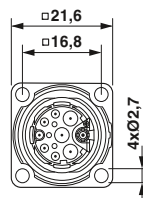
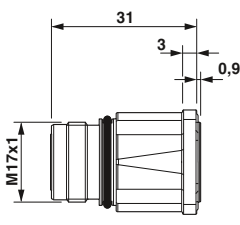


Device plug-in connector, straight, socket assembly



Device plug-in connector, straight, pin assembly

Description	Ordering data				Ordering data			
	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	8-pos.		17-pos.		8-pos.		17-pos.	
Device plug-in connector, with contact carrier, without contacts, contact insert can be snapped in	1619039	1	1607654	1	1613286	1	1607636	1
Device plug-in connector, with contact carrier, without contacts, contact insert for support on the device	1619038	1	1607653	1	1619037	1	1607634	1
	Accessories				Accessories			
	Crimp contacts Color rings, 50 pcs. in set (to be ordered separately)				For pin contacts, see page 318 onwards See page 412			
	For socket contacts, see page 318 onwards See page 412				For pin contacts, see page 318 onwards See page 412			



Installation dimensions

M17 to M58 circular plug-in connectors

M17 - signal plug-in connectors

Cable plug-in connector,
SPEEDCON rapid interlock system

– Individual marking of plug-in
connectors with color rings

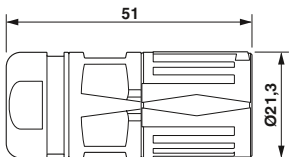


Cable plug-in connector,
socket assembly



Cable plug-in connector,
pin assembly

		Ordering data				Ordering data			
Description	Cable clamping area	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		8-pos.		17-pos.		8-pos.		17-pos.	
Cable plug-in connector, with contact carrier, without contacts	5 mm ... 8 mm	1619007	1	1607642	1	1618999	1	1607625	1
	8 mm ... 10 mm	1619008	1	1607644	1	1619000	1	1607627	1
	10 mm ... 12.5 mm	1619009	1	1624532	1	1619001	1	1624529	1
		Accessories				Accessories			
Crimp contacts		For socket contacts, see page 318 onwards				For pin contacts, see page 318 onwards			
Color rings, 50 pcs. in set (to be ordered separately)		See page 412				See page 412			



Cable plug-in connector,
M17 standard interlocking

- Standard knurled nuts compatible with mating plugs with SPEEDCON or M17 standard external thread
- Individual marking of plug-in connectors with color rings

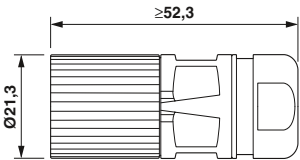


Cable plug-in connector,
socket assembly



Cable plug-in connector,
pin assembly

		Ordering data				Ordering data			
Description	Cable clamping area	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		8-pos.		17-pos.		8-pos.		17-pos.	
Cable plug-in connector, with contact carrier, without contacts	5 mm ... 8 mm	1619003	1	1607641	1	1618995	1	1607624	1
	8 mm ... 10 mm	1619004	1	1607643	1	1618996	1	1607626	1
	10 mm ... 12.5 mm	1619005	1	1624531	1	1618997	1	1624528	1
		Accessories				Accessories			
Crimp contacts		For socket contacts, see page 318 onwards				For pin contacts, see page 318 onwards			
Color rings, 50 pcs. in set (to be ordered separately)		See page 412				See page 412			



M17 to M58 circular plug-in connectors

M17 - signal plug-in connectors

Coupler plug-in connector

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Individual marking of plug-in connectors with color rings

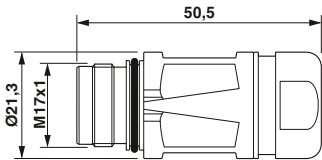


Coupler plug-in connector, socket assembly



Coupler plug-in connector, pin assembly

		Ordering data				Ordering data			
Description	Cable clamping area	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		8-pos.		17-pos.		8-pos.		17-pos.	
Coupler plug-in connector, with contact carrier, without contacts	5 mm ... 8 mm	1619015	1	1607647	1	1619011	1	1607630	1
	8 mm ... 10 mm	1619016	1	1607649	1	1619012	1	1607631	1
	10 mm ... 12.5 mm	1619017	1	1624533	1	1619013	1	1624530	1
		Accessories				Accessories			
Crimp contacts		For socket contacts, see page 318 onwards				For pin contacts, see page 318 onwards			
Color rings, 50 pcs. in set (to be ordered separately)		See page 412				See page 412			



Device plug-in connector, straight, front mounting

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Contact insert for support on the device or can be snapped in
- Individual marking of plug-in connectors with color rings

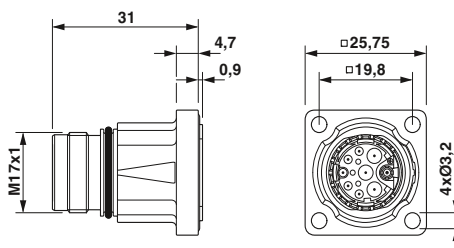


Device plug-in connector, straight, socket assembly

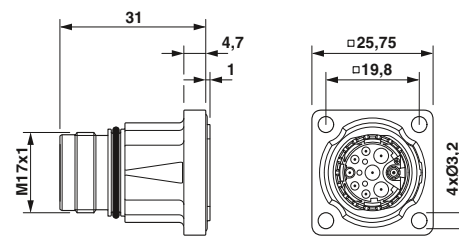


Device plug-in connector, straight, pin assembly

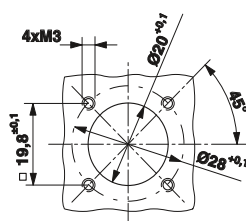
Description	Ordering data				Ordering data			
	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
Device plug-in connector , with contact carrier, without contacts, contact insert for support on the device Flange dimensions: 25.75 mm x 25.75 mm Device plug-in connector , with contact carrier, without contacts, contact insert can be snapped in Flange dimensions: 25.75 mm x 25.75 mm	8-pos.		17-pos.		8-pos.		17-pos.	
	1619197	1	1619206	1	1619196	1	1619202	1
	1619220	1	1619226	1	1619219	1	1619225	1
	Accessories				Accessories			
Crimp contacts Color rings , 50 pcs. in set (to be ordered separately)	For socket contacts, see page 318 onwards See page 412				For pin contacts, see page 318 onwards See page 412			



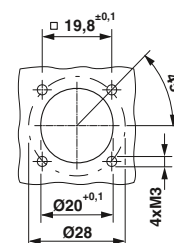
Contact insert for support on the device



Contact insert can be snapped in



Installation dimensions



Installation dimensions

M17 to M58 circular plug-in connectors

M17 - signal plug-in connectors

Device plug-in connector, angled, rotatable, front mounting

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Housing can be freely rotated up to 308°
- Individual marking of plug-in connectors with color rings
- Flange versions for M2.5/M3 attachment

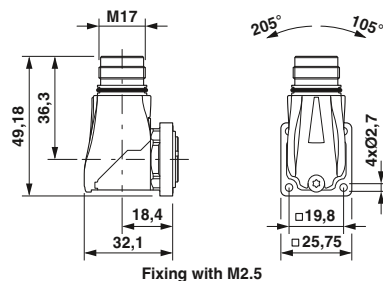


Device plug-in connector, angled, rotatable, for socket contacts

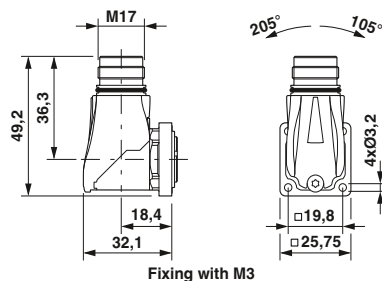


Device plug-in connector, angled, rotatable, for pin contacts

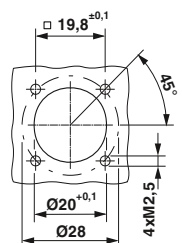
Description	Ordering data				Ordering data			
	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	8-pos.		17-pos.		8-pos.		17-pos.	
Device plug-in connector, angled, rotatable, with contact carrier, without contacts Fixing with M2.5	1620440	1	1620442	1	1620439	1	1620441	1
Device plug-in connector, angled, rotatable, with contact carrier, without contacts Fixing with M3	1620455	1	1620457	1	1620456	1	1620458	1
Accessories	Accessories				Accessories			
	Crimp contacts Color rings, 50 pcs. in set (to be ordered separately)				For socket contacts, see page 318 onwards See page 412			
					For pin contacts, see page 318 onwards See page 412			



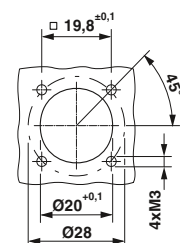
Fixing with M2.5



Fixing with M3



Installation dimensions



Installation dimensions

**Device plug-in connector,
central fastening thread,
front/rear mounting**

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Contact carrier snapped in from the device side
- Individual marking of plug-in connectors with color rings


**Device plug-in connector, central fixing,
socket assembly**

**Device plug-in connector, central fixing,
pin assembly**

Description
Device plug-in connector, front mounting , M18 x 0.75 fastening thread, with contact carrier, without contacts
Device plug-in connector, rear mounting , M20 x 1.5 fastening thread, with contact carrier, without contacts

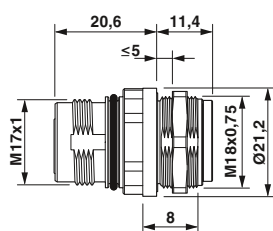
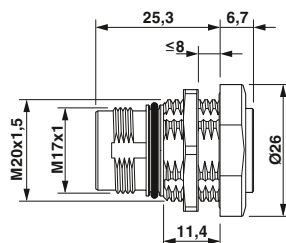
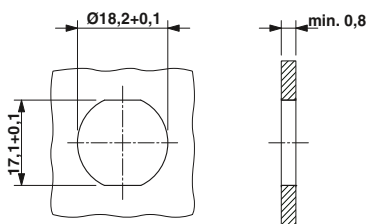
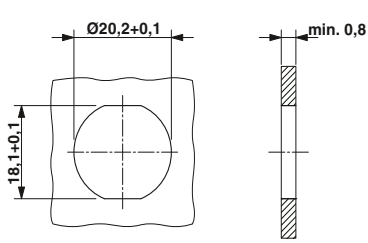
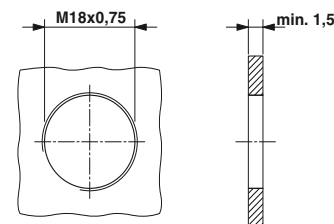
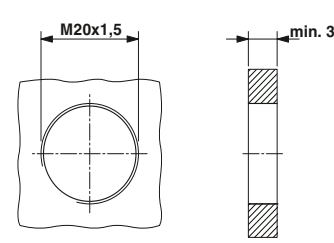
Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
8-pos.		17-pos.	
1619036	1	1613542	1
1619035	1	1613543	1

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
8-pos.		17-pos.	
1618584	1	1613540	1
1619034	1	1613541	1

Description
Locking nut , for mounting bore holes and anti-rotation protection
M18 x 0.75
M20 x 1.5
Crimp contacts
Color rings , 50 pcs. in set (to be ordered separately)

Accessories			
Type	Order No.	Pcs. / Pkt.	
ST-E2015151	1613831	10	
RC-13041	1600417	10	
For socket contacts, see page 318 onwards See page 412			

Accessories			
Type	Order No.	Pcs. / Pkt.	
ST-E2015151	1613831	10	
RC-13041	1600417	10	
For pin contacts, see page 318 onwards See page 412			


**Front mounting, M18 x 0.75,
order locking nut separately**

**Rear mounting, M20 x 1.5,
order locking nut separately**

**Installation dimensions: mounting
with anti-rotation protection and locking nut**

**Installation dimensions: mounting
with anti-rotation protection and locking nut**

Installation dimensions: mounting with thread

Installation dimensions: mounting with thread

M17 to M58 circular plug-in connectors

M17 - signal plug-in connectors

Crimp contacts, punched-rolled

C-HC® are punched-rolled contacts. They are designed for high insertion/withdrawal cycles.

The contacts are available taped on rolls for manual or automatic processing.

Note: depending on the litz wire used, the connection cross sections (crimp ranges) may deviate from the listed values. For reasons of safety, only socket contacts may be used in the live part of the plug.



C-HC socket contacts



C-HC pin contacts

Description	Connection cross section [mm²]
Crimp contacts , C-HC punched-rolled, Ø 1.0 mm, 2500 pcs./roll	
	0.06 mm² ... 0.25 mm²
	0.2 mm² ... 0.56 mm²
Crimp contact C-HC punched-rolled, Ø 1.0 mm, 10,000 pcs./roll	
	0.06 mm² ... 0.25 mm²
	0.2 mm² ... 0.56 mm²

Crimping tools

Ordering data		
Type	Order No.	Pcs. / Pkt.
SF-10KS320	1607031	1
SF-10KS350	1607032	1
SF-10KS330	1607358	1
SF-10KS360	1607361	1

Accessories	
Order separately, see page 406	

Ordering data		
Type	Order No.	Pcs. / Pkt.
SF-10KP320	1615961	1
SF-10KP350	1615963	1
SF-10KP330	1615962	1
SF-10KP360	1615964	1

Accessories	
Order separately, see page 406	

Crimp contacts, turned

M17 signal plug-in connectors are fitted with contacts with Ø 1.0 mm or Ø 0.6 mm depending on the number of positions.

- 8-pos. versions: contacts with Ø 1.0 mm
- 17-pos. versions: contacts with Ø 0.6 mm

Note:

Depending on the litz wire used, the connection cross sections (crimp ranges) may deviate from the values listed below.



Crimp contacts, socket



Crimp contacts, pin

		Ordering data			Ordering data		
Description	Connection cross section [mm²]	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Contact socket Ø 0.6 mm	0.06 mm² ... 0.25 mm²	ST-06KS010	1607580	100			
	0.14 mm² ... 0.34 mm²	ST-06KS020	1607581	100			
	0.34 mm² ... 0.50 mm²	ST-06KS030	1607582	100			
Contact socket Ø 1.0 mm	0.06 mm² ... 0.25 mm²	ST-10KS010	1618239	100			
	0.34 mm² ... 0.5 mm²	ST-10KS020	1618251	100			
	0.5 mm² ... 1.0 mm²	ST-10KS030	1618254	100			
Contact pin Ø 0.6 mm	0.06 mm² ... 0.25 mm²				ST-06KP010	1607577	100
	0.14 mm² ... 0.34 mm²				ST-06KP020	1607578	100
	0.34 mm² ... 0.50 mm²				ST-06KP030	1607579	100
Contact pin Ø 1.0 mm	0.06 mm² ... 0.25 mm²				ST-10KP010	1618255	100
	0.34 mm² ... 0.5 mm²				ST-10KP020	1618256	100
	0.5 mm² ... 1.0 mm²				ST-10KP030	1618261	100
		Accessories			Accessories		
Crimping tools		Order separately, see page 407			Order separately, see page 407		

Notes:

Every plug-in connector housing type can be fitted with pin or socket contacts.

For reasons of safety, only socket contacts may be used in the live part of the plug.

M17 to M58 circular plug-in connectors

M23 - signal plug-in connectors

Mechanical and electrical data

Mechanical data	
Housing material:	Copper zinc alloy (CuZn), die-cast zinc (GD-Zn)
Housing surface:	Nickel-plated/thick layer passivated (can be coated)
Insulating body:	Thermoplastic polyester (PBT), polyamide (PA 66)
Contact material:	Copper zinc alloy (CuZn)
Contact surface:	Nickel-plated (Ni) with gold coating (Au)
Contact connection method:	Solder cup, crimp, solder-in pin
Sealing and O-ring:	NBR
Flat gasket:	NBR, fiber reinforced NBR
Temperature range:	-40°C ... +125°C
Cable entry:	cable and coupler plug-in connectors for cable outside diameter of 3 - 14.5 mm, shielded
Type of locking:	M23 SPEEDCON rapid interlock system, Cable plug-in connector optionally with M23 x 1 coarse-pitch thread
Mechanical insertion/withdrawal cycles:	Standard: 100, punched-rolled C-HC crimp contacts: up to 500
Protection class:	IP67 in the locked state

Electrical data								
Number of positions	6	7	9 (8+1)		12	17	19 (16+3)	
Contacts	6	7	8	+	1	12	17	16 + 3
Contact Ø [mm]	2	2	1		2	1	1	1.5
Litz wire cross section								
Solder connection: contacts x [mm²] maximum	6 x 2.5	7 x 2.5	8 x 1.0	+	1 x 2.5	12 x 1.0	17 x 1.0	16 x 1.0 + 3 x 1.0
Crimp connection: contacts x [mm²] maximum	6 x 2.5	7 x 2.5	8 x 0.56	+	1 x 2.5	12 x 0.56	17 x 0.56	16 x 1.0 + 3 x 1.0
Nominal current per contact at 25°C ¹⁾	20	20	8		20	8	8	10
Specifications according to DIN EN 61984:2009								
Rated voltage [V AC/DC]	300	300	300		150	150	150	
Test/surge voltage [kV AC]	2.5	2.5	2.5		1.5	1.5	1.5	
Surge voltage category	II	II	II		II	II	II	
Pollution degree ²⁾	3	3	3		3	3	3	
Installation height [m]	Up to 2000	Up to 2000	Up to 2000		Up to 2000	Up to 2000	Up to 2000	
Cable clamping area ³⁾ max. Ø [mm]	14.5	14.5	14.5		14.5	14.5	14.5	

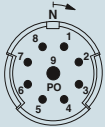
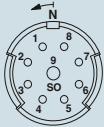
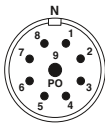
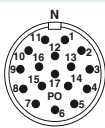
¹⁾ The effective current carrying capacity must be determined via a derating curve, if necessary, according to the application.

²⁾ The values specified assume that the plug-in connector pair is correctly locked and is only disconnected for testing and maintenance purposes. If the plug-in connector is unlocked and exposed to ambient conditions, and if there is a danger of contamination, the plug-in connector must be sealed using a protective cap ≥ IP54.

³⁾ The cable clamping areas specified on the following pages may vary depending on the cable material/structure. Selection and testing is the responsibility of the user.

Note:

Unlike plug-in equipment, plug-in connectors must not be plugged or unplugged under load.

Contact chamber numbering (view of plug-in side)		
Direction of rotation for contact chamber numbering (view of plug-in side)		
	Clockwise (standard)	Counter-clockwise (standard)
Number of positions	Pin	Socket
6-pos. Solder/crimp/solder-in		
7-pos. Solder/crimp/solder-in		
9-pos. (8+1) Solder/crimp/solder-in		
12-pos. Solder/crimp/solder-in		
17-pos. Solder/crimp/solder-in		
19-pos. (16+3) Solder/crimp		

Note:

The plug-in connectors can be equipped with pin or socket contacts according to the application.

For reasons of safety, only socket contacts may be used in the live part of the plug.

M17 to M58 circular plug-in connectors

M23 - signal plug-in connectors

Selection guide

M23 signal plug-in connector, 6 to 19-pos., up to 20 A/300 V, solder, crimp, and solder-in connection.

- Cable plug-in connectors
- Coupler plug-in connectors
- Device plug-in connectors (device flanges)

In the case of crimp connection, the respective crimp contacts must be added according to the connection cross section.

Each housing type can be equipped with pin or socket contacts. The product chart provides an overview of the available components.

Plug-in connector type

Cable plug-in connectors

SPEEDCON rapid interlock system, see page 324.

M23 x 1 standard interlocking, see page 325.



Shielded

Coupler plug-in connectors

See page 326.



Shielded

Device plug-in connectors

Front mounting, Pg13.5 fastening thread, see page 327.

Front mounting, M20 fastening thread, see page 328.



Front mounting, flange dimensions 25 mm x 25 mm, see page 329.

Front mounting, solder-in connection flange dimensions 25 mm x 25 mm, see page 330.



Rear mounting, central fastening nut, see page 332.



Shielded

For crimp connection:**Socket contacts**

Turned, see page 334.



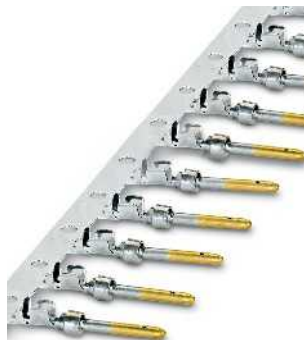
Rolled, taped,
see page 334.

**Pin contacts**

Turned, see page 334.



Rolled, taped,
see page 334.



All housing can be fitted with pin or socket crimp contacts

Tools/accessories**Crimping tools**

Crimping pliers for rolled
crimp contacts,
see page 404.



Crimping pliers with digital display for turned
crimp contacts,
see page 404.

**Tools/accessories**

Contact removal tool for device plug-in connec-
tors for releasing the contact carriers from the
plug-in side,
see page 410.



Color rings for individually marking the plug-in
connectors,
see page 412.

**Note:**

For reasons of safety, only socket
contacts may be used in the live part
of the plug.

M17 to M58 circular plug-in connectors

M23 - signal plug-in connectors

Cable plug-in connector, SPEEDCON rapid interlock system

- 6 to 19-pos. versions, solder/crimp connection
- Individual marking of plug-in connectors with color rings



6, 7, 8+1-pos.

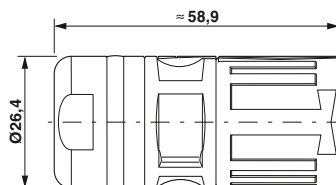
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12, 17, 16+3-pos.

N

		Ordering data			Ordering data		
Description	Cable clamping area	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		6-pos.		7-pos.		8+1-pos.	
Cable plug-in connector, with contact carrier, with socket contacts, solder connection							
Universal gasket	3 mm ... 14.5 mm	1619605	1	1619601	1	1619597	1
	4 mm ... 6 mm	1619579	1	1619575	1	1619571	1
	6 mm ... 10 mm	1619534	1	1619530	1	1619526	1
	10 mm ... 14.5 mm	1619508	1	1619504	1	1619500	1
Cable plug-in connector, with contact carrier, with pin contacts, solder connection							
Universal gasket	3 mm ... 14.5 mm	1619604	1	1619600	1	1619596	1
	4 mm ... 6 mm	1619578	1	1619574	1	1619570	1
	6 mm ... 10 mm	1619533	1	1619529	1	1619525	1
	10 mm ... 14.5 mm	1619507	1	1619503	1	1619499	1
Cable plug-in connector, with contact carrier, without contacts, for socket assembly, crimp connection							
Universal gasket	3 mm ... 14.5 mm	1619603	1	1619599	1	1619595	1
	4 mm ... 6 mm	1619577	1	1619573	1	1619569	1
	6 mm ... 10 mm	1619532	1	1619528	1	1619524	1
	10 mm ... 14.5 mm	1619506	1	1619502	1	1619498	1
Cable plug-in connector, with contact carrier, without contacts, for pin assembly, crimp connection							
Universal gasket	3 mm ... 14.5 mm	1619602	1	1619598	1	1619594	1
	4 mm ... 6 mm	1619576	1	1619572	1	1619568	1
	6 mm ... 10 mm	1619531	1	1619527	1	1619523	1
	10 mm ... 14.5 mm	1619505	1	1619501	1	1619497	1
		Accessories			Accessories		
For crimp connection: crimp contacts		Order separately, see page 334 onwards			Order separately, see page 334 onwards		
Color rings, 50 pcs. in set (to be ordered separately)		See page 412			See page 412		



Cable plug-in connector, M23 standard interlocking

- Standard knurled nuts compatible with mating plugs with SPEEDCON or M23 standard external thread
- 6 to 19-pos. versions, solder/crimp connection
- Individual marking of plug-in connectors with color rings

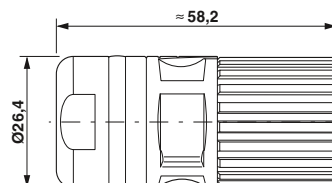


6, 7, 8+1-pos.



12, 17, 16+3-pos.

Description		Ordering data			Ordering data		
		Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		6-pos.		7-pos.		8+1-pos.	
Cable plug-in connector, with contact carrier, with socket contacts, solder connection							
Universal gasket							
3 mm ... 14.5 mm		1619776	1	1619772	1	1619768	1
4 mm ... 6 mm		1619750	1	1619746	1	1619742	1
6 mm ... 10 mm		1619724	1	1619720	1	1619716	1
10 mm ... 14.5 mm		1619659	1	1619655	1	1619651	1
Cable plug-in connector, with contact carrier, with pin contacts, solder connection							
Universal gasket							
3 mm ... 14.5 mm		1619775	1	1619771	1	1619767	1
4 mm ... 6 mm		1619749	1	1619745	1	1619741	1
6 mm ... 10 mm		1619723	1	1619719	1	1619715	1
10 mm ... 14.5 mm		1619658	1	1619654	1	1619650	1
Cable plug-in connector, with contact carrier, without contacts, for socket assembly, crimp connection							
Universal gasket							
3 mm ... 14.5 mm		1619774	1	1619770	1	1619766	1
4 mm ... 6 mm		1619748	1	1619744	1	1619740	1
6 mm ... 10 mm		1619722	1	1619718	1	1619714	1
10 mm ... 14.5 mm		1619657	1	1619653	1	1619649	1
Cable plug-in connector, with contact carrier, without contacts, for pin assembly, crimp connection							
Universal gasket							
3 mm ... 14.5 mm		1619773	1	1619769	1	1619765	1
4 mm ... 6 mm		1619747	1	1619743	1	1619739	1
6 mm ... 10 mm		1619721	1	1619717	1	1619711	1
10 mm ... 14.5 mm		1619656	1	1619652	1	1619648	1
		Accessories			Accessories		
For crimp connection: crimp contacts		Order separately, see page 334 onwards			Order separately, see page 334 onwards		
Color rings, 50 pcs. in set (to be ordered separately)		See page 412			See page 412		



M17 to M58 circular plug-in connectors

M23 - signal plug-in connectors

Coupler plug-in connector

- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts
- 6 to 19-pos. versions, solder/crimp connection
- Individual marking of plug-in connectors with color rings

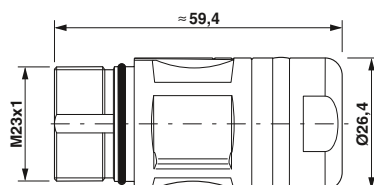


6, 7, 8+1-pos.



12, 17, 16+3-pos.

		Ordering data			Ordering data		
Description	Cable clamping area	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		6-pos.		7-pos.		8+1-pos.	
Coupler plug-in connector, with contact carrier, with socket contacts, solder connection							
Universal gasket	3 mm ... 14.5 mm	1620172	1	1620168	1	1620164	1
	4 mm ... 6 mm	1620145	1	1620141	1	1620137	1
	6 mm ... 10 mm	1620119	1	1620115	1	1620079	1
	10 mm ... 14.5 mm	1620046	1	1620042	1	1620036	1
Coupler plug-in connector, with contact carrier, with pin contacts, solder connection							
Universal gasket	3 mm ... 14.5 mm	1620171	1	1620167	1	1620163	1
	4 mm ... 6 mm	1620144	1	1620140	1	1620136	1
	6 mm ... 10 mm	1620118	1	1620114	1	1620078	1
	10 mm ... 14.5 mm	1620045	1	1620041	1	1620035	1
Coupler plug-in connector, with contact carrier, without contacts, for socket assembly, crimp connection							
Universal gasket	3 mm ... 14.5 mm	1620170	1	1620166	1	1620162	1
	4 mm ... 6 mm	1620143	1	1620139	1	1620135	1
	6 mm ... 10 mm	1620117	1	1620081	1	1620077	1
	10 mm ... 14.5 mm	1620044	1	1620038	1	1620034	1
Coupler plug-in connector, with contact carrier, without contacts, for pin assembly, crimp connection							
Universal gasket	3 mm ... 14.5 mm	1620169	1	1620165	1	1620161	1
	4 mm ... 6 mm	1620142	1	1620138	1	1620134	1
	6 mm ... 10 mm	1620116	1	1620080	1	1620076	1
	10 mm ... 14.5 mm	1620043	1	1620037	1	1620033	1
		Accessories			Accessories		
For crimp connection: crimp contacts Color rings, 50 pcs. in set (to be ordered separately)		Order separately, see page 334 onwards See page 412			Order separately, see page 334 onwards See page 412		



Device plug-in connectors, front mounting

N

N

– Pg13.5 fastening thread

- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts
- 6 to 19-pos. versions, solder/crimp connection
- Individual marking of plug-in connectors with color rings



6, 7, 8+1-pos.



12, 17, 16+3-pos.

Description
Device plug-in connector, with contact carrier, with socket contacts, solder connection, Pg13.5 central fastening thread, axial seal
Device plug-in connector, with contact carrier, with pin contacts, solder connection, Pg13.5 central fastening thread, axial seal
Device plug-in connector, with contact carrier, without contacts, for socket assembly, crimp connection, Pg13.5 central fastening thread, axial seal
Device plug-in connector, with contact carrier, without contacts, for pin assembly, crimp connection, Pg13.5 central fastening thread, axial seal

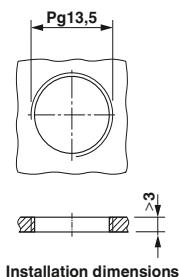
Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
6-pos.		7-pos.		8+1-pos.	
1619903	1	1619899	1	1619895	1
1619902	1	1619898	1	1619894	1
1619901	1	1619897	1	1619893	1
1619900	1	1619896	1	1619892	1

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
12-pos.		17-pos.		16+3-pos.	
1619891	1	1619883	1	1619879	1
1619890	1	1619882	1	1619878	1
1619889	1	1619881	1		
1619888	1	1619880	1		

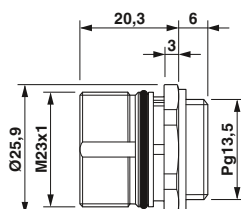
Accessories					
Order separately, see page 334 onwards See page 412					

Accessories					
Order separately, see page 334 onwards See page 412					

For crimp connection: crimp contacts
Color rings, 50 pcs. in set (to be ordered separately)



Installation dimensions



M17 to M58 circular plug-in connectors

M23 - signal plug-in connectors

Device plug-in connectors, front mounting

– M20 fastening thread

- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts
- 6 to 19-pos. versions, solder/crimp connection
- Individual marking of plug-in connectors with color rings



6, 7, 8+1-pos.



12, 17, 16+3-pos.

Description
Device plug-in connector, with contact carrier, with socket contacts, solder connection, M20 central fastening thread, axial seal
Device plug-in connector, with contact carrier, with pin contacts, solder connection, M20 central fastening thread, axial seal
Device plug-in connector, with contact carrier, without contacts, for socket assembly, crimp connection, M20 central fastening thread, axial seal
Device plug-in connector, with contact carrier, without contacts, for pin assembly, crimp connection, M20 central fastening thread, axial seal

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
6-pos.		7-pos.		8+1-pos.	

1619877	1	1619873	1	1619869	1
1619876	1	1619872	1	1619868	1

1619875	1	1619871	1	1619867	1
1619874	1	1619870	1	1619866	1

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
12-pos.		17-pos.		16+3-pos.	

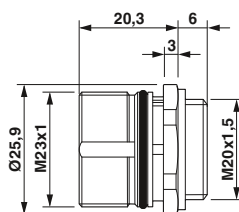
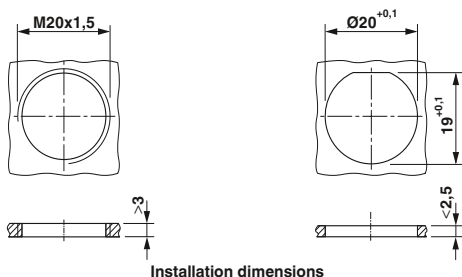
1619865	1	1619857	1	1619853	1
1619864	1	1619856	1	1619852	1

1619863	1	1619855	1		
1619862	1	1619854	1		

Description
Locking nut, for mounting bore holes and anti-rotation protection
M20 x 1.5
For crimp connection: crimp contacts
Color rings, 50 pcs. in set (to be ordered separately)

Accessories			
Type	Order No.	Pcs. / Pkt.	
RC-13041	1600417	10	
Order separately, see page 334 onwards See page 412			

Accessories			
Type	Order No.	Pcs. / Pkt.	
RC-13041	1600417	10	
Order separately, see page 334 onwards See page 412			



Device plug-in connectors, front mounting

- Flange dimensions 25 mm x 25 mm
- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts
- 6 to 19-pos. versions, solder/crimp connection
- Individual marking of plug-in connectors with color rings



6, 7, 8+1-pos.

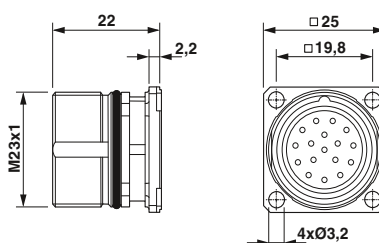
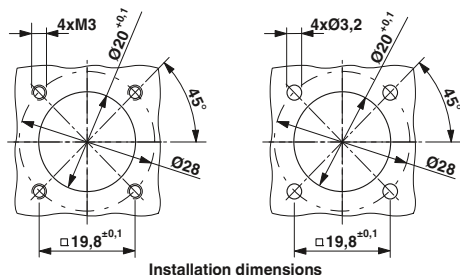


12, 17, 16+3-pos.

Description
Device plug-in connector, with contact carrier, with socket contacts , solder connection, flat gasket
Device plug-in connector, with contact carrier, with pin contacts , solder connection, flat gasket
Device plug-in connector, with contact carrier, without contacts, for socket assembly , crimp connection, flat gasket
Device plug-in connector, with contact carrier, without contacts, for pin assembly , crimp connection, flat gasket
For crimp connection: crimp contacts Color rings , 50 pcs. in set (to be ordered separately)

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
6-pos.		7-pos.		8+1-pos.	
1619993	1	1619989	1	1619973	1
1619992	1	1619988	1	1619972	1
1619991	1	1619987	1	1619971	1
1619990	1	1619986	1	1619970	1
Accessories					
Order separately, see page 334 onwards See page 412					

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
12-pos.		17-pos.		16+3-pos.	
1619969	1	1619961	1	1619957	1
1619968	1	1619960	1	1619956	1
1619967	1	1619959	1		
1619966	1	1619958	1		
Accessories					
Order separately, see page 334 onwards See page 412					



M17 to M58 circular plug-in connectors

M23 - signal plug-in connectors

Device plug-in connectors, front mounting

- Flange dimensions 25 mm x 25 mm
- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts
- 6 to 17-pos., **solder-in connection**
- Individual marking of plug-in connectors with color rings



6, 7, 8+1-pos.

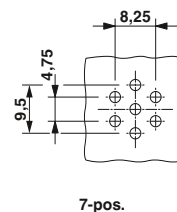
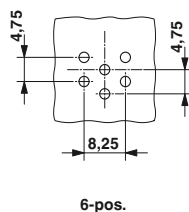
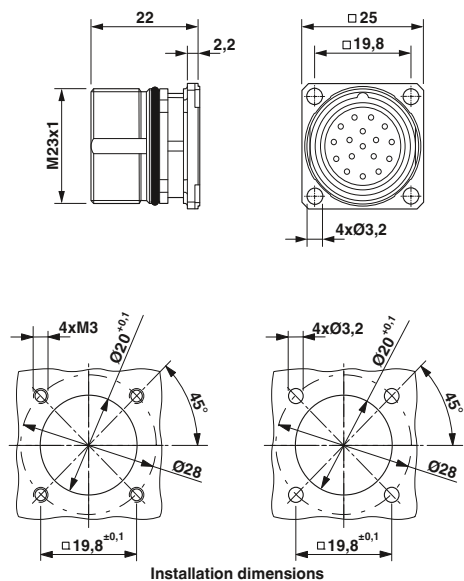


12, 17-pos.

Description
Device plug-in connector , with contact carrier, with contacts, solder-in connection, free solder pin length of 3.5 mm , flat gasket
Socket
Plug
Device plug-in connector , with contact carrier, with contacts, solder-in connection, free solder pin length of 10.0 mm , flat gasket
Socket
Plug
Device plug-in connector , with contact carrier, with contacts, solder-in connection, free solder pin length of 17.5 mm , flat gasket
Socket
Plug
Color rings , 50 pcs. in set (to be ordered separately)

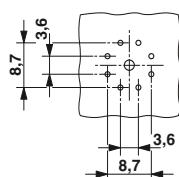
Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
6-pos.		7-pos.		8+1-pos.	
1619955	1	1619953	1	1619951	1
1619954	1	1619952	1	1619950	1
1619931	1	1619929	1	1619927	1
1619930	1	1619928	1	1619926	1
1619916	1	1619914	1	1619912	1
1619915	1	1619913	1	1619911	1
Accessories					
See page 412					

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
12-pos.		17-pos.			
1619949	1	1619933	1		
1619948	1	1619932	1		
1619925	1	1619918	1		
1619924	1	1619917	1		
1619910	1	1619905	1		
1619909	1	1619904	1		
Accessories					
See page 412					

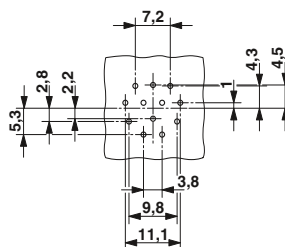


Device plug-in connectors, front mounting, PCB hole patterns

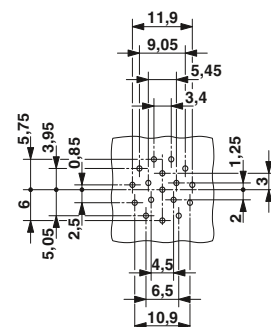
The free solder pin length is the distance between the mounting flange of the device connector and end of the soldered-in pin. In this measurement, the housing wall thickness and distance to the PCB are included.



8+1-pos.



12-pos.



17-pos.

M17 to M58 circular plug-in connectors

M23 - signal plug-in connectors

Device plug-in connector,
rear mounting

N

N

- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts
- 6 to 19-pos. versions, solder/crimp connection
- Individual marking of plug-in connectors with color rings

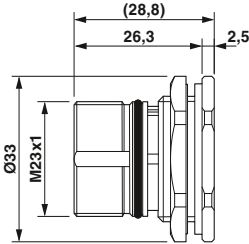
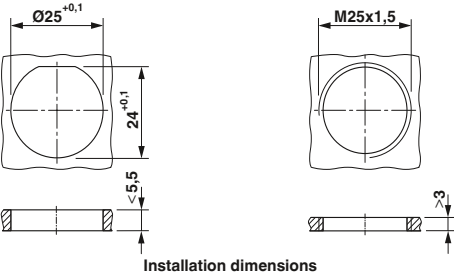


6, 7, 8+1-pos.



12, 17, 16+3-pos.

Description	Ordering data						Ordering data					
	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
Device plug-in connector , with contact carrier, with socket contacts , solder connection , central fixing nut , axial seal	6-pos.		7-pos.		8+1-pos.		12-pos.		17-pos.		16+3-pos.	
Device plug-in connector , with contact carrier, with pin contacts , solder connection , central fixing nut , axial seal	1619851	1	1619847	1	1619843	1	1619790	1	1619782	1	1619778	1
Device plug-in connector , with contact carrier, without contacts , for socket assembly , crimp connection , central fixing nut , axial seal	1619850	1	1619846	1	1619842	1	1619789	1	1619781	1	1619777	1
Device plug-in connector , with contact carrier, without contacts , for pin assembly , crimp connection , central fixing nut , axial seal	1619849	1	1619845	1	1619841	1	1619788	1	1619780	1		
	1619848	1	1619844	1	1619791	1	1619787	1	1619779	1		
	Accessories						Accessories					
For crimp connection: crimp contacts Color rings , 50 pcs. in set (to be ordered separately)	Order separately, see page 334 onwards See page 412						Order separately, see page 334 onwards See page 412					



M17 to M58 circular plug-in connectors

M23 - signal plug-in connectors

Crimp contacts

Pin and socket crimp contacts with various connection cross sections can be ordered for each crimp contact carrier.



Rolled crimp contacts



Turned crimp contacts

		Ordering data			Ordering data		
Description	Contacts / connection cross section [mm²]	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Crimp contacts for contact carriers, 6-pos., 6 x Ø 2.0 mm	Pin Ø 2.0 mm / 1.0 ... 1.5				RC-5CP2000	1603513	50
	Socket Ø 2.0 mm / 1.0 ... 1.5				RC-5CS2000	1603517	50
	Pin Ø 2.0 mm / 1.5 ... 2.5				RC-5AP2000	1603505	50
	Socket Ø 2.0 mm / 1.5 ... 2.5				RC-5AS2000	1603509	50
Crimp contacts for contact carriers, 7-pos., 7 x Ø 2.0 mm	Pin Ø 2.0 mm / 1.0 ... 1.5				RC-5CP2000	1603513	50
	Socket Ø 2.0 mm / 1.0 ... 1.5				RC-5CS2000	1603517	50
	Pin Ø 2.0 mm / 1.5 ... 2.5				RC-5AP2000	1603505	50
	Socket Ø 2.0 mm / 1.5 ... 2.5				RC-5AS2000	1603509	50
Crimp contacts for contact carriers, 9-pos. (8+1), 8 x Ø 1.0 mm, 1 x Ø 2.0 mm	Pin Ø 1.0 mm / 0.14 ... 0.56				RC-12P2000	1597862	100
	Socket Ø 1.0 mm / 0.14 ... 0.56				RC-12S2000	1599600	100
	Pin Ø 2.0 mm / 1.5 ... 2.5				RC-5AP2000	1603505	50
	Socket Ø 2.0 mm / 1.5 ... 2.5				RC-5AS2000	1603509	50
	Pin Ø 2.0 mm / 1.0 ... 1.5				RC-5CP2000	1603513	50
	Socket Ø 2.0 mm / 1.0 ... 1.5				RC-5CS2000	1603517	50
Crimp contacts for contact carriers, 12-pos., 12 x Ø 1.0 mm	Pin Ø 1.0 mm / 0.22 ... 0.56	RC-22P2000 RC-22S2000	1603321 1603327	100 100			
	Socket Ø 1.0 mm / 0.22 ... 0.56						
	Pin Ø 1.0 mm / 0.14 ... 0.56						
	Socket Ø 1.0 mm / 0.14 ... 0.56						
Crimp contacts for contact carriers, 16-pos., 16 x Ø 1.0 mm	Pin Ø 1.0 mm / 0.22 ... 0.56	RC-22P2000 RC-22S2000	1603321 1603327	100 100			
	Socket Ø 1.0 mm / 0.22 ... 0.56						
	Pin Ø 1.0 mm / 0.14 ... 0.56						
	Socket Ø 1.0 mm / 0.14 ... 0.56						
		Accessories			Accessories		
Crimping tools		See page 404			See page 404		

M17 to M58 circular plug-in connectors

M23 - feedback plug-in connectors

Mechanical and electrical data

Mechanical data	
Housing material:	Copper zinc alloy (CuZn), die-cast zinc (GD-Zn)
Housing surface:	Nickel-plated/thick layer passivated (can be coated)
Insulating body:	Polyamide (PA 66)
Contact material:	Copper zinc alloy (CuZn)
Contact surface:	Nickel-plated (Ni) with gold coating (Au)
Contact connection method:	Crimp version
Sealing and O-ring:	Fluorocarbon rubber (FKM)
Ambient temperature:	-40°C ... 125°C
Cable entry:	Cable and coupler plug-in connectors for cable outside diameter of 3 ... 14.5 mm, shielded
Type of locking:	M23 SPEEDCON screw locking, cable plug-in connector optionally with M23 x 1 coarse-pitch thread
Mechanical insertion/withdrawal cycles:	Standard: 100, punched-rolled C-HC crimp contacts: up to 500
Protection class:	IP67 in the locked state

Electrical data			
Number of positions		12	17
Contacts		12	17
Contact Ø	[mm]	1	1
Litz wire cross section, crimp contacts turned	[mm ²]	0.08 ... 1.0	0.08 ... 1.0
Litz wire cross section, C-HC crimp contacts punched-rolled	[mm ²]	0.06 ... 0.56	0.06 ... 0.56
Cable clamping area	max. Ø [mm]	14.5	14.5
Nominal current per contact at 25°C ¹⁾	[A]	8	8
Specifications according to DIN EN 61984:2009			
Rated voltage	[V AC/DC]	150	100
Test/surge voltage	[kV]	2.5	1.5
Surge voltage category		III	III
Pollution degree ²⁾		3	3
Installation height	[m]	Up to 3000	Up to 3000
Cable clamping area ³⁾	max. Ø [mm]	14.5	14.5

¹⁾ The effective current carrying capacity must be determined via a derating curve, if necessary, according to the application.

²⁾ The values specified assume that the plug-in connector pair is correctly locked and is only disconnected for testing and maintenance purposes. If the plug-in connector is unlocked and exposed to ambient conditions, and if there is a danger of contamination, the plug-in connector must be sealed using a protective cap ≥ IP54.

³⁾ The cable clamping areas specified on the following pages may vary depending on the cable material/structure. Selection and testing is the responsibility of the user.

Note:

Unlike plug-in equipment, plug-in connectors must not be plugged or unplugged under load.

Pin assignments and coding

Contact chamber numbering (view of plug-in side)				
Direction of rotation for contact chamber numbering (view of plug-in side)				
	Clockwise (standard) R marked	Counter-clockwise (standard) L marked	Counter-clockwise (reverse) L marked	Clockwise (reverse) R marked
Number of positions	Pin	Socket	Pin	Socket
12-pos. N-coding Crimp				
17-pos. N-coding Crimp				

Note:
Standard coding is "N". Other coding types and numbers of positions available on request

The plug-in connectors can be equipped with pin or socket contacts according to the application.

For reasons of safety, only socket contacts may be used in the live part of the plug.

M17 to M58 circular plug-in connectors

M23 - feedback plug-in connectors

Selection guide

M23 signal plug-in connector,
12/17-pos., N-coding, up to 8 A/150 V,
crimp ranges up to 1 mm²

- Cable plug-in connectors
- Coupler plug-in connectors
- Device plug-in connectors
(device flanges)

Crimp contacts must be ordered separately depending on the connection cross section.

Each housing type can be equipped with pin or socket contacts.

The plug-in connectors can be supplied with clockwise or counter-clockwise contact chamber numbering.

N (0°) and S (20°, on request) coding positions are possible.

The product chart provides an overview of the available components.

Plug-in connector type

Cable plug-in connectors

SPEEDCON rapid interlock system, M23 x 1 standard interlocking, see page 340.

M23 x 1 standard interlocking, see page 341.



Square mounting flange for cable and coupler plug-in connectors for wall mounting, see page 410.

Shielded

Coupler plug-in connectors

see page 342.



Square mounting flange for cable and coupler plug-in connectors for wall mounting, see page 410.

Shielded

Device plug-in connectors

Straight, 4-hole mounting
Ø 3.2,
see page 344.



Contact carriers for snapping in from the device side,
straight, 4-hole mounting
Ø 3.2, see page 344.



Angled, rotatable,
flange dimensions 26 mm x 26 mm,
see page 345.



Angled, rotatable,
Flange dimensions 28 mm x 28 mm,
see page 345.



Shielded

Crimp contacts

Socket contacts

Turned, see page 347.



Punched-rolled, taped, see page 346.



Pin contacts

Turned, see page 347.



Punched-rolled, taped, see page 346.

**Note:**

For reasons of safety, only socket contacts may be used in the live part of the plug.

Tools/accessories

Crimping tools

Crimping pliers for punched-rolled C-HC crimp contacts, see page 406.



Crimping pliers with digital display for turned crimp contacts, see page 407.



Tools/accessories

Contact removal tool for device plug-in connectors with contact carriers for snapping in from the device side, see page 410.



Color rings for individually marking the plug-in connectors, see page 412.



All housing can be fitted with pin or socket crimp contacts

M17 to M58 circular plug-in connectors

M23 - feedback plug-in connectors

Cable plug-in connector,
SPEEDCON rapid interlock system

- 12 or 17-pos. versions
- Individual marking of plug-in connectors with color rings



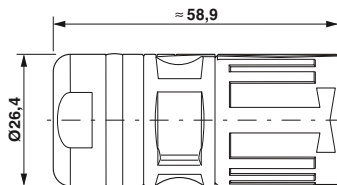
Cable plug-in connector,
socket assembly



Cable plug-in connector,
pin assembly



		Ordering data				Ordering data			
Description	Cable clamping area	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		12-pos.		17-pos.		12-pos.		17-pos.	
Cable plug-in connector , with contact carrier, without contacts, standard direction of rotation									
Universal gasket	3 mm ... 14.5 mm	1619472	1	1619470	1	1619471	1	1619469	1
	4 mm ... 6 mm	1619466	1	1619464	1	1619465	1	1619463	1
	6 mm ... 10 mm	1619460	1	1619458	1	1619459	1	1619457	1
	10 mm ... 14.5 mm	1619454	1	1619452	1	1619453	1	1619451	1
Cable plug-in connector , with contact carrier, without contacts, reverse direction of rotation									
Universal gasket	3 mm ... 14.5 mm	1619474	1			1619473	1		
	4 mm ... 6 mm	1619468	1			1619467	1		
	6 mm ... 10 mm	1619462	1			1619461	1		
	10 mm ... 14.5 mm	1619456	1			1619455	1		
		Accessories				Accessories			
Crimp contacts		For socket contacts, see page 346 onwards				For pin contacts, see page 346 onwards			
Color rings , 50 pcs. in set (to be ordered separately)		See page 412				See page 412			



Cable plug-in connector, M23 standard interlocking

- M23 standard knurled nut
- 12 or 17-pos. versions
- Individual marking of plug-in connectors with color rings

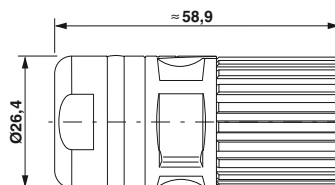


Cable plug-in connector,
socket assembly



Cable plug-in connector,
pin assembly

		Ordering data				Ordering data			
Description	Cable clamping area	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		12-pos.		17-pos.		12-pos.		17-pos.	
Cable plug-in connector housing , with contact carrier, without contacts, standard direction of rotation									
Universal gasket	3 mm ... 14.5 mm	1619631	1	1619629	1	1619630	1	1619628	1
	4 mm ... 6 mm	1619625	1	1619623	1	1619624	1	1619619	1
	6 mm ... 10 mm	1619616	1	1619614	1	1619615	1	1619613	1
	10 mm ... 14.5 mm	1619610	1	1619608	1	1619609	1	1619607	1
Cable plug-in connector housing , with contact carrier, without contacts, reverse direction of rotation									
Universal gasket	3 mm ... 14.5 mm	1619633	1			1619632	1		
	4 mm ... 6 mm	1619627	1			1619626	1		
	6 mm ... 10 mm	1619618	1			1619617	1		
	10 mm ... 14.5 mm	1619612	1			1619611	1		
		Accessories				Accessories			
Crimp contacts		For socket contacts, see page 346 onwards				For pin contacts, see page 346 onwards			
Color rings , 50 pcs. in set (to be ordered separately)		See page 412				See page 412			



M17 to M58 circular plug-in connectors

M23 - feedback plug-in connectors

Coupler plug-in connector

- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts
- 12 or 17-pos. versions
- Individual marking of plug-in connectors with color rings

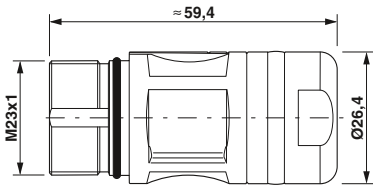


Coupler plug-in connector, socket assembly



Coupler plug-in connector, pin assembly

		Ordering data				Ordering data			
Description	Cable clamping area	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		12-pos.		17-pos.		12-pos.		17-pos.	
Coupler plug-in connector housing , with contact carrier, without contacts, standard direction of rotation									
Universal gasket	3 mm ... 14.5 mm	1620016	1	1620014	1	1620015	1	1620013	1
	4 mm ... 6 mm	1620009	1	1620007	1	1620008	1	1620006	1
	6 mm ... 10 mm	1620003	1	1620001	1	1620002	1	1620000	1
	10 mm ... 14.5 mm	1619997	1	1619995	1	1619996	1	1619994	1
Coupler plug-in connector housing , with contact carrier, without contacts, reverse direction of rotation									
Universal gasket	3 mm ... 14.5 mm	1620018	1			1620017	1		
	4 mm ... 6 mm	1620011	1			1620010	1		
	6 mm ... 10 mm	1620005	1			1620004	1		
	10 mm ... 14.5 mm	1619999	1			1619998	1		
		Accessories				Accessories			
Crimp contacts		For socket contacts, see page 346 onwards				For pin contacts, see page 346 onwards			
Color rings , 50 pcs. in set (to be ordered separately)		See page 412				See page 412			



M17 to M58 circular plug-in connectors

M23 - feedback plug-in connectors

Device plug-in connectors,
straight, front mounting

- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts
- Contact insert for support on the device or can be snapped in

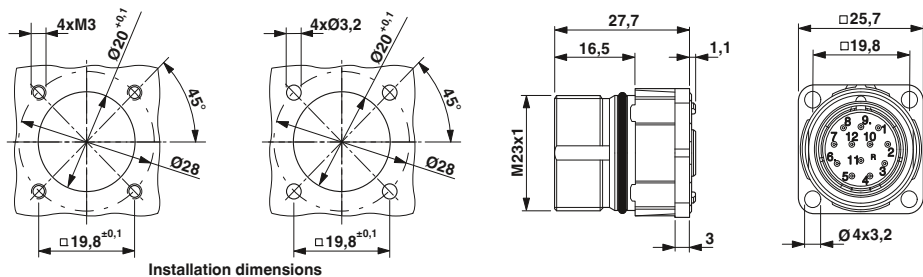


Device plug-in connector,
straight, socket assembly



Device plug-in connector,
straight, pin assembly

Description	Ordering data				Ordering data			
	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
Device plug-in connector, straight , with contact carrier, without contacts, 4-hole fastening with Ø 3.2 mm	12-pos.		17-pos.		12-pos.		17-pos.	
Standard direction of rotation	1607283	1	1607892	1	1607236	1	1607860	1
Reverse direction of rotation	1607307	1			1607260	1		
Device plug-in connector, straight , with contact carrier, without contacts, 4-hole fastening with Ø 3.2 mm , contact insert can be snapped in								
Standard direction of rotation	1607830	1	1607893	1	1607804	1	1607863	1
Reverse direction of rotation	1607844	1			1607817	1		
	Accessories				Accessories			
Crimp contacts Color rings , 50 pcs. in set (to be ordered separately)	For socket contacts, see page 346 onwards See page 412				For pin contacts, see page 346 onwards See page 412			



Device plug-in connectors, angled, rotatable, front mounting

- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts
- Flange dimensions 26 mm x 26 mm or 28 mm x 28 mm

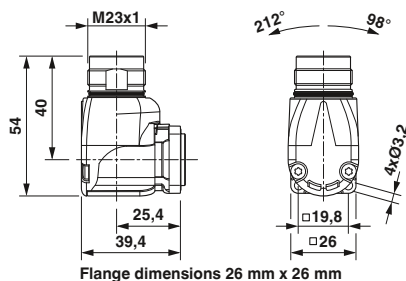


Device plug-in connector, angled, rotatable, for socket contacts

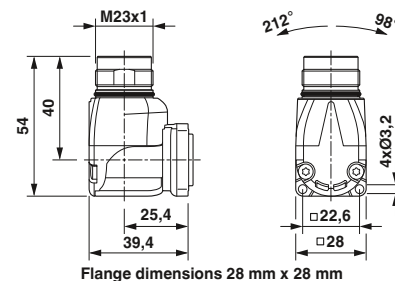


Device plug-in connector, angled, rotatable, for pin contacts

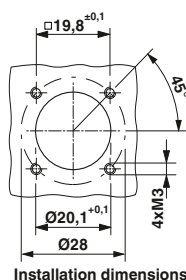
Description	Ordering data				Ordering data			
	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
Device plug-in connector, angled, rotatable, with contact carrier, without contacts, flange dimensions: 26 mm x 26 mm Standard direction of rotation Reverse direction of rotation	12-pos.		17-pos.		12-pos.		17-pos.	
	1607280	1	1607345	1	1607233	1	1607328	1
Device plug-in connector, angled, rotatable, with contact carrier, without contacts, flange dimensions: 28 mm x 28 mm Standard direction of rotation Reverse direction of rotation	1607304	1			1607257	1		
	1607827	1	1607887	1	1607802	1	1607852	1
	1607842	1			1607814	1		
Crimp contacts Color rings, 50 pcs. in set (to be ordered separately)	Accessories				Accessories			
	For socket contacts, see page 346 onwards See page 412				For pin contacts, see page 346 onwards See page 412			



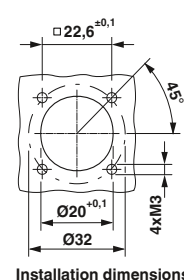
Flange dimensions 26 mm x 26 mm



Flange dimensions 28 mm x 28 mm



Installation dimensions



Installation dimensions

Crimp contacts, punched-rolled

C-HC® are punched-rolled contacts. They are designed for high insertion/withdrawal cycles.

The contacts are available taped on rolls for manual or automatic processing.

Note: depending on the litz wire used, the connection cross sections (crimp ranges) may deviate from the listed values. For reasons of safety, only socket contacts may be used in the live part of the plug.



C-HC socket contacts



C-HC pin contacts

Description	Connection cross section [mm²]
Crimp contacts, C-HC punched-rolled, Ø 1.0 mm, 2500 pcs./roll	
	0.06 mm² ... 0.25 mm²
	0.2 mm² ... 0.56 mm²
Crimp contact C-HC punched-rolled, Ø 1.0 mm, 10,000 pcs./roll	
	0.06 mm² ... 0.25 mm²
	0.2 mm² ... 0.56 mm²

Crimping tools

Ordering data		
Type	Order No.	Pcs. / Pkt.
SF-10KS320	1607031	1
SF-10KS350	1607032	1
SF-10KS330	1607358	1
SF-10KS360	1607361	1

Accessories	
Order separately, see page 406 onwards	

Ordering data		
Type	Order No.	Pcs. / Pkt.
SF-10KP320	1615961	1
SF-10KP350	1615963	1
SF-10KP330	1615962	1
SF-10KP360	1615964	1

Accessories	
Order separately, see page 406 onwards	

M17 to M58 circular plug-in connectors

M17 - power plug-in connectors

Mechanical and electrical data

Mechanical data	
Housing material:	Copper zinc alloy (CuZn), die-cast zinc (GD-Zn)
Housing surface:	Nickel-plated/thick layer passivated (can be coated)
Insulating body:	Polyamide (PA 66)
Contact material:	Copper zinc alloy (CuZn)
Contact surface:	Nickel-plated (Ni) with gold coating (Au)
Contact connection method:	Crimp version
Sealing and O-ring:	Fluorocarbon rubber (FKM)
Ambient temperature:	-40°C ... 125°C
Cable entry:	Cable and coupler plug-in connectors for cable outside diameter of 3.5 - 11 mm, shielded (M17 Compact) 5 - 12.5 mm, shielded (M17)
Type of locking:	M17 SPEEDCON rapid interlock system, cable plug-in connector Optionally with M17 x 1 coarse-pitch thread
Mechanical insertion/withdrawal cycles:	Standard: 100, punched-rolled C-HC crimp contacts: up to 500
Protection class:	IP67 in the locked state

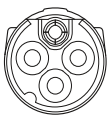
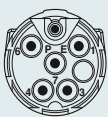
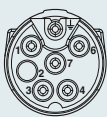
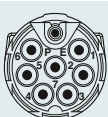
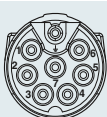
Electrical data								
Number of positions		4 (3+PE)	6 (5+PE)	7 (6+PE)	8 (7+PE)	9 (5+3+PE)		
Contacts		3 + PE	5 + PE	6 + PE	7 + PE	5	+	3 + PE
Contact Ø	[mm]	2	1	1	1	0.6		1
Litz wire cross section, crimp contacts	[mm²]	0.25 ... 2.5	0.06 ... 1.0	0.06 ... 1.0	0.06 ... 1.0	0.06 ... 0.5		0.06 ... 1.0
Turned								
Litz wire cross section, C-HC crimp contacts	[mm²]	–	0.08 ... 0.56	0.06 ... 0.56	0.06 ... 0.56	–		–
Punched-rolled								
Nominal current per contact at 25°C ¹⁾		20 (25) ²⁾	14	14	14	3.6		14
Specifications according to DIN EN 61984:2009								–
Rated voltage	[V AC/DC]	630	630	630	630	60		630
Test/surge voltage	[kV AC]	6	6	6	6	1.5		6
Surge voltage category		III	III	III	III			III
Pollution degree ³⁾		3	3	3	3			3
Installation height	[m]	Up to 3000	Up to 3000	Up to 3000	Up to 3000			Up to 3000
Cable clamping area ⁴⁾	max. Ø [mm]	12.5	12.5	12.5	12.5			12.5

¹⁾ The effective current carrying capacity must be determined via a derating curve, if necessary, according to the application.

²⁾ 25 A in the case of assignment with 3 x 2.5 mm²

³⁾ The values specified assume that the plug-in connector pair is correctly locked and is only disconnected for testing and maintenance purposes. If the plug-in connector is unlocked and exposed to ambient conditions, and if there is a danger of contamination, the plug-in connector must be sealed using a protective cap ≥ IP54.

⁴⁾ The cable clamping areas specified on the following pages may vary depending on the cable material/structure. Selection and testing is the responsibility of the user.

Contact chamber numbering (view of plug-in side)		
Number of positions	Pin	Socket
4-pos. (3+PE) Crimp		
6-pos. (5+PE) (Contact chambers 2+5 closed) Crimp		
7-pos. (6+PE) Crimp		
8-pos. (7+PE) Crimp		
9-pos. (5+3+PE) Crimp		
* with grounding spring PE leading		* with grounding spring PE leading

Note:
The plug-in connectors can be equipped with pin or socket contacts according to the application.

For reasons of safety, only socket contacts may be used in the live part of the plug.

M17 to M58 circular plug-in connectors

M17 - power plug-in connectors

Selection guide

M17 power plug-in connectors, 4/6/7/8/9-pos., up to 20 A/630 V, crimp ranges: 0.06 mm² to 2.5 mm²

- Cable plug-in connectors
- Coupler plug-in connectors
- Device plug-in connectors (device flanges)

The plug-in connectors are supplied fully pre-assembled and are complemented by the respective crimp contacts.

Each housing type can be equipped with pin or socket contacts. Cable plug-in connectors can be optionally equipped with SPEEDCON rapid interlock system or with M17 x 1 coarse-pitch thread. The plug-in connectors with external thread are fully compatible with standard threads and the SPEEDCON rapid interlock system.

The product chart provides an overview of the available components.

Plug-in connector type

Cable plug-in connector

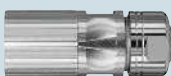
SPEEDCON rapid interlock system, M17 Compact, see page 352.



M17, see page 356.



M17 x 1 standard interlocking, M17, see page 357.



Square mounting flange for cable and coupler plug-in connectors for wall mounting, see page 410.



Shielded

Coupler plug-in connector/panel feed-through

Coupler plug-in connector M17 Compact, see page 353.



M17, see page 358.



Panel feed-through M17 Compact, see page 354.



Shielded

Device plug-in connector

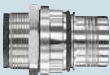
Straight, M17 Compact, see page 355.



Straight, M17, see page 359.



Straight, with central fastening thread, front mounting, M17, see page 361.



Straight, with central fastening thread, rear mounting, M17, see page 361.



Angled, rotatable, M17, see page 360.



Shielded

Crimp contacts

Socket contacts

Turned, see page 363.



Punched-rolled, taped, see page 362.



Pin contacts

Turned, see page 363.



Punched-rolled, taped, see page 362.



All housing can be fitted with pin or socket crimp contacts

Note:

For reasons of safety, only socket contacts may be used in the live part of the plug.

Tools/accessories

Crimping tools

Crimping pliers for punched-rolled C-HC crimp contacts, see page 406.



Crimping pliers with digital display for turned crimp contacts, see page 407.



Tools/accessories

Contact removal tool for device plug-in connectors with contact carriers for snapping in from the device side, see page 410.



Color rings for individually marking the plug-in connectors, see page 412.



M17 to M58 circular plug-in connectors

M17 - power plug-in connectors

M17 Compact cable plug-in connector

- High packing density in a compact product
- Individual marking of plug-in connectors with color rings



3+PE, 5+PE, 6+PE-pos.



7+PE, 5+3+PE-pos.

		Ordering data						Ordering data					
Description	Cable clamping area	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		3+PE-pos.		5+PE-pos.		6+PE-pos.		7+PE-pos.		5+3+PE-pos.			
Cable plug-in connector, with contact carrier, without contacts, for socket assembly	3.5 mm ... 5.5 mm	1618312	1	1618621	1	1618632	1	1618633	1	1618674	1		
	5 mm ... 9 mm	1618408	1	1618620	1	1618631	1	1618634	1	1618675	1		
	9 mm ... 11 mm	1618603	1	1618619	1	1618630	1	1618635	1	1618676	1		
Cable plug-in connector, with contact carrier, without contacts, for pin assembly	3.5 mm ... 5.5 mm	1618602	1	1618614	1	1618622	1	1618640	1	1618681	1		
	5 mm ... 9 mm	1618574	1	1618615	1	1618623	1	1618639	1	1618680	1		
	9 mm ... 11 mm	1618575	1	1618616	1	1618624	1	1618638	1	1618679	1		
		Accessories						Accessories					
Crimp contacts		Order separately, see page 362 onwards						Order separately, see page 362 onwards					
Color rings, 50 pcs. in set (to be ordered separately)		See page 412						See page 412					



M17 Compact coupler plug-in connector

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Individual marking of plug-in connectors with color rings



3+PE, 5+PE, 6+PE-pos.



7+PE, 5+3+PE-pos.

		Ordering data						Ordering data					
Description	Cable clamping area	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		3+PE-pos.		5+PE-pos.		6+PE-pos.		7+PE-pos.		5+3+PE-pos.			
Coupler plug-in connector , with contact carrier, without contacts, for socket assembly	3.5 mm ... 5.5 mm	1618695	1	1618696	1	1618708	1	1618716	1	1618748	1		
	5 mm ... 9 mm	1618694	1	1618697	1	1618709	1	1618717	1	1618749	1		
	9 mm ... 11 mm	1618693	1	1618698	1	1618710	1	1618718	1	1618750	1		
Coupler plug-in connector , with contact carrier, without contacts, for pin assembly	3.5 mm ... 5.5 mm	1620614	1	1618703	1	1618704	1	1618712	1	1618740	1		
	5 mm ... 9 mm	1618406	1	1618702	1	1618705	1	1618713	1	1618741	1		
	9 mm ... 11 mm	1618690	1	1618701	1	1618706	1	1618714	1	1618742	1		
		Accessories						Accessories					
Crimp contacts		Order separately, see page 362 onwards						Order separately, see page 362 onwards					
Color rings , 50 pcs. in set (to be ordered separately)		See page 412						See page 412					



M17 to M58 circular plug-in connectors

M17 - power plug-in connectors

M17 Compact panel feed-through

- Panel feed-throughs suitable for front and rear mounting
- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Individual marking of plug-in connectors with color rings
- **Flange dimensions**
25.7 mm x 25.7 mm

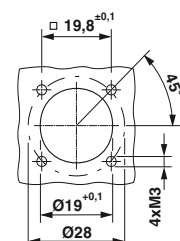
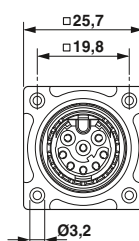
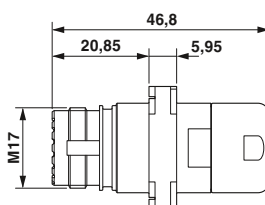


3+PE, 5+PE, 6+PE-pos.



7+PE, 5+3+PE-pos.

		Ordering data						Ordering data					
Description	Cable clamping area	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		3+PE-pos.		5+PE-pos.		6+PE-pos.		7+PE-pos.		5+3+PE-pos.			
Panel feed-through , with contact carrier, without contacts, for socket assembly	3.5 mm ... 5.5 mm	1618762	1	1618772	1	1618780	1	1618787	1	1618825	1		
	5 mm ... 9 mm	1618763	1	1618773	1	1618781	1	1618786	1	1618824	1		
	9 mm ... 11 mm	1618764	1	1618774	1	1618782	1	1618785	1	1618823	1		
Panel feed-through , with contact carrier, without contacts, for pin assembly	3.5 mm ... 5.5 mm	1618402	1	1618767	1	1618776	1	1618788	1	1618818	1		
	5 mm ... 9 mm	1618407	1	1618768	1	1618777	1	1618790	1	1618819	1		
	9 mm ... 11 mm	1618760	1	1618769	1	1618778	1	1618791	1	1618820	1		
		Accessories						Accessories					
Crimp contacts Color rings , 50 pcs. in set (to be ordered separately)		Order separately, see page 362 onwards See page 412						Order separately, see page 362 onwards See page 412					



Installation dimensions

M17 Compact device plug-in connectors, front mounting

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Individual marking of plug-in connectors with color rings
- **Flange dimensions**
21.6 mm x 21.6 mm

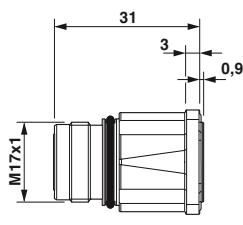


3+PE, 5+PE, 6+PE-pos.

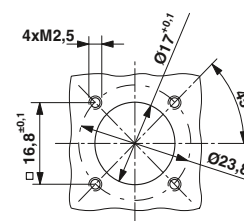
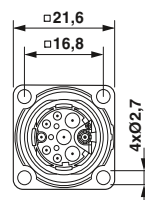


7+PE, 5+3+PE-pos.

Description	Ordering data						Ordering data					
	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	3+PE-pos.		5+PE-pos.		6+PE-pos.		7+PE-pos.		5+3+PE-pos.			
Device plug-in connector, with contact carrier, without contacts, for socket assembly	1607694	1	1607728	1	1613589	1	1607769	1	1613631	1		
Contact insert for support on the device												
Device plug-in connector, with contact carrier, without contacts, for pin assembly	1607675	1	1607711	1	1613570	1	1607747	1	1613612	1		
Contact insert for support on the device												
Device plug-in connector, with contact carrier, without contacts, for socket assembly	1607692	1	1607727	1	1613588	1	1607768	1	1613630	1		
Contact insert can be snapped in												
Device plug-in connector, with contact carrier, without contacts, for pin assembly	1607674	1	1607710	1	1613569	1	1607746	1	1613611	1		
Contact insert can be snapped in												
Accessories												
Crimp contacts	Order separately, see page 362 onwards						Order separately, see page 362 onwards					
Color rings, 50 pcs. in set (to be ordered separately)	See page 412						See page 412					



Flange dimensions 21.6 mm x 21.6 mm



Installation dimensions

M17 to M58 circular plug-in connectors

M17 - power plug-in connectors

Cable plug-in connector,
SPEEDCON rapid interlock system

- SPEEDCON rapid interlock system or M17 standard interlocking
- Standard knurled nuts compatible with mating plugs with SPEEDCON or M17 standard external thread
- Individual marking of plug-in connectors with color rings

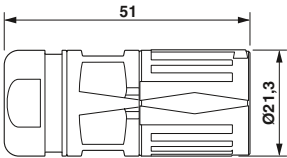


3+PE, 5+PE, 6+PE-pos.



7+PE, 5+3+PE-pos.

		Ordering data						Ordering data							
Description		Cable clamping area		Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.		
				3+PE-pos.		5+PE-pos.		6+PE-pos.		7+PE-pos.		5+3+PE-pos.			
Cable plug-in connector , with contact carrier, without contacts, for socket assembly		5 mm ... 8 mm		1607683	1	1607718	1	1613578	1	1607756	1	1613620	1		
		8 mm ... 10 mm		1607685	1	1607720	1	1613580	1	1607759	1	1613622	1		
		10 mm ... 12.5 mm		1624538	1	1624544	1	1624550	1	1624556	1	1624639	1		
Cable plug-in connector , with contact carrier, without contacts, for pin assembly		5 mm ... 8 mm		1607665	1	1607700	1	1613559	1	1607736	1	1613601	1		
		8 mm ... 10 mm		1607667	1	1607702	1	1613561	1	1607738	1	1613603	1		
		10 mm ... 12.5 mm		1624535	1	1624541	1	1624547	1	1624553	1	1624637	1		
				Accessories						Accessories					
Crimp contacts Color rings , 50 pcs. in set (to be ordered separately)				Order separately, see page 362 onwards See page 412						Order separately, see page 362 onwards See page 412					



Cable plug-in connector, M17 standard interlocking

- Standard knurled nuts compatible with mating plugs with SPEEDCON or M17 standard external thread
- Individual marking of plug-in connectors with color rings

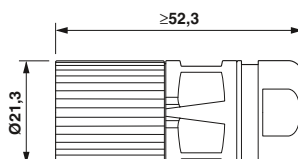


3+PE, 5+PE, 6+PE-pos.



7+PE, 5+3+PE-pos.

		Ordering data						Ordering data					
Description	Cable clamping area	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		3+PE-pos.		5+PE-pos.		6+PE-pos.		7+PE-pos.		5+3+PE-pos.			
Cable plug-in connector , with contact carrier, without contacts, for socket assembly	5 mm ... 8 mm	1607682	1	1607717	1	1613577	1	1607755	1	1613619	1		
	8 mm ... 10 mm	1607684	1	1607719	1	1613579	1	1607758	1	1613621	1		
	10 mm ... 12.5 mm	1624537	1	1624534	1	1624549	1	1624555	1	1624638	1		
Cable plug-in connector , with contact carrier, without contacts, for pin assembly	5 mm ... 8 mm	1607663	1	1607699	1	1613558	1	1607735	1	1613600	1		
	8 mm ... 10 mm	1607666	1	1607701	1	1613560	1	1607737	1	1613602	1		
	10 mm ... 12.5 mm	1624534	1	1624540	1	1624546	1	1624552	1	1624636	1		
		Accessories						Accessories					
Crimp contacts		Order separately, see page 362 onwards						Order separately, see page 362 onwards					
Color rings , 50 pcs. in set (to be ordered separately)		See page 412						See page 412					



M17 to M58 circular plug-in connectors

M17 - power plug-in connectors

Coupler plug-in connector

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Individual marking of plug-in connectors with color rings

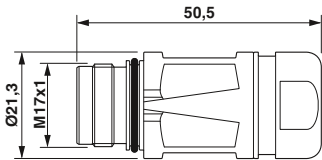


3+PE, 5+PE, 6+PE-pos.



7+PE, 5+3+PE-pos.

		Ordering data				Ordering data			
Description	Cable clamping area	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		3+PE-pos.		5+PE-pos.		6+PE-pos.		7+PE-pos.	5+3+PE-pos.
Coupler plug-in connector , with contact carrier, without contacts, for socket assembly									
	5 mm ... 8 mm	1607688	1	1607723	1	1613583	1	1607764	1613625
	8 mm ... 10 mm	1607689	1	1607724	1	1613584	1	1607765	1613626
	10 mm ... 12.5 mm	1624539	1	1624545	1	1624551	1	1624557	1624654
Coupler plug-in connector , with contact carrier, without contacts, for pin assembly									
	5 mm ... 8 mm	1607670	1	1607706	1	1613564	1	1607741	1613606
	8 mm ... 10 mm	1607671	1	1607707	1	1613565	1	1607742	1613607
	10 mm ... 12.5 mm	1624536	1	1624542	1	1624548	1	1624554	1624653
		Accessories				Accessories			
Crimp contacts		Order separately, see page 362 onwards				Order separately, see page 362 onwards			
Color rings , 50 pcs. in set (to be ordered separately)		See page 412				See page 412			



Device plug-in connector, straight, front mounting

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Contact insert for support on the device or can be snapped in
- Individual marking of plug-in connectors with color rings
- **Flange dimensions**
25.7 mm x 25.7 mm

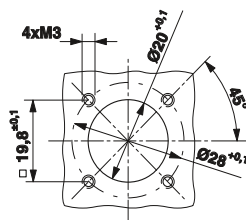


3+PE, 5+PE, 6+PE-pos.

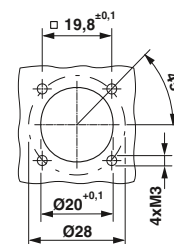


7+PE, 5+3+PE-pos.

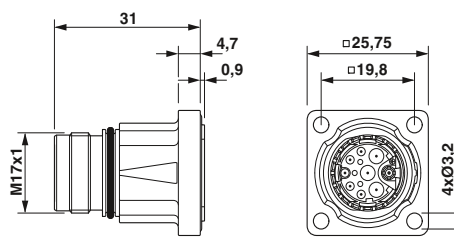
Description	Ordering data						Ordering data					
	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	3+PE-pos.		5+PE-pos.		6+PE-pos.		7+PE-pos.		5+3+PE-pos.			
Device plug-in connector , with contact carrier, without contacts, for socket assembly Contact insert for support on the device	1619189	1	1619191	1	1619193	1	1619195	1	1620459	1		
Device plug-in connector , with contact carrier, without contacts, for pin assembly Contact insert for support on the device	1619186	1	1619190	1	1619192	1	1619194	1	1620460	1		
Device plug-in connector , with contact carrier, without contacts, for socket assembly Contact insert can be snapped in	1619212	1	1619214	1	1619216	1	1619218	1	1620461	1		
Device plug-in connector , with contact carrier, without contacts, for pin assembly Contact insert can be snapped in	1619209	1	1619213	1	1619215	1	1619217	1	1620462	1		
	Accessories						Accessories					
Crimp contacts Color rings , 50 pcs. in set (to be ordered separately)	Order separately, see page 362 onwards See page 412						Order separately, see page 362 onwards See page 412					



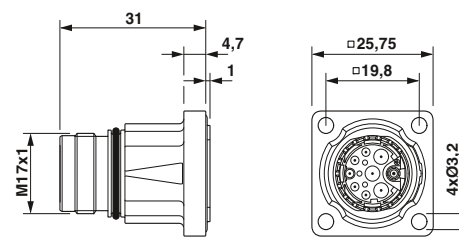
Installation dimensions



Installation dimensions



Contact insert for support on the device



Contact insert can be snapped in

M17 to M58 circular plug-in connectors

M17 - power plug-in connectors

Device plug-in connector, angled, rotatable, front mounting

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Housing can be freely rotated up to 308°
- Individual marking of plug-in connectors with color rings
- Flange versions for M2.5/M3 attachment
- **Flange dimensions**
25.7 mm x 25.7 mm



3+PE, 5+PE, 6+PE-pos.

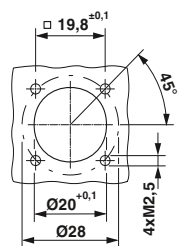


7+PE, 5+3+PE-pos.

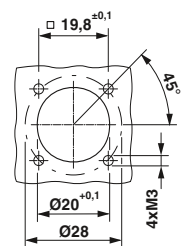
Description
Device plug-in connector, angled, rotatable, with contact carrier, without contacts, for socket contacts
Fixing with M2.5 Device plug-in connector, angled, rotatable, with contact carrier, without contacts, for pin contacts
Fixing with M2.5 Device plug-in connector, angled, rotatable, with contact carrier, without contacts, for socket contacts
Fixing with M3 Device plug-in connector, angled, rotatable, with contact carrier, without contacts, for pin contacts
Fixing with M3
Crimp contacts Color rings, 50 pcs. in set (to be ordered separately)

Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
3+PE-pos.		5+PE-pos.		6+PE-pos.	
1620428	1	1620432	1	1620434	1
1620427	1	1620431	1	1620433	1
1620443	1	1620447	1	1620449	1
1620444	1	1620448	1	1620450	1
Accessories					
Order separately, see page 362 onwards See page 412					

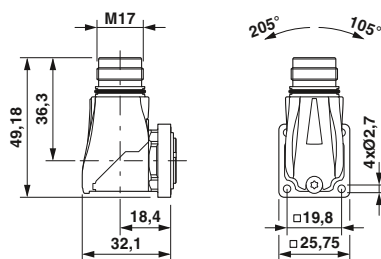
Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
7+PE-pos.		5+3+PE-pos.			
1620436	1	1620438	1		
1620435	1	1620437	1		
1620451	1	1620453	1		
1620452	1	1620454	1		
Accessories					
Order separately, see page 362 onwards See page 412					



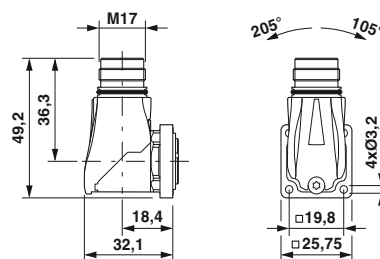
Installation dimensions



Installation dimensions



Fixing with M2.5



Fixing with M3

**Device plug-in connector,
central fastening thread,
front/rear mounting**

- Compatible with mating plugs with SPEEDCON or M17 standard knurled nuts
- Contact carrier snapped in from the device side
- Individual marking of plug-in connectors with color rings

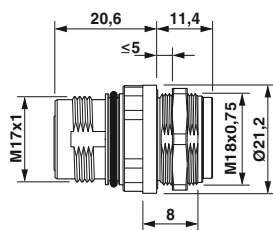


3+PE, 5+PE, 6+PE-pos.

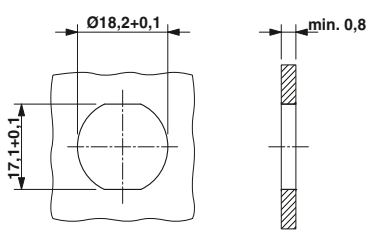


7+PE, 5+3+PE-pos.

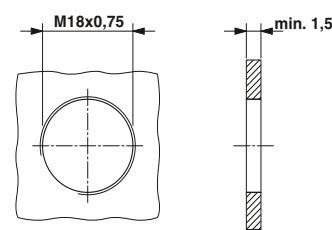
Description	Ordering data			Ordering data		
	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
Device plug-in connector, front mounting , M18 x 0.75 fastening thread, with contact carrier, without contacts, for socket assembly	1613546	1	1613550	1	1613572	1
Device plug-in connector, front mounting , M18 x 0.75 fastening thread, with contact carrier, without contacts, for pin contacts	1613544	1	1613548	1	1613553	1
Device plug-in connector, rear mounting , M20 x 1.5 fastening thread, with contact carrier, without contacts, for socket contacts	1613547	1	1613551	1	1613587	1
Device plug-in connector, rear mounting , M20 x 1.5 fastening thread, with contact carrier, without contacts, for pin contacts	1613545	1	1613549	1	1613568	1
Description	Accessories			Accessories		
	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Locking nut , for mounting bore holes and anti-rotation protection	ST-E2015151	1613831	10	ST-E2015151	1613831	10
M18 x 0.75	RC-13041	1600417	10	RC-13041	1600417	10
M20 x 1.5	Order separately, see page 362 onwards See page 412			Order separately, see page 362 onwards See page 412		
Crimp contacts						
Color rings , 50 pcs. in set (to be ordered separately)						



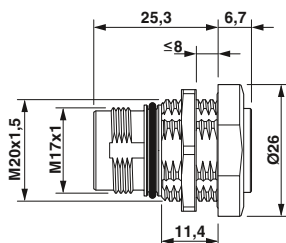
Front mounting, M18 x 0.75, order locking nut separately



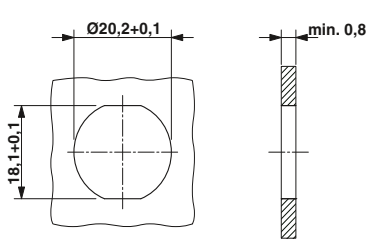
Installation dimensions: mounting with anti-rotation protection and locking nut



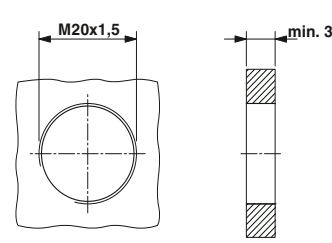
Installation dimensions: mounting with thread



Rear mounting, M20 x 1.5, order locking nut separately



Installation dimensions: mounting with anti-rotation protection and locking nut



Installation dimensions: mounting with thread

M17 to M58 circular plug-in connectors

M17 - power plug-in connectors

Crimp contacts, punched-rolled

C-HC® are punched-rolled contacts. They are designed for high insertion/withdrawal cycles.

The contacts are available taped on rolls for manual or automatic processing.

Note: depending on the litz wire used, the connection cross sections (crimp ranges) may deviate from the listed values. For reasons of safety, only socket contacts may be used in the live part of the plug.



C-HC socket contacts



C-HC pin contacts

Description	Connection cross section [mm²]
Crimp contacts, C-HC punched-rolled, Ø 1.0 mm, 2500 pcs./roll	
	0.06 mm² ... 0.25 mm²
	0.2 mm² ... 0.56 mm²
Crimp contact C-HC punched-rolled, Ø 1.0 mm, 10,000 pcs./roll	
	0.06 mm² ... 0.25 mm²
	0.2 mm² ... 0.56 mm²

Crimping tools

Ordering data		
Type	Order No.	Pcs. / Pkt.
SF-10KS320	1607031	1
SF-10KS350	1607032	1
SF-10KS330	1607358	1
SF-10KS360	1607361	1

Accessories	
Order separately, see page 406 onwards	

Ordering data		
Type	Order No.	Pcs. / Pkt.
SF-10KP320	1615961	1
SF-10KP350	1615963	1
SF-10KP330	1615962	1
SF-10KP360	1615964	1

Accessories	
Order separately, see page 406 onwards	

Contact diameter

Number of positions	Number of contacts	Contact Ø [mm]
4(3+PE)	4	2
6(5+PE)	6	1
7(6+PE)	7	1
8(7+PE)	8	1
9(5+3+PE)	5+3+PE	0.6+1+1
17	17	0.6

Crimp contacts, turned

M17 power plug-in connectors are fitted with contacts with Ø 2 mm, Ø 1 mm or Ø 0.6 mm depending on the number of positions (see table below).

Note: depending on the litz wire used, the connection cross sections (crimp ranges) may deviate from the listed values. For reasons of safety, only socket contacts may be used in the live part of the plug.



Crimp contacts socket



Crimp contacts pin

		Ordering data			Ordering data		
Description	Connection cross section [mm²]	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Contact socket Ø 2.0 mm	0.25 ... 1.0	ST-20KS010	1607657	50			
	1.0 ... 2.5	ST-20KS020	1607658	50			
Contact socket Ø 1.0 mm	0.06 mm² ... 0.25 mm²	ST-10KS010	1618239	100			
	0.34 mm² ... 0.5 mm²	ST-10KS020	1618251	100			
	0.5 mm² ... 1.0 mm²	ST-10KS030	1618254	100			
Contact socket Ø 0.6 mm	0.06 mm² ... 0.25 mm²	ST-06KS010	1607580	100			
	0.14 mm² ... 0.34 mm²	ST-06KS020	1607581	100			
	0.34 mm² ... 0.50 mm²	ST-06KS030	1607582	100			
Contact pin Ø 2.0 mm	0.25 ... 1.0				ST-20KP010	1607655	50
	1.0 ... 2.5				ST-20KP020	1607656	50
Contact pin Ø 1.0 mm	0.06 mm² ... 0.25 mm²				ST-10KP010	1618255	100
	0.34 mm² ... 0.5 mm²				ST-10KP020	1618256	100
	0.5 mm² ... 1.0 mm²				ST-10KP030	1618261	100
Contact pin Ø 0.6 mm	0.06 mm² ... 0.25 mm²				ST-06KP010	1607577	100
	0.14 mm² ... 0.34 mm²				ST-06KP020	1607578	100
	0.34 mm² ... 0.50 mm²				ST-06KP030	1607579	100
		Accessories			Accessories		
Crimping tools		Order separately, see page 407			Order separately, see page 407		

Contact diameter

Number of positions	Number of contacts	Contact Ø [mm]
4(3+PE)	4	2
6(5+PE)	6	1
7(6+PE)	7	1
8(7+PE)	8	1
9(5+3+PE)	5+3+PE	0.6+1+1
17	17	0.6

M17 to M58 circular plug-in connectors

M23 - power plug-in connectors

Mechanical and electrical data

Mechanical data

Housing material:	Copper zinc alloy (CuZn), die-cast zinc (GD-Zn)
Housing surface:	Nickel-plated/thick layer passivated (can be coated)
Insulating body:	Polyamide (PA 66)
Contact material:	Copper zinc alloy (CuZn)
Contact surface:	Nickel-plated (Ni) with gold coating (Au)
Contact connection method:	Crimp version
Sealing and O-ring:	Fluorocarbon rubber (FKM)
Ambient temperature:	-40°C ... 125°C
Cable entry:	Cable and coupler plug-in connectors for cable outside diameter of 7.5 - 18 mm, shielded
Type of locking:	M23 SPEEDCON screw locking, cable plug-in connector optional M23 x 1 coarse-pitch thread
Mechanical insertion/withdrawal cycles:	Standard: 100
Protection class:	IP67 in the locked state

Electrical data

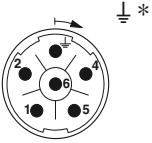
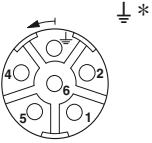
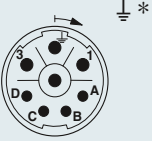
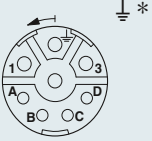
Number of positions		6 (5+PE)	8 (4+3+PE)				
Contacts		5 + PE	4	+	3	+	PE
Contact Ø	[mm]	2	1		2		2
Litz wire cross sections							
Short version, cable Ø max. 14 mm	[mm²]	0.25 ... 2.5	0.06 ... 1.0		0.25 ... 2.5		0.25 ... 2.5
Long version, cable Ø max. 18 mm	[mm²]	0.25 ... 4.0	0.06 ... 1.0		0.25 ... 4.0		0.25 ... 4.0
Device plug-in connectors	[mm²]	0.25 ... 4.0	0.06 ... 1.0		0.25 ... 4.0		0.25 ... 4.0
Nominal current per contact at 25°C ¹⁾		30	9		30		–
Specifications according to DIN EN 61984:2009							–
Rated voltage	[V AC/DC]	630 ²⁾	250		630 ²⁾		–
Test/surge voltage	[kV AC]	6	4		6		–
Surge voltage category		III			III		
Pollution degree ³⁾		3			3		
Installation height	[m]	Up to 3000			Up to 3000		
Cable clamping area 4)	max. Ø [mm]	18			18		

¹⁾ The effective current carrying capacity must be determined via a derating curve, if necessary, according to the application.

²⁾ 400 V when equipped with punched-rolled C-HC contacts

³⁾ The values specified assume that the plug-in connector pair is correctly locked and is only disconnected for testing and maintenance purposes. If the plug-in connector is unlocked and exposed to ambient conditions, and if there is a danger of contamination, the plug-in connector must be sealed using a protective cap ≥ IP54.

⁴⁾ The cable clamping areas specified on the following pages may vary depending on the cable material/structure. Selection and testing is the responsibility of the user.

Contact chamber numbering (view of plug-in side)				
Number of positions	Pin		Socket	
6-pos. (5 + PE) Crimp		* with grounding spring, Pos. 3 leading		* with grounding spring, Pos. 3
8-pos. (4 + 3 + PE) Crimp		* with grounding spring, Pos. 2		* with grounding spring, Pos. 2 leading

M17 to M58 circular plug-in connectors

M23 - power plug-in connectors

Selection guide

M23 power plug-in connector up to 30 A/630 V, crimp ranges up to 4 mm²

- Cable plug-in connectors
- Coupler plug-in connectors
- Device plug-in connectors (device flanges)
- Feed-throughs/panel feed-throughs

The plug-in connectors are supplied fully pre-assembled and are complemented by the respective crimp contacts.

The product chart provides an overview of the available components.

Plug-in connector type

Cable plug-in connectors

Short, SPEEDCON rapid interlock system, see page 368.

M23 x 1 standard interlocking, see page 368.



Long, SPEEDCON rapid interlock system, see page 368.

M23 x 1 standard interlocking, see page 368.

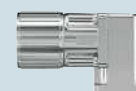


Device plug-in connectors with knurled nut

Straight, see page 371.



Angled, see page 371.



Coupler plug-in connectors

Short, see page 369.



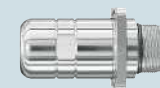
Long, see page 369.



With mounting flange
Short, see page 372.



With mounting flange
Long, see page 372.



Device plug-in connectors

Straight, see page 370.



Angled, rotatable, flange dimensions 26 mm x 26 mm, see page 370.



Angled, rotatable, flange dimensions 28 mm x 28 mm, see page 370.



Panel feed-through

External socket - internal pin, see page 373.



Panel feed-throughs are fully wired at the time of delivery

Crimp contacts**Tools/accessories**

Socket contacts

Socket contacts

Turned, see page 374.



Crimping pliers with digital display for turned crimp contacts, see page 407.



Pin contacts

Pin contacts

Turned, see page 374.

**Accessories**

Color rings for individually marking the plug-in connectors, see page 412.



Pin contacts

Note:

For reasons of safety, only socket contacts may be used in the live part of the plug.

M17 to M58 circular plug-in connectors

M23 - power plug-in connectors

Cable plug-in connectors, long and short design

- SPEEDCON rapid interlock system or M23 standard interlocking
- Standard knurled nuts compatible with mating plugs with SPEEDCON or M23 standard external thread
- Individual marking of plug-in connectors with color rings



Cable plug-in connector, SPEEDCON

N



Cable plug-in connector, M23 standard interlocking

Ordering data

Description	Cable clamping area
-------------	---------------------

Cable plug-in connector, short, with contact carrier, without contacts, for cable Ø 7.5 mm to 14 mm, connection cross section up to 2.5 mm²	
Universal gasket	7.5 mm ... 14 mm
	7.5 mm ... 9 mm
	9 mm ... 11 mm
	11 mm ... 14 mm

Cable plug-in connector, long, with contact carrier, without contacts, for cable Ø 7.5 mm to 18 mm, connection cross section up to 4 mm²	
Universal gasket	7.5 mm ... 18 mm
	7.5 mm ... 9 mm
	9 mm ... 12 mm
	12 mm ... 15 mm
	15 mm ... 18 mm

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
5+PE-pos.		4+3+PE-pos.	

1618197	1	1618207	1
1618194	1	1618204	1
1618195	1	1618205	1
1618196	1	1618206	1

1618202	1	1618212	1
1618201	1	1618211	1
1618200	1	1618210	1
1618199	1	1618209	1
1618198	1	1618208	1

Ordering data

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
5+PE-pos.		4+3+PE-pos.	

1605532	1	1605602	1
1605524	1	1605595	1
1605526	1	1605596	1
1605529	1	1605597	1

1605549	1	1605617	1
1605548	1	1605614	1
1605546	1	1605610	1
1605545	1	1605607	1
1605543	1	1605605	1

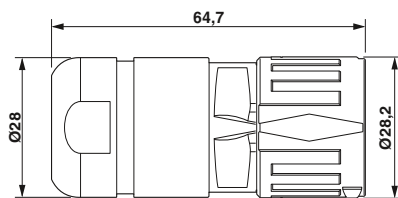
Accessories

Crimp contacts
Color rings , 50 pcs. in set (to be ordered separately)

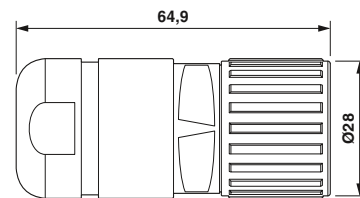
For socket contacts, see page 374
See page 412

Accessories

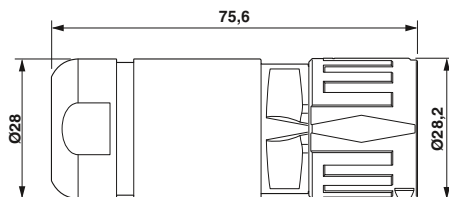
For socket contacts, see page 374
See page 412



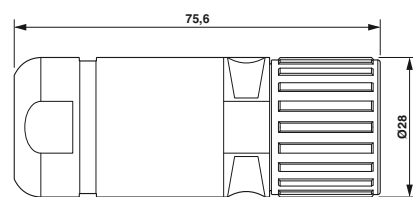
Short design



Short design



Long design



Long design

Coupler plug-in connectors, long and short design

- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts
- Individual marking of plug-in connectors with color rings

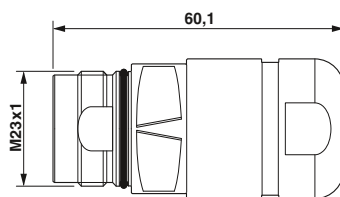


Coupler plug-in connector,
short

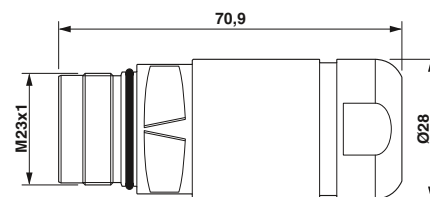


Coupler plug-in connector,
long

		Ordering data				Ordering data			
Description	Cable clamping area	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		5+PE-pos.		4+3+PE-pos.		5+PE-pos.		4+3+PE-pos.	
Coupler plug-in connector, short , with contact carrier, without contacts, for cable Ø 7.5 mm to 14 mm, connection cross section up to 2.5 mm ²									
Universal gasket	7.5 mm ... 14 mm	1605499	1	1605575	1				
	7.5 mm ... 9 mm	1605494	1	1605568	1				
	9 mm ... 11 mm	1605496	1	1605570	1				
	11 mm ... 14 mm	1605498	1	1605571	1				
Coupler plug-in connector, long , with contact carrier, without contacts, for cable Ø 7.5 mm to 18 mm, connection cross section up to 4 mm ²									
Universal gasket	7.5 mm ... 18 mm					1605510	1	1605583	1
	7.5 mm ... 9 mm					1605509	1	1605582	1
	9 mm ... 12 mm					1605508	1	1605581	1
	12 mm ... 15 mm					1605507	1	1605580	1
	15 mm ... 18 mm					1605505	1	1605578	1
		Accessories				Accessories			
Crimp contacts		For pin contacts, see page 374				For pin contacts, see page 374			
Color rings , 50 pcs. in set (to be ordered separately)		See page 412				See page 412			



Short design



Long design

M17 to M58 circular plug-in connectors

M23 - power plug-in connectors

Device plug-in connector, straight and angled, rotatable

- Compatible with mating plugs with SPEEDCON or M23 standard knurled nuts



Device plug-in connector, straight



Device plug-in connector, angled rotatable

Ordering data

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
5+PE-pos.		4+3+PE-pos.	
1605520	1	1605589	1
1620619	1	1620620	1

Ordering data

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
5+PE-pos.		4+3+PE-pos.	
1620657	1	1620660	1
1620661	1	1620662	1

Description

Device plug-in connector with contact carrier without contacts

Flange dimensions: 26 mm x 26 mm

Device plug-in connector, with reinforced contact carrier (black) for angled mating plugs, without contacts

Flange dimensions: 26 mm x 26 mm

Device plug-in connector with contact carrier without contacts

Flange dimensions: 28 mm x 28 mm

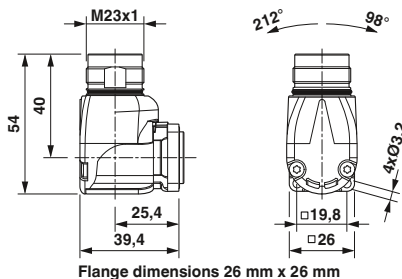
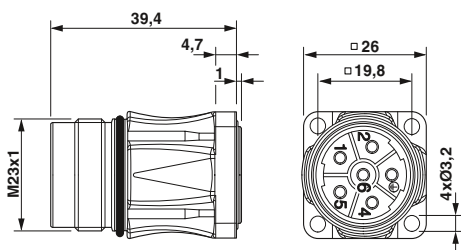
Accessories

Crimp contacts

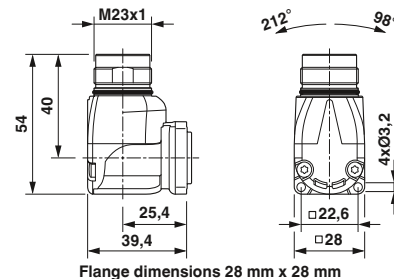
Color rings, 50 pcs. in set (to be ordered separately)

For pin contacts, see page 374
See page 412

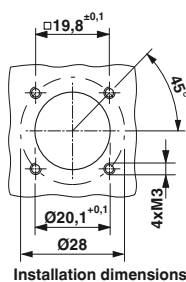
For pin contacts, see page 374
See page 412



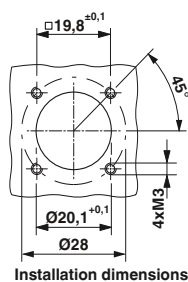
Flange dimensions 26 mm x 26 mm



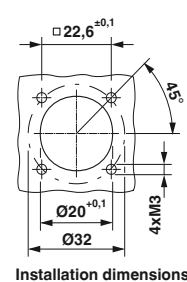
Flange dimensions 28 mm x 28 mm



Installation dimensions



Installation dimensions



Installation dimensions

Device plug-in connector with knurled nut

Device plug-in connectors with knurled nuts must be equipped with socket contacts.

- Standard knurled nuts compatible with mating plugs with SPEEDCON or M23 standard external thread

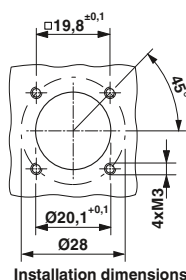
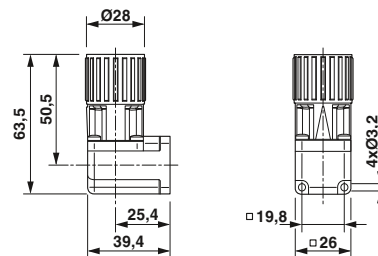
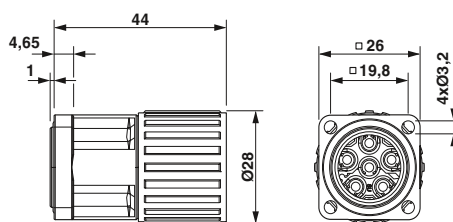


Device plug-in connector with knurled nut, straight

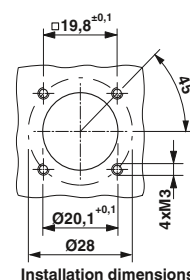


Device plug-in connector with knurled nut, angled, fixed

Description	Ordering data				Ordering data			
	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	5+PE-pos.		4+3+PE-pos.		5+PE-pos.		4+3+PE-pos.	
	1607082		1		1605622		1	
Device plug-in connector with knurled nut, straight , with contact carrier, without contacts								
Device plug-in connector with knurled nut, angled, fixed , with contact carrier, without contacts					1607405		1	
							1607429	
Accessories				Accessories				
Crimp contacts	For socket contacts, see page 374				For socket contacts, see page 374			



Installation dimensions



Installation dimensions

M17 to M58 circular plug-in connectors

M23 - power plug-in connectors

Panel feed-through, long and short design

- Rear mounting
- Compatible with mating plugs with M23 standard knurled nuts



Panel feed-through,
short



Panel feed-through,
long

Ordering data

Description	Cable clamping area
-------------	---------------------

Panel feed-through, short with contact carrier, without contacts, for cable Ø 7.5 to 14 mm, connection cross section up to 2.5 mm²

Universal gasket	7.5 mm ... 14 mm
	7.5 mm ... 9 mm
	9 mm ... 11 mm
	11 mm ... 14 mm

Panel feed-through, long with contact carrier, without contacts, for cable Ø 7.5 to 18 mm, connection cross section up to 4 mm²

Universal gasket	7.5 mm ... 18 mm
	7.5 mm ... 9 mm
	9 mm ... 12 mm
	12 mm ... 15 mm
	15 mm ... 18 mm

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
5+PE-pos.		4+3+PE-pos.	

1605517	1	1607051	1
1605516	1	1607048	1
1607037	1	1607049	1
1607038	1	1607050	1

Ordering data

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
5+PE-pos.		4+3+PE-pos.	

1605518	1	1607056	1
1607042	1	1607055	1
1607041	1	1607054	1
1607040	1	1607053	1
1607039	1	1607052	1

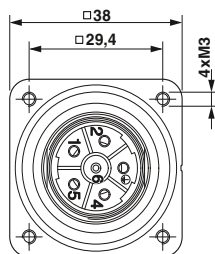
Accessories

Crimp contacts
Color rings, 50 pcs. in set (to be ordered separately)

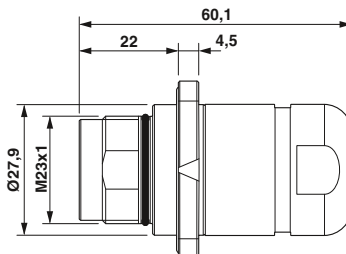
For pin contacts, see page 374
See page 412

Accessories

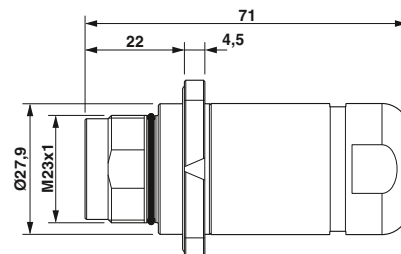
For pin contacts, see page 374
See page 412



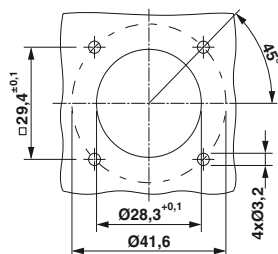
Flange dimensions for short and long design



Short design



Long design



Installation dimensions for short and long design

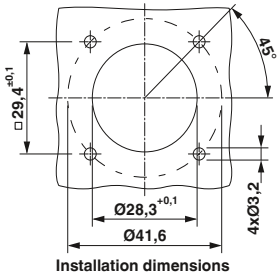
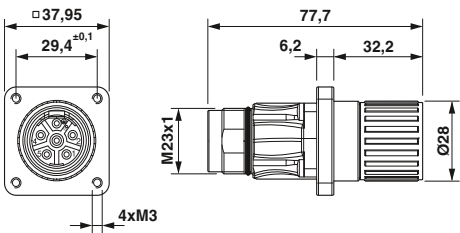
Panel feed-through, fully wired

- Front mounting
- Internally fully wired and fitted with contacts
- Compatible with mating plugs with M23 standard knurled nuts



Panel feed-through,
pin/socket

Description	Ordering data			
	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	5+PE-pos.		4+3+PE-pos.	
Panel feed-through, pin inside - socket outside, fully wired	1605492	1	1605567	1



M17 to M58 circular plug-in connectors

M23 - power plug-in connectors

Crimp contacts, turned

The 6-pos. (5+PE) versions are assembled with 2 mm Ø contacts. The 8-pos. (4+3+PE) versions are equipped with four 1 mm Ø signal contacts and four 2 mm Ø contacts.

Note: observe the crimp ranges for cable and coupler plug-in connectors.

- Short version: connection cross sections up to 2.5 mm², max. cable diameter of 14 mm
- Long version: connection cross sections up to 4 mm², max. cable diameter of 18 mm



Crimp contacts, socket



Crimp contacts, pin

Ordering data			Ordering data		
Description	Connection cross section [mm²]	Type	Order No.	Pcs. / Pkt.	Type
Contacts, socket Ø 2.0 mm for cable and device plug-in connectors with knurled nuts, power and PE contacts	0.25 ... 1.0	SF-7PS2000	1605636	50	
	0.75 ... 1.5	SF-7NS2000	1605631	50	
	1.0 ... 2.5	SF-7QS2000	1605643	50	
	4.0	SF-7MS2000	1605628	50	
Contacts, socket Ø 1.0 mm for cable and device plug-in connectors with knurled nuts, signal contacts	0.06 ... 0.2	SF-6CS2000	1605562	100	
	0.14 ... 0.5	SF-10KS004	1607356	100	
	0.5 ... 1.0	SF-6AS2000	1605557	100	
Contacts, pin Ø 2.0 mm for coupler plug-in connectors, power and PE contacts	0.14 ... 0.25				SF-7RP2000
	0.25 ... 1.0				1605646
	0.75 ... 1.5				1605634
	1.0 ... 2.5				1607376
Contacts, pin Ø 1.0 mm for coupler plug-in connectors, signal contacts	0.06 ... 0.2				1605639
	0.14 ... 0.5				1605626
	0.5 ... 1.0				
Contacts, pin Ø 2.0 mm for device plug-in connectors, power and PE contacts	0.14 ... 0.25				SF-6CP2000
	0.25 ... 1.0				1605559
	0.75 ... 1.5				1607355
	1.0 ... 2.5				1605554
Contacts, pin Ø 1.0 mm for device plug-in connectors, signal contacts	0.06 ... 0.2				SF-7RP2000
	0.14 ... 0.5				SF-7PP2000
	0.5 ... 1.0				1605646
					1605634
Accessories			Accessories		
Order separately, see page 407 onwards			Order separately, see page 407 onwards		

Contact diameter

Number of positions	Number of contacts	Contact Ø [mm]
6(5+PE)	5+PE	2+2
8(4+3+PE)	4+3+PE	1+2+2

M17 to M58 circular plug-in connectors

M40 - power plug-in connectors

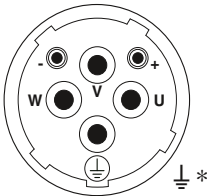
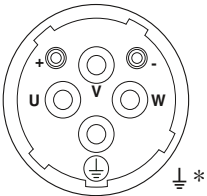
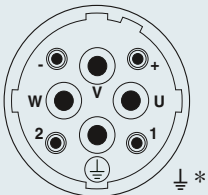
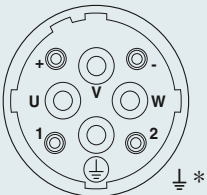
Mechanical and electrical data

Mechanical data	
Housing material:	Copper zinc alloy (CuZn), die-cast zinc (GD-Zn)
Housing surface:	Nickel-plated/thick layer passivated (can be coated)
Insulating body:	Polyamide (PA 66)
Contact material:	Copper zinc alloy (CuZn)
Contact surface:	Nickel-plated (Ni) with gold coating (Au)
Contact connection method:	Crimp version
Sealing and O-ring:	Fluorocarbon rubber (FKM)
Ambient temperature:	-40°C ... 125°C
Cable entry:	Cable outside diameter 9.0 - 26.5 mm, shielded
Type of locking:	M40 SPEEDCON rapid interlock system, cable plug-in connector optionally with M40 x 1.5 coarse-pitch thread
Mechanical insertion/withdrawal cycles:	Standard: 50
Protection class	IP67 in the locked state

Electrical data											
Number of positions		6 (2+3+PE)					8 (4+3+PE)				
Contacts		2	+	3	+	PE	4	+	3	+	PE
Contact Ø	[mm]	2.0		3.6		3.6	2.0		3.6		3.6
Litz wire cross sections											
Cable and coupler plug-in connectors	[mm²]	0.14 ... 4.0		0.75 ... 16		0.75 ... 16	0.14 ... 4.0		0.75 ... 16		0.75 ... 16
Device plug-in connectors	[mm²]	0.14 ... 4.0		0.75 ... 10		0.75 ... 10	0.14 ... 4.0		0.75 ... 10		0.75 ... 10
Nominal current per contact at 25°C ¹⁾		[A]	30		70	–	30		70		–
Specifications according to DIN EN 61984:2009											
Rated voltage	[V AC/DC]	250		630		–	250		630		–
Test/surge voltage	[kV]	4		6		–	4		6		–
Surge voltage category		III					III				
Pollution degree		3					3				
Installation height	[m]	Up to 3000					Up to 3000				
Cable clamping area ²⁾	max. Ø [mm]	26.5					26.5				

¹⁾ The effective current carrying capacity must be determined via a derating curve, if necessary, according to the application.

²⁾ The cable clamping areas specified on the following pages may vary depending on the cable material/structure. Selecting and testing is the responsibility of the user.

Contact chamber numbering (view of plug-in side)		
Number of positions	Pin	Socket
6-pos. (2 + 3 + PE) Crimp		
8-pos. (4 + 3 + PE) Crimp		

* with grounding spring

M17 to M58 circular plug-in connectors

M40 - power plug-in connectors

Selection guide

M40 power plug-in connectors up to 70 A/630 V, crimp ranges up to 16 mm²

- Cable plug-in connectors
- Coupler plug-in connectors
- Device plug-in connectors (device flanges)
- Feed-throughs/panel feed-throughs

The plug-in connectors are supplied fully pre-assembled and are complemented by the respective crimp contacts.

In order to specify an M40 power plug-in connector for the cable and device plug-in connector side, the fully pre-assembled plug housing is supplemented by the corresponding crimp contacts. M40 plug-in connectors with knurled nuts can be optionally supplied with SPEEDCON rapid interlock system or with M40 x 1.5 coarse-pitch thread.

The product chart provides an overview of the available components.

Plug-in connector type

Cable plug-in connectors

SPEEDCON rapid interlock system, see page 380.



Mounting flange for wall mounting, see page 410.

M40 x 1.5 standard interlocking, see page 380.



Shielded

Device plug-in connectors with knurled nut

Straight, see page 382.



Angled, see page 383.



Shielded

Coupler plug-in connectors

See page 380.



Shielded

Device plug-in connectors

Angled, rotatable, M17, see page 384.



Straight, see page 381.



Socket contacts

Pin contacts

Crimp contacts**Socket contacts**

Turned, see page 385.

**Pin contacts**

Turned, see page 385.

**Tools/accessories****Crimping tools**

Crimping pliers, see page 407.



Crimping pliers with digital display for turned crimp contacts, see page 407.

**Accessories**

Color rings for individually marking the plug-in connectors, see page 412.

**Note:**

For reasons of safety, only socket contacts may be used in the live part of the plug.

M17 to M58 circular plug-in connectors

M40 - power plug-in connectors

Cable plug-in connector

- SPEEDCON rapid interlock system or M40 standard interlocking
- Standard knurled nuts compatible with mating plugs with SPEEDCON or M40 standard external thread
- Individual marking of plug-in connectors with color rings

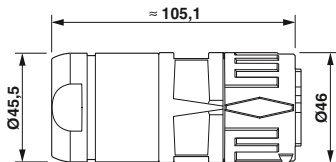


Cable plug-in connector, SPEEDCON



Cable plug-in connector

		Ordering data				Ordering data			
Description		Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
Cable clamping area		2+3+PE-pos.		4+3+PE-pos.		2+3+PE-pos.		4+3+PE-pos.	
Cable plug-in connector housing , with contact carrier, without contacts, connection cross section up to 16 mm ²									
9 mm ... 14 mm		1613428	1	1613434	1	1613518	1	1613528	1
14 mm ... 20.5 mm		1613429	1	1613435	1	1613519	1	1613529	1
20.5 mm ... 26.5 mm		1613430	1	1613436	1	1613520	1	1613530	1
		Accessories				Accessories			
Crimp contacts		For socket contacts, see page 385				For socket contacts, see page 385			
Color rings , 50 pcs. in set (to be ordered separately)		See page 412				See page 412			



Coupler and device plug-in connectors

- Compatible with mating plugs with SPEEDCON or M40 standard knurled nuts
- Individual marking of plug-in connectors with color rings

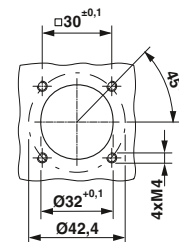
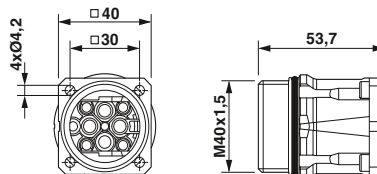
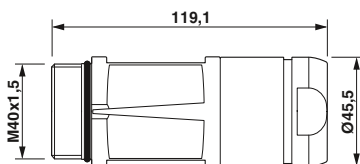


Coupler plug-in connector



Device plug-in connector, straight

		Ordering data				Ordering data			
Description	Cable clamping area	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		2+3+PE-pos.		4+3+PE-pos.		2+3+PE-pos.		4+3+PE-pos.	
Coupler plug-in connector , with contact carrier, without contacts, connection cross section up to 16 mm ²									
	9 mm ... 14 mm	1613425	1	1613431	1				
	14 mm ... 20.5 mm	1613426	1	1613432	1				
	20.5 mm ... 26.5 mm	1613427	1	1613433	1				
Device plug-in connector, straight , with contact carrier, without contacts									
Connection cross section up to 10 mm ²						1613517	1	1613527	1
		Accessories				Accessories			
Crimp contacts		For pin contacts, see page 385				For pin contacts, see page 385			
Color rings , 50 pcs. in set (to be ordered separately)		See page 412				See page 412			



Installation dimensions

M17 to M58 circular plug-in connectors

M40 - power plug-in connectors

Device plug-in connector with knurled nut

- SPEEDCON rapid interlock system or M40 standard interlocking
- Standard knurled nuts compatible with mating plugs with SPEEDCON or M40 standard external thread
- Device plug-in connectors with knurled nuts must be fitted with socket contacts

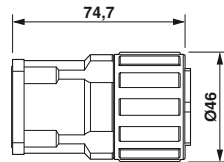
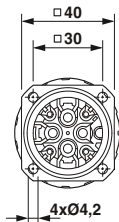
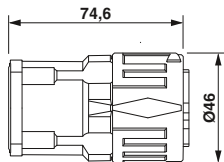
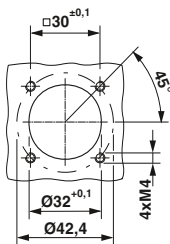


Device plug-in connector with knurled nut, straight, SPEEDCON



Device plug-in connector with knurled nut, straight

Description	Ordering data				Ordering data			
	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	2+3+PE-pos.		4+3+PE-pos.		2+3+PE-pos.		4+3+PE-pos.	
Device plug-in connector with SPEEDCON knurled nut, straight, with contact carrier, without contacts Connection cross section up to 16 mm ²	1613524	1	1613534	1				
Device plug-in connector with standard knurled nut, straight, with contact carrier, without contacts Connection cross section up to 16 mm ²					1605823	1	1605865	1
Accessories				Accessories				
Crimp contacts Color rings, 50 pcs. in set (to be ordered separately)	For socket contacts, see page 385 See page 412				For socket contacts, see page 385 See page 412			



Installation dimensions

Device plug-in connector with knurled nut

Device plug-in connectors with knurled nuts must be equipped with socket contacts.



Device plug-in connector with knurled nut, angled, SPEEDCON



Device plug-in connector with knurled nut, angled

Ordering data

Description
Device plug-in connector with SPEEDCON knurled nut, angled, with contact carrier, without contacts
Connection cross section up to 16 mm ²
Device plug-in connector with knurled nut, angled, with contact carrier, without contacts
Connection cross section up to 16 mm ²

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
2+3+PE-pos.		4+3+PE-pos.	

1613525	1	1613535	1
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Accessories

Crimp contacts
Color rings, 50 pcs. in set (to be ordered separately)

For socket contacts, see page 385
See page 412

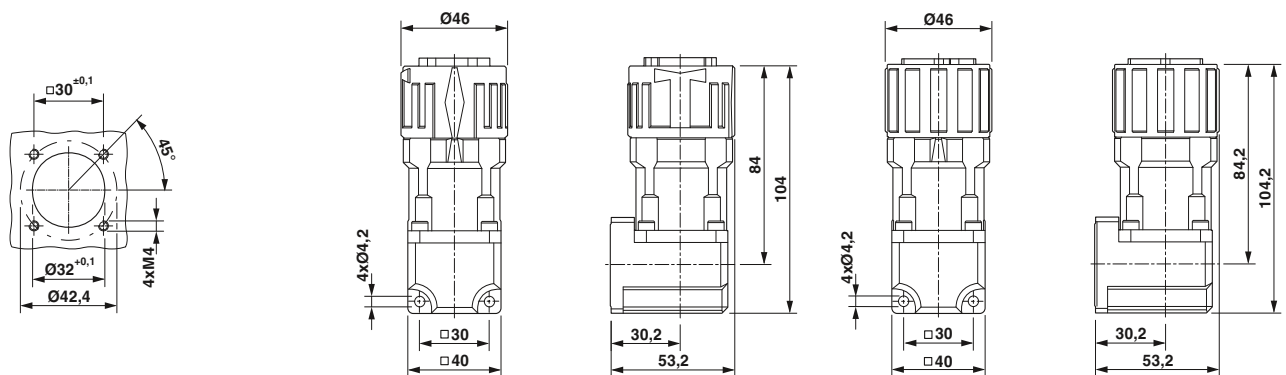
Ordering data

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
2+3+PE-pos.		4+3+PE-pos.	

1607532	1	1607543	1
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Accessories

For socket contacts, see page 385
See page 412



Installation dimensions

M17 to M58 circular plug-in connectors

M40 - power plug-in connectors

Device plug-in connector,
angled, rotatable

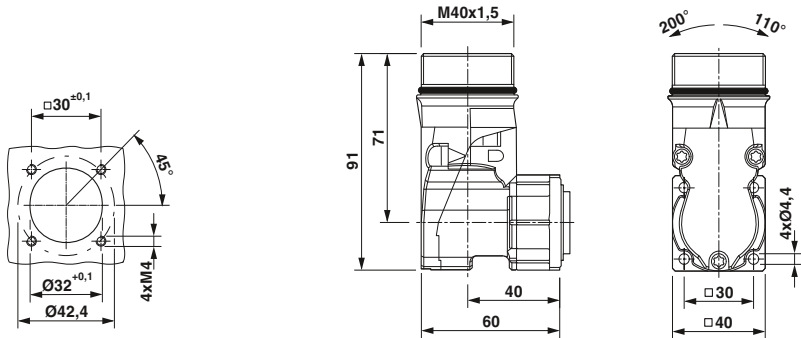
- Compatible with mating plugs with SPEEDCON or M40 standard knurled nuts
- The rotatable angled housing can be rotated freely through 310°
- Individual marking of plug-in connectors with color rings



Device plug-in connector,
angled rotatable

Description
Device plug-in connector, angled, rotatable, with contact carrier, without contacts
Connection cross section up to 10 mm²
Crimp contacts
Color rings, 50 pcs. in set (to be ordered separately)

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
2+3+PE-pos.		4+3+PE-pos.	
1620663	1	1620664	1
Accessories			
For pin contacts, see page 385			
See page 412			



Installation dimensions

Crimp contacts, turned

The 6-pos. (2+3+PE) versions are equipped with two Ø 2 mm signal contacts and four 3.6 mm contacts (three power, 1 PE contact).

The 8-pos. (4+3+PE) versions are equipped with four 2 mm signal contacts and four 3.6 mm contacts (three power, 1 PE contact).

Note: depending on the litz wire used, the connection cross sections (crimp ranges) can differ from the values mentioned below.



Crimp contacts, socket



Crimp contacts, pin

Ordering data				Ordering data			
Description	Connection cross section [mm²]	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Contacts, socket Ø 3.6 mm, for cable and device plug-in connectors with knurled nuts, power and PE contacts	1.0 ... 2.5	SM-36KS001	1605756	20			
	2.5 ... 4.0	SM-36KS002	1605758	20			
	4.0 ... 6.0	SM-36KS003	1605760	20			
	6.0 ... 10.0 (16.0)	SM-36KS004	1605762	20			
Contacts, socket Ø 2.0 mm, for cable and device plug-in connectors with knurled nuts, signal contacts	0.25 ... 1.0	SF-7PS2000	1605636	50			
	0.75 ... 1.5	SF-7NS2000	1605631	50			
	1.0 ... 2.5	SF-7QS2000	1605643	50			
	4.0	SF-7MS2000	1605628	50			
Contacts, pin Ø 3.6 mm, for coupler plug-in connectors, power and PE contacts	1.0 ... 2.5				SM-36KP005	1605749	20
	2.5 ... 4.0				SM-36KP006	1605750	20
	4.0 ... 6.0				SM-36KP008	1605754	20
	6.0 ... 10.0 (16.0)				SM-36KP007	1605752	20
Contacts, pin Ø 2.0 mm, for coupler plug-in connectors, signal contacts	0.25 ... 1.0				SM-20KP006	1605738	50
	0.75 ... 1.5				SM-20KP005	1605736	50
	1.0 ... 2.5				SM-20KP007	1605739	50
	4.0				SM-20KP008	1605741	50
Contacts, pin Ø 3.6 mm, for device plug-in connectors, power and PE contacts	0.75 ... 1.5				SM-36KP001	1605743	20
	1.0 ... 2.5				SM-36KP009	1607057	20
	1.0 ... 4.0				SM-36KP002	1605744	20
	4.0 ... 6.0				SM-36KP003	1605745	20
	6.0 ... 10.0				SM-36KP004	1605747	20
Contacts, pin Ø 2.0 mm, for device plug-in connectors, signal contacts	0.14 ... 0.25				SF-7RP2000	1605646	50
	0.25 ... 1.0				SF-7PP2000	1605634	50
	0.75 ... 1.5				SF-20KP004	1607376	50
	1.0 ... 2.5				SF-7QP2000	1605639	50
	4.0				SF-7MP2000	1605626	50
Accessories				Accessories			
Crimping tools	Order separately, see page 407			Order separately, see page 407			

Number of positions	Number of contacts	Contact Ø [mm]
6(2+3+PE)	2+3+PE	2+3,6+3,6
8(4+3+PE)	4+3+PE	2+3,6+3,6

M17 to M58 circular plug-in connectors

M58 - power plug-in connectors

Mechanical and electrical data

Mechanical data

Housing material:	Aluminum
Housing surface:	Aluminum, anodized
Insulating body:	Polyamide (PA 66)
Contact surface:	Power and PE contacts: silver-plated (Ag), signal contacts: gold-plated (Au)
Contact connection method:	Crimp version
Sealing and O-ring:	Fluorocarbon rubber (FPM)
Ambient temperature:	-40°C ... 120°C
Cable entry:	Cable and coupler plug-in connectors for cable outside diameter of 17 - 36 mm, shielded
Type of locking:	M58 x 2 screw locking
Mechanical insertion/withdrawal cycles:	Standard: 100
Protection class:	IP67 in the locked state

Electrical data

Number of positions	6 (2+3+PE)						8 (4+3+PE)					
Contacts	2	+	3	+	PE		4	+	3	+	PE	
Contact Ø [mm]	1.6		10		10		1.6		10		10	
Litz wire cross section												
Crimp contacts, turned [mm²]	0.75 ... 1.5		10 ... 50		10 ... 50		0.75 ... 1.5		10 ... 50		10 ... 50	
Nominal current per contact at 25°C ¹⁾ [A]	12		150		–		12		150		–	
Specifications according to DIN EN 61984:2009												
Rated voltage [V AC/DC]	250		630		–		250		630		–	
Test/surge voltage [kV AC]	4		6		–		4		6		–	
Surge voltage category			III						III			
Pollution degree			3						3			
Installation height [m]			Up to 2000						Up to 2000			
Cable clamping area ²⁾ max. Ø [mm]			36						36			

¹⁾ The effective current carrying capacity must be determined via a derating curve, if necessary, according to the application.

²⁾ The cable clamping areas specified on the following pages may vary depending on the cable material/structure. Selecting and testing is the responsibility of the user.

Note:

Unlike plug-in equipment, plug-in connectors must not be plugged or unplugged under load.

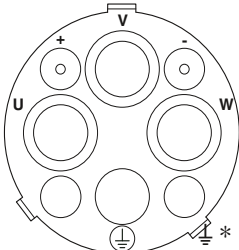
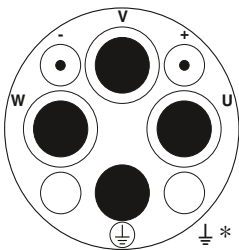
Contact chamber numbering
(view of plug-in side)

Number of positions

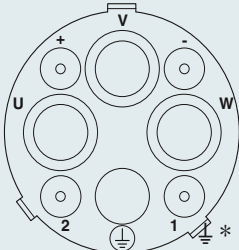
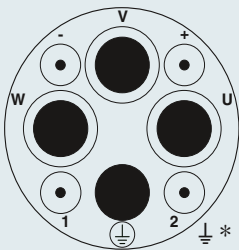
Pin

Socket

6-pos.
(2 + 3 + PE)
Crimp



8-pos.
(4 + 3 + PE)
Crimp



* with grounding spring,
PE leading

M17 to M58 circular plug-in connectors

M58 - power plug-in connectors

Selection guide

M58 power plug-in connectors up to
150 A/630 V, crimp ranges
up to 50 mm²

- Cable plug-in connectors
- Coupler plug-in connectors
- Device plug-in connectors, straight

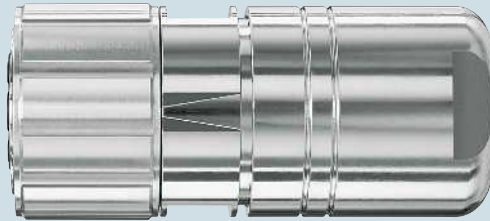
The power plug-in connectors are supplied fully pre-assembled and are complemented by the respective crimp contacts.

The product chart provides an overview of the available components.

Plug-in connector type

Cable plug-in connectors

Shielded



See page 390.

Coupler plug-in connectors

Shielded



See page 390.

Device plug-in connectors

Shielded



See page 391.

Crimp contacts**Tools/accessories**

Socket contacts

Socket contacts

Turned, see page 392.

**Crimping tools**

Crimping device for power and PE contacts
 Ø 10 mm,
 see page 408.



Crimping pliers, for signal contacts Ø 1.6 mm,
 see page 408.



Pin contacts

Pin contacts

Turned, see page 392.



Pin contacts

Note:

For reasons of safety, only socket contacts may be used in the live part of the plug.

M17 to M58 circular plug-in connectors

M58 - power plug-in connectors

Cable and coupler plug-in connectors

- High transmission capacities of up to 630 V and 150 A
- Connection cross sections up to 50 mm²
- Cable clamping area from 17 mm to 36 mm

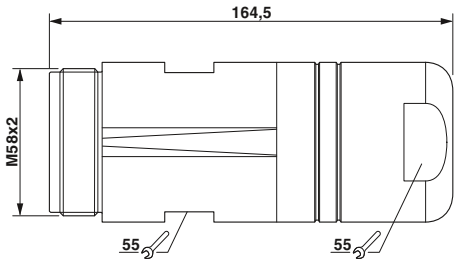
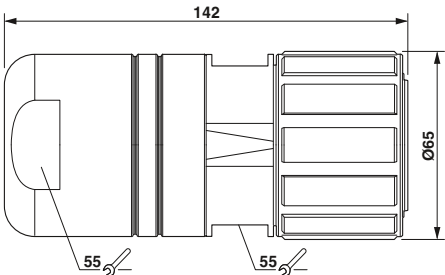


Cable plug-in connector



Coupler plug-in connector

		Ordering data				Ordering data			
Description	Cable clamping area	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		2+3+PE-pos.		4+3+PE-pos.		2+3+PE-pos.		4+3+PE-pos.	
Plug-in connector housing, with contact carrier, without contacts, for cable diameter:	17 mm ... 25 mm	1607503	1	1607508	1	1607500	1	1607506	1
	25 mm ... 36 mm	1607501	1	1607507	1	1607499	1	1607505	1
		Accessories				Accessories			
Crimp contacts		For socket contacts, see page 392				For pin contacts, see page 392			



Device plug-in connector
for front mounting

Coupler and device plug-in connectors must be fitted with pin contacts, cable plug-in connectors must be fitted with socket contacts.



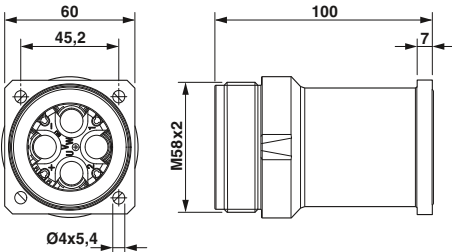
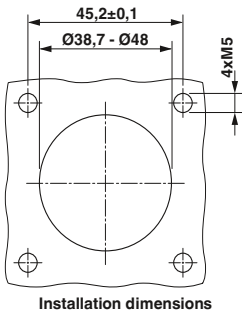
Device plug-in connector, straight

Description

Device plug-in connector, straight, with contact carrier, without contacts

Crimp contacts

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
2+3+PE-pos.		4+3+PE-pos.	
1615686	1	1615687	1
Accessories			
For pin contacts, see page 392			



M17 to M58 circular plug-in connectors

M58 - power plug-in connectors

Crimp contacts, turned

The 6-pos. (2+3+PE) versions are equipped with two Ø 1.6 mm signal contacts and four 10 mm contacts (three power, 1 PE contact).

The 8-pos. (4+3+PE) versions are equipped with four 1.6 mm signal contacts and four 10 mm contacts (three power, 1 PE contact).

Note: depending on the litz wire used, the connection cross sections (crimp ranges) can differ from the values mentioned below.



Crimp contacts, socket



Crimp contacts, pin

Ordering data				Ordering data				
Description		Connection cross section [mm²]	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Contacts, socket Ø 10.0 mm for cable plug-in connectors, power and PE contacts		10.0	SL-1CKS010	1607916	4			
		16.0	SL-1CKS020	1607917	4			
		25.0	SL-1CKS030	1607918	4			
		35.0	SL-1CKS040	1607919	4			
		50.0	SL-1CKS050	1607920	4			
Contacts, socket Ø 1.6 mm for cable plug-in connectors, signal contacts		0.75 ... 1.5	SL-16KS010	1607956	4			
Contacts, pin Ø 10.0 mm for coupler and device plug-in connectors, power and PE contacts		10.0				SL-1CKP010	1607911	4
		16.0				SL-1CKP020	1607912	4
		25.0				SL-1CKP030	1607913	4
		35.0				SL-1CKP040	1607914	4
		50.0				SL-1CKP050	1607915	4
Contacts, pin Ø 1.6 mm for coupler and device plug-in connectors, signal contacts		0.75 ... 1.5				SL-16KP010	1607909	4
Accessories						Accessories		
Crimping tools			Order separately, see page 408 onwards			Order separately, see page 408 onwards		

Number of positions	Number of contacts	Contact Ø [mm]
6(2+3+PE)	2+3+PE	1,6+10+10
8(4+3+PE)	4+3+PE	1,6+10+10

M17 to M58 circular plug-in connectors

Signal/power plug-in connectors, plastic molded

M17 and M23 plastic molded signal plug-in connectors

- Feedback plug-in connectors
- Contact resistance ≤ 0.3 ohms
- Contact material gold-plated CuZn
- Flame-retardant TPU handle material
- Knurl CuZn/Gd-Zn, nickel-plated
- IP67 protection
- Plug head temperature range -40 to +105°C
- Standard and counter direction contact numbering
- M17 and M23 standard thread - SPEEDCON rapid interlock system on request
- Angled versions rotatable

	M17, 17-pos., socket, standard, 60 V, 9 A	M23, 12-pos., socket, reverse, 150 V, 9 A	M23, 12-pos., socket, reverse, 150 V, 9 A
			
	E01	E00	E00
	Ordering data	Ordering data	Ordering data
	Order no.	Order no.	Order no.
Free end	2 m 1624780 5 m 1624781 10 m 1624782	2 m 1619247 5 m 1619248 10 m 1619249	2 m 1619280 5 m 1619281 10 m 1619282
M17, 17-pos., pin	2 m 1624778 5 m 1624783 10 m 1624784		
M23, 12-pos., pin		2 m 1619289 5 m 1619290 10 m 1619291	
M23, 12-pos., pin			
M23, 17-pos., pin			

Cable information:

Type/application	Color	Structure	Sheath/core material	Assignment	Temperature range
E00 Feedback	Orange	Shielded, 4 x 2 x 0.25 + 2 x 0.5	TPU/PP	1 - pink 2 - red 3 - black 4 - blue 5 - brown 6 - green 7 - violet 8 - gray 9 - exterior shield 10 - white 11 - n.c. 12 - brown	Flexible: -20°C ... 60°C Fixed: -40°C ... 80°C
E01 Feedback	Green	Shielded, 3 x 2 x 0.14 + 2 x 0.5 + 4 x 0.14 + 4 x 0.22	TPU/TPM	1 - yellow 2 - green 3 - red 4 - n.c. 5 - blue 6 - n.c. 7 - brown-blue (encoder) 8 - green-black (+temp.) 9 - green-red (-temp.) 10 - brown-red (P encoder) 11 - black 12 - brown 13 - orange 14 - white-black 15 - brown-gray (OV sense) 16 - brown-yellow (sense) 17 - interior shields 1 - 3"	Flexible: -30°C ... 60°C Fixed: -30°C ... 80°C

M23, 12-pos., socket, standard, 150 V, 9 A		M23, 12-pos., socket, standard, 150 V, 9 A		M23, 17-pos., socket, standard, 100 V, 9 A		M23, 17-pos., socket, standard, 100 V, 9 A	
							
E00		E00		E01		E01	
Ordering data		Ordering data		Ordering data		Ordering data	
Order no.		Order no.		Order no.		Order no.	
2 m	1619250	2 m	1619285	2 m	1619277	2 m	1619286
5 m	1619273	5 m	1619283	5 m	1619278	5 m	1619287
10 m	1619274	10 m	1619284	10 m	1619279	10 m	1619288
				</			

M17 to M58 circular plug-in connectors

Signal/power plug-in connectors, plastic molded

M17 plastic molded power plug-in connectors

- Contact resistance ≤ 0.3 ohms
- Contact material gold-plated CuZn
- Flame-retardant TPU handle material
- Knurl CuZn/Gd-Zn, nickel-plated
- IP67 protection
- Plug head temperature range -40 to +105°C
- Standard contact numbering
- M17 standard thread - SPEEDCON rapid interlock system on request

	M17, 3+PE-position, Socket, 630 V, 18 A	M17, 3+PE-position, Socket, 630 V, 26 A	M17, 5+PE-position, Socket, 630 V, 12 A
			
	B00	B01	C00
	Ordering data	Ordering data	Ordering data
	Order no.	Order no.	Order no.
	2 m 1619298	2 m 1619301	2 m 1619307
	5 m 1619299	5 m 1619302	5 m 1619308
	10 m 1619300	10 m 1619303	10 m 1619309
Free end 			
M17, 3+PE-pos., pin 	2 m 1619304 5 m 1619305 10 m 1619306	2 m 1619326 5 m 1619327 10 m 1619328	
M17, 5+PE-pos., pin 			2 m 1619316 5 m 1619317 10 m 1619318
M17, 7+PE-pos., pin 			

Cable information:

Type	Color	Structure	Sheath/core material	Assignment	Temperature range
B00 Servo	Orange	Shielded, 4 x 1.50	PUR/TPM	1 - black U 2 - black V 3 - black W PE - green/yellow"	Flexible: -20°C ... 60°C Fixed: -40°C ... 80°C
B01 Servo	Orange	Shielded, 4 x 2.50	TPU/TPM		Flexible: -20°C ... 70°C Fixed: -50°C ... 80°C
C00 Servo	Orange	Shielded, 4 x 0.75 + 2 x 0.5	PUR/TPM	1 - black U 6 - black V 7 - black W PE - green/yellow	Flexible: -30°C ... 70°C Fixed: -40°C ... 80°C
C01 Servo	Orange	Shielded, 4G1 + 2 x 0.5	PUR/TPE		Flexible: -5°C ... 70°C Fixed: -30°C ... 70°C
D00 Servo	Orange	Shielded, 4 x 0.75 + 2 x 2 x 0.34	PUR/TPM	1 - black U 2 - black V 3 - black W PE - green/yellow	Flexible: -30°C ... 90°C Fixed: -40°C ... 90°C
D01 Servo	Orange	Shielded, 4 x 1.0 + 2 x 2 x 0.75	PUR/TPM	A - black 5 (brake) B - black 6 (brake) C - black 7 (motor temp. +) D - black 8 (motor temp. -)	Flexible: -20°C ... 60°C Fixed: -40°C ... 80°C

M17, 5+PE-position, Socket, 630 V, 15 A		M17, 7+PE-position, Socket, 630 V, 12 A		M17, 7+PE-position, Socket, 630 V, 15 A	
					
C01		D00		D01	
Ordering data		Ordering data		Ordering data	
Order no.		Order no.		Order no.	
2 m	1619310	2 m	1624785	2 m	1619313
5 m	1619311	5 m	1624786	5 m	1619314
10 m	1619312	10 m	1624792	10 m	1619315
2 m	1619319				
5 m	1619321				
10 m	1619322				
		2 m	1624787	2 m	1619323
		5 m	1624788	5 m	1619324
		10 m	1624789	10 m	1619325

M17 to M58 circular plug-in connectors

Signal/power plug-in connectors, plastic molded

M23 plastic molded power plug-in connectors

- Contact resistance ≤ 0.3 ohms
- Contact material gold-plated CuZn
- Flame-retardant TPU handle material
- Knurl CuZn/Gd-Zn, nickel-plated
- IP67 protection
- Plug head temperature range -40 to +105°C
- Standard contact numbering
- M23 standard thread - SPEEDCON rapid interlock system on request
- Angled version rotatable (only with reinforced device plug-in connector 1620619)

	M23, 3+PE-position, Socket, 630 V, 34 A	M23, 4+PE-position, Socket, 630 V, 34 A	M23, 5+PE-position, Socket, 630 V, 18 A
			
	A00	A01	C02
	Ordering data	Ordering data	Ordering data
	Order no.	Order no.	Order no.
	2 m 1624771 5 m 1619622 10 m 1624772	2 m 1625776 5 m 1625777 10 m 1625775	2 m 1618957 5 m 1618958 10 m 1618959
Free end 			
M23, 3+PE-pos., pin 	2 m 1624773 5 m 1619606 10 m 1624774		
M23, 4+PE-pos., pin 		2 m 1625779 5 m 1625781 10 m 1625780	
M23, 5+PE-pos., pin 			2 m 1618964 5 m 1618965 10 m 1618966

Cable information:

Type	Color	Structure	Sheath/core material	Assignment	Temperature range
A00 Energy	Gray	Shielded, 4 x 4.0	PVC/PVC	1 - nc 2 - black 3 PE - green/yellow 4 - black 1 5 - black 2 6 - nc	Fixed: -40°C ... 90°C
A01 energy	Gray	5 x 4.0	PVC/PVC	1 - black 4 2 - black 3 PE - green/yellow 4 - black 1 5 - black 2 6 - nc	Fixed: -40°C ... 90°C
C02 servo	Orange	Shielded, 4 x 1.50 + 2 x 1.5	PUR/TPM	1 - black U 2 - black V 6 - black W 4 - black, (BR1 brake) 5 - white, (BR2 brake)	Flexible: -20°C ... 60°C Fixed: -40°C ... 80°C
C03 servo	Orange	Shielded, 4 x 2.50 + 2 x 1.5	TPU/TPM	PE - green/yellow	Flexible: -20°C ... 70°C Fixed: -50°C ... 80°C

M23, 5+PE-position,
Socket, 630 V, 18 A



C02

M23, 5+PE-position,
Socket, 630 V, 26 A



C03

M23, 5+PE-position,
Socket, 630 V, 26 A

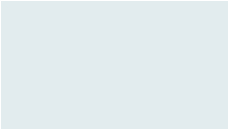
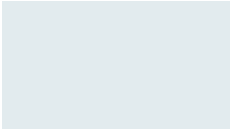
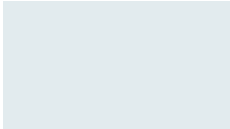


C03

Ordering data	
Order no.	
2 m	1620415
5 m	1620416
10 m	1620417

Ordering data	
Order no.	
2 m	1620396
5 m	1620397
10 m	1620398

Ordering data	
Order no.	
2 m	1620418
5 m	1620419
10 m	1620420



2 m	1620406
5 m	1620407
10 m	1620408



M17 to M58 circular plug-in connectors

Signal/power plug-in connectors, plastic molded

M23 plastic molded power plug-in connectors

- Contact resistance ≤ 0.3 ohms
- Contact material gold-plated CuZn
- Flame-retardant TPU handle material
- Knurl CuZn/Gd-Zn, nickel-plated
- IP67 protection
- Plug head temperature range -40 to +105°C
- Standard contact numbering
- M23 standard thread - SPEEDCON rapid interlock system on request
- Angled version rotatable (only with reinforced device plug-in connector 1620620)

Free end



M23, 4+3+PE-pos., pin



M23, 4+3+PE-pos., socket, 250 V/630 V, 18 A



M23, 4+3+PE-pos., socket, 250 V/630 V, 18 A



M23, 4+3+PE-pos., socket, 250 V/630 V, 26 A



D02		D02		D03	
Ordering data		Ordering data		Ordering data	
Order no.		Order no.		Order no.	
2 m	1620399	2 m	1620421	2 m	1620402
5 m	1620400	5 m	1620422	5 m	1620404
10 m	1620401	10 m	1620423	10 m	1620405
2 m	1620409			2 m	1620412
5 m	1620410			5 m	1620413
10 m	1620411			10 m	1620414

Cable information:

Type	Color	Structure	Sheath/core material	Assignment		Temperature range
D02 servo	Orange	Shielded, 4 x 1.5 + 2 x 2 x 0.75	PUR/TPM	1 - black U 3 - black V 4 - black W PE - green/yellow	A - black 5 (brake) B - black 6 (brake) C - black 7 (motor temp. +) D - black 8 (motor temp. -)	Flexible: -20°C ... 60°C Fixed: -40°C ... 80°C
D03 servo	Orange	Shielded, 4 x 2.5 + 2 x 2 x 0.75	PUR/TPM			Flexible: -20°C ... 60°C Fixed: -40°C ... 80°C

M23, 4+3+PE-pos., socket,
250 V/630 V, 26 A



D03

Ordering data

Order no.

2 m	1620424
5 m	1620425
10 m	1620426

M17 to M58 circular plug-in connectors

Signal/power plug-in connectors, plastic molded

M40 plastic molded power plug-in connectors

- Contact resistance ≤ 0.3 ohms
- Contact material gold-plated CuZn
- Flame-retardant TPU handle material
- Knurl CuZn/Gd-Zn, nickel-plated
- IP67 protection
- Plug head temperature range -40 to +105°C
- Standard contact numbering
- M40 standard thread - SPEEDCON rapid interlock system on request

	M40, 2+3+PE-pos., socket, 250 V/630 V, 26 A	M40, 2+3+PE-pos., socket, 250 V/630 V, 34 A	M40, 2+3+PE-pos., socket, 250 V/630 V, 44 A
			
	C03	C04	C05
	Ordering data	Ordering data	Ordering data
	Order no.	Order no.	Order no.
	2 m 1619329	2 m 1620311	2 m 1620316
	5 m 1620309	5 m 1620313	5 m 1620317
	10 m 1620310	10 m 1620314	10 m 1620318
Free end			
M40, 2+3+PE-pos., pin			
	2 m 1620345	2 m 1620348	2 m 1620376
	5 m 1620346	5 m 1620349	5 m 1620377
	10 m 1620347	10 m 1620375	10 m 1620378
M40, 4+3+PE-pos., pin			

Cable information:

Type	Color	Structure	Sheath/core material	Assignment	Temperature range
C03 Servo	Orange	Shielded, 4 x 2.50 + 2 x 1.5	TPU/TPM	1 - black U 2 - black V 6 - black W PE - green/yellow	4 - black, (BR1 brake) 5 - white, (BR2 brake)
C04 Servo	Orange	Shielded, 4 x 4.00 + 2 x 1.5	TPU/TPM		
C05 Servo	Orange	Shielded, 4 x 6.00 + 2 x 1.5	PUR/TPE		
C06 Servo	Orange	Shielded, 4 x 10.0 + 2 x 1.5	TPU/TPM		
D03 Servo	Orange	Shielded, 4 x 2.5 + 2 x 2 x 0.75	PUR/TPM	1 - black U 3 - black V 4 - black W PE - green/yellow	A - black 5 (brake) B - black 6 (brake) C - black 7 (motor temp. +) D - black 8 (motor temp. -)
D04 Servo	Orange	Shielded, 4 x 4.0 + 2 x 1.5 + 2 x 1.0	PUR/TPM		
D05 Servo	Orange	Shielded, 4 x 6.0 + 2 x 1.5 + 2 x 1.0	PUR/TPM		
D06 Servo	Orange	Shielded, 4 x 10 + 2 x 1.5 + 2 x 1.0	PUR/TPM		

M40, 2+3+PE-pos., socket,
250 V/630 V, 61 A



M40, 4+3+PE-pos., socket,
250 V/630 V, 26 A



M40, 4+3+PE-pos., socket,
250 V/630 V, 34 A



M40, 4+3+PE-pos., socket,
250 V/630 V, 44 A



M40, 4+3+PE-pos., socket,
250 V/630 V, 61 A



C06

D03

D04

D05

D06

Ordering data

Ordering data

Ordering data

Ordering data

Ordering data

Order no.

Order no.

Order no.

Order no.

Order no.

2 m 1620319
5 m 1620320
10 m 1620321

2 m 1620322
5 m 1620323
10 m 1620324

2 m 1620325
5 m 1620337
10 m 1620338

2 m 1620339
5 m 1620340
10 m 1620341

2 m 1620342
5 m 1620343
10 m 1620344

2 m 1620379
5 m 1620380
10 m 1620381

2 m 1620382
5 m 1620383
10 m 1620384

2 m 1620385
5 m 1620386
10 m 1620387

2 m 1620390
5 m 1620391
10 m 1620392

2 m 1620393
5 m 1620394
10 m 1620395

M17 to M58 circular plug-in connectors

Tools and accessories

Tools and accessories
for M23 signal plug-in connectors

For RC crimp contacts, RC-Z2130 and RC-Z2514 crimping pliers are used for rolled or turned crimp contacts.

RC-Z2514 crimping pliers with 4-arbor pressing are suitable for crimping turned RC contacts. Detailed operating instructions are included in the packaging.



Crimping tools for rolled/turned contacts



Contact insertion/contact removal tool

Description	Ordering data			Type	Order No.	Pcs. / Pkt.
	Type	Order No.	Pcs. / Pkt.			
Crimping pliers for rolled RC crimp contacts Ø 1 mm						
Litz wire cross section of 0.08 ... 0.56 mm²						
Crimping pliers for turned RC crimp contacts Ø 1 mm / Ø 1.5 mm / Ø 2 mm						
Litz wire cross section of 0.08 ... 2.5 mm²						
Insertion and contact removal tool for RC crimp contacts						
Socket/plug Ø 1 mm						
Socket/plug Ø 1.5 mm						
Socket/plug Ø 2 mm						

Ordering data			Type	Order No.	Pcs. / Pkt.
Type	Order No.	Pcs. / Pkt.			
RC-Z2130	1604267	1			
RC-Z2514	1614590	1			
RC-Z2494	1614123	1			
RC-Z2274	1604409	1			
RC-Z2490	1611803	1			

M17 to M58 circular plug-in connectors

Tools and accessories

Crimping tools for punched-rolled C-HC crimp contacts

The manual crimping pliers are suitable for single processing. For processing taped products, a bench-mounted electric crimping device with integrated feed mechanism is available.

- The SF-Z0041 adapter enables tools for the manual crimping pliers for single processing to be used with the electric crimping device.



Manual crimping tools
for punched-rolled C-HC crimp contacts



Electrical crimping device
for punched-rolled C-HC crimp contacts

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Manual crimping pliers , basic tool for individual processing						
for C-HC crimp contacts	SF-Z0029	1607458	1			
Tool head for crimping pliers SF-Z0029 , for C-HC crimp contacts						
Contacts Ø 2 mm	SF-Z0030	1607459	1			
Contacts Ø 1 mm	SF-Z0031	1607461	1			
Electric crimping device , for processing taped products						
for C-HC crimp contacts				SF-Z0032	1607462	1
Tool head for electrical crimping device SF-Z0032 , for C-HC crimp contacts, processing for taped products						
Contacts Ø 2.0 mm / connection 1.0 mm²				SF-Z0033	1607463	1
Contacts Ø 2.0 mm / connection 1.5 mm²				SF-Z0047	1614689	1
Contacts Ø 2.0 mm / connection 2.5 mm²				SF-Z0035	1607465	1
Contacts Ø 1.0 mm / connection 0.08 ... 0.2 mm²				SF-Z0039	1607470	1
Contacts Ø 1.0 mm / connection 0.2 ... 0.56 mm²				SF-Z0040	1607471	1
Media hub for electrical crimping device SF-Z0032 for accommodating rolls up to Ø 60 cm						
				SF-Z0052	1615413	1
Adapter for electrical crimping device SF-Z0032 , for accommodating tool heads for single processing						
				SF-Z0041	1607472	1

Crimping tools for turned contacts

The crimping pliers are suitable for crimping turned contacts with Ø 0.6 mm, Ø 1 mm, Ø 2 mm, and Ø 3.6 mm (excl. M23 signal plug-in connectors). For large litz wire cross sections, a pneumatic crimping tool is available.

Notes:

For crimping tools for M23 signal plug-in connectors, see page 404



Manual crimping pliers



Crimping tool, pneumatic

		Ordering data			Ordering data		
Description	Litz wire cross section [mm²]	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Manual crimping pliers with digital display for turned crimp contacts with Ø 1 mm, Ø 2 mm, Ø 3.6 mm	0.06 ... 6	SF-Z0025	1607452	1			
Positioners for crimping the SF-6FS2000 / SF-6DP2000 contacts with a connection cross section of 1.5 mm²		SF-Z0042	1613666	1			
Manual crimping pliers with digital display for turned crimp contacts with Ø 2 mm, Ø 3.6 mm	1.5 ... 10	SF-Z0026	1607454	1			
Manual crimping pliers with digital display for turned crimp contacts with Ø 0.6 mm, Ø 1 mm, Ø 2 mm	0.06 ... 2.5	SF-Z0054	1615585	1			
Crimping tool, pneumatic for turned crimp contacts with Ø 3.6 mm	6.0 ... 16				SF-Z0014	1607446	1
Crimp head for crimping tool, pneumatic					SF-Z0003	1605657	1
Positioner for crimp head SF-Z0003, for device plug-in connectors					SF-Z0011	1605675	1
Positioner for crimp head SF-Z0003, for cable and coupler plug-in connectors					SF-Z0013	1605681	1
	"D" marking						
	"F" marking						

M17 to M58 circular plug-in connectors

Tools and accessories

Crimping tools for turned contacts for M58 power plug-in connectors

For turned crimp contacts with Ø 1.6 mm for M58 power plug-in connectors, SF-Z0025 manual crimping pliers are used. For user-friendly crimping of contacts with Ø 10 mm, the SL-Z0007 electric crimping tool is available.

Crimping stamps for processing contacts with Ø 10 mm are used in pairs. The stamps are tailored to the connection cross sections and marked.



Electro-hydraulic crimping device



Manual crimping pliers

		Ordering data			Ordering data		
Description	Connection cross section [mm²]	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Electro-hydraulic crimping device incl. charger and rechargeable battery , for Litz wire cross section of 10 ... 50 mm² (power and PE contacts Ø 10 mm)		SL-Z0007	1613484	1			
Crimping stamp for crimping device SL-Z0007	10	SL-Z0011	1613488	1			
Crimping stamp for crimping device SL-Z0007	16	SL-Z0012	1613489	1			
Crimping stamp for crimping device SL-Z0007	25	SL-Z0013	1613490	1			
Crimping stamp for crimping device SL-Z0007	35	SL-Z0014	1613491	1			
Crimping stamp for crimping device SL-Z0007	50	SL-Z0015	1613492	1			
Crimping tool with digital display	0.06 ... 6				SF-Z0025	1607452	1
Accessories for electro-hydraulic crimping device SL-Z0007							
	Replacement battery	SL-Z0008	1613485	1			
	Table bracket incl. foot actuation switch	SL-Z0010	1613487	1			

Notes:

The manual crimping pliers SF-Z0025 with digital display are also suitable for crimping turned crimp contacts ST / SF / SM.

Special wrench

The torque screwdriver is specially adapted to the M23 circular plug-in connectors and simplifies the process of tightening and loosening the knurled nut safely even in places where space is restricted.

The tool consists of a hook wrench as well as a torque screwdriver with a fixed torque of 2.5 Nm.



Torque screwdriver for M23 plug-in connectors with knurled nuts



Special wrench for screwing the adapter

		Ordering data			Ordering data		
Description	Wrench size [mm]	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Torque screwdriver incl. hook wrench							
For M23 plug-in connectors with knurled nuts		SF-Z0028	1607456	1			
Replacement hook wrench for torque screwdriver		SF-Z0027	1607455	1			
Special wrench for cable/coupler plug-in connectors for screwing the adapter. Connection dimensions for torque wrench: 8.9 mm x 11.9 mm							
For M17 plug-in connectors, WAF 19					ST-Z0012	1613667	1
For M23 plug-in connectors, WAF 24					RF-Z0007	1614347	1
For M40 plug-in connectors, WAF 41					SM-Z0012	1614349	1
For M58 plug-in connectors, WAF 55					SL-Z0016	1614348	1

M17 to M58 circular plug-in connectors

Tools and accessories

Contact removal tools, square mounting flange

The removal tool is used for contact carriers which are snapped into the housing without rear support. They are removed from the plug-in side using the removal tool.

The square mounting flange is used for cable and coupler plug-in connectors. In this way, the product range is easily extended to include plug-in connectors as panel feed-throughs.



**Contact removal tool
for snap-in contact carriers**



**Square mounting flange for cable/coupler
plug-in connector for wall mounting**

			Ordering data			Ordering data		
Description	Wall mounting	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.	
Contact removal tool for contact carriers, device plug-in connectors For M17 signal/power plug-in connectors For M23 feedback plug-in connectors For M23 signal plug-in connectors		ST-Z0001	1607770	1				
		RF-Z0001	1607904	1				
		CA-Z0001	1620699	1				
Square mounting flange, metal, with O-ring seal , for M17 (excl. M17 Compact) cable and coupler plug-in connectors for wall mounting 4 x Ø 2.7 mm 4 x M3					ST-Z0002	1607771	1	
					ST-Z0003	1607772	1	
Square mounting flange, metal, without seal , for M17 (excl. M17 Compact) cable and coupler plug-in connectors for wall mounting 4 x Ø 2.7 mm 4 x M3					ST-Z0004	1607773	1	
					ST-Z0005	1607775	1	
Square mounting flange, metal, with O-ring seal , for M23 feedback, cable, and coupler plug-in connectors for wall mounting 4 x M3								
					RF-Z0003	1607905	1	
Square mounting flange, metal, with O-ring seal , for M58 cable and coupler plug-in connectors for wall mounting 4 x Ø 4.3 mm								
					SM-Z0003	1607935	1	
Square mounting flange, metal, without seal , for M58 cable and coupler plug-in connectors for wall mounting 4 x Ø 4.3 mm								
					SM-Z0004	1607937	1	

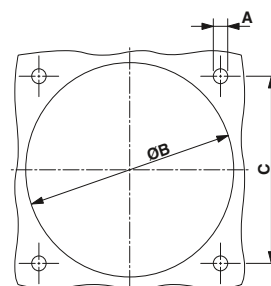
Installation dimensions for square mounting flanges

Type	Installation dimensions			Flange dimensions					
	A	B	C	D	E	F	G	H	J
ST-Z0002 ST-Z0003 ST-Z0004 ST-Z0005	4 x M2.5/∅ 3.2	∅ 22.9 +0.2	□ 22.6 ±0.1	∅ 21.6	□ 22.6 ±0.1	4 x M3/∅ 2.7	M2.5	□ 28.0 ±0.1	5
RF-Z0003	4 x ∅ 3.2	∅ 27.9 ±0.1	□ 28.3 ±0.1	∅ 26.2	□ 28.3 ±0.1	4 x M3	M3	□ 35.0	6
SM-Z0003 SM-Z0004	4 x M4/∅ 4.2	∅ 46.1 ±0.1	□ 42.4 ±0.1	∅ 45.0	□ 42.4 ±0.1	4 x ∅ 4.3	M3	□ 55.0 ±0.1	5.5

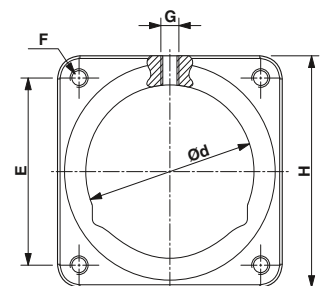
Note:

For insulating wall mounting, plastic mounting flanges are available on request.

Installation dimensions



Flange dimensions



M17 to M58 circular plug-in connectors

Tools and accessories

Color rings

The color rings are used for individually marking the plug-in connectors



Color rings for marking plug-in connectors with cable entry



Color rings for marking device plug-in connectors

		Ordering data			Ordering data		
Description	Color	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Color rings for M17 plug-in connectors, 50 pcs. in set							
	Green	ST-Z0016	1617993	50	ST-Z0019	1620621	50
	Orange	ST-Z0017	1618049	50	ST-Z0020	1620622	50
	Black	ST-Z0018	1618050	50	ST-Z0021	1620623	50
Color rings for M23 signal plug-in connectors, 50 pcs. in set							
	Green	RF-Z0014	1620588	50			
	Orange	RF-Z0015	1620592	50			
	Black	RF-Z0016	1620593	50			
Color rings for M23 signal device plug-in connectors, front mounting, Pg13.5 and M20 fastening thread/rear mounting, central fastening thread, 50 pcs. in set							
	Green				CA-Z0110	1620700	50
	Orange				CA-Z0111	1620701	50
	Black				CA-Z0112	1620702	50
Color rings for M23 signal device plug-in connectors, front mounting, flange dimensions: 25 mm x 25 mm, 50 pcs. in set							
	Green				CA-Z0120	1620704	50
	Orange				CA-Z0121	1620705	50
	Black				CA-Z0122	1620706	50
Color rings for M23 feedback plug-in connectors, 50 pcs. in set							
	Green	RF-Z0014	1620588	50	RF-Z0017	1620624	50
	Orange	RF-Z0015	1620592	50	RF-Z0018	1620625	50
	Black	RF-Z0016	1620593	50	RF-Z0019	1620626	50
Color rings for M23 power plug-in connectors, 50 pcs. in set							
	Green	SF-Z0064	1620585	50	RF-Z0017	1620624	50
	Orange	SF-Z0065	1620586	50	RF-Z0018	1620625	50
	Black	SF-Z0066	1620587	50	RF-Z0019	1620626	50
Color rings for M40 plug-in connectors, 50 pcs. in set							
	Green	SM-Z0025	1620558	50	SM-Z0028	1620627	50
	Orange	SM-Z0026	1620559	50	SM-Z0029	1620628	50
	Black	SM-Z0027	1620560	50	SM-Z0030	1620629	50

Dust protection caps, plastic

A range of protective caps is available for signal and power plug-in connectors to protect the contact elements in the case of a separate plug connection.

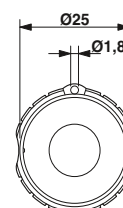
These prevent penetration of dust and humidity.

Plastic protective caps enable IP40 protection to be achieved when locked.



Plastic dust protection caps

		Ordering data		
Description	Degree of protection when locked	Type	Order No.	Pcs. / Pkt.
Plastic dust protection cap, for signal/power plug-in connectors, with M17 external thread	IP40	ST-Z0006	1607776	25
Plastic dust protection cap, for signal/power plug-in connectors, with M17 knurled nut (SPEEDCON and standard)	IP40	ST-Z0007	1607777	25
Plastic dust protection cap with lug for signal/power plug-in connectors with M23 external thread	IP40	SF-Z0019	1607449	25
Plastic dust protection cap, for signal/power plug-in connectors, with M23 knurled nut	IP40	RC-Z2058	1604223	25
Plastic dust protection cap, for signal/power plug-in connectors, with M23 external thread	IP40	RC-Z2059	1604225	25
Plastic dust protection cap, anti-static, black, for signal/power plug-in connectors, with M23 knurled nut	IP40	RC-Z2468	1611796	25
Plastic dust protection cap, anti-static, black, for signal/power plug-in connectors with M23 external thread	IP40	RC-Z2469	1611797	25
Plastic dust protection cap for power plug-in connectors with M40 external thread	IP40	SM-Z0001	1605866	25
Plastic dust protection cap for power plug-in connectors with M58 external thread	IP40	SL-Z0005	1607926	25



SF-Z0019, eye for fixing rope

Dust protection caps, metal

Metal protective caps are available for applications that require a higher degree of protection. These enable IP67 protection to be achieved when locked.

The wire is fixed to the housing panel and prevents the metal protective caps from being lost.



Metal dust protection caps

		Ordering data		
Description	Degree of protection when locked	Type	Order No.	Pcs. / Pkt.
Metal dust protection cap , for power plug-in connectors with M23 external thread	IP67	SC-Z2319	1605456	10
Metal dust protection cap with steel wire , for power plug-in connectors with M23 external thread	IP67	SC-Z2320	1605457	10
Metal dust protection cap with steel wire , for power plug-in connectors with M23 knurled nut	IP67	SC-Z2322	1605459	10
Metal dust protection cap , for signal plug-in connectors, with M23 external thread	IP67	RC-Z2104	1604260	10
Metal dust protection cap with steel wire , for signal plug-in connectors with M23 external thread	IP67	RC-Z2068	1604236	10
Metal dust protection cap with steel wire , for signal plug-in connectors, with M23 knurled nut	IP67	RC-Z2062	1604228	10



Photovoltaic plug-in connectors

SUNCLIX – the unique connection system for photovoltaics

Are you looking for innovative and reliable connection technology for your PV modules, inverters or for cabling complete PV systems?

We have the right connection solution for you – from connection technology for junction boxes through DC plug-in connectors for field cabling to device connection for power. The tailored, high-quality components contribute to the long-term and increased availability of your system.

SUNCLIX – DC plug-in connectors with fast connection

The one-piece DC plug-in connectors can be connected quickly and easily by means of spring technology without using special tools. The unique spring technology ensures reliable and long-term stable contacting of the conductors.

Miniature plug-in system for building-integrated photovoltaics - BIPV

Absorb solar energy not only from the roof of a building, but from its entire surface.

Phoenix Contact has developed a new DC plug-in system in miniature format for this new trend in energy production using photovoltaics. In this way, the facade of a building is efficiently used to produce energy.

Product range overview	418
Device plug-in connectors	420
DC plug-in connectors	422
Y plug-in connectors	424
Cables	425
Building-integrated photovoltaic applications (BIPV)	426
PCB connection for PV applications	428



Assembly



– Insert the stripped PV conductor



– Press down on the spring and snap in



– Tighten the screw connection
- and you're done!



SUNCLIX DC device plug-in connectors
– see page 420



SUNCLIX DC plug-in connectors,
2.5 mm² to 16 mm², can be assembled
– see page 422



SUNCLIX Y-distributors
– see page 424



Photovoltaic cables
– see page 425



PCB connection
– see page 428



SUNCLIX building-integrated
photovoltaic applications
– see page 426

Release



– Can only be released using a screwdriver

Photovoltaic plug-in connectors

Device plug-in connectors

SUNCLIX DC device plug-in connectors

- With connected cable as standard
- IP65 when not plugged in
- Anti-rotation protection with coding
- For voltage up to 1500 V

Notes:
Further cable types and lengths are available on request



With 0.13 m litz wire

General data
Degree of protection
Electrical data
Rated voltage
Nominal current I _N
Conductor cross section
Temperature data
Ambient temperature (operation)

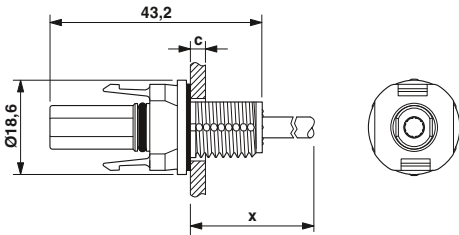
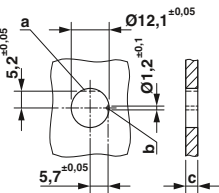
Technical data					
IP65 / IP66 / IP68 (2m / 24h)					
1500 V					
27 A		40 A			
2.5 mm ²		4 mm ²		6 mm ²	
-40 °C ... 85 °C					

Description
DC device plug-in connector
Socket (+)
Plug (-)

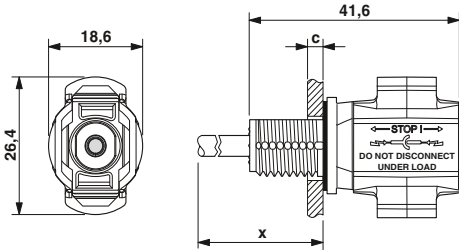
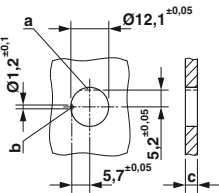
Ordering data					
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
1805135	50	1805151	50	1805177	50
1805148	50	1805164	50	1805180	50

Nut for attaching SUNCLIX device plug-in connectors
Protective cap for SUNCLIX photovoltaic plug-in connector; degree of protection: IP67
Flat gasket for photovoltaic plug-in connector

Accessories			
PV-FT-C NUT BK		1775880	100
PV-C PROTECTION CAP		1785430	100
PV-FT-FLAT GASKET		1705561	1000



Dimension: socket (+),
dimension x = cable length



Dimension: pin (-),
dimension x = cable length

SUNCLIX DC device plug-in connectors for self-assembly

Plastic housing

- Anti-rotation protection with coding
- For voltage up to 1500 V

Contacts for crimp connection

- Contacts on roll



Technical data		Technical data	
General data			
Degree of protection (when plugged in)	-	IP66 / IP68 (2m / 24h)	
Electrical data			
Rated voltage	1500 V		1500 V
Rated current	-	40 A (for 4 mm ²)	40 A (for 6 mm ²)
Connection capacity	-	2.5 mm ² ... 4 mm ²	6 mm ²
Temperature data			
Ambient temperature (operation)	-40 °C ... 85 °C		-40 °C ... 85 °C
Ordering data		Ordering data	
Description	Order No. Pcs. / Pkt.	Order No. Pcs. / Pkt.	Order No. Pcs. / Pkt.
Plastic housing			
Socket (+)	1704926 50		
Plug (-)	1704925 50		
Metal contact			
Socket (+)		1704930 1000	1704931 1000
Plug (-)		1704927 1000	1704928 1000
Accessories		Accessories	
Nut for attaching SUNCLIX device plug-in connectors	PV-FT-C NUT BK 1775880 100		
Protective cap for SUNCLIX photovoltaic plug-in connector; degree of protection: IP67	PV-C PROTECTION CAP 1785430 100		
Flat gasket for photovoltaic plug-in connector	PV-FT-FLAT GASKET 1705561 1000		
Test pin for SUNCLIX device plug-in connectors for free assembly	PV-FT-TEST PIN 1705589 1		

Photovoltaic plug-in connectors

DC plug-in connectors

SUNCLIX DC plug-in connectors

- Quick and easy connection without special tools
- Reliable and long-term stable contacting of the conductors, thanks to proven spring technology



SUNCLIX,
1100 V, 2.5 to 6 mm²



SUNCLIX,
1500 V, 2.5 to 6 mm²



Technical data

General data	
Degree of protection	IP66 / IP68 (2m / 24h)
Connection method	Spring-cage
Electrical data	
Rated voltage	1100 V
Nominal current I _N	40 A (from 4 mm ² ; 27.5 A for 2.5 mm ²)
Connection capacity	2.5 mm ² ... 6 mm ²
Temperature data	
Ambient temperature (operation)	-40 °C ... 85 °C

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
DC plug-in connectors			
Socket (+)	PV-CF-S 2,5-6 (+)	1774674	50
Plug (-)	PV-CM-S 2,5-6 (-)	1774687	50

Accessories

Protective cap for SUNCLIX photovoltaic plug-in connector; degree of protection: IP67	PV-C PROTECTION CAP	1785430	100
Filler plug for protection against dust and humidity	PV-C PLUG	1775631	200
Screwdriver	SZF 1-0,6X3,5	1204517	10
Stripping tool , for standard 2.5, 4, and 6 mm ² solar cables, with 15 mm length stop, for SUNCLIX field connectors	WIREFOX-D SR 6-1	1212511	1



Technical data

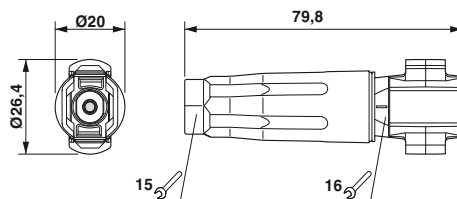
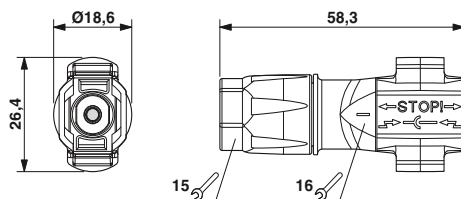
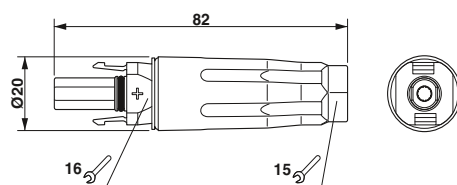
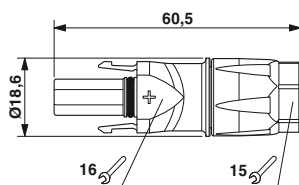
General data	
Degree of protection	IP66 / IP68 (2m / 24h)
Connection method	Spring-cage
Electrical data	
Rated voltage	1500 V
Nominal current I _N	40 A (from 4 mm ² ; 27.5 A for 2.5 mm ²)
Connection capacity	2.5 mm ² ... 6 mm ²
Temperature data	
Ambient temperature (operation)	-40 °C ... 85 °C

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
DC plug-in connectors			
Socket (+)	PV-C1F-S 2,5-6 (+)	1789821	50
Plug (-)	PV-C1M-S 2,5-6 (-)	1789834	50

Accessories

Protective cap for SUNCLIX photovoltaic plug-in connector; degree of protection: IP67	PV-C PROTECTION CAP	1785430	100
Filler plug for protection against dust and humidity	PV-C PLUG	1775631	200
Screwdriver	SZF 1-0,6X3,5	1204517	10
Stripping tool , for standard 2.5, 4, and 6 mm ² solar cables, with 15 mm length stop, for SUNCLIX field connectors	WIREFOX-D SR 6-1	1212511	1

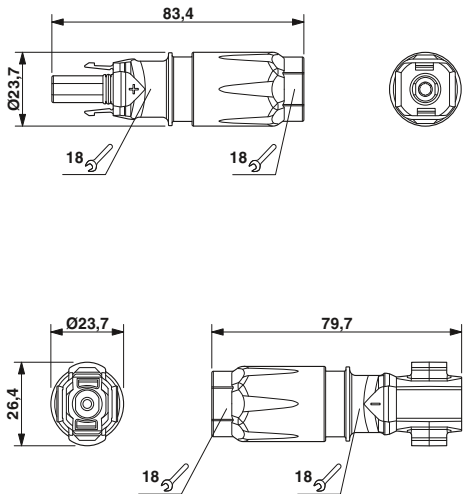




SUNCLIX,
1500 V, 6 to 16 mm²



Technical data		
IP66 / IP68 (2m / 24h) Spring-cage		
1500 V 65 A (at 16 mm ² ; 40 A at 6 mm ² ; 50 A at 10 mm ²)		
6 mm ² ... 16 mm ²		
-40 °C ... 85 °C		
Ordering data		
Type	Order No.	Pcs. / Pkt.
PV-CF-S 6-16 (+)	1790784	25
PV-CM-S 6-16 (-)	1790797	25
Accessories		
PV-C PROTECTION CAP	1785430	100
PV-C PLUG	1775631	200
SZF 1-0,6X3,5	1204517	10



Photovoltaic plug-in connectors

Y-distributors and cables

SUNCLIX DC accessories

Y-distributors

- Flexible and compact configuration
- Customer-specific configurations on request
- Variable cable lengths, number of branches, cable cross section, and processing of free cable ends

DC test plugs

- Can be released without tools
- For test applications with high insertion/withdrawal cycles



Y-distributor



DC test plug

General data
Degree of protection
Electrical data
Rated voltage
Nominal current I _N
Conductor cross section
Insertion/withdrawal cycles
Temperature data
Ambient temperature (operation)

Technical data	
4 mm ²	6 mm ²
IP66 / IP68 (2m / 24h)	
1100 V	
40 A (observe derating)	
4 mm ²	6 mm ²
-	
-40 °C ... 85 °C	

Description

Y-distributor, length of each individual cable: 0.12 m

Plug (-) to 2 x socket (+)

Socket (+) to 2 x plug (-)

DC test plug, can be released without tools, for test applications with high insertion/withdrawal cycles

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
4 mm ²		6 mm ²	

1795019	10	1787726	10
1795022	10	1787739	10

Accessories

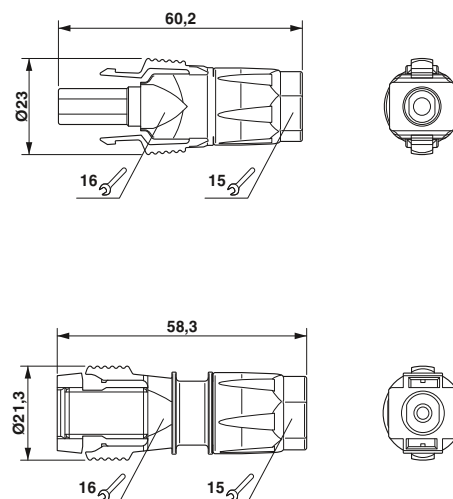
For dimensional drawings, see www.phoenixcontact.net/products

Technical data	
Socket (+)	Pin (-)
IP20	
1100 V	
40 A	
10 mm ²	
≥ 4000	
-20 °C ... 55 °C	

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
Socket (+)		Pin (-)	

1780451	50	1780464	50
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Accessories



Solar cables

- Suitable for fixed and flexible routing
- Insulating and sheath material offers excellent resistance to weather, UV, and wear
- PV1-F cable certified by TÜV and VDE



Technical data				
Temperature data				
Ambient temperature (operation)		-40 °C ... 90 °C		
Ordering data				
Description		Type	Order No.	Pcs. / Pkt.
Solar cable, tin-plated single litz wires, 100 m ring, cross section:				
2.5 mm ²		PV-1P-100,0/S01-2,5	1459509	1
4 mm ²		PV-1P-100,0/S02-4,0	1459511	1
6 mm ²		PV-1P-100,0/S03-6,0	1459524	1
10 mm ²		PV-1P-100,0/S04-10,0	1459537	1
Solar cable, tin-plated single litz wires, 500 m drum, cross section:				
2.5 mm ²		PV-1P-500,0/S01-2,5	1459540	1
4 mm ²		PV-1P-500,0/S02-4,0	1787700	1
6 mm ²		PV-1P-500,0/S03-6,0	1787713	1
10 mm ²		PV-1P-500,0/S04-10,0	1459553	1
Solar cable, tin-plated single litz wires, 1000 m drum, cross section:				
2.5 mm ²		PV-1P-1000,0/S01-2,5	1459566	1
4 mm ²		PV-1P-1000,0/S02-4,0	1459579	1
6 mm ²		PV-1P-1000,0/S03-6,0	1459582	1
10 mm ²		PV-1P-1000,0/S04-10,0	1459595	1

Photovoltaic plug-in connectors

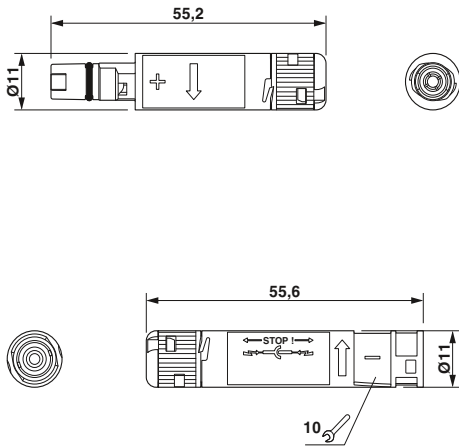
Building-integrated photovoltaic applications (BIPV)

SUNCLIX mini DC plug-in connector

- For building-integrated photovoltaic applications (BIPV)
- Narrow design, just 11 mm in diameter
- Easy to hide in the facade structure
- Quick and easy connection without special tools



Technical data			
General data			
Degree of protection	IP67		
Connection method	Pierce connection		
Electrical data			
Rated voltage	1000 V		
Nominal current I _N	15 A		
Connection capacity	2.5 mm ²		
Temperature data			
Ambient temperature (operation)	-40 °C ... 85 °C		
Ordering data			
Description	Type	Order No.	Pcs. / Pkt.
DC plug-in connectors			
Socket (+)	PV-CF-P 2,5(+)	1795323	50
Plug (-)	PV-CM-P 2,5(-)	1795336	50



SUNCLIX DC diode and junction box

- For building-integrated photovoltaic applications (BIPV)
- Compact design
- Easy to hide in the facade structure
- High density due to molding compound

SUNCLIX diode box

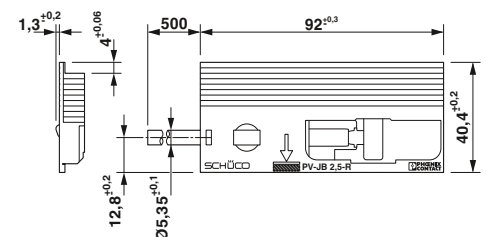
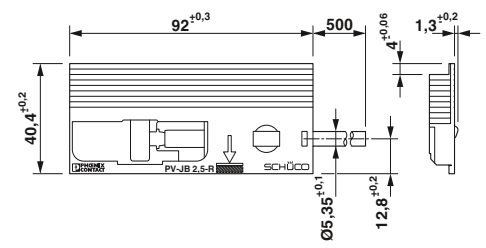
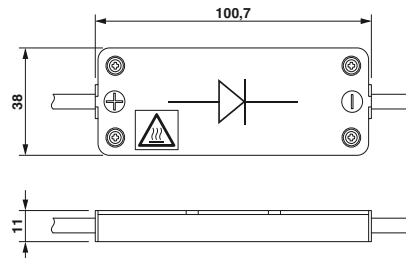
- Optimum heat management

Junction box

- Ribbon contacting with spring connection



		Technical data			Technical data		
General data		IP67			-		
Degree of protection		Open cable end			Spring-cage		
Connection method		1000 V			1000 V		
Electrical data		2200 V			-		
Rated voltage		5 A			15 A		
Reverse voltage		2.5 mm ²			2.5 mm ²		
Nominal current I _N		-			Width: ≤ 5 mm; thickness: 0.05 ... 0.2 mm		
Conductor cross section		-40 °C ... 85 °C			-40 °C ... 85 °C		
Ribbon connection capacity							
Temperature data							
Ambient temperature (operation)							
		Ordering data			Ordering data		
Description	Cable length	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
DC string diode							
Free cable end	0.8 m	PV-DB S20-2,5/0,8-2D	1811239	10			
Pre-assembled with SUNCLIX mini	0.8 m	PV-DB S20-2,5/0,8-CA	1463065	10			
Module junction box							
Cable outlet right	0.5 m				PV-JB 2,5/ 1-R 50 PXC	1705131	25
Cable outlet left	0.5 m				PV-JB 2,5/ 1-L 50 PXC	1705132	25



PCB terminal blocks
for PV applications

- PTSPL 6 push-lock spring-cage PCB terminal block without insulating body for conductor cross sections up to 6 mm² and a current carrying capacity of up to 41 A for use in SMT reflow processes
- Connection direction of the conductor horizontal to the PCB
- Low actuation forces
- Delivery form: tape-on-reel packing according to IEC 60286-3 for automated assembly
- PTSPL spring closed for assembly using vacuum pipette
- PTSPLO spring opened for assembly using mechanical gripper
- Standard pin lengths of 2.1 mm and 2.9 mm

Notes:

Pick and place pads for taped THR articles usually protrude beyond the components. The PCB layout must ensure that collisions are avoided when components are assembled. Dimensional drawings of tape reels and place pads can be found online at www.phoenixcontact.net/products.

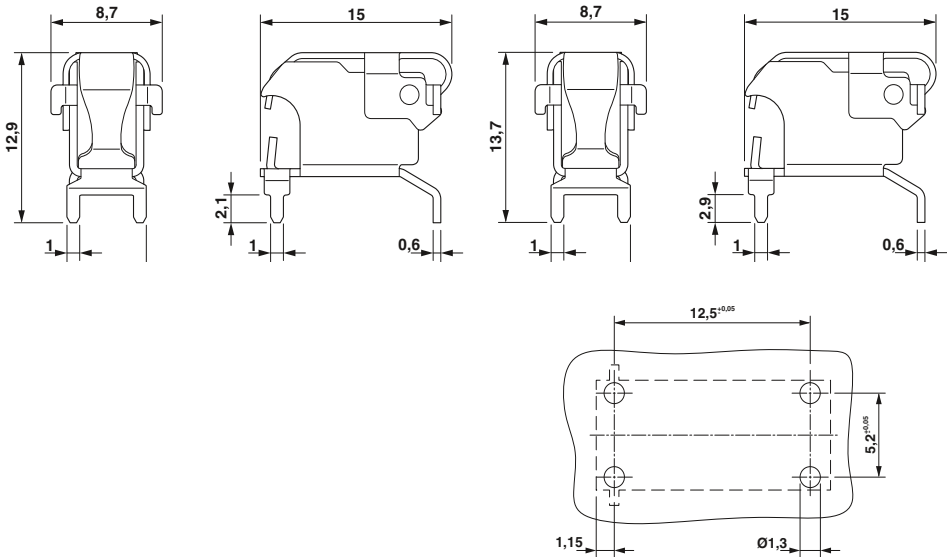


Electrical data
Nominal current I _N
Connection capacity

Technical data
41 A
2.5 mm ² ... 6 mm ²

Description
PCB terminal block closed
Solder pin length: 2.1 mm
Solder pin length: 2.9 mm
PCB terminal block open
Solder pin length: 2.1 mm
Solder pin length: 2.9 mm

Ordering data		
Type	Order No.	Pcs. / Pkt.
PTSPL-6/1-2X2 2,1 R32	1704836	240
PTSPL-6/1-2X2 2,9 R32	1704837	240
PTSPLO-6/1-2X2 2,1 R32	1705081	220
PTSPLO-6/1-2X2 2,9 R32	1705085	220

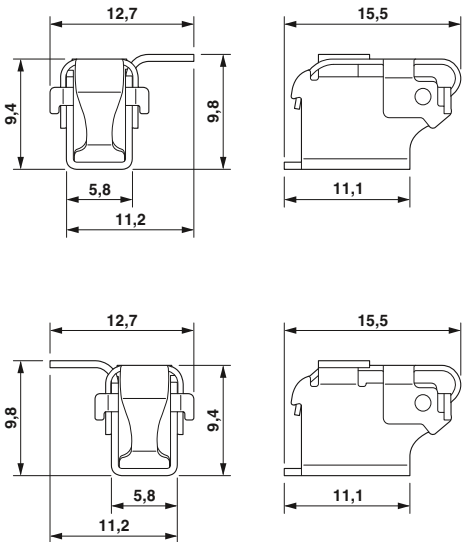


Flush-type spring-cage terminal blocks with welded bracket

- Suitable for applications with leadframe
- Push-lock spring-cage terminal block with welded bracket
- Reliable contacting of conductors, thanks to spring technology, proven a million times over
- Available with welded bracket left or right



		Technical data		
Electrical data				
Nominal current I _N		41 A		
Connection capacity		2.5 mm ² ... 6 mm ²		
		Ordering data		
Description		Type	Order No.	Pcs. / Pkt.
Spring-cage terminal block				
Welded bracket right		PV-PTSPL-W/1R	1705624	250
Welded bracket left		PV-PTSPL-W/1L	1705625	250





Plug-in charging systems for electromobility

PLUSCON power offers a product and technology portfolio that enables the flexible, modular, and efficient implementation of various concepts for your charging infrastructure for different business models. Whether charging on an AC network or fast DC charging – the AC and DC plug-in charging systems from Phoenix Contact are safe, reliable, and user friendly.

Product range overview

Type 2 combined AC/DC charging system (Europe)	435
Type 2 AC charging cables (Europe)	436
Type 2 (Europe) and GB (China) AC socket outlets	438
GB AC charging cables (China)	440



The development of a widespread charging infrastructure in conjunction with renewable energy is an important step toward a mobile future. Special charging plugs are used to establish an electrical connection between the electric vehicle and the infrastructure (e.g., a charging station). Internationally standardized charging interfaces ensure uniform connection for charging stations and vehicles.

The PLUSCON power product range from Phoenix Contact offers reliable standard-compliant solutions for a consistent charging interface for all applications.

The matrix below provides an overview of the various plug-in charging systems and standards with the respective pin connector patterns of the vehicle inlet.

Overview of plug-in charging systems

	Type 1/USA	Type 2/Europe	GB/China
Alternating current AC	 SAE J1772/IEC 62196-2	 IEC 62196-2	 GB part 2
Direct current DC	 IEC 62196-3	 IEC 62196-3	 GB part 3/IEC 62196-3
Combined AC/DC charging system	 SAE J1772/IEC 62196-3	 IEC 62196-3	



In addition to the type 2 combined AC/DC charging system, the PLUSCON power product range also features plug-in charging systems for AC charging. This includes AC charging cables and the corresponding type 2 and GB socket outlets. The compact design and ergonomic handle design of the charging plug enable convenient and optimal handling during the charging process.

The following charging infrastructure components can be found in Catalog 7 (interface technology and switching devices):

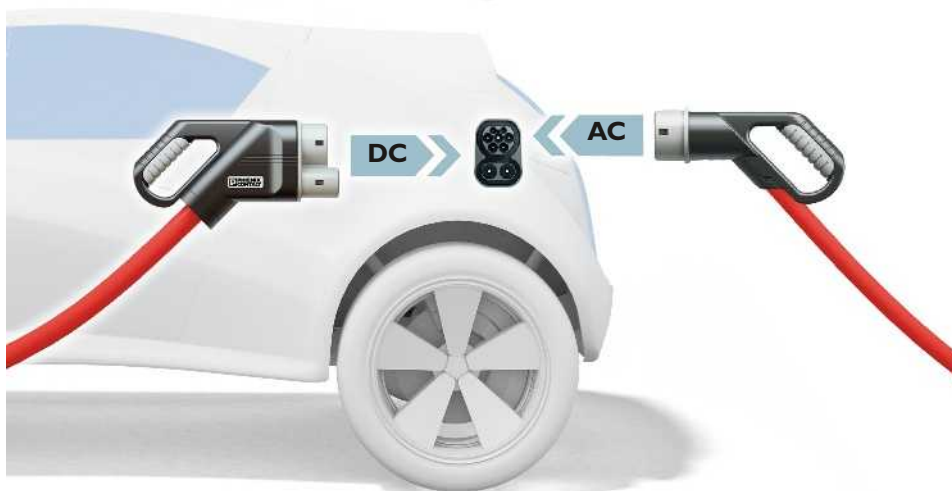
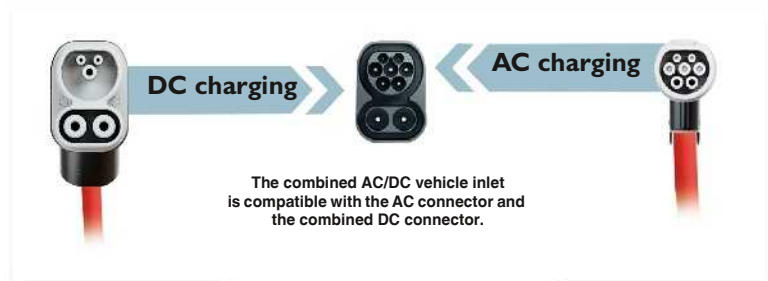
- EV Charge Control charging controller for charging electric vehicles on the AC power grid according to IEC 61851-1
- Optional EV Charge Lock Release add-on module for plug release in the event of mains failure

In addition to the standardized plug-in charging systems, Phoenix Contact also offers high-performance plug-in connectors for DC charging of large battery units. The DC replacement battery concept is particularly suitable for utility vehicles used in local and municipal authorities as well as for fork-lift trucks, transport vehicles, and passenger transport vehicles.

Type 2 combined AC/DC charging system (Europe)

DC charging process

AC charging process



The most important requirement for setting up a modern charging infrastructure is a reliable and uniform connection between electric vehicles and charging stations. The electrical energy must be supplied in the form of DC voltage or AC voltage for recharging the batteries.

The type 2 combined AC/DC charging system from Phoenix Contact supports conductive charging of electric vehicles with both DC and AC. It was developed in conjunction with leading automobile manufacturers and represents the ideal charging interface for future electromobility due to its varied charging options. Only one vehicle inlet is required for each charging process in all applications thanks to the universal pin connector pattern.

If AC is used for charging, the energy can be supplied directly from the existing low-voltage network to the integrated AC/DC converter in the vehicle with the type 2 AC connector, see page 436.

In the case of DC charging with the type 2 combined DC connector, the AC/DC converter is located within the charging sta-

tion and reduces the load on the vehicle. Due to the high current carrying capacity, the battery is charged in a matter of minutes.

Both AC and DC charging processes are supported by control and signal contacts.

The handle's ergonomic design and the low insertion and withdrawal forces mean that the combined DC connector ensures fast, convenient, and easy handling.



Type 2 combined AC/DC charging system (Europe)

- Supports fast DC charging
- Safe and secure, thanks to the electromechanical lock between connector and vehicle
- Robust, thanks to the use of high-quality materials

Notes:
Cable length and housing color versions on request.



N

125 A type 2 combined DC connector

Technical data	
Nominal current	125 A
Nominal voltage	850 V DC
Standards	IEC 62196-3 (type 2)
Charging mode	Mode 4
Resistor coding	1500 Ω
Temperature sensor	Pt1000
Ambient temperature (operation)	-30 °C ... 50 °C
Number of power contacts	3
Insertion/withdrawal cycles	> 10000
Insertion/withdrawal force	< 100 N
Type of protection (when plugged in)	IP44
Degree of protection (when not plugged in)	IP20
Cable data	
Cable type	Straight
Cable length	5 m
Cable diameter	28 mm
Cable structure	2 x 50 mm ² + 1 x 25 mm ² + 3 x 0.75 mm ²

Ordering data		
Description	Type	Order No. Pcs. / Pkt.
Type 2 combined DC charging cable Outer sheath color: black	EV-T2M4CC-DC125A-5,0M50ESBK001	1409060 1

Plug-in charging systems for electromobility

Charging plug-in connectors

Type 2 AC charging cables (Europe)

- Convenient handling, thanks to the ergonomic handle design
- Safe and secure, thanks to the electromechanical lock on the charging station and vehicle
- Robust, thanks to the use of high-quality materials

Notes:
Cable length and housing color versions on request.
All connectors and plugs are provided together with a protective cap.



20 A type 2 AC connector,
with open cable end



32 A type 2 AC connector,
with open cable end

Nominal current
Nominal voltage
Standards
Charging mode
Resistor coding
Ambient temperature (operation)
Number of power contacts
Insertion/withdrawal cycles
Insertion/withdrawal force
Type of protection (when plugged in)
Degree of protection (with protective cap)
Degree of protection (when not plugged in)

Cable data
Cable type
Cable length
Cable diameter
Cable structure

Technical data	
1-phase	3-phase
20 A	20 A
250 V AC	480 V AC
IEC 62196-2 (type 2)	IEC 62196-2 (type 2)
Mode 3	Mode 3
680 Ω	680 Ω
-30 °C ... 50 °C	-30 °C ... 50 °C
3 (L1, N, PE)	5 (L1, L2, L3, N, PE)
> 10000	> 10000
< 100 N	< 100 N
IP44	IP44
IP24	IP24
IP20	IP20
Spiraled	Spiraled
4 m	4 m
10.5 mm ±0.5	13 mm ±0.5
3 x 2.5 mm ² + 1 x 0.5 mm ²	5 x 2.5 mm ² + 1 x 0.5 mm ²

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
1-phase		3-phase	
1405194	1	1405197	1
1405195	1		

Technical data	
1-phase	3-phase
32 A	32 A
250 V AC	480 V AC
IEC 62196-2 (type 2)	IEC 62196-2 (type 2)
Mode 3	Mode 3
220 Ω	220 Ω
-30 °C ... 50 °C	-30 °C ... 50 °C
3 (L1, N, PE)	5 (L1, L2, L3, N, PE)
> 10000	> 10000
< 100 N	< 100 N
IP44	IP44
IP24	IP24
IP20	IP20
Straight	Straight
4 m	4 m
13.9 mm ±0.5	17 mm ±0.5
3 x 6 mm ² + 1 x 0.5 mm ²	5 x 6 mm ² + 1 x 0.5 mm ²

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
1-phase		3-phase	
1405198	1	1405199	1

Description
Type 2 AC charging cable
Outer sheath color: red
Outer sheath color: black



20 A type 2 AC connector and plug



20 A type 2 AC connector and plug



32 A type 2 AC connector and plug

Technical data	
1-phase	3-phase
20 A	20 A
250 V AC	480 V AC
IEC 62196-2 (type 2)	IEC 62196-2 (type 2)
Mode 3	Mode 3
680 Ω	680 Ω
-30 °C ... 50 °C	-30 °C ... 50 °C
3 (L1, N, PE)	5 (L1, L2, L3, N, PE)
> 10000	> 10000
< 100 N	< 100 N
IP44	IP44
IP24	IP24
IP20	IP20
Straight	Straight
4 m	4 m
10.5 mm ±0.5	13 mm ±0.5
3 x 2.5 mm ² + 1 x 0.5 mm ²	5 x 2.5 mm ² + 1 x 0.5 mm ²

Technical data	
1-phase	3-phase
20 A	20 A
250 V AC	480 V AC
IEC 62196-2 (type 2)	IEC 62196-2 (type 2)
Mode 3	Mode 3
680 Ω	680 Ω
-30 °C ... 50 °C	-30 °C ... 50 °C
3 (L1, N, PE)	5 (L1, L2, L3, N, PE)
> 10000	> 10000
< 100 N	< 100 N
IP44	IP44
IP24	IP24
IP20	IP20
Spiraled	Spiraled
4 m	4 m
10.5 mm ±0.5	13 mm ±0.5
3 x 2.5 mm ² + 1 x 0.5 mm ²	5 x 2.5 mm ² + 1 x 0.5 mm ²

Technical data	
1-phase	3-phase
32 A	32 A
250 V AC	480 V AC
IEC 62196-2 (type 2)	IEC 62196-2 (type 2)
Mode 3	Mode 3
220 Ω	220 Ω
-30 °C ... 50 °C	-30 °C ... 50 °C
3 (L1, N, PE)	5 (L1, L2, L3, N, PE)
> 10000	> 10000
< 100 N	< 100 N
IP44	IP44
IP24	IP24
IP20	IP20
Straight	Straight
4 m	4 m
13.9 mm ±0.5	17 mm ±0.5
3 x 6 mm ² + 1 x 0.5 mm ²	5 x 6 mm ² + 1 x 0.5 mm ²

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
1-phase		3-phase	
1404876	1		
1405193	1	1404877	1

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
1-phase		3-phase	
1404563	1		
1405192	1	1404567	1

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
1-phase		3-phase	
1404568	1		
		1404569	1

Charging plug-in connectors

Type 2 (Europe) and GB (China) AC socket outlets

- Space-saving design
- Secure, thanks to lock actuator
- Querying function for the locking status
- Robust, thanks to the use of high-quality materials

Notes:

All socket outlet versions can be mounted on the housing panel from both the front and the rear (see below).

As an option, the type 2 AC socket outlet can be secured with a hinged cover or a panel mounting frame for both front or rear panel mounting.



Type 2 AC socket outlet with actuator



Hinged cover for type 2 AC socket outlet

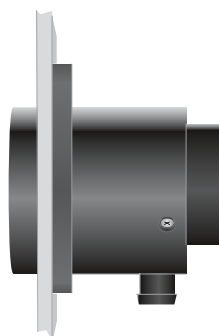
Nominal current
Nominal voltage
Standards
Charging mode
Ambient temperature (operation)
Number of power contacts
Insertion/withdrawal cycles
Type of protection (when plugged in)
Degree of protection (when not plugged in)
Cable data
Cable type
Cable length
Cable structure
Actuator data
Mechanical emergency release
Lock recognition

Technical data	
3-phase	3-phase
20 A	32 A
480 V AC	480 V AC
IEC 62196-2 (type 2)	IEC 62196-2 (type 2)
Mode 3	Mode 3
-30 °C ... 50 °C	-30 °C ... 50 °C
5 (L1, L2, L3, N, PE)	5 (L1, L2, L3, N, PE)
> 10000	> 10000
IP44	IP44
IP20	IP20
Single wires	Single wires
0.70 m	0.70 m
5 x 2.5 mm ² + 1 x 0.5 mm ²	5 x 6.0 mm ² + 1 x 0.5 mm ²
Available	Available
Available	Available

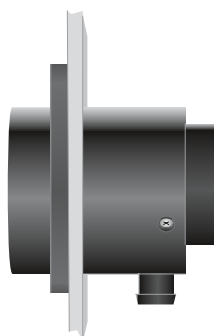
Technical data	
-	-
-	-
-	-
-	-
-30 °C ... 50 °C	-
-	-
-	-
IP44	-
IP24	-
-	-
-	-
-	-
-	-
-	-
-	-

Description	Ordering data			
	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	3-phase		3-phase	
AC socket outlet				
With actuator (12 V operating voltage)	1405213	1	1405214	1
With actuator (24 V operating voltage)	1405215	1	1405216	1
Without actuator				
AC socket outlet accessories				

Ordering data			
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
1405217	1		



Rear panel mounting



Front mounting

N



Panel mounting frame
for type 2 AC socket outlet

N



GB AC socket outlet
with actuator

N



GB AC socket outlet
without actuator

Technical data		Technical data		Technical data	
		1-phase	3-phase	1-phase	3-phase
-	-	32 A	32 A	32 A	32 A
-	-	250 V AC	440 V AC	250 V AC	440 V AC
-	-	GB/T Part 2	GB/T Part 2	GB/T Part 2	GB/T Part 2
-	-	Mode 3	Mode 3	Mode 3	Mode 3
-30 °C ... 50 °C	-	-30 °C ... 50 °C	-30 °C ... 50 °C	-30 °C ... 50 °C	-30 °C ... 50 °C
-	-	3 (L1, N, PE)	5 (L1, L2, L3, N, PE)	3 (L1, N, PE)	5 (L1, L2, L3, N, PE)
-	-	> 10000	> 10000	> 10000	> 10000
IP44	-	IP44	IP44	IP44	IP44
IP20	-	IP20	IP20	IP20	IP20
-	-	Single wires	Single wires	Single wires	Single wires
-	-	0.70 m	0.70 m	0.70 m	0.70 m
-	-	3 x 6.0 mm ² + 1 x 0.5 mm ²	5 x 6.0 mm ² + 1 x 0.5 mm ²	3 x 6.0 mm ² + 1 x 0.5 mm ²	5 x 6.0 mm ² + 1 x 0.5 mm ²
-	-	Available	Available	Available	Available
-	-	Available	Available	Available	Available
Ordering data		Ordering data		Ordering data	
Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		1-phase	3-phase	1-phase	3-phase
		1408171	1	1408172	1
				1408169	1
				1408170	1
1405218	1				

Charging plug-in connectors

GB AC charging cables (China)

N

N

- Convenient handling, thanks to the ergonomic handle design
- Safe and secure, thanks to the lever-type lock and electric locking bolt on the charging station and vehicle
- Robust, thanks to the use of high-quality materials

Notes:

Cable length versions on request



16 A GB AC connector,
with open cable end



32 A GB AC connector,
with open cable end

Nominal current
Nominal voltage
Standards
Charging mode
Resistor coding
Ambient temperature
(operation)
Number of power contacts
Insertion/withdrawal cycles
Insertion/withdrawal force
Type of protection (when plugged in)
Degree of protection (when not plugged in)

Cable data

Cable type
Cable length
Cable diameter
Cable structure

Technical data

1-phase

16 A	-
250 V	-
GB/T Part 2	-
Mode 3	-
680 Ω	-
-30 °C ... 50 °C	-
3 (L1, N, PE)	-
> 10000	-
< 100 N	-
IP44	-
IP20	-

Ordering data

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
1-phase			
1408166	1		

Technical data

1-phase

32 A
250 V
GB/T Part 2
Mode 3
220 Ω
-30 °C ... 50 °C

3 (L1, N, PE)
> 10000
< 100 N
IP44
IP20

Cable data

Straight
5 m
13.9 mm
3 x 6.0 mm ² + 1 x 0.5 mm ²

3-phase

32 A
440 V
GB/T Part 2
Mode 3
220 Ω
-30 °C ... 50 °C

5 (L1, L2, L3, N, PE)
> 10000
< 100 N
IP44
IP20

Cable data

Straight
5 m
17.1 mm
5 x 6.0 mm ² + 1 x 0.5 mm ²

Ordering data

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
1-phase		3-phase	
1408167	1	1408168	1

Description

GB AC charging cable

Outer sheath color: orange

N



16 A GB AC connector and plug



32 A GB AC connector and plug

Technical data

1-phase	
16 A	-
250 V	-
GB/T Part 2	-
Mode 3	-
680 Ω	-
-30 °C ... 50 °C	-
3 (L1, N, PE)	-
> 10000	-
< 100 N	-
IP44	-
IP20	-
Straight	-
5 m	-
10.5 mm	-
3 x 2.5 mm ² + 1 x 0.5 mm ²	-

Ordering data

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
1-phase			
1408161	1		

Technical data

1-phase	3-phase
32 A	32 A
250 V	440 V
GB/T Part 2	GB/T Part 2
Mode 3	Mode 3
220 Ω	220 Ω
-30 °C ... 50 °C	-30 °C ... 50 °C
3 (L1, N, PE)	5 (L1, L2, L3, N, PE)
> 10000	> 10000
< 100 N	< 100 N
IP44	IP44
IP20	IP20
Straight	Straight
5 m	5 m
13.9 mm	17.1 mm
3 x 6.0 mm ² + 1 x 0.5 mm ²	5 x 6.0 mm ² + 1 x 0.5 mm ²

Ordering data

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
1-phase		3-phase	
1408163	1	1408165	1

Quality in quantity



Integrated management system

The aim of the Phoenix Contact integrated management system is to coordinate all the requirements regarding products, processes, and organization.

Statutory and regulatory requirements, as well as those of international standards and our customers, are met and, in some cases, even exceeded in all phases of the product life-cycle.

The Phoenix Contact management system is monitored by internationally recognized independent bodies each year to ensure that quality, environmental protection, and safety at the workplace have been integrated in conformity with the relevant requirements. Certification in accordance with international standards ISO 9001, ISO 14001, and BS OHSAS 18001 is the result of our corporate philosophy of meeting the needs of our customers, staff, and environment as fully as possible. They serve as the basis for innovative products with the familiar high Phoenix quality standard, actively practiced environmental protection, and responsibility in the field of occupational health and safety. Of course, we integrate all further requirements of standards, international approvals or special customer requirements into company processes.

This system provides a building block for the success of the Phoenix Contact Group and its products and services.

CE marking

The CE marking was introduced as an important instrument for the free movement of goods and services within the single European market. By attaching the mark to a product, the manufacturer confirms that it complies with all applicable European Union (EU) directives. EC directives describe the product properties with regard to device safety and avoiding danger. These are legally binding regulations of the European Union (EU). In other words, compliance with the requirements is a

statutory condition for marketing the product within the EU.

Where applicable, the products that our company currently manufactures fall within the scope of the following directives:

- 2006/95/EC
Electrical equipment designed for use within certain voltage limits (Low-Voltage Directive)
- 2004/108/EC
Electromagnetic compatibility (EMC Directive)
- 2006/42/EC
Safety of machinery (Machinery Directive)
- 94/9/EC
Equipment and protective systems intended for use in potentially explosive areas (ATEX Directive 100a)
- 1999/5/EC
Radio and telecommunications terminal equipment (R&TTE)

The standards upon which the specified directives are based, have been part of our standard of development for a long time. This guarantees conformance with European directives. The numbers of the directives indicate their version at the time of publication. In the event of changes to directives and/or standards, our products will undergo conformity assessment again in good time and a new declaration of conformity will be issued promptly. The current declarations for each product can also be found in our Download Center.

The EMC Directive occupies a special place among the European directives listed. It defines electromagnetic compatibility as a fundamental property of devices based on mandatory guidelines. European Law therefore acknowledges the electromagnetic compatibility of devices and systems as an important condition for error-free operation of machinery and systems. Phoenix Contact is one of the leading international companies in surge protection, and therefore possesses broad expertise in EMC. This expertise and the experience gained over years of developing and applying industrial interface and communication technology have resulted in our products having an extremely high standard of quality with regard to electromagnetic compatibility. It was with a view to providing other companies with this expertise that our associate company, Phoenix Testlab, was founded. Phoenix Testlab GmbH is an independent, accredited service provider offering EMC testing that conforms to European standards. At Phoenix Testlab, devices are also tested with regard to their electrical safety, mechanical influences, and their behavior in relation to environmental influences. Furthermore, Phoenix Testlab is a "Notified Body" in accordance with EMC Di-

rective 2004/108/EC and according to R&TTE Directive 1999/5/EC for radio and telecommunications terminal equipment. As a "Telecom Certification Body" (TCB), Phoenix Testlab may also approve these products for markets in the USA, Canada, and Japan.

Standards and regulations

All relevant standards and regulations are used as the basis for the development and maintenance of our products.

International standards are subject to continuous changes as a result of harmonization and new developments. In line with this process, the current version of all standards that are relevant to our products is documented in the product area on our website at www.phoenixcontact.net/products.

Online product information service on the web

Phoenix Contact's product range is growing constantly.

Due to our commitment to product monitoring, all products are subject to improvement.

The Internet is an ideal platform to quickly communicate new product developments and improvements to the market.

You can quickly access the relevant Phoenix Contact website for your region via www.phoenixcontact.com. Here, you will always find the latest overview of products, solutions, and services from Phoenix Contact. This includes technical documents, such as data sheets and user manuals, the latest driver and demo software, plus a means of contacting the appropriate contact person directly.

Note:

Subject to changes that serve the purpose of technical progress.

Connection cross section

The rated cross sections of modular terminal blocks must be specified by the manufacturer in accordance with IEC 60947-7-1. This refers to the conductor cross section that can be connected in single, multi or fine-strand versions. Specific thermal, mechanical, and electrical requirements relate to this cross section.

The manufacturer must also specify the **rated connection capacity**, i.e., the area of the conductor that can be connected, as well as the number of conductors that can be connected simultaneously and the necessary preparation of the conductor ends. The conductors can be **solid (single or**

multi-strand) or stranded (fine-strand).

These values can be found in the product-specific technical data.

The rated connection capacity of Phoenix Contact modular terminal blocks usually exceeds standard requirements, which specify that it must only be possible to connect one conductor with one of the two next smallest cross sections, excluding the rated cross section, (standardized for the cross-section range from 0.2 to 35 mm²).

In addition, conductors with a rated cross section can usually be wired with ferrules with plastic sleeve.

Phoenix Contact modular terminal blocks are designed to allow copper cables to be connected to them untreated. "Special treatment" or the use of ferrules – both permitted according to IEC 60947-7-1 – is not required. If ferrules are nevertheless used to protect stranded conductors against splicing, the connection capacity of the stranded conductor is generally reduced by one level.

Structure and dimensions of connecting cables

Cross section [mm²]	Single-strand		Multi-strand		Fine-strand		Gauge No. AWG	American Wire Gauge [AWG]					
	Diameter Max. dimen- sion	Number of wires	Diameter Max. dimen- sion	Number of wires (minimum number)	Diameter Max. dimen- sion	Number of wires (guide value)		[Ø mm]	Solid wires [circ. mils]	[mm²]	[Ø mm]	Stranded wires [circ. mils]	[mm²]
0.2	0.5	1	-	-	-	-	24	0.51	404	0.21	-	-	-
0.5	0.9	1	1.1	7	1.1	16	20	0.81	1022	0.52	0.97	1111	0.56
0.75	1.0	1	1.2	7	1.3	24	18	1.02	1620	0.82	1.16	1600	0.82
1	1.2	1	1.4	7	1.5	32	(17)	1.15	2050	1.04			
-	-	-	-	-	-	-	16	1.29	2580	1.31	1.50	2580	1.32
1.5	1.5	1	1.7	7	1.8	30	(15)	1.45	3260	1.65			
-	-	-	-	-	-	-	14	1.63	4110	2.08	1.85	4100	2.09
2.5	1.9	1	2.2	7	2.3	50	(13)	1.83	5180	2.63			
-	-	-	-	-	-	-	12	2.05	6530	3.31	2.41	6500	3.32
4	2.4	1	2.7	7	2.9	56	(11)	2.30	8230	4.17			
-	-	-	-	-	-	-	10	2.59	10380	5.26	2.95	10530	5.37
6	2.9	1	3.3	7	3.9	84	(9)	2.91	13100	6.63			
-	-	-	-	-	-	-	8	3.26	16510	8.37	3.73	16625	8.48
10	3.7	1	4.2	7	5.1	80	(7)	3.67	20800	10.56	4.15	20820	10.55
-	-	-	-	-	-	-	6	4.12	26240	13.30	4.67	26250	13.39
16	4.6	1	5.3	7	6.3	126	(5)	4.62	33100	16.77	5.24	33100	16.77
-	-	-	-	-	-	-	4	5.19	41740	21.15	5.90	41650	21.24
25	-	-	6.6	7	7.8	196	3	5.83	52600	26.67	6.61	52630	26.67
35	-	-	7.9	7	9.2	276	2	6.54	66360	33.62	7.42	66150	33.74
-	-	-	-	-	-	-	1	7.35	83690	42.41	8.33	83706	42.69
50	-	-	9.1	19	11	396	0	8.25	105600	53.51	9.35	104640	53.36
70	-	-	11	19	13.1	360	00	9.27	133100	67.44	10.52	132300	67.47

Tightening torque of terminal block screws

IEC 60947-1/EN 60947-1, modified, Table 4 specifies tightening torques for screw connections based on the type and size of screw for electrical and mechanical type tests. Tightening Phoenix Contact terminal blocks to this torque guarantees the reliable connection of the connected conductors. Other than this value, the technical product data in this catalog provides a practical range for the tightening torque, ensuring gas-tight and long-term reliable electrical contacts.

Extract from IEC 60947-1/EN 60947, Table 4

The torque according to IEC/EN and the recommended tightening torque for Phoenix Contact terminal blocks are specified.

Head screw with slot

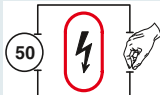
Thread	Torque [Nm]	Recommended tightening torque	
		CuZn or CuSn screw [Nm]	Steel screw [Nm]
M2.5 (M2.6)	0.4	0.6	0.8
M3	0.5	0.8	1.0
M3.5	0.8	1.2	–
M4	1.2	1.8	2.0
M5	2.0	3	4.5
M6	2.5	4	8

Degrees of protection according to DIN EN 60529

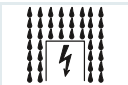
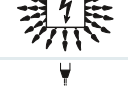
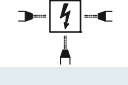
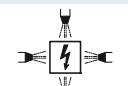
Definition:

IP (Ingress Protection) protection according to DIN EN 60529 is defined by two digits (e.g., IP54), the meaning of which is explained in the following tables.

Degree of protection against access to dangerous parts and against solid foreign objects

First digit	Short description	Example	Definition
0	Not protected		
1	Protected against solid foreign objects		Protected against touching dangerous parts with the back of the hand. Protection against ingress of solid foreign objects with $\varnothing > 50$ mm.
2	Protected against solid foreign objects with $\varnothing 12.5$ mm or more		Protected against touching dangerous parts with a finger. Protection against ingress of solid foreign objects with $\varnothing > 12.5$ mm.
3	Protected against solid foreign objects with $\varnothing 2.5$ mm or more		Protected against touching dangerous parts with a tool. Protection against ingress of solid foreign objects with $\varnothing > 2.5$ mm.
4	Protected against solid foreign objects with $\varnothing 1$ mm or more		Protected against touching dangerous parts with a wire. Protection against ingress of solid foreign objects with $\varnothing > 1$ mm.
5	Protected against dust		Protected against touching dangerous parts with a wire. The ingress of dust is not completely prevented, but dust may not enter in such an amount that the satisfactory operation of the device or its safety is impaired.
6	Dust-proof		Protected against touching dangerous parts with a wire. No ingress of dust.

Degree of protection against water

Second digit	Short description	Example	Definition
0	Not protected		
1	Protected against dripping water		Vertically falling drops shall have no effect.
2	Protected against dripping water if the housing is inclined at an angle of up to 15°		Vertically falling drops shall have no effect if the housing is inclined at an angle of up to 15° either side of the perpendicular.
3	Protected against spray water		Water that is sprayed at an angle of up to 60° either side of the perpendicular shall have no harmful effect.
4	Protected against splash water		Water that splashes against the housing from any direction shall have no harmful effect.
5	Protected against jet water		Water that is directed as a jet against the housing from every direction shall have no harmful effect.
6	Protected against powerful jet water		Water that is directed as a strong jet against the housing from every direction shall have no harmful effect.
7	Protected against the effect of temporary submersion in water		Water may not penetrate in a harmful quantity when the housing is temporarily submerged in water under standard pressure and time conditions.
8	Protected against the effect of continuous submersion in water		Water may not penetrate in a harmful quantity when the housing is submerged in water continuously under conditions to be agreed between the manufacturer and user.
9K	Protected against water during high-pressure and jet-stream cleaning		Water that is directed against the housing under extremely high pressure from every direction shall have no harmful effect. (Example: IP69K according to DIN 40050 Part 9)

For safety reasons, electrical equipment must be protected against external influences. This is the job of the housing, which protects electrical equipment against contact, ingress of solid objects, dust, and moisture.

The following table contains possible combinations of degrees of protection according to DIN EN 60529 which can be practically applied to housing.

		Protection against water	No protection	Protection against vertically falling dripping water	Protection against dripping water if the housing is inclined at an angle of up to 15°	Protection against spray water from all directions, even when inclined at an angle of up to 60°	Protection against splash water from all directions	Protection against jet water from all directions	Protection against powerful jet water from all directions	Protection against temporary submersion	Protection against the effects of continuous submersion in water	Protected against water during high-pressure and jet-stream cleaning (DIN 40050-9)
Shock protection	Foreign object protection		IPx0	IPx1	IPx2	IPx3	IPx4	IPx5	IPx6	IPx7	IPx8	IPx9K
No shock protection	No protection against solid foreign objects	IP0x	IP00									
Back of hand safe	Protection against solid foreign objects > 50 mm Ø	IP1x	IP10	IP11	IP12							
Touch proof	Protection against solid foreign objects > 12.5 mm Ø	IP2x	IP20	IP21	IP22	IP23						
Protection against touching with tools, wires, etc. > 2.5 mm Ø	Protection against solid foreign objects > 2.5 mm Ø	IP3x	IP30	IP31	IP32	IP33						
Protection against touching with tools, wires, etc. > 1 mm Ø	Protection against solid foreign objects > 1.5 mm Ø	IP4x	IP40	IP41	IP42	IP43	IP44					
Protection against touching with tools, wires, etc. > 1 mm Ø	Protection against harmful dust accumulations inside the device	IP5x	IP50				IP54	IP55				
Protection against touching with tools, wires, etc. > 1 mm Ø	No ingress of dust	IP6x	IP60					IP65	IP66	IP67	IP68	IP69K

Example: DUPLICON power distribution with IP67 protection according to DIN EN 60529

Dust-proof
(IP6x)

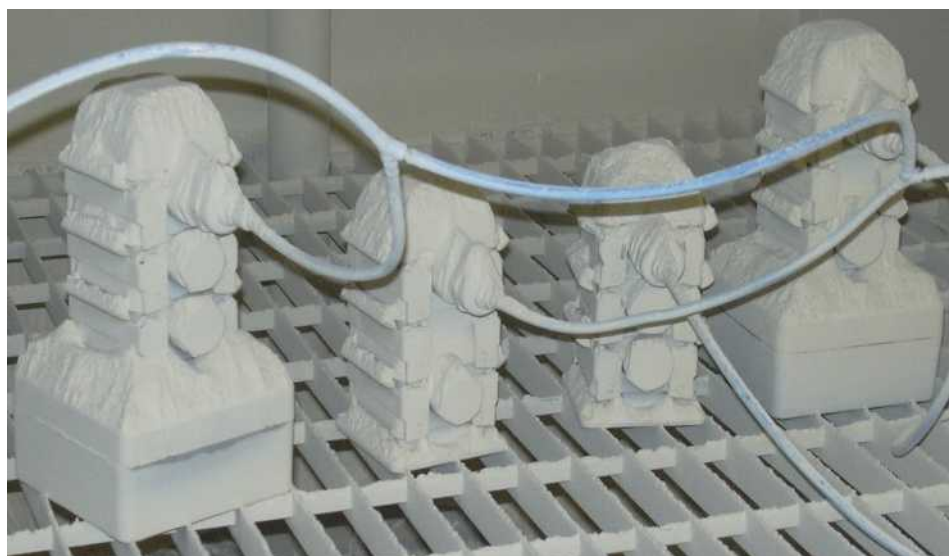


Photo shows DUPLICON test sample during the IP6x dust test

Protected against temporary submersion
(IPx7)



Information

Our insulation housing is made from various thermoplastic materials. Depending on the application, the best-suited material is selected based on its electrical and mechanical properties.

All plastics used by Phoenix Contact are RoHS-compliant.

All plastics used at Phoenix Contact have been listed with UL (Underwriters Laboratories Inc.) in the USA.

Behavior of plastics under the influence of temperature (operating temperatures)

All plastics undergo thermal aging when they are subjected to heat over long periods. This process causes changes in the mechanical and electrical properties of the material. External influences, e.g., radiation, additional mechanical, chemical or electrical stresses, amplify this effect. All characteristic data included in the table has been determined using samples and thus provides a good means of drawing comparisons between different plastics. However, applying these characteristics to an evaluation of molded plastic parts is only possible to a limited extent, and can only give the designer a rough guide when it comes to selecting a plastic material. This catalog uses RTI Elec. according to UL746B as an assessment criterion for temperature resistance.

Insulation materials

Polyamide: PA and PA-GF

Polyamide has excellent electrical, mechanical, and chemical properties even at high operating temperatures. Brief peak temperatures of up to approximately 200°C are permitted as a result of heat aging stabilization. The absorption of water makes the plastic flexible and resistant to breakage, even at low temperatures.

Fiber-reinforced polyamides feature greater rigidity and hardness as well as operating temperatures higher than those of non-reinforced materials.

Polyamide for high-temperature applications: PA HT and PA-GF HT

Special high-temperature-resistant types of polyamide are used in non-reinforced or glass-fiber-reinforced versions for reflow ap-

plications. These high-temperature polyamides combine the excellent electrical properties of polyamide and the requirements of the reflow soldering process for temperature resistance.

Liquid crystal polymers: LCP GF

LCP combines high temperature stability with excellent dimensional stability and creeping resistance for products used in reflow processes. LCP has exceptional mechanical properties across a wide temperature range and a very low thermal expansion.

Polyester: PBT and PBT-GF

We use thermoplastic polyester in non-reinforced and glass-fiber-reinforced versions for special applications which require increased dimensional and form stability.

In addition to the high operating temperature, the material is characterized by excellent mechanical stability, hardness, and excellent notched impact strength. PBT does not absorb moisture from its surroundings. PBT is therefore particularly suitable for strips, for example, which are soldered onto PCBs.

Polycarbonate: PC

Polycarbonate combines many advantages such as rigidity, impact strength, transparency, dimensional stability, good insulation properties, and resistance to heat.

The amorphous material only absorbs moisture to a very limited degree, and is used for items such as large, rigid electronic component housing.

In its transparent form, polycarbonate is particularly suitable for use as a material for cover profiles or marking materials.

Acrylonitrile butadiene styrene: ABS

We use ABS for products which must have good impact and notched impact properties in addition to high mechanical stability and rigidity. The products are also characterized by their special surface quality and hardness.

ABS is suitable for coating metal surfaces, e.g., nickel.

Polyvinyl chloride: PVC

While most thermoplastic materials are processed with injection molding using ready-to-use molding and extrusion material, PVC is processed as a powder in the extruder. This is why it is used in our profile products. PVC is also self-extinguishing without flame protection and has high mechanical strength but is notch-sensitive.

Polyoxymethylene: POM

Polyoxymethylene is a technical material that combines high rigidity with mechanical stability, excellent elastic properties, high tenacity, dimensional accuracy, and exceptional sliding friction behavior.

Polyethylene: PE

Polyethylene is characterized by excellent chemical resistance and electrical insulation properties. PE is thermoplastic and can thus be processed using almost all procedures. Furthermore, PE has excellent tenacity even at low temperatures and a good elongation at break.

Polypropylene: PP

PP has higher rigidity, hardness, and stability and is more heat-resistant than PE. PP is not as tough at low temperatures, however.

Thermoplastic polyurethane: TPU and TPU-GF

TPU is characterized by excellent electrical properties, a good surface feel, a high degree of flexibility over a wide temperature range, and high resistance to wear. Thermoplastic polyurethanes are also elastic and low-temperature impact resistant.

In contrast to non-reinforced materials, glass-fiber-reinforced TPU is characterized by high rigidity and hardness.

Cross-linked ethylene-propylene-diene polymer/polypropylene: EPDM-PP

EPDM-PP is a polymer blend of PP and cross-linked EPDM. EPDM-PP is a rubber-like material which can be processed using thermoplastic procedures. EPDM-PP combines high temperature resistance, a low compression set, and excellent resistance to abrasion and chemicals.

Acrylonitrile butadiene styrene rubber: NBR

NBR is a rubber with excellent resistance to aging. It also features excellent resistance to abrasion and low plastic flow. Its elasticity is lower than other rubbers.

Fluorinated rubber: FPM

FPM rubbers are characterized by very high temperature resistance, but behave less favorably at low temperatures than other rubbers.

Chlorine-butadiene rubber: CR

CR rubber stands out against other rubbers with its excellent resistance to weather and ozone.

Properties	Standard	Unit	PA	PA GF	PA HT	PA GF HT	PBT	PBT GF	LCP GF	PC	ABS	PVC	POM	PP	PE
RTI Elec.	UL 746B	°C	≥ 105	≥ 105	≥ 105	≥ 105	≥ 105	≥ 105	≥ 130	≥ 105	≥ 80	≥ 50	≥ 105	65	50
Minimum temperature for use (without mechanical load)		°C	- 40	- 40	- 40	- 40	- 40	- 40	- 40	- 40	- 40	- 15	- 40	- 40	- 40
Dielectric strength	IEC 60243-1/DIN VDE 0303-21	kV/cm	600	400		> 200	400	400		> 300	850		850		
Creep resistance CTI...	IEC 60112/DIN VDE 0303-1		600	400	≥ 250	225	600	225	175	175	600	600	600		
Creep resistance CTI...M	IEC 60112/DIN VDE 0303-1		550	250			600	225		175	600	600	600		
Inflammability class	UL 94	HB – V0	V2, V0	HB, V0	V0	V0	V0	V0	V0	V2, V0		V0	HB	HB	HB
Tropical and termite resistance			Good	Good			Good			Good					

Properties	Standard	Unit	TPU	TPU GF	EPDM/PP
RTI Elec.	UL 746B	°C	50	50	100
Minimum temperature for use (without mechanical load)		°C	- 40	- 40	- 40
Dielectric strength	IEC 60243-1/DIN VDE 0303-21	kV/cm	35	35	
Creep resistance CTI...	IEC 60112/DIN VDE 0303-1		600	600	600
Creep resistance CTI...M	IEC 60112/DIN VDE 0303-1		600		
Inflammability class	UL 94	HB – V0	V2	HB	HB
Chemical resistance	See chemical resistance table				

Properties	Standard	Unit	NBR	FPM	CR
Operating temperature		°C	≤ 100	≤ 200	≤ 100
Minimum temperature for use (without mechanical load)		°C	- 40	- 25	- 40
Dielectric strength	IEC 60243-1/DIN VDE 0303-21	kV/cm	Not relevant as these are sealing materials		
Creep resistance CTI...	IEC 60112/DIN VDE 0303-1				
Creep resistance CTI...M	IEC 60112/DIN VDE 0303-1				
Inflammability class	UL 94	HB – V0			

	Plastics																	
Chemicals	Concentration in %	Temperature in °C	PA 66/PA 6	PA 66 GF	PA 46 GF	PC GF	POM	NBR	PP	EPDM	PBT	PUR	PUR irradiated*	PVC-P (soft)	PE-LD	TPU	FPM (Viton)	CR (neoprene)
Acetaldehyde			0	0	0	-	0	-	-	0		+	+	+	0	0	-	0
Acetone		20	+				+	-	+	+	0	0	0	+	+	-	-	0
Acetate			+	+	+	0	0	-	+	0	0	+	+	-	-	-	-	-
Acetophenone			+	+	+	0	0	-	+	0	0	+	+	-	-	-	-	-
Aldehyde			0	0	0	-	0	-	-	0		+	+	+	0	-	0	0
Formic acid			-	-	0	0	+	-	+	+	+	0	0	-	+	0	0	+
Amines			+	+	+	-	0	-	-	0	+	+	+	+	0	-	-	-
Alcohols			0	0	0	0	+	0	+	+	+	+	+	-	+	+	0	+
Ammonia	10	20	+				+	0	+	+	+	+	+	0	+	0	-	+
Benzaldehyde			0	0	0	-	0	-	-	0		+	+	+	0	0	-	0
Gasoline		20	+	+	+	0	+	0	0	-	+	+	+	-	-	-	+	-
Benzol		50	+	+	+	+	0	-	0	-	+	0	0	-	0	-	0	-
Benzophenone		20	+	+	+	0	0	-	+	0	0	+	+	-	-	-	+	-
Boracic acid		100	0				0	+		+	+	0	0	0	+	+	+	+
Brake fluid		100	+				+	-		+	+	-	-	0	+	-	-	-
Butyric acid			-	-	0	0	+	0	+	+	+	0	0	+	+	-	0	0
Cyclohexanone			+	+	+	0	0	-	+	0	0	+	+	-	-	-	-	-
Diesel oil			+				+	+	+	-	+	+	+	-	+	-	+	-
Diethylamine			+	+	+	-	0	-	-	0	+	+	+	+	-	-	-	-
Dimethylamine			+	+	+	-	0	-	-	0	+	+	+	+	0		-	-
Glacial acetic acid		50	-	-	-	-	-	-	0	+	-	-	-	-	+	-	-	-
Acetic acid	20		-	-	0	0	+	-	+	+	+	0	0	0	+	-	-	0
Ester			+	+	+	0	-	-	-	0	+			-	+	-	-	-
Ethanol			0	0	0	0	+	0	+	+	+	+	+	-	+	+	+	+
Ether			+	+	+	-	0	-	0	0	+	+	+	-	0	+	-	-
Greases			+	+	+	+	+	+	0	0				0	+	-	+	0
Formaldehyde			0	0	0	-	0	-	-	0		+	+	+	0	0	+	0
Gear oil		100	+				+	+		-	+	+	+	+	+	-	+	-
Halogens (fluorine, chlorine, bromine, iodine)			-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	-
Hydraulic oil		20	+				0	+		-	+	+	+	-	+	-	+	-
Potassium hydroxide solution			+	+	+	-	+	0	+		-	+	+	+	+	0	+	-
Kerosene		20	+				+				+	+	+	-	0	-	+	-
Ketones			+	+	+	0	0	-	+	0	0	+	+	-	-	-	-	-
Hydrocarbons, aliphatic			+	+	+	+	+	+	0	0	+	+	+	-	+	+	+	-
Hydrocarbons, aromatic			+	+	+	-	0	-	0	0	0	+	+	-	-	-	+	-
Hydrocarbons, chlorinated			0	0	0	-	+	-	-	-	0	-	-	-	-	-	+	-
Hydrocarbons, unsaturated chlorinated			0	0	0	-	+	-	-	-	0	0	0	-	-	-	+	-
Fuels			+	+	+	0	+	0	0	-	+	+	+	-	-	-	+	-
Alkalis, weak			+	+	+	-	+	0	+	+	+	+	+	+	+	0	+	0
Alkalis, strong			0	-	-	-	+	-	+		+	-	-	+	0	0	-	-
Inorganic salt solutions			+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+
Machine oil			+				+				+	+	+	0	+	-	+	-
Metal chloride			+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+
Metal sulfate			+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+
Metal nitrate			+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+
Methanol			0	0	0	0	+	0	+	+	+	+	+	-	+	+	-	+
Methylamine			+	+	+	-	0	-	-	0	+	+	+	+	+	0	0	-
Lactic acid	10	20	+				+	+	+	+	+	+	+	-	+	+	+	+
Mineral oil			+	+	+		+	+	+	-	+	+	+	-	+	-	+	-
Motor oil		120	+	+	+	0	+	+	+	-	+	+	+	-	+	-	+	-
Sodium hydroxide solution	50	50	0	0	+	-	+	+	+	+	-	+	+	+	+	0	0	0
Nitrobenzene			0				0	-		0	+	-	-	-	0	+	0	-
Ozone			0	0	0	-	0	-	+	+	+	0	0	+	+	0	+	-
Propyl alcohol			0	0	0	0	+	0	+	+	+	+	+	-	+	+	+	+
Nitric acid	30	20	-	0	-	0	-	-	+	0	0	0	0	-	+	-	+	-
Hydrochloric acid		20	-				-	0	+	0	0	-	-	-	+	0	+	0
Sulfuric acid	50	50	-	0	-	0	-	-	+	+	-	0	0	+	+	0	+	-
Seawater		20	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Turpentine			0	0	0	+	-	+	-	-	+	0	0	-	-	-	+	-
UV resistance			+	+	+	0	0	-	-		+	+	+	0	0	+	+	+
Detergent alkalis	2	100	0				+	+		+	+	+	+	-	+	+	+	0
Water (dist.)		20												+				
Water, cold			+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Water, hot			-	-	-	-	+	+	+	+	-	+	+	+	+	0	+	0
Citric acid	10		+				+	+	+	+	+			+	+	+	+	+

- Not resistant
0 Moderately resistant
+ Resistant

* The irradiated PUR type is generally more resistant than the non-irradiated type. This cannot be quantified and must be checked in individual cases.

The information in the table has been gathered from the recommendations of our plastic suppliers.

Since individual operating conditions can also affect the usability of each product, this information should be used as a guide only.

In cases where there has been no previous experience of using the products, we recommend that the user undertakes preliminary tests in order to minimize risks.

Insulation coordination for electrical equipment in low-voltage systems

Dimensioning of air and creepage distances according to DIN EN 60664-1/VDE 0110-1.

This part of the standard, based on IEC 60664, contains specifications for the insulation coordination of items of equipment in low-voltage systems. This part is applicable for items to be used at a height of up to 2000 m above sea level. This basic safety standard is primarily aimed at technical committees, and if suitable product directives are not available for an item, it can be used at one's own responsibility. International and European product standards cited in this catalog contain specifications for insulation coordination in accordance with DIN EN 60664/VDE 0110-1.

Insulation coordination

Insulation coordination includes the selection of electrical insulation properties for items as regards intended applications and ambient conditions. Separate requirements must be applied for air and creepage distances and for rigid insulation. The surge voltages to be expected, characteristics of surge protective devices, and pollution at the intended site must be considered when dimensioning clearances. Clearances are then dimensioned according to the external or internal surge voltages to be expected. Different surge voltages, grouped into categories, i.e., a value that determines an impulse withstand voltage, determine the required clearance directly. These surge voltage categories (I to IV) are mainly based on a statistical study, and are used for the items that are directly supplied by low-voltage networks. Definitions of the individual categories are provided below as an extract of DIN EN 60664/VDE 0110-1.

The clearances can be calculated according to Table 2 (minimum clearances) depending on the homogeneity level of the field between the electrodes (case A – non-homogeneous field, case B – homogeneous field).

Clearances according to case A are capable of withstanding the assigned surge voltages under all conditions. Items that are dimensioned according to case A can therefore be used without any further testing. Clearance values according to case B are based on ideal conditions. Clearance values which fall between case A and case B must be proven by means of a surge voltage test.

The voltages present, the properties of insulation materials, the pollution to be expected, and safety measures against pollution are considered when dimensioning creepage distances.

The effect of pollution is considered when determining the air and creepage distances according to three intensity levels (pollution degree 1 to 3).

The creepage distance is based on the rated voltage that is derived from the working voltage or nominal mains voltage. The minimum creepage distances are assigned to the rated voltages according to the pollution degree in Table 4.

If the respective product descriptions do not contain any additional specifications, the products presented in this catalog are dimensioned for surge voltage category III and pollution degree 3 according to this regulation (DIN EN 60664-1/VDE 0110-1).

Surge voltage categories I to IV

– Items in **surge voltage category IV** can be used at the terminal point of the installation.

Note: examples of such items include electricity meters and primary devices for overcurrent protection.

– Items in **surge voltage category III** can be used in fixed installations and are intended for such cases where there are special requirements for the reliability and availability of the items.

Note: examples of such items include switches in fixed installations and items for industrial use with permanent connection to the fixed installation.

– Items in **surge voltage category II** are power-consuming items that are supplied by the fixed installation.

Note: examples of such items include household appliances, portable tools, other domestic appliances, and similar devices.

– Items in **surge voltage category I** can be connected to circuits where measures have been taken to limit the surge voltages to a suitable lower value.

Pollution degrees 1 to 4

The following four pollution degrees have been defined for the micro-environment in order to determine air and creepage distances:

– Pollution degree 1

No contamination or only dry, non-conductive contamination is present. The contamination has no influence.

– Pollution degree 2

Only non-conductive contamination is present. Temporary conductivity due to condensation must occasionally be taken into consideration, however.

– Pollution degree 3

Conductive contamination or dry, non-conductive contamination is present which becomes conductive, since condensation is expected.

– Pollution degree 4

Permanent conductivity is present, caused by conductive dust, rain or moisture.

Insulation material

DIN EN 60664/VDE 0110-1 classifies insulation materials into four groups depending on their CTI values that were obtained using solution A in accordance with IEC 60112. These are:

Insulation material group I: $600 \leq \text{CTI}$

Insulation material group II: $400 \leq \text{CTI} < 600$

Insulation material group IIIa

$175 \leq \text{CTI} < 400$

Insulation material group IIIb:

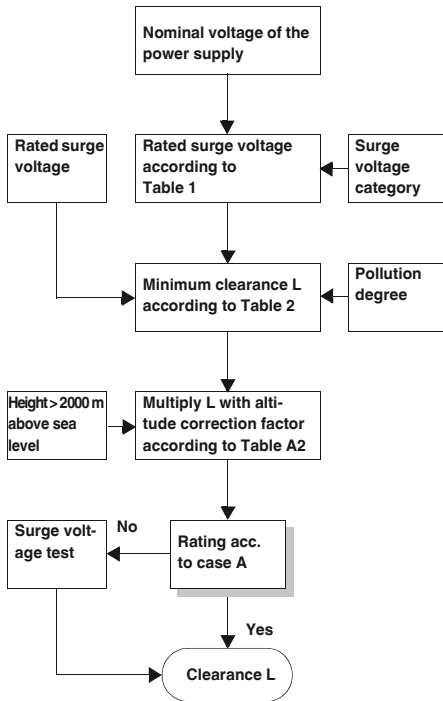
$100 \leq \text{CTI} < 175$

The comparative tracking index of the creepage distance must have been determined based on suitable samples using test solution A as specified in DIN IEC 60112.

The proof tracking index of the creepage distance (PTI) is used as proof of the creepage current properties of insulation materials.

Dimensioning of clearances

Schematic for determining clearances



Altitude correction factors (extract from Table A.2)

Height in m	Normal air pressure in kPa	Multiplication factor for gaps
2000	80.0	1.00
3000	70.0	1.14
4000	62.0	1.29
5000	54.0	1.48
6000	47.0	1.70
7000	41.0	1.95
8000	35.5	2.25
9000	30.5	2.62
10000	26.5	3.02
15000	12.0	6.67
20000	5.5	14.50

Rated surge voltages for items that are directly supplied by the low-voltage network (extract from Table 1)

Nominal voltage of the power supply system ¹⁾ (mains) acc. to IEC 60038 ³⁾ [V]		Conductor-neutral conductor voltage derived from the total nominal AC voltage or nominal DC voltage	Rated surge voltage ²⁾ [V] Surge voltage category ⁴⁾			
Three-phase	Single-phase		I	II	III	IV
	120 to 240	50	330	500	800	1500
		100	500	800	1500	2500
		150	800	1500	2500	4000
230/400 277/480		300	1500	2500	4000	6000
400/690		600	2500	4000	6000	8000
1000		1000	4000	6000	8000	12000

¹⁾ Refer to Appendix B for application in existing deviating low-voltage networks and their nominal voltages.

²⁾ Items with this rated surge voltage may be used in systems in accordance with IEC 60364-4-443.

³⁾ The slash, i.e., /, indicates a three-phase 4-conductor system. The lower value is the conductor-to-neutral conductor voltage, whereas the higher value is the conductor-to-conductor voltage. When only one value is specified, it refers to a three-phase 3-conductor system, and indicates the conductor-to-conductor voltage.

⁴⁾ Refer to 2.2.2.1.1 for an explanation of surge voltage categories.

Minimum clearances for surge voltages (extract from Table 2)

Required impulse withstand voltage ¹⁾ ⁵⁾	Condition A Non-homogeneous field (refer to 1.3.15)			Condition B Homogeneous field (refer to 1.3.14)		
	Pollution degree ⁶⁾			Pollution degree ⁶⁾		
	1 [mm]	2 [mm]	3 [mm]	1 [mm]	2 [mm]	3 [mm]
0.33 ²⁾	0.01	0.2 ^{3) 4)}	0.8 ⁴⁾	0.01	0.2 ^{3) 4)}	0.8 ⁴⁾
0.40	0.02			0.02		
0.5 ²⁾	0.04			0.04		
0.60	0.06			0.06		
0.80 ²⁾	0.10			0.10		
1.0	0.15			0.15		
1.2	0.25	0.25	1.0	0.2	0.3	1.2
1.5 ²⁾	0.5	0.5		0.3		
2.0	1.0	1.0	1.0	0.45	0.45	1.5
2.5 ²⁾	1.5	1.5	1.5	0.6	0.6	2
3.0	2.0	2.0	2.0	0.8	0.8	3
4.0 ²⁾	3	3	3	1.2	1.2	3.5
5.0	4	4	4	1.5	1.5	4.5
6.0 ²⁾	5.5	5.5	5.5	2	2	5.5
8.0 ²⁾	8	8	8	3	3	8
10	11	11	11	3.5	3.5	10
12 ²⁾	14	14	14	4.5	4.5	12.5
15	18	18	18	5.5	5.5	17
20	25	25	25	8	8	22
25	33	33	33	10	10	27
30	40	40	40	12.5	12.5	35
40	60	60	60	17	17	45
50	75	75	75	22	22	45
60	90	90	90	27	27	45
80	130	130	130	35	35	45
100	170	170	170	45	45	45

¹⁾ This voltage is:

- For function insulation: the highest surge voltage expected for the clearance
- For basic insulation, if influenced directly or considerably by surge voltages from the low-voltage network: the item's rated surge voltage
- For a different basic insulation: the highest surge voltage possible in the circuit

²⁾ Preferred values

³⁾ For PCBs, the values of pollution degree 1 are applicable, except that no deviation below the value of 0.04 mm is permitted, as specified in Table 4.

⁴⁾ Minimum clearances for pollution degrees 2 and 3 are based on the corresponding creepage distances. This resistance is reduced due to the effects of humidity.

⁵⁾ Values can be interpolated for parts or circuits within items that are subjected to surge voltages.

⁶⁾ The distances for pollution degree 4 are equal to those for pollution degree 3, except that the minimum clearance is 1.6 mm.

Current carrying capacity

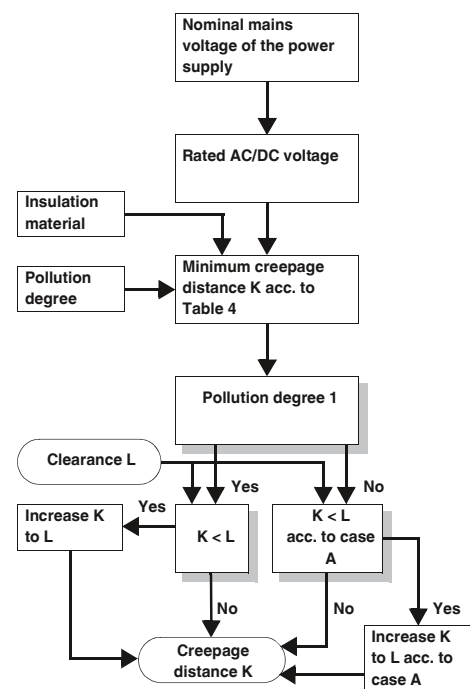
Standard IEC 60947-7-1/
EN 60947-7-1/DIN VDE 0611-1 specifies the test currents for the individual conductor cross sections listed in the adjacent table. The corresponding currents are listed with the connection data for the individual terminal blocks. The type tests for modular terminal blocks are based on this data.

Test currents according to IEC 60947-7-1/EN 60947-7-1, Table 5

Rated cross section	[mm ²]	0.2	0.5	0.75	1.0	1.5	2.5	4	6	10	16
Test current	[A]	4	6	9	13.5	17.5	24	32	41	57	76
Rated cross section	[mm ²]	25	35	50	70	95	120	150	185	240	300
Test current	[A]	101	125	150	192	232	269	309	353	415	520

Dimensioning of creepage distances

Schematic for determining creepage distances



Single-phase 3 or 2-conductor AC or DC voltage systems (extract from Table 3a)

Nominal voltage of the power supply system (mains) *)	Voltages for Table 4	
	for conductor-conductor insulation 1)	for conductor-ground insulation 1)
	All systems	3-cond. systems center point grounded
[V]	[V]	[V]
12.5	12.5	–
24	25	–
25		
30	32	–
42		
48	50	–
50 **)		
60	63	–
30 - 60	63	32
100 **)	100	–
110	125	–
120		
150 **)	160	–
220	250	–
110 - 220	250	125
220 - 240		
300 **)	320	–
220 - 440	500	250
600 **)	630	–
480 - 960	1000	500
1000 **)	1000	–

1) Conductor-ground insulation levels for non-grounded systems or those grounded through impedance correspond to conductor-conductor insulation levels as the operating voltage of every conductor to ground can, in practice, reach the conductor-conductor voltage. This is due to the fact that the actual voltage to ground is determined by the insulation resistance and the capacitive reactance of each conductor to ground. A low (but permissible) insulation resistance of one conductor can thereby practically ground it and increase the other two to conductor-conductor voltage to ground.

*) Refer to 2.2.1 for correlation with the rated voltage.

**) These values correspond to the values in Table 1.

Three-phase 4 or 3-conductor AC voltage systems (extract from Table 3b)

Nominal voltage of the power supply system (mains) *)	Voltages for Table 4		
	for conductor-conductor insulation	Insulation for conductor-ground	
	All systems	Three-phase 4-cond. systems with grounded neutral conductor 2)	Three-phase 3-cond. systems non-grounded 1) or conductor grounded
[V]	[V]	[V]	[V]
60	63	32	63
110/120/127	125	80	125
150 **)	160	–	160
208	200	125	200
220/230/240	250	160	250
300 **)	320	–	320
380/400/415	400	250	400
440	500	250	400
480/500	500	320	500
575	630	400	630
600 **)	630	–	630
660/690	630	400	630
720/830	800	500	800
960	1000	630	1000
1000 **)	1000	–	1000

1) Conductor-ground insulation levels for non-grounded systems or those grounded through impedance correspond to conductor-conductor insulation levels as the operating voltage of every conductor to ground can, in practice, reach the conductor-conductor voltage. This is due to the fact that the actual voltage to ground is determined by the insulation resistance and the capacitive reactance of each conductor to ground. A low (but permissible) insulation resistance of one conductor can thereby practically ground it and increase the other two to conductor-conductor voltage to ground.

2) For items designed for use in three-phase 4-conductor and three-phase 3-conductor systems, grounded as well as non-grounded, only the values for 3-conductor systems may be used.

*) Refer to 2.2.1 for correlation with the rated voltage.

**) These values correspond to the values in Table 1.

Creepage distances to prevent failures occurring due to creepage (extract from Table 4)

Voltage 1) r.m.s. value	Minimum creepage distances								
	Printed circuits		Pollution degree						
	Pollution degree								
	1	2	1	2			3		
	All insulation material groups	All insulation material groups except IIIb	All insulation material groups	Insulation material group			Insulation material group		
[V]	[mm]	[mm]	[mm]	I [mm]	II [mm]	III [mm]	I [mm]	II [mm]	III 2) [mm]
10	0.025	0.04	0.08	0.40	0.40	0.40	1.00	1.00	1.00
12.5	0.025	0.04	0.09	0.42	0.42	0.42	1.05	1.05	1.05
16	0.025	0.04	0.10	0.45	0.45	0.45	1.10	1.10	1.10
20	0.025	0.04	0.11	0.48	0.48	0.48	1.20	1.20	1.20
25	0.025	0.04	0.125	0.50	0.50	0.50	1.25	1.25	1.25
32	0.025	0.04	0.14	0.53	0.53	0.53	1.30	1.30	1.30
40	0.025	0.04	0.16	0.56	0.80	1.10	1.4	1.6	1.8
50	0.025	0.04	0.18	0.60	0.85	1.20	1.5	1.7	1.9
63	0.040	0.63	0.20	0.63	0.90	1.25	1.6	1.8	2.0
80	0.063	0.10	0.22	0.67	0.95	1.3	1.7	1.9	2.1
100	0.10	0.16	0.25	0.71	1.00	1.4	1.8	2.0	2.2
125	0.16	0.25	0.28	0.75	1.05	1.5	1.9	2.1	2.4
160	0.25	0.40	0.32	0.80	1.1	1.6	2.0	2.2	2.5
200	0.40	0.63	0.42	1.00	1.4	2.0	2.5	2.8	3.2
250	0.56	1.00	0.56	1.25	1.8	2.5	3.2	3.6	4.0
320	0.75	1.60	0.75	1.60	2.2	3.2	4.0	4.5	5.0
400	1.00	2.00	1.00	2.00	2.8	4.0	5.0	5.6	6.3
500	1.30	2.50	1.30	2.50	3.6	5.0	6.3	7.1	8.0
630	1.80	3.20	1.8	3.2	4.5	6.3	8.0	9	10.0
800	2.40	4.00	2.4	4.0	5.6	8.0	10.0	11	12.5
1000	3.20	5.00	3.2	5.0	7.1	10	12.5	14	16.0
1250			4.2	6.3	9	12.5	16	18	20
1600			5.6	8	11	16	20	22	25
2000			7.5	10	14	20	25	28	32
2500			10	12.5	18	25	32	36	40
3200			12.5	16	22	32	40	45	50
4000			16	20	28	40	50	56	63
5000			20	25	36	50	63	71	80
6300			25	32	45	63	80	90	100
8000			32	40	56	80	100	110	125
10000			40	50	71	100	125	140	160

1) This voltage is:

a) For function insulation: the working voltage

b) For basic and additional insulation of a circuit supplied directly by the low-voltage network: either the voltage selected from Table 3a or 3b on the basis of the rated voltage of the equipment or the rated insulation voltage

c) For basic and additional insulation of systems, equipment and internal circuits which are not supplied directly from the mains: the highest r.m.s. value of the voltage that, within the bounds of the rated data, can occur in the system, the equipment or the internal circuit, when supplied with rated voltage and in the case of the most unfavorable combination of operating conditions.

2) With pollution degree 3, insulation material group IIIb is not recommended for use if voltages are greater than 630 V.

Overview of approval bodies and safety marks

Certification bodies and approvals		Country code	Explosion protection		Country code	Ship classification societies		Country code
	IECEE CB Scheme (in combination with certifying body)	International		FM Approvals	US		Bureau Veritas	FR
CCA	CENELEC Certification Agreement (CCA inspection report) (in combination with certifying body)	EU		DEKRA Certification B.V.	NL		Germanischer Lloyd AG	DE
	Canadian Standards Association (CSA)	CA		Physikalisch-Technische Bundesanstalt	DE		Lloyd's Register EMEA	GB
	Underwriters Laboratories Inc. (UL)	US		QS Schaffhausen	CH		Nippon Kaiji Kyokai	JP
	Underwriters Laboratories Inc. (UL) - UL approval for Canada -	CA		VTT Expert Services Oy	FI		Det Norske Veritas	NO
	Underwriters Laboratories Inc. (UL) Combined logo - UL approval for the USA and Canada -	US CA		IBExU Institut für Sicherheitstechnik GmbH	DE		Polski Rejestr Statków	PL
	INSIEME PER LA QUALITA' E LA SICUREZZA	IT		TÜV Rheinland do Brasil	BR		Russian Maritime Register of Shipping	RU
	Gosudarstvennyy Komitet Standartov (GOST)	RU		Underwriters Laboratories Inc. (UL)	US		Korean Register of Shipping	KR
	DEKRA Certification B.V.	NL		TÜV Nord	DE		American Bureau of Shipping	US
	Österreichischer Verband für Elektrotechnik	AT		DEKRA EXAM GmbH	DE			
	South African Bureau of Standards	ZA						
	electrosuisse SEV Verband für Elektro-, Energie- und Informationstechnik	CH						
	Verband Deutscher Elektrotechniker e.V. (VDE) – Approval of drawings – Reports with production monitoring	DE						
	Berufsgenossenschaft (BG) GS - Geprüfte Sicherheit (tested safety)	DE						
	TÜV Rheinland Industrie Service GmbH	DE						

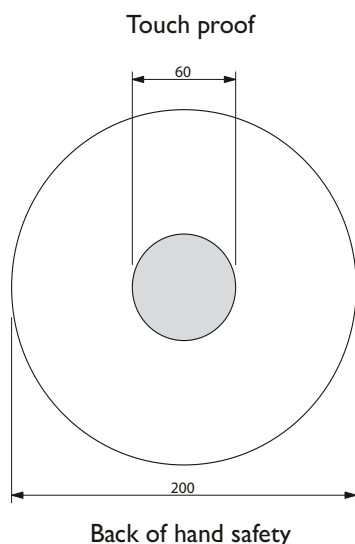
Color designations

Color	Code
White	WH
Red	RD
Blue	BU
Green	GN
Yellow	YE
Gray	GY
Brown	BN
Orange	OG
Black	BK
Turquoise	TQ
Ivory	IV
Beige	BE
Olive	OL
Violet	VT
Pink	PK
Gold	GD
Silver	SR

Note:

Subject to changes that serve the purpose of technical progress.

Shock protection



Example: pressure actuation

The accident prevention regulations BGV A 2 issued by the German employer's liability insurance association for precision mechanics and electrical engineering apply to the operators of electrical systems and are aimed at the prevention of electrical accidents by means of special safety requirements.

These regulations contain specifications regarding the safety distances for work, operation, and occasional handling in the proximity of "live parts" in low-voltage systems up to 1000 V ~ or 1500 V –.

Work with live parts is only permitted once they are in the de-energized state. Operational activities are only permitted in the vicinity of live parts if these parts are de-energized or are protected against direct contact (§ 6). The following safety measures apply when working in the vicinity of live parts:

- Ensure that the system remains de-energized for the duration of the work or
- Ensure shock protection is in place in the form of covers or barriers during the work, or
- Ensure that the minimum permissible clearances are observed (§ 7)

The term "occasional handling" has been introduced for the operation of elements such as pushbuttons, rocker arms or rotary buttons in the proximity of live parts.

In VDE 0105-1, this is called "operation with partial protection against direct contact".

Detailed specifications for "occasional handling" can be found in DIN EN 50274. This specifies to what degree live parts in the proximity of operating elements are to be protected against contact. The basis for this is the definition of a "protection area

for occasional handling"; this is the area into which the user must reach in order to handle the machine.

The most important thing is that an area formed by an even envelope curve 30 mm in radius must surround the live parts. This area must be **touch proof**, i.e., the live parts of the electrical device must not be within reach of the VDE test finger in accordance with IEC 60529/DIN VDE 0470-1 (test finger).

Back of hand safety is specified for the "rest of the area" up to 100 mm around the operating element. **Back of hand safety** means that when a force of 50 N is applied

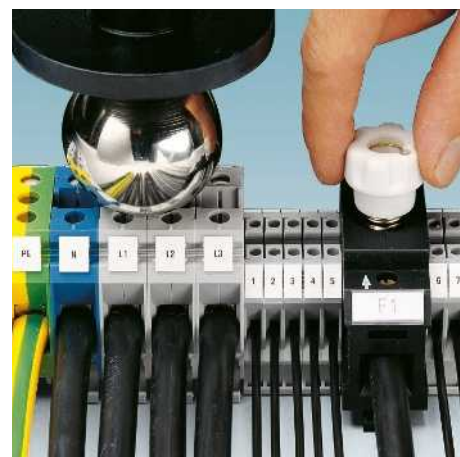


to a ball with a diameter of 50 mm, this does not come into contact with the live parts of the equipment. No special measures for ensuring contact safety are stipulated outside this area.

Note: systems and equipment that are operated with SELV up to 25 V ~ or 60 V – are considered to be protected against direct contact.

According to BGV A 2, the state of the system does not have to be tested prior to initial startup if the company has confirmation from the manufacturer or installer that the electrical systems and items meet BGV A 2 regulations. The confirmation required refers to the installed systems and items which are ready for operation and this can only be issued by the installer or installation company. The manufacturer of the electrical equipment can only issue a confirmation that products have been produced in accordance with the relevant electrotechnical regulations stipulated in BGV A 2. The installer must bear this in mind when selecting the equipment to be used.

In the field of connection technology, Phoenix Contact offers a wide range of products which are touch-proof or can be protected against contact by means of cov-



ers. Depending on the conditions, all of this must be taken into account when selecting the individual types of terminal block and accessories.

Type	Order No.	Page	Type	Order No.	Page	Type	Order No.	Page	Type	Order No.	Page
C			CA-07P1N128007S	1619529	324	CA-09P1N222S00	1619950	330	CA-12M1N8A8503	1619615	341
			CA-07P1N128008	1619654	324	CA-09P1N8A2S00	1619970	329	CA-12M1N8A8503S	1619459	340
			CA-07P1N128008S	1619503	325	CA-09P1N8A6Y00	1619866	328	CA-12M1N8A8504	1619609	341
			CA-07P1N1280DN	1619771	325	CA-09P1N8A6Z00	1619892	327	CA-12M1N8A8504S	1619453	340
	CA-06P1N122S00	1619992 329	CA-07P1N1280DNS	1619600	324	CA-09P1N8A8006	1619739	325	CA-12M1N8A85DU	1619630	341
	CA-06P1N126Y00	1619876 328	CA-07P1N129006	1620140	326	CA-09P1N8A8006S	1619568	324	CA-12M1N8A85DUS	1619471	340
	CA-06P1N126Z00	1619902 327	CA-07P1N129007	1620114	326	CA-09P1N8A8007	1619711	325	CA-12M1N8A9502	1620008	342
	CA-06P1N128006	1619749 325	CA-07P1N129008	1620041	326	CA-09P1N8A8007S	1619523	324	CA-12M1N8A9503	1620002	342
	CA-06P1N128006S	1619578 324	CA-07P1N1290DN	1620167	326	CA-09P1N8A8008	1619648	325	CA-12M1N8A9504	1619996	342
	CA-06P1N128007	1619723 325	CA-07P1N12HZ00	1619846	332	CA-09P1N8A8008S	1619497	324	CA-12M1N8A95DU	1620015	342
	CA-06P1N128007S	1619533 324	CA-07P1N222S00	1619952	330	CA-09P1N8A80DN	1619765	325	CA-12M2N8A8502	1619626	341
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	CA-06P1N12HZ00	1619850 332	CA-07P1N8A8008S	1619501	324	CA-09S1N122S00	1619973	329	CA-12M2N8A9503	1620004	342
	CA-06P1N222S00	1619954 330	CA-07P1N8A80DN	1619769	325	CA-09S1N126Y00	1619869	328	CA-12M2N8A9504	1619998	342
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	CA-06P1N8A8006	1619747 325	CA-07P1N8A9008	1620037	326	CA-09S1N128007	1619716	325	CA-12P1N126Z00	1619890	327
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	CA-06P1N8A8007	1619721 325	CA-07P1N8AHZ00	1619844	332	CA-09S1N128008	1619651	325	CA-12P1N128006S	1619548	324
	CA-06P1N8A8007S	1619531 324	CA-07P1NA22S00	1619928	330	CA-09S1N128008S	1619500	324	CA-12P1N128007	1619709	325
	CA-06P1N8A8008	1619656 325	CA-07P1NC22S00	1619913	330	CA-09S1N1280DN	1619768	325	CA-12P1N128007S	1619521	324
	CA-06P1N8A8008S	1619505 324	CA-07S1N122S00	1619989	329	CA-09S1N1280DNS	1619597	324	CA-12P1N128008	1619646	325
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	CA-06S1N122S00	1619993 329	CA-07S1N1280DNS	1619601	324	CA-09S1N8A8006	1619740	325	CA-12P1N8A2S00	1619966	329
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	CA-06S1N128006S	1619579 324	CA-07S1N1290DN	1620168	326	CA-09S1N8A8008	1619649	325	CA-12P1N8A8006S	1619546	324
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	CA-06S1N129007	1620119 326	CA-07S1N8A8007	1619718	325	CA-09S1N8AHZ00	1619841	332	CA-12P1N8A9007	1620072	326
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	CA-06S1N1290DN	1620172 326	CA-07S1N8A8008	1619653	325	CA-09S1NC22S00	1619912	330	CA-12P1N8A90DN	1620157	326
	CA-06S1N12HZ00	1619851 332	CA-07S1N8A8008S	1619502	324	CA-12F1N8A8502	1619625	341	CA-12P1N8AHZ00	1619787	332
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	CA-06S1N8A6Y00	1619875 328	CA-07S1N8A9006	1620139	326	CA-12F1N8A8503S	1619460	340	CA-12S1N122S00	1619969	329
	CA-06S1N8A6Z00	1619901 327	CA-07S1N8A9007	1620081	326	CA-12F1N8A8504	1619610	341	CA-12S1N126Y00	1619865	328
	CA-06S1N8A8006	1619748 325	CA-07S1N8A9008	1620038	326	CA-12F1N8A8504S	1619454	340	CA-12S1N126Z00	1619891	327
	CA-06S1N8A8006S	1619577 324	CA-07S1N8A90DN	1620166	326	CA-12F1N8A85DU	1619631	341	CA-12S1N128006	1619738	325
	CA-06S1N8A8007	1619722 325	CA-07S1N8AHZ00	1619845	332	CA-12F1N8A85DUS	1619472	340	CA-12S1N128006S	1619567	324
	CA-06S1N8A8007S	1619532 324	CA-07S1NA22S00	1619929	330	CA-12F1N8A9502	1620009	342	CA-12S1N128007	1619710	325
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	CA-06S1N8A80DN	1619774 325	CA-09P1N126Y00	1619868	328	CA-12F1N8A95DU	1620016	342	CA-12S1N128008S	1619496	324
	CA-06S1N8A80DNS	1619603 324	CA-09P1N126Z00	1619894	327	CA-12F2N8A8502	1619627	341	CA-12S1N1280DN	1619764	325
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	CA-06S1N8A9007	1620117 326	CA-09P1N128006S	1619570	324	CA-12F2N8A8503	1619618	341	CA-12S1N129006	1620133	326
	CA-06S1N8A9008	1620044 326	CA-09P1N128007	1619715	325	CA-12F2N8A8503S	1619462	340	CA-12S1N129007	1620075	326
	CA-06S1N8A90DN	1620170 326	CA-09P1N128007S	1619525	324	CA-12F2N8A8504	1619612	341	CA-12S1N129008	1620032	326
	CA-06S1N8AHZ00	1619849 332	CA-09P1N128008	1619650	325	CA-12F2N8A8504S	1619456	340	CA-12S1N1290DN	1620160	326
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	CA-07P1N122S00	1619988 329	CA-09P1N1280DNS	1619596	324	CA-12F2N8A9502	1620011	342	CA-12S1N8A2S00	1619967	329
	CA-07P1N126Y00	1619872 328	CA-09P1N129006	1620136	326	CA-12F2N8A9503	1620005	342	CA-12S1N8A6Y00	1619863	328
	CA-07P1N126Z00	1619898 327	CA-09P1N129007	1620078	326	CA-12F2N8A9504	1619999	342	CA-12S1N8A6Z00	1619889	327
	CA-07P1N128006	1619745 325	CA-09P1N129008	1620035	326	CA-12F2N8A95DU	1620018	342	CA-12S1N8A8006	1619736	325
	CA-07P1N128006S	1619574 324	CA-09P1N1290DN	1620163	326	CA-12M1N8A8502	1619624	341	CA-12S1N8		

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CA-12S1N8A8007S	1619520	324	CA-17S1N1280DN	1619756	325	CK1,6-ED-0,50ST AU	1672453	40	EV-T2SC	1405217	438
CA-12S1N8A8008	1619645	325	CA-17S1N1280DNS	1619585	324	CK1,6-ED-0,75BU AG	1663417	40	EV-T2SM	1405218	439
CA-12S1N8A8008S	1619489	324	CA-17S1N129006	1620125	326	CK1,6-ED-0,75BU AU	1672440	40			
CA-12S1N8A800DN	1619762	325	CA-17S1N129007	1620052	326	CK1,6-ED-0,75ST AG	1663352	40			
CA-12S1N8A800DNS	1619591	324	CA-17S1N129008	1620024	326	CK1,6-ED-0,75ST AU	1674914	40			
CA-12S1N8A9006	1620131	326	CA-17S1N1290DN	1620151	326	CK1,6-ED-1,00BU AG	1663420	40			
CA-12S1N8A9007	1620073	326	CA-17S1N12HZ00	1619782	332	CK1,6-ED-1,00BU AU	1674943	40			
CA-12S1N8A9008	1620030	326	CA-17S1N222S00	1619933	330	CK1,6-ED-1,00ST AG	1663365	40			
CA-12S1N8A900DN	1620158	326	CA-17S1N8A2S00	1619959	329	CK1,6-ED-1,00ST AU	1674888	40	FL CAT5 PATCH 0,3	2832250	111
CA-12S1N8AHZ00	1619788	332	CA-17S1N8A6Y00	1619855	328	CK1,6-ED-1,50BU AG	1663433	40	FL CAT5 PATCH 0,5	2832263	111
CA-12S1NA22S00	1619925	330	CA-17S1N8A6Z00	1619881	327	CK1,6-ED-1,50BU AU	1674930	40	FL CAT5 PATCH 1,0	2832276	111
CA-12S1NC22S00	1619910	330	CA-17S1N8A8006	1619728	325	CK1,6-ED-1,50ST AG	1663378	40	FL CAT5 PATCH 1,5	2832221	111
CA-17F1N8A8502	1619623	341	CA-17S1N8A8006S	1619539	324	CK1,6-ED-1,50ST AU	1674875	40	FL CAT5 PATCH 10,0	2832629	111
CA-17F1N8A8502S	1619464	340	CA-17S1N8A8007	1619700	325	CK1,6-ED-2,50BU AG	1663446	40	FL CAT5 PATCH 2,0	2832289	111
CA-17F1N8A8503	1619614	341	CA-17S1N8A8007S	1619512	324	CK1,6-ED-2,50BU AU	1674985	40	FL CAT5 PATCH 3,0	2832292	111
CA-17F1N8A8503S	1619458	340	CA-17S1N8A8008	1619637	325	CK1,6-ED-2,50ST AG	1663381	40	FL CAT5 PATCH 5,0	2832580	111
CA-17F1N8A8504	1619608	341	CA-17S1N8A8008S	1619481	324	CK1,6-ED-2,50ST AU	1674927	40	FL CAT5 PATCH 7,5	2832616	111
CA-17F1N8A8504S	1619754	340	CA-17S1N8A800DN	1619754	325	CK1,6-ED-BU-POF	1885004	41	FL CAT6 PATCH 0,3	2891181	111
CA-17F1N8A850DU	1619629	341	CA-17S1N8A800DNS	1619583	324	CK1,6-ED-ST-POF	1884995	41	FL CAT6 PATCH 0,5	2891288	111
CA-17F1N8A85DUS	1619470	340	CA-17S1N8A9006	1620123	326	CK1,6-ER-0,50BU AG	1884128	41	FL CAT6 PATCH 1,0	2891385	111
CA-17F1N8A9502	1620007	342	CA-17S1N8A9007	1620050	326	CK1,6-ER-0,50ST AG	1884092	41	FL CAT6 PATCH 1,5	2891482	111
CA-17F1N8A9503	1620001	342	CA-17S1N8A9008	1620022	326	CK1,6-ER-1,50BU AG	1884115	41	FL CAT6 PATCH 10	2891877	111
CA-17F1N8A9504	1619995	342	CA-17S1N8A900DN	1620149	326	CK1,6-ER-1,50ST AG	1884089	41	FL CAT6 PATCH 12,5	2891369	111
CA-17F1N8A95DU	1620014	342	CA-17S1N8AHZ00	1619780	332	CK2,0-ED-1,0ST AU	1409118	53	FL CAT6 PATCH 15,0	2891372	111
CA-17M1N8A8502	1619619	341	CA-17S1NA22S00	1619918	330	CK2,0-ED-2,5ST AU	1409095	53	FL CAT6 PATCH 2,0	2891589	111
CA-17M1N8A8502S	1619463	340	CA-17S1NC22S00	1619905	330	CP-HCC 4	1600027	50	FL CAT6 PATCH 20,0	2891576	111
CA-17M1N8A8503	1619613	341	CA-19P1N122S00	1619956	329	CP-MSTB	1734634	50	FL CAT6 PATCH 3,0	2891686	111
CA-17M1N8A8503S	1619457	340	CA-19P1N126Y00	1619852	328	CRIMPFOX PCC 16 CS 10QMM	1743430	29	FL CAT6 PATCH 5,0	2891783	111
CA-17M1N8A8504	1619607	341	CA-19P1N126Z00	1619878	327	CRIMPFOX PCC 16 CS 4QMM	1743427	29	FL CAT6 PATCH 7,5	2891880	111
CA-17M1N8A8504S	1619451	340	CA-19P1N128006	1619725	325	CRIMPFOX-DSUB 5	1212111	216	FL COUPLER SC-DUPLEX	2901788	136
CA-17M1N8A85DU	1619628	341	CA-19P1N128006S	1619536	324	CRIMPFOX-TC MP	1212510	239	FL CRIMPTOOL	2744869	81
CA-17M1N8A85DUS	1619469	340	CA-19P1N128007	1619660	325	CRIMPFOX-TC MP-1	1212620	53	FL DUST CVR BK	2891107	112
CA-17M1N8A9502	1620006	342	CA-19P1N128007S	1619509	324	CT-WZA	2765505	79	FL DUST CVR BN	2891301	112
CA-17M1N8A9503	1620000	342	CA-19P1N128008	1619634	325	CUC-PP-FRAME-19	1407986	114	FL DUST CVR BU	2891204	112
CA-17M1N8A9504	1619994	342	CA-19P1N128008S	1619478	324	CUC-PP-FRAME-SCREWSET	1407989	114	FL DUST CVR GN	2891602	112
CA-17M1N8A95DU	1620013	342	CA-19P1N12800DN	1619751	325	CUC-PP-MODUL-CABLEFIXSET	1407991	114	FL DUST CVR GY	2891055	112
CA-17P1N122S00	1619960	329	CA-19P1N1280DNS	1619580	324	CUC-PP-MODUL-COVER	1407988	114	FL DUST CVR RD	2891709	112
CA-17P1N126Y00	1619856	328	CA-19P1N129006	1620120	326	CUC-PP-MODUL-RJ45-6-RJ45/6...	1407995	114	FL DUST CVR VT	2891806	112
CA-17P1N126Z00	1619882	327	CA-19P1N129007	1620047	326	CUC-PP-PATCHBAY	1407994	114	FL DUST CVR WH	2891903	112
CA-17P1N128006	1619729	325	CA-19P1N129008	1620019	326	CUC-V04-BU-180	1407409	81	FL DUST CVR YE	2891408	112
CA-17P1N128006S	1619540	324	CA-19P1N1290DN	1620146	326	CUC-V04-BU-90	1407408	81	FL FOC PN-B-980/1000	2313397	144
CA-17P1N128007	1619701	325	CA-19P1N12HZ00	1619777	332	CUC-V04-F-BU/BU-RJ45	1407412	81	FL FOC PN-C-FLEX-980/1000	2313407	146
CA-17P1N128007S	1619513	324	CA-19S1N122S00	1619957	329	CUC-V04-F-POBK-180	1407410	81	FL FOC PN-C-HCS-GI-200/230	2313410	150
CA-17P1N128008	1619638	325	CA-19S1N126Y00	1619853	328	CUC-V04-F-POBK-90	1407411	81	FL MM PATCH 1,0 LC-LC	2989158	166
CA-17P1N128008S	1619482	324	CA-19S1N126Z00	1619879	327	CUC-V04-RJ45-POBK-8	1407413	81	FL MM PATCH 1,0 LC-SC	2989161	167
CA-17P1N12800DN	1619755	325	CA-19S1N128006	1619726	325	CUTFOX-ES	1212621	170	FL MM PATCH 1,0 LC-SCRJ	2901802	167
CA-17P1N12800DNS	1619584	324	CA-19S1N128006S	1619537	324	CUTFOX-SCRJ-POF	1405247	170	FL MM PATCH 1,0 LC-ST	2989174	167
CA-17P1N129006	1620124	326	CA-19S1N128007	1619661	325				FL MM PATCH 1,0 SC-SC	2901805	167
CA-17P1N129007	1620051	326	CA-19S1N128007S	1619510	324				FL MM PATCH 1,0 SC-SCRJ	2901812	167
CA-17P1N129008	1620023	326	CA-19S1N128008	1619635	325				FL MM PATCH 1,0 SC-ST	2901809	167
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FOC-LC-A-LC-A-GZ01/...	1405688	161	FOC-TOOL-FERRULECLEANER-2.50	1407029	169				K-5E - OE/5,0-C06/M40 F8	1620320	403
FOC-LC-A-LC-A-GZ01/2	1400604	161	FOC-TOOL-STICKCLEANER-1.25	1407000	169	K-12 - OE/010-E00/M23 F8	1619274	395	K-5E-M17 M9/010-C00/M17 F8	1619318	396
FOC-LC-A-LC-A-GZ02/2	1400621	163	FOC-TOOL-STICKCLEANER-2.50	1407002	169	K-12 - OE/010-E00/M23 F8-N2	1619249	394	K-5E-M17 M9/010-C01/M17 F8	1619322	397
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K-5E-M23 M9/2,0-C03/M23 F8	1620406	399				NBC-FSD/ 1,0-93E/R4MC SCO	1407388	99	NBC-MS-R4AC SCO-IE/.../...	1408681	101
K-5E-M23 M9/5,0-C02/M23 F8	1618965	398				NBC-FSD/ 1,0-93E/R4QC SCO	1407396	99	NBC-MS-R4MC SCO-IE/.../...	1408679	101
K-5E-M23 M9/5,0-C03/M23 F8	1620407	399				NBC-FSD/ 1,0-93E/R4RC SCO	1407392	99	NBC-MS-R4QC SCO-IE/.../...	1408677	101
K-5E-M40 M9/010-C03/M40 F8	1620347	402				NBC-FSD/ 2,0-93B/R4AC SCO	1407533	107	NBC-MS-R4RC SCO-IE/.../...	1408678	101
K-5E-M40 M9/010-C04/M40 F8	1620375	402	MICROFOX-SB	1212489	50	NBC-FSD/ 2,0-93B/R4ACR SCO	1407537	107	NBC-MS/ 1,0-94B SCO	1407404	101
K-5E-M40 M9/010-C05/M40 F8	1620378	402	MICROFOX-SP-1	1212487	81	NBC-FSD/ 2,0-93B/R4QC SCO	1407549	107	NBC-MS/ 1,0-94B/FS SCO	1407463	101
K-5E-M40 M9/010-C06/M40 F	1620381	403				NBC-FSD/ 2,0-93B/R4RC SCO	1407545	107	NBC-MS/ 1,0-94B/MS SCO	1407434	101
K-5E-M40 M9/2,0-C03/M40 F8	1620345	402				NBC-FSD/ 2,0-93E/R4AC SCO	1407385	99	NBC-MS/ 1,0-94B/R4AC SCO	1407414	101
K-5E-M40 M9/2,0-C04/M40 F8	1620348	402				NBC-FSD/ 2,0-93E/R4MC SCO	1407389	99	NBC-MS/ 1,0-94B/R4MC SCO	1407422	101
K-5E-M40 M9/2,0-C05/M40 F8	1620376	402	N			NBC-FSD/ 2,0-93E/R4QC SCO	1407397	99	NBC-MS/ 1,0-94B/R4QC SCO	1407430	101
K-5E-M40 M9/2,0-C06/M40 F8	1620379	403				NBC-FSD/ 2,0-93E/R4RC SCO	1407393	99	NBC-MS/ 1,0-94B/R4RC SCO	1407426	101
K-5E-M40 M9/5,0-C03/M40 F8	1620346	402	NBC- 1,0-93B/FSD SCO	1407528	107	NBC-FSD/ 5,0-93B/R4AC SCO	1407534	107	NBC-MS/ 2,0-94B SCO	1407405	101
K-5E-M40 M9/5,0-C04/M40 F8	1620349	402	NBC- 1,0-93E/FSD SCO	1407380	99	NBC-FSD/ 5,0-93B/R4ACR SCO	1407538	107	NBC-MS/ 2,0-94B/FS SCO	1407464	101
K-5E-M40 M9/5,0-C05/M40 F8	1620377	402	NBC- 1,0-94B/FS SCO	1407439	101	NBC-FSD/ 5,0-93B/R4QC SCO	1407551	107	NBC-MS/ 2,0-94B/MS SCO	1407435	101
K-5E-M40 M9/5,0-C06/M40 F8	1620380	403	NBC- 2,0-93B/FSD SCO	1407529	107	NBC-FSD/ 5,0-93B/R4RC SCO	1407546	107	NBC-MS/ 2,0-94B/R4AC SCO	1407415	101
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K-7E - OE/010-D02/M40 F8	1620401	400	NBC- 2,0-94B/FS SCO	1407440	101	NBC-FSD/ 5,0-93E/R4MC SCO	1407390	99	NBC-MS/ 2,0-94B/R4QC SCO	1407431	101
K-7E - OE/010-D02/M23 FK	1620423	400	NBC- 5,0-93B/FSD SCO	1407530	107	NBC-FSD/ 5,0-93E/R4QC SCO	1407398	99	NBC-MS/ 2,0-94B/R4RC SCO	1407427	101
K-7E - OE/010-D03/M23 F8	1620405	400	NBC- 5,0-93E/FSD SCO	1407382	99	NBC-FSD/ 5,0-93E/R4RC SCO	1407394	99	NBC-MS/ 5,0-94B SCO	1407406	101
K-7E - OE/010-D03/M23 FK	1620426	401	NBC- 5,0-94B/FS SCO	1407441	101	NBC-FSD/10,0-93B/R4AC SCO	1407535	107	NBC-MS/ 5,0-94B/FS SCO	1407465	101
K-7E - OE/010-D03/M40 F8	1620342	400	NBC- 10,0-93B/FSD SCO	1407531	107	NBC-FSD/10,0-93B/R4ACR SCO	1407539	107	NBC-MS/ 5,0-94B/MS SCO	1407436	101
K-7E - OE/010-D04/M40 F8	1620338	403	NBC- 10,0-93E/FSD SCO	1407383	99	NBC-FSD/10,0-93B/R4QC SCO	1407552	107	NBC-MS/ 5,0-94B/R4AC SCO	1407416	101
K-7E - OE/010-D05/M40 F8	1620341	403	NBC- 10,0-94B/FS SCO	1407442	101	NBC-FSD/10,0-93B/R4RC SCO	1407547	107	NBC-MS/ 5,0-94B/R4MC SCO	1407424	101
K-7E - OE/010-D06/M40 F8	1620344	403	NBC-FR SCO-IE/.../...	1408657	101	NBC-FSD/10,0-93E/R4AC SCO	1407387	99	NBC-MS/ 5,0-94B/R4QC SCO	1407432	101
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K-7E - OE/2,0-D02/M23 F8	1620399	400	NBC-FR-R4MC SCO-IE/.../...	1408653	101	NBC-FSD/10,0-93E/R4QC SCO	1407399	99	NBC-MS/10,0-94B SCO	1407407	101
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K-7E - OE/2,0-D03/M23 F8	1620402	400	NBC-FR-R4RC SCO-IE/.../...	1408652	101	NBC-M 8FS-R4AC/.../...	1408714	97	NBC-MS/10,0-94B/MS SCO	1407438	101
K-7E - OE/2,0-D03/M23 FK	1620424	401	NBC-FRD SCO-EC/.../...	1408584	109	NBC-M 8FS/.../...	1408716	97	NBC-MS/10,0-94B/R4AC SCO	1407417	101
K-7E - OE/2,0-D03/M40 F8	1620322	403	NBC-FRD SCO-PN/.../...	1408615	107	NBC-M 8MS-M 8FS/.../...	1408715	97	NBC-MS/10,0-94B/R4MC SCO	1407425	101
K-7E - OE/2,0-D04/M40 F8	1620325	403	NBC-FRD SCO/.../...	1408690	99	NBC-M 8MS-M 8MS/.../...	1408718	97	NBC-MS/10,0-94B/R4QC SCO	1407433	101
K-7E - OE/2,0-D05/M40 F8	1620339	403	NBC-FRD-R4AC SCO-EC/.../...	1408583	109	NBC-M 8MS-R4AC/.../...	1408717	97	NBC-MS/10,0-94B/R4RC SCO	1407429	101
K-7E - OE/2,0-D06/M40 F8	1620342	403	NBC-FRD-R4AC SCO-PN/.../...	1408613	107	NBC-M 8MS/ 1,0-93B	1407344	97	NBC-MSD SCO-EC/.../...	1408600	108
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K-7E - OE/5,0-D02/M23 FK	1620422	400	NBC-FRD-R4ACR SCO-PN/.../...	1408612	107	NBC-M 8MS/ 2,0-93B	1407345	97	NBC-MSD-FRD SCO-EC/.../...	1408581	109
K-7E - OE/5,0-D03/M23 F8	1620404	400	NBC-FRD-R4MC SCO/.../...	1408688	99	NBC-M 8MS/ 2,0-93B/M 8MS	1407349	97	NBC-MSD-FRD SCO-PN/.../...	1408608	107
K-7E - OE/5,0-D03/M23 FK	1620425	401	NBC-FRD-R4QC SCO-PN/.../...	1408609	107	NBC-M 8MS/ 2,0-93B/R4AC	1407353	97	NBC-MSD-FRD SCO/.../...	1408684	99
K-7E - OE/5,0-D03/M40 F8	1620323	403	NBC-FRD-R4QC SCO/.../...	1408686	99	NBC-M 8MS/ 5,0-93B	1407346	97	NBC-MSD-FSD SCO-EC/.../...	1408586	109
K-7E - OE/5,0-D04/M40 F8	1620337	403	NBC-FRD-R4RC SCO-PN/.../...	1408610	107	NBC-M 8MS/ 5,0-93B/M 8MS	1407350	97	NBC-MSD-FSD SCO-PN/.../...	1408617	107
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K-7E-M17 M9/2,0-D01/M17 F8	1619323	397	NBC-FS-R4MC SCO-IE/.../...	1408662	101	NBC-M 8MS/10,0-93B/M 8MS	1407351	97	NBC-MSD-MRD SCO/.../...	1408700	99
K-7E-M17 M9/5,0-D01/M17 F8	1619324	397	NBC-FS-R4QC SCO-IE/.../...	1408660	101	NBC-M 8MS/10,0-93B/R4AC	1407355	97	NBC-MSD-MSD SCO-EC/.../...	1408597	108
K-7E-M23 M9/010-D02/M23 F8	1620411	400	NBC-FS-R4RC SCO-IE/.../...	1408661	101	NBC-MR SCO-IE/.../...	1408675	101	NBC-MSD-MSD SCO-PN/.../...	1408634	107
K-7E-M23 M9/010-D03/M23 F8	1620414	400	NBC-FS/ 1,0-94B/R4AC SCO	1407443	101	NBC-MR-FR SCO-IE/.../...	1408649	101	NBC-MSD-MSD SCO/.../...	1408706	99
K-7E-M23 M9/2,0-D02/M23 F8	1620409	400	NBC-FS/ 1,0-94B/R4MC SCO	1407451	101	NBC-MR-FS SCO-IE/.../...	1408658	101	NBC-MSD-R4AC SCO-EC/.../...	1408599	108
K-7E-M23 M9/2,0-D03/M23 F8	1620412	400	NBC-FS/ 1,0-94B/R4QC SCO	1407459	101	NBC-MR-MR SCO-IE/.../...	1408666	101	NBC-MSD-R4AC SCO-PN/.../...	1408639	107
K-7E-M23 M9/5,0-D02/M23 F8	1620410	400	NBC-FS/ 1,0-94B/R4RC SCO	1407455	101	NBC-MR-R4AC SCO-IE/.../...	1408674	101	NBC-MSD-R4AC SCO/.../...	1408712	99
K-7E-M23 M9/5,0-D03/M23 F8	1620413	400	NBC-FS/ 2,0-94B/R4AC SCO	1407444	101	NBC-MR-R4MC SCO-IE/.../...	1408671	101	NBC-MSD-R4ACR SCO-EC/.../...	1408598	108
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K-7E-M40 M9/2,0-D05/M40 F8	1620390	403	NBC-FS/ 5,0-94B/R4RC SCO	1407457	101	NBC-MRD-FRD SCO-PN/.../...	1408607	107	NBC-MSD/ 1,0-93B SCO	1407495	107
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K-7E-M40 M9/5,0-D03/M40 F8	1620383	403	NBC-FS/10,0-94B/R4MC SCO	1407454	101	NBC-MRD-FSD SCO-EC/.../...	1408585	109	NBC-MSD/ 1,0-93B/MSD SCO	1407524	107
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KSF3ESP8905A2,0	1624773	398	NBC-FSD-R4AC SCO/.../...	1408696	99	NBC-MRD-R4AC SCO/.../...	1408704	99	NBC-MSD/ 1,0-93E/R4AC SCO	1407360	99
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NBC-MSD/ 2,0-93B/R4QC SCO	1407521	107	NBC-MSY/ 5,0-94H SCO	1407489	104	PROT-M12 MS-PA-CHAIN	1430899	295	PV-TC (-) 10-1,5M		1780464 424
NBC-MSD/ 2,0-93B/R4RC SCO	1407517	107	NBC-MSY/ 5,0-94H/MSY SCO	1407493	104	PROT-M12 MS-PA-CHAIN-EYE-DM14	1456200	295	PV-YC 4/ 1-0,12-SO2 (+/-)		1795022 424
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NBC-MSD/ 2,0-93E/R4MC SCO	1407365	99	NBC-R4AC/1,0-93G/R4AC	1408981	108	PROT-MINMS-PA-CHAIN	1430925	295			
NBC-MSD/ 2,0-93E/R4QC SCO	1407373	99	NBC-R4AC/1,0-94B/R4AC	1408950	100	PROT-MS SCO	1553129	294			
NBC-MSD/ 2,0-93E/R4RC SCO	1407369	99	NBC-R4AC/10,0-93B/R4AC	1408971	106	PSC 1,5/ 3-F	1841909	215			
NBC-MSD/ 2,0-93G SCO	1407558	108	NBC-R4AC/10,0-93E/R4AC	1408936	98	PSC 1,5/ 5-F	1841912	215			
NBC-MSD/ 2,0-93G/MSD SCO	1407570	108	NBC-R4AC/10,0-93G/R4AC	1408984	108	PSM-FO-STRIP	2744199	50			
NBC-MSD/ 2,0-93G/R4AC SCO	1407562	108	NBC-R4AC/10,0-94B/R4AC	1408953	100	PSM-HCS-KONFTOOL	2799526	171	Q-PROT 9/11		1670235 294
NBC-MSD/ 2,0-93G/R4ACR SCO	1407568	108	NBC-R4AC/10G-R4AC/10G-94F/10,0	1408367	102	PSM-HCS-KONFTOOL/B-FOC	2708465	171			
NBC-MSD/ 5,0-93B SCO	1407497	107	NBC-R4AC/10G-R4AC/10G-94F/2,0	1408360	102	PSM-HCS-KONFTOOL/SC-RJ	2708876	171			
NBC-MSD/ 5,0-93B/FSD SCO	1407555	107	NBC-R4AC/2,0-93B/R4AC	1408969	106	PSM-LWL-GDM-RUGGED- 50/125	2799322	156			
NBC-MSD/ 5,0-93B/MSD SCO	1407526	107	NBC-R4AC/2,0-93E/R4AC	1408934	98	PSM-LWL-GDO- 50/125	2799432	158			
NBC-MSD/ 5,0-93B/R4AC SCO	1407501	107	NBC-R4AC/2,0-93G/R4AC	1408982	108	PSM-LWL-HCS-RUGGED-200/230	2799885	152			
NBC-MSD/ 5,0-93B/R4ACR SCO	1407510	107	NBC-R4AC/2,0-94B/R4AC	1408951	100	PSM-LWL-HCSO-200/230	2799445	154			
NBC-MSD/ 5,0-93B/R4QC SCO	1407522	107	NBC-R4AC/5,0-93B/R4AC	1408970	106	PSM-LWL-KDHEAVY-980/1000	2744319	138			
NBC-MSD/ 5,0-93B/R4RC SCO	1407518	107	NBC-R4AC/5,0-93E/R4AC	1408935	98	PSM-LWL-RUGGED-980/1000	2744322	140	RC-12P2000		1597862 334
NBC-MSD/ 5,0-93E SCO	1407358	99	NBC-R4AC/5,0-93G/R4AC	1408983	108	PSM-LWL-RUGGED-FLEX-980/1000	2744335	142	RC-12S2000		1599600 334
NBC-MSD/ 5,0-93E/FSD SCO	1407402	99	NBC-R4AC/5,0-94B/R4AC	1408952	100	PSM-SET-B-FOC/4-HCS	2708481	130	RC-13041		1600417 317
NBC-MSD/ 5,0-93E/MSD SCO	1407378	99	NBC-R4ACR/1,0-93B/R4ACR	1409002	106	PSM-SET-B-FOC/4-HCS/PN	2313782	131	RC-22P2000		1603321 334
NBC-MSD/ 5,0-93E/R4AC SCO	1407362	99	NBC-R4ACR/1,0-93G/R4ACR	1409006	108	PSM-SET-BFOC-LINK/2	2799429	136	RC-22S2000		1603327 334
NBC-MSD/ 5,0-93E/R4MC SCO	1407366	99	NBC-R4ACR/10,0-93B/R4ACR	1409005	106	PSM-SET-FSMA-LINK/2	2799416	136	RC-5AP2000		1603505 334
NBC-MSD/ 5,0-93E/R4QC SCO	1407374	99	NBC-R4ACR/10,0-93G/R4ACR	1409015	108	PSM-SET-FSMA-POLISH	2799348	50	RC-5AS2000		1603509 334
NBC-MSD/ 5,0-93E/R4RC SCO	1407370	99	NBC-R4ACR/2,0-93B/R4ACR	1409003	106	PSM-SET-FSMA/4-HCS	2799487	130	RC-SCP2000		1603513 334
NBC-MSD/ 5,0-93G SCO	1407559	108	NBC-R4ACR/2,0-93G/R4ACR	1409007	108	PSM-SET-FSMA/4-KT	2799720	127	RC-5CS2000		1603517 334
NBC-MSD/ 5,0-93G/MSD SCO	1407571	108	NBC-R4ACR/5,0-93B/R4ACR	1409004	106	PSM-SET-SC-DUPLEX/2-HCS/PN	2313779	131	RC-Z2058		1604223 414
NBC-MSD/ 5,0-93G/R4AC SCO	1407563	108	NBC-R4ACR/5,0-93G/R4ACR	1409014	108	PSM-SET-SCRJ-DUP/2-HCS	2313070	130	RC-Z2059		1604225 414
NBC-MSD/ 5,0-93G/R4ACR SCO	1407567	108	NBC-R4MC/1,0-93E/R4MC	1408937	98	PSM-SET-SCRJ-DUP/2-HCS/PN	2313546	131	RC-Z2062		1604228 415
NBC-MSD/10,0-93B SCO	1407498	107	NBC-R4MC/1,0-94B/R4MC	1408955	100	PSM-SET-SCRJ-DUP/2-POF	2708656	127	RC-Z2068		1604236 415
NBC-MSD/10,0-93B/FSD SCO	1407556	107	NBC-R4MC/10,0-93E/R4MC	1408940	98	PTSPL-6/1-2X2 2,1 R32	1704836	428	RC-Z2104		1604260 415
NBC-MSD/10,0-93B/MSD SCO	1407527	107	NBC-R4MC/10,0-94B/R4MC	1408958	100	PTSPL-6/1-2X2 2,9 R32	1704837	428	RC-Z2130		1604267 404
NBC-MSD/10,0-93B/R4AC SCO	1407502	107	NBC-R4MC/2,0-93E/R4MC	1408938	98	PTSPL-6/1-2X2 2,1 R32	1705081	428	RC-Z2274		1604409 404
NBC-MSD/10,0-93B/R4ACR SCO	1407511	107	NBC-R4MC/2,0-94B/R4MC	1408956	100	PTSPL-6/1-2X2 2,9 R32	1705085	428	RC-Z2468		1611796 414
NBC-MSD/10,0-93B/R4QC SCO	1407523	107	NBC-R4MC/5,0-93E/R4MC	1408939	98	PV-1P-100,0/S01-2,5	1459509	425	RC-Z2469		1611797 414
NBC-MSD/10,0-93B/R4RC SCO	1407519	107	NBC-R4MC/5,0-94B/R4MC	1408954	100	PV-1P-100,0/S02-4,0	1459511	425	RC-Z2490		1611803 404
NBC-MSD/10,0-93E SCO	1407359	99	NBC-R4QC/1,0-93B/R4QC	1408978	107	PV-1P-100,0/S03-6,0	1459524	425	RC-Z2494		1614123 404
NBC-MSD/10,0-93E/FSD SCO	1407403	99	NBC-R4QC/1,0-93E/R4QC	1408947	99	PV-1P-100,0/S04-10,0	1459537	425	RC-Z2514		1614590 404
NBC-MSD/10,0-93E/MSD SCO	1407379	99	NBC-R4QC/1,0-94B/R4QC	1408965	101	PV-1P-1000,0/S01-2,5	1459566	425	RF-12P1N8AAC00		1607802 345
NBC-MSD/10,0-93E/R4AC SCO	1407363	99	NBC-R4QC/10,0-93B/R4QC	1408980	107	PV-1P-1000,0/S02-4,0	1459579	425	RF-12P1N8AAD00		1607233 345
NBC-MSD/10,0-93E/R4MC SCO	1407367	99	NBC-R4QC/10,0-93E/R4QC	1408949	99	PV-1P-1000,0/S03-6,0	1459582	425	RF-12P1N8AWA00		1607236 344
NBC-MSD/10,0-93E/R4QC SCO	1407375	99	NBC-R4QC/10,0-94B/R4QC	1408967	101	PV-1P-1000,0/S04-10,0	1459595	425	RF-12P1N8AWB00		1607804 344
NBC-MSD/10,0-93E/R4RC SCO	1407371	99	NBC-R4QC/2,0-93B/R4QC	1408979	107	PV-1P-500,0/S01-2,5	1459540	425	RF-12P2N8AAC00		1607814 345
NBC-MSD/10,0-93G SCO	1407560	108	NBC-R4QC/2,0-93E/R4QC	1408948	99	PV-1P-500,0/S02-4,0	1787700	425	RF-12P2N8AAD00		1607257 345
NBC-MSD/10,0-93G/MSD SCO	1407572	108	NBC-R4QC/2,0-94B/R4QC	1408966	101	PV-1P-500,0/S03-6,0	1787713	425	RF-12P2N8AWA00		1607260 344
NBC-MSD/10,0-93G/R4AC SCO	1407564	108	NBC-R4QC/5,0-93B/R4QC	1408977	107	PV-1P-500,0/S04-10,0	1459553	425	RF-12P2N8AWB00		1607817 344
NBC-MSD/10,0-93G/R4ACR SCO	1407568	108	NBC-R4QC/5,0-93E/R4QC	1408946	99	PV-C PLUG	1775631	422	RF-12S1N8AAC00		1607827 345
NBC-MSX SCO-10G/.....	1408648	102	NBC-R4QC/5,0-94B/R4QC	1408964	101	PV-C PROTECTION CAP	1785430	420	RF-12S1N8AAD00		1607280 345
NBC-MSX-MSX SCO-10G/.....	1408644	102	NBC-R4RC/1,0-93B/R4RC	1408974	106	PV-C1F-S 2,5-6 (+)	1789821	422	RF-12S1N8AWA00		1607283 344
NBC-MSX-R4AC SCO-10G/.....	1408647	102	NBC-R4RC/1,0-93E/R4RC	1408941	98	PV-C1M-S 2,5-6 (-)	1789834	422	RF-12S1N8AWB00		1607830 344
NBC-MSX-R4QC SCO-10G/.....	1408645	102	NBC-R4RC/1,0-94B/R4RC	1408961	100	PV-CF-P 2,5(+)	1795323	426	RF-12S2N8AAC00		1607842 345
NBC-MSX-R4RC SCO-10G/.....	1408646	102	NBC-R4RC/10,0-93B/R4RC	1408976	106	PV-CF-S 2,5-6 (+)	1774674	422	RF-12S2N8AAD00		1607304 345
NBC-MSX/ 1,0-94F SCO	1407467	102	NBC-R4RC/10,0-93E/R4RC	1408945	98	PV-CF-S 6-16 (+)	1790784	423	RF-12S2N8AWA00		1607307 344
NBC-MSX/ 1,0-94F/MSX SCO	1407483	102	NBC-R4RC/10,0-94B/R4RC	1408963	100	PV-CM-P 2,5(-)	1795336	426	RF-12S2N8AWB00		1607844 344
NBC-MSX/ 1,0-94F/R4AC SCO	1407471	102	NBC-R4RC/2,0-93B/R4RC	1408975	106	PV-CM-S 2,5-6 (-)	1774687	422	RF-17P1N8AAC00		1607852 345
NBC-MSX/ 1,0-94F/R4QC SCO	1407479	102	NBC-R4RC/2,0-93E/R4RC	1408942	98	PV-CM-S 6-16 (-)	1790797	423	RF-17P1N8AAD00		1607328 345
NBC-MSX/ 1,0-94F/R4RC SCO	1407475	102	NBC-R4RC/2,0-94B/R4RC	1408962	100	PV-DB S20-2,5/0,8-2D	1811239	427	RF-17P1N8AWA00		1607860 344
NBC-MSX/ 2,0-94F SCO	1407468	102	NBC-R4RC/5,0-93B/R4RC	1408972	106	PV-DB S20-2,5/0,8-CA	1463065	427	RF-17P1N8AWB00		1607863 344
NBC-MSX/ 2,0-94F/MSX SCO	1407484	102	NBC-R4RC/5,0-93E/R4RC	1408943	98	PV-FT-C NUT BK	1775880	420	RF-17S1N8AAC00		1607887 345
NBC-MSX/ 2,0-94F/R4AC SCO	1407472	102	NBC-R4RC/5,0-94B/R4RC	1408959	100	PV-FT-C2F-HSG	1704926	421	RF-17S1N8AAD00		1607345 345
NBC-MSX/ 2,0-94F/R4QC SCO											

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Type	Order No.	Page	Type	Order No.	Page	Type	Order No.	Page	Type	Order No.	Page
S			SACC-CI-M12FS-12CON-L180 THRS	1442052	257	SACC-CI-M12MST-4CON-L180 THR	1406396	288	SACC-DSI-M12FS-8CON-PG9/0,5 VA	1554720	270
			SACC-CI-M12FS-12CON-L90	1424195	253	SACC-CI-M12MST-4CON-L180 THR SH	1406397	288	SACC-DSI-M12FSB-5CON-M16	1441794	250
			SACC-CI-M12FS-12CON-L90 SH	1424199	253	SACC-DSI-FS-12CON-L180 SCO	1559929	246	SACC-DSI-M12FSB-5CON-M16 SH	1441914	251
			SACC-CI-M12FS-12CON-SH TOR 32	1457704	257	SACC-DSI-FS-12CON-L180 SCO SH	1436770	247	SACC-DSI-M12FSB-5CON-M16/0,5	1419674	244
SAC BIT M12-W14	1212513	297	SACC-CI-M12FS-12CON-TOR 32	1457694	256	SACC-DSI-FS-12CON-PG9/0,5 SCO	1430446	242	SACC-DSI-M12FSD-4CON-M16	1441752	250
SAC BIT MIN-D25	1212512	297	SACC-CI-M12FS-17CON-L180 THR	1441998	256	SACC-DSI-FS-17CON-L180 SCO	1559958	246	SACC-DSI-M12FSD-4CON-M16 SH	1441875	251
SAC-4P- 1,0-PUR/FRS PE SCO	1408848	290	SACC-CI-M12FS-17CON-L180 THRS	1442078	257	SACC-DSI-FS-17CON-L180 SCO SH	1436806	247	SACC-DSI-M12FSD-4CON-M16/0,5	1419616	244
SAC-4P- 1,0-PUR/FRT SCO	1408827	292	SACC-CI-M12FS-17CON-L90	1424197	253	SACC-DSI-FS-17CON-PG9/0,5 SCO	1430462	242	SACC-DSI-M12FSS-4CON-M16/0,5PE	1424133	286
SAC-4P- 1,0-PUR/FSS PE SCO	1408843	290	SACC-CI-M12FS-17CON-L90 SH	1424201	253	SACC-DSI-FS-4CON-L180 SCO	1553462	246	SACC-DSI-M12FST-4CON-M16/0,5	1424134	286
SAC-4P- 1,0-PUR/FST SCO	1408823	292	SACC-CI-M12FS-17CON-SH TOR 32	1457720	257	SACC-DSI-FS-4CON-L180/12 SCOSH	1558522	247	SACC-DSI-M12MS-12CON-M16	1441820	250
SAC-4P- 2,0-PUR/FRS PE SCO	1408852	290	SACC-CI-M12FS-17CON-TOR 32	1457717	256	SACC-DSI-FS-4CON-L180/SCO SH	1556841	247	SACC-DSI-M12MS-12CON-M16 SH	1441943	251
SAC-4P- 2,0-PUR/FRT SCO	1408828	292	SACC-CI-M12FS-4CON-L 90 SH SCO	1432444	252	SACC-DSI-FS-4CON-PG9/0,5 SCO	1556621	242	SACC-DSI-M12MS-12CON-M16/0,5	1419700	244
SAC-4P- 2,0-PUR/FSS PE SCO	1408844	290	SACC-CI-M12FS-4CON-L180 SH THR	1439955	257	SACC-DSI-FS-5CON-L180 SCO	1542761	188	SACC-DSI-M12MS-17CON-M16	1441846	250
SAC-4P- 2,0-PUR/FST SCO	1408824	292	SACC-CI-M12FS-4CON-L180 THR	1439942	256	SACC-DSI-FS-5CON-L180/12 SCO	1552285	246	SACC-DSI-M12MS-17CON-M16 SH	1441969	251
SAC-4P- 5,0-PUR/FRS PE SCO	1408853	290	SACC-CI-M12FS-4CON-L90 SCO	1436628	252	SACC-DSI-FS-5CON-L180/12 SCOSH	1558548	247	SACC-DSI-M12MS-17CON-M16/0,5	1419726	244
SAC-4P- 5,0-PUR/FRT SCO	1408829	292	SACC-CI-M12FS-4CON-SH TOR 32	1457623	257	SACC-DSI-FS-5CON-L180/SCO SH	1553019	188	SACC-DSI-M12MS-4CON-L180 VA	1404979	270
SAC-4P- 5,0-PUR/FSS PE SCO	1408845	290	SACC-CI-M12FS-4CON-TOR 32	1457610	256	SACC-DSI-FS-5CON-PG 9/0,5 SCO	1542729	242	SACC-DSI-M12MS-4CON-M16	1419742	250
SAC-4P- 5,0-PUR/FST SCO	1408825	292	SACC-CI-M12FS-5CON TOR 32	1457649	256	SACC-DSI-FS-5CON-L180 SCO	1542774	246	SACC-DSI-M12MS-4CON-M16 SH	1419768	251
SAC-4P-10,0-PUR/FRS PE SCO	1408854	290	SACC-CI-M12FS-5CON-L180	1551464	254	SACC-DSI-FS-8CON-L180/12 SCO	1408770	246	SACC-DSI-M12MS-4CON-M16/0,5	1419629	244
SAC-4P-10,0-PUR/FRT SCO	1408830	292	SACC-CI-M12FS-5CON-L180-THR	1551448	256	SACC-DSI-FS-8CON-L180/12 SCOSH	1408771	247	SACC-DSI-M12MS-4CON-PG9/0,5 VA	1405239	270
SAC-4P-10,0-PUR/FSS PE SCO	1408846	290	SACC-CI-M12FS-5CON-L180-THR SH	1432363	257	SACC-DSI-FS-8CON-L180/SCO SH	1553860	247	SACC-DSI-M12MS-5CON-L180 VA	1554746	193
SAC-4P-10,0-PUR/FST SCO	1408826	292	SACC-CI-M12FS-5CON-L90 SCO	1436644	252	SACC-DSI-FS-8CON-L180/SH TQ	1456543	90	SACC-DSI-M12MS-5CON-M16	1441765	250
SAC-4P-FRS/ 1,5-PUR PE SH SCO	1424100	291	SACC-CI-M12FS-5CON-SH TOR 32	1457652	257	SACC-DSI-FS-8CON-PG 9/0,5 SCO	1542732	242	SACC-DSI-M12MS-5CON-M16 SH	1441888	251
SAC-4P-FRS/ 3,0-PUR PE SH SCO	1424101	291	SACC-CI-M12FS-8CON- TOR 32	1457678	256	SACC-DSI-FSB-5CON-L180 SCO	1543650	246	SACC-DSI-M12MS-5CON-M16/0,5	1419645	244
SAC-4P-FRS/ 5,0-PUR PE SH SCO	1424102	291	SACC-CI-M12FS-8CON-L180-10G	1402457	90	SACC-DSI-FSB-5CON-L180/12 SCO	1552298	246	SACC-DSI-M12MS-5CON-PG9/0,5 VA	1554681	270
SAC-4P-FRS/10,0-PUR PE SH SCO	1424103	291	SACC-CI-M12FS-8CON-L180-THR	1557808	256	SACC-DSI-FSB-5CON-L180/12SCOSH	1558564	247	SACC-DSI-M12MS-8CON-L180 VA	1529807	270
SAC-4P-FRT/ 1,5-PUR SH SCO	1424116	293	SACC-CI-M12FS-8CON-L180-THR SH	1551422	257	SACC-DSI-FSB-5CON-L180/SCO SH	1553022	188	SACC-DSI-M12MS-8CON-M16	1441804	250
SAC-4P-FRT/ 3,0-PUR SH SCO	1424117	293	SACC-CI-M12FS-8CON-L90 SCO	1436990	252	SACC-DSI-FSB-5CON-PG9/0,5 SCO	1543676	242	SACC-DSI-M12MS-8CON-M16 SH	1441927	251
SAC-4P-FRT/ 5,0-PUR SH SCO	1424118	293	SACC-CI-M12FS-8CON-L90 SH SCO	1437009	252	SACC-DSI-FSD-4CON-L180 SCO	1551503	246	SACC-DSI-M12MS-8CON-M16/0,5	1419687	244
SAC-4P-FRT/10,0-PUR SH SCO	1424128	293	SACC-CI-M12FS-8CON-SH TOR 32	1457681	257	SACC-DSI-FSD-4CON-L180/12 SCO	1552272	246	SACC-DSI-M12MS-8CON-PG9/0,5 VA	1554694	270
SAC-4P-FSS/ 1,5-PUR PE SH SCO	1424096	291	SACC-CI-M12FSB-5CON-L180	1551477	254	SACC-DSI-FSD-4CON-L180/12SCOSH	1558506	247	SACC-DSI-M12MSB-5CON-M16	1441781	250
SAC-4P-FSS/ 3,0-PUR PE SH SCO	1424097	291	SACC-CI-M12FSB-5CON-L180-THR	1551435	257	SACC-DSI-FSD-4CON-L180/SCO SH	1553006	247	SACC-DSI-M12MSB-5CON-M16 SH	1441901	251
SAC-4P-FSS/ 5,0-PUR PE SH SCO	1424098	291	SACC-CI-M12FSB-5CON-L90 SH SCO	1432512	252	SACC-DSI-FSD-4CON-L180/SH GN	1456569	90	SACC-DSI-M12MSB-5CON-M16/0,5	1419661	244
SAC-4P-FSS/10,0-PUR PE SH SCO	1424099	291	SACC-CI-M12FSB-5CON-SH TOR 32	1457665	257	SACC-DSI-FSD-4CON-L180/SH TQ	1456527	90	SACC-DSI-M12MSD-4CON-M16	1441749	250
SAC-4P-FST/ 1,5-PUR SH SCO	1424112	293	SACC-CI-M12FSD-4CON-L180	1551480	254	SACC-DSI-FSD-4CON-PG9/0,5 SCO	1551529	92	SACC-DSI-M12MSD-4CON-M16 SH	1441862	251
SAC-4P-FST/ 3,0-PUR SH SCO	1424113	293	SACC-CI-M12FSD-4CON-L180-THR	1551451	257	SACC-DSI-FSX-8CON-M16-L180 SCO	1424177	91	SACC-DSI-M12MSD-4CON-M16/0,5	1419603	244
SAC-4P-FST/ 5,0-PUR SH SCO	1424114	293	SACC-CI-M12FSD-4CON-L90 SCO	1432457	252	SACC-DSI-FSX-8CON-PG9-L180 SCO	1404741	91	SACC-DSI-M12MSS-4CON-M16/0,5PE	1424132	286
SAC-4P-FST/10,0-PUR SH SCO	1424115	293	SACC-CI-M12FSD-4CON-SH TOR 32	1457636	257	SACC-DSI-FSY-8CON-M16-L180 SCO	1407503	91	SACC-DSI-M12MST-4CON-M16/0,5	1424136	286
SAC-4P-MRS/ 1,0-PUR PE SCO	1408839	290	SACC-CI-M12FSS-4CON-L180 THR PE	1406409	288	SACC-DSI-M 8FS-3CON-L180	1694363	226	SACC-DSI-M5FS-3CON-L180	1530647	224
SAC-4P-MRS/ 1,5-PUR PE SH SCO	1424108	291	SACC-CI-M12FST-4CON-L180 THR	1406411	288	SACC-DSI-M 8FS-3CON-M12/0,5	1453449	227	SACC-DSI-M5FS-4CON-L180	1530650	224
SAC-4P-MRS/2,0-PUR PE SCO	1408840	290	SACC-CI-M12FST-4CON-L180 THR SH	1406412	288	SACC-DSI-M 8FS-4CON-L180	1694376	226	SACC-DSI-M5MS-3CON-L180	1530621	224
SAC-4P-MRS/3,0-PUR PE SH SCO	1424109	291	SACC-CI-M12FSX-8CON-L90	1424180	91	SACC-DSI-M 8FS-4CON-M12/0,5	1453452	227	SACC-DSI-M5MS-4CON-L180	1530634	224
SAC-4P-MRS/ 5,0-PUR PE SH SCO	1408841	290	SACC-CI-M12FSY-8CON-L90	1424193	91	SACC-DSI-M 8FS-6CON-L180	1436534	226	SACC-DSI-M8FS-3CON-M10-L180 SH	1456116	229
SAC-4P-MRS/ 5,0-PUR PE SH SCO	1424110	291	SACC-CI-M12MS- 12CON-TOR 32	1457571	256	SACC-DSI-M 8FS-6CON-M12/0,5	1453465	227	SACC-DSI-M8FS-3CON-M10-L90 SH	1456145	228
SAC-4P-MRS/10,0-PUR PE SCO	1408842	290	SACC-CI-M12MS- 4CON-SH TOR 32	1457500	257	SACC-DSI-M 8MS-3CON-L180	1694334	226	SACC-DSI-M8FS-3CON-M10/0,5	1456080	227
SAC-4P-MRS/10,0-PUR PE SH SCO	1424111	291	SACC-CI-M12MS- 4CON-TOR 32	1457490	256	SACC-DSI-M 8MS-3CON-L180 SH	1455997	229	SACC-DSI-M8FS-4CON-M10-L180 SH	1456129	229
SAC-4P-MRT/ 1,0-PUR SCO	1408816	292	SACC-CI-M12MS- 5CON-SH TOR 32	1457539	257	SACC-DSI-M 8MS-3CON-L90 SH	1456035	228	SACC-DSI-M8FS-4CON-M10-L90 SH	1456158	228
SAC-4P-MRT/ 1,5-PUR SH SCO	1424124	293	SACC-CI-M12MS- 5CON-TOR 32	1457526	256	SACC-DSI-M 8MS-3CON-M 8/0,5	1453478	227	SACC-DSI-M8FS-4CON-M10/0,5	1456093	227
SAC-4P-MRT/2,0-PUR SCO	1408819	292	SACC-CI-M12MS- 8CON-SH TOR 32	1457568	257	SACC-DSI-M 8MS-4CON-L180	1694347	226	SACC-DSI-M8FS-5CON-M10-L180 DN	1424241	229
SAC-4P-MRT/3,0-PUR SH SCO	1424125	293	SACC-CI-M12MS- 8CON-TOR 32	1457555	256	SACC-DSI-M 8MS-4CON-L180 SH	1456019	229	SACC-DSI-M8FS-5CON-M10-L90 DN	1424239	228
SAC-4P-MRT/ 5,0-PUR SCO	1408820	292	SACC-CI-M12MS-12CON-L180 THR	1441985	256	SACC-DSI-M 8MS-4CON-M 8/0,5	1453481	227	SACC-DSI-M8FS-6CON-M10-L180 SH	1456132	229
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SAC-4P-MRT/10,0-PUR SCO	1408822	292	SACC-CI-M12MS-12CON-L90	1424194	253	SACC-DSI-M 8MS-6CON-L180 SH	1456022	229	SACC-DSI-M8FS-6CON-M10/0,5	1456103	227
SAC-4P-MRT/10,0-PUR SH SCO	1424127	293	SACC-CI-M12MS-12CON-L90 SH	1424198	253	SACC-DSI-M 8MS-6CON-M 8/0,5	1453494	227	SACC-DSI-M8FS-8CON-M10-L180	1424237	226
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SAC-4P-MSS/ 1,5-PUR PE SH SCO	1424104	291	SACC-CI-M12MS-17CON- TOR 32	1457597	256	SACC-DSI-M12FS-12CON-M16 SH	1441956	251	SACC-DSI-M8FS-8CON-M10/0,5	1424229	227
SAC-4P-MSS/ 2,0-PUR PE SCO	1408836	290	SACC-CI-M12MS-17CON-L180 THR	1442007	256	SACC-DSI-M12FS-12CON-M16/0,5	1419713	244	SACC-DSI-M8MS-4CON-L90 SH	1456048	228
SAC-4P-MSS/ 3,0-PUR PE SH SCO	1424105	291	SACC-CI-M12MS-17CON-L180 THRS	1442081	257	SACC-DSI-M12FS-17CON-M16	1441859	250	SACC-DSI-M8MS-5CON-M8-L180 DN	1424242	229
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SACC-DSI-MS-5CON-PG 9/0,5 SCO	1542703	242	SACC-E-M12FS-8CON-M20/0,5 VA	1452110	269	SACC-EC-MSD-4CON-M16/0,5 SCO	1552256	234	SACC-M12FR-5CON-PG9	1500790	280
SACC-DSI-MS-8CON-L180 SCO	1542758	246	SACC-E-M12FS-8CON-PG 9/0,5 VA	1554607	268	SACC-FR-4CON-PG 7-M SCO	1543058	280	SACC-M12FR-5CON-PG9-M	1681499	281
SACC-DSI-MS-8CON-L180/SCO SH	1553873	247	SACC-E-M12FS-8CON-PG9/0,5	1513758	232	SACC-FR-4SC M SCO	1432622	279	SACC-M12FR-5CON-PG9-M SKIN	1556812	281
SACC-DSI-MS-8CON-L180/SH TQ	1456530	90	SACC-E-M12FSB-5CON-M20/0,5 VA	1452097	269	SACC-FR-4SC SH SCO	1432758	279	SACC-M12FR-6Q SH VARAN	1429169	89
SACC-DSI-MS-8CON-M12 SCO	1551862	248	SACC-E-M12FSS-4CON-M16/0,5 PE	1424137	286	SACC-FR-5CON-PG 7-M SCO	1543061	280	SACC-M12FR-8Q SH	1553666	89
SACC-DSI-MS-8CON-M12-SCO SH	1552997	249	SACC-E-M12FST-4CON-M16/0,5 VA	1424138	286	SACC-FR-5CON-PG 9-M SCO	1543414	280	SACC-M12FR-4Q SH	1553637	89
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SACC-DSI-MS-8CON-PG 9/0,5 SCO	1542716	242	SACC-E-M12MS-4CON-M20/0,5	1408451	235	SACC-FR-5SC SH DN SCO	1432790	187	SACC-M12FS-12SOL-PG 9-M	1404420	275
SACC-DSI-MSB-5CON-L180 SCO	1543647	188	SACC-E-M12MS-4CON-M20/0,5 VA	1408415	269	SACC-FR-5SC SH SCO	1432677	279	SACC-M12FS-12SOL-PG 9-M SH	1404411	275
SACC-DSI-MSB-5CON-L180/12 SCO	1552324	246	SACC-E-M12MS-4CON-PG 9/0,5 VA	1554555	268	SACC-FRB-2SC SH PB SCO	1432871	186	SACC-M12FS-4CON-PG 7-SH	1694295	282
SACC-DSI-MSB-5CON-L180/12SCOSH	1558577	247	SACC-E-M12MS-4CON-PG9/0,5	1693762	232	SACC-FRB-5SC SH IB SCO	1432839	186	SACC-M12FS-4CON-PG 7-VA	1553242	281
SACC-DSI-MSB-5CON-L180/SCO SH	1553051	188	SACC-E-M12MS-4CON-PG9/0,5 FFVA	1431432	193	SACC-FS-12PCON SCO	1559631	275	SACC-M12FS-4CON-PG 9-SH	1515170	282
SACC-DSI-MSB-5CON-M12 SCO	1551846	188	SACC-E-M12MS-5CON-M12 PSCUP	1436437	241	SACC-FS-17PCON SCO	1559644	275	SACC-M12FS-4CON-PG 9-VA	1553268	281
SACC-DSI-MSB-5CON-M12-SCO SH	1552971	188	SACC-E-M12MS-5CON-M16 PSCUP	1436398	241	SACC-FS-4CON-PG 7-M SCO	1543029	280	SACC-M12FS-4CON-PG11-M PWR	1404416	281
SACC-DSI-MSB-5CON-M12/0,5 SCO	1551891	243	SACC-E-M12MS-5CON-M16/0,5 P	1436411	241	SACC-FS-4QO-0,34-M SCO	1521588	278	SACC-M12FS-4CON-PG7	1681114	280
SACC-DSI-MSB-5CON-PG9/0,5 SCO	1543663	242	SACC-E-M12MS-5CON-M16/0,5 VA	1458868	268	SACC-FS-4QO-0,75-M SCO	1521601	278	SACC-M12FS-4CON-PG7-M	1681127	281
SACC-DSI-MSD-4CON-L180 SCO	1551516	246	SACC-E-M12MS-5CON-M20/0,5	1408446	235	SACC-FS-4SC M SCO	1432619	279	SACC-M12FS-4CON-PG7-M SKIN	1430381	281
SACC-DSI-MSD-4CON-L180/12 SCO	1552308	246	SACC-E-M12MS-5CON-M20/0,5 VA	1452068	269	SACC-FS-4SC SH SCO	1432745	279	SACC-M12FS-4QO-0,34	1641701	278
SACC-DSI-MSD-4CON-L180/12SCOSH	1558519	247	SACC-E-M12MS-5CON-PG 9/0,5 VA	1554568	268	SACC-FS-5CON-PG 7-M SCO	1543032	280	SACC-M12FS-4QO-0,34-M	1641688	278
SACC-DSI-MSD-4CON-L180/SCO SH	1553035	247	SACC-E-M12MS-5CON-PG9/0,5	1671111	232	SACC-FS-5CON-PG 9-M SCO	1543045	280	SACC-M12FS-4QO-0,34-VA	1440766	278
SACC-DSI-MSD-4CON-L180/SH GN	1456556	90	SACC-E-M12MS-8CON-M12 PSCUP	1436440	241	SACC-FS-5SC M SCO	1432583	279	SACC-M12FS-4QO-0,75	1641756	278
SACC-DSI-MSD-4CON-L180/SH TQ	1456514	90	SACC-E-M12MS-8CON-M16 PSCUP	1436408	241	SACC-FS-5SC SH DN SCO	1432787	187	SACC-M12FS-4QO-0,75-M	1641772	278
SACC-DSI-MSD-4CON-M12 SCO	1551859	248	SACC-E-M12MS-8CON-M16/0,5 P	1436424	241	SACC-FS-5SC SH SCO	1432664	279	SACC-M12FS-4QO-0,75-VA	1440782	278
SACC-DSI-MSD-4CON-M12-SCO SH	1552984	249	SACC-E-M12MS-8CON-M16/0,5 VA	1405221	268	SACC-FSB-2SC SH PB SCO	1432868	186	SACC-M12FS-4SC SH CCL	1559770	187
SACC-DSI-MSD-4CON-M12/0,5 SCO	1551901	243	SACC-E-M12MS-8CON-M20/0,5	1408442	235	SACC-FSB-5SC SH IB SCO	1432826	186	SACC-M12FS-5CON-DM 3-5 SH VA	1440038	282
SACC-DSI-MSD-4CON-PG9/0,5 SCO	1551532	242	SACC-E-M12MS-8CON-M20/0,5 VA	1452107	269	SACC-M 8-SET/2,2-3,5	1436945	273	SACC-M12FS-5CON-DM 5-8 SH VA	1440041	282
SACC-DSIV-FS-5CON-L180SCOTHRSH	1434879	189	SACC-E-M12MS-8CON-PG 9/0,5 VA	1554571	268	SACC-M 8FR-3CON-M	1529399	274	SACC-M12FS-5CON-PG 7	1662296	280
SACC-DSIV-FS-5CON-L90 SH SCO	1438024	189	SACC-E-M12MS-8CON-PG9/0,5	1513774	232	SACC-M 8FR-3CON-M-SW	1407582	273	SACC-M12FS-5CON-PG 7-M	1662968	281
SACC-DSIV-FS-8CON-L180-10G SCO	1440669	90	SACC-E-M12MSB-5CON-M20/0,5 VA	1452084	269	SACC-M 8FR-3CON-SH	1436479	274	SACC-M12FS-5CON-PG 7-SH	1694305	282
SACC-DSIV-FS-8CON-L180-THR SH	1557549	90	SACC-E-M12MS-4CON-M16/0,5 PE	1424139	286	SACC-M 8FR-4CON-M	1513444	274	SACC-M12FS-5CON-PG 7-VA	1553255	281
SACC-DSIV-FSB-5CON-L180 SCOTHR	1542635	189	SACC-E-M12MST-4CON-M16/0,5	1407584	273	SACC-M 8FR-4CON-M-SW	1407584	273	SACC-M12FS-5CON-PG 9 SH AU	1508365	187
SACC-DSIV-FSB-5CON-L90 SCO	1436576	189	SACC-E-M5FS-3CON-M5/0,5	1530605	224	SACC-M 8FR-4CON-SH	1436482	274	SACC-M12FS-5CON-PG 9-SH	1694318	282
SACC-DSIV-FSD-4CON-L180 SCO	1542619	90	SACC-E-M5FS-4CON-M5/0,5	1530618	224	SACC-M 8FS-3CON-M	1681172	274	SACC-M12FS-5CON-PG 9-VA	1553271	281
SACC-DSIV-FSD-4CON-L180 SCOTHR	1542648	90	SACC-E-M5MS-3CON-M5/0,5	1530582	224	SACC-M 8FS-3CON-M-0,34-SH	1542907	273	SACC-M12FS-5CON-PG11-DUO	1694596	284
SACC-DSIV-FSD-4CON-L90 SCO	1436550	90	SACC-E-M5MS-4CON-M5/0,5	1530595	224	SACC-M 8FS-3CON-M-SH	1506927	274	SACC-M12FS-5CON-PG11-M PWR	1404418	281
SACC-DSIV-M 8FS-3CON-L 90	1524788	230	SACC-E-M8FS-5CON-M10/0,5 DN	1424233	225	SACC-M 8FS-3CON-M-SW	1506888	273	SACC-M12FS-5CON-PG7-M SKIN	1559000	281
SACC-DSIV-M 8FS-3CON-L180-06	1524776	230	SACC-E-M8FS-8CON-M10/0,5	1424231	225	SACC-M 8FS-3QO-0,25-M	1441040	272	SACC-M12FS-5CON-PG9	1500787	280
SACC-DSIV-M 8FS-4CON-L 90	1526169	230	SACC-E-M8MS-5CON-M10/0,5 DN	1424234	225	SACC-M 8FS-3QO-0,5-M	1441066	272	SACC-M12FS-5CON-PG9-M	1681486	281
SACC-DSIV-M 8MS-3CON-L180-06	1524789	230	SACC-E-M8MS-8CON-M10/0,5	1424232	225	SACC-M 8FS-4CON-M	1681185	274	SACC-M12FS-5CON-PG9-M SKIN	1556836	281
SACC-DSIV-M 8MS-3CON-L 90	1440070	230	SACC-E-MINFS-3CON-PG13/0,5	1521407	265	SACC-M 8FS-4CON-M-0,34-SH	1542910	273	SACC-M12FS-6Q SH VARAN	1429143	89
SACC-DSIV-M 8MS-4CON-L 90	1440096	230	SACC-E-MINFS-4CON-PG13/0,5	1521423	265	SACC-M 8FS-4CON-M-SH	1506930	274	SACC-M12FS-8CON-PG 9-SH	1511860	282
SACC-DSIV-M12FS-5CON-L180	1694237	189	SACC-E-MINFS-5CON-PG13/0,5	1521449	265	SACC-M 8MS-4CON-M-SW	1506891	273	SACC-M12FS-8CON-PG9-M	1513347	281
SACC-DSIV-M12FS-8CON-L180	1556854	262	SACC-E-MINMS-3CON-PG13/0,5	1521410	265	SACC-M 8FS-4QO-0,25-M	1441053	272	SACC-M12FS-8Q SH	1553640	89
SACC-DSIV-M12FSB-5CON-L180	1515934	262	SACC-E-MINMS-4CON-PG13/0,5	1521436	265	SACC-M 8FS-4QO-0,5-M	1441079	272	SACC-M12FSB-5CON-PG9 SH AU	1507777	186
SACC-DSIV-M12FSB-5CON-L180 SH	1437180	189	SACC-E-MINMS-5CON-PG13/0,5	1521452	265	SACC-M 8MR-3CON-M	1699902	274	SACC-M12FSD-4Q SH	1553611	89
SACC-DSIV-M12FSD-4CON-L180	1534627	262	SACC-E-MS-12CON-M16/0,5 SCO	1556265	233	SACC-M 8MR-3CON-M-SW	1407583	273	SACC-M12FSD-4Q SH PN	1554526	89
SACC-DSIV-M12MS-5CON-L180	1694211	189	SACC-E-MS-17CON-M16/0,5 SCO	1556304	233	SACC-M 8MR-3CON-SH	1436453	274	SACC-M12FSS-3PECON-PG11-M	1404642	283
SACC-DSIV-M12MS-5CON-L180 SH	1437193	262	SACC-E-MS-4CON-M16/0,5 SCO	1523450	233	SACC-M 8MR-4CON-M	1554209	274	SACC-M12FST-3PECON-PG11-M	1404644	283
SACC-DSIV-M12MSB-5CON-L180	1514883	262	SACC-E-MS-5CON-M16/0,5 SCO	1520055	233	SACC-M 8MR-4CON-M-SW	1407585	273	SACC-M12MR-12SOL-PG 9-M	1404421	275
SACC-DSIV-M12MSB-5CON-L180 SH	1523420	189	SACC-E-MS-8CON-M16/0,5 SCO	1523492	233	SACC-M 8MR-4CON-SH	1436466	274	SACC-M12MR-12SOL-PG 9-M SH	1404412	275
SACC-DSIV-MS-5CON-L180SCOTHRSH	1439968	189	SACC-E-MSB-5CON-M16/0,5 SCO	1520013	233	SACC-M 8MS-3CON-M	1681156	274	SACC-M12MR-4CON-PG 7-SH	1694279	282
SACC-DSIV-MS-5CON-L90 SH SCO	1438037	189	SACC-E-MSD-4CON-M16/0,5 SCO	1551558	233	SACC-M 8MS-3CON-M-0,34-SH	1542884	273	SACC-M12MR-4CON-PG 7-VA	1553200	281
SACC-DSIV-MSB-5CON-L180 SCO THR	1552188	189	SACC-E-MU-M 5	1535901	224	SACC-M 8MS-3CON-M-SH	1506901	274	SACC-M12MR-4CON-PG 9-VA	1553226	281
SACC-DSIV-MSB-5CON-L90 SCO	1436615	189	SACC-E-MU-M 8	1504071	225	SACC-M 8MS-3CON-M-SW	1501252	273	SACC-M12MR-4CON-PG7	1681091	280
SACC-E-FS-12CON-M16/0,5 SCO	1556252	233	SACC-E-MU-M16	1504097	233	SACC-M 8MS-3QO-0,25-M	1441008	272	SACC-M12MR-4CON-PG7-M	1681101	281
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SACC-M12MR-5CON-PG11-DUO	1531044	284	SACC-MINFS-5CON-PG13/2,5	1456284	285	SACC-SQ-M12MSB-5CON-20/0,5	1441688	236	SACCEC-M12FSB-2CON-M16/0,5-910	1525597	191
SACC-M12MR-5CON-PG9-M	1513431	280	SACC-MINFS-5CON-PG16	1559071	285	SACC-SQ-M12MSB-5CON-25F/0,5	1440999	237	SACCEC-M12FSB-2CON-M16/1,0-910	1529607	191
	1681473	281	SACC-MINFS-5CON-PG16/2,5	1456268	285	SACC-SQ-M12MSD-4CON-20-L180	1456394	240	SACCEC-M12FSB-2CON-M16/2,0-910	1519574	191
SACC-M12MR-5CON-PG9-M SKINTOP	1561742	281	SACC-MINMR-3CON-PG 9	1521465	285	SACC-SQ-M12MSD-4CON-20/0,5	1441626	236	SACCEC-M12FSB-2CON-M16/5,0-910	1525610	191
SACC-M12MR-6Q SH VARAN	1429156	89	SACC-MINMR-4CON-PG 9	1521481	285	SACC-SQ-M12MSD-4CON-25F/0,5	1440957	237	SACCEC-M12FSB-5CON-M16/0,5-900	1529742	190
SACC-M12MR-8Q SH	1553653	89	SACC-MINMR-5CON-PG 9	1521504	285	SACCCBP-FS-12CON-M16/1,0-PVCSCO	1442188	245	SACCEC-M12FSB-5CON-M16/1,0-900	1529655	190
SACC-M12MRD-4Q SH	1553624	89	SACC-MINMR-5CON-PG11/2,5	1456242	285	SACCCBP-FS-12CON-M16/2,0-PVCSCO	1442191	245	SACCEC-M12FSB-5CON-M16/2,0-900	1529768	190
SACC-M12MRD-4Q SH PN	1554539	89	SACC-MINMR-5CON-PG13/2,5	1456255	285	SACCCBP-FS-17CON-M16/1,0-PVCSCO	1442269	245	SACCEC-M12FSB-5CON-M16/5,0-900	1529771	190
SACC-M12MS-12SOL-PG 9-M	1404419	275	SACC-MINMS-3CON-PG 9	1521287	285	SACCCBP-FS-17CON-M16/2,0-PVCSCO	1442272	245	SACCEC-M12MS-5CON-M16/ 0,5-920	1525623	192
SACC-M12MS-12SOL-PG 9-M SH	1404410	275	SACC-MINMS-3CON-PG13	1521290	285	SACCCBP-FS-4CON-M16/1,0-PUR SCO	1419302	245	SACCEC-M12MS-5CON-M16/ 1,0-920	1525636	192
SACC-M12MS-4CON-PG 7	1681088	280	SACC-MINMS-4CON-PG 9	1521326	285	SACCCBP-FS-4CON-M16/2,0-PUR SCO	1419315	245	SACCEC-M12MS-5CON-M16/ 2,0-920	1525649	192
SACC-M12MS-4CON-PG 7-M	1662528	281	SACC-MINMS-4CON-PG13	1521339	285	SACCCBP-FS-5CON-M16/1,0-PUR SCO	1419328	245	SACCEC-M12MS-5CON-M16/ 5,0-920	1525652	192
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SACC-M12MS-4CON-PG 9-SH	1501540	282	SACC-MINMS-5CON-PG13/2,5	1456213	285	SACCCBP-FS-5CON-PG9/2,0-920SCO	1437546	192	SACCEC-M12MSB-2CON-M16/5,0-910	1525571	191
SACC-M12MS-4CON-PG 9-VA	1553174	281	SACC-MINMS-5CON-PG16	1559039	285	SACCCBP-FS-5CON-PG9/5,0-920SCO	1437559	192	SACCEC-M12MSB-5CON-M16/0,5-900	1529629	190
SACC-M12MS-4CON-PG11-DUO-M	1507052	284	SACC-MINMS-5CON-PG16/2,5	1456239	285	SACCCBP-FS-8CON-M16/1,0-PUR SCO	1419357	245	SACCEC-M12MSB-5CON-M16/1,0-900	1530223	190
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SACC-M12MS-4SC SH CCL	1559767	187	SACC-MR-5SC SH SCO	1432651	279	SACCCBP-FSB-5CON-PG9/2,0-900SCO	1437627	190	SEALING PLUG 3X12 RD	1400238	44
SACC-M12MS-5CON-PG11 3-5 SH VA	1440012	282	SACC-MRB-2SC SH PB SCO	1432855	186	SACCCBP-FSB-5CON-PG9/5,0-900SCO	1437630	190	SEALING PLUG 5X12 RD	1400253	44
SACC-M12MS-5CON-DM 5-8 SH VA	1440025	282	SACC-MRB-5SC SH IB SCO	1432813	186	SACCCBP-FSD-4CON-PG9/1,0-933SCO	1437779	107	SEALING PLUG 6X16 RD	1400254	44
SACC-M12MS-5CON-PG 7	1662256	280	SACC-MS-12PCON SCO	1559592	275	SACCCBP-FSD-4CON-PG9/2,0-933SCO	1437782	107	SEALING PLUG 7X16 RD	1400255	44
SACC-M12MS-5CON-PG 7-M	1663116	281	SACC-MS-17PCON SCO	1559602	275	SACCCBP-FSD-4CON-PG9/5,0-933SCO	1437795	107	SEALING PLUG 8X16 RD	1400257	44
SACC-M12MS-5CON-PG 7-SH	1693416	282	SACC-MS-4CON-PG 7-M SCO	1542952	280	SACCCBP-M12FS-5CON-M16/0,5-920	1534465	192	SF-10KP004	1607355	347
SACC-M12MS-5CON-PG 7-VA	1553187	281	SACC-MS-4QO-0,34-M SCO	1521575	278	SACCCBP-M12FS-5CON-M16/1,0-920	1534478	192	SF-10KP320	1615961	318
SACC-M12MS-5CON-PG 9	1500774	280	SACC-MS-4QO-0,75-M SCO	1521591	278	SACCCBP-M12FS-5CON-M16/2,0-920	1534481	192	SF-10KP330	1615962	318
SACC-M12MS-5CON-PG 9 SH AU	1508352	187	SACC-MS-4SC M SCO	1432635	279	SACCCBP-M12FS-5CON-M16/5,0-920	1534494	192	SF-10KP350	1615963	318
SACC-M12MS-5CON-PG 9-M	1681460	281	SACC-MS-4SC SH SCO	1432729	279	SACCCBP-M12FSB-2CON-M16/0,5-910	1534384	191	SF-10KP360	1615964	318
SACC-M12MS-5CON-PG 9-SH	1694266	282	SACC-MS-5CON-PG 7-M SCO	1542965	280	SACCCBP-M12FSB-2CON-M16/1,0-910	1534397	191	SF-10KS004	1607356	347
SACC-M12MS-5CON-PG 9-VA	1553190	281	SACC-MS-5CON-PG 9-M SCO	1542978	280	SACCCBP-M12FSB-2CON-M16/2,0-910	1534407	191	SF-10KS320	1607303	318
SACC-M12MS-5CON-PG11-DUO	1662285	284	SACC-MS-5CON-PG11-DUO-M SCO	1543016	284	SACCCBP-M12FSB-2CON-M16/5,0-910	1534410	191	SF-10KS330	1607358	318
SACC-M12MS-5CON-PG11-DUO-M	1662748	284	SACC-MS-5SC M SCO	1432567	279	SACCCBP-M12FSB-2CON-M16/0,5-900	1534546	190	SF-10KS350	1607302	318
SACC-M12MS-5CON-PG11-M PWR	1404417	281	SACC-MS-5SC SH DN SCO	1432761	187	SACCCBP-M12FSB-5CON-M16/1,0-900	1534559	190	SF-10KS360	1607361	318
SACC-M12MS-5CON-PG7-M SKIN	1456466	281	SACC-MS-5SC SH SCO	1432648	279	SACCCBP-M12FSB-5CON-M16/2,0-900	1534562	190	SF-20KP004	1607376	374
SACC-M12MS-5CON-PG9-M SKIN	1556825	281	SACC-MSB-2SC SH PB SCO	1432842	186	SACCCBP-M12FSB-5CON-M16/5,0-900	1534575	190	SF-5EEN8A8000	1605492	373
SACC-M12MS-6Q SH VARAN	1429130	89	SACC-MSB-5SC SH IB SCO	1432800	186	SACCCBP-M12MS-5CON-M16/0,5-920	1534423	192	SF-5EP1N8A90A1	1605494	369
SACC-M12MS-8CON-PG 9-SH	1511857	282	SACC-MSQ-M12MS-25-3,2 SCO	1419959	238	SACCCBP-M12MS-5CON-M16/1,0-920	1534436	192	SF-5EP1N8A90A2	1605496	369
SACC-M12MS-8CON-PG9-M	1513334	281	SACC-MSQ-P-M12MS-25-2,7 SCO	1424131	287	SACCCBP-M12MS-5CON-M16/2,0-920	1534449	192	SF-5EP1N8A90A3	1605498	369
SACC-M16-KD-NUT-SH	1543236	89	SACC-PG9-KD-NUT-SH	1440177	188	SACCCBP-M12MS-5CON-M16/5,0-920	1534452	192	SF-5EP1N8A90DU	1605499	369
SACC-M12MSB-5CON-PG9 SH AU	1507764	186	SACC-PG9-SEAL CLM	1556320	296	SACCCBP-M12MSB-2CON-M16/0,5-910	1534342	191	SF-5EP1N8A9LB1	1605505	369
SACC-M12MSD-4CON-PG 7-SH	1521258	88	SACC-SQ-M12FS-12CON-20/0,5	1441710	236	SACCCBP-M12MSB-2CON-M16/1,0-910	1534355	191	SF-5EP1N8A9LB2	1605507	369
SACC-M12MSD-4CON-PG 9-SH	1521261	88	SACC-SQ-M12FS-12CON-25F/0,5	1441590	237	SACCCBP-M12MSB-2CON-M16/2,0-910	1534368	191	SF-5EP1N8A9LB3	1605508	369
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SACC-M12MSS-3PECON-PG11-M	1404641	283	SACC-SQ-M12FS-4CON-20-L180	1456420	240	SACCCBP-M12MSB-5CON-M16/1,0-900	1534517	190	SF-5EP1N8AA500	1620657	370
SACC-M12MST-3PECON-PG11-M	1404643	283	SACC-SQ-M12FS-4CON-20/0,5	1419797	236	SACCCBP-M12MSB-5CON-M16/2,0-900	1534520	190	SF-5EP1N8AA600	1620661	370
SACC-M16-KD-NUT-SH	1440164	190	SACC-SQ-M12FS-4CON-25F/0,5	1420003	237	SACCCBP-M12MSB-5CON-M16/5,0-900	1534533	190	SF-5EP1N8AC0A1	1605516	372
SACC-M16-SEAL CLM	1430394	296	SACC-SQ-M12FS-5CON-20-L180	1456446	240	SACCCBP-MS-12CON-M16/1,0-PVCSCO	1442227	245	SF-5EP1N8AC0A2	1607037	372
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SACC-MCI-M12MS-4CON	1440931	239	SACC-SQ-M12FS-5CON-25F/0,5	1440986	237	SACCCBP-MS-17CON-M16/1,0-PVCSCO	1442308	245	SF-5EP1N8AC0DU	1605517	372
SACC-MCI-M12MS-4CON/0,5	1440805	238	SACC-SQ-M12FS-8CON-20-L180	1408573	240	SACCCBP-MS-17CON-M16/2,0-PVCSCO	1442311	245	SF-5EP1N8ACLB1	1607039	372
SACC-MCI-M12MS-5CON	1419988	239	SACC-SQ-M12FS-8CON-20/0,5	1441697	236	SACCCBP-MS-4CON-M16/1,0-PUR SCO	1419399	245	SF-5EP1N8ACLB2	1607040	372
SACC-MCI-M12MS-5CON/0,5	1440818	238	SACC-SQ-M12FS-8CON-25F/0,5	1441574	237	SACCCBP-MS-4CON-M16/2,0-PUR SCO	1419386	245	SF-5EP1N8ACLB3	1607041	372
SACC-MCI-M12MS-8CON	1440928	239	SACC-SQ-M12FSB-5CON-20-L180	1456462	240	SACCCBP-MS-5CON-M16/1,0-PUR SCO	1419409	245	SF-5EP1N8ACLB4	1607042	372
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SACC-MCI-M12MSD-4CON	1440944	239	SACC-SQ-M12FSD-4CON-20/0,5	1441639	236	SACCCBP-MS-5CON-PG9/2,0-920SCO	1437588	192	SF-5EP1N8A80A1	1605524	368
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SF-6AS2000	1605557	347	SL-16KS010	1607956	392	SM-Z0004	1607937	410	ST-17P1N8A8K03S	1618683	308
SF-6CP2000	1605559	347	SL-1CKP010	1607911	392	SM-Z0012	1614349	409	ST-17P1N8A8K04S	1618684	308
SF-6CS2000	1605562	347	SL-1CKP020	1607912	392	SM-Z0025	1620558	412	ST-17P1N8A9003S	1607630	314
SF-7EE1N8AS000	1605567	373	SL-1CKP030	1607913	392	SM-Z0026	1620559	412	ST-17P1N8A9004S	1607631	314
SF-7EP1N8A90A1	1605568	369	SL-1CKP040	1607914	392	SM-Z0027	1620560	412	ST-17P1N8A9005S	1624530	314
SF-7EP1N8A90A2	1605570	369	SL-1CKP050	1607915	392	SM-Z0028	1620627	412	ST-17P1N8A9K02S	1613497	309
SF-7EP1N8A90A3	1605571	369	SL-1CKS010	1607916	392	SM-Z0029	1620628	412	ST-17P1N8A9K03S	1613896	309
SF-7EP1N8A90D1U	1605575	369	SL-1CKS020	1607917	392	SM-Z0030	1620629	412	ST-17P1N8A9K04S	1614532	309
SF-7EP1N8A9LB1	1605578	369	SL-1CKS030	1607918	392	ST-06KP010	1607577	319	ST-17P1N8AA400S	1620441	316
SF-7EP1N8A9LB2	1605580	369	SL-1CKS040	1607919	392	ST-06KP020	1607578	319	ST-17P1N8AA500S	1620458	316
SF-7EP1N8A9LB3	1605581	369	SL-1CKS050	1607920	392	ST-06KP030	1607579	319	ST-17P1N8ACK02S	1617863	310
SF-7EP1N8A9LB4	1605582	369	SL-5EP1N8A9001	1607499	390	ST-06KS010	1607580	319	ST-17P1N8ACK03S	1617872	310
SF-7EP1N8A9LDL	1605583	369	SL-5EP1N8A9002	1607500	390	ST-06KS020	1607581	319	ST-17P1N8ACK04S	1617873	310
SF-7EP1N8AA500	1620660	370	SL-5EPWN8AWA00	1615686	391	ST-06KS030	1607582	319	ST-17P1N8AH100S	1613541	317
SF-7EP1N8AA600	1620662	370	SL-5ES1N8A8001	1607501	390	ST-08P1N8A6100S	1618584	317	ST-17P1N8AW400S	1607634	311
SF-7EP1N8AC0A1	1607048	372	SL-5ES1N8A8002	1607503	390	ST-08P1N8A8003	1618995	313	ST-17P1N8AW500S	1619225	315
SF-7EP1N8AC0A2	1607049	372	SL-7EP1N8A9001	1607505	390	ST-08P1N8A8003S	1618999	312	ST-17P1N8AWK00S	1619202	315
SF-7EP1N8AC0A3	1607050	372	SL-7EP1N8A9002	1607506	390	ST-08P1N8A8004	1618996	313	ST-17P1N8AWQ00S	1607636	311
SF-7EP1N8AC0DU	1607051	372	SL-7EPWN8AWA00	1615687	391	ST-08P1N8A8004S	1619000	312	ST-17S1N8A6100S	1613542	317
SF-7EP1N8ACLB1	1607052	372	SL-7ES1N8A8001	1607507	390	ST-08P1N8A8005	1618997	313	ST-17S1N8A8003	1607641	313
SF-7EP1N8ACLB2	1607053	372	SL-7ES1N8A8002	1607508	390	ST-08P1N8A8005S	1619001	312	ST-17S1N8A8003S	1607642	312
SF-7EP1N8ACLB3	1607054	372	SL-Z0005	1607926	414	ST-08P1N8A8K02S	1618641	308	ST-17S1N8A8004	1607643	313
SF-7EP1N8ACLB4	1607055	372	SL-Z0007	1613484	408	ST-08P1N8A8K03S	1618648	308	ST-17S1N8A8004S	1607644	312
SF-7EP1N8ACLDL	1607056	372	SL-Z0008	1613485	408	ST-08P1N8A8K04S	1618649	308	ST-17S1N8A8005	1624531	313
SF-7EP1N8AWA00	1605589	370	SL-Z0010	1613487	408	ST-08P1N8A9003S	1619011	314	ST-17S1N8A8005S	1624532	312
SF-7EP1S8AWA00	1620620	370	SL-Z0011	1613488	408	ST-08P1N8A9004S	1619012	314	ST-17S1N8A8K02S	1613288	308
SF-7ES1N8A80A1	1605595	368	SL-Z0012	1613489	408	ST-08P1N8A9005S	1619013	314	ST-17S1N8A8K03S	1613324	308
SF-7ES1N8A80A1S	1618204	368	SL-Z0013	1613490	408	ST-08P1N8A9K02S	1617799	309	ST-17S1N8A8K04S	1613325	308
SF-7ES1N8A80A2	1605596	368	SL-Z0014	1613491	408	ST-08P1N8A9K03S	1617813	309	ST-17S1N8A9003S	1607647	314
SF-7ES1N8A80A2S	1618205	368	SL-Z0015	1613492	408	ST-08P1N8A9K04S	1617830	309	ST-17S1N8A9004S	1607649	314
SF-7ES1N8A80A3	1605597	368	SL-Z0016	1614348	409	ST-08P1N8AA400S	1620439	316	ST-17S1N8A9005S	1624533	314
SF-7ES1N8A80A3S	1618206	368	SM-20KP005	1605736	385	ST-08P1N8AA500S	1620456	316	ST-17S1N8A9K02S	1618756	309
SF-7ES1N8A80DU	1605602	368	SM-20KP006	1605738	385	ST-08P1N8ACK02S	1617925	310	ST-17S1N8A9K03S	1618757	309
SF-7ES1N8A80DUS	1618207	368	SM-20KP007	1605739	385	ST-08P1N8ACK03S	1617929	310	ST-17S1N8A9K04S	1618758	309
SF-7ES1N8A8LB1	1605605	368	SM-20KP008	1605741	385	ST-08P1N8ACK04S	1617932	310	ST-17S1N8AA400S	1620442	316
SF-7ES1N8A8LB1S	1618208	368	SM-36KP001	1605743	385	ST-08P1N8AH100S	1619034	317	ST-17S1N8AA500S	1620457	316
SF-7ES1N8A8LB2	1605607	368	SM-36KP002	1605744	385	ST-08P1N8AW400S	1619037	311	ST-17S1N8ACK02S	1618834	310
SF-7ES1N8A8LB2S	1618209	368	SM-36KP003	1605745	385	ST-08P1N8AW500S	1619219	315	ST-17S1N8ACK03S	1618835	310
SF-7ES1N8A8LB3	1605610	368	SM-36KP004	1605747	385	ST-08P1N8AWK00S	1619196	315	ST-17S1N8ACK04S	1618836	310
SF-7ES1N8A8LB3S	1618210	368	SM-36KP005	1605749	385	ST-08P1N8AWQ00S	1613286	311	ST-17S1N8AH100S	1613543	317
SF-7ES1N8A8LB4	1605614	368	SM-36KP006	1605750	385	ST-08S1N8A6100S	1619036	317	ST-17S1N8AW400S	1607653	311
SF-7ES1N8A8LB4S	1618211	368	SM-36KP007	1605752	385	ST-08S1N8A8003	1619003	313	ST-17S1N8AW500S	1619226	315
SF-7ES1N8A8LDL	1605617	368	SM-36KP008	1605754	385	ST-08S1N8A8003S	1619007	312	ST-17S1N8AWK00S	1619206	315
SF-7ES1N8A8LDLS	1618212	368	SM-36KP009	1607057	385	ST-08S1N8A8004	1619004	313	ST-17S1N8AWQ00S	1607654	311
SF-7ES1N8AY000	1605622	371	SM-36KS001	1605756	385	ST-08S1N8A8004S	1619008	312	ST-20KP010	1607655	363
SF-7ES1N8AYW00	1607429	371	SM-36KS002	1605758	385	ST-08S1N8A8005	1619005	313	ST-20KP020	1607656	363
SF-7MP2000	1605626	374	SM-36KS003	1605760	385	ST-08S1N8A8005S	1619009	312	ST-20KS010	1607657	363
SF-7MS2000	1605628	374	SM-36KS004	1605762	385	ST-08S1N8A8K02S	1613370	308	ST-20KS020	1607658	363
SF-7NS2000	1605631	374	SM-5EP1N8A9L32S	1613425	381	ST-08S1N8A8K03S	1613371	308	ST-3EP1N8A6100S	1613544	361
SF-7PP2000	1605634	374	SM-5EP1N8A9L33S	1613426	381	ST-08S1N8A8K04S	1613372	308	ST-3EP1N8A8003	1607663	357
SF-7PS2000	1605636	374	SM-5EP1N8A9L34S	1613427	381	ST-08S1N8A9003S	1619015	314	ST-3EP1N8A8003S	1607665	356
SF-7QP2000	1605639	374	SM-5EPWN8AA700	1620663	381	ST-08S1N8A9004S	1619016	314	ST-3EP1N8A8004	1607666	357
SF-7QS2000	1605643	374	SM-5EPWN8AWT00	1613517	384	ST-08S1N8A9005S	1619017	314	ST-3EP1N8A8004S	1607667	356
SF-7RP2000	1605646	374	SM-5ES1N8A8L32S	1613428	380	ST-08S1N8A9K02S	1618724	309	ST-3EP1N8A8005	1624534	357
SF-Z0003	1605657	407	SM-5ES1N8A8L33S	1613429	380	ST-08S1N8A9K03S	1618725	309	ST-3EP1N8A8005S	1624535	356
SF-Z0011	1605675	407	SM-5ES1N8A8L34S	1613430	380	ST-08S1N8A9K04S	1618726	309	ST-3EP1N8A8K02S	1618602	352
SF-Z0013	1605681	407	SM-5ES1N8A8S22	1613518	380	ST-08S1N8AA400S	1620440	316	ST-3EP1N8A8K03S	1618574	352
SF-Z0014	1607446	407	SM-5ES1N8A8S23	1613519	380	ST-08S1N8AA500S	1620455	316	ST-3EP1N8A8K04S	1618575	352
SF-Z0019	1607449	414	SM-5ES1N8A8S24	1613520	380	ST-08S1N8ACK02S	1618801	310	ST-3EP1N8A9003S	1607670	358
SF-Z0025	1607452	407	SM-5ES1N8AY000	1605823	392	ST-08S1N8ACK03S	1618802	310	ST-3EP1N8A9004S	1607671	358
SF-Z0026	1607454	407	SM-5ES1N8AY000S	1613524	392	ST-08S1N8ACK04S	1618805	310	ST-3EP1N8A9005S	1624536	358
SF-Z0027	1607455	409	SM-5ES1N8AYW00	1607532	383	ST-08S1N8AH100S	1619035	317	ST-3EP1N8A9K02S	1620614	353
SF-Z0028	1607456	409	SM-5ES1N8AYW00S	1613525	383	ST-08S1N8AW400S	1619038	311	ST-3EP1N8A9K03S	1618406	353
SF-Z0029	1607458	406	SM-7EP1N8A9L32S	1613431	381	ST-08S1N8AW500S	1619220	315	ST-3EP1N8A9K04S	1618690	353
SF-Z0030	1607459	406	SM-7EP1N8A9L33S	1613432	381	ST-08S1N8AWK00S	1619197	315	ST-3EP1N8AA400S	1620427	360
SF-Z0031	1607461	406	SM-7EP1N8A9L34S	1613433	381	ST-08S1N8AWQ00S	1619039	311	ST-3EP1N8AA500S	1620444	360
SF-Z0032	1607462	406	SM-7EPWN8AA700	1620664	384	ST-10KP010	1618255	319	ST-3EP1N8ACK02S	1618402	354
SF-Z0033	1607463	406	SM-7EPWN8AWT00	1613527	381	ST-10KP020	1618256	319	ST-3EP1N8ACK03S	1618407	354
SF-Z0035	1607465	406	SM-7ES1N8A8L32S	1613434	380	ST-10KP030	1618261	319	ST-3EP1N8ACK04S	1618760	354
SF-Z0039	1607470	406	SM-7ES1N8A8L33S	1613435	380	ST-10KS010	1618239	319	ST-3EP1N8AH100S	1613545	361
SF-Z0040	1607471	406	SM-7ES1N8A8L34S	1613436	380	ST-10KS020	1618251	319	ST-3EP1N8AW400S	1607674	355
SF-Z0041	1607472	406	SM-7ES1N8A8S22	1613528	380	ST-10KS030	1618254	319	ST-3EP1N8AW500S	1619209	359
SF-Z0042	1613666	407	SM-7ES1N8A8S23	1613529	380	ST-17P1N8A6100S	1613540	317	ST-3EP1N8AWK00S	1619186	359
SF-Z0047	1614689	406	SM-7ES1N8A8S24	1613530	380	ST-17P1N8A8003	1607624	313	ST-3EP1N8AWQ00S	1607675	355

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ST-3ES1N8A8004	1607684	357	ST-6EP1N8A8005S	1624547	356	ST-7ES1N8A8003S	1618634	352	ST-Z0017	1618049	412
ST-3ES1N8A8004S	1607685	356	ST-6EP1N8A8K02S	1618622	352	ST-7ES1N8A8K04S	1618635	352	ST-Z0018	1618050	412
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ST-3ES1N8A8005S	1624538	356	ST-6EP1N8A8K04S	1618624	352	ST-7ES1N8A9004S	1607765	358	ST-Z0020	1620622	412
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ST-3ES1N8A8K03S	1618408	352	ST-6EP1N8A9004S	1613565	358	ST-7ES1N8A9K02S	1618716	353	SZF 1-0,6X3,5	1204517	422
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ST-3ES1N8A9005S	1624539	358	ST-6EP1N8A9K04S	1618706	353	ST-7ES1N8AA500S	1620451	360			
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ST-3ES1N8A9K03S	1618694	353	ST-6EP1N8AA500S	1620450	360	ST-7ES1N8ACK03S	1618786	354			
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ST-3ES1N8ACK04S	1618764	354	ST-6EP1N8AW500S	1619215	359	ST-7ES1N8AWQ00S	1607769	355	TSD-M 3NM	1212225	297
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ST-5EP1N8A8K02S	1618614	352	ST-6ES1N8A9003S	1613583	358	ST-8EP1N8A9005S	1624653	358	VC-AL-T1-Z-M20-S	1583597	34
ST-5EP1N8A8K03S	1618615	352	ST-6ES1N8A9004S	1613584	358	ST-8EP1N8A9K02S	1618740	353	VC-AL-T1-Z-M25-S	1583607	34
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ST-5EP1N8A9004S	1607707	358	ST-6ES1N8A9K03S	1618709	353	ST-8EP1N8AA400S	1620437	360	VC-AL-T2-Z-M20-S	1583636	34
ST-5EP1N8A9005S	1624542	358	ST-6ES1N8A9K04S	1618710	353	ST-8EP1N8AA500S	1620454	360	VC-AL-T2-Z-M25-S	1583649	34
ST-5EP1N8A9K02S	1618703	353	ST-6ES1N8AA400S	1620434	360	ST-8EP1N8ACK02S	1618818	354	VC-AL-T3-R-M25-S	1583704	34
ST-5EP1N8A9K03S	1618702	353	ST-6ES1N8AA500S	1620449	360	ST-8EP1N8ACK03S	1618819	354	VC-AL-T3-R-M25/M20-S	1583717	34
ST-5EP1N8A9K04S	1618701	353	ST-6ES1N8ACK02S	1618780	354	ST-8EP1N8ACK04S	1618820	354	VC-AL-T3-R-M32-S	1583720	34
ST-5EP1N8AA400S	1620431	360	ST-6ES1N8ACK03S	1618781	354	ST-8EP1N8AH100S	1613610	361	VC-AL-T3-Z-M25-S	1583678	34
ST-5EP1N8AA500S	1620448	360	ST-6ES1N8ACK04S	1618782	354	ST-8EP1N8AW400S	1613611	355	VC-AL-T3-Z-M25/M20-S	1583681	34
ST-5EP1N8ACK02S	1618767	354	ST-6ES1N8AH100S	1613587	361	ST-8EP1N8AW500S	1620462	359	VC-AL-T3-Z-M32-S	1583694	34
ST-5EP1N8ACK03S	1618768	354	ST-6ES1N8AW400S	1613588	355	ST-8EP1N8AWK00S	1620460	359	VC-AL-T4-R-M25-S	1583762	34
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VC-K-KV-PG21-O	1885363	45	VC-T1-PR-D1	1607832	50	VS-09-A-EMV-S	1688463	184	VS-15-ST-DSUB-3P	1688201	214
VC-K-T1-R	1855092	35	VC-T2-PR-D1	1607835	50	VS-09-A-GC-BU/BU	1689695	185	VS-15-ST-DSUB-3P-LH	1655331	214
VC-K-T1-R-M20	1855097	35	VC-T3-PR-D1	1607838	50	VS-09-A-GC-ST/ST	1689705	185	VS-15-ST-DSUB-CD-MG	1688913	212
VC-K-T1-Z	1852930	35	VC-T4-PR-D1	1607841	50	VS-09-BU-DSUB-1P-4S	1689019	215	VS-15-ST-DSUB-CD-OG	1688939	212
VC-K-T1-Z-M20	1852935	35	VC-TFOS 2	1855814	36	VS-09-BU-DSUB-1P-4S-LH	1655302	215	VS-15-ST-DSUB-EG	1688874	210
VC-K-T2-IN (10-25) G	1583880	35	VC-TFS 2	1852846	33	VS-09-BU-DSUB-2P	1688421	214	VS-15-ST-DSUB-ER	1688081	211

Type	Order No.	Page	Type	Order No.	Page	Type	Order No.	Page	Type	Order No.	Page
VS-15-ST-DSUB-FK	1688890	213	VS-CT-RJ45-H	1653265	78	VS-PNRJ45-PNRJ45R-93G-1,0	1402505	108	VS-SCDU-GOF-FA-IP20	1658529	132
VS-15-ST-DSUB-HD-CD-B	1655195	212	VS-EC-MSDB SH SCO	1407011	205	VS-PNRJ45-PNRJ45R-93G-2,0	1402508	108	VS-SCRJ-A-T-IP67	1658545	127
VS-15-ST-DSUB-HD-EG	1655179	210	VS-FSBPXS-OE-94F/0,5	1424135	93	VS-PP-19-1HE-16-F	1652994	122	VS-SCRJ-GOF-BU/BU	1652978	127
VS-15-ST-DSUB-HD-ER	1655153	211	VS-FSBPXS-OE-94F/1,0	1424148	93	VS-PP-F-RJ45-CAT6	1658118	120	VS-SCRJ-GOF-FA-IP20	1657070	132
VS-15-ST-DSUB-LH-B	1654808	211	VS-FSBPXS-OE-94F/2,0	1424151	93	VS-PP-F-SCRJ	1658121	134	VS-SCRJ-GOF-FA-IP67	1657083	132
VS-15-ST-DSUB/16-MPT-0,5	1688078	210	VS-FSBPXS-OE-94F/5,0	1424164	93	VS-PPC-C1-MNNA-4Q5-EMC	1403366	80	VS-SCRJ-GOF-KU	1654358	136
VS-15-T-20-1-S-A	1655687	218	VS-FSBPYS-OE-94I/0,5 SCO	1407504	93	VS-PPC-C1-MNNA-8Q5-EMC	1403367	80	VS-SCRJ-HCS-FA-IP20	1654866	130
VS-15-T-20-1-S-S	1655674	218	VS-FSBPYS-OE-94I/1,0 SCO	1407505	93	VS-PPC-C1-PC-ROBK-L	1405293	83	VS-SCRJ-HCS-FA-IP20-PN	1404087	131
VS-15-T-2PG11	1688052	219	VS-FSBPYS-OE-94I/2,0 SCO	1407506	93	VS-PPC-C1-RJ45-MNNA-8I10G	1422108	80	VS-SCRJ-HCS-FA-IP67	1657012	130
VS-15-TI-2EMV	1688065	219	VS-FSBPYS-OE-94I/5,0 SCO	1407507	93	VS-PPC-C1-RJ45-MNNA-PG9-4Q5	1608100	80	VS-SCRJ-PC	1653757	127
VS-25-A	1689750	220	VS-FSDBPS-IP20-93G-LI/2,0	1419146	109	VS-PPC-C1-RJ45-MNNA-PG9-8Q5	1608016	80	VS-SCRJ-POF-FA-IP20	1654879	127
VS-25-A-EMV-S	1689763	220	VS-FSDBPS-OE-93G-LI/1,0	1419135	109	VS-PPC-C1-RJ45-POBK-8I10G	1422205	80	VS-SCRJ-POF-FA-IP67	1657009	127
VS-25-A-GC-BU/BU	1689734	221	VS-FSDBPS-OE-93G-LI/2,0	1419136	109	VS-PPC-C1-RJ45-POBK-PG9-4Q5	1608126	80	VS-SCRJ-POF-KONFTOOL-POLISH	1658820	170
VS-25-A-GC-ST/ST	1689747	221	VS-FSDBPS-OE-93G-LI/5,0	1419137	109	VS-PPC-C1-RJ45-POBK-PG9-8Q5	1657834	80	VS-SCRJ-POF-POLISH	1655467	170
VS-25-BU-DSUB-3P-10S	1690008	215	VS-GOF-FA-KONFTOOL-ADHESIVE	1658244	171	VS-PPC-C1-SCRJ-MNNA-PG9-A3C-C	1608045	131	VS-ST-CD-1,0/14,8/0,2	1688971	216
VS-25-BU-DSUB-3P-10S-LH	1655412	215	VS-GOF-FA-KONFTOOL-EU	1658228	171	VS-PPC-C1-SCRJ-MNNA-PG9-A4D-C	1608032	128	VS-ST-CD-1,0/14,8/0,5	1688968	216
VS-25-BU-DSUB-4P-5S	1655373	215	VS-GOF-FA-KONFTOOL-US	1658231	171	VS-PPC-C1-SCRJ-POBK-PG9-A3C-C	1657863	131	VS-ST-CD-HD-1,0/13,5/0,37	1655276	216
VS-25-BU-DSUB-4P-5S-LH	1655399	215	VS-IET-DSUB-SIGNAL-HD	1658503	216	VS-PPC-C1-SCRJ-POBK-PG9-A4D-C	1657850	128	VS-ST-LH-3,6/18/3,8	1655467	217
VS-25-BU-DSUB-5P	1689983	214	VS-IET-DSUB-SIGNAL-STD	1658794	216	VS-PPC-C2-MSTB-MNNA-P13-A5-SP	1608074	124	VS-ST-LK-3,6/22,4/2,6	1688243	217
VS-25-BU-DSUB-5P-LH	1655438	214	VS-IP20-FPN-93G-LI/2,0	1419142	108	VS-PPC-C2-MSTB-POBK-P13-A5-SP	1657892	124	VS-ST-LK-3,6/22,4/4,6	1688269	217
VS-25-BU-DSUB-CD-B	1689967	212	VS-IP20-OE-93E-LI/1,0	1405633	98	VS-PPC-C2-MSTB-POBK-P13-B5-SP	1608236	124	VS-ST-SC-2,6	1655483	217
VS-25-BU-DSUB-CD-G	1689941	212	VS-IP20-OE-94B-LI/5,0	1407699	100	VS-PPC-C2-PC-ROBK	1405125	124	VS-ST-LW-6-F-9010	1653029	134
VS-25-BU-DSUB-EG	1689909	210	VS-IP20/10G-IP20/10G-94F/1	1418866	102	VS-PPC-C2-PC-ROBK-L	1405303	124	VS-TO-IW-2-F-9010	1653016	122
VS-25-BU-DSUB-ER	1689886	211	VS-IP20/10G-IP20/10G-94F/5	1418879	102	VS-PPC-C2-PC67-MNNA	1404045	124	VS-TO-OW-2-F-9010	1653003	122
VS-25-BU-DSUB-FK	1689925	213	VS-IP67-IP20-93E-LI/2,0	1405921	98	VS-PPC-F1-PC-POBK	1405316	80	VS-TO-RO-MCBK-F1411/1411	1404281	118
VS-25-BU-DSUB-HD-CD-B	1655247	212	VS-IP67-IP20-94B-LI/5,0	1407932	100	VS-PPC-F1-RJ45-MNNA-1C-F	1405222	83	VS-TO-RO-MCBK-F1411/1413	1404333	118
VS-25-BU-DSUB-HD-EG	1655221	210	VS-IP67-OE-93E-LI/2,0	1405675	98	VS-PPC-F1-RJ45-MNNA-1R-F	1405358	83	VS-TO-RO-MCBK-F1417/1413	1404346	134
VS-25-BU-DSUB-HD-ER	1655205	211	VS-IP67-OE-94B-LI/5,0	1407725	100	VS-PPC-F1-RJ45-MNNA-1R-PHA	1608029	85	VS-TO-RO-MCBK-F1417/1417	1404320	134
VS-25-BU-DSUB-LH-B	1654837	211	VS-M12FSBP-IP20-93E-LI/2,0	1406085	99	VS-PPC-F1-RJ45-POBK-1R-PHA	1657847	85	VS-TO-RO-MCBK-F1418/1418	1404278	118
VS-25-BU-DSUB/25-MPT-0,5	1689776	210	VS-M12FSBP-IP20-94B-LI/5,0	1412082	101	VS-PPC-F1-RJ45-POBK-1R-F	1608197	83	VS-TO-RO-MCBK-F1421/1421	1404294	118
VS-25-DSUB-20-LI-1,0	1656291	218	VS-M12FSBP-IP67-93E-LI/2,0	1406247	99	VS-PPC-F1-SCRJ-MNNA-1C-F	1405235	128	VS-TO-RO-MCBK-F1422/1422	1404304	118
VS-25-DSUB-20-LI-2,0	1656301	218	VS-M12FSBP-IP67-94B-LI/5,0	1412231	101	VS-PPC-F1-SCRJ-MNNA-1R-F	1405374	128	VS-V1-C-LC-MNNA-PG9-A1-G	1419190	133
VS-25-DSUB-20-LI-5,0	1656314	218	VS-M12FSBP-OE-93E-LI/2,0	1405866	99	VS-PPC-F1-SCRJ-MNNA-1RP	1608061	128	VS-V1-C-LC-MNNA-PG9-B1-G	1419191	133
VS-25-GC-BU/BU	1652680	213	VS-M12FSBP-OE-94B-LI/5,0	1407877	101	VS-PPC-F1-SCRJ-POBK-1RF	1608210	128	VS-V1-C-PC-POBK	1419183	82
VS-25-GC-ST/ST	1652693	213	VS-M12FSBP-PPC/ME-93E-LI/2,0	1406519	99	VS-PPC-F1-SCRJ-POBK-1RP	1657889	128	VS-V1-C-RJ45-MNNA-PG9-8I-5-S	1419182	82
VS-25-KU-BU/BU	1689679	221	VS-M12FSBP-PPC/ME-94B-LI/5,0	1412503	101	VS-PPC-F2-MSTB-MNNA-1C-SPSA5	1405248	124	VS-V1-C-SCRJ-MNNA-PG9-A1-G	1419187	133
VS-25-KU-ST/ST	1689682	221	VS-M12FSBP-PPC/PL-93E-LI/2,0	1406603	99	VS-PPC-F2-MSTB-MNNA-1C-SPSB5	1405167	124	VS-V1-C-SCRJ-MNNA-PG9-A4A-G	1419189	129
VS-25-SD	1652211	219	VS-M12FSBP-PPC/PL-94B-LI/5,0	1412590	101	VS-PPC-F2-MSTB-MNNA-1R-P	1608087	124	VS-V1-C-SCRJ-MNNA-PG9-B1-G	1419188	133
VS-25-SET-EMV	1652208	221	VS-M16 (3-6)	1688450	219	VS-PPC-F2-MSTB-MNNA-1R-SPSA5	1608249	124	VS-V1-F-LC-MNNA-PG9-C-S-A1	1420210	133
VS-25-SET-STD	1652198	220	VS-M16 (5-9)	1688447	219	VS-PPC-F2-MSTB-MNNA-1R-SPSB5	1608252	124	VS-V1-F-LC-MNNA-PG9-C-S-B1	1420223	133
VS-25-ST-DSUB-3P-10S	1689996	215	VS-M20 (5-13)	1652127	219	VS-PPC-F2-MSTB-POBK-1R-P	1608281	124	VS-V1-F-PC-POBK	1419186	86
VS-25-ST-DSUB-3P-10S-LH	1655425	215	VS-MP-PPC/CG-10G	1403678	117	VS-PPC-F2-MSTB-POBK-1R-SPSA5	1608294	124	VS-V1-F-RJ45-MNNA-1-C-S-JI-S	1419185	86
VS-25-ST-DSUB-4P-5S	1655386	215	VS-MP-PPC/CG-FO	1404319	135	VS-PPC-F2-MSTB-POBK-1R-SPSB5	1608304	124	VS-V1-F-RJ45-MNNA-1-C-S-JJ-S	1419184	86
VS-25-ST-DSUB-4P-5S-LH	1655409	215	VS-MP-PPC/CG-PO	1403681	117	VS-PPC-F2-PC-POBK	1405329	124	VS-V1-F-SCRJ-MNNA-PG9-C-S-A1	1420197	129
VS-25-ST-DSUB-5P	1689970	214	VS-MP-PPC/CG-PO/10G	1403682	117	VS-PPC-J-1-SCRJ-MNBK	1405206	136	VS-V1-F-SCRJ-MNNA-PG9-C-S-B1	1420207	133
VS-25-ST-DSUB-5P-LH	1655441	214	VS-MP-PPC/CG-PO/FO	1404321	135	VS-PPC-J-1220-1227-1020-...	1405484	125			
VS-25-ST-DSUB-CD-B	1689954	212	VS-MP-PPC/CG-XL-10G	1403686	117	VS-PPC-J-1220-1227-1020-0,2	1404799	125			
VS-25-ST-DSUB-CD-G	1689938	212	VS-MP-PPC/CG-XL-FO	1404324	135	VS-PPC-J-1226-1227-1021-...	1405497	125			
VS-25-ST-DSUB-EG	1689899	210	VS-MP-PPC/CG-XL-PO/10G	1403688	117	VS-PPC-J-1226-1227-1021-0,2	1404812	125			
VS-25-ST-DSUB-ER	1689873	211	VS-MP-PPC/CG-XL-PO/FO	1404325	135	VS-PPC-J-4X-1227	1405387	125			
VS-25-ST-DSUB-FK	1689912	213	VS-MP-PPC/PPC-1G	1403685	117	VS-PPC-J-M	1405390	125			
VS-25-ST-DSUB-HD-CD-B	1655250	212	VS-MP-PPC/PPC-PO	1403684	117	VS-PPC/ME-IP20-93B-LI/5,0	1416138	106			
VS-25-ST-DSUB-HD-EG	1655234	210	VS-MSTBAH 2,5/ 5-GB-5,08-BK-A	1657915	124	VS-PPC/ME-IP20-93E-LI/5,0	1405992	98	WIREFOX-D SR 6-1	1212511	422
VS-25-ST-DSUB-HD-ER	1655218	211	VS-MSTBAH 2,5/ 5-GB-5,08-RD-B	1609549	124	VS-PPC/ME-IP20-94B-LI/5,0	1407990	100	WIREFOX-PN POF	1405249	170
VS-25-ST-DSUB-LH-B	1654824	211	VS-MSTBVA 2,5/ 5-GB-5,08-BK-A	1609565	124	VS-PPC/ME-OE-93E-LI/5,0	1405743	98	WR-DA-M32/PG29	1644847	51
VS-25-ST-DSUB/25-MPT-0,5	1689789	210	VS-MSTBVA 2,5/ 5-GB-5,08-RD-B	1609581	124	VS-PPC/ME-OE-94B-LI/5,0	1407783	100	WR-DA-M40	1644876	51
VS-25-T-20-1-S-A	1655700	218	VS-OE-OE-937/...	1402687	105	VS-PPC/PL-IP20-93B-LI/5,0	1416141	107	WR-DA-PG16	1686685	51
VS-25-T-20-1-S-S	1655690	218	VS-OE-OE-93A-100,0	1416392	105	VS-PPC/PL-IP20-93E-LI/5,0	1406030	99	WR-DA-PG21	1686698	51
VS-25-T-2M20	1689792	219	VS-OE-OE-93B-100,0	1416389	105	VS-PPC/PL-IP20-94B-LI/5,0	1412024	101	WR-OEF-M40	1644892	51
VS-25-TI-2 EMV	1689802	219	VS-OE-OE-93B/...	1417362	105	VS-PPC/PL-OE-93E-LI/5,0	1405772	99	WR-OEF-PG16	1853638	51
VS-93A/...	1416486	105	VS-OE-OE-93C-100,0	1416376	105	VS-PPC/PL-OE-94B-LI/5,0	1407819	101	WR-OEF-PG21	1853612	51
VS-94A/...	1416415	96	VS-OE-OE-93C/...	1417491	105	VS-PSC 1,5/3-M	1689310	215	WR-OEF-PG29	1853641	51
VS-94D/...	1416444	96	VS-OE-OE-93E-100,0	1416295	96	VS-PSC 1,5/3-M PE	1689336	215	WR/M40-25M	1644889	51
VS-94E/...	1416460	96	VS-OE-OE-93E/...	1417320	96	VS-PSC 1,5/5-M	1688825	215	WR/PG16-50M	1666841	51
VS-A-F-IP67	1653744	83	VS-OE-OE-93R-100,0	1416363	105	VS-PSC 1,5/5-M PE	1689323	215	WR/PG21-50M	1666867	51
VS-A-F-IP67-BK	1658668	83	VS-OE-OE-93R/...	1417388	105	VS-RJ45-RJ45-94P-0,3	1417993	110	WR/PG29-25M	1666854	51
VS-BH-M12FS-8CON-RJ45/ 90	1405057	94	VS-OE-OE-94A-100,0	1416305	96	VS-RJ45-RJ45-94P-0,5	1418028	110			
VS-BH-M12FS-8CON-RJ45/180	1405060	94	VS-OE-OE-94B-100,0	1416567	96	VS-RJ45-RJ45-94P-1,0	1418057	110			
VS-BH-M12FSD-RJ45/180	1657494	94	VS-OE-OE-94B/...	1417333	96	VS-RJ45-RJ45-94P-2,0	1418109	110			
VS-BH-M12FSD-RJ45/90	1657621	94	VS-OE-OE-94C-100,0	1416318	96	VS-RJ45-RJ45-94P-5,0	1418141	110			
VS-BH-M12FSX-10G-RJ45/180	1404549	94	VS-OE-OE-94C/...	1417346	96	VS-RJ45-RJ45R-94P-0,3	1418002	110			
VS-BH-M12FSX-10G-RJ45/90	1404548	94	VS-OE-OE-94D-100,0	1416334	96	VS-RJ45-RJ45R-94P-0,5	1418031	110			
VS-BU-CD-1,0/14,4/0,2	1688997	216	VS-OE-OE-94E-100,0	1416350	96	VS-RJ45-RJ45R-94P-1,0	1418070	110			
VS-BU-CD-1,0/14,4/0,5	1688984	216	VS-OE-PPC/ME-93B-LI/5,0	1416162	106	VS-RJ45-RJ45R-94P-2,0	1418125	110			
VS-BU-CD-HD-1,0/13,5/0,37	1655263	216	VS-OE-PPC/PL-93B-LI/5,0	1416168	107	VS-RJ45-RJ45R-94P-5,0	1418154	110			
VS-BU-LH-3,6/18/3,8	1655454	217	VS-PG11 (3- 7)	1688117	219	VS-RJ45R-RJ45R-94P-0,3	1418015	110			
VS-BU-LK-3,6/22,8/2,6	1688256	217	VS-PG11 (5-10)	1688104	219	VS-RJ45R-RJ45R-94P-0,5	1418044	110			
VS-BU-LK-3,6/22,8/4,6	1688272	217	VS-PN-RJ45-5-Q/IP20	1658435	78	VS-RJ45R-RJ45R-94P-1,0	1418099	110			
VS-BU-SC-2,6	1655										

