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PHOENIX CONTACT
INSPIRING INNOVATIONS

4

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Sensor/Actuator Cabling and Industrial Plug-in Connectors 2013/2014 EN

Sensor/Actuator Cabling and Industrial Plug-in Connectors

2013/2014

4



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INSPIRING INNOVATIONS



PCB connection technology and electronics housing
- PCB terminal blocks and plug-in connectors
- Electronics housing



Connection technology for field devices
- Plug-in connectors
- Cables and connectors



Modular terminal blocks
- Modular terminal blocks



Sensor/actuator cabling and industrial 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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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.

Sensor/actuator cabling



For M5 and M8 flush-type plug-in connectors with litz wires,
see Catalog 2



For M12 flush-type plug-in connector with litz wire,
see Catalog 2



For 7/8" flush-type plug-in connectors with litz wires,
see Catalog 2



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For M17 to M58 plug-in connectors for signals and power, for assembly,
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Sensor/actuator cabling



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Data plug-in connectors and cables



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Heavy-duty plug-in connectors



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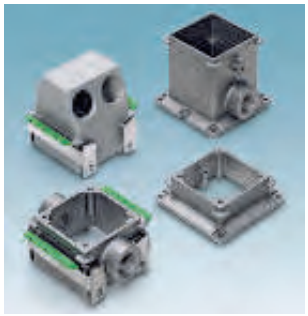

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Cable marking
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SACB
SAC

Sensor/actuator cabling

A one-stop-shop for the entire range of solutions for field installation

With distributed connection technology, passive distributor systems connect the I/O devices to the PLC controller. Phoenix Contact offers the most comprehensive range of sensor/actuator cabling on the market. Passive M5, M8, M12, and 7/8" components consisting of distributor boxes, cables, and plug-in connectors for assembly are available from stock.

The 1/2" and 7/8" range for the North American market can be found on our website.

Customer/sector-specific solutions

In order to be able to respond flexibly to your needs, cables and boxes can be manufactured to suit with specific cable lengths and types (e.g., a different sheath color).

For increased requirements, such as the railway or food industry, the long-term use of products outdoors and cables for flexible use in drag chains or robot applications, Phoenix Contact offers a range of suitable product series.

Faster assembly with the SPEEDCON rapid interlock system

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%.

Due to the 100% compatibility, redundant warehousing is eliminated.

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User-friendly configuration

By entering technical parameters, you can quickly and easily find your product for sensor/actuator cabling.



EPLAN data

We support you in the creation of circuit diagrams with EPLAN Electric P8.

The required product data can be found on our website under “Service and Support”.



Customized solutions

The Service Center for industrial plug-in connectors at Phoenix Contact will transform your requirements into a custom product within just a few days.



Correct connection

Always the right connection technology for your application: IDC, spring-cage, pierce or screw connection offer various advantages that can be utilized in your specific application.



Easy detection

A particularly user-friendly feature is diagnostics in the event of an error. LEDs can be used to detect errors in the signal path quickly and easily. This can directly increase your machine availability.



Safe transmission

With 360° shielded plug-in connectors and cables, you can transmit signals reliably even in critical EMI applications.



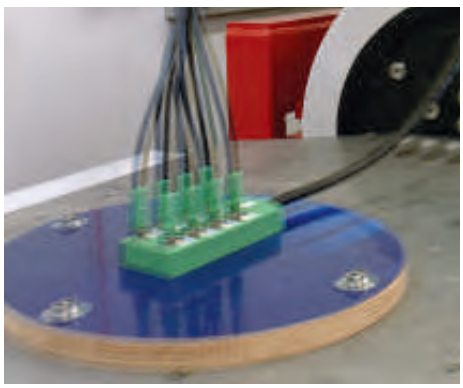
SPEEDCON: compatibility

The SPEEDCON rapid interlock system is based on the principle of "Plug & Turn" and is 100% compatible with all M12 plug-in connectors with M12x1 thread on the market.



SPEEDCON: fast assembly

Just half a turn and the SPEEDCON M12 rapid interlock system creates the perfect plug-in connection. Reduce your assembly time by 90%.



SPEEDCON: safe operation

SPEEDCON meets all the electrical and mechanical properties of a conventional M12 plug-in connection, plus all accepted standards and requirements.



High standard

Our standard PUR cables are resistant to aggressive media. They are halogen, PVC, and silicone-free plus flame-retardant and are suitable for use in drag chains.



Cables for every application

Whether extreme mechanical strain, chemical loads, UV and atmospheric influences or welding sparks - we have the right cable for your requirements.



High-quality materials and innovative designs

For increased requirements, we have developed solutions which meet the needs of your application through innovative design and material selection.





Signal plug-in connectors

Plug-in connectors for signal transmission are available in types M8 and M12 with various connection technologies.



Power plug-in connectors

Plug-in connectors for power transmission are available in types M12 to M40 and 7/8".



Valve plug-in connectors

The product range consists of valve plug-in connectors with various types (A, B, BI, C, CI, AD) and protective circuits.



Insulation displacement connection

With QUICKON connection technology, an insulation displacement contact cuts through the conductor insulation and makes spring-loaded, vibration-resistant, and gas-tight contact with the litz wire.

Advantage:

– Fastest connection on the market



Spring-cage connection

Stranded conductors with ferrules or solid conductors can be quickly and easily inserted directly into the connection without tools.

Advantage:

– Vibration and shock-proof connection



Piercecon® connection

With Piercecon® connection technology, the electrical connection is made by a contact pin that axially pierces the litz wires.

Advantage:

– Most compact design on the market



Screw connection

Just like spring-cage connection technology, connection can be made irrespective of the conductor insulation material.

Advantage:

– Multi-conductor connection



SPEEDCON: fast, safe, and compatible

The SPEEDCON rapid interlock system is 100% compatible with all M12 plug-in connectors with standard M12x1 thread. The assembly time is reduced by 90%.



High packing density

High-pos. versions are available in types M8 and M12, which feature a compact design. This means that up to 8 positions can be accommodated in type M8 and up to 17 positions in type M12.

M8, insulation displacement connection



0.08 mm² - 0.25 mm², 3, 4-pos.



0.25 mm² - 0.5 mm², 3, 4-pos.

	Technical data		Technical data	
	3-pos.	4-pos.	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	IP65/67		IP65/67	
Connection method	Insulation displacement connection		Insulation displacement connection	
Cable diameter	2.5 mm ... 5 mm ±0.2 mm		2.5 mm ... 5 mm ±0.2 mm	
Electrical data				
Rated voltage	60 V	30 V	60 V	30 V
Rated current	4 A		4 A	
Volume resistance	≤ 5 mΩ		≤ 5 mΩ	
Insulation resistance	≥ 100 MΩ		≥ 100 MΩ	
Material data				
Material contact / contact surface	CuSn / Ni/Au		CuSn / Ni/Au	
Contact carrier material	TPU GF		TPU GF	
Inflammability class according to UL 94	HB		HB	
Temperature data				
Plug / socket [°C]	-25 ... 80		-25 ... 80	

	Ordering data				Ordering data			
Description	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	3-pos.		4-pos.		3-pos.		4-pos.	
Plug-in connectors								
Socket, straight	**1441040**	1	**1441053**	1	**1441066**	1	**1441079**	1
Plug, straight	**1441008**	1	**1441011**	1	**1441024**	1	**1441037**	1

M8, screw connections



Unshielded, 3, 4-pos.



Shielded, 3, 4-pos.

	Technical data		Technical data	
	3-pos.	4-pos.	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	Screw connection		Screw connection	
Cable diameter	3.5 mm ... 5 mm		3.5 mm ... 5.5 mm	
Connection cross section [mm²]	0.14 mm² ... 0.5 mm²		0.14 mm² ... 0.5 mm²	
Electrical data				
Rated voltage	60 V	30 V	60 V	30 V
Rated current	4 A		4 A	
Volume resistance	≤ 3 mΩ		≤ 3 mΩ	
Insulation resistance	≥ 100 MΩ		≥ 100 MΩ	
Material data				
Material contact / contact surface	CuZn / Au		CuSn / Au	
Contact carrier material	PA		PUR / PA66	
Inflammability class according to UL 94	HB		HB	
Temperature data				
Plug / socket [°C]	-40 ... 85		-40 ... 85	

	Ordering data				Ordering data			
Description	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	3-pos.		4-pos.		3-pos.		4-pos.	
Plug-in connectors								
Socket, straight	**1506888**	1	**1506891**	1	**1542907**	1	**1542910**	1
Plug, straight	**1501252**	1	**1501265**	1	**1542884**	1	**1542897**	1
Socket, angled	**1407582**	1	**1407584**	1				
Plug, angled	**1407583**	1	**1407585**	1				

	Accessories			Accessories		
Pressure screw and seal, for cable diameter:						
2.5 mm ... 3.5 mm	**SACC-M 8-SET/2,2-3,5**	**1436945**	5			

M8, solder connection



Unshielded, 3, 4-pos.



Shielded, 3, 4-pos.

	Technical data		Technical data	
	3-pos.	4-pos.	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	Solder connection		Solder connection	
Cable diameter	3.5 mm ... 5 mm		3.5 mm ... 5 mm	
Connection cross section [mm²]	0.08 mm² ... 0.25 mm²		0.08 mm² ... 0.25 mm²	
Electrical data				
Rated voltage	60 V	30 V	60 V	30 V
Rated current	4 A		4 A	
Volume resistance	≤ 3 mΩ		≤ 3 mΩ	
Insulation resistance	≥ 100 MΩ		≥ 100 MΩ	
Material data				
Material contact / contact surface	CuSn / Au		CuSn / Au	
Contact carrier material	PUR / PA66		PUR / PA66	
Inflammability class according to UL 94	V0		HB	
Temperature data				
Plug / socket [°C]	-40 ... 85		-40 ... 85	

	Ordering data				Ordering data			
Description	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	3-pos.		4-pos.		3-pos.		4-pos.	
Plug-in connectors								
Socket, angled	**1529399**	1	**1513444**	1	**1436479**	1	**1436482**	1
Plug, angled	**1699902**	1	**1554209**	1	**1436453**	1	**1436466**	1
Socket, straight	**1681172**	1	**1681185**	1	**1506927**	1	**1506930**	1
Plug, straight	**1681156**	1	**1681169**	1	**1506901**	1	**1506914**	1

	Accessories			Accessories		
Pressure screw and seal, for cable diameter:						
2.5 mm ... 3.5 mm	**SACC-M 8-SET/2,2-3,5**	**1436945**	5			

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	[°C]	-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 connectors									
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				

M12, insulation displacement connection



0.14 mm² ... 0.34 mm², 4-pos.



0.34 mm² ... 0.75 mm², 4-pos.

		Technical data	Technical data
		4-pos.	**4-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		IP65/67	IP65/67
Connection method		Insulation displacement connection	Insulation displacement connection
Cable diameter		3.5 mm ... 6 mm	4 mm ... 8 mm
Electrical data			
Rated voltage		125 V	250 V
Rated current		4 A	4 A
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Insulation resistance		≥ 100 MΩ	≥ 100 MΩ
Material data			
Material contact / contact surface		CuSn / Ni/Au	CuSn / Ni/Au
Contact carrier material		TPU	TPU
Inflammability class according to UL 94		V0	V0
Temperature data			
Plug / socket	[°C]	-25 ... 80	-25 ... 80

		Ordering data			Ordering data		
Description	Coding	**Type**	**Order No.**	Pcs. / Pkt.	**Type**	**Order No.**	Pcs. / Pkt.
Plug-in connector, with plastic knurl							
Socket, straight	A - standard	**SACC-M12FS-4QO-0,34**	**1641701**	1	**SACC-M12FS-4QO-0,75**	**1641756**	1
Plug, straight	A - standard	**SACC-M12MS-4QO-0,34**	**1641714**	1	**SACC-M12MS-4QO-0,75**	**1641769**	1
Plug-in connector, with metal knurl, SPEEDCON							
Socket, straight	A - standard	**SACC-FS-4QO-0,34-M SCO**	**1521588**	1	**SACC-FS-4QO-0,75-M SCO**	**1521601**	1
Plug, straight	A - standard	**SACC-MS-4QO-0,34-M SCO**	**1521575**	1	**SACC-MS-4QO-0,75-M SCO**	**1521591**	1
Plug-in connector, with metal knurl							
Socket, straight	A - standard	**SACC-M12FS-4QO-0,34-M**	**1641688**	1	**SACC-M12FS-4QO-0,75-M**	**1641772**	1
Plug, straight	A - standard	**SACC-M12MS-4QO-0,34-M**	**1641691**	1	**SACC-M12MS-4QO-0,75-M**	**1641785**	1
Plug-in connector, with stainless steel knurl							
Socket, straight	A - standard	**SACC-M12FS-4QO-0,34-VA**	**1440766**	1	**SACC-M12FS-4QO-0,75-VA**	**1440782**	1
Plug, straight	A - standard	**SACC-M12MS-4QO-0,34-VA**	**1440753**	1	**SACC-M12MS-4QO-0,75-VA**	**1440779**	1

M12, spring-cage connections



Unshielded, 4, 5-pos.



Shielded, 4, 5-pos.

		Technical data		Technical data	
		4-pos.	5-pos.	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		Spring-cage conn.		Spring-cage conn.	
Cable diameter		4 mm ... 8 mm		4 mm ... 8 mm	
Connection cross section [mm²]		0.14 mm² ... 0.5 mm²		0.14 mm² ... 0.5 mm²	
Electrical data					
Rated voltage		250 V	60 V	60 V	
Rated current		4 A		4 A	
Volume resistance		≤ 8 mΩ		≤ 8 mΩ	
Insulation resistance		≥ 100 MΩ		≥ 100 MΩ	
Material data					
Material contact / contact surface		CuSn / Ni/Au		CuSn / Ni/Au	
Contact carrier material		TPU		TPU	
Inflammability class according to UL 94		V0		V0	
Temperature data					
Plug / socket	[°C]	-40 ... 85		-40 ... 85	

		Ordering data				Ordering data			
Description	Coding	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		4-pos.		5-pos.		4-pos.		5-pos.	
Plug-in connector, terminal marking: standard color coding and numbering									
Socket, angled	A - standard	**1432622**	1	**1432596**	1	**1432758**	1	**1432677**	1
Plug, angled	A - standard	**1432606**	1	**1432570**	1	**1432732**	1	**1432651**	1
Socket, straight	A - standard	**1432619**	1	**1432583**	1	**1432745**	1	**1432664**	1
Plug, straight	A - standard	**1432635**	1	**1432567**	1	**1432729**	1	**1432648**	1

M12, screw connections



Plastic knurl, 4, 5-pos.



Metal knurl, SPEEDCON, 4, 5-pos.

Technical data

		4-pos.	5-pos.		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		Screw connection		-	Screw connection		-
Connection cross section [mm²]		0.25 mm² ... 0.75 mm²		- ... -	0.25 mm² ... 0.75 mm²		- ... -
Electrical data							
Rated voltage		250 V	60 V	-	250 V	60 V	-
Rated current		4 A		-	4 A		-
Volume resistance		≤ 8 mΩ		-	≤ 8 mΩ		-
Insulation resistance		≥ 100 MΩ		-	≥ 100 MΩ		-
Material data							
Material contact / contact surface		CuZn / CuSnZn		- / -	CuZn / CuSnZn		- / -
Contact carrier material		PA 66		-	PA 66		-
Inflammability class according to UL 94		HB		-	HB		-
Temperature data							
Plug / socket	[°C]	-40 ... 85		-	-40 ... 85		-

Ordering data

Description	Coding	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		4-pos.		5-pos.				4-pos.		5-pos.			
Plug-in connector, with **Pg7** screw connection, **cable diameter: 4 mm ... 6 mm**													
Socket, angled	A - standard	**1681130**	1	**1662308**	1			**1543058**	1	**1543061**	1		
Plug, angled	A - standard	**1681091**	1	**1662269**	1			**1542981**	1	**1542994**	1		
Socket, straight	A - standard	**1681114**	1	**1662298**	1			**1543029**	1	**1543032**	1		
Plug, straight	A - standard	**1681088**	1	**1662256**	1			**1542952**	1	**1542965**	1		
Plug-in connector, with **Pg9** screw connection, **cable diameter: 6 mm ... 8 mm**													
Socket, angled	A - standard			**1500790**	1					**1543414**	1		
Plug, angled	A - standard			**1513431**	1					**1543003**	1		
Socket, straight	A - standard			**1500787**	1					**1543045**	1		
Plug, straight	A - standard			**1500774**	1					**1542978**	1		
Power plug-in connector, with **Pg11** screw connection, **cable diameter: 8 mm ... 10 mm, rated current:** up to 8 A (5th pos. max. 2 A) with 1.5 mm² wires/litz wires													
Socket, straight	A - standard												
Plug, straight	A - standard												

Accessories

Pressure screw and seal, for cable diameter:							
2.5 mm ... 3.5 mm	**SACC-M12-SET/2,5-3,5**	**1436505**	5	**SACC-M12-SET/2,5-3,5**	**1436505**	5	



**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	

Ordering data

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
4-pos.		5-pos.		8-pos.	
1681143	1	1662984	1		
1681101	1	1663129	1		
1681127	1	1662968	1		
1662528	1	1663116	1		
		1681499	1		
		1681473	1		
		1681486	1	1513347	1
		1681460	1	1513334	1
1404416	1	1404418	1		
1404415	1	1404417	1		

Accessories

SACC-M12-SET/2,5-3,5	1436505	5

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	-

Ordering data

Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
4-pos.		5-pos.			
1430381	1	1559000	1		
1556870	1	1456466	1		
		1556812	1		
		1561742	1		
		1556838	1		
		1556825	1		

Accessories

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.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
4-pos.		5-pos.			
1553284	1	1553297	1		
1553200	1	1553213	1		
1553242	1	1553255	1		
1553161	1	1553187	1		
		1553307	1		
1553226	1	1553239	1		
1553268	1	1553271	1		
1553174	1	1553190	1		

Accessories

SACC-M12-SET/2,5-3,5	1436505	5

M12, screw connection, shielded



Cast zinc housing, 4, 5, 8-pos.



Stainless steel housing, 5-pos.

		Technical data			Technical data		
		4-pos.	5-pos.	8-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/IP69K	-	
Connection method			Screw connection		Screw connection	-	
Connection cross section [mm²]			0.25 mm² ... 0.75 mm²		0.25 mm² ... 0.75 mm²	- ... -	
Electrical data							
Rated voltage		60 V		30 V	60 V	-	
Rated current		4 A		2 A	4 A	-	
Volume resistance			≤ 3 mΩ		≤ 3 mΩ	-	
Insulation resistance			≥ 100 MΩ		≥ 100 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		V0	-	
Temperature data							
Plug / socket	[°C]		-40 ... 85		-40 ... 85	-	

		Ordering data						Ordering data			
Description	Coding	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		4-pos.		5-pos.		8-pos.		5-pos.			
Plug-in connector, with **Pg7** screw connection, **cable diameter: 4 mm ... 6 mm**											
Plug, angled	A - standard	**1694279**	1	**1693429**	1						
Socket, straight	A - standard	**1694295**	1	**1694305**	1						
Plug, straight	A - standard	**1693830**	1	**1693416**	1						
Plug-in connector, with **Pg9** screw connection, **cable diameter: 6 mm ... 8 mm**											
Socket, angled	A - standard			**1430433**	1						
Plug, angled	A - standard			**1694282**	1						
Socket, straight	A - standard	**1515170**	1	**1694318**	1	**1511860**	1				
Plug, straight	A - standard	**1501540**	1	**1694266**	1	**1511857**	1				
Plug-in connector, with **Pg9** screw connection, **cable diameter: 6 mm ... 8.5 mm**											
Socket, straight	A - standard			**1508365**	1						
Plug, straight	A - standard			**1508352**	1						
Plug-in connector, with **M16** screw connection, **cable diameter: 3 mm ... 5.5 mm**											
Socket, straight	A - standard							**1440038**	1		
Plug, straight	A - standard							**1440012**	1		
Plug-in connector, with **M16** screw connection, **cable diameter: 5.5 mm ... 8.6 mm**											
Socket, straight	A - standard							**1440041**	1		
Plug, straight	A - standard							**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
	3-pos. + PE	**4-pos.**
General data		
Pollution degree	3	3
Degree of protection	IP67	IP67
Connection method	Screw connection	Screw connection
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
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 [°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**						
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
Socket, angled	**SACC-M12FRS-3PECON-PG11-M**	**1408987**	1	**SACC-M12FRT-3PECON-PG11-M**	**1408989**	1
Plug, angled	**SACC-M12MRS-3PECON-PG11-M**	**1408985**	1	**SACC-M12MRT-3PECON-PG11-M**	**1408988**	1

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		Technical data	
	4-pos.	**5-pos.**	**Metal knurl, SPEEDCON, 5-pos.**	**Plastic knurl, 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	Screw connection		Screw connection	
Connection cross section [mm²]	0.25 mm² ... 0.75 mm²		0.25 mm² ... 0.75 mm²	
Electrical data				
Rated voltage	250 V	60 V	60 V	
Rated current	4 A		4 A	
Volume resistance	≤ 8 mΩ		≤ 8 mΩ	
Insulation resistance	≥ 100 MΩ		≥ 100 MΩ	
Material data				
Material contact / contact surface	CuZn / CuSnZn		CuZn / CuSnZn	
Contact carrier material	PA 66		PA 66	
Inflammability class according to UL 94	V0		V0	
Temperature data				
Plug / socket [°C]	-40 ... 85		-40 ... 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.
		4-pos.		**5-pos.**		**Metal knurl, SPEEDCON, 5-pos.**		**Plastic knurl, 5-pos.**	
Plug-in connector, with **Pg11 DUO** screw connection, **cable diameter: 2 x 3 mm ... 5.2 mm**									
Socket, straight	A - standard							**1694596**	1
Plug, straight	A - standard	**1507052**	1	**1662748**	1	**1543016**	1	**1662285**	1
Plug, angled	A - standard							**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			Technical data		
	3-pos.	4-pos.	5-pos.	5-pos.		
General data						
Pollution degree		3		3	-	
Degree of protection		IP67		IP67	-	
Connection method		Screw connection		Screw connection	-	
Connection cross section		0.34 mm² ... 1.5 mm²		0.34 mm² ... 2.5 mm²	- ... -	-
Connection cross section AWG		22 ... 16		22 ... 14	- ... -	-
Electrical data						
Rated voltage		250 V		250 V	-	
Rated current	12 A	9 A		9 A	-	
Volume resistance		≤ 5 mΩ		≤ 5 mΩ	-	
Insulation resistance		≥ 100 MΩ		≥ 100 MΩ	-	
Material data						
Material contact / contact surface		CuZn / Au		CuZn / Au	- / -	
Contact carrier material		PUR / PA66		PUR / PA66	-	
Inflammability class according to UL 94		HB		HB	-	
Temperature data						
Plug / socket [°C]		-25 ... 85		-25 ... 85	-	

	Ordering data						Ordering data			
Description	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	3-pos.		4-pos.		5-pos.		5-pos.			
Plug-in connector, with **Pg9** screw connection, **cable diameter: 6 mm ... 8 mm**										
Socket, angled	**1521478**	1	**1521494**	1	**1521517**	1				
Plug, angled	**1521465**	1	**1521481**	1	**1521504**	1				
Socket, straight	**1521300**	1	**1521342**	1	**1521384**	1				
Plug, straight	**1521287**	1	**1521326**	1	**1521668**	1				
Plug-in connector, with **Pg11** screw connection, **cable diameter: 8 mm ... 10 mm**										
Socket, angled							**1456297**	1		
Plug, angled							**1456242**	1		
Socket, straight							**1456271**	1		
Plug, straight							**1456226**	1		
Plug-in connector, with **Pg13.5** screw connection, **cable diameter: 10 mm ... 12 mm**										
Socket, angled							**1456307**	1		
Plug, angled							**1456255**	1		
Socket, straight	**1521313**	1	**1521355**	1	**1521397**	1	**1456284**	1		
Plug, straight	**1521290**	1	**1521339**	1	**1521371**	1	**1456213**	1		
Plug-in connector, with **Pg16** screw connection, **cable diameter: 12 mm ... 14 mm**										
Socket, straight					**1559071**	1	**1456268**	1		
Plug, straight					**1559039**	1	**1456239**	1		

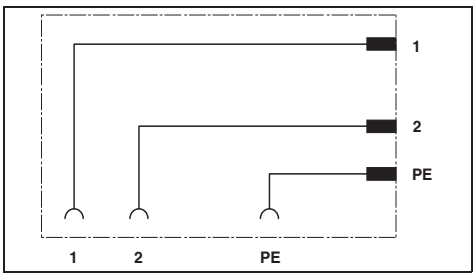
Valve connectors, type A, screw connection

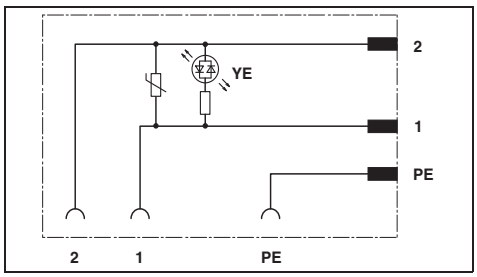


Without protective circuit



Protective circuit: varistor





	Technical data	Technical data
General data		
Valve connector according to:	EN 175301-803	EN 175301-803
Pollution degree	3	3
Degree of protection	IP65	IP65
Connection method	Screw connection	Screw connection
Electrical data		
Rated current	10 A	1.5 A
Volume resistance	≤ 4 MΩ	≤ 4 MΩ
Insulation resistance	> 2 GΩ	> 2 GΩ
Material data		
Material contact valve connector	CuZn	CuZn
Material contact surface valve connector	CuSn	CuSn
Inflammability class according to UL 94	HB	HB
Temperature data		
Valve connectors [°C]	-25 ... 60	-25 ... 60

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Valve connector, without protective circuit, rated voltage: 230 V						
3-pos.	**SACC-VB-3CON-M16/A**	**1452123**	1			
4-pos.	**SACC-VB-4CON-M16/A**	**1452136**	1			
Valve connector, with protective circuit, rated voltage:						
24 V				**SACC-VB-3CON-M16/A-1L-SV 24V**	**1452149**	1
110 V				**SACC-VB-3CON-M16/A-1L-SV 110V**	**1452152**	1
230 V				**SACC-VB-3CON-M16/A-1L-SV 230V**	**1452165**	1
Valve connector, 5-pos., type A, for pressure switch, 2 LEDs, without protective circuit, M16 cable gland, rated voltage: 24 V						
Valve connector, with protective circuit, rated voltage: 24 V, cable gland: Pg9 M16						



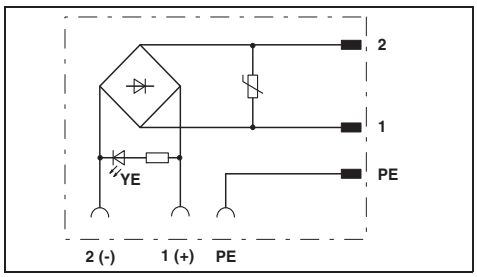
Protective circuit: varistor and rectifier

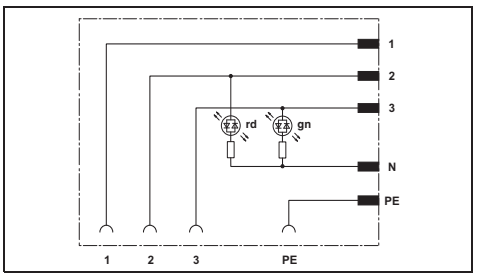


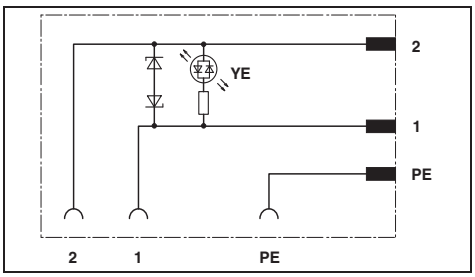
Pressure switch



Protective circuit: Z diode







Technical data

EN 175301-803	-	EN 175301-803
3	3	3
IP65	IP65	IP65
Screw connection	Screw connection	Screw connection
1.5 A	1.5 A	4 A
≤ 4 MΩ	≤ 4 MΩ	≤ 4 MΩ
> 2 GΩ	> 2 GΩ	> 2 GΩ
CuZn CuSn	CuZn CuSn	CuSn Ag
HB	HB	HB
-25 ... 60	-25 ... 60	-25 ... 60

Ordering data

Type	Order No.	Pcs. / Pkt.
SACC-VB-3CON-M16/A-GVL 12/24V	**1452178**	1
SACC-VB-3CON-M16/A-GVL 110V	**1452181**	1
SACC-VB-3CON-M16/A-GVL 230V	**1452194**	1

Ordering data

Type	Order No.	Pcs. / Pkt.
SACC-VB-5CON-M16/AD-2L 24V	**1457908**	1

Ordering data

Type	Order No.	Pcs. / Pkt.
SACC-V-3CON-PG9/A-1L-S	**1671137**	1
SACC-V-3CON-M16/A-1L-S	**1544714**	1

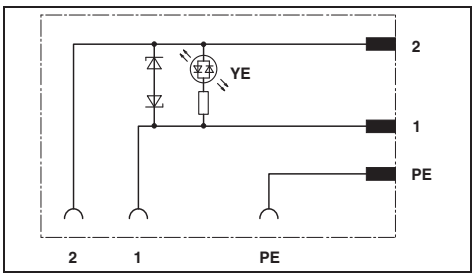
Valve connector, types B and BI, screw connection

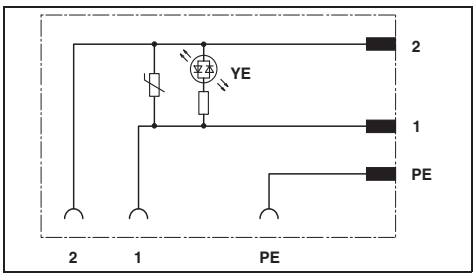


Protective circuit: Z diode



Protective circuit: varistor





Technical data

		Type B	Type BI
General data			
Valve connector according to:		EN 175301-803	-
Pollution degree		3	
Degree of protection		IP65	
Connection method		Screw connection	
Electrical data			
Rated voltage		24 V	
Rated current		4 A	
Volume resistance		≤ 4 MΩ	
Insulation resistance		> 2 GΩ	
Material data			
Material contact surface valve connector		Ag	
Material housing valve connector		PA	
Inflammability class according to UL 94		HB	
Temperature data			
Valve connectors	[°C]	-25 ... 60	

Technical data

		Type B	Type BI
General data			
Valve connector according to:		EN 175301-803	-
Pollution degree		3	
Degree of protection		IP65	
Connection method		Screw connection	
Electrical data			
Rated voltage		24 V	
Rated current		1.5 A	
Volume resistance		≤ 4 MΩ	
Insulation resistance		> 2 GΩ	
Material data			
Material contact surface valve connector		CuSn	
Material housing valve connector		PA	
Inflammability class according to UL 94		HB	
Temperature data			
Valve connectors	[°C]	-25 ... 60	

Ordering data

Description	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	Type B		Type BI	
Valve connector, 3-pos., with protective circuit, Pg9 cable gland	**1671153**	5	**1671140**	5
Valve connector, with protective circuit, yellow LED, rated voltage:				
24 V				
110 V				
230 V				

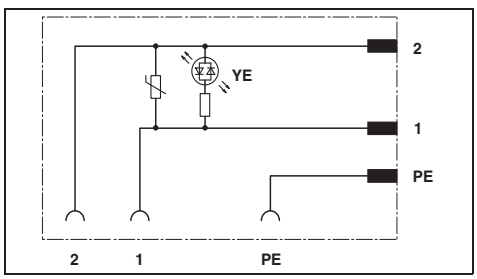
Ordering data

Description	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	Type B		Type BI	
Valve connector, 3-pos., with protective circuit, Pg9 cable gland				
Valve connector, with protective circuit, yellow LED, rated voltage:				
24 V	**1452204**	1	**1452233**	1
110 V	**1452217**	1	**1452246**	1
230 V	**1452220**	1	**1452259**	1

Valve connectors, type C and CI, screw connection



Protective circuit: varistor



Technical data

		Type C	Type CI
General data			
Valve connector according to:		EN 175301-803	-
Pollution degree		3	
Degree of protection		IP65	
Connection method		Screw connection	
Electrical data			
Rated current		1.5 A	
Volume resistance		≤ 4 MΩ	
Insulation resistance		> 2 GΩ	
Material data			
Material contact valve connector		CuZn	
Material contact surface valve connector		CuSn	
Inflammability class according to UL 94		HB	
Temperature data			
Valve connectors	[°C]	-25 ... 60	

Ordering data

Description	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	Type C		Type CI	
Valve connector, with protective circuit, yellow LED, rated voltage:				
24 V	**1452262**	1	**1452291**	1
110 V	**1452275**	1	**1452301**	1
230 V	**1452288**	1	**1452314**	1





Signal plug-in connectors

Assembled cables are available in types M5, M8, and M12. PUR cabling, which is used as standard, meets the requirements of many fields of application.



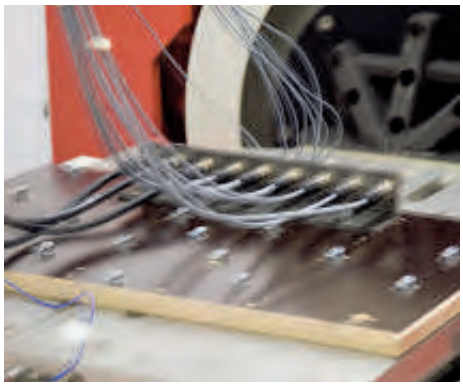
Power plug-in connectors

Plug-in connectors for power transmission are available in types M12 to M40 and 7/8".



Valve plug-in connectors

Choose from a range of cables with assembled valve plug-in connectors in various types (A, B, BI, C, CI, AD) as well as various protective circuits.



Securely locked

An integrated vibration brake prevents the unintentional loosening of the plug-in connection in the event of vibrations and ensures a secure, permanent connection.



Safe transmission

With 360° shielded plug-in connectors and cables, you can transmit signals reliably even in critical EMI applications.



High packing density

Our high-pos. M8 and M12 versions feature a compact design. This means that up to 8 positions can be accommodated in type M8 and up to 17 positions in type M12.



SPEEDCON: fast, safe, and compatible

The SPEEDCON rapid interlock system is based on the principle of "Plug & Turn" and is 100% compatible with all M12 plug-in connectors with M12x1 thread on the market.



Variety of cables for KMAT

Standard items are produced with high-quality PUR cable. For special applications, different cable types for KMAT are available.



M12 plug-in connectors for power

With new T and S-coded power plug-in connectors for up to 12 A and 630 V, the M12 design opens up new areas of application for supplying power.



High-quality materials and innovative designs

For increased requirements, we have developed solutions which meet the needs of your application through innovative design and material selection.



Easy detection

A particularly user-friendly feature is diagnostics in the event of an error. LEDs can be used to detect errors in the signal path quickly and easily. This can directly increase your machine availability.



100% tested

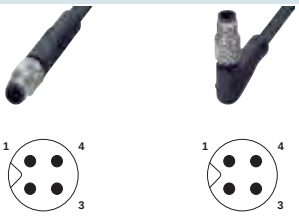
All supplied components are 100% electrically checked by Quality Assurance.

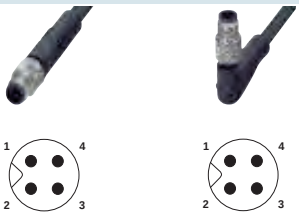
M5 SAC cable, 3 and 4-pos.

Notes:

For information about the cable qualities, see page 184







		Free end	M5 plug, 3-pos.		M5 plug, 4-pos.	
		Ordering data	Ordering data	Ordering data	Ordering data	Ordering data
Free end		**Order No.**	**Order No.**	**Order No.**	**Order No.**	**Order No.**
			1.5 m **1530265** 3 m **1530278** 5 m **1530281** 10 m **1530294**	1.5 m **1530346** 3 m **1530359** 5 m **1530362** 10 m **1530375**	1.5 m **1530304** 3 m **1530317** 5 m **1530320** 10 m **1530333**	1.5 m **1530388** 3 m **1530391** 5 m **1530401** 10 m **1530414**
M5 socket, 3-pos., straight						
		1.5 m **1530427** 3 m **1530430** 5 m **1530443** 10 m **1530456**				
M5 socket, 3-pos., angled						
		1.5 m **1530508** 3 m **1530511** 5 m **1530524** 10 m **1530537**				
M5 socket, 4-pos., straight						
		1.5 m **1530469** 3 m **1530472** 5 m **1530485** 10 m **1530498**				
M5 socket, 4-pos., angled						
		1.5 m **1530540** 3 m **1530553** 5 m **1530566** 10 m **1530579**				

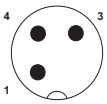
Cable description	Cable type	Color coding	Pin assignment 3-pos.	Color coding	Pin assignment 4-pos.
PUR/PVC - black	PUR M5	BN	1	BN	1
		BK	4	WH	2
		BU	3	BK	4
				BU	3

		Technical data	Technical data
		M5 3-pos.	M5 4-pos.
Rated voltage	[V]	125	125
Rated current	[A]	1	1
Volume resistance		≤ 3 mΩ	≤ 3 mΩ
Contact material		CuZn	CuZn
Contact surface material		Au	Au
Material of grip body		PUR	PUR
M5 circular plug-in connector according to:		IEC 61076-2-105	IEC 61076-2-105
Degree of protection		IP65 / IP67 / IP68	IP65 / IP67 / IP68
Temperature data			
Plug / socket	[°C]	-25 ... 80	-25 ... 80

M8 SAC cable, snap-in, 3 and 4-pos.

Notes:

For information about the cable qualities, see page 184

	Free end	M12 plug, 3-pos.
		
		

	Ordering data		Ordering data		Ordering data	
M8 socket, snap-in, 3-pos., straight		**Order No.**		**Order No.**		**Order No.**
 	5 m	**1519875**				
	Variable	**1697593**	Variable	**1696853**		
M8 socket, snap-in, 3-pos., angled						
 	5 m	**1519891**				
	Variable	**1697629**	Variable	**1696882**		
M8 socket, snap-in, 3-pos., with LEDs, angled						
 	Variable	**1513402**	Variable	**1515675**		
M8 socket, snap-in, 4-pos., straight						
 	Variable	**1513389**				
M8 socket, snap-in, 4-pos., angled						
 	Variable	**1513392**				
M8 socket, snap-in, 4-pos., with LEDs, angled						
 	Variable	**1511954**				

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the halogen-free **PUR** cable type and are available from stock.

Ordering data for products with variable cables:

For a sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, with a straight 3-pos. M12 plug and a straight M8 snap-in socket, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 40 m
1696853	PUR	4.5

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

Minimum order amount = 25

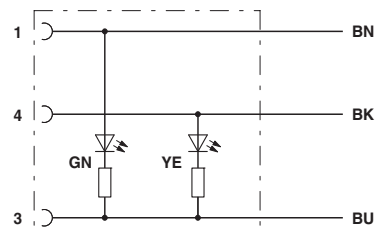
Cable description	Cable type	Suitable for
PUR, halogen-free - black E221474	PUR	3/4-pos.
PUR, halogen-free - gray E221474	280	3-pos.
PUR/PVC - gray E221474	100	3/4-pos.
PUR/PVC - yellow E221474	140	3/4-pos.
TPE-U highly flexible - gray E221474	800	3/4-pos.

Color coding	Pin assignment 3-pos.
BN	1
BK	4
BU	3

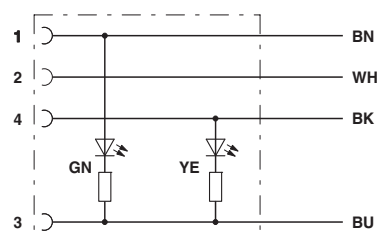
Color coding	Pin assignment 4-pos.
BN	1
WH	2
BK	4
BU	3

With a combination of M12 and M8 plug-in connectors, the limiting M8 value applies to the rated voltage.

		Technical data	Technical data	Technical data	Technical data
		M8 3-pos.	M8 3-pos., with LEDs	M8 4-pos.	M8 4-pos., with LED
Rated voltage	[V]	60	24	30	24
Rated current	[A]	4	4	4	4
Volume resistance		≤ 5 mΩ	≤ 5 mΩ	≤ 5 mΩ	≤ 5 mΩ
Contact material		CuSn	CuSn	CuSn	CuSn
Contact surface material		Ni/Au	Ni/Au	Ni/Au	Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing
M8 circular plug-in connector according to:		IEC 61076-2-104	IEC 61076-2-104	IEC 61076-2-104	IEC 61076-2-104
Degree of protection		IP65 / IP67 / IP68	IP65 / IP67 / IP68	IP65 / IP67 / IP68	IP65 / IP67 / IP68
Temperature data					
Plug / socket	[°C]	-25 ... 90	-25 ... 90	-25 ... 90	-25 ... 90



Contact assignment of the M8 socket with LED, 3-pos.



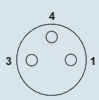
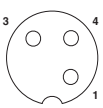
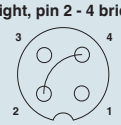
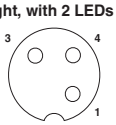
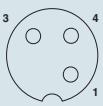
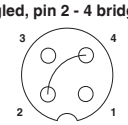
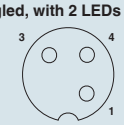
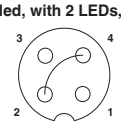
Contact assignment of the M8 socket with LED, 4-pos.

M8 and M12 SPEEDCON SAC cable, 3-pos.

Notes:

For information about the cable qualities, see page 184

SPEEDCON LOCKING

Free end			M8 plug				M12 plug, SPEEDCON			
	Ordering data		Ordering data		Ordering data		Ordering data		Ordering data	
Free end		**Order No.**		**Order No.**		**Order No.**		**Order No.**		**Order No.**
			1.5 m	**1681664**	1.5 m	**1681693**	1.5 m	**1518643**	1.5 m	**1518685**
			3 m	**1681677**	3 m	**1681703**	3 m	**1518656**	3 m	**1518698**
			5 m	**1681680**	5 m	**1681716**	5 m	**1518669**	5 m	**1518708**
			10 m	**1693584**	10 m	**1694114**	10 m	**1518672**	10 m	**1518711**
			Variable	**1697548**	Variable	**1697551**	Variable	**1523515**	Variable	**1523531**
M8 socket, straight										
 	1.5 m	**1669712**	0.3 m	**1681907**	0.3 m	**1682029**				
	3 m	**1669725**	0.6 m	**1681910**	0.6 m	**1682032**				
	5 m	**1669628**	1.5 m	**1681923**	1.5 m	**1682045**				
	10 m	**1694101**	3 m	**1681936**	3 m	**1682058**				
	Variable	**1697580**	Variable	**1697632**	Variable	**1697661**	Variable	**1535736**	Variable	**1541856**
M8 socket, angled										
 	1.5 m	**1669738**	0.3 m	**1681949**	0.3 m	**1682061**				
	3 m	**1669741**	0.6 m	**1681952**	0.6 m	**1682074**				
	5 m	**1669631**	1.5 m	**1681965**	1.5 m	**1682087**				
	10 m	**1694169**	3 m	**1681978**	3 m	**1682090**				
	Variable	**1697603**	Variable	**1697645**	Variable	**1697674**	Variable	**1540763**	Variable	**1541869**
M8 socket, angled, with 2 LEDs										
 	1.5 m	**1671069**	0.3 m	**1681981**	0.3 m	**1682100**				
	3 m	**1671072**	0.6 m	**1681994**	0.6 m	**1682113**				
	5 m	**1671085**	1.5 m	**1682003**	1.5 m	**1682126**				
	10 m	**1683594**	3 m	**1682016**	3 m	**1682139**				
	Variable	**1697616**	Variable	**1697658**	Variable	**1697687**	Variable	**1535710**	Variable	**1541872**
M12 socket, SPEEDCON, straight										
 	1.5 m	**1536243**					0.3 m	**1518724**	0.3 m	**1518766**
	3 m	**1536256**					0.6 m	**1518737**	0.6 m	**1518779**
	5 m	**1536269**					1.5 m	**1518740**	1.5 m	**1518782**
	10 m	**1536272**					3 m	**1518753**	3 m	**1518795**
	Variable	**1535778**	Variable	**1541911**	Variable	**1541940**	Variable	**1523544**	Variable	**1523557**
M12 socket, SPEEDCON, straight, pin 2 - 4 bridged										
 	Variable	**1542046**					Variable	**1542091**	Variable	**1542130**
M12 socket, SPEEDCON, straight, with 2 LEDs										
 	Variable	**1542059**	Variable	**1541843**	Variable	**1553501**	Variable	**1542017**	Variable	**1542033**
M12 socket, SPEEDCON, angled										
 	1.5 m	**1536366**								
	3 m	**1536379**								
	5 m	**1536382**								
	10 m	**1536395**								
	Variable	**1536492**	Variable	**1541924**	Variable	**1541953**	Variable	**1542101**	Variable	**1542020**
M12 socket, SPEEDCON, angled, pin 2 - 4 bridged										
 	Variable	**1542075**					Variable	**1542114**	Variable	**1542143**
M12 socket, SPEEDCON, angled, with 2 LEDs										
 	1.5 m	**1407774**								
	3 m	**1407775**								
	5 m	**1407776**								
	10 m	**1407777**								
	Variable	**1535752**	Variable	**1541937**	Variable	**1541966**	Variable	**1538225**		
M12 socket, SPEEDCON, angled, with 2 LEDs, pin 2 - 4 bridged										
 	Variable	**1542088**					Variable	**1542127**	Variable	**1542156**

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the halogen-free **PUR** cable type and are available from stock.

Ordering data for products with variable cables:

For a sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, with a straight 3-pos. M12 plug and a straight M12 socket, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 40 m
1523544	PUR	4.5

Minimum order amount = 25

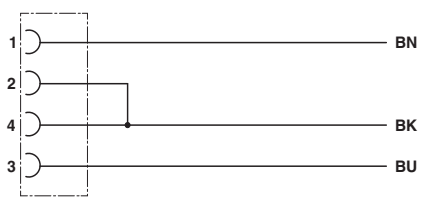
Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

Cable description	Cable type	Suitable for:
PUR, halogen-free - black E221474	PUR	M8/M12
PUR, halogen-free - gray E221474	280	M8/M12
PUR/PVC - gray E221474	100	M8/M12
PUR/PVC - yellow E221474	140	M8/M12
TPE-U highly flexible - gray E221474	800	M8/M12
PUR irradiated - orange E221474	150	M12
PVC - black E221474	PVC	M8/M12
PVC - gray E221474	500	M8/M12
PVC - yellow E221474	540	M12
PVC 105° - yellow E221474	542	M12

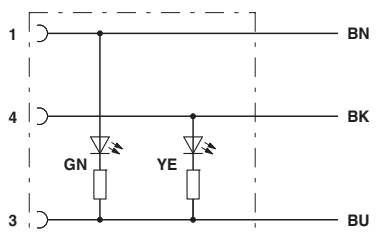
Color coding	Pin assignment
BN	1
BK	4
BU	3

With a combination of M12 and M8 plug-in connectors, the limiting M8 value applies to the rated voltage.

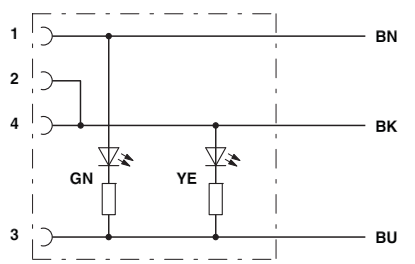
		Technical data	Technical data	Technical data	Technical data
		M8 3-pos.	M8 3-pos., with LED	M12 3-pos.	M12 3-pos., with LEDs
Rated voltage	[V]	60	24	250	24
Rated current	[A]	4	4	4	4
Volume resistance		≤ 5 mΩ	≤ 5 mΩ	≤ 5 mΩ	≤ 5 mΩ
Contact material		CuSn	CuSn	CuSn	CuSn
Contact surface material		Ni/Au	Ni/Au	Ni/Au	Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing
M8 circular plug-in connector according to:		IEC 61076-2-104	IEC 61076-2-104	-	-
M12 circular plug-in connector according to:		-	-	IEC 61076-2-101	IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68	IP65 / IP67 / IP68	IP65 / IP67 / IP68	IP65 / IP67 / IP68
Temperature data					
Plug / socket	[°C]	-25 ... 90	-25 ... 90	-25 ... 90	-25 ... 90



Contact assignment of M12 sockets bridged



Contact assignment of M8/M12 socket with two LEDs



Contact assignment of M12 sockets with 2 LEDs, bridged

M8 and M12 SAC cable, 3-pos.

Notes:

For information about the cable qualities, see page 184



Free end





M8 plug

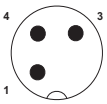


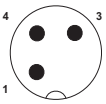


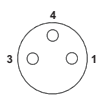
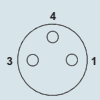
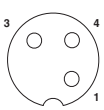
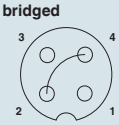
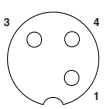
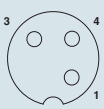
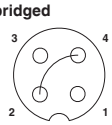
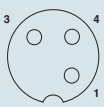
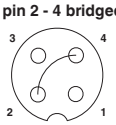
M12 plug









		Ordering data		Ordering data		Ordering data		Ordering data		Ordering data	
Free end			**Order No.**		**Order No.**		**Order No.**		**Order No.**		**Order No.**
				1.5 m	**1681664**	1.5 m	**1681693**	1.5 m	**1668014**	1.5 m	**1668137**
				3 m	**1681677**	3 m	**1681703**	3 m	**1668027**	3 m	**1668140**
				5 m	**1681680**	5 m	**1681716**	5 m	**1668030**	5 m	**1668153**
				10 m	**1693584**	10 m	**1694114**	10 m	**1682566**	10 m	**1694444**
				Variable	**1697548**	Variable	**1697551**	Variable	**1696662**	Variable	**1696675**
M8 socket, straight											
		1.5 m	**1669712**	0.3 m	**1681907**	0.3 m	**1682029**	0.3 m	**1668797**	0.3 m	**1668878**
		3 m	**1669725**	0.6 m	**1681910**	0.6 m	**1682032**	0.6 m	**1668807**	0.6 m	**1668881**
		5 m	**1669628**	1.5 m	**1681923**	1.5 m	**1682045**	1.5 m	**1668810**	1.5 m	**1668894**
		10 m	**1694101**	3 m	**1681936**	3 m	**1682058**	3 m	**1668823**	3 m	**1668904**
		Variable	**1697580**	Variable	**1697632**	Variable	**1697661**	Variable	**1696840**	Variable	**1696895**
M8 socket, angled											
		1.5 m	**1669738**	0.3 m	**1681949**	0.3 m	**1682061**	0.3 m	**1668836**	0.3 m	**1668917**
		3 m	**1669741**	0.6 m	**1681952**	0.6 m	**1682074**	0.6 m	**1668849**	0.6 m	**1668920**
		5 m	**1669631**	1.5 m	**1681965**	1.5 m	**1682087**	1.5 m	**1668852**	1.5 m	**1668933**
		10 m	**1694169**	3 m	**1681978**	3 m	**1682090**	3 m	**1668865**	3 m	**1668946**
		Variable	**1697603**	Variable	**1697645**	Variable	**1697674**	Variable	**1696866**	Variable	**1696905**
M8 socket, angled, with 2 LEDs											
		1.5 m	**1671069**	0.3 m	**1681981**	0.3 m	**1682100**	0.3 m	**1694884**		
		3 m	**1671072**	0.6 m	**1681994**	0.6 m	**1682113**	0.6 m	**1694897**		
		5 m	**1671085**	1.5 m	**1682003**	1.5 m	**1682126**	1.5 m	**1694907**		
		10 m	**1683594**	3 m	**1682016**	3 m	**1682139**	3 m	**1694910**		
		Variable	**1697616**	Variable	**1697658**	Variable	**1697687**	Variable	**1696879**	Variable	**1696918**
M12 socket, straight											
		1.5 m	**1694486**	0.3 m	**1682304**	0.3 m	**1682388**	0.3 m	**1681509**		
		3 m	**1694499**	0.6 m	**1682317**	0.6 m	**1682391**	0.6 m	**1681512**		
		5 m	**1683510**	1.5 m	**1682320**	1.5 m	**1682401**	1.5 m	**1681525**		
		10 m	**1693034**	3 m	**1682333**	3 m	**1682414**	3 m	**1681538**		
		Variable	**1696688**	Variable	**1697690**	Variable	**1697726**	Variable	**1696756**		
M12 socket, straight, pin 2- 4 bridged											
		1.5 m	**1668072**					0.3 m	**1668315**	0.3 m	**1668551**
		3 m	**1668085**					0.6 m	**1668328**	0.6 m	**1668564**
		5 m	**1668098**					1.5 m	**1668331**	1.5 m	**1668577**
		10 m	**1694208**					3 m	**1668344**	3 m	**1668580**
		Variable	**1696691**					Variable	**1696769**	Variable	**1696811**
M12 socket, straight, with LED											
		1.5 m	**1694185**								
		3 m	**1694198**								
		5 m	**1694787**								
		10 m	**1694790**								
		Variable	**1696701**	Variable	**1514197**			Variable	**1511802**	Variable	**1524763**
M12 socket, angled											
		1.5 m	**1694509**	0.3 m	**1682346**	0.3 m	**1682427**	0.3 m	**1681541**		
		3 m	**1694512**	0.6 m	**1682359**	0.6 m	**1682430**	0.6 m	**1681554**		
		5 m	**1694525**	1.5 m	**1682362**	1.5 m	**1682443**	1.5 m	**1681567**		
		10 m	**1694538**	3 m	**1682375**	3 m	**1682456**	3 m	**1681570**		
		Variable	**1696714**	Variable	**1697700**	Variable	**1697739**	Variable	**1696772**		
M12 socket, angled, pin 2 - 4 bridged											
		1.5 m	**1668195**					0.3 m	**1668399**	0.3 m	**1668632**
		3 m	**1668205**					0.6 m	**1668409**	0.6 m	**1668645**
		5 m	**1668218**					1.5 m	**1668412**	1.5 m	**1668658**
		10 m	**1681017**					3 m	**1668425**	3 m	**1668661**
		Variable	**1696727**					Variable	**1696785**	Variable	**1696824**
M12 socket, angled with LED											
		1.5 m	**1694392**	0.3 m	**1693351**	0.3 m	**1682469**	0.3 m	**1694554**		
		3 m	**1694402**	0.6 m	**1693364**	0.6 m	**1682472**	0.6 m	**1694567**		
		5 m	**1694415**	1.5 m	**1693380**	1.5 m	**1682485**	1.5 m	**1694570**		
		10 m	**1694428**	3 m	**1693403**	3 m	**1682498**	3 m	**1694583**		
		Variable	**1696730**	Variable	**1697713**	Variable	**1697742**	Variable	**1696798**		
M12 socket, angled, with LED, pin 2 - 4 bridged											
		1.5 m	**1668250**					0.3 m	**1668438**		
		3 m	**1668263**					0.6 m	**1668441**		
		5 m	**1668276**					1.5 m	**1668454**		
		10 m	**1681059**					3 m	**1668467**		
		Variable	**1696743**					Variable	**1696808**	Variable	**1696837**

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the halogen-free **PUR** cable type and are available from stock.

Ordering data for products with variable cables:

For a sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, with a straight 3-pos. M12 plug and a straight M12 socket, the ordering data is as follows:

Order No.	Cable type	Length [m] 40 m, max.
1696756	PUR	4.5

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

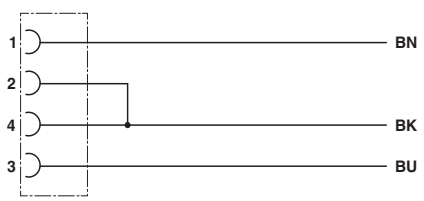
Minimum order amount = 25

Cable description	Cable type	Suitable for:
PUR, halogen-free - black E221474	PUR	M8/M12
PUR, halogen-free - gray E221474	280	M8/M12
PUR/PVC - gray E221474	100	M8/M12
PUR/PVC - yellow E221474	140	M8/M12
TPE-U highly flexible - gray E221474	800	M8/M12
PUR irradiated - orange E221474	150	M12
PVC - black E221474	PVC	M8/M12
PVC - gray E221474	500	M8/M12
PVC - yellow E221474	540	M12
PVC 105° - yellow E221474	542	M12

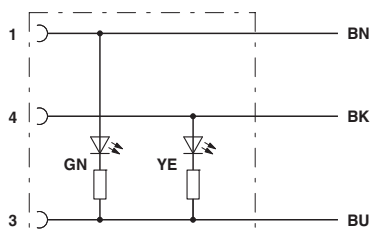
Color coding	Pin assignment
BN	1
BK	4
BU	3

With a combination of M12 and M8 plug-in connectors, the limiting M8 value applies to the rated voltage.

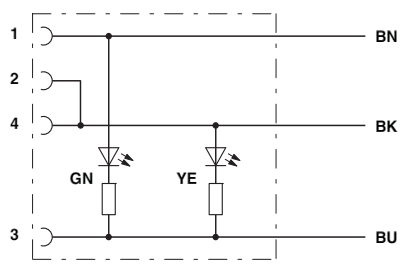
		Technical data	Technical data	Technical data	Technical data
		M8 3-pos.	M8 3-pos., with LEDs	M12 3-pos.	M12 3-pos., with LEDs
Rated voltage	[V]	60	24	250	24
Rated current	[A]	4	4	4	4
Volume resistance		≤ 5 mΩ	≤ 5 mΩ	≤ 5 mΩ	≤ 5 mΩ
Contact material		CuSn	CuSn	CuSn	CuSn
Contact surface material		Ni/Au	Ni/Au	Ni/Au	Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing
M8 circular plug-in connector according to:		IEC 61076-2-104	IEC 61076-2-104	-	-
M12 circular plug-in connector according to:		-	-	IEC 61076-2-101	IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68	IP65 / IP67 / IP68	IP65 / IP67 / IP68	IP65 / IP67 / IP68
Temperature data					
Plug / socket	[°C]	-25 ... 90	-25 ... 90	-25 ... 90	-25 ... 90



Contact assignment of M12 sockets bridged



Contact assignment of M8/M12 socket with two LEDs



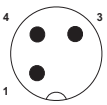
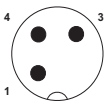
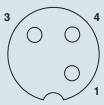
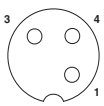
Contact assignment of M12 sockets with 2 LEDs, bridged

M12 SPEEDCON SAC cable, 3-pos., shielded

Notes:

For information about the cable qualities, see page 184

SPEEDCON LOCKING

	Free end	M12 plug, SPEEDCON, 360° shielded	
			
			
	Ordering data	Ordering data	Ordering data
Free end	**Order No.**	**Order No.**	**Order No.**
		Variable **1523706**	Variable **1523719**
M12socket, SPEEDCON, straight, 360° shielded			
 	Variable **1536528**	Variable **1523748**	Variable **1541801**
M12 socket, SPEEDCON, angled, 360° shielded			
 	Variable **1536557**	Variable **1523751**	Variable **1541814**

Ordering data for products with variable cables:

For a shielded sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, with a straight 3-pos. M12 plug and a straight M12 socket, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 40 m
1523748 /	**PUR** /	**4.5**

Minimum order amount = 25

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

Cable description	Cable type	Suitable for:
PUR, halogen-free - black E221474	**PUR**	M8/M12
PUR/PVC - gray E221474	**100**	M12
PVC - black E221474	**PVC**	M12
PVC - gray E221474	**500**	M12

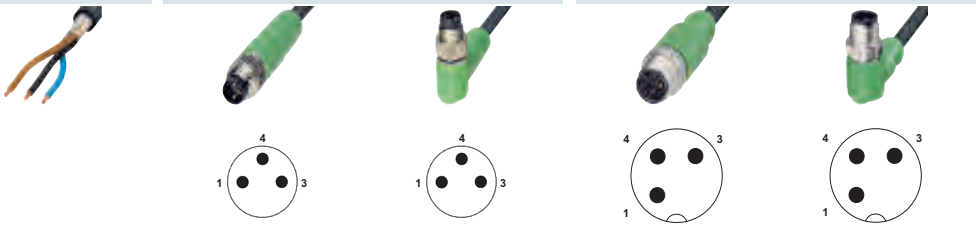
Color coding	Pin assignment
BN	1
BK	4
BU	3

		Technical data
		M12 3-pos., shielded
Rated voltage	[V]	250
Rated current	[A]	4
Volume resistance		≤ 5 mΩ
Contact material		CuSn
Contact surface material		Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection		IP65 / IP67
Temperature data		
Plug / socket	[°C]	-25 ... 90

M8 and M12 SAC cable, 3-pos., shielded

Notes:

For information about the cable qualities, see page 184



Free end		Ordering data	M8 plug, 360° shielded		Ordering data		Ordering data	M12 plug, 360° shielded		Ordering data		Ordering data
		Order No.			Order No.		Order No.			Order No.		Order No.
			1.5 m		1521614	1.5 m	1521669	1.5 m		1682650	1.5 m	1682689
			3 m		1521527	3 m	1521672	3 m		1682663	3 m	1682692
			5 m		1521630	5 m	1521685	5 m		1682676	5 m	1682702
			10 m		1521643	10 m	1521698	10 m		1500664	10 m	1500677
			Variable		1521656	Variable	1521708	Variable		1697425	Variable	1697438
M8 socket, straight, 360° shielded												
	1.5 m	1521711	0.3 m		1456310							
	3 m	1521724	0.6 m		1456323							
	5 m	1521737	1.5 m		1455285							
	10 m	1521740	3 m		1455298							
	Variable	1521753	Variable		1552052	Variable	1552078					
M8 socket, angled, 360° shielded												
	1.5 m	1521766										
	3 m	1521779										
	5 m	1521782										
	10 m	1521795										
	Variable	1521805	Variable		1552065	Variable	1552081					
M12 socket, straight, 360° shielded												
	1.5 m	1682786						0.3 m		1500800		
	3 m	1682799						0.6 m		1500813		
	5 m	1682809						1.5 m		1500826		
	10 m	1500680						3 m		1500839		
	Variable	1697441						Variable		1536049	Variable	1536065
M12 socket, angled, 360° shielded												
	1.5 m	1682812						0.3 m		1500923		
	3 m	1682825						0.6 m		1500936		
	5 m	1682838						1.5 m		1500949		
	10 m	1500693						3 m		1500952		
	Variable	1697454						Variable		1536052	Variable	1536078

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the halogen-free **PUR** cable type and are available from stock.

Cable description	Cable type	Suitable for:
PUR, halogen-free - black E221474	PUR	M8/M12
PUR/PVC - gray E221474	100	M12
PVC - black E221474	PVC	M12
PVC - gray E221474	500	M12

Color coding	Pin assignment
BN	1
BK	4
BU	3

Ordering data for products with variable cables:

For a shielded sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, with a straight 3-pos. M12 plug and a straight M12 socket, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 40 m
1536049	PUR	4.5

Minimum order amount = 25

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

With a combination of M12 and M8 plug-in connectors, the limiting M8 value applies to the rated voltage.

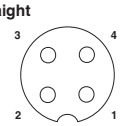
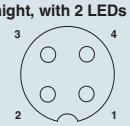
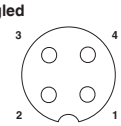
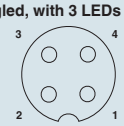
		Technical data	Technical data
		M8 3-pos., shielded	M12 3-pos., shielded
Rated voltage	[V]	60	250
Rated current	[A]	4	4
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Contact material		CuSn	CuSn
Contact surface material		Ni/Au	Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing
M8 circular plug-in connector according to:		IEC 61076-2-104	-
M12 circular plug-in connector according to:		-	IEC 61076-2-101
Degree of protection		IP65 / IP67	IP65 / IP67
Temperature data			
Plug / socket	[°C]	-25 ... 90	-25 ... 90

M8 and M12 SPEEDCON SAC cable, 4-pos.

Notes:

For information about the cable qualities, see page 184

SPEEDCON LOCKING

	Free end		M8 plug				M12 plug, SPEEDCON			
	Ordering data		Ordering data		Ordering data		Ordering data		Ordering data	
Free end		**Order No.**		**Order No.**		**Order No.**		**Order No.**		**Order No.**
			1.5 m	**1681787**	1.5 m	**1681813**	1.5 m	**1518805**	1.5 m	**1518847**
			3 m	**1681790**	3 m	**1681826**	3 m	**1518818**	3 m	**1518850**
			5 m	**1681800**	5 m	**1681839**	5 m	**1518821**	5 m	**1518863**
			10 m	**1694143**	10 m	**1694156**	10 m	**1518834**	10 m	**1518876**
			Variable	**1697755**	Variable	**1697768**	Variable	**1523560**	Variable	**1523573**
M8 socket, straight										
 	1.5 m	**1681842**	0.3 m	**1682142**	0.3 m	**1682223**				
	3 m	**1681855**	0.6 m	**1682155**	0.6 m	**1682236**				
	5 m	**1681868**	1.5 m	**1682168**	1.5 m	**1682249**				
	10 m	**1683484**	3 m	**1682171**	3 m	**1682252**				
	Variable	**1697771**	Variable	**1697797**	Variable	**1697810**	Variable	**1535749**	Variable	**1542253**
M8 socket, angled										
 	1.5 m	**1681871**	0.3 m	**1682184**	0.3 m	**1682265**				
	3 m	**1681884**	0.6 m	**1682197**	0.6 m	**1682278**				
	5 m	**1681897**	1.5 m	**1682207**	1.5 m	**1682281**				
	10 m	**1694172**	3 m	**1682210**	3 m	**1682294**				
	Variable	**1697784**	Variable	**1697807**	Variable	**1697823**	Variable	**1542279**		
M8 socket, angled, with 2 LEDs										
 	Variable	**1517673**					Variable	**1535723**		
M12 socket, SPEEDCON, straight										
 	1.5 m	**1536285**					0.3 m	**1518889**	0.3 m	**1518928**
	3 m	**1536298**					0.6 m	**1518892**	0.6 m	**1518931**
	5 m	**1536308**					1.5 m	**1518902**	1.5 m	**1518944**
	10 m	**1536311**					3 m	**1518915**	3 m	**1518957**
	Variable	**1535781**	Variable	**1542240**			Variable	**1523586**	Variable	**1523599**
M12 socket, SPEEDCON, straight, with 2 LEDs										
 	Variable	**1542321**								
M12 socket, SPEEDCON, angled										
 	1.5 m	**1536405**								
	3 m	**1536418**								
	5 m	**1536421**								
	10 m	**1536434**								
	Variable	**1537734**	Variable	**1542266**	Variable	**1542282**	Variable	**1537747**	Variable	**1537828**
M12 socket, SPEEDCON, angled, with 3 LEDs										
 	1.5 m	**1407778**								
	3 m	**1407779**								
	5 m	**1407780**								
	10 m	**1407781**								
	Variable	**1535765**					Variable	**1535707**	Variable	**1542334**

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the halogen-free **PUR** cable type and are available from stock.

Ordering data for products with variable cables:

For a sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, with a straight 4-pos. M12 plug and a straight M12 socket, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 40 m
1523586	PUR	4.5

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

Minimum order amount = 25

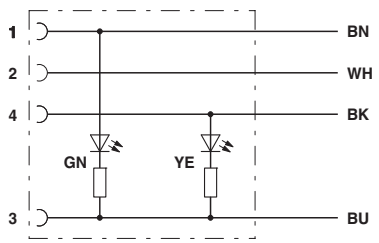
Cable description	Cable type	Suitable for:
PUR, halogen-free - black E221474	PUR	M8/M12
PUR, halogen-free - yellow E221474	240	M12
PUR, halogen-free - gray E221474	280	M8/M12
PUR/PVC - gray E221474	100	M8/M12
PUR/PVC - yellow E221474	140	M8/M12
PUR/PVC - black, 0.75 mm² E221474	186	M12
TPE-U highly flexible - gray E221474	800	M8/M12
PUR irradiated - orange E221474	150	M12
PUR irradiated - yellow E221474	160	M12
PVC - black E221474	PVC	M8/M12

Cable description	Cable type	Suitable for:
PVC - gray E221474	500	M8/M12
PVC - yellow E221474	540	M12
PVC 105° - yellow E221474	542	M12

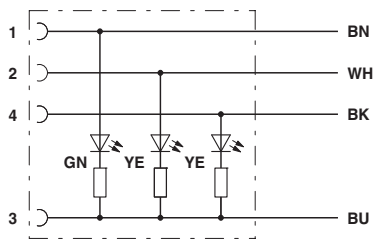
Color coding	Pin assignment
BN	1
WH	2
BK	4
BU	3

With a combination of M12 and M8 plug-in connectors, the limiting M8 value applies to the rated voltage.

		Technical data	Technical data	Technical data	Technical data
		M8 4-pos.	M8 4-pos., with LED	M12 4-pos.	M12 4-pos., with LED
Rated voltage	[V]	30	24	250	24
Rated current	[A]	4	4	4	4
Volume resistance		≤ 5 mΩ	≤ 5 mΩ	≤ 5 mΩ	≤ 5 mΩ
Contact material		CuSn	CuSn	CuSn	CuSn
Contact surface material		Ni/Au	Ni/Au	Ni/Au	Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing
M8 circular plug-in connector according to:		IEC 61076-2-104	IEC 61076-2-104	-	-
M12 circular plug-in connector according to:		-	-	IEC 61076-2-101	IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68	IP65 / IP67 / IP68	IP65 / IP67 / IP68	IP65 / IP67 / IP68
Temperature data					
Plug / socket	[°C]	-25 ... 90	-25 ... 90	-25 ... 90	-25 ... 90



Contact assignment of M8/M12 socket with LED



Contact assignment of M12 sockets with LED

M8 and M12 SAC cable, 4-pos.

Notes:

For information about the cable qualities, see page 184

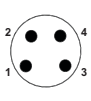


Free end



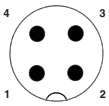




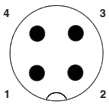


M8 plug

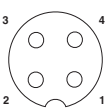
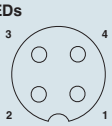
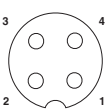
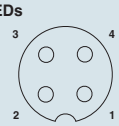








M12 plug

Free end	Ordering data		Ordering data		Ordering data		Ordering data		Ordering data	
		Order No.		Order No.		Order No.		Order No.		Order No.
			1.5 m	1681787	1.5 m	1681813	1.5 m	1668043	1.5 m	1668166
			3 m	1681790	3 m	1681826	3 m	1668056	3 m	1668179
			5 m	1681800	5 m	1681839	5 m	1668069	5 m	1668182
			10 m	1694143	10 m	1694156	10 m	1682993	10 m	1694457
			Variable	1697755	Variable	1697768	Variable	1696947	Variable	1696950
M8 socket, straight										
 	1.5 m	1681842	0.3 m	1682142	0.3 m	1682223	0.3 m	1694923		
	3 m	1681855	0.6 m	1682155	0.6 m	1682236	0.6 m	1693076		
	5 m	1681868	1.5 m	1682168	1.5 m	1682249	1.5 m	1693089		
	10 m	1683484	3 m	1682171	3 m	1682252	3 m	1694936		
	Variable	1697771	Variable	1697797	Variable	1697810	Variable	1697072	Variable	1507874
M8 socket, angled										
 	1.5 m	1681871	0.3 m	1682184	0.3 m	1682265			0.3 m	1671551
	3 m	1681884	0.6 m	1682197	0.6 m	1682278			0.6 m	1671564
	5 m	1681897	1.5 m	1682207	1.5 m	1682281			1.5 m	1671577
	10 m	1694172	3 m	1682210	3 m	1682294			3 m	1671580
	Variable	1697784	Variable	1697807	Variable	1697823	Variable	1697085		
M8 socket, angled, with 2 LEDs										
 	Variable	1517673					Variable	1515031		
M12 socket, straight										
 	1.5 m	1668108					0.3 m	1668357	0.3 m	1668593
	3 m	1668111					0.6 m	1668360	0.6 m	1668603
	5 m	1668124					1.5 m	1668373	1.5 m	1668616
	10 m	1683002					3 m	1668386	3 m	1668629
	Variable	1696963	Variable	1506697			Variable	1697001	Variable	1697030
M12 socket, straight, with 2 LEDs										
 	1.5 m	1694800								
	3 m	1694813								
	5 m	1694826								
	10 m	1694839								
	Variable	1696976								
M12 socket, angled										
 	1.5 m	1668221					0.3 m	1668470	0.3 m	1668713
	3 m	1668234					0.6 m	1668483	0.6 m	1668726
	5 m	1668247					1.5 m	1668496	1.5 m	1668739
	10 m	1681389					3 m	1668506	3 m	1668742
	Variable	1696989	Variable	1511718	Variable	1697836	Variable	1697014	Variable	1697043
M12 socket, angled, with 3 LEDs										
 	1.5 m	1668289					0.3 m	1668519	0.3 m	1668755
	3 m	1668292					0.6 m	1668522	0.6 m	1668768
	5 m	1668302					1.5 m	1668535	1.5 m	1668771
	10 m	1681020					3 m	1668548	3 m	1668784
	Variable	1696992					Variable	1697027	Variable	1697056

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the halogen-free **PUR** cable type and are available from stock.

Ordering data for products with variable cables:

For a sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, with a straight 4-pos. M12 plug and a straight M12 socket, the ordering data is as follows:

Order No.	Cable type	Length [m] 40 m, max.
1697001	PUR	4.5

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

Minimum order amount = 25

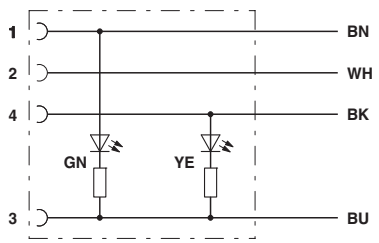
Cable description	Cable type	Suitable for:
PUR, halogen-free - black E221474	PUR	M8/M12
PUR halogen-free - yellow E221474	240	M12
PUR, halogen-free - gray E221474	280	M8/M12
PUR/PVC - gray E221474	100	M8/M12
PUR/PVC - yellow E221474	140	M8/M12
PUR/PVC - black, 0.75 mm² E221474	186	M12
TPE-U highly flexible - gray E221474	800	M8/M12
PUR irradiated - orange E221474	150	M12
PUR irradiated - yellow E221474	160	M12
PVC - black E221474	PVC	M8/M12

Cable description	Cable type	Suitable for:
PVC - gray E221474	500	M8/M12
PVC - yellow E221474	540	M12
PVC 105° - yellow E221474	542	M12

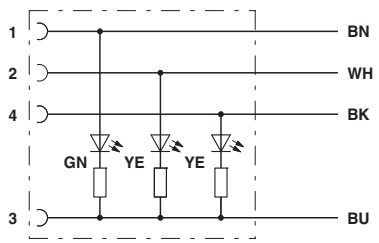
Color coding	Pin assignment
BN	1
WH	2
BK	4
BU	3

With a combination of M12 and M8 plug-in connectors, the limiting M8 value applies to the rated voltage.

		Technical data	Technical data	Technical data	Technical data
		M8 4-pos.	M8 4-pos., with LED	M12 4-pos.	M12 4-pos., with LED
Rated voltage	[V]	30	24	250	24
Rated current	[A]	4	4	4	4
Volume resistance		≤ 5 mΩ	≤ 5 mΩ	≤ 5 mΩ	≤ 5 mΩ
Contact material		CuSn	CuSn	CuSn	CuSn
Contact surface material		Ni/Au	Ni/Au	Ni/Au	Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing
M8 circular plug-in connector according to:		IEC 61076-2-104	IEC 61076-2-104	-	-
M12 circular plug-in connector according to:		-	-	IEC 61076-2-101	IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68	IP65 / IP67 / IP68	IP65 / IP67 / IP68	IP65 / IP67 / IP68
Temperature data					
Plug / socket	[°C]	-25 ... 90	-25 ... 90	-25 ... 90	-25 ... 90



Contact assignment of M8/M12 socket with LED



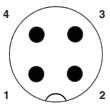
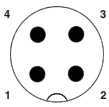
Contact assignment of M12 sockets with LED

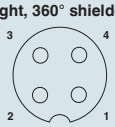
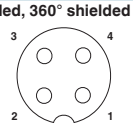
M12 SPEEDCON SAC cable, 4-pos., shielded

Notes:

For information about the cable qualities, see page 184

SPEEDCON LOCKING

		Free end	M12 plug, SPEEDCON, 360° shielded	
				
				

		Ordering data		Ordering data		Ordering data	
Free end			**Order No.**		**Order No.**		**Order No.**
				1.5 m	**1407800**		
				3 m	**1407801**		
				5 m	**1407802**		
				10 m	**1407803**		
				Variable	**1523764**	Variable	**1523777**
M12 socket, SPEEDCON, straight, 360° shielded							
		1.5 m	**1407782**				
		3 m	**1407784**				
		5 m	**1407785**				
		10 m	**1407786**				
		Variable	**1536531**	Variable	**1523803**	Variable	**1542208**
M12 socket, SPEEDCON, angled, 360° shielded							
		1.5 m	**1407796**				
		3 m	**1407797**				
		5 m	**1407798**				
		10 m	**1407799**				
		Variable	**1536560**	Variable	**1523816**	Variable	**1542211**

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the halogen-free **PUR** cable type and are available from stock.

Cable description	Cable type	Suitable for:
PUR, halogen-free - black E221474	**PUR**	M8/M12
PUR/PVC - gray E221474	**100**	M12
PVC - black E221474	**PVC**	M12
PVC - gray E221474	**500**	M12

Color coding	Pin assignment
BN	1
WH	2
BK	4
BU	3

Ordering data for products with variable cables:

For a shielded sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, with a straight 4-pos. M12 plug and a straight M12 socket, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 40 m
1523803	PUR	4.5

Minimum order amount = 25

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

		Technical data
		M12 4-pos., shielded
Rated voltage	[V]	250
Rated current	[A]	4
Volume resistance		≤ 5 mΩ
Contact material		CuSn
Contact surface material		Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection		IP65 / IP67
Temperature data		
Plug / socket	[°C]	-25 ... 90

M8 and M12 SAC cable, 4-pos., shielded

Notes:

For information about the cable qualities, see page 184



Free end





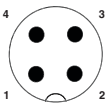


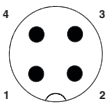


M8 plug, 360° shielded

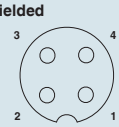
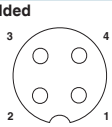








M12 plug, 360° shielded

Free end		Ordering data Order No.		Ordering data Order No.		Ordering data Order No.		Ordering data Order No.		Ordering data Order No.
			1.5 m	1521818	1.5 m	1521863	1.5 m	1682715	1.5 m	1682870
			3 m	1521821	3 m	1521876	3 m	1682618	3 m	1682883
			5 m	1521834	5 m	1521889	5 m	1682647	5 m	1682896
			10 m	1521847	10 m	1521892	10 m	1694389	10 m	1500703
			Variable	1521850	Variable	1521902	Variable	1697467	Variable	1697470
M8 socket, straight, 360° shielded										
		1.5 m	1521915	0.3 m	1574580					
		3 m	1521928	0.6 m	1455722					
		5 m	1521931	1.5 m	1455735					
		10 m	1521944	3 m	1574603					
		Variable	1521957	Variable	1552094	Variable	1552104			
M8 socket, angled, 360° shielded										
		1.5 m	1521960							
		3 m	1521973							
		5 m	1521986							
		10 m	1521999							
		Variable	1522008	Variable	1552065	Variable	1552120			
M12 socket, straight, 360° shielded										
		1.5 m	1682841					0.3 m	1500842	
		3 m	1682854					0.6 m	1500855	
		5 m	1682867					1.5 m	1500868	
		10 m	1500716					3 m	1500871	
		Variable	1697483					Variable	1536081	Variable 1536104
M12 socket, angled, 360° shielded										
		1.5 m	1682906					0.3 m	1500965	
		3 m	1682919					0.6 m	1500978	
		5 m	1682922					1.5 m	1500981	
		10 m	1500729					3 m	1500994	
		Variable	1697496					Variable	1536094	Variable 1536117

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the halogen-free **PUR** cable type and are available from stock.

Cable description	Cable type	Suitable for:
PUR, halogen-free - black E221474	PUR	M8/M12
PUR/PVC - gray E221474	100	M12
PVC - black E221474	PVC	M12
PVC - gray E221474	500	M12

Color coding	Pin assignment
BN	1
WH	2
BK	4
BU	3

Ordering data for products with variable cables:

For a shielded sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, with a straight 4-pos. M12 plug and a straight M12 socket, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 40 m
1536081	PUR	4.5

Minimum order amount = 25

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

With a combination of M12 and M8 plug-in connectors, the limiting M8 value applies to the rated voltage.

		Technical data M8 4-pos., shielded	Technical data M12 4-pos., shielded
Rated voltage	[V]	30	250
Rated current	[A]	4	4
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Contact material		CuSn	CuSn
Contact surface material		Ni/Au	Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing
M8 circular plug-in connector according to:		IEC 61076-2-104	-
M12 circular plug-in connector according to:		-	IEC 61076-2-101
Degree of protection		IP65 / IP67	IP65 / IP67
Temperature data			
Plug / socket	[°C]	-25 ... 90	-25 ... 90

M8 SAC cable, 5-pos., B-coded

Notes:
For information about the cable qualities, see page 184

	Free end	M8 plug	
			
			

		Ordering data		Ordering data		Ordering data	
Free end			**Order No.**		**Order No.**		**Order No.**
				1.5 m	**1404461**	1.5 m	**1404465**
				3 m	**1404462**	3 m	**1404466**
				5 m	**1404463**	5 m	**1404467**
				10 m	**1404464**	10 m	**1404468**
M8 socket, straight							
		1.5 m	**1404470**	0.3 m	**1404479**		
		3 m	**1404471**	0.6 m	**1404480**		
		5 m	**1404473**	1.5 m	**1404481**		
		10 m	**1404474**	3 m	**1404482**		
M8 socket, angled							
		1.5 m	**1404475**				
		3 m	**1404476**				
		5 m	**1404477**				
		10 m	**1404478**				

Cable description	Cable type
PUR, halogen-free - black	**115**

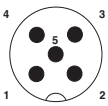
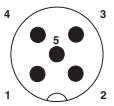
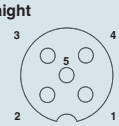
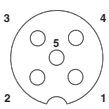
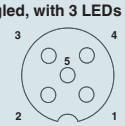
Color coding		Pin assignment
BN		1
WH		2
BK		4
BU		3
GY		5

		Technical data
		M8 5-pos.
Rated voltage	[V]	30
Rated current	[A]	3
Volume resistance		≤ 5 mΩ
Contact material		CuSn
Contact surface material		Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing
Material, knurls		Zinc die-cast, nickel-plated
M8 circular plug-in connector according to:		IEC 61076-2-104
Degree of protection		IP65 / IP67 / IP68
Temperature data		
Plug / socket	[°C]	-25 ... 90

M12 SPEEDCON SAC cable, 5-pos.

Notes:
For information about the cable qualities, see page 184

SPEEDCON LOCKING

	Free end		M12 plug, SPEEDCON		M12 plug, SPEEDCON	
						
						
	Ordering data		Ordering data		Ordering data	
Free end		**Order No.**		**Order No.**		**Order No.**
			1.5 m	**1518960**	1.5 m	**1519008**
			3 m	**1518973**	3 m	**1519011**
			5 m	**1518986**	5 m	**1519024**
			10 m	**1518999**	10 m	**1519037**
			Variable	**1523609**	Variable	**1523612**
M12 socket, SPEEDCON, straight						
 	1.5 m	**1536324**	0.3 m	**1519040**	0.3 m	**1519082**
	3 m	**1536337**	0.6 m	**1519053**	0.6 m	**1519095**
	5 m	**1536340**	1.5 m	**1519066**	1.5 m	**1519105**
	10 m	**1536353**	3 m	**1519079**	3 m	**1519118**
	Variable	**1536489**	Variable	**1523625**	Variable	**1523638**
M12 socket, SPEEDCON, angled						
 	1.5 m	**1536447**				
	3 m	**1536450**				
	5 m	**1536463**				
	10 m	**1536476**				
	Variable	**1536515**	Variable	**1542415**	Variable	**1542389**
M12 socket, SPEEDCON, angled, with 3 LEDs						
 	Variable	**1542428**	Variable	**1542431**		

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the halogen-free **PUR** cable type and are available from stock.

Ordering data for products with variable cables:

For a sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, with a straight 5-pos. M12 plug and a straight M12 socket, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 40 m
1523625	/ PUR	/ 4.5

Minimum order amount = 25

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

Cable description	Cable type
PUR, halogen-free - black E221474	PUR
PUR, halogen-free - black, 5th wire gray E221474	115
PUR/PVC - gray E221474	100
PUR/PVC - yellow E221474	140
PUR/PVC - black, 0.75 mm² E221474	186
TPE-U highly flexible - gray, 5th wire gray E221474	800
PUR irradiated - orange E221474	150
PVC - black E221474	PVC
PVC - black, 5th wire gray E221474	515
PVC - gray E221474	500

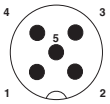
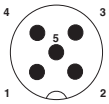
Cable description	Cable type
PVC 105° - yellow E221474	540
PVC 105° - yellow, 5th wire gray E221474	542

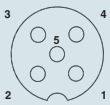
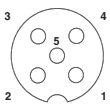
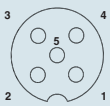
Color coding	Pin assignment
BN	1
WH	2
BK	4
BU	3
GNYE	5

		Technical data	Technical data
		M12 5-pos.	M12 5-pos., with LED
Rated voltage	[V]	60	24
Rated current	[A]	4	4
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Contact material		CuSn	CuSn
Contact surface material		Ni/Au	Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68	IP65 / IP67 / IP68
Temperature data			
Plug / socket	[°C]	-25 ... 90	-25 ... 90

M12 SAC cable, 5-pos.

Notes:
For information about the cable qualities, see page 184

	Free end	M12 plug	
			
			

		Ordering data		Ordering data		Ordering data	
Free end			**Order No.**		**Order No.**		**Order No.**
				1.5 m	**1669767**	1.5 m	**1669796**
				3 m	**1669770**	3 m	**1669806**
				5 m	**1669783**	5 m	**1669819**
				10 m	**1683361**	10 m	**1694460**
				Variable	**1697098**	Variable	**1697108**
M12 socket, straight							
		1.5 m	**1669822**	0.3 m	**1681583**		
		3 m	**1669835**	0.6 m	**1681596**		
		5 m	**1669848**	1.5 m	**1681606**		
		10 m	**1683374**	3 m	**1681619**		
		Variable	**1697111**	Variable	**1697140**	Variable	**1508734**
M12 socket, angled							
		1.5 m	**1669851**	0.3 m	**1681622**		
		3 m	**1669864**	0.6 m	**1681635**		
		5 m	**1669877**	1.5 m	**1681648**		
		10 m	**1694541**	3 m	**1681651**		
		Variable	**1697124**	Variable	**1697153**	Variable	**1529506**
M12 socket, angled, with 3 LEDs							
		1.5 m	**1669880**	0.3 m	**1694635**		
		3 m	**1669893**	0.6 m	**1694648**		
		5 m	**1669903**	1.5 m	**1694651**		
		10 m	**1694431**				
		Variable	**1697137**	Variable	**1697166**	Variable	**1552159**

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the halogen-free **PUR** cable type and are available from stock.

Ordering data for products with variable cables:

For a sensor/actuator cable, PUR, halogen-free black, 4.5 m long, with a straight 5-pos. M12 plug and a straight M12 socket, the ordering data is as follows:

Order No.	Cable type	Length [m] 40 m, max.
1697140	/ PUR	/ 4.5

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

Minimum order amount = 25

Cable description	Cable type
PUR, halogen-free - black E221474	PUR
PUR, halogen-free - black, 5th wire gray E221474	115
PUR/PVC - gray E221474	100
PUR/PVC - yellow E221474	140
PUR/PVC - black, 0.75 mm² E221474	186
TPE-U highly flexible - gray, 5th wire gray E221474	800
PUR irradiated - orange E221474	150
PVC - black E221474	PVC
PVC - black, 5th wire gray E221474	515
PVC - gray E221474	500

Cable description	Cable type
PVC 105° - yellow E221474	540
PVC 105° - yellow, 5th wire gray E221474	542

Color coding	Pin assignment
BN	1
WH	2
BK	4
BU	3
GNYE	5

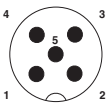
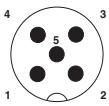
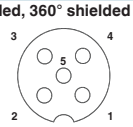
		Technical data	Technical data
		M12 5-pos.	**M12 5-pos., with LED**
Rated voltage	[V]	60	24
Rated current	[A]	4	4
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Contact material		CuSn	CuSn
Contact surface material		Ni/Au	Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68	IP65 / IP67 / IP68
Temperature data			
Plug / socket	[°C]	-25 ... 90	-25 ... 90

M12 SPEEDCON SAC cable, 5-pos., shielded

Notes:

For information about the cable qualities, see page 184

SPEEDCON LOCKING

	Free end		M12 plug, SPEEDCON, 360° shielded			
			 		 	
	Ordering data		Ordering data		Ordering data	
Free end		**Order No.**		**Order No.**		**Order No.**
			1.5 m	**1407804**		
			3 m	**1407805**		
			5 m	**1407806**		
			10 m	**1407807**		
			Variable	**1523829**	Variable	**1523832**
M12 socket, SPEEDCON, straight, 360° shielded						
 		1.5 m	**1407787**			
		3 m	**1407788**			
		5 m	**1407789**			
		10 m	**1407790**			
		Variable	**1536544**	Variable	**1523861**	Variable	**1542347**
M12 socket, SPEEDCON, angled, 360° shielded						
 		1.5 m	**1407808**			
		3 m	**1407809**			
		5 m	**1407810**			
		10 m	**1407811**			
		Variable	**1536573**	Variable	**1523874**	Variable	**1542350**

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the halogen-free **PUR** cable type and are available from stock.

Ordering data for products with variable cables:

For a shielded sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, with a straight 5-pos. M12 plug and a straight M12 socket, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 40 m
1523861	/ PUR	/ 4.5

Minimum order amount = 25

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

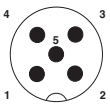
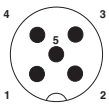
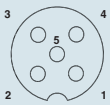
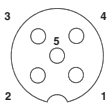
Cable description	Cable type
PUR, halogen-free - black E221474	PUR
PUR/PVC - gray E221474	100
PVC - black E221474	PVC
PVC - gray E221474	500

Color coding	Pin assignment
BN	1
WH	2
BK	4
BU	3
GY	5

		Technical data
		M12 5-pos., shielded
Rated voltage	[V]	60
Rated current	[A]	4
Volume resistance		≤ 5 mΩ
Contact material		CuSn
Contact surface material		Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection		IP65 / IP67
Temperature data		
Plug / socket	[°C]	-25 ... 90

M12 SAC cable, 5-pos., shielded

Notes:
For information about the cable qualities, see page 184

	Free end	M12 plug, 360° shielded			
					
					
	Ordering data	Ordering data		Ordering data	
Free end		Order No.		Order No.		Order No.
			1.5 m	1682728	1.5 m	1682757
			3 m	1682744	3 m	1682760
			5 m	1682731	5 m	1682773
			10 m	1500732	10 m	1500745
			Variable	1697506	Variable	1697519
M12 socket, straight, 360° shielded						
 		1.5 m	1682935	0.3 m	1500884		
		3 m	1682948	0.6 m	1500897		
		5 m	1682951	1.5 m	1500907		
		10 m	1500758	3 m	1500910		
		Variable	1697522	Variable	1536120	Variable	1536146
M12 socket, angled, 360° shielded						
 		1.5 m	1682964	0.3 m	1501003		
		3 m	1682977	0.6 m	1501029		
		5 m	1682980	1.5 m	1501045		
		10 m	1500761	3 m	1501058		
		Variable	1697535	Variable	1536133	Variable	1536159

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the halogen-free **PUR** cable type and are available from stock.

Ordering data for products with variable cables:

For a shielded sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, with a straight 5-pos. M12 plug and a straight M12 socket, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 40 m
1536120	/ PUR	/ 4.5

Minimum order amount = 25

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

Cable description	Cable type
PUR, halogen-free - black E221474	PUR
PUR/PVC - gray E221474	100
PVC - black E221474	PVC
PVC - gray E221474	500

Color coding	Pin assignment
BN	1
WH	2
BK	4
BU	3
GY	5

		Technical data
		M12 5-pos., shielded
Rated voltage	[V]	60
Rated current	[A]	4
Volume resistance		≤ 5 mΩ
Contact material		CuSn
Contact surface material		Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection		IP65 / IP67
Temperature data		
Plug / socket	[°C]	-25 ... 90

M8 SAC cable, 6-pos.

Notes:

For information about the cable qualities, see page 184

	Free end	M8 plug	
			
			

		Ordering data		Ordering data		Ordering data	
Free end			**Order No.**		**Order No.**		**Order No.**
				1.5 m	**1522095**	1.5 m	**1522147**
				3 m	**1522105**	3 m	**1522150**
				5 m	**1522118**	5 m	**1522163**
				10 m	**1522121**	10 m	**1522176**
				Variable	**1522134**	Variable	**1522189**
M8 socket, straight							
		1.5 m	**1522192**				
		3 m	**1522202**				
		5 m	**1522215**				
		10 m	**1522228**				
		Variable	**1522231**	Variable	**1551927**	Variable	**1551943**
M8 socket, angled							
		1.5 m	**1522244**				
		3 m	**1522257**				
		5 m	**1522260**				
		10 m	**1522273**				
		Variable	**1522286**	Variable	**1551930**	Variable	**1551956**

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the halogen-free **PUR** cable type and are available from stock.

Cable description	Cable type
PUR, halogen-free - black E221474	PUR

Color coding		Pin assignment
BN		1
WH		2
BU		3
BK		4
GY		5
PK		6

Ordering data for products with variable cables:

For a shielded sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, with a straight 6-pos. M8 plug and open cable end, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 40 m
1522134	PUR	4.5

Minimum order amount = 25

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

		Technical data
		M8 6-pos.
Rated voltage	[V]	30
Rated current	[A]	1.5
Volume resistance		≤ 5 mΩ
Contact material		CuZn
Contact surface material		Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing
M8 circular plug-in connector according to:		IEC 61076-2-104
Degree of protection		IP65 / IP67 / IP68
Temperature data		
Plug / socket	[°C]	-25 ... 90

M8 SAC cable, 6-pos., shielded

Notes:
For information about the cable qualities, see page 184

	Free end	M8 plug, 360° shielded	
			
			

		Ordering data		Ordering data		Ordering data	
Free end			**Order No.**		**Order No.**		**Order No.**
				1.5 m	**1522299**	1.5 m	**1522341**
				3 m	**1522309**	3 m	**1522354**
				5 m	**1522312**	5 m	**1522367**
				10 m	**1522325**	5 m	**1522370**
				Variable	**1522338**	Variable	**1522383**
M8 socket, straight, 360° shielded							
		1.5 m	**1522396**				
		3 m	**1522406**				
		5 m	**1522419**				
		10 m	**1522422**				
		Variable	**1522435**	Variable	**1552010**	Variable	**1552036**
M8 socket, angled, 360° shielded							
		1.5 m	**1522448**				
		3 m	**1522451**				
		5 m	**1522464**				
		10 m	**1522477**				
		Variable	**1522480**	Variable	**1552023**	Variable	**1552049**

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the halogen-free **PUR** cable type and are available from stock.

Cable description	Cable type
PUR, halogen-free - black E221474	**PUR**

Color coding		Pin assignment
BN		1
WH		2
BU		3
BK		4
GY		5
PK		6

Ordering data for products with variable cables:

For a shielded sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, with a straight 6-pos. M8 plug and a straight M8 socket, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 40 m
1552010	PUR	4.5

Minimum order amount = 25

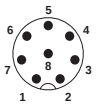
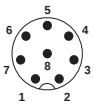
Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

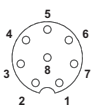
		Technical data
		M8 6-pos., shielded
Rated voltage	[V]	30
Rated current	[A]	1.5
Volume resistance		≤ 5 mΩ
Contact material		CuZn
Contact surface material		Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing
M8 circular plug-in connector according to:		IEC 61076-2-104
Degree of protection		IP65 / IP67
Temperature data		
Plug / socket	[°C]	-25 ... 90

M8 SAC cable, 8-pos.

Notes:

For information about the cable qualities, see page 184

Free end	M8 plug
	 
	 

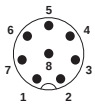
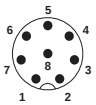
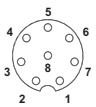
		Ordering data		Ordering data		Ordering data	
Free end			**Order No.**		**Order No.**		**Order No.**
				1.5 m 3 m 5 m 10 m	**1404178** **1404180** **1404181** **1404179**	1.5 m 3 m 5 m 10 m	**1404182** **1404186** **1404185** **1404183**
M8 socket, straight							
		1.5 m 3 m 5 m 10 m	**1404187** **1404188** **1404189** **1404190**	0.3 m 0.6 m 1.5 m 3 m	**1404196** **1404198** **1404199** **1404200**		
M8 socket, angled							
		1.5 m 3 m 5 m 10 m	**1404191** **1404192** **1404193** **1404194**	0.3 m 0.6 m 1.5 m 3 m	**1404201** **1404202** **1404203** **1404204**		

Cable description	Cable type	Color coding	Pin assignment
PUR, halogen-free - black	**PUR**	WH	1
		BN	2
		GN	3
		YE	4
		GY	5
		PK	6
		BU	7
		RD	8

		Technical data
		M8 8-pos.
Rated voltage	[V]	30
Rated current	[A]	1.5
Volume resistance		≤ 5 mΩ
Contact material		CuSn
Contact surface material		Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing
Material, knurls		Zinc die-cast, nickel-plated
M8 circular plug-in connector according to:		IEC 61076-2-104
Degree of protection		IP65 / IP67 / IP68
Temperature data		
Plug / socket	[°C]	-25 ... 85

M12 SPEEDCON SAC cable, 8-pos.

Notes:
For information about the cable qualities, see page 184

	Free end	M12 plug, SPEEDCON	
		 	 
	Ordering data	Ordering data	Ordering data
	Order No.	Order No.	Order No.
Free end			
		Variable **1523641**	Variable **1523654**
M12 socket, SPEEDCON, straight			
 	1.5 m **1407791** 3 m **1401793** 5 m **1401691** 10 m **1407792** Variable **1523667**	Variable **1523683**	Variable **1552191**
M12 socket, SPEEDCON, angled			
 	Variable **1523670**	Variable **1523696**	Variable **1552201**

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the halogen-free **PUR** cable type and are available from stock.

Ordering data for products with variable cables:

For a sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, with a straight 8-pos. M12 plug and a straight M12 socket, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 40 m
1523683 /	PUR /	4.5

Minimum order amount = 25

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

Cable description	Cable type
PUR, halogen-free - black E221474	PUR
PUR/PVC - gray E221474	100
TPE-U highly flexible - gray E221474	800
PVC - black E221474	PVC
PVC - gray E221474	500

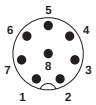
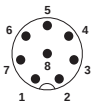
Color coding	Pin assignment
WH	1
BN	2
GN	3
YE	4
GY	5
PK	6
BU	7
RD	8

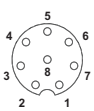
		Technical data
		M12 8-pos.
Rated voltage	[V]	30
Rated current	[A]	2
Volume resistance		≤ 5 mΩ
Contact material		CuZn
Contact surface material		Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68
Temperature data		
Plug / socket	[°C]	-25 ... 90

M12 SAC cable, 8-pos.

Notes:

For information about the cable qualities, see page 184

	Free end	M12 plug	
			
			

		Ordering data		Ordering data		Ordering data	
Free end			**Order No.**		**Order No.**		**Order No.**
				1.5 m	**1522493**	1.5 m	**1522545**
				3 m	**1522503**	3 m	**1522558**
				5 m	**1522516**	5 m	**1522561**
				10 m	**1522529**	10 m	**1522574**
				Variable	**1522532**	Variable	**1522587**
M12 socket, straight							
		1.5 m	**1522590**	0.3 m	**1522671**		
		3 m	**1522600**	0.6 m	**1522684**		
		5 m	**1520369**	1.5 m	**1522697**		
		10 m	**1520372**	3 m	**1522707**		
		Variable	**1522613**	Variable	**1522710**	Variable	**1551969**
M12 socket, angled							
		1.5 m	**1522626**	0.3 m	**1522723**		
		3 m	**1522639**	0.6 m	**1522736**		
		5 m	**1522642**	1.5 m	**1522749**		
		10 m	**1522655**	3 m	**1522752**		
		Variable	**1522668**	Variable	**1522765**	Variable	**1551972**

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the halogen-free **PUR** cable type and are available from stock.

Ordering data for products with variable cables:

For a sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, with a straight 8-pos. M12 plug and a straight M12 socket, the ordering data is as follows:

Order No.	Cable type	Length [m] 40 m, max.
1522710	PUR	4.5

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

Minimum order amount = 25

Cable description	Cable type
PUR, halogen-free - black E221474	PUR
PUR/PVC - gray E221474	100
TPE-U highly flexible - gray E221474	800
PVC - black E221474	PVC
PVC - gray E221474	500

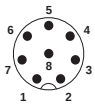
Color coding		Pin assignment
WH		1
BN		2
GN		3
YE		4
GY		5
PK		6
BU		7
RD		8

		Technical data
		M12 8-pos.
Rated voltage	[V]	30
Rated current	[A]	2
Volume resistance		≤ 5 mΩ
Contact material		CuZn
Contact surface material		Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68
Temperature data		
Plug / socket	[°C]	-25 ... 90

M8 SAC cable, 8-pos., shielded

Notes:
For information about the cable qualities, see page 184

Free end	M8 plug
	



	Ordering data		Ordering data		Ordering data
Free end		**Order No.**		**Order No.**	**Order No.**
			1.5 m	**1404137**	
			3 m	**1404140**	
			5 m	**1404141**	
			10 m	**1404138**	
M8 socket, straight					
 		1.5 m **1404147** 3 m **1404148** 5 m **1404149** 10 m **1404150**		0.3 m **1404133** 0.6 m **1404134** 1.5 m **1404135** 3 m **1404136**	

Cable description	Cable type
PUR, halogen-free - black	**PUR**

Color coding		Pin assignment
WH		1
BN		2
GN		3
YE		4
GY		5
PK		6
BU		7
RD		8

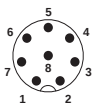
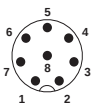
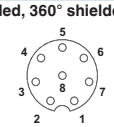
		Technical data
		M8 8-pos.
Rated voltage	[V]	30
Rated current	[A]	1.5
Volume resistance		≤ 5 mΩ
Contact material		CuSn
Contact surface material		Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing
Material, knurls		Zinc die-cast, nickel-plated
M8 circular plug-in connector according to:		IEC 61076-2-104
Degree of protection		IP65 / IP67
Temperature data		
Plug / socket	[°C]	-25 ... 85

M12 SPEEDCON SAC cable, 8-pos., shielded

Notes:

For information about the cable qualities, see page 184

SPEEDCON LOCKING

	Free end	M12 plug, SPEEDCON, 360° shielded	
		 	 
	Ordering data	Ordering data	Ordering data
Free end	Order No.	Order No.	Order No.
		1.5 m **1407812** 3 m **1556773** 5 m **1407813** 10 m **1407814** Variable **1523887**	Variable **1523890**
M12 socket, SPEEDCON, straight, 360° shielded			
 	1.5 m **1407793** 3 m **1556786** 5 m **1407794** 10 m **1407795** Variable **1523900**	Variable **1523926**	
M12 socket, SPEEDCON, angled, 360° shielded			
 	Variable **1523913**	Variable **1523939**	

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the halogen-free **PUR** cable type and are available from stock.

Ordering data for products with variable cables:

For a shielded sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, with a straight 8-pos. M12 plug and a straight M12 socket, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 40 m
1523926 /	PUR /	4.5

Minimum order amount = 25

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

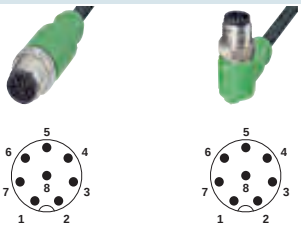
Cable description	Cable type
PUR, halogen-free - black E221474	PUR
PUR, halogen-free - gray E221474	280
PVC - black E221474	PVC

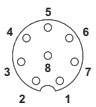
Color coding		Pin assignment
WH		1
BN		2
GN		3
YE		4
GY		5
PK		6
BU		7
RD		8

		Technical data
		M12 8-pos., shielded
Rated voltage	[V]	30
Rated current	[A]	2
Volume resistance		≤ 5 mΩ
Contact material		CuZn
Contact surface material		Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection		IP65 / IP67
Temperature data		
Plug / socket	[°C]	-25 ... 90

M12 SAC cable, 8-pos., shielded

Notes:
For information about the cable qualities, see page 184

Free end	M12 plug, 360° shielded
	

		Ordering data		Ordering data		Ordering data	
Free end			**Order No.**		**Order No.**		**Order No.**
				1.5 m	**1522778**	1.5 m	**1522817**
				3 m	**1522781**	3 m	**1522820**
				5 m	**1526981**	5 m	**1522833**
				10 m	**1522794**	10 m	**1522846**
				Variable	**1522804**	Variable	**1522859**
M12 socket, straight, 360° shielded							
		1.5 m	**1522862**	0.3 m	**1522969**		
		3 m	**1522875**	0.6 m	**1522972**		
		5 m	**1522888**	1.5 m	**1522985**		
		10 m	**1522891**	3 m	**1522998**		
		Variable	**1522901**	Variable	**1523007**	Variable	**1551998**
M12 socket, angled, 360° shielded							
		1.5 m	**1522914**	0.3 m	**1523010**		
		3 m	**1522927**	0.6 m	**1523023**		
		5 m	**1522930**	1.5 m	**1523036**		
		10 m	**1522943**	3 m	**1523049**		
		Variable	**1522956**	Variable	**1523052**	Variable	**1552007**

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the halogen-free **PUR** cable type and are available from stock.

Ordering data for products with variable cables:

For a shielded sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, with a straight 8-pos. M12 plug and a straight M12 socket, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 40 m
1523007	PUR	4.5

Minimum order amount = 25

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

Cable description	Cable type
PUR, halogen-free - black E221474	PUR
PUR, halogen-free - gray E221474	280
PVC - black E221474	PVC

Color coding	Pin assignment
WH	1
BN	2
GN	3
YE	4
GY	5
PK	6
BU	7
RD	8

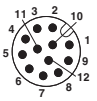
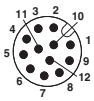
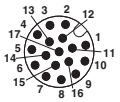
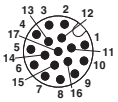
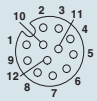
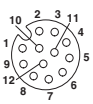
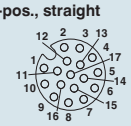
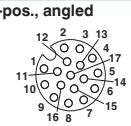
		Technical data
		M12 8-pos., shielded
Rated voltage	[V]	30
Rated current	[A]	2
Volume resistance		≤ 5 mΩ
Contact material		CuZn
Contact surface material		Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection		IP65 / IP67
Temperature data		
Plug / socket	[°C]	-25 ... 90

M12 SPEEDCON SAC cable, 12 and 17-pos. PUR cable

Notes:

For information about the cable qualities, see page 184

SPEEDCON LOCKING

	Free end	M12 plug, SPEEDCON, 12-pos.		M12 plug, SPEEDCON, 17-pos.	
					
					
	Ordering data	Ordering data	Ordering data	Ordering data	Ordering data
Free end	**Order No.**	**Order No.**	**Order No.**	**Order No.**	**Order No.**
		1.5 m **1430530** 3 m **1430543** 5 m **1430556** 10 m **1430569**	1.5 m **1430572** 3 m **1430585** 5 m **1430598** 10 m **1430608**	1.5 m **1430695** 3 m **1430705** 5 m **1430718** 10 m **1430721**	1.5 m **1430734** 3 m **1430747** 5 m **1430750** 10 m **1430763**
M12 socket, SPEEDCON, 12-pos., straight					
 	1.5 m **1430611** 3 m **1430624** 5 m **1430637** 10 m **1430640**				
M12 socket, SPEEDCON, 12-pos., angled					
 	1.5 m **1430653** 3 m **1430666** 5 m **1430679** 10 m **1430682**				
M12 socket, SPEEDCON, 17-pos., straight					
 	1.5 m **1430776** 3 m **1430789** 5 m **1430792** 10 m **1430802**				
M12 socket, SPEEDCON, 17-pos., angled					
 	1.5 m **1430815** 3 m **1430828** 5 m **1430831** 10 m **1430844**				

Cable description	Cable type
PUR halogen-free - black	**PUR**

Color coding	Pin assignment, 12-pos.
BN	1
BU	2
WH	3
GN	4
PK	5
YE	6
BK	7
GY	8
RD	9
VT	10
GYPK	11
RDBU	12

Color coding	Pin assignment, 17-pos.
BN	1
BU	2
WH	3
GN	4
PK	5
YE	6
BK	7
GY	8
RD	9
VT	10
GYPK	11
RDBU	12
WHGN	13
BNGN	14
WHYE	15
YEBN	16
WHGY	17

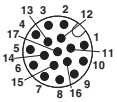
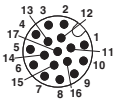
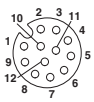
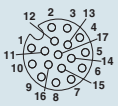
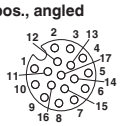
		Technical data	Technical data
		M12 12-pos.	**M12 17-pos.**
Rated voltage	[V]	30	30
Rated current	[A]	1.5	1.5
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Contact material		CuZn	CuZn
Contact surface material		Ni/Au	Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68	IP65 / IP67 / IP68
Temperature data			
Plug / socket	[°C]	-25 ... 90	-25 ... 90

M12 SPEEDCON SAC cable, 12 and 17-pos. PVC cable

Notes:

For information about the cable qualities, see page 184

SPEEDCON LOCKING

	Free end	M12 plug, SPEEDCON, 12-pos.		M12 plug, SPEEDCON, 17-pos.	
					
					
	Ordering data	Ordering data	Ordering data	Ordering data	Ordering data
Free end	Order No.	Order No.	Order No.	Order No.	Order No.
		1.5 m **1554775** 3 m **1554788** 5 m **1554791** 10 m **1554801**	1.5 m **1554814** 3 m **1554827** 5 m **1554830** 10 m **1554843**	1.5 m **1555266** 3 m **1555279** 5 m **1555282** 10 m **1555295**	1.5 m **1555305** 3 m **1555318** 5 m **1555321** 10 m **1555334**
M12 socket, SPEEDCON, 12-pos., straight					
 	1.5 m **1554856** 3 m **1554869** 5 m **1554872** 10 m **1554885**				
M12 socket, SPEEDCON, 12-pos., angled					
 	1.5 m **1554898** 3 m **1554908** 5 m **1554924** 10 m **1554937**				
M12 socket, SPEEDCON, 17-pos., straight					
 	1.5 m **1555347** 3 m **1555350** 5 m **1555363** 10 m **1555376**				
M12 socket, SPEEDCON, 17-pos., angled					
 	1.5 m **1555389** 3 m **1555392** 5 m **1555402** 10 m **1555415**				

Cable description	Cable type
PVC - black	**PVC**

Color coding	Pin assignment, 12-pos.
BN	1
BU	2
WH	3
GN	4
PK	5
YE	6
BK	7
GY	8
RD	9
VT	10
GYPK	11
RDBU	12

Color coding	Pin assignment, 17-pos.
BN	1
BU	2
WH	3
GN	4
PK	5
YE	6
BK	7
GY	8
RD	9
VT	10
GYPK	11
RDBU	12
WHGN	13
BNGN	14
WHYE	15
YEBN	16
WHGY	17

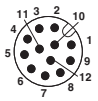
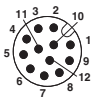
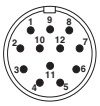
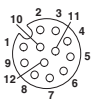
		Technical data	Technical data
		M12 12-pos.	M12 17-pos.
Rated voltage	[V]	30	30
Rated current	[A]	1.5	1.5
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Contact material		CuZn	CuZn
Contact surface material		Ni/Au	Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68	IP65 / IP67 / IP68
Temperature data			
Plug / socket	[°C]	-25 ... 90	-25 ... 90

M12 SPEEDCON and M23 SAC cable, 12-pos., shielded

Notes:

For information about the cable qualities, see page 184

SPEEDCON LOCKING

	Free end	M12 plug, SPEEDCON, 360° shielded		M23 plug, 360° shielded
				
				
	Ordering data	Ordering data	Ordering data	Ordering data	Ordering data
Free end	Order No.	Order No.	Order No.	Order No.	Order No.
		1.5 m **1430048** 3 m **1430051** 5 m **1430064** 10 m **1430077**	1.5 m **1430080** 3 m **1430093** 5 m **1430103** 10 m **1430116**		
M12 socket, SPEEDCON, straight, 360° shielded					
 	0.5 m **1437083** 1 m **1434730** 1.5 m **1430129** 3 m **1430132** 5 m **1430145** 10 m **1430158**	3 m **1402551**		0.5 m **1437287** 1 m **1437290** 2 m **1437300** 5 m **1437313**	
M12 socket, SPEEDCON, angled, 360° shielded					
 	1.5 m **1430161** 3 m **1430174** 5 m **1430187** 10 m **1430190**				
M23 socket, straight, 360° shielded					
 		0.5 m **1437326** 1 m **1437339** 2 m **1437342** 5 m **1437355**			

Cable description	Cable type
PUR/PVC - black, twisted pair	**35T**

Color coding		Pin assignment M12	Pin assignment M23
BN		1	1
BU		2	2
WH		3	3
GN		4	4
PK		5	5
YE		6	6
BK		7	7
GY		8	8
RD		9	9
VT		10	10
GYPK		11	11
RDBU		12	12

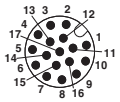
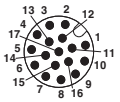
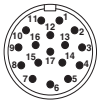
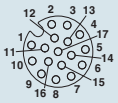
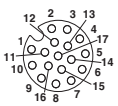
		Technical data	Technical data
		M12 12-pos.	**M23, 12-pos.**
Rated voltage	[V]	30	30
Rated current	[A]	1.5	1.5
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Contact material		CuZn	CuZn
Contact surface material		Ni/Au	Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing	PUR
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101
Degree of protection		IP65 / IP67	IP65 / IP67
Temperature data			
Plug / socket	[°C]	-25 ... 90	-25 ... 90

M12 SPEEDCON and M23 SAC cable, 17-pos., shielded

Notes:

For information about the cable qualities, see page 184

SPEEDCON LOCKING

	Free end	M12 plug, SPEEDCON, 360° shielded		M23 plug, 360° shielded
				
				
	Ordering data	Ordering data	Ordering data	Ordering data	Ordering data
	Order No.	Order No.	Order No.	Order No.	Order No.
Free end					
		1.5 m **1430200** 3 m **1430213** 5 m **1430226** 10 m **1430239**	1.5 m **1430242** 3 m **1430255** 5 m **1430268** 10 m **1430271**		
M12 socket, SPEEDCON, straight, 360° shielded					
 	1.5 m **1430284** 3 m **1430297** 5 m **1430307** 10 m **1430310**	5 m **1402421** 10 m **1402422**		0.5 m **1437368** 1 m **1437371** 2 m **1437384** 5 m **1437397**	
M12 socket, SPEEDCON, angled, 360° shielded					
 	1.5 m **1430323** 3 m **1430336** 5 m **1430349** 10 m **1430352**				
M23 socket, straight, 360° shielded					
 		0.5 m **1437407** 1 m **1437410** 2 m **1437423** 5 m **1437436**			

Cable description	Cable type
PUR/PVC - black, twisted pair	35T

Color coding		Pin assignment M12	Pin assignment M23
BN		1	1
BU		2	2
WH		3	3
GN		4	4
PK		5	5
YE		6	6
BK		7	7
GY		8	8
RD		9	9
VT		10	10
GYPK		11	11
RDBU		12	12
WHGN		13	13
BNGN		14	14
WHYE		15	15
YEBN		16	16
WHGY		17	17

		Technical data	Technical data
		M12 17-pos.	M23, 17-pos.
Rated voltage	[V]	30	30
Rated current	[A]	1.5	1.5
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Contact material		CuZn	CuZn
Contact surface material		Ni/Au	Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing	PUR
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101
Degree of protection		IP65 / IP67	IP65 / IP67
Temperature data			
Plug / socket	[°C]	-25 ... 90	-25 ... 90

M12-SPEEDCON power cable, 3-pos.+PE, S-coded, unshielded

Notes:

For information about the cable qualities, see page 184

SPEEDCON LOCKING

		Free end		M12 plug, SPEEDCON		M12 plug, SPEEDCON	
		Ordering data		Ordering data		Ordering data	
Free end			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

Notes:
For information about the cable qualities, see page 184

	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** 3 m **1424105** 5 m **1424245** 10 m **1424107**	1.5 m **1424108** 3 m **1424109** 5 m **1424110** 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
PUR, halogen-free - orange	**PUR**

Color coding		Pin assignment
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, 4-pos., T-coded, unshielded

Notes:

For information about the cable qualities, see page 184

SPEEDCON LOCKING

	Free end	M12 plug, SPEEDCON	
		 	 
	Ordering data	Ordering data	Ordering data
Free end	**Order No.**	**Order No.**	**Order No.**
		1 m **1408812** 2 m **1408813** 5 m **1408814** 10 m **1408815**	1 m **1408816** 2 m **1408819** 5 m **1408820** 10 m **1408822**
M12 socket, SPEEDCON, straight			
 	1 m **1408823** 2 m **1408824** 5 m **1408825** 10 m **1408826**	1 m **1408808** 2 m **1408809** 5 m **1408810** 10 m **1408811**	
M12 socket, SPEEDCON, angled			
 	1 m **1408827** 2 m **1408828** 5 m **1408829** 10 m **1408830**		

Cable description	Cable type
PUR, halogen-free - black	**PUR**

Color coding		Pin assignment
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

Notes:

For information about the cable qualities, see page 184

	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** 3 m **1424121** 5 m **1424122** 10 m **1424123**	1.5 m **1424124** 3 m **1424125** 5 m **1424126** 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
PUR, halogen-free - black	**PUR**

Color coding		Pin assignment
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

7/8" power cable, 4-pos. + PE, PUR cable, 1.5 mm²

Notes:

For information about the cable qualities, see page 194

Free end	7/8" plug

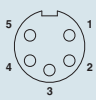










		Ordering data		Ordering data		Ordering data	
7/8" socket, straight			**Order No.**		**Order No.**		**Order No.**
		1.5 m	**1443705**	0.3 m 0.6 m 1 m 1.5 m 2 m	**1443802** **1443815** **1443828** **1443831** **1443844**		
		3 m	**1443718**				
		5 m	**1443721**				
		7.5 m	**1443734**				
		10 m	**1443747**				
7/8" socket, angled							
		1.5 m	**1443750**			0.3 m 0.6 m 1 m 1.5 m 2 m	**1443857** **1443860** **1443873** **1443886** **1443899**
		3 m	**1443763**				
		5 m	**1443776**				
		7.5 m	**1443789**				
		10 m	**1443792**				

Cable description	Cable type
PUR/PVC 1.5 mm² - gray	**440**

Color coding		Pin assignment
BK1	1	1
BK2	2	2
BK3	3	4
BK4	4	5
GNYE		3

		Technical data
		7/8'', 1.5 mm²
Rated voltage	[V]	600
Rated current	[A]	10
Volume resistance		≤ 5 mΩ
Contact material		CuZn
Contact surface material		AU
Material of grip body		TPU
Degree of protection		IP65 / IP67 / IP68
Temperature data		
Plug / socket	[°C]	-40 ... 90

7/8" power cable, 4-pos. + PE, PUR cable, 2.5 mm²

Notes:
For information about the cable qualities, see page 194

Free end



7/8" plug









		Ordering data		Ordering data		Ordering data	
7/8" socket, straight			**Order No.**		**Order No.**		**Order No.**
		1.5 m	**1443909**	0.3 m 0.6 m 1 m 1.5 m 2 m	**1419823** **1419836** **1419849** **1419852** **1419865**		
		3 m	**1443912**				
		5 m	**1443925**				
		7.5 m	**1443938**				
		10 m	**1443941**				
7/8" socket, angled							
		1.5 m	**1443954**			0.3 m 0.6 m 1 m 1.5 m 2 m	**1419878** **1419881** **1419894** **1419904** **1419917**
		3 m	**1443967**				
		5 m	**1443970**				
		7.5 m	**1419807**				
		10 m	**1419810**				

Cable description	Cable type
PUR/PVC 2.5 mm² - gray	**441**

Color coding		Pin assignment
BK1	1	1
BK2	2	2
BK3	3	4
BK4	4	5
GNYE		3

		Technical data
		7/8", 2.5 mm²
Rated voltage	[V]	600
Rated current	[A]	13
Volume resistance		≤ 5 mΩ
Contact material		CuZn
Contact surface material		AU
Material of grip body		TPU
Degree of protection		IP65 / IP67 / IP68
Temperature data		
Plug / socket	[°C]	-40 ... 90

7/8" power cable, 4-pos. + PE, PVC cable, 1.5 mm²

Notes:

For information about the cable qualities, see page 194

Free end	7/8" plug

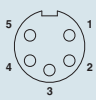










		Ordering data		Ordering data		Ordering data	
7/8" socket, straight			**Order No.**		**Order No.**		**Order No.**
		1.5 m	**1443307**	0.3 m 0.6 m 1 m 1.5 m 2 m	**1443404** **1443417** **1443420** **1443433** **1443446**		
		3 m	**1443310**				
		5 m	**1443323**				
		7.5 m	**1443336**				
		10 m	**1443349**				
7/8" socket, angled							
		1.5 m	**1443352**			0.3 m 0.6 m 1 m 1.5 m 2 m	**1443459** **1443462** **1443475** **1443488** **1443491**
		3 m	**1443365**				
		5 m	**1443378**				
		7.5 m	**1443381**				
		10 m	**1443394**				

Cable description	Cable type
PVC 1.5 mm² - gray	**430**

Color coding		Pin assignment
BK1	1	1
BK2	2	2
BK3	3	4
BK4	4	5
GNYE		3

		Technical data
		7/8'', 1.5 mm²
Rated voltage	[V]	600
Rated current	[A]	10
Volume resistance		≤ 5 mΩ
Contact material		CuZn
Contact surface material		AU
Material of grip body		TPU
Degree of protection		IP65 / IP67 / IP68
Temperature data		
Plug / socket	[°C]	-40 ... 90

7/8" power cable, 4-pos. + PE, PVC cable, 2.5 mm²

Notes:
For information about the cable qualities, see page 194

	Free end	7/8" plug	
			
			

	Ordering data		Ordering data		Ordering data	
7/8" socket, straight		**Order No.**		**Order No.**		**Order No.**
		1.5 m	**1443501**	0.3 m	**1443608**	
				0.6 m	**1443611**	
				1 m	**1443624**	
				1.5 m	**1443637**	
				2 m	**1443640**	
		3 m	**1443514**			
		5 m	**1443527**			
		7.5 m	**1443530**			
		10 m	**1443543**			
7/8" socket, angled						
					0.3 m	**1443653**
					0.6 m	**1443666**
					1 m	**1443679**
		1.5 m	**1443556**		1.5 m	**1443682**
					2 m	**1443695**
		3 m	**1443569**			
		5 m	**1443572**			
		7.5 m	**1443585**			
		10 m	**1443598**			

Cable description	Cable type
PVC 2.5 mm² - gray	**431**

Color coding		Pin assignment
BK1	1	1
BK2	2	2
BK3	3	4
BK4	4	5
GNYE		3

		Technical data
		7/8", 2.5 mm²
Rated voltage	[V]	600
Rated current	[A]	13
Volume resistance		≤ 5 mΩ
Contact material		CuZn
Contact surface material		AU
Material of grip body		TPU
Degree of protection		IP65 / IP67 / IP68
Temperature data		
Plug / socket	[°C]	-40 ... 90

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 reverse 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 5 m 10 m	**1624780** **1624781** **1624782**	2 m 5 m 10 m	**1619247** **1619248** **1619249**	2 m 5 m 10 m	**1619280** **1619281** **1619282**
M17, 17-pos., pin 	2 m 5 m 10 m	**1624778** **1624783** **1624784**				
M23, 12-pos., pin 			2 m 5 m 10 m	**1619289** **1619290** **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**
2 m **1619292**			
5 m **1619293**			
10 m **1619294**			
		2 m **1619295**	
		5 m **1619296**	
		10 m **1619297**	

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-pos., socket, 630 V, 18 A		M17, 3+PE-pos., socket, 630 V, 26 A		M17, 5+PE-pos., socket, 630 V, 12 A	
						
	B00		B01		C00	
	Ordering data		Ordering data		Ordering data	
		Order No.		Order No.		Order No.
Free end 	2 m 5 m 10 m	**1619298** **1619299** **1619300**	2 m 5 m 10 m	**1619301** **1619302** **1619303**	2 m 5 m 10 m	**1619307** **1619308** **1619309**
M17, 3+PE-pos., pin 	2 m 5 m 10 m	**1619304** **1619305** **1619306**	2 m 5 m 10 m	**1619326** **1619327** **1619328**		
M17, 5+PE-pos., pin 					2 m 5 m 10 m	**1619316** **1619317** **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	3 - black, 5 (brake) 4 - black, 6 (brake)	**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	A - black 5 (brake) B - black 6 (brake) C - black 7 (motor temp. +) D - black 8 (motor temp. -)	**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			**Flexible:** -20°C ... 60°C **Fixed:** -40°C ... 80°C

M17, 5+PE-pos., socket, 630 V, 15 A	M17, 7+PE-pos., socket, 630 V, 12 A	M17, 7+PE-pos., socket, 630 V, 15 A
		
C01	D00	D01
Ordering data	**Ordering data**	**Ordering data**
Order No.	**Order No.**	**Order No.**
2 m **1619310** 5 m **1619311** 10 m **1619312**	2 m **1624785** 5 m **1624786** 10 m **1624792**	2 m **1619313** 5 m **1619314** 10 m **1619315**
2 m **1619319** 5 m **1619321** 10 m **1619322**		
	2 m **1624787** 5 m **1624788** 10 m **1624789**	2 m **1619323** 5 m **1619324** 10 m **1619325**

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-pos., socket, 630 V, 34 A		M23, 4+PE-pos., socket, 630 V, 34 A		M23, 5+PE-pos., socket, 630 V, 18 A	
						
	A00		A01		C02	
	Ordering data		Ordering data		Ordering data	
		Order No.		Order No.		Order No.
Free end 	2 m 5 m 10 m	**1624771** **1619622** **1624772**	2 m 5 m 10 m	**1625776** **1625777** **1625775**	2 m 5 m 10 m	**1618957** **1618958** **1618959**
M23, 3+PE-pos., pin 	2 m 5 m 10 m	**1624773** **1619606** **1624774**				
M23, 4+PE-pos., pin 			2 m 5 m 10 m	**1625779** **1625781** **1625780**		
M23, 5+PE-pos., pin 					2 m 5 m 10 m	**1618964** **1618965** **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 PE - green/yellow	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			**Flexible:** -20°C ... 70°C **Fixed:** -50°C ... 80°C

M23, 5+PE-pos., socket, 630 V, 18 A	M23, 5+PE-pos., socket, 630 V, 26 A	M23, 5+PE-pos., socket, 630 V, 26 A
		
C02	C03	C03
Ordering data	**Ordering data**	**Ordering data**
Order No.	**Order No.**	**Order No.**
2 m **1620415**	2 m **1620396**	2 m **1620418**
5 m **1620416**	5 m **1620397**	5 m **1620419**
10 m **1620417**	10 m **1620398**	10 m **1620420**
	2 m **1620406**	
	5 m **1620407**	
	10 m **1620408**	

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)

	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.	
Free end 	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
M23, 4+3+PE-pos., pin 	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**

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.
Free end 	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**
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)	**Flexible:** -20°C ... 70°C **Fixed:** -50°C ... 80°C
C04 Servo	Orange	Shielded, 4 x 4.00 + 2 x 1.5	TPU/TPM			**Flexible:** -20°C ... 70°C **Fixed:** -50°C ... 80°C
C05 Servo	Orange	Shielded, 4 x 6.00 + 2 x 1.5	PUR/TPE			**Flexible:** -40°C ... 80°C **Fixed:** -50°C ... 90°C
C06 Servo	Orange	Shielded, 4 x 10.0 + 2 x 1.5	TPU/TPM			**Flexible:** -20°C ... 70°C **Fixed:** -50°C ... 80°C
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. -)	**Flexible:** -20°C ... 60°C **Fixed:** -40°C ... 80°C
D04 Servo	Orange	Shielded, 4 x 4.0 + 2 x 1.5 + 2 x 1.0	PUR/TPM			**Flexible:** -30°C ... 80°C **Fixed:** -45°C ... 80°C
D05 Servo	Orange	Shielded, 4 x 6.0 + 2 x 1.5 + 2 x 1.0	PUR/TPM			**Flexible:** -30°C ... 60°C **Fixed:** -30°C ... 80°C
D06 Servo	Orange	Shielded, 4 x 10 + 2 x 1.5 + 2 x 1.0	PUR/TPM			**Flexible:** -20°C ... 60°C **Fixed:** -40°C ... 80°C

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	2 m 1620322	2 m 1620325	2 m 1620339	2 m 1620342
5 m 1620320	5 m 1620323	5 m 1620337	5 m 1620340	5 m 1620343
10 m 1620321	10 m 1620324	10 m 1620338	10 m 1620341	10 m 1620344
2 m 1620379				
5 m 1620380				
10 m 1620381				
	2 m 1620382	2 m 1620385	2 m 1620390	2 m 1620393
	5 m 1620383	5 m 1620386	5 m 1620391	5 m 1620394
	10 m 1620384	10 m 1620387	10 m 1620392	10 m 1620395

Valve connectors, type A

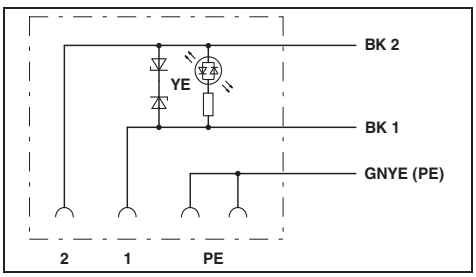
Notes:
For information about the cable qualities, see page 184
For ordering example for valve connector cables with variable cable, see page 101

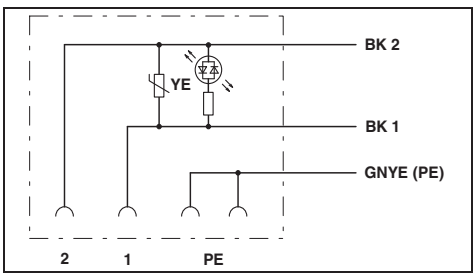


Valve connector with Z diode



Valve connector with 24 V varistor





		Technical data	Technical data
General data			
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101
Valve connector according to:		EN 175301-803	EN 175301-803
Degree of protection		IP65/67	IP65/67
Electrical data			
Rated voltage		24 V	24 V
Rated current		4 A	4 A
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Material data			
Material contact M12		CuSn	CuSn
Material contact valve connector		CuSn	CuSn
Material contact surface M12		Ni/Au	Ni/Au
Material contact surface valve connector		Sn	Sn
Material handle M12		TPU	TPU
Material housing valve connector		TPU	TPU
Mechanical data			
No. of pos.		3	3
Temperature data			
Plug / socket	[°C]	-25 ... 90	-25 ... 90
Valve connectors	[°C]	-20 ... 85	-20 ... 85

Description	Cable length	Ordering data Type	Order No.	Pcs. / Pkt.	Ordering data Type	Order No.	Pcs. / Pkt.
Assembled cable, with **valve connector,** and **free cable end**							
	1.5 m	**SAC-3P- 1,5-PUR/A-1L-Z**	**1434989**	1	**SAC-3P- 1,5-PUR/A-1L-V**	**1443103**	1
	3 m	**SAC-3P- 3,0-PUR/A-1L-Z**	**1434992**	1	**SAC-3P- 3,0-PUR/A-1L-V**	**1443116**	1
	5 m	**SAC-3P- 5,0-PUR/A-1L-Z**	**1435001**	1	**SAC-3P- 5,0-PUR/A-1L-V**	**1443129**	1
	10 m	**SAC-3P-10,0-PUR/A-1L-Z**	**1435014**	1	**SAC-3P-10,0-PUR/A-1L-V**	**1443132**	1
	Variable	**SAC-3P-A-1L-Z/.../...**	**1435027**	1	**SAC-3P-A-1L-V/.../...**	**1400876**	1
Assembled cable, with **valve connector,** and **M12 SPEEDCON connector, straight**							
	0.3 m	**SAC-3P-MS/ 0,3-PUR/A-1L-Z SCO**	**1434882**	1			
	0.6 m	**SAC-3P-MS/ 0,6-PUR/A-1L-Z SCO**	**1434895**	1			
	1.5 m	**SAC-3P-MS/ 1,5-PUR/A-1L-Z SCO**	**1434905**	1			
	3 m	**SAC-3P-MS/ 3,0-PUR/A-1L-Z SCO**	**1434918**	1			
	Variable	**SAC-3P-MS-A-1L-Z SCO/.../...**	**1434921**	1	**SAC-3P-MS-A-1L-V SCO/.../...**	**1400874**	1
Assembled cable, with **valve connector,** and **M12 SPEEDCON connector, angled**							
	0.3 m	**SAC-3P-MR/ 0,3-PUR/A-1L-Z SCO**	**1434934**	1			
	0.6 m	**SAC-3P-MR/ 0,6-PUR/A-1L-Z SCO**	**1434947**	1			
	1.5 m	**SAC-3P-MR/ 1,5-PUR/A-1L-Z SCO**	**1434950**	1			
	3 m	**SAC-3P-MR/ 3,0-PUR/A-1L-Z SCO**	**1434963**	1			
	Variable	**SAC-3P-MR-A-1L-Z SCO/.../...**	**1434976**	1	**SAC-3P-MR-A-1L-V SCO/.../...**	**1400875**	1



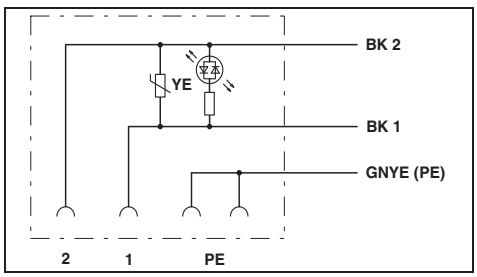
Valve connector with 230 V varistor

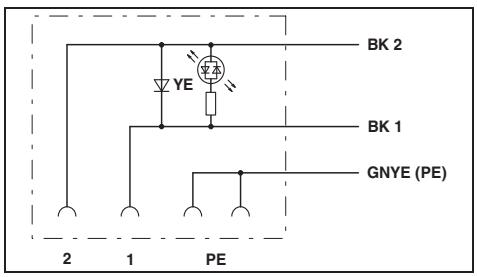


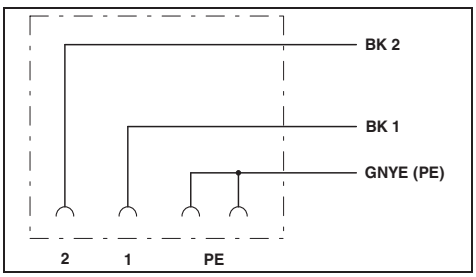
Valve connector with freewheeling diode



Valve connector without circuit







Technical data

-	
EN 175301-803	
IP65/67	
230 V	
4 A	
≤ 5 mΩ	
-	
CuSn	
-	
Sn	
-	
TPU	
3	
- ... -	
-20 ... 85	

Technical data

-	
EN 175301-803	
IP65/67	
24 V DC	
2 A	
≤ 5 mΩ	
-	
CuSn	
-	
Sn	
-	
TPU	
3	
- ... -	
-20 ... 85	

Technical data

IEC 61076-2-101	
EN 175301-803	
IP65/67	
230 V	
4 A	
≤ 5 mΩ	
CuSn	
CuSn	
Ni/Au	
Sn	
TPU	
TPU	
3	
-25 ... 90	
-20 ... 85	

Ordering data

Type	Order No.	Pcs. / Pkt.
SAC-3P- 1,5-PUR/A-1L-V 230V	**1402985**	1
SAC-3P- 3,0-PUR/A-1L-V 230V	**1400694**	1
SAC-3P-5,0-PUR/A-1L-V 230V	**1400648**	1
SAC-3P-10,0-PUR/A-1L-V 230V	**1402986**	1

Ordering data

Type	Order No.	Pcs. / Pkt.
SAC-3P-1,5-PUR/A-1L-R	**1400589**	1
SAC-3P-3,0-PUR/A-1L-R	**1400588**	1
SAC-3P- 5,0-PUR/A-1L-R	**1400798**	1
SAC-3P-10,0-PUR/A-1L-R	**1400799**	1

Ordering data

Type	Order No.	Pcs. / Pkt.
SAC-3P- 1,5-PUR/A	**1402983**	1
SAC-3P- 3,0-PUR/A	**1439544**	1
SAC-3P- 5,0-PUR/A	**1402984**	1
SAC-3P-10,0-PUR/A	**1400732**	1
SAC-3P-A/.../...	**1400897**	1
SAC-3P-MS-A SCO/.../...	**1400895**	1
SAC-3P-MR-A SCO/.../...	**1400896**	1

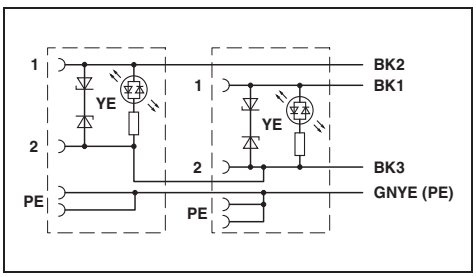
Double valve connector, type A

Notes:

For information about the cable qualities, see page 184



Type A



Technical data

General data		
Valve connector according to:		EN 175301-803
Degree of protection		IP65/67
Electrical data		
Rated voltage		24 V AC/DC
Rated current		4 A
Volume resistance		≤ 5 mΩ
Material data		
Material contact valve connector		CuSn
Material contact surface valve connector		Sn
Material housing valve connector		TPU
Mechanical data		
No. of pos.		4
Temperature data		
Valve connectors	[°C]	-25 ... 85

Ordering data

Description	Cable length	Type	Order No.	Pcs. / Pkt.
Pre-assembled cable, 2 valve connectors to free end, **valve connector spacing: 10 cm**				
	1.5 m	**SAC- 1,5/0,1-116/2XA-1L-Z**	**1457982**	1
	3 m	**SAC- 3,0/0,1-116/2XA-1L-Z**	**1457995**	1
	5 m	**SAC- 5,0/0,1-116/2XA-1L-Z**	**1458004**	1
	10 m	**SAC-10,0/0,1-116/2XA-1L-Z**	**1458017**	1
Pre-assembled cable, 2 valve connectors to free end, **valve connector spacing: 15 cm**				
	1.5 m	**SAC- 1,5/0,15-116/2XA-1L-Z**	**1458020**	1
	3 m	**SAC- 3,0/0,15-116/2XA-1L-Z**	**1458033**	1
	5 m	**SAC- 5,0/0,15-116/2XA-1L-Z**	**1458046**	1
	10 m	**SAC-10,0/0,15-116/2XA-1L-Z**	**1458059**	1
Pre-assembled cable, 2 valve connectors to free end, **valve connector spacing: 20 cm**				
	1.5 m	**SAC- 1,5/0,2-116/2XA-1L-Z**	**1458062**	1
	3 m	**SAC- 3,0/0,2-116/2XA-1L-Z**	**1458075**	1
	5 m	**SAC- 5,0/0,2-116/2XA-1L-Z**	**1458088**	1
	10 m	**SAC-10,0/0,2-116/2XA-1L-Z**	**1458091**	1

Valve connector, type B

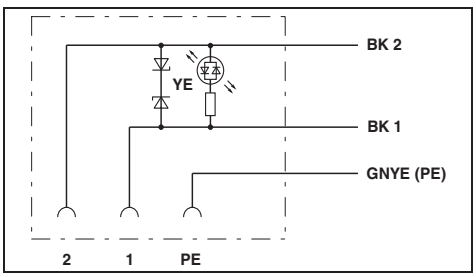
Notes:
For information about the cable qualities, see page 184
For ordering example for valve connector cables with variable cable, see page 101

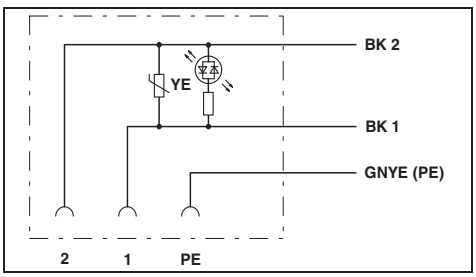


Valve connector with Z diode



Valve connector with 24 V varistor





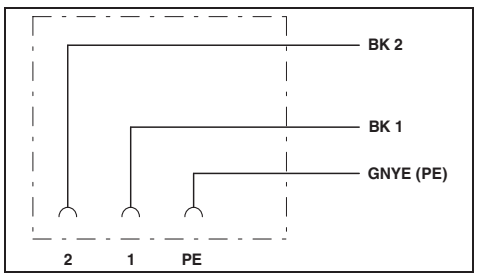
		Technical data	Technical data
General data			
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101
Valve connector according to:		EN 175301-803	EN 175301-803
Degree of protection		IP65/67	IP65/67
Electrical data			
Rated voltage		24 V	24 V
Rated current		4 A	4 A
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Material data			
Material contact M12		CuSn	CuSn
Material contact valve connector		CuSn	CuSn
Material contact surface M12		Ni/Au	Ni/Au
Material contact surface valve connector		Sn	Sn
Material handle M12		TPU	TPU
Material housing valve connector		TPU	TPU
Mechanical data			
No. of pos.		3	3
Temperature data			
Plug / socket	[°C]	-25 ... 90	-25 ... 90
Valve connectors	[°C]	-20 ... 85	-20 ... 85

		Ordering data			Ordering data		
Description	Cable length	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Assembled cable, with **valve connector,** and **free cable end**							
	1.5 m	**SAC-3P- 1,5-PUR/B-1L-Z**	**1435386**	1	**SAC-3P- 1,5-PUR/B-1L-V**	**1443145**	1
	3 m	**SAC-3P- 3,0-PUR/B-1L-Z**	**1435399**	1	**SAC-3P- 3,0-PUR/B-1L-V**	**1443158**	1
	5 m	**SAC-3P- 5,0-PUR/B-1L-Z**	**1435409**	1	**SAC-3P- 5,0-PUR/B-1L-V**	**1443161**	1
	10 m	**SAC-3P-10,0-PUR/B-1L-Z**	**1435412**	1	**SAC-3P-10,0-PUR/B-1L-V**	**1443174**	1
	Variable	**SAC-3P-B-1L-Z/.../...**	**1435425**	1	**SAC-3P-B-1L-V/.../...**	**1400882**	1
Assembled cable, with **valve connector,** and **M12 SPEEDCON connector, straight**							
	0.3 m	**SAC-3P-MS/ 0,3-PUR/B-1L-Z SCO**	**1435289**	1			
	0.6 m	**SAC-3P-MS/ 0,6-PUR/B-1L-Z SCO**	**1435292**	1			
	1.5 m	**SAC-3P-MS/ 1,5-PUR/B-1L-Z SCO**	**1435302**	1			
	3 m	**SAC-3P-MS/ 3,0-PUR/B-1L-Z SCO**	**1435315**	1			
	Variable	**SAC-3P-MS-B-1L-Z SCO/.../...**	**1435328**	1	**SAC-3P-MS-B-1L-V SCO/.../...**	**1400880**	1
Assembled cable, with **valve connector,** and **M12 SPEEDCON connector, angled**							
	0.3 m	**SAC-3P-MR/ 0,3-PUR/B-1L-Z SCO**	**1435331**	1			
	0.6 m	**SAC-3P-MR/ 0,6-PUR/B-1L-Z SCO**	**1435344**	1			
	1.5 m	**SAC-3P-MR/ 1,5-PUR/B-1L-Z SCO**	**1435357**	1			
	3 m	**SAC-3P-MR/ 3,0-PUR/B-1L-Z SCO**	**1435360**	1			
	Variable	**SAC-3P-MR-B-1L-Z SCO/.../...**	**1435373**	1	**SAC-3P-MR-B-1L-V SCO/.../...**	**1400881**	1

SPEEDCON LOCKING



Valve connector without circuit



Technical data

IEC 61076-2-101 EN 175301-803 IP65/67
230 V 4 A ≤ 5 mΩ
CuSn CuSn Ni/Au Sn TPU TPU
3
-25 ... 90 -20 ... 85

Ordering data

Type	Order No.	Pcs. / Pkt.
SAC-3P-B/.../...	**1400909**	1
SAC-3P-MS-B SCO/.../...	**1400903**	1
SAC-3P-MR-B SCO/.../...	**1400905**	1

Valve connector, type BI

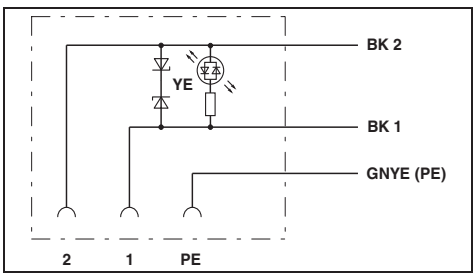
Notes:
For information about the cable qualities, see page 184
For ordering example for valve connector cables with variable cable, see page 101

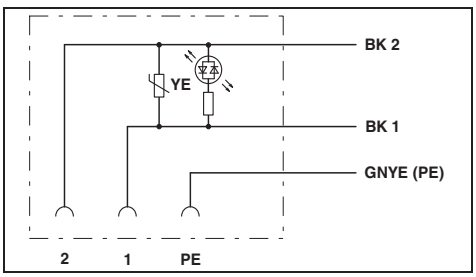


Valve connector with Z diode



Valve connector with 24 V varistor





Technical data

General data			
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101
Degree of protection		IP65/67	IP65/67
Electrical data			
Rated voltage		24 V	24 V
Rated current		4 A	4 A
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Material data			
Material contact M12		CuSn	CuSn
Material contact valve connector		CuSn	CuSn
Material contact surface M12		Ni/Au	Ni/Au
Material contact surface valve connector		Sn	Sn
Material handle M12		TPU	TPU
Material housing valve connector		TPU	TPU
Mechanical data			
No. of pos.		3	3
Temperature data			
Plug / socket	[°C]	-25 ... 90	-25 ... 90
Valve connectors	[°C]	-20 ... 85	-20 ... 85

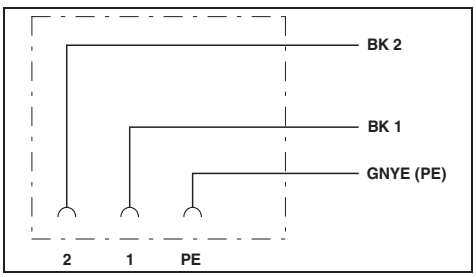
Ordering data

Description	Cable length	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Assembled cable, with **valve connector,** and **free cable end**							
	1.5 m	**SAC-3P- 1,5-PUR/BI-1L-Z**	**1435234**	1	**SAC-3P- 1,5-PUR/BI-1L-V**	**1443187**	1
	3 m	**SAC-3P- 3,0-PUR/BI-1L-Z**	**1435247**	1	**SAC-3P- 3,0-PUR/BI-1L-V**	**1443190**	1
	5 m	**SAC-3P- 5,0-PUR/BI-1L-Z**	**1435250**	1	**SAC-3P- 5,0-PUR/BI-1L-V**	**1443200**	1
	10 m	**SAC-3P-10,0-PUR/BI-1L-Z**	**1435263**	1	**SAC-3P-10,0-PUR/BI-1L-V**	**1443213**	1
	Variable	**SAC-3P-BI-1L-Z/.../...**	**1435276**	1	**SAC-3P-BI-1L-V/.../...**	**1400879**	1
Assembled cable, with **valve connector,** and **M12 SPEEDCON connector, straight**							
	0.3 m	**SAC-3P-MS/ 0,3-PUR/BI-1L-Z SCO**	**1435137**	1			
	0.6 m	**SAC-3P-MS/ 0,6-PUR/BI-1L-Z SCO**	**1435140**	1			
	1.5 m	**SAC-3P-MS/ 1,5-PUR/BI-1L-Z SCO**	**1435153**	1			
	3 m	**SAC-3P-MS/ 3,0-PUR/BI-1L-Z SCO**	**1435166**	1			
	Variable	**SAC-3P-MS-BI-1L-Z SCO/.../...**	**1435179**	1	**SAC-3P-MS-BI-1L-V SCO/.../...**	**1400877**	1
Assembled cable, with **valve connector,** and **M12 SPEEDCON connector, angled**							
	0.3 m	**SAC-3P-MR/ 0,3-PUR/BI-1L-Z SCO**	**1435182**	1			
	0.6 m	**SAC-3P-MR/ 0,6-PUR/BI-1L-Z SCO**	**1435195**	1			
	1.5 m	**SAC-3P-MR/ 1,5-PUR/BI-1L-Z SCO**	**1435205**	1			
	3 m	**SAC-3P-MR/ 3,0-PUR/BI-1L-Z SCO**	**1435218**	1			
	Variable	**SAC-3P-MR-BI-1L-Z SCO/.../...**	**1435221**	1	**SAC-3P-MR-BI-1L-V SCO/.../...**	**1400878**	1

SPEEDCON LOCKING



Valve connector without circuit



Technical data

IEC 61076-2-101
IP65/67
230 V
4 A
≤ 5 mΩ
CuSn
CuSn
Ni/Au
Sn
TPU
TPU
3
-25 ... 90
-20 ... 85

Ordering data

Type	Order No.	Pcs. / Pkt.
SAC-3P- 5,0-PUR/BI	**1439065**	1
SAC-3P-10,0-PUR/BI	**1438862**	1
SAC-3P-BI/.../...	**1400902**	1
SAC-3P-MS-BI SCO/.../...	**1400900**	1
SAC-3P-MR-BI SCO/.../...	**1400901**	1

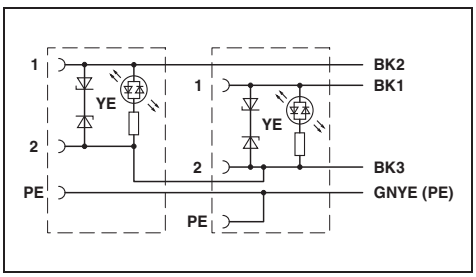
Double valve connector, type B

Notes:

For information about the cable qualities, see page 184



Type B



Technical data

General data		
Valve connector according to:		EN 175301-803
Degree of protection		IP65/67
Electrical data		
Rated voltage		24 V AC/DC
Rated current		4 A
Volume resistance		≤ 5 mΩ
Material data		
Material contact valve connector		CuSn
Material contact surface valve connector		Sn
Material housing valve connector		TPU
Mechanical data		
No. of pos.		4
Temperature data		
Valve connectors	[°C]	-25 ... 85

Ordering data

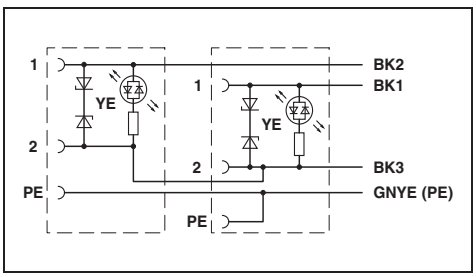
Description	Cable length	Type	Order No.	Pcs. / Pkt.
Pre-assembled cable, 2 valve connectors to free end, **valve connector spacing: 10 cm**				
	1.5 m	**SAC- 1,5/0,1-116/2XB-1L-Z**	**1458169**	1
	3 m	**SAC- 3,0/0,1-116/2XB-1L-Z**	**1458172**	1
	5 m	**SAC- 5,0/0,1-116/2XB-1L-Z**	**1458185**	1
	10 m	**SAC-10,0/0,1-116/2XB-1L-Z**	**1458198**	1
Pre-assembled cable, 2 valve connectors to free end, **valve connector spacing: 15 cm**				
	1.5 m	**SAC- 1,5/0,15-116/2XB-1L-Z**	**1458208**	1
	3 m	**SAC- 3,0/0,15-116/2XB-1L-Z**	**1458211**	1
	5 m	**SAC- 5,0/0,15-116/2XB-1L-Z**	**1458224**	1
	10 m	**SAC-10,0/0,15-116/2XB-1L-Z**	**1458237**	1
Pre-assembled cable, 2 valve connectors to free end, **valve connector spacing: 20 cm**				
	1.5 m	**SAC- 1,5/0,2-116/2XB-1L-Z**	**1458240**	1
	3 m	**SAC- 3,0/0,2-116/2XB-1L-Z**	**1458253**	1
	5 m	**SAC- 5,0/0,2-116/2XB-1L-Z**	**1458266**	1
	10 m	**SAC-10,0/0,2-116/2XB-1L-Z**	**1458279**	1

Double valve connector, type BI

Notes:
For information about the cable qualities, see page 184



Type BI



Technical data

General data		
Degree of protection		IP65/67
Electrical data		
Rated voltage		24 V AC/DC
Rated current		4 A
Volume resistance		≤ 5 mΩ
Material data		
Material contact valve connector		CuSn
Material contact surface valve connector		Sn
Material housing valve connector		TPU
Mechanical data		
No. of pos.		4
Temperature data		
Valve connectors	[°C]	-25 ... 85

Ordering data

Description	Cable length	Type	Order No.	Pcs. / Pkt.
Pre-assembled cable, 2 valve connectors to free end, **valve connector spacing: 10 cm**				
	1.5 m	**SAC- 1,5/0,1-116/2XBI-1L-Z**	**1458347**	1
	3 m	**SAC- 3,0/0,1-116/2XBI-1L-Z**	**1458350**	1
	5 m	**SAC- 5,0/0,1-116/2XBI-1L-Z**	**1458363**	1
	10 m	**SAC-10,0/0,1-116/2XBI-1L-Z**	**1458376**	1
Pre-assembled cable, 2 valve connectors to free end, **valve connector spacing: 15 cm**				
	1.5 m	**SAC- 1,5/0,15-116/2XBI-1L-Z**	**1458389**	1
	3 m	**SAC- 3,0/0,15-116/2XBI-1L-Z**	**1458392**	1
	5 m	**SAC- 5,0/0,15-116/2XBI-1L-Z**	**1458402**	1
	10 m	**SAC-10,0/0,15-116/2XBI-1L-Z**	**1458415**	1
Pre-assembled cable, 2 valve connectors to free end, **valve connector spacing: 20 cm**				
	1.5 m	**SAC- 1,5/0,2-116/2XBI-1L-Z**	**1458428**	1
	3 m	**SAC- 3,0/0,2-116/2XBI-1L-Z**	**1458431**	1
	5 m	**SAC- 5,0/0,2-116/2XBI-1L-Z**	**1458444**	1
	10 m	**SAC-10,0/0,2-116/2XBI-1L-Z**	**1458457**	1

Valve connector, type C

Notes:

For information about the cable qualities, see page 184

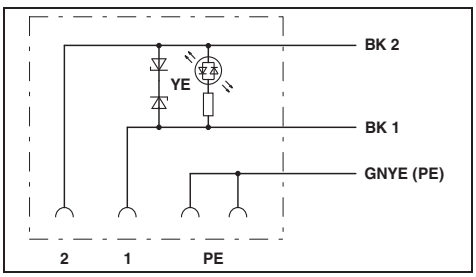
For ordering example for valve connector cables with variable cable, see page 101

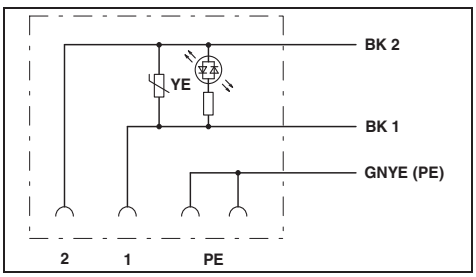


Valve connector with Z diode



Valve connector with 24 V varistor





Technical data

General data			
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101
Valve connector according to:		EN 175301-803	EN 175301-803
Degree of protection		IP65/67	IP65/67
Electrical data			
Rated voltage		24 V	24 V
Rated current		4 A	4 A
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Material data			
Material contact M12		CuSn	CuSn
Material contact valve connector		CuSn	CuSn
Material contact surface M12		Ni/Au	Ni/Au
Material contact surface valve connector		Sn	Sn
Material handle M12		TPU	TPU
Material housing valve connector		TPU	TPU
Mechanical data			
No. of pos.		3	3
Temperature data			
Plug / socket	[°C]	-25 ... 90	-25 ... 90
Valve connectors	[°C]	-20 ... 85	-20 ... 85

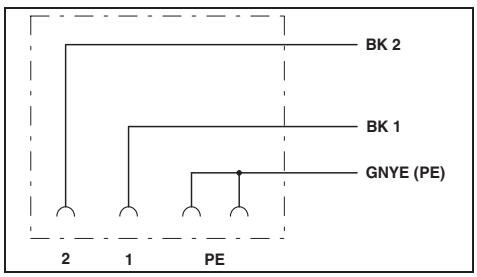
Ordering data

Description	Cable length	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Assembled cable, with **valve connector,** and **free cable end**							
	1.5 m	**SAC-3P- 1,5-PUR/C-1L-Z**	**1435535**	1	**SAC-3P- 1,5-PUR/C-1L-V**	**1443226**	1
	3 m	**SAC-3P- 3,0-PUR/C-1L-Z**	**1435548**	1	**SAC-3P- 3,0-PUR/C-1L-V**	**1443239**	1
	5 m	**SAC-3P- 5,0-PUR/C-1L-Z**	**1435551**	1	**SAC-3P- 5,0-PUR/C-1L-V**	**1443242**	1
	10 m	**SAC-3P-10,0-PUR/C-1L-Z**	**1435564**	1	**SAC-3P-10,0-PUR/C-1L-V**	**1443255**	1
	Variable	**SAC-3P-C-1L-Z/.../...**	**1435726**	1	**SAC-3P-C-1L-V/.../...**	**1400894**	1
Assembled cable, with **valve connector,** and **M12 SPEEDCON connector, straight**							
	0.3 m	**SAC-3P-MS/ 0,3-PUR/C-1L-Z SCO**	**1435438**	1			
	0.6 m	**SAC-3P-MS/ 0,6-PUR/C-1L-Z SCO**	**1435441**	1			
	1.5 m	**SAC-3P-MS/ 1,5-PUR/C-1L-Z SCO**	**1435454**	1			
	3 m	**SAC-3P-MS/ 3,0-PUR/C-1L-Z SCO**	**1435467**	1			
	Variable	**SAC-3P-MS-C-1L-Z SCO/.../...**	**1435629**	1	**SAC-3P-MS-C-1L-V SCO/.../...**	**1400892**	1
Assembled cable, with **valve connector,** and **M12 SPEEDCON connector, angled**							
	0.3 m	**SAC-3P-MR/ 0,3-PUR/C-1L-Z SCO**	**1435483**	1			
	0.6 m	**SAC-3P-MR/ 0,6-PUR/C-1L-Z SCO**	**1435496**	1			
	1.5 m	**SAC-3P-MR/ 1,5-PUR/C-1L-Z SCO**	**1435506**	1			
	3 m	**SAC-3P-MR/ 3,0-PUR/C-1L-Z SCO**	**1435519**	1			
	Variable	**SAC-3P-MR-C-1L-Z SCO/.../...**	**1435674**	1	**SAC-3P-MR-C-1L-V SCO/.../...**	**1400893**	1

SPEEDCON LOCKING



Valve connector without circuit



Technical data

IEC 61076-2-101 EN 175301-803 IP65/67
230 V 4 A ≤ 5 mΩ
CuSn CuSn Ni/Au Sn TPU TPU
3
-25 ... 90 -20 ... 85

Ordering data

Type	Order No.	Pcs. / Pkt.
SAC-3P-5,0-PUR/C	**1400814**	1
SAC-3P-10,0-PUR/C	**1400641**	1
SAC-3P-C/.../...	**1400921**	1
SAC-3P-MS-C SCO/.../...	**1400919**	1
SAC-3P-MR-C SCO/.../...	**1400920**	1

Valve connector, type CI

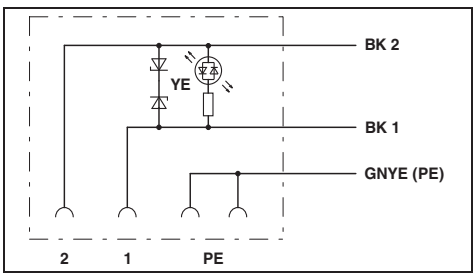
Notes:
For information about the cable qualities, see page 184
For ordering example for valve connector cables with variable cable, see page 101

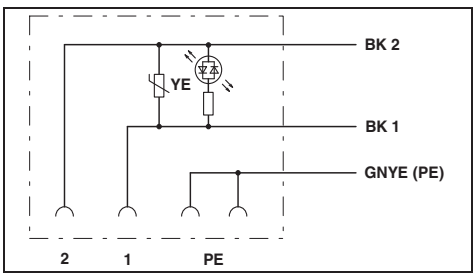


Valve connector with Z diode



Valve connector with 24 V varistor



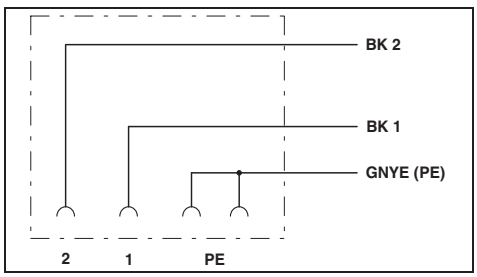


		Technical data	Technical data
General data			
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101
Degree of protection		IP65/67	IP65/67
Electrical data			
Rated voltage		24 V	24 V
Rated current		4 A	4 A
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Material data			
Material contact M12		CuSn	CuSn
Material contact valve connector		CuSn	CuSn
Material contact surface M12		Ni/Au	Ni/Au
Material contact surface valve connector		Sn	Sn
Material handle M12		TPU	TPU
Material housing valve connector		TPU	TPU
Mechanical data			
No. of pos.		3	3
Temperature data			
Plug / socket	[°C]	-25 ... 90	-25 ... 90
Valve connectors	[°C]	-20 ... 85	-20 ... 85

		Ordering data			Ordering data		
Description	Cable length	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Assembled cable, with **valve connector**, and **free cable end**							
	1.5 m	**SAC-3P- 1,5-PUR/CI-1L-Z**	**1435687**	1	**SAC-3P- 1,5-PUR/CI-1L-V**	**1443268**	1
	3 m	**SAC-3P- 3,0-PUR/CI-1L-Z**	**1435690**	1	**SAC-3P- 3,0-PUR/CI-1L-V**	**1443271**	1
	5 m	**SAC-3P- 5,0-PUR/CI-1L-Z**	**1435700**	1	**SAC-3P- 5,0-PUR/CI-1L-V**	**1443284**	1
	10 m	**SAC-3P-10,0-PUR/CI-1L-Z**	**1435713**	1	**SAC-3P-10,0-PUR/CI-1L-V**	**1443297**	1
	Variable	**SAC-3P-CI-1L-Z/.../...**	**1435577**	1	**SAC-3P-CI-1L-V/.../...**	**1400891**	1
Assembled cable, with **valve connector**, and **M12 SPEEDCON connector, straight**							
	0.3 m	**SAC-3P-MS/ 0,3-PUR/CI-1L-Z SCO**	**1435580**	1			
	0.6 m	**SAC-3P-MS/ 0,6-PUR/CI-1L-Z SCO**	**1435593**	1			
	1.5 m	**SAC-3P-MS/ 1,5-PUR/CI-1L-Z SCO**	**1435603**	1			
	3 m	**SAC-3P-MS/ 3,0-PUR/CI-1L-Z SCO**	**1435616**	1			
	Variable	**SAC-3P-MS-CI-1L-Z SCO/.../...**	**1435470**	1	**SAC-3P-MS-CI-1L-V SCO/.../...**	**1400889**	1
Assembled cable, with **valve connector**, and **M12 SPEEDCON connector, angled**							
	0.3 m	**SAC-3P-MR/ 0,3-PUR/CI-1L-Z SCO**	**1435632**	1			
	0.6 m	**SAC-3P-MR/ 0,6-PUR/CI-1L-Z SCO**	**1435645**	1			
	1.5 m	**SAC-3P-MR/ 1,5-PUR/CI-1L-Z SCO**	**1435658**	1			
	3 m	**SAC-3P-MR/ 3,0-PUR/CI-1L-Z SCO**	**1435661**	1			
	Variable	**SAC-3P-MR-CI-1L-Z SCO/.../...**	**1435522**	1	**SAC-3P-MR-CI-1L-V SCO/.../...**	**1400890**	1



Valve connector without circuit



Technical data

IEC 61076-2-101
IP65/67
230 V
4 A
≤ 5 mΩ
CuSn
CuSn
Ni/Au
Sn
TPU
TPU
3
-25 ... 90
-20 ... 85

Ordering data

Type	Order No.	Pcs. / Pkt.
SAC-3P-CI/.../...	**1400918**	1
SAC-3P-MS-CI SCO/.../...	**1400916**	1
SAC-3P-MR-CI SCO/.../...	**1400917**	1

Valve connectors, type AD pressure switch

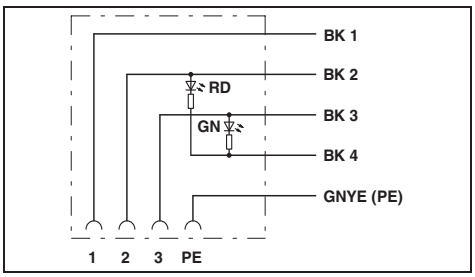
Notes:
For information about the cable qualities, see page 184
For ordering example for valve connector cables with variable cable, see page 101

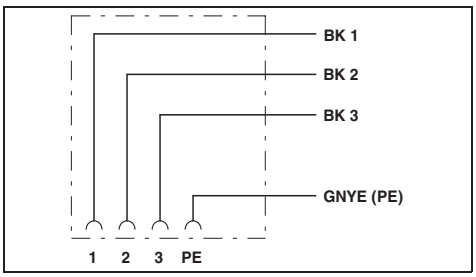


5-pos., with 2 LEDs



4-pos., not connected





		Technical data	Technical data
General data			
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101
Degree of protection		IP65/67	IP65/67
Electrical data			
Rated voltage		24 V	230 V
Rated current		4 A	4 A
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Material data			
Material contact M12		CuSn	CuSn
Material contact valve connector		CuSn	CuSn
Material contact surface M12		Ni/Au	Ni/Au
Material contact surface valve connector		Sn	Sn
Material handle M12		TPU	TPU
Material housing valve connector		TPU	TPU
Mechanical data			
No. of pos.		5	4
Temperature data			
Plug / socket	[°C]	-25 ... 90	-25 ... 90
Valve connectors	[°C]	-20 ... 85	-20 ... 85

Description	Cable length	Ordering data Type	Order No.	Pcs. / Pkt.	Ordering data Type	Order No.	Pcs. / Pkt.
Assembled cable, with **valve connector**, and **free cable end**							
	1.5 m	**SAC-5P- 1,5-PUR/AD-2L**	**1435085**	1			
	3 m	**SAC-5P- 3,0-PUR/AD-2L**	**1435098**	1	**SAC-4P-3,0-PUR/AD**	**1438956**	1
	5 m	**SAC-5P- 5,0-PUR/AD-2L**	**1435108**	1			
	10 m	**SAC-5P-10,0-PUR/AD-2L**	**1435111**	1			
	Variable	**SAC-5P-AD-2L/.../...**	**1435124**	1	**SAC-4P-AD/.../...**	**1400899**	1
Assembled cable, with **valve connector**, and **M12 SPEEDCON connector, straight**							
	0.3 m	**SAC-5P-MS/ 0,3-PUR/AD-2L SCO**	**1435030**	1			
	0.6 m	**SAC-5P-MS/ 0,6-PUR/AD-2L SCO**	**1435043**	1			
	1.5 m	**SAC-5P-MS/ 1,5-PUR/AD-2L SCO**	**1435056**	1			
	3 m	**SAC-5P-MS/ 3,0-PUR/AD-2L SCO**	**1435069**	1			
	Variable	**SAC-5P-MS-AD-2L SCO/.../...**	**1435072**	1	**SAC-4P-MS-AD SCO/.../...**	**1400898**	1

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the halogen-free **PUR** cable type and are available from stock.

Ordering data for type A, B, BI, C, CI valve connector cables with variable cable:

For a sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, type A valve connector with Zener diode and a 3-pos. straight M12 plug, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 40 m
1434921	PUR	4.5

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

Minimum order amount = 25

Cable description	Cable type
PUR, halogen-free - black, 0.5 mm²	PUR
PUR, halogen-free - black, 1.0 mm² Type A valve connector only	121
PUR, halogen-free - yellow, 0.5 mm²	240
PUR, halogen-free - gray, 0.5 mm²	280
PUR irradiated - orange, 0.5 mm²	150
PUR/PVC - black, 0.75 mm²	116
PUR/PVC - gray, 0.75 mm²	117
PUR, highly flexible - gray, 0.5 mm²	800
PVC - black, 0.5 mm²	PVC
PVC - black, 0.75 mm²	534
PVC - gray, 0.5 mm²	500

Color coding		Pin assignment
BK1	1	3
BK2	2	4
GNYE		5

Ordering data for type AD valve connector cables with 2 LEDs and variable cable:

For a sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, type AD valve connector with 2 LEDs and a 5-pos. straight M12 plug, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 40 m
1435072	PUR	4.5

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

Minimum order amount = 25

Cable description	Cable type
PUR, halogen-free - black, 0.5 mm²	PUR
PUR, halogen-free - yellow, 0.5 mm²	240
PUR, halogen-free - gray, 0.5 mm²	280
PUR irradiated - orange, 0.5 mm²	150
PUR/PVC - black, 0.75 mm²	116
PUR, highly flexible - gray, 0.5 mm²	800
PVC - black, 0.5 mm²	PVC
PVC - black, 0.75 mm²	534
PVC - gray, 0.5 mm²	500

Color coding		Pin assignment
BK1	1	1
BK2	2	2
BK3	3	4
BK2	4	3
GNYE		5

Ordering data for unwired type AD valve connector cables with variable cable:

For a sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, unwired type AD valve connector and a 4-pos. straight M12 plug, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 40 m
1400898	PUR	4.5

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

Minimum order amount = 25

Cable description	Cable type
PUR, halogen-free - black, 0.5 mm²	PUR
PUR/PVC - black, 0.75 mm²	116
PVC - black, 0.5 mm²	PVC
PVC - black, 0.75 mm²	534

Color coding		Pin assignment
BK1	1	1
BK2	2	2
BK3	3	4
GNYE		5

M8 Y-cable, 3-pos., two cable outlets

Notes:

For information about the cable qualities, see page 184

M8 Y plug



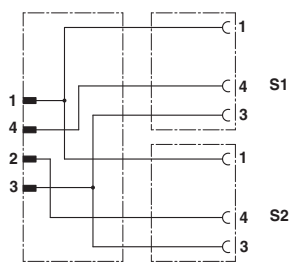


Ordering data

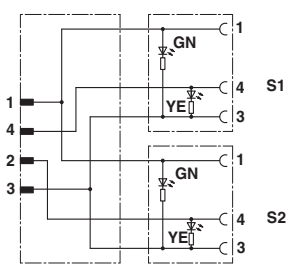
		Order No.
Free end		
	1.5 m	**1458622**
	3 m	**1458635**
	5 m	**1458648**
	10 m	**1458651**
M8 socket, straight		
 	0.3 m	**1458664**
	0.6 m	**1458677**
	1.5 m	**1458680**
	3 m	**1458693**
M8 socket, angled		
 	0.3 m	**1458703**
	0.6 m	**1458716**
	1.5 m	**1458729**
	3 m	**1458732**
M8 socket, angled, with 2 LEDs		
 	0.3 m	**1458745**
	0.6 m	**1458758**
	1.5 m	**1458761**
	3 m	**1458774**

Cable description	Cable type
PUR, halogen-free - black	**PUR**

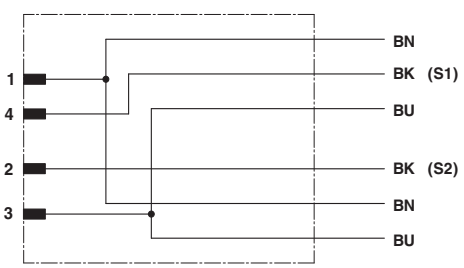
Color coding		Pin assignment, 3-pos.	
		Plug	Socket
BN		1	1
BK		2 + 4	4
BU		3	3



Contact assignment of the M8 plug and the M8 sockets



Contact assignment of the M8 plug and the M8 sockets, with LEDs



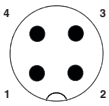
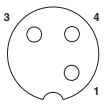
Contact assignment of the M8 Y plug

		Technical data	Technical data
		Y-M8	Y-M8 with LEDs
Rated voltage	[V]	30	24
Rated current	[A]	4	4
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Contact material		CuSn	CuSn
Contact surface material		Ni/Au	Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing
Material, knurls		Zinc die-cast, nickel-plated	Zinc die-cast, nickel-plated
M8 circular plug-in connector according to:		IEC 61076-2-104	IEC 61076-2-104
Degree of protection		IP65 / IP67 / IP68	IP65 / IP67 / IP68
Temperature data			
Plug / socket	[°C]	-25 ... 90	-25 ... 90

M12 Y SAC cable, one cable outlet

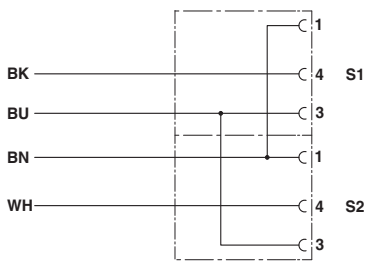
Notes:
For information about the cable qualities, see page 184
Further combinations on request.

SPEEDCON LOCKING

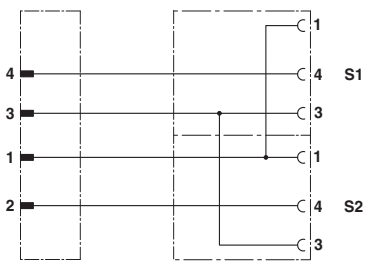
	Free end		M12 plug, SPEEDCON	
				
				
	Ordering data		Ordering data	Ordering data
Y plug with 2 x M12 SPEEDCON socket		Order No.		Order No.
 	1.5 m	**1436165**	0.3 m	**1436204**
	3 m	**1436178**	0.6 m	**1436217**
	5 m	**1436181**	1.5 m	**1436220**
	10 m	**1436194**	3 m	**1436233**

Cable description	Cable type	Suitable for:
PUR halogen-free - black	PUR	M12 4-pos.

Color coding	Pin assignment		
	M12	M12-Y	
	4-pos.	S1	S2
BN	1	1	1
BK	4	4	–
WH	2	–	4
BU	3	3	3



Circuit diagram: Y-distributor to free end



Circuit diagram: Y-distributor to M12-SPEEDCON plug

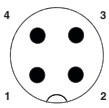
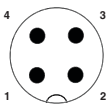
		Technical data
		Y-M12
Rated voltage	[V]	60
Rated current	[A]	4
Volume resistance		≤ 5 mΩ
Contact material		CuSn
Contact surface material		Ni/Au
Contact carrier material		TPU GF
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68
Temperature data		
Plug / socket	[°C]	-25 ... 90

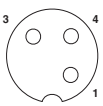
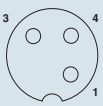
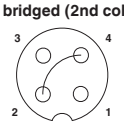
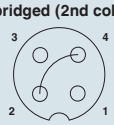
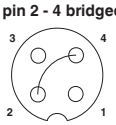
M12 Y SAC cable, two cable outlets

Notes:

For information about the cable qualities, see page 184

SPEEDCON LOCKING

	M12 Y plug	M12 Y plug, SPEEDCON
		
		

		Ordering data		Ordering data		Ordering data
Free end			**Order No.**		**Order No.**	**Order No.**
		1.5 m	**1669686**	1.5 m	**1524200**	
		3 m	**1669699**	3 m	**1524213**	
		5 m	**1669754**	5 m	**1524226**	
		10 m	**1694473**	10 m	**1524239**	
		Variable	**1697357**	Variable	**1524242**	
M8 socket, straight						
		0.3 m	**1671331**			
		0.6 m	**1671344**			
		1.5 m	**1671357**			
		3 m	**1671360**			
		Variable	**1697399**	Variable	**1541885**	
M8 socket, angled						
		0.3 m	**1671373**			
		0.6 m	**1671386**			
		1.5 m	**1671399**			
		3 m	**1671409**			
		Variable	**1697409**	Variable	**1541898**	
M8 socket, angled, with 2 LEDs						
		0.3 m	**1671412**			
		0.6 m	**1671425**			
		1.5 m	**1671438**			
		3 m	**1671441**			
		Variable	**1697412**	Variable	**1541908**	
M12 socket, straight (2nd column M12 socket, SPEEDCON)						
		Variable	**1699766**	Variable	**1542198**	
M12 socket, angled (2nd column M12 socket, SPEEDCON)						
		Variable	**1506419**	Variable	**1542004**	
M12 socket, straight, pin 2 - 4 bridged (2nd column M12 socket, SPEEDCON)						
		0.3 m	**1668959**			
		0.6 m	**1668962**			
		1.5 m	**1668975**			
		3 m	**1668988**			
		Variable	**1697360**	Variable	**1542169**	
M12 socket, angled, pin 2 - 4 bridged (2nd column M12 socket, SPEEDCON)						
		0.3 m	**1668991**			
		0.6 m	**1669000**			
		1.5 m	**1669013**			
		3 m	**1669026**			
		Variable	**1697373**	Variable	**1542172**	
M12 socket, angled, with LED, pin 2 - 4 bridged (2nd column M12 socket, SPEEDCON)						
		0.3 m	**1669039**			
		0.6 m	**1669042**			
		1.5 m	**1669055**			
		3 m	**1669068**			
		Variable	**1697386**	Variable	**1542185**	

Information for products with fixed cable lengths:

Products with fixed cable lengths are produced with the halogen-free **PUR** cable type and are available from stock.

Ordering data for products with variable cables:

For a sensor/actuator cable, PUR, halogen-free, black, 4.5 m long, with a straight 4-pos. M12 Y plug and two straight M12 sockets, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 40 m
1699766	PUR	4.5

Minimum order amount = 25

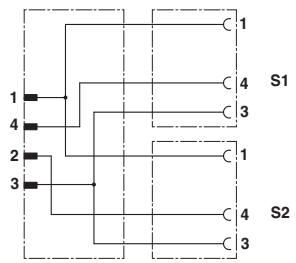
Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

Cable description	Cable type	Suitable for:
PUR, halogen-free - black E221474	PUR	M8/M12
PUR, halogen-free - gray E221474	280	M12
PUR/PVC - gray E221474	100	M8/M12
PUR/PVC - yellow E221474	140	M8/M12
TPE-U highly flexible - gray E221474	800	M8/M12
PUR irradiated - orange E221474	150	M12
PVC - black E221474	PVC	M8/M12
PVC - gray E221474	500	M8/M12
PVC - yellow E221474	540	M12
PVC 105° - yellow E221474	542	M12

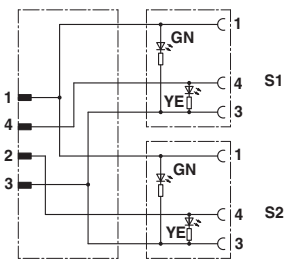
Color coding	Pin assignment, 3-pos. Plug	Socket
BN	1	1
BK	2 + 4	4
BU	3	3

With a combination of M12 and M8 plug-in connectors, the limiting M8 value applies to the rated voltage.

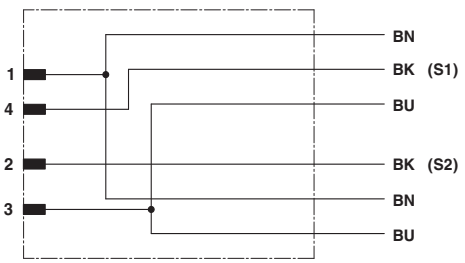
		Technical data Y-M8	Technical data Y-M8 with LEDs	Technical data Y-M12	Technical data Y-M12 with LEDs
Rated voltage	[V]	60	24	250	24
Rated current	[A]	4	4	4	4
Volume resistance		≤ 5 mΩ	≤ 5 mΩ	≤ 5 mΩ	≤ 5 mΩ
Contact material		CuSn	CuSn	CuSn	CuSn
Contact surface material		Ni/Au	Ni/Au	Ni/Au	Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing
M8 circular plug-in connector according to:		IEC 61076-2-104	IEC 61076-2-104	-	-
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68	IP65 / IP67 / IP68	IP65 / IP67 / IP68	IP65 / IP67 / IP68
Temperature data					
Plug / socket	[°C]	-25 ... 90	-25 ... 90	-25 ... 90	-25 ... 90



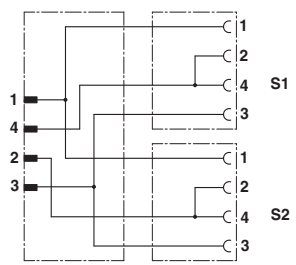
Contact assignment of the M12 plug and the M8/M12 sockets



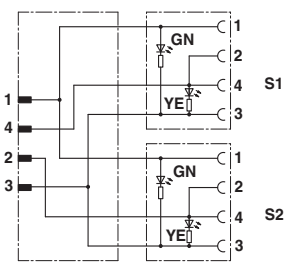
Contact assignment of the M12 plug and the M8 sockets, with LEDs



Contact assignment of the M12 Y plug-in connector



Contact assignment of the M12 plug and the M12 socket, bridged



Contact assignment of the M12 plug and the M12 socket, with LEDs, bridged

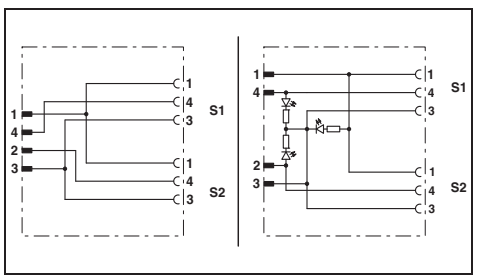
M8/M12 Y-distributors, M12 T-distributors

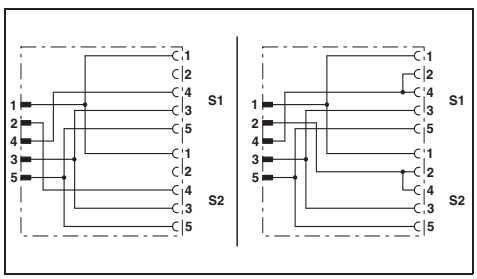


3-pos.



3+PE-pos.





		Technical data		Technical data	
		Without LED	With 3 LEDs	Not bridged	Pins 2 and 4 bridged
General data					
M8 circular plug-in connector according to:		IEC 61076-2-104	-	-	
M12 circular plug-in connector according to:		IEC 61076-2-101		IEC 61076-2-101	
Pollution degree		3		3	
Degree of protection		IP65/67	IP65/IP68/IP69K	IP65/IP68/IP69K	
Electrical data					
Rated voltage		60 V	24 V	60 V	
Rated current		4 A		4 A	
Volume resistance		≤ 5 mΩ		≤ 5 mΩ	
Material data					
Contact material		CuZn		CuZn	
Contact surface material		Ni/Au		Ni/Au	
Inflammability class according to UL 94		HB		HB	
Temperature data					
Plug / socket	[°C]	-25 ... 90		-25 ... 90	

		Ordering data			Ordering data			
Description	Center distance	Order No.	Pcs. / Pkt.		Order No.	Pcs. / Pkt.		
		Without LED			With 3 LEDs			
		Not bridged			Pins 2 and 4 bridged			
M8/M12 Y-distributor								
M8 plug to 2 x M8 sockets	12 mm	**1696183**	5					
M12 plug to 2 x M8 sockets	12 mm	**1683471**	5					
M8/M12 SPEEDCON Y-distributor								
M12 plug to 2 x M8 sockets	12 mm	**1523984**	5					
M12 Y-distributor								
M12 plug to 2 x M12 sockets	18 mm						**1683455**	5
M12 plug to 2 x M12 sockets	21 mm						**1511789**	5
M12 SPEEDCON Y-distributor								
M12 plug to 2 x M12 sockets	18 mm						**1523971**	5
M12 plug to 2 x M12 sockets	21 mm				**1403627**	5		
T-distributor								
M12 plug to 2 x M12 sockets								

		Ordering data
Description	Center distance	Order No. Pcs. / Pkt.
		Pins 2 and 4 bridged
M8/M12 Y-distributor		
M8 plug to 2 x M8 sockets	12 mm	
M12 plug to 2 x M8 sockets	12 mm	
M8/M12 SPEEDCON Y-distributor		
M12 plug to 2 x M8 sockets	12 mm	
M12 Y-distributor		
M12 plug to 2 x M12 sockets	18 mm	**1683413** 5
M12 plug to 2 x M12 sockets	21 mm	**1514016** 5
M12 SPEEDCON Y-distributor		
M12 plug to 2 x M12 sockets	18 mm	**1523968** 5
M12 plug to 2 x M12 sockets	21 mm	
T-distributor		
M12 plug to 2 x M12 sockets		**1519723** 1

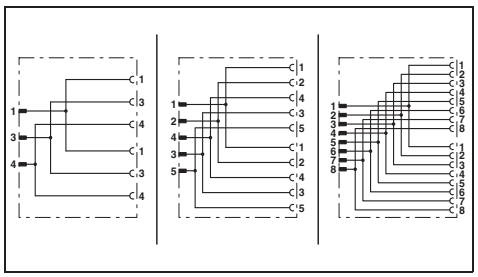
M8/M12 Y-distributors, parallel, M12 T-distributors, parallel

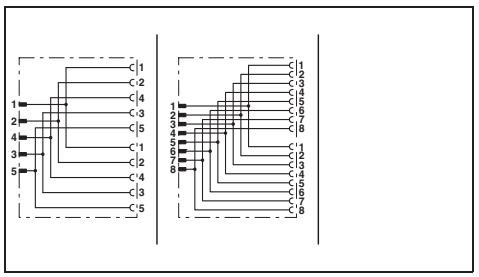


3, 5, 8-pos.



5, 8-pos., shielded





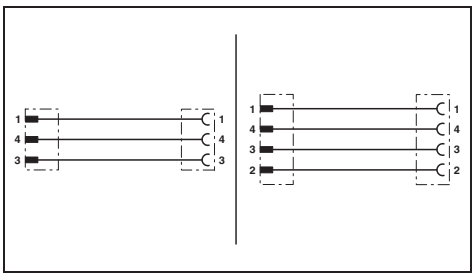
		Technical data			Technical data		
		3-pos.	5-pos.	8-pos.	5-pos.	8-pos.	
General data							
M8 circular plug-in connector according to:		IEC 61076-2-104	-		-		
M12 circular plug-in connector according to:			IEC 61076-2-101		IEC 61076-2-101		-
Pollution degree			3		3		-
Degree of protection		IP65/67	IP65/IP68/IP69K		IP65/67		-
Electrical data							
Rated voltage		60 V		30 V	60 V	30 V	-
Rated current		4 A		2 A	4 A	2 A	-
Volume resistance			≤ 5 mΩ		≤ 5 mΩ		-
Material data							
Contact material			CuZn		CuZn		-
Contact surface material			Ni/Au		Ni/Au		-
Inflammability class according to UL 94			HB		HB		-
Temperature data							
Plug / socket	[°C]		-25 ... 90		-25 ... 90		-

		Ordering data						Ordering data					
Description	Center distance	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-pos.		5-pos.		8-pos.		5-pos.		8-pos.			
M8/M12 Y-distributor													
M8 plug to 2 x M8 sockets	12 mm	**1696222**	5										
M12 plug to 2 x M8 sockets	12 mm	**1683549**	5										
M12 Y-distributor													
M12 plug to 2 x M12 sockets	18 mm			**1683468**	5								
M12 plug to 2 x M12 sockets	21 mm			**1514029**	5								
M12 SPEEDCON Y-distributor													
M12 plug to 2 x M12 sockets	18 mm			**1546068**	5								
M12 plug to 2 x M12 sockets	21 mm					**1454972**	5	**1419920**	5	**1454969**	5		
M12 plug to M12 plug/M12 socket	21 mm							**1438079**	5				
M12 socket to 2 x M12 plugs	21 mm							**1419946**	5				
M12 socket to M12 plug/M12 socket	21 mm							**1419933**	5				
T-distributor													
M12 socket to M12 socket and M12 plug				**1541186**	1								

M8/M12 adapters



3, 4-pos.



Technical data

		3-pos.	4-pos.
General data			
M8 circular plug-in connector according to:		IEC 61076-2-104	
M12 circular plug-in connector according to:		IEC 61076-2-101	
Pollution degree		3	
Degree of protection		IP65/67	
Electrical data			
Rated voltage		60 V	30 V
Rated current		4 A	
Volume resistance		≤ 5 mΩ	
Material data			
Contact material		CuSn	
Contact surface material		Ni/Au	
Inflammability class according to UL 94		HB	
Temperature data			
Plug / socket	[°C]	-25 ... 90	

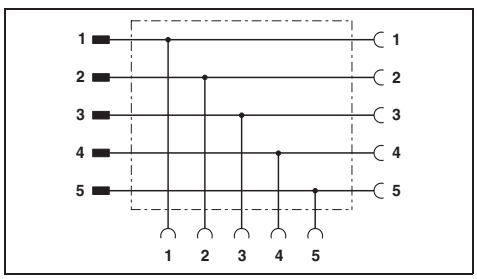
Ordering data

Description	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	3-pos.		4-pos.	
Adapter				
M8 plug to M12 socket	**1519749**	5	**1519736**	5
M12 plug to M8 socket	**1519752**	5	**1519765**	5
M12 plug to M8 snap-in socket	**1519781**	5	**1519778**	5

7/8" T-distributors, parallel



5-pos.



Technical data

General data		
Pollution degree		3
Degree of protection		IP65/67
Electrical data		
Rated voltage		250 V
Rated current		10 A
Volume resistance		≤ 5 mΩ
Material data		
Contact material		CuZn
Contact surface material		AU
Inflammability class according to UL 94		HB
Temperature data		
Plug / socket	[°C]	-40 ... 80

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
7/8" T-distributor, 5-pos., 7/8"-16UNF socket to 7/8"-16UNF socket and 7/8"-16UNF plug	**SAC-5P-MINT/2XMIN VP**	**1543977**	1

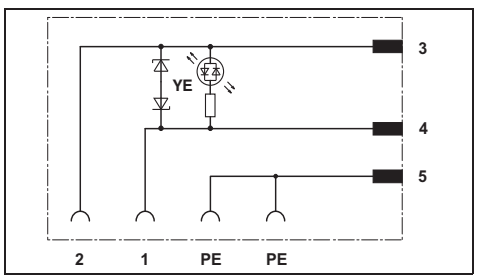
Valve connector adapters with M12 SPEEDCON plug

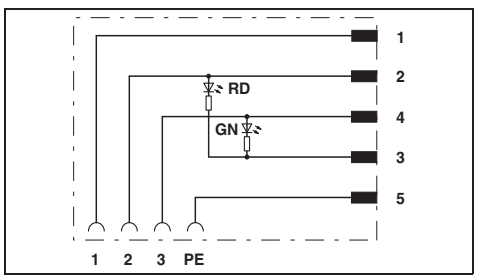


Valve connector type A



Valve connector type AD, pressure switch





Technical data

General data		
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101
Valve connector according to:	EN 175301-803	-
Degree of protection	IP65/67	IP65/67
Electrical data in acc. with IEC 61076-2-101		
Rated voltage	24 V AC/DC	24 V AC/DC
Rated current	4 A	4 A
Cut-off peak	≤ 55 V	-
Status display	Yellow LED	2 LEDs
Material data		
Contact material valve connector	CuSn	CuSn
Contact surface material valve connector	Sn	Sn
Contact material M12 plug	CuSn	CuSn
Contact surface material M12 plug	Ni/Au	Ni/Au
Material housing valve connector	TPU	TPU
Inflammability class according to UL 94	HB	HB
Temperature data		
Ambient temperature (operation)	-25 °C ... 85 °C (valve connector)	-25 °C ... 85 °C (valve connector)

Ordering data

Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Valve connector type A, PE bridged, 18 mm contact spacing						
- Vertical M12 SPEEDCON plug	**SAC-3P-MS/A-1L-Z SCO**	**1458525**	1			
- Horizontal M12 SPEEDCON plug	**SAC-3P-MR/A-1L-Z SCO**	**1458538**	1			
Valve connector type AD, 18 mm contact spacing						
- Vertical M12 SPEEDCON plug				**SAC-5P-MS/AD-2L SCO**	**1458596**	1
- Horizontal M12 SPEEDCON plug				**SAC-5P-MR/AD-2L SCO**	**1458606**	1
Valve connector type B, 10 mm contact spacing						
- Vertical M12 SPEEDCON plug						
- Horizontal M12 SPEEDCON plug						
Valve connector type BI, 11 mm contact spacing						
- Vertical M12 SPEEDCON plug						
- Horizontal M12 SPEEDCON plug						
DESINA valve connector type A, 18 mm contact spacing						
- Vertical M12 SPEEDCON plug						



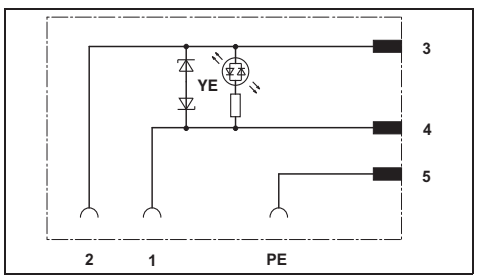
Valve connector type B

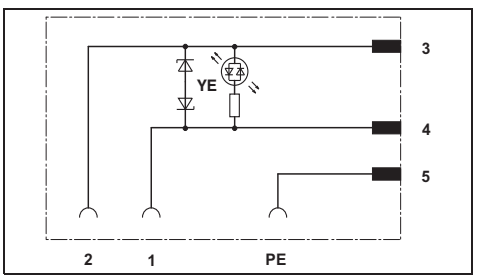


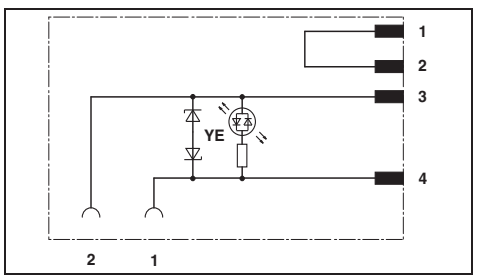
Valve connector type BI



DESINA valve connector type A







Technical data

IEC 61076-2-101 EN 175301-803 IP65/67	IEC 61076-2-101 - IP65/67	IEC 61076-2-101 EN 175301-803 IP65/67
24 V AC/DC 4 A ≤ 55 V Yellow LED	24 V AC/DC 4 A ≤ 55 V Yellow LED	24 V AC/DC 4 A ≤ 55 V Yellow LED
CuSn Sn CuSn Ni/Au TPU HB	CuSn Sn CuSn Ni/Au TPU HB	CuSn Sn CuSn Ni/Au TPU HB
-25 °C ... 85 °C (valve connector)	-25 °C ... 85 °C (valve connector)	-25 °C ... 85 °C (valve connector)

Ordering data

Type	Order No.	Pcs. / Pkt.
SAC-3P-MS/B-1L-Z SCO	**1458541**	1
SAC-3P-MR/B-1L-Z SCO	**1458554**	1

Ordering data

Type	Order No.	Pcs. / Pkt.
SAC-3P-MS/BI-1L-Z SCO	**1458567**	1
SAC-3P-MR/BI-1L-Z SCO	**1458570**	1

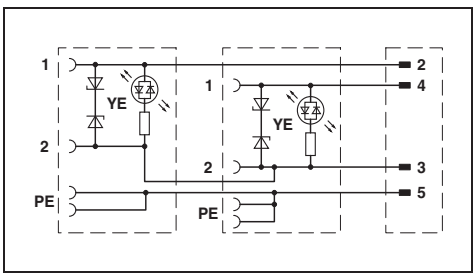
Ordering data

Type	Order No.	Pcs. / Pkt.
SAC-4P-MS/A-1L-Z D SCO	**1458583**	1

Double valve connector adapter with M12-SPEEDCON plug, type A



Type A



Technical data

General data		
M12 circular plug-in connector according to:		IEC 61076-2-101
Valve connector according to:		EN 175301-803
Degree of protection		IP65/67
Electrical data		
Rated voltage		24 V AC/DC
Rated current		4 A
Volume resistance		≤ 5 mΩ
Material data		
Material contact M12		CuSn
Material contact valve connector		CuSn
Material contact surface M12		Ni/Au
Material contact surface valve connector		Sn
Material housing valve connector		TPU
Temperature data		
Valve connectors	[°C]	-25 ... 85

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Double valve plug-in connector, plug spacing: 10 cm, valve connector to valve connector adapter with:			
- Vertical M12 SPEEDCON plug	**SAC-MS/0,1-116/2XA-1L-Z SCO**	**1458101**	1
- Horizontal M12 SPEEDCON plug	**SAC-MR/0,1-116/2XA-1L-Z SCO**	**1458130**	1
Double valve plug-in connector, plug spacing: 15 cm, valve connector to valve connector adapter with:			
- Vertical M12 SPEEDCON plug	**SAC-MS/0,15-116/2XA-1L-Z SCO**	**1458114**	1
- Horizontal M12 SPEEDCON plug	**SAC-MR/0,15-116/2XA-1L-Z SCO**	**1458143**	1
Double valve plug-in connector, plug spacing: 20 cm, valve connector to valve connector adapter with:			
- Vertical M12 SPEEDCON plug	**SAC-MS/0,2-116/2XA-1L-Z SCO**	**1458127**	1
- Horizontal M12 SPEEDCON plug	**SAC-MR/0,2-116/2XA-1L-Z SCO**	**1458156**	1

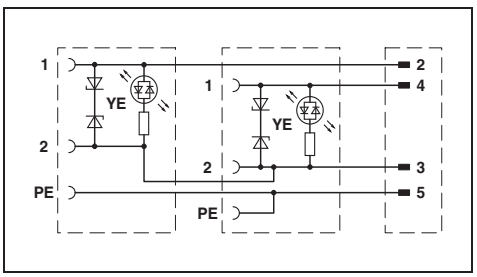
Double valve connector adapter with M12-SPEEDCON plug, type B and BI

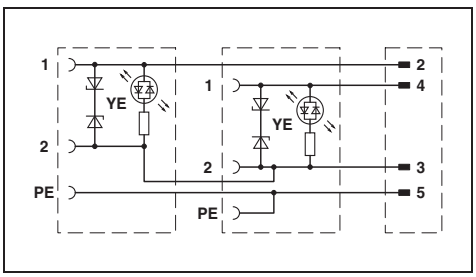


Type B



Type BI





	Technical data	Technical data
General data		
M12 circular plug-in connector according to:	IEC 61076-2-101	IEC 61076-2-101
Valve connector according to:	EN 175301-803	-
Degree of protection	IP65/67	IP65/67
Electrical data		
Rated voltage	24 V AC/DC	24 V AC/DC
Rated current	4 A	4 A
Volume resistance	≤ 5 mΩ	≤ 5 mΩ
Material data		
Material contact M12	CuSn	CuSn
Material contact valve connector	CuSn	CuSn
Material contact surface M12	Ni/Au	Ni/Au
Material contact surface valve connector	Sn	Sn
Material housing valve connector	TPU	TPU
Temperature data		
Valve connectors [°C]	-25 ... 85	-25 ... 85

Description	Ordering data: Type	Order No.	Pcs. / Pkt.	Ordering data: Type	Order No.	Pcs. / Pkt.
Double valve plug-in connector, plug spacing: 10 cm, valve connector to valve connector adapter with:						
- Vertical M12 SPEEDCON plug	**SAC-MS/0,1-116/2XB-1L-Z SCO**	**1458282**	1	**SAC-MS/0,1-116/2XBI-1L-Z SCO**	**1458460**	1
- Horizontal M12 SPEEDCON plug	**SAC-MR/0,1-116/2XB-1L-Z SCO**	**1458318**	1	**SAC-MR/0,1-116/2XBI-1L-Z SCO**	**1458499**	1
Double valve plug-in connector, plug spacing: 15 cm, valve connector to valve connector adapter with:						
- Vertical M12 SPEEDCON plug	**SAC-MS/0,15-116/2XB-1L-Z SCO**	**1458295**	1	**SAC-MS/0,15-116/2XBI-1L-Z SCO**	**1458473**	1
- Horizontal M12 SPEEDCON plug	**SAC-MR/0,15-116/2XB-1L-Z SCO**	**1458321**	1	**SAC-MR/0,15-116/2XBI-1L-Z SCO**	**1458509**	1
Double valve plug-in connector, plug spacing: 20 cm, valve connector to valve connector adapter with:						
- Vertical M12 SPEEDCON plug	**SAC-MS/0,2-116/2XB-1L-Z SCO**	**1458305**	1	**SAC-MS/0,2-116/2XBI-1L-Z SCO**	**1458486**	1
- Horizontal M12 SPEEDCON plug	**SAC-MR/0,2-116/2XB-1L-Z SCO**	**1458334**	1	**SAC-MR/0,2-116/2XBI-1L-Z SCO**	**1458512**	1





M8 distributor boxes

Fully molded distributors with M8 metal thread are already equipped for the production environment. Thanks to their compact design, up to 20 signals can be transmitted in a confined space.



M12 distributor boxes

Distributors with M12 thread are available in various materials and designs. The right distributor box is available for your specific application.



Distributor boxes with IDC technology

With the QUICKON insulation displacement connection, open cable ends are connected unstripped, thereby saving on plug-in connectors.



Reliable in every environment

The fully molded distributors offer comprehensive protection for the PCB even against corrosive effects.



Safe transmission

With 360° shielded sensor/actuator boxes, cables, and plug-in connectors, you can transmit signals reliably even in critical EMI applications.



Flexibility thanks to double assignment

By using Y-distributors, up to two signals can be connected per slot. This saves space in the system and reduces cabling costs.



SPEEDCON: fast, safe, and compatible

The SPEEDCON rapid interlock system is based on the principle of "Plug & Turn" and is 100% compatible with all M12 plug-in connectors with M12x1 thread on the market.



Variety of cables for KMAT

Standard items are produced with high-quality PUR cable. For special applications, different cable types for KMAT are available.



Plug-in master cable connection

A pre-assembled master cable simplifies installation. The plug-in version allows the box and cable to be replaced separately during servicing.



High-quality materials and innovative designs

For increased requirements, we have developed solutions which meet the needs of your application through innovative design and material selection.



Easy detection

A particularly user-friendly feature is diagnostics in the event of an error. LEDs can be used to detect errors in the signal path quickly and easily. This can directly increase your machine availability.



100% tested

All supplied components are 100% electrically checked by Quality Assurance.

M8 distributor with metal thread



With a master cable



M12 plug-in connection, vertical



M12 plug-in connection, vertical

		Technical data	Technical data	Technical data
General data				
Degree of protection in acc. with IEC 60529/EN 60529		IP65 / IP67	IP65 / IP67	IP65 / IP67
M8 circular plug-in connectorcircular plug-in connector according to:		IEC 61076-2-104	IEC 61076-2-104	IEC 61076-2-104
M12 circular plug-in connector according to:		-	IEC 61076-2-101	IEC 61076-2-101
Electrical data				
Rated current for each I/O signal	[A]	2	2	1.5
Rated current per slot	[A]	2	2	1.5
Rated current, total	[A]	6	4	1.5
Dimensions				
Width x height	[mm]	30 x 22	30 x 27	30 x 27
Length (4 / 6 / 8 / 10 slots)	[mm]	102 / 122 / 141 / 161	93 / 113 / - / -	- / - / 133 / 152
Temperature data				
Distributor box	[°C]	-30 ... 80	-30 ... 80	-30 ... 80
Master cable, fixed installation	[°C]	-40 ... 90	-	-
Master cable, flexible installation	[°C]	-5 ... 80	-	-

					Ordering data		Ordering data		Ordering data	
Status indication	**Signal type**	**Rated voltage**	**Slots**	**Cable length**	**Single occupancy**	**Double occupancy**	**Single occupancy**	**Double occupancy**	**Single occupancy**	**Double occupancy**
With LED	pnp	24 V DC	4	-	-	-	**1516234**	-	-	-
With LED	pnp	24 V DC	4	5 m	**1516014**	-	-	-	-	-
With LED	pnp	24 V DC	4	10 m	**1516027**	-	-	-	-	-
With LED	pnp	24 V DC	4	Variable	**1516137**	-	-	-	-	-
With LED	pnp	24 V DC	6	-	-	-	**1516247**	-	-	-
With LED	pnp	24 V DC	6	5 m	**1516030**	-	-	-	-	-
With LED	pnp	24 V DC	6	10 m	**1516043**	-	-	-	-	-
With LED	pnp	24 V DC	6	Variable	**1516140**	-	-	-	-	-
With LED	pnp	24 V DC	8	-	-	-	-	-	**1434840**	-
With LED	pnp	24 V DC	8	5 m	**1516056**	**1516111**	-	-	-	-
With LED	pnp	24 V DC	8	10 m	**1516069**	**1516124**	-	-	-	-
With LED	pnp	24 V DC	8	Variable	**1516153**	**1516179**	-	-	-	-
With LED	pnp	24 V DC	10	-	-	-	-	-	**1434853**	-
With LED	pnp	24 V DC	10	5 m	**1516072**	-	-	-	-	-
With LED	pnp	24 V DC	10	10 m	**1516085**	-	-	-	-	-
With LED	pnp	24 V DC	10	Variable	**1516166**	-	-	-	-	-

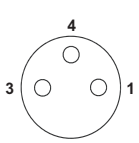
	Notes:	Notes:	Notes:
For accessories, see page	**177**	**177**	**177**
For master cable rings, see page		**170**	**170**
For master cable data, see page	**202**		

Ordering example for products with variable master cable:

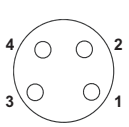
For a distributor with 4 single-occupancy slots and a master cable length of 34.5 m, the ordering data is as follows:

Order No.	Length [m]
1516137	/ 34.5

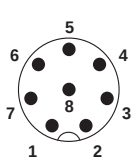
Increment: 0.5 m;
Length min.: 0.5 m
Length max.: 50 m



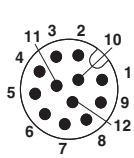
Pin assignment M8 socket, 3-pos.



Pin assignment M8 socket, 4-pos.



Pin assignment M12 plug, 8-pos.



Pin assignment M12 plug, 12-pos.



M16 plug-in connection, vertical



Spring-cage connection, horizontal



Plug-in screw connection, horizontal

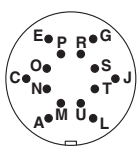


Header for plug-in screw connection



Connector hood, with a master cable

Technical data									
IP65 / IP67		IP65 / IP67		IP65 / IP67		IP65 / IP67		-	
IEC 61076-2-104		IEC 61076-2-104		IEC 61076-2-104		IEC 61076-2-104		-	
-		-		-		-		-	
2		2		2		2		2	
2		2		2		2		-	
6		6		8		8		8	
30 x 26		30 x 44		30 x 44		30 x 20		30 x 24	
93 / 113 / 132 / 152		122 / 142 / 176 / 196		122 / 142 / 176 / 196		122 / 142 / 176 / 196		- / - / - / -	
-30 ... 80		-30 ... 80		-30 ... 80		-30 ... 80		-30 ... 80	
-		-		-		-		-40 ... 90	
-		-		-		-		-5 ... 80	
Ordering data		**Ordering data**		**Ordering data**		**Ordering data**		**Ordering data**	
Single occupancy	Double occupancy	Single occupancy	Double occupancy	Single occupancy	Double occupancy	Single occupancy	Double occupancy	Single occupancy	Double occupancy
1516182	-	1503386	-	1503412	-	1516250	-	-	-
-	-	-	-	-	-	-	-	1516292	-
-	-	-	-	-	-	-	-	1516302	-
-	-	-	-	-	-	-	-	1516373	-
1516195	-	1503399	-	1503425	-	1516263	-	-	-
-	-	-	-	-	-	-	-	1516315	-
-	-	-	-	-	-	-	-	1516328	-
-	-	-	-	-	-	-	-	1516386	-
1516205	-	1511747	1503454	1511750	1503467	1516276	-	-	-
-	-	-	-	-	-	-	-	1516331	-
-	-	-	-	-	-	-	-	1516344	-
-	-	-	-	-	-	-	-	1516399	-
1516218	-	1503409	-	1503438	-	1516289	-	-	-
-	-	-	-	-	-	-	-	1516357	-
-	-	-	-	-	-	-	-	1516360	-
-	-	-	-	-	-	-	-	1516409	-
Notes:		**Notes:**		**Notes:**		**Notes:**		**Notes:**	
176 170		176 170		176 170		176		176 202	



Pin assignment M16 plug, 14-pos.

M12 distributor with plastic thread, middle duty



With a master cable



Spring-cage connection, horizontal



Plug-in screw connection, horizontal

		Technical data	Technical data	Technical data
General data				
Degree of protection in acc. with IEC 60529/EN 60529		IP65 / IP67	IP65 / IP67	IP65 / IP67
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
Electrical data				
Rated current for each I/O signal	[A]	2	2	2
Rated current per slot	[A]	4	4	4
Rated current, total	[A]	12	12	10
Dimensions				
Width x height	[mm]	54 x 23	54 x 42	54 x 43
Length (4 / 6 / 8 / 10 slots)	[mm]	117 / 123 / 149 / -	117 / 123 / 149 / -	117 / 123 / 149 / -
Temperature data				
Distributor box	[°C]	-25 ... 80	-25 ... 80	-25 ... 80
Master cable, fixed installation	[°C]	-40 ... 90	-	-
Master cable, flexible installation	[°C]	-5 ... 80	-	-

Status indication	Signal type	Rated voltage	Slots	Cable length	Ordering data: Single occupancy	Ordering data: Double occupancy	Ordering data: Single occupancy	Ordering data: Double occupancy	Ordering data: Single occupancy	Ordering data: Double occupancy
Without LED	Universal	120 V	4	-	-	-	1452929	1452932	1452741	1452754
Without LED	Universal	120 V	4	5 m	1452398	1452424	-	-	-	-
Without LED	Universal	120 V	4	10 m	1452408	1452437	-	-	-	-
Without LED	Universal	120 V	6	-	-	-	1452945	1452958	1452767	1452770
Without LED	Universal	120 V	6	5 m	1452453	1452482	-	-	-	-
Without LED	Universal	120 V	6	10 m	1452466	1452495	-	-	-	-
Without LED	Universal	120 V	8	-	-	-	1452961	1452974	1452783	1452796
Without LED	Universal	120 V	8	5 m	1452518	1452547	-	-	-	-
Without LED	Universal	120 V	8	10 m	1452521	1452550	-	-	-	-
With LED	pnp	24 V DC	4	-	-	-	1452987	1452990	1452806	1452819
With LED	pnp	24 V DC	4	5 m	1452576	1452602	-	-	-	-
With LED	pnp	24 V DC	4	10 m	1452589	1452615	-	-	-	-
With LED	pnp	24 V DC	4	Variable	1401376	1401419	-	-	-	-
With LED	pnp	24 V DC	6	-	-	-	1453009	1453012	1452822	1452835
With LED	pnp	24 V DC	6	5 m	1452631	1452660	-	-	-	-
With LED	pnp	24 V DC	6	10 m	1452644	1452673	-	-	-	-
With LED	pnp	24 V DC	6	Variable	1401379	1401380	-	-	-	-
With LED	pnp	24 V DC	8	-	-	-	1453025	1453038	1452848	1452851
With LED	pnp	24 V DC	8	5 m	1452699	1452725	-	-	-	-
With LED	pnp	24 V DC	8	10 m	1452709	1452738	-	-	-	-
With LED	pnp	24 V DC	8	Variable	1401382	1401383	-	-	-	-
With LED	npn	24 V DC	4	5 m	1405678	1405713	-	-	-	-
With LED	npn	24 V DC	4	10 m	1405687	1405732	-	-	-	-
With LED	npn	24 V DC	6	5 m	1405733	1405735	-	-	-	-
With LED	npn	24 V DC	6	10 m	1405734	1405736	-	-	-	-
With LED	npn	24 V DC	8	5 m	1405737	1405739	-	-	-	-
With LED	npn	24 V DC	8	10 m	1405738	1405740	-	-	-	-

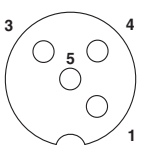
	Notes:	Notes:	Notes:
For accessories, see page	178	178	178
For master cable rings, see page		170	170
For master cable data, see page	203		

Ordering example for products with variable master cable:

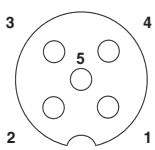
For a distributor with 4 single-occupancy slots and a master cable length of 34.5 m, the ordering data is as follows:

Order No.	Length [m]
1401376	34.5

Increment: 0.5 m;
Length min.: 0.5 m
Length max.: 50 m



Pin assignment M12 socket, 4-pos.



Pin assignment M12 socket, 5-pos.



Header for plug-in screw connection



Connector hood, with a master cable

Technical data	Technical data
IP65 / IP67	-
IEC 61076-2-101	-
2	2
4	-
10	10
54 x 19	54 x 23
117 / 123 / 149 / -	- / - / - / -
-25 ... 80	-25 ... 80
-	-40 ... 90
-	-5 ... 80

Ordering data		Ordering data	
Single occupancy	Double occupancy	Single occupancy	Double occupancy
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
1452864	1452877	-	-
-	-	1453054	1453083
-	-	1453067	1453096
-	-	1401391	1401393
1452880	1452893	-	-
-	-	1453119	1453148
-	-	1453122	1453151
-	-	1401411	1401413
1452903	1452916	-	-
-	-	1453177	1453203
-	-	1453180	1453216
-	-	1401416	1401418
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Notes:	Notes:
178	178 203

M12 distributor with metal thread, heavy-duty



With a master cable



With halogen-free master cable



Plug-in screw connection, horizontal

		Technical data	Technical data	Technical data
General data				
Degree of protection in acc. with IEC 60529/EN 60529		IP65 / IP67 / IP69K	IP65 / IP67 / IP69K	IP65 / IP67 / IP69K
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
Electrical data				
Rated current for each I/O signal	[A]	2	2	2
Rated current per slot	[A]	4	4	4
Rated current, total	[A]	12	12	10
Total rated current for electrical isolation	[A]	-	-	2x 8
Dimensions				
Width x height	[mm]	58 x 26	58 x 26	58 x 45
Length (4 / 6 / 8 / 10 slots)	[mm]	117 / 126 / 153 / -	116 / 126 / 153 / -	117 / 126 / 153 / -
Temperature data				
Distributor box	[°C]	-30 ... 90	-30 ... 90	-30 ... 80
Master cable, fixed installation	[°C]	-40 ... 90	-40 ... 90	-
Master cable, flexible installation	[°C]	-5 ... 80	-5 ... 80	-

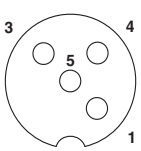
					Ordering data		Ordering data		Ordering data	
Status indication	**Signal type**	**Rated voltage**	**Slots**	**Cable length**	**Single occupancy**	**Double occupancy**	**Single occupancy**	**Double occupancy**	**Single occupancy**	**Double occupancy**
Without LED	Universal	120 V	4	-	-	-	-	-	1516849	1516852
Without LED	Universal	120 V	4	5 m	1516962	1516988	-	1517204	-	-
Without LED	Universal	120 V	4	10 m	1516975	1516991	-	1517217	-	-
Without LED	Universal	120 V	6	-	-	-	-	-	1516865	1516878
Without LED	Universal	120 V	6	5 m	1517000	1517026	-	1517220	-	-
Without LED	Universal	120 V	6	10 m	1517013	1517039	-	1517233	-	-
Without LED	Universal	120 V	8	-	-	-	-	-	1516881	1516894
Without LED	Universal	120 V	8	5 m	1517042	1517068	-	1517246	-	-
Without LED	Universal	120 V	8	10 m	1517055	1517071	-	1517259	-	-
With LED	pnp	24 V DC	4	-	-	-	-	-	1516784	1516797
With LED	pnp	24 V DC	4	5 m	1517084	1517107	-	1517262	-	-
With LED	pnp	24 V DC	4	10 m	1517097	1517110	-	1517275	-	-
With LED	pnp	24 V DC	4	Variable	1516904	1516917	-	-	-	-
With LED	pnp	24 V DC	6	-	-	-	-	-	1516807	1516810
With LED	pnp	24 V DC	6	5 m	1517123	1517149	-	1517288	-	-
With LED	pnp	24 V DC	6	10 m	1517136	1517152	-	1517291	-	-
With LED	pnp	24 V DC	6	Variable	1516920	1516933	-	-	-	-
With LED	pnp	24 V DC	8	-	-	-	-	-	1516823	1516836
With LED	pnp	24 V DC	8	1.5 m	-	-	-	-	-	-
With LED	pnp	24 V DC	8	5 m	1517165	1517181	-	1517301	-	-
With LED	pnp	24 V DC	8	10 m	1517178	1517194	-	1517314	-	-
With LED	pnp	24 V DC	8	Variable	1516946	1516959	-	-	-	-
With LED	npn	24 V DC	4	-	-	-	-	-	1537077	1537103
With LED	npn	24 V DC	4	Variable	1537019	1537048	-	-	-	-
With LED	npn	24 V DC	6	-	-	-	-	-	1537080	1537116
With LED	npn	24 V DC	6	Variable	1537022	1537051	-	-	-	-
With LED	npn	24 V DC	8	-	-	-	-	-	1537093	1537129
With LED	npn	24 V DC	8	Variable	1537035	1537064	-	-	-	-

	Notes:	Notes:	Notes:
For accessories, see page	179	179	179
For master cable rings, see page			170
For master cable data, see page	203	205	

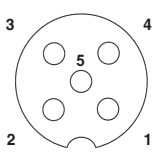
Ordering example for products with variable master cable:

For a distributor with 4 single-occupancy slots and a master cable length of 34.5 m, the ordering data is as follows:

Order No.	Length [m]
1516904	/ 34.5
	Increment: 0.5 m; **Length min.:** 0.5 m **Length max.:** 50 m



Pin assignment 12 socket, 4-pos.



Pin assignment M12 socket, 5-pos.



Header for plug-in screw connection



Connector hood, with a master cable



With master cable connection on the back



With plug-in spring-cage connection on the back



With FLK pin strip on the back

Technical data	Technical data	Technical data	Technical data	Technical data
IP65 / IP67 / IP69K IEC 61076-2-101	- -	IP54 IEC 61076-2-101	IP54 IEC 61076-2-101	IP54 IEC 61076-2-101
2 4 10 2x 8	2 - 10 -	2 4 12 -	2 4 8 -	0.5 0.5 4 8
58 x 26 117 / 126 / 153 / -	58 x 21 - / - / - / -	58 x 28 - / - / 159 / -	58 x 28 - / - / 159 / -	58 x 28 - / - / 159 / -
-30 ... 80 - -	-30 ... 80 -40 ... 90 -5 ... 80	-30 ... 80 - -	-30 ... 80 - -	-30 ... 80 - -

Ordering data		Ordering data		Ordering data		Ordering data		Ordering data	
Single occupancy	Double occupancy	Single occupancy	Double occupancy	Single occupancy	Double occupancy	Single occupancy	Double occupancy	Single occupancy	Double occupancy
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
1516726	1516739	-	-	-	-	-	-	-	-
-	-	1516353	1516593	-	-	-	-	-	-
-	-	1516548	1516603	-	-	-	-	-	-
-	-	1516658	1516661	-	-	-	-	-	-
1516742	1516755	-	-	-	-	-	-	-	-
-	-	1516551	1516616	-	-	-	-	-	-
-	-	1516564	1516629	-	-	-	-	-	-
-	-	1516674	1516687	-	-	-	-	-	-
-	-	-	-	-	-	-	1437232	1547928	-
1516768	1516771	-	-	1437245	-	-	-	-	-
-	-	1516577	1516632	-	-	-	-	-	-
-	-	1516580	1516645	-	-	-	-	-	-
-	-	1516690	1516700	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-

Notes:	Notes:	Notes:	Notes:	Notes:
179	179 203	179	179	179 203

QUICKON distributor, connection cross section: 0.14 mm² ... 0.34 mm²



With a master cable



Plug-in screw connection, horizontal

		Technical data	Technical data
General data			
Degree of protection in acc. with IEC 60529/EN 60529		IP65 / IP67 / IP69K	IP65 / IP67 / IP69K
Electrical data			
Rated current for each I/O signal	[A]	2	2
Rated current per slot	[A]	4	4
Rated current, total	[A]	12	10
Total rated current for electrical isolation	[A]	-	2x 8
Dimensions			
Width x height	[mm]	58 x 45	58 x 45
Length (4 / 6 / 8 / 10 slots)	[mm]	116 / 126 / 153 / -	117 / 126 / 153 / -
Temperature data			
Distributor box	[°C]	-30 ... 80	-30 ... 80
Master cable, fixed installation	[°C]	-40 ... 90	-
Master cable, flexible installation	[°C]	-5 ... 80	-

Status indication	Signal type	Rated voltage	Slots	Cable length	Ordering data: Single occupancy	Ordering data: Double occupancy	Ordering data: Single occupancy	Ordering data: Double occupancy
Without LED	Universal	48 V	4	-	-	-	1548354	1548419
Without LED	Universal	48 V	4	Variable	1548642	1548671	-	-
Without LED	Universal	48 V	6	-	-	-	1548367	1548422
Without LED	Universal	48 V	6	Variable	1548655	1548684	-	-
Without LED	Universal	48 V	8	-	-	-	1548370	1548435
Without LED	Universal	48 V	8	Variable	1548668	1548697	-	-
With LED	pnp	24 V DC	4	-	-	-	1548325	1548383
With LED	pnp	24 V DC	4	5 m	1548448	1548532	-	-
With LED	pnp	24 V DC	4	10 m	1548451	1548545	-	-
With LED	pnp	24 V DC	4	Variable	1548503	1548590	-	-
With LED	pnp	24 V DC	6	-	-	-	1548338	1548396
With LED	pnp	24 V DC	6	5 m	1548464	1548558	-	-
With LED	pnp	24 V DC	6	10 m	1548477	1548561	-	-
With LED	pnp	24 V DC	6	Variable	1548516	1548600	-	-
With LED	pnp	24 V DC	8	-	-	-	1548341	1548406
With LED	pnp	24 V DC	8	5 m	1548480	1548574	-	-
With LED	pnp	24 V DC	8	10 m	1548493	1548587	-	-
With LED	pnp	24 V DC	8	Variable	1548529	1548613	-	-

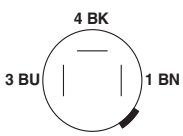
	Notes:	Notes:
For accessories, see page	**181**	**181**
For master cable rings, see page		**170**
For master cable data, see page	**202**	

Ordering example for products with variable master cable:

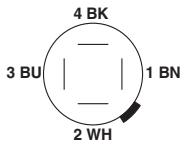
For a distributor with 4 single-occupancy QUICKON slots and a master cable length of 34.5 m, the ordering data is as follows:

Order No.		Length [m]
1548503	/	34.5

Increment: 0.5 m;
Length min.: 0.5 m
Length max.: 50 m



Pin assignment QUICKON connection, 3-pos.



Pin assignment QUICKON connection, 4-pos.

QUICKON distributor, connection cross section: 0.34 mm² ... 0.75 mm²



With a master cable



Spring-cage connection, horizontal

		Technical data	Technical data
General data			
Degree of protection in acc. with IEC 60529/EN 60529		IP65 / IP67	IP65 / IP67
Electrical data			
Rated current for each I/O signal	[A]	4	4
Rated current per slot	[A]	4	4
Rated current, total	[A]	12	12
Dimensions			
Width x height	[mm]	60 x 44	60 x 44
Length (4 / 6 / 8 / 10 slots)	[mm]	97 / 134 / 170 / -	132 / 168 / 205 / -
Temperature data			
Distributor box	[°C]	-25 ... 60	-25 ... 60
Master cable, fixed installation	[°C]	-40 ... 90	-
Master cable, flexible installation	[°C]	-5 ... 80	-

					Ordering data		Ordering data	
Status indication	**Signal type**	**Rated voltage**	**Slots**	**Cable length**	**Single occupancy**	**Double occupancy**	**Single occupancy**	**Double occupancy**
Without LED	Universal	120 V	4	-	-	-	**1683633**	-
Without LED	Universal	120 V	4	5 m	**1683662**	-	-	-
Without LED	Universal	120 V	4	10 m	**1683675**	-	-	-
Without LED	Universal	120 V	6	-	-	-	**1683646**	-
Without LED	Universal	120 V	6	5 m	**1683688**	-	-	-
Without LED	Universal	120 V	6	10 m	**1683691**	-	-	-
Without LED	Universal	120 V	8	-	-	-	**1683659**	-
Without LED	Universal	120 V	8	5 m	**1683701**	-	-	-
Without LED	Universal	120 V	8	10 m	**1683714**	-	-	-
With LED	pnp	24 V DC	4	-	-	-	**1662939**	-
With LED	pnp	24 V DC	4	5 m	**1695223**	-	-	-
With LED	pnp	24 V DC	4	10 m	**1695236**	-	-	-
With LED	pnp	24 V DC	4	Variable	**1695249**	-	-	-
With LED	pnp	24 V DC	6	-	-	-	**1662942**	-
With LED	pnp	24 V DC	6	5 m	**1695252**	-	-	-
With LED	pnp	24 V DC	6	10 m	**1695265**	-	-	-
With LED	pnp	24 V DC	6	Variable	**1695278**	-	-	-
With LED	pnp	24 V DC	8	-	-	-	**1662955**	-
With LED	pnp	24 V DC	8	5 m	**1695281**	-	-	-
With LED	pnp	24 V DC	8	10 m	**1695294**	-	-	-
With LED	pnp	24 V DC	8	Variable	**1695304**	-	-	-
With LED	npn	24 V DC	4	-	-	-	**1680856**	-
With LED	npn	24 V DC	6	-	-	-	**1680869**	-
With LED	npn	24 V DC	8	-	-	-	**1680872**	-

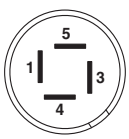
	Notes:	Notes:
For accessories, see page	**182**	**182**
For master cable rings, see page		**170**
For master cable data, see page	**203**	

Ordering example for products with variable master cable:

For a distributor with 4 single-occupancy QUICKON slots and a master cable length of 34.5 m, the ordering data is as follows:

Order No.		Length [m]
1695249	/	**34.5**

Increment: 0.5 m;
Length min.: 0.5 m
Length max.: 50 m



Pin assignment QUICKON connection, 4-pos.

M12 distributors, shielded, with metal housing



With a master cable

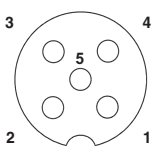


M23 plug-in connection, vertical

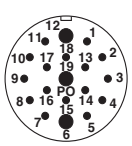
		Technical data	Technical data
General data			
Degree of protection in acc. with IEC 60529/EN 60529		IP65 / IP67	IP65 / IP67
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101
Electrical data			
Rated current for each I/O signal	[A]	2	2
Rated current per slot	[A]	4	4
Rated current, total	[A]	12	12
Dimensions			
Width x height	[mm]	61 x 24	61 x 31
Length (4 / 6 / 8 / 10 slots)	[mm]	116 / 129 / 156 / -	117 / 130 / 157 / -
Temperature data			
Distributor box	[°C]	-25 ... 70	-25 ... 70
Master cable, fixed installation	[°C]	-40 ... 90	-
Master cable, flexible installation	[°C]	-5 ... 80	-

Status indication	Signal type	Rated voltage	Slots	Cable length	Ordering data: Single occupancy	Ordering data: Double occupancy	Ordering data: Single occupancy	Ordering data: Double occupancy
Without LED	Universal	48 V	4	-	-	-	-	**1695757**
Without LED	Universal	48 V	4	5 m	-	**1695786**	-	-
Without LED	Universal	48 V	4	10 m	-	**1695799**	-	-
Without LED	Universal	48 V	6	-	-	-	-	**1695760**
Without LED	Universal	48 V	6	5 m	-	**1695809**	-	-
Without LED	Universal	48 V	6	10 m	-	**1695812**	-	-
Without LED	Universal	48 V	8	-	-	-	-	**1695773**
Without LED	Universal	48 V	8	5 m	-	**1695825**	-	-
Without LED	Universal	48 V	8	10 m	-	**1695838**	-	-

	Notes:	Notes:
For accessories, see page	**180**	**180**
For master cable rings, see page		**170**
For master cable data, see page	**204**	



Pin assignment M12 socket, 5-pos.



Pin assignment M23 plug, 19-pos.

M5 distributor with metal thread



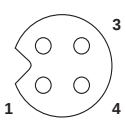
With a master cable



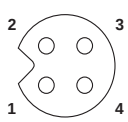
M12 plug-in connection, vertical

		Technical data	Technical data
General data			
Degree of protection in acc. with IEC 60529/EN 60529		IP67	IP67
M5 circular plug-in connector according to:		IEC 61076-2-105	IEC 61076-2-105
M12 circular plug-in connector according to:		-	IEC 61076-2-101
Electrical data			
Rated current for each I/O signal	[A]	1	1
Rated current per slot	[A]	1	1
Rated current, total	[A]	3	3
Dimensions			
Width x height	[mm]	20 x 14	20 x 28
Length (4 / 6 / 8 / 10 slots)	[mm]	76 / - / 116 / -	76 / - / 116 / -
Temperature data			
Distributor box	[°C]	-25 ... 80	-25 ... 80
Master cable, fixed installation	[°C]	-30 ... 70	-
Master cable, flexible installation	[°C]	-5 ... 70	-

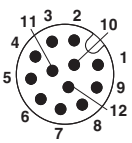
					Ordering data		Ordering data	
Status indication	**Signal type**	**Rated voltage**	**Slots**	**Cable length**	**Single occupancy**	**Double occupancy**	**Single occupancy**	**Double occupancy**
With LED	pnp	24 V DC	4	-	**-**	**-**	**1530760**	**-**
With LED	pnp	24 V DC	4	5 m	**1530663**	**1530702**	**-**	**-**
With LED	pnp	24 V DC	4	10 m	**1530676**	**1530715**	**-**	**-**
With LED	pnp	24 V DC	8	-	**-**	**-**	**1530773**	**-**
With LED	pnp	24 V DC	8	5 m	**1530689**	**1530744**	**-**	**-**
With LED	pnp	24 V DC	8	10 m	**1530692**	**1530757**	**-**	**-**



Pin assignment M5 socket, 3-pos.



Pin assignment M5 socket, 4-pos.



Pin assignment M12 plug, 12-pos.

Sensor/actuator cabling for the railway industry









Optimally coordinated

Through the use of selected, flame-retardant, and smoke-minimizing materials, we adapt our products to the requirements of the railway industry.

Versatile

Whether in the railway station, for control tasks or within rolling stock - our cables for the railway industry support flexible use.

100% tested

Our products for data transmission are tested according to network specifications CAT5 and CAT5e, and the relevant test documentation is retained.



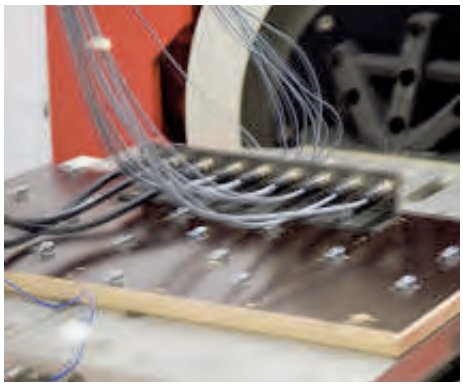
Flame-retardant material

An important aspect in the selection of the plastics used in the railway industry is their flame retardancy. We use flame-retardant grips made from PA 6.6 and RADOX® cables.



Safe transmission

With 360° shielded plug-in connectors and cables, you can transmit signals reliably even in critical EMI applications.



Securely locked

The vibration brake in the form of a wave shape with counterpart prevents the unintentional loosening of the plug-in connection in the event of vibrations.



SPEEDCON: fast, safe, and compatible

The SPEEDCON rapid interlock system is based on the principle of "Plug & Turn" and is 100% compatible with all M12 plug-in connectors with M12x1 thread on the market.



Temperature testing

Our products are intensively tested for an extended temperature range and for resistance to temperature shocks.



Certified according to IRIS

The Phoenix Contact Group is currently IRIS certified (as of 2013). IRIS is an international railway industry standard for quality management systems.



Plug-in connectors for assembly

Spring-cage connection technology, which is particular safe and is accepted by the railway industry, is used in our plug-in connectors for assembly.



Assembled cables

The assembled signal and data cables are available in socket or pin and straight or angled versions.



Cable for signals and data

Our range includes shielded signal cables with various numbers of positions, as well as 4-pos. data cables for Ethernet and PROFINET.

M12 plug-in connector, spring-cage connection, A-coded

– Tested according to EN 50155:2001 (shock and vibration)



Shielded, 4, 5-pos.

Technical data

		4-pos.	5-pos.
General data			
M12 circular plug-in connector according to:		IEC 61076-2-101	
Pollution degree		3	
Degree of protection		IP67	
Connection method		Spring-cage conn.	
Cable diameter		4 mm ... 8 mm	
Connection cross section [mm²]		0.14 mm² ... 0.5 mm²	
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	[°C]	-40 ... 85	

Ordering data

Description	Coding	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		4-pos.		5-pos.	
Plug-in connector, terminal marking: standard color coding and numbering					
Socket, angled	A - standard	**1432758**	1	**1432677**	1
Plug, angled	A - standard	**1432732**	1	**1432651**	1
Socket, straight	A - standard	**1432745**	1	**1432664**	1
Plug, straight	A - standard	**1432729**	1	**1432648**	1

Accessories

Torque screwdriver			
With preset torque of 0.4 Nm and 4 mm hexagonal drive	**TSD 04 SAC**	**1208429**	1
With preset torque of 0.8 Nm and 4 mm hexagonal drive	**TSD 08 SAC**	**1212597**	1
Adjustable from 0.3 - 1.2 Nm	**TSD-M 1,2NM**	**1212224**	1
Adapter insert			
For torque screwdrivers with adjustable torque, for accommodating plug attachments with 4 mm hexagonal drive	**TSD-M SAC-BIT ADAPTER**	**1212600**	1
Nut			
For assembling SACC M12 plug-in connectors, excluding those with insulation displacement connection, for 4 mm hexagonal screwdriver	**SACC BIT M12-D20**	**1208445**	1
Stripping tool, for multiple-stage repositioning of shielded conductors	**VS-CABLE-STRIP-VARIO**	**1657407**	1

M12 plug-in connector, spring-cage connection, D-coded

– Tested according to EN 50155:2001 (shock and vibration)



Shielded, 4-pos.

Technical data

		4-pos.	
General data			
M12 circular plug-in connector according to:		IEC 61076-2-101	-
Pollution degree		3	-
Degree of protection		IP67	-
Connection method		Spring-cage conn.	-
Cable diameter		4 mm ... 8 mm	-
Connection cross section [mm²]		0.14 mm² ... 0.5 mm²	- ... -
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	[°C]	-40 ... 85	-

Ordering data

Description	Coding	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		4-pos.			
Plug-in connector, terminal marking: color-coded, to match the bus system					
Socket, angled	D - data	**1436767**	1		
Plug, angled	D - data	**1436754**	1		
Socket, straight	D - data	**1436741**	1		
Plug, straight	D - data	**1436738**	1		

Accessories

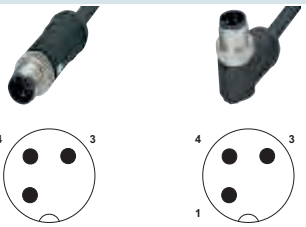
Torque screwdriver			
With preset torque of 0.4 Nm and 4 mm hexagonal drive	**TSD 04 SAC**	**1208429**	1
With preset torque of 0.8 Nm and 4 mm hexagonal drive	**TSD 08 SAC**	**1212597**	1
Adjustable from 0.3 - 1.2 Nm	**TSD-M 1,2NM**	**1212224**	1
Adapter insert For torque screwdrivers with adjustable torque, for accommodating plug attachments with 4 mm hexagonal drive	**TSD-M SAC-BIT ADAPTER**	**1212600**	1
Nut For assembling SACC M12 plug-in connectors, excluding those with insulation displacement connection, for 4 mm hexagonal screwdriver	**SACC BIT M12-D20**	**1208445**	1
Stripping tool, for multiple-stage repositioning of shielded conductors	**VS-CABLE-STRIP-VARIO**	**1657407**	1

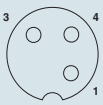
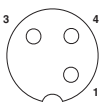
Sensor/actuator cabling for the railway industry

M12 SAC cable, 3-pos., type 28R

Notes:

For information about the cable qualities, see page 201

Free end	M12 plug, SPEEDCON
	

		Ordering data		Ordering data		Ordering data	
Free end			**Order No.**		**Order No.**		**Order No.**
				2 m 5 m 10 m	**1407296** **1407297** **1407298**	2 m 5 m 10 m	**1407299** **1407300** **1407302**
M12 socket, SPEEDCON, straight							
		2 m 5 m 10 m	**1407303** **1407304** **1407305**	2 m 5 m	**1407309** **1407310**		
M12 socket, SPEEDCON, angled							
		2 m 5 m 10 m	**1407306** **1407307** **1407308**				

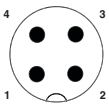
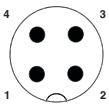
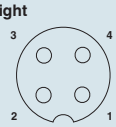
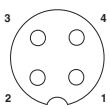
Cable description	Cable type	Color coding		Pin assignment
RADOX® GWK S - black	**28R**	WH1	**1**	1
		WH2	**2**	3
		WH3	**3**	4

		Technical data
		M12 3-pos.
Rated voltage	[V]	250
Rated current	[A]	4
Volume resistance		≤ 5 mΩ
Contact material		CuSn
Contact surface material		Ni/Au
Material of grip body		PA 6.6
Material, knurls		Zinc die-cast, nickel-plated
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection		IP65 / IP67
Temperature data		
Plug / socket	[°C]	-40 ... 85

M12 SAC cable, 4-pos., type 28R

Notes:

For information about the cable qualities, see page 201

	Free end	M12 plug, SPEEDCON	
		 	 
	Ordering data	Ordering data	Ordering data
Free end	Order No.	Order No.	Order No.
		2 m **1407311** 5 m **1407312** 10 m **1407313**	2 m **1407314** 5 m **1407315** 10 m **1407316**
M12 socket, SPEEDCON, straight			
 	2 m **1407317** 5 m **1407318** 10 m **1407319**	2 m **1407323** 5 m **1407324**	
M12 socket, SPEEDCON, angled			
 	2 m **1407320** 5 m **1407321** 10 m **1407322**		

Cable description	Cable type
RADOX® GWK S - black	**28R**

Color coding		Pin assignment
WH1	**1**	1
WH2	**2**	3
WH3	**3**	4
WH4	**4**	2

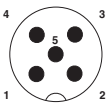
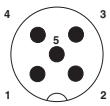
		Technical data
		M12 4-pos.
Rated voltage	[V]	250
Rated current	[A]	4
Volume resistance		≤ 5 mΩ
Contact material		CuSn
Contact surface material		Ni/Au
Material of grip body		PA 6.6
Material, knurls		Zinc die-cast, nickel-plated
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection		IP65 / IP67
Temperature data		
Plug / socket	[°C]	-40 ... 85

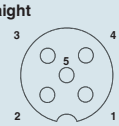
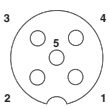
Sensor/actuator cabling for the railway industry

M12 SAC cable, 5-pos., type 28R

Notes:

For information about the cable qualities, see page 201

Free end	M12 plug, SPEEDCON
	 
	 

	Ordering data		Ordering data		Ordering data	
Free end		**Order No.**		**Order No.**		**Order No.**
			2 m 5 m 10 m	**1407325** **1407326** **1407327**	2 m 5 m 10 m	**1407328** **1407329** **1407330**
M12 socket, SPEEDCON, straight						
 	2 m 5 m 10 m	**1407331** **1407332** **1407333**	2 m 5 m	**1407337** **1407338**		
M12 socket, SPEEDCON, angled						
 	2 m 5 m 10 m	**1407334** **1407335** **1407336**				

Cable description	Cable type
RADOX® GWK S - black	**28R**

Color coding		Pin assignment
WH1	**1**	1
WH2	**2**	3
WH3	**3**	4
WH4	**4**	2
WH5	**5**	5

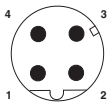
		Technical data
		M12 5-pos.
Rated voltage	[V]	60
Rated current	[A]	4
Volume resistance		≤ 5 mΩ
Contact material		CuSn
Contact surface material		Ni/Au
Material of grip body		PA 6.6
Material, knurls		Zinc die-cast, nickel-plated
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection		IP65 / IP67
Temperature data		
Plug / socket	[°C]	-40 ... 85

M12 SAC cable, patch cable, type 937

Notes:
For information about the cable qualities, see page 364

M12 plug, SPEEDCON





Ordering data

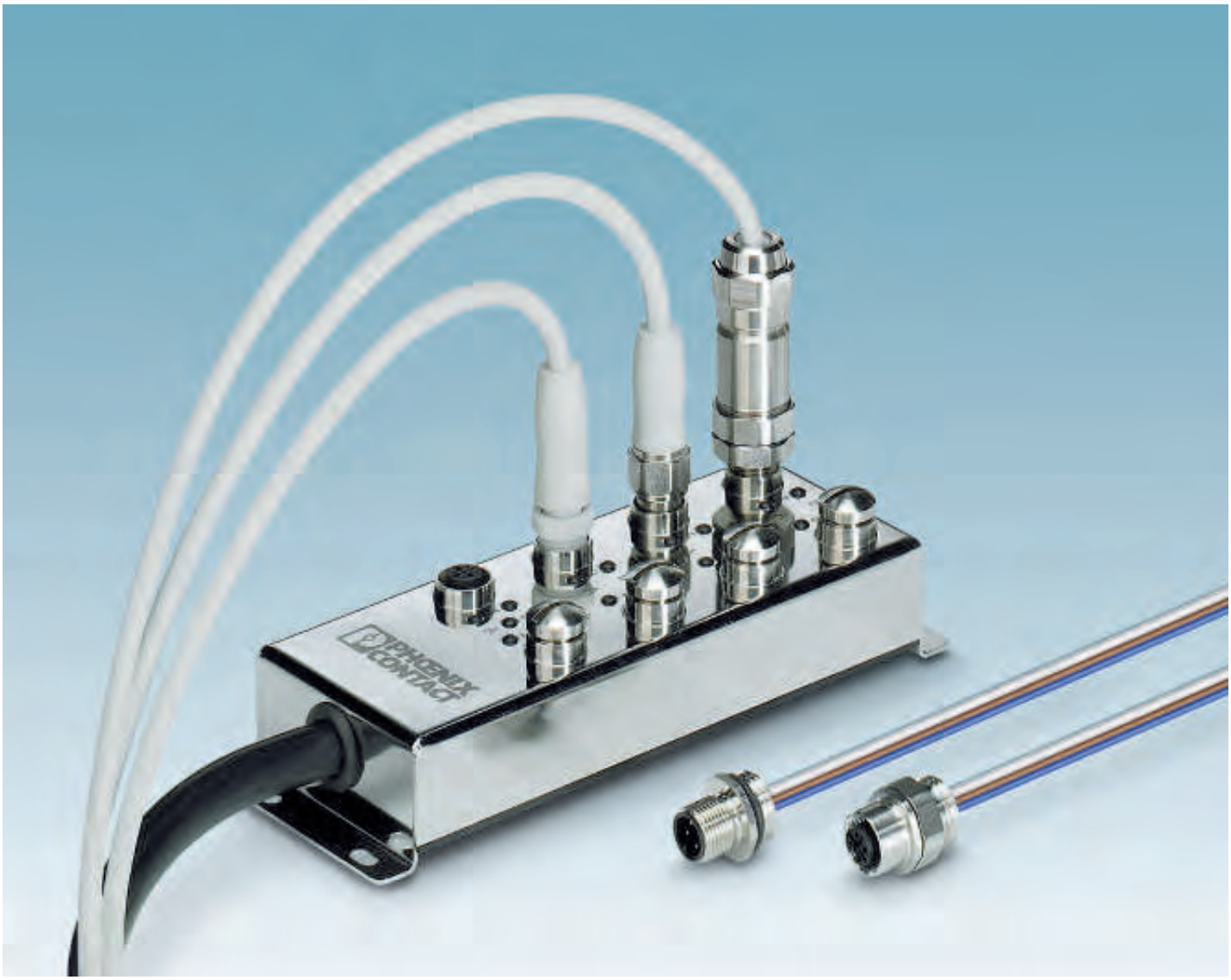
Free end		**Order No.**
	2 m	**1407339**
	5 m	**1407340**
	10 m	**1407341**
M12 plug, SPEEDCON, straight		
 	2 m	**1407342**
	5 m	**1407343**

Pin M12	Wire color		Signal
1	YE		TD+
3	OG		TD–
2	WH		RD+
4	BU		RD–

Technical data

		M12 Shielded
Rated voltage	[V]	250
Rated current	[A]	4
Volume resistance		≤ 5 mΩ
Contact material		CuSn
Contact surface material		Ni/Au
Material of grip body		PA 6.6
Material, knurls		Zinc die-cast, nickel-plated
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection		IP65 / IP67
Temperature data		
Plug / socket	[°C]	-40 ... 85

Sensor/actuator cabling for the food industry





Resistance to cleaning agents

The plug-in connectors in hygienic and washdown design are tested for resistance to cleaning agents commonly used in the food industry in accordance with Diversey and ECOLAB standards.



Product-contacting area

The components and devices used here must meet the highest hygienic requirements. Our cabling in hygienic design is suitable for use in this area.



Splash zone

The products in washdown design are suitable for the splash zone. Cost-effective features include resistance to cleaning agents and cleaning methods.



Protection against contamination

Thanks to the special design and use of plastic, plug-in connectors in hygienic design make it impossible for residual food material and bacteria to accumulate.



Mechanical resistance

All components for the food industry are IP69K tested. This means guaranteed sealing for applications with steam jets, even after repeated temperature shocks.



Safe transmission

With 360° shielded sensor/actuator boxes, cables, and plug-in connectors, you can transmit signals reliably even in critical EMI applications.



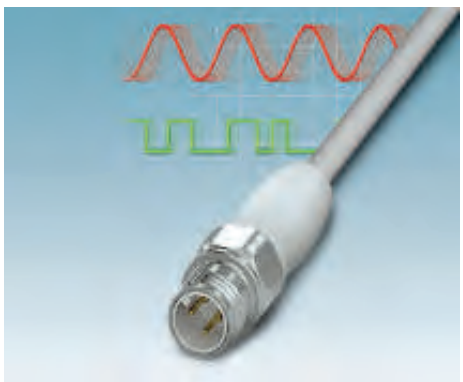
High-quality materials and innovative designs

The hygienic design is characterized by seamless surfaces and knurls made from stainless steel 1.4404. The plug-in connector grips and cables are made from polypropylene.



Hygienic design - certificates and tests

All electrical components are designed according to the EHEDG design guidelines. The materials comply with FDA guidelines and are tested in accordance with ECOLAB and Diversey standards.



100% tested

All supplied components are 100% electrically checked by Quality Assurance.



Plug-in connectors for the splash zone

For the special requirements of the food industry, we offer flush-type plug-in connectors and plug-in connectors with stainless steel components for assembly.



Assembled cables for all areas

Molded cables are available with plug-in connectors in sizes M8 and M12 in hygienic or washdown design.



Distributor boxes for the splash zone

Distributor boxes with stainless steel housing and permanently connected PVC master cable in washdown design are available for the splash zone.

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

– Housing material, stainless steel 1.4404



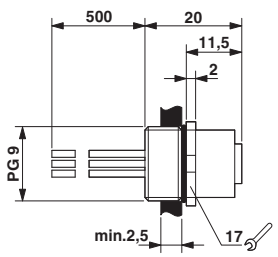
4, 5, 8-position



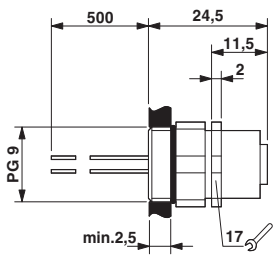
Can be positioned, 4, 5, 8-pos.

		Technical data			Technical data		
		4-pos.	5-pos.	8-pos.	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/IP69K			IP67/IP69K	
Connection method			Individual wires			Individual wires	
Electrical data							
Rated voltage		250 V	60 V	30 V	250 V	60 V	30 V
Rated current		4 A		2 A	4 A		2 A
Volume resistance			≤ 3 mΩ			≤ 3 mΩ	
Insulation resistance			> 100 MΩ			> 100 MΩ	
Material data							
Material contact / contact surface			CuZn / Au			CuZn / Au	
Contact carrier material			PA66 GF			PA66 GF	
Inflammability class according to UL 94			V0			V0	
Temperature data							
Plug / socket	[°C]		-25 ... 85			-25 ... 85	
Cable, fixed installation	[°C]		-25 ... 90			-25 ... 90	

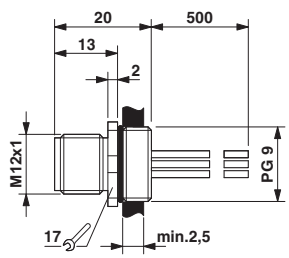
		Ordering data						Ordering data					
Description	Coding	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		4-pos.		5-pos.		8-pos.		4-pos.		5-pos.		8-pos.	
Device plug-in connector, Pg9 fastening thread													
Socket	A - standard	**1555448**	1	**1699863**	1	**1554607**	1	**1554649**	1	**1554652**	1	**1554665**	1
Plug	A - standard	**1554555**	1	**1554568**	1	**1554571**	1	**1554610**	1	**1554623**	1	**1554636**	1



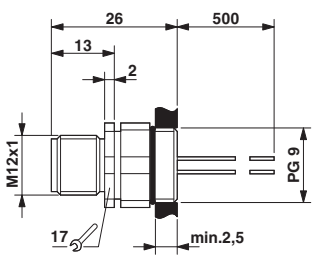
M12 flush-type socket



M12 flush-type socket, can be positioned



M12 flush-type plug



M12 flush-type plug, can be positioned

M12 flush-type plug-in connector, front mounting, M20 fastening thread, with 0.5 m long litz wires

– Housing material, stainless steel 1.4404



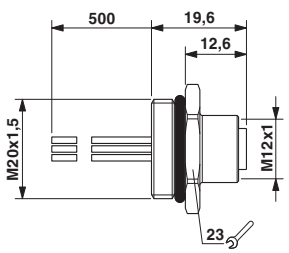
5, 8-pos.

Technical data

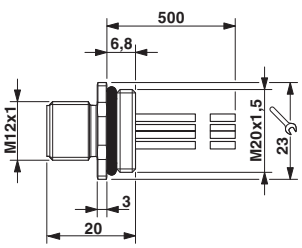
		5-pos.	8-pos.
General data			
M12 circular plug-in connector according to:		IEC 61076-2-101	
Pollution degree		3	
Degree of protection		IP67/IP69K	
Connection method		Individual wires	
Electrical data			
Rated voltage		60 V	30 V
Rated current		4 A	2 A
Volume resistance		≤ 3 mΩ	
Insulation resistance		≥ 100 MΩ	
Material data			
Material contact / contact surface		CuZn / Au	
Contact carrier material		PA 66	
Inflammability class according to UL 94		V0	
Temperature data			
Plug / socket	[°C]	-25 ... 85	
Cable, fixed installation	[°C]	-25 ... 90	

Ordering data

Description	Coding	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		5-pos.		8-pos.	
Device plug-in connectors					
Socket	A - standard	**1452071**	1	**1452110**	1
Plug	A - standard	**1452068**	1	**1452107**	1
Socket	B - inverse	**1452097**	1		
Plug	B - inverse	**1452084**	1		



M12 flush-type socket



M12 flush-type plug

Sensor/actuator cabling for the food industry

M12 flush-type plug-in connector, rear mounting

– Housing material, stainless steel 1.4404



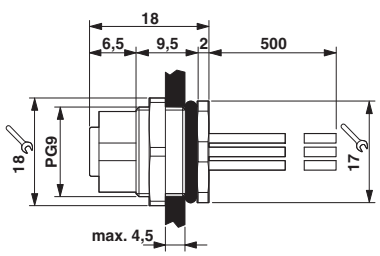
With 0.5 m long litz wires, 5, 8-pos.



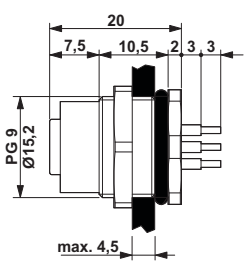
For wave soldering processes, 5, 8-pos.

		Technical data		Technical data	
		5-pos.	8-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/IP69K		IP67/IP69K	
Connection method		Individual wires		Solder pins	
Electrical data					
Rated voltage		60 V	30 V	60 V	30 V
Rated current		4 A	2 A	4 A	2 A
Volume resistance		≤ 3 mΩ		≤ 3 mΩ	
Insulation resistance		≥ 100 MΩ		≥ 100 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	[°C]	-25 ... 85		-25 ... 85	

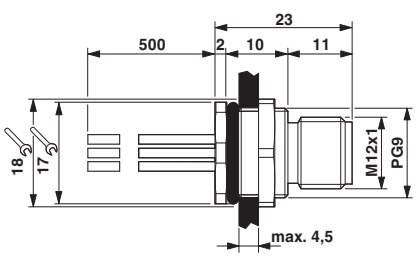
		Ordering data				Ordering data			
Description	Coding	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		5-pos.		8-pos.		5-pos.		8-pos.	
Device plug-in connectors									
Socket	A - standard	**1554717**	1	**1554720**	1	**1554733**	20	**1529797**	20
Plug	A - standard	**1554681**	1	**1554694**	1	**1554746**	20	**1529807**	20



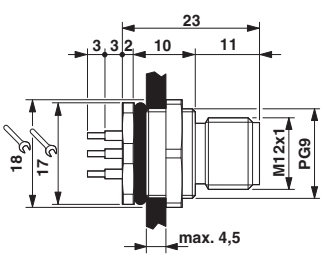
M12 flush-type socket



M12 flush-type socket



M12 flush-type plug



M12 flush-type plug

M12 plug-in connector, screw connection

– Material for screw connection, stainless steel 1.4405



Unshielded, 4, 5-pos.



Shielded, 5-pos.

		Technical data		Technical data	
		4-pos.	5-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/IP69K		IP67/IP69K	-
Connection method		Screw connection		Screw connection	-
Conductor cross section		0.25 mm² ... 0.75 mm²		0.25 mm² ... 0.75 mm²	-
Electrical data					
Rated voltage		250 V	60 V	60 V	-
Rated current		4 A		4 A	-
Volume resistance		≤ 3 mΩ		≤ 3 mΩ	-
Insulation resistance		≥ 100 MΩ		≥ 100 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	[°C]	-40 ... 85		-40 ... 85	-

		Ordering data				Ordering data			
Description	Coding	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		4-pos.		5-pos.		5-pos.			
Plug-in connector, with **Pg7** screw connection, **cable diameter: 4 mm - 6 mm**									
Socket, angled	A - standard	**1553284**	1	**1553297**	1				
Plug, angled	A - standard	**1553200**	1	**1553213**	1				
Socket, straight	A - standard	**1553242**	1	**1553255**	1				
Plug, straight	A - standard	**1553161**	1	**1553187**	1				
Plug-in connector, with **Pg9** screw connection, **cable diameter: 6 mm - 8 mm**									
Socket, angled	A - standard			**1553307**	1				
Plug, angled	A - standard	**1553226**	1	**1553239**	1				
Socket, straight	A - standard	**1553268**	1	**1553271**	1				
Plug, straight	A - standard	**1553174**	1	**1553190**	1				
Plug-in connector, with **M16** screw connection, **cable diameter: 3 mm ... 5.5 mm**									
Socket, straight	A - standard					**1440038**	1		
Plug, straight	A - standard					**1440012**	1		
Plug-in connector, with **M16** screw connection, **cable diameter: 5.5 mm ... 8.6 mm**									
Socket, straight	A - standard					**1440041**	1		
Plug, straight	A - standard					**1440025**	1		
Socket, straight	B - inverse					**1440135**	1		
Plug, straight	B - inverse					**1440148**	1		

M8 SAC cable, 3-pos., washdown design, plastic knurl

Notes:

For information about the cable qualities, see page 200

Free end	M8 plug
	 
	 

		Ordering data		Ordering data		Ordering data	
Free end			**Order No.**		**Order No.**		**Order No.**
				1.5 m 3 m 5 m 10 m	**1406469** **1406470** **1406471** **1406472**	1.5 m 3 m 5 m 10 m	**1406473** **1406474** **1406475** **1406476**
M8 socket, straight							
		1.5 m 3 m 5 m 10 m	**1406477** **1406478** **1406479** **1406480**	0.3 m 0.6 m 1.5 m 3 m	**1406490** **1406491** **1406492** **1406493**		
M8 socket, angled							
		1.5 m 3 m 5 m 10 m	**1406481** **1406482** **1406484** **1406485**	0.3 m 0.6 m 1.5 m 3 m	**1406494** **1406495** **1406496** **1406497**		
M8 socket, angled, with 2 LEDs							
		1.5 m 3 m 5 m 10 m	**1406486** **1406487** **1406488** **1406489**	0.3 m 0.6 m 1.5 m 3 m	**1406498** **1406499** **1406500** **1406524**		

Cable description	Cable type	Color coding	Pin assignment
PP-EPDM - gray (RAL 7035)	**PP**	BN	1
		BK	4
		BU	3

		Technical data	Technical data
		M8, 3-pos.	**M8, 3-pos., with LED**
Rated voltage	[V]	60	24
Rated current	[A]	4	4
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Contact material		CuSn	CuSn
Contact surface material		Ni/Au	Ni/Au
Material of grip body		PP	PP
Material, knurls		PP	PP
M8 circular plug-in connector according to:		IEC 61076-2-104	IEC 61076-2-104
Degree of protection		IP65 / IP67 / IP68 / IP69K	IP65 / IP67 / IP68 / IP69K
Temperature data			
Plug / socket	[°C]	-40 ... 105	-40 ... 105

M8 SAC cable, 4-pos., washdown design, plastic knurl

Notes:
For information about the cable qualities, see page 200

	Free end	M8 plug	
			
			

		Ordering data		Ordering data		Ordering data	
Free end			**Order No.**		**Order No.**		**Order No.**
				1.5 m	**1406835**	1.5 m	**1406841**
				3 m	**1406837**	3 m	**1406843**
				5 m	**1406839**	5 m	**1406844**
				10 m	**1406840**	10 m	**1406845**
M8 socket, straight							
		1.5 m	**1406846**	0.3 m	**1406858**		
		3 m	**1406847**	0.6 m	**1406859**		
		5 m	**1406848**	1.5 m	**1406860**		
		10 m	**1406849**	3 m	**1406861**		
M8 socket, angled							
		1.5 m	**1406850**	0.3 m	**1406862**		
		3 m	**1406851**	0.6 m	**1406863**		
		5 m	**1406852**	1.5 m	**1406864**		
		10 m	**1406853**	3 m	**1406865**		
M8 socket, angled, with 2 LEDs							
		1.5 m	**1406854**	0.3 m	**1406866**		
		3 m	**1406855**	0.6 m	**1406867**		
		5 m	**1406856**	1.5 m	**1406868**		
		10 m	**1406857**	3 m	**1406869**		

Cable description	Cable type
PP-EPDM - gray (RAL 7035)	**PP**

Color coding		Pin assignment
BN		1
WH		2
BK		4
BU		3

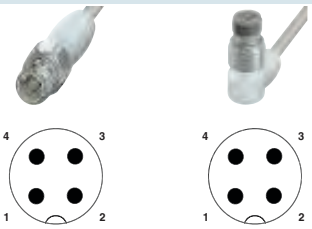
		Technical data
		M8, 4-pos.
Rated voltage	[V]	30
Rated current	[A]	4
Volume resistance		≤ 5 mΩ
Contact material		CuSn
Contact surface material		Ni/Au
Material of grip body		PP
Material, knurls		PP
M8 circular plug-in connector according to:		IEC 61076-2-104
Degree of protection		IP65 / IP67 / IP68 / IP69K
Temperature data		
Plug / socket	[°C]	-40 ... 105

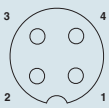
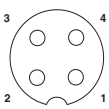
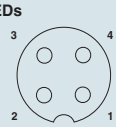
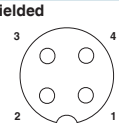
Sensor/actuator cabling for the food industry

M12 SAC cable, 4-pos., hygienic design, stainless steel knurl

Notes:

For information about the cable qualities, see page 200

Free end	M12 plug	M12 plug, 360° shielded
		

	Ordering data		Ordering data		Ordering data		Ordering data		Ordering data
Free end		**Order No.**		**Order No.**		**Order No.**		**Order No.**	**Order No.**
			1.5 m 3 m 5 m 10 m	**1403947** **1403948** **1403949** **1403951**	1.5 m 3 m 5 m 10 m	**1403952** **1403953** **1403954** **1403955**	1.5 m 3 m 5 m 10 m	**1403981** **1403982** **1403983** **1403984**	
M12 socket, straight									
 		1.5 m 3 m 5 m 10 m	**1403956** **1403957** **1403958** **1403959**	0.3 m 0.6 m 1.5 m 3 m	**1403968** **1403969** **1403970** **1403971**				
M12 socket, angled									
 		1.5 m 3 m 5 m 10 m	**1403960** **1403961** **1403962** **1403963**	0.3 m 0.6 m 1.5 m 3 m	**1403972** **1403973** **1403974** **1403975**				
M12 socket, angled, with 3 LEDs									
 		1.5 m 3 m 5 m 10 m	**1403964** **1403965** **1403966** **1403967**	0.3 m 0.6 m 1.5 m 3 m	**1403976** **1403977** **1403978** **1403979**				
M12 socket, straight, 360° shielded									
 		1.5 m 3 m 5 m 10 m	**1403985** **1403986** **1403987** **1403989**					0.3 m 0.6 m 1.5 m 3 m	**1403990** **1403991** **1403992** **1403993**

Cable description	Cable type
PP-EPDM - gray (RAL 7035)	**PP**

Color coding		Pin assignment
BN		1
WH		2
BK		4
BU		3

		Technical data	Technical data	Technical data
		M12 4-pos.	**M12 4-pos., shielded**	**M12 4-pos., with LED**
Rated voltage	[V]	250	250	24
Rated current	[A]	4	4	4
Volume resistance		≤ 5 mΩ	≤ 5 mΩ	≤ 5 mΩ
Contact material		CuSn	CuSn	CuSn
Contact surface material		Ni/Au	Ni/Au	Ni/Au
Material of grip body		PP	PP	PP
Material, knurls		Stainless steel	Stainless steel	Stainless steel
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101	IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68 / IP69K	IP65 / IP67 / IP68 / IP69K	IP65 / IP67 / IP68 / IP69K
Temperature data				
Plug / socket	[°C]	-40 ... 105	-40 ... 105	-40 ... 105

M12 SAC cable, 5-pos., hygienic design, stainless steel knurl

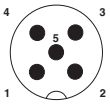
Notes:

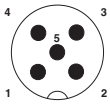
For information about the cable qualities, see page 200

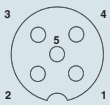
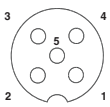
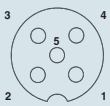










		Ordering data		Ordering data		Ordering data	
Free end			**Order No.**		**Order No.**		**Order No.**
				1.5 m	**1404039**	1.5 m	**1404044**
				3 m	**1404041**	3 m	**1404046**
				5 m	**1404042**	5 m	**1404047**
				10 m	**1404043**	10 m	**1404048**
M12 socket, straight							
		1.5 m	**1404049**	0.3 m	**1404063**		
		3 m	**1404050**	0.6 m	**1404064**		
		5 m	**1404051**	1.5 m	**1404065**		
		10 m	**1404052**	3 m	**1404066**		
M12 socket, angled							
		1.5 m	**1404053**	0.3 m	**1404067**		
		3 m	**1404054**	0.6 m	**1404068**		
		5 m	**1404055**	1.5 m	**1404069**		
		10 m	**1404056**	3 m	**1404070**		
M12 socket, angled, with 3 LEDs							
		1.5 m	**1404057**	0.3 m	**1404071**		
		3 m	**1404059**	0.6 m	**1404072**		
		5 m	**1404060**	1.5 m	**1404073**		
		10 m	**1404062**	3 m	**1404550**		

Cable description	Cable type
PP-EPDM - gray (RAL 7035)	**PP**

Color coding		Pin assignment
BN		1
WH		2
BK		4
BU		3
GY		5

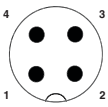
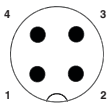
		Technical data	Technical data
		M12 5-pos.	**M12 5-pos., with LED**
Rated voltage	[V]	60	24
Rated current	[A]	4	4
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Contact material		CuSn	CuSn
Contact surface material		Ni/Au	Ni/Au
Material of grip body		PP	PP
Material, knurls		Stainless steel	Stainless steel
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68 / IP69K	IP65 / IP67 / IP68 / IP69K
Temperature data			
Plug / socket	[°C]	-40 ... 105	-40 ... 105

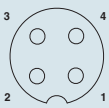
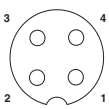
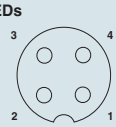
Sensor/actuator cabling for the food industry

M12 SAC cable, 4-pos., washdown design, plastic knurl

Notes:

For information about the cable qualities, see page 200

	Free end	M12 plug	
			
			

		Ordering data		Ordering data		Ordering data	
Free end			**Order No.**		**Order No.**		**Order No.**
				1.5 m 3 m 5 m 10 m	**1404002** **1404003** **1404004** **1404005**	1.5 m 3 m 5 m 10 m	**1404006** **1404007** **1404008** **1404009**
M12 socket, straight							
		1.5 m 3 m 5 m 10 m	**1404010** **1404011** **1404012** **1404013**	0.3 m 0.6 m 1.5 m 3 m	**1404023** **1404024** **1404025** **1404026**		
M12 socket, angled							
		1.5 m 3 m 5 m 10 m	**1404014** **1404015** **1404017** **1404018**	0.3 m 0.6 m 1.5 m 3 m	**1404027** **1404028** **1404030** **1404031**		
M12 socket, angled, with 3 LEDs							
		1.5 m 3 m 5 m 10 m	**1404019** **1404020** **1404021** **1404022**	0.3 m 0.6 m 1.5 m 3 m	**1404033** **1404034** **1404035** **1404036**		

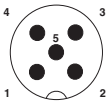
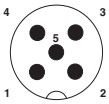
Cable description	Cable type	Color coding	Pin assignment
PP-EPDM - gray (RAL 7035)	**PP**	BN	1
		WH	2
		BK	4
		BU	3

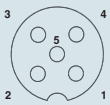
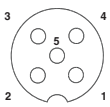
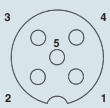
		Technical data	Technical data
		M12 4-pos.	**M12 4-pos., with LED**
Rated voltage	[V]	250	24
Rated current	[A]	4	4
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Contact material		CuSn	CuSn
Contact surface material		Ni/Au	Ni/Au
Material of grip body		PP	PP
Material, knurls		Polypropylene	Polypropylene
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68 / IP69K	IP65 / IP67 / IP68 / IP69K
Temperature data			
Plug / socket	[°C]	-40 ... 105	-40 ... 105

M12 SAC cable, 5-pos., washdown design, plastic knurl

Notes:

For information about the cable qualities, see page 200

	Free end	M12 plug	
			
			

		Ordering data		Ordering data		Ordering data	
Free end			**Order No.**		**Order No.**		**Order No.**
				1.5 m	**1404075**	1.5 m	**1404079**
				3 m	**1404076**	3 m	**1404080**
				5 m	**1404077**	5 m	**1404081**
				10 m	**1404078**	10 m	**1404082**
M12 socket, straight							
		1.5 m	**1404083**	0.3 m	**1404097**		
		3 m	**1404084**	0.6 m	**1404098**		
		5 m	**1404085**	1.5 m	**1404099**		
		10 m	**1404086**	3 m	**1404101**		
M12 socket, angled							
		1.5 m	**1404088**	0.3 m	**1404102**		
		3 m	**1404089**	0.6 m	**1404103**		
		5 m	**1404091**	1.5 m	**1404104**		
		10 m	**1404092**	3 m	**1404105**		
M12 socket, angled, with 3 LEDs							
		1.5 m	**1404093**	0.3 m	**1404106**		
		3 m	**1404094**	0.6 m	**1404107**		
		5 m	**1404095**	1.5 m	**1404108**		
		10 m	**1404096**	3 m	**1404109**		

Cable description	Cable type	Color coding	Pin assignment
PP-EPDM - gray (RAL 7035)	**PP**	BN	1
		WH	2
		BK	4
		BU	3
		GY	5

		Technical data	Technical data
		M12 5-pos.	**M12 5-pos., with LED**
Rated voltage	[V]	60	24
Rated current	[A]	4	4
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Contact material		CuSn	CuSn
Contact surface material		Ni/Au	Ni/Au
Material of grip body		PP	PP
Material, knurls		Polypropylene	Polypropylene
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68 / IP69K	IP65 / IP67 / IP68 / IP69K
Temperature data			
Plug / socket	[°C]	-40 ... 105	-40 ... 105

M12 distributors with stainless steel housing, washdown design

The housing of the sensor/actuator boxes for the food industry is made of 1.4404 stainless steel. The stainless steel distributor, which is provided with spacers, can be easily cleaned from all sides.

The distributors meet the requirements for IP69K protection. The range includes double-occupancy boxes with a 5 and 10 m long master cable.



With master cable

Technical data

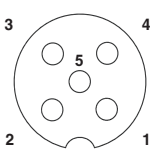
General data		
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection in acc. with IEC 60529/EN 60529		IP65/IP67/IP69K
Electrical data		
Rated voltage		24 V DC
Rated current for each I/O signal		2 A
Rated current per slot		4 A
Total rated current		12 A
Material data		
Housing material		Stainless steel 1.4404
Dimensions		
Width x height x length	[mm]	60 x 35 x 170
Temperature data		
Distributor box		-30 °C ... 80 °C
Master cable, fixed installation	[°C]	-40 ... 90
Master cable, flexible installation	[°C]	-5 ... 80

Ordering data

Description	Cable length	Type	Order No.	Pcs. / Pkt.
Sensor/actuator box with stainless steel housing, eight M12 slots, 5-pos., with status indicator and permanently connected PVC master cable				
	5 m	**SACB-8/16-L- 5,0PVC FB**	**1555541**	1
	10 m	**SACB-8/16-L-10,0PVC FB**	**1555554**	1

Accessories

M12 screw plug made of stainless steel 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
Torque screwdriver With preset torque of 0.4 Nm and 4 mm hexagonal drive	**TSD 04 SAC**	**1208429**	1
Nut For mounting M12 plug-in connectors with hexagonal stainless steel knurl, wrench size 14, with 4 mm hexagonal drive	**SAC BIT M12-W14**	**1212513**	1
Torque screwdriver, accuracy according to standard EN ISO 6789 Adjustable from 0.3 - 1.2 Nm	**TSD-M 1,2NM**	**1212224**	1
Screw bit, slotted, E6,3-1/4" drive, hardened, suitable for holder according to DIN 3126-F 6.3/ISO 1173 Size: 1.2 x 6.5 x 70 mm	**SF-BIT-SL 1,2X6,5-70**	**1212577**	5



Pin assignment M12 socket, 5-pos.

Sensor/actuator cabling for outdoor applications





Adapted to the relevant requirements

Through the selection of special materials, the components are designed for use outdoors. The materials are resistant to UV, ozone, corrosion, and temperatures.



For a variety of applications

Outdoor components are particularly suitable for use in traffic management systems, snow cats and snow cannons, photovoltaic systems or wind power plants.



UV and ozone test

Testing with special climate cabinets ensures that the plug-in connectors and cables are suitable for the control of solar plants, for example, without any restrictions.



Temperature testing

In the field of climatic tests, our products are subjected to low temperature, high temperature, and temperature shock tests.



Salt spray test

The effects of damp and corrosive atmospheric influences on our products are tested to simulate outdoor use.



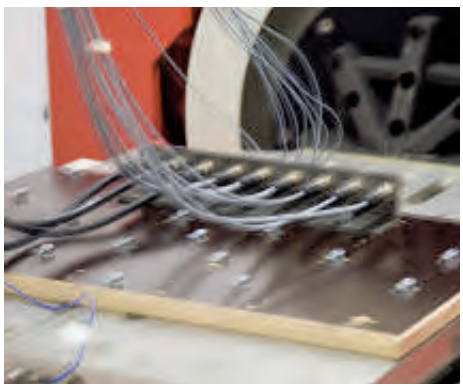
Resistance to oils and chemicals

Due to the special material selection, our outdoor range is resistant to liquids such as mineral oils, acids, and lyes, plus chemicals.



Corrosive gas test

Resistance to corrosive gases is also tested for our products for outdoor use.



Vibration and shock test

If plug-in connectors pass this series of tests, they will not come loose when used in this area of application.



IP69K protection

For outdoor applications, a high IP protection class is essential because products are exposed to direct atmospheric influences.



Plug-in connectors for assembly

The plug-in connector knurls are made from stainless steel and the plastics are resistant to atmospheric influences. The plug-in connectors are available with insulation displacement connection and screw connection.



Assembled cables

In addition to 4, 5, and 8-pos. shielded and unshielded versions, PROFINET and Ethernet cables for data applications are also available.



Distributor boxes

Robust, fully molded sensor/actuator distributor boxes with 8 slots are available with fixed master cable or plug-in screw connection.

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

– Housing material, stainless steel 1.4404



4, 5-pos.



Can be positioned, 4, 5-pos.

Technical data

		4-pos.	5-pos.
General data			
M12 circular plug-in connector according to:		IEC 61076-2-101	
Pollution degree		3	
Degree of protection		IP67/IP69K	
Connection method		Individual wires	
Electrical data			
Rated voltage		250 V	60 V
Rated current		4 A	
Volume resistance		≤ 3 mΩ	
Insulation resistance		> 100 MΩ	
Material data			
Material contact / contact surface		CuZn / Au	
Contact carrier material		PA66 GF	
Inflammability class according to UL 94		V0	
Temperature data			
Plug / socket	[°C]	-25 ... 85	

Technical data

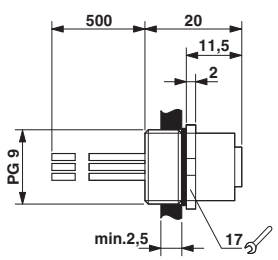
		4-pos.	5-pos.
General data			
M12 circular plug-in connector according to:		IEC 61076-2-101	
Pollution degree		3	
Degree of protection		IP67/IP69K	
Connection method		Individual wires	
Electrical data			
Rated voltage		250 V	60 V
Rated current		4 A	
Volume resistance		≤ 3 mΩ	
Insulation resistance		> 100 MΩ	
Material data			
Material contact / contact surface		CuZn / Au	
Contact carrier material		PA66 GF	
Inflammability class according to UL 94		V0	
Temperature data			
Plug / socket	[°C]	-25 ... 85	

Ordering data

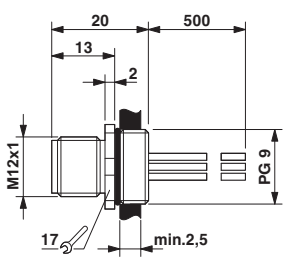
Description	Coding	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		4-pos.		5-pos.	
Device plug-in connector, Pg9 fastening thread					
Socket	A - standard	**1555448**	1	**1699863**	1
Plug	A - standard	**1554555**	1	**1554568**	1

Ordering data

Description	Coding	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		4-pos.		5-pos.	
Device plug-in connector, Pg9 fastening thread					
Socket	A - standard	**1554649**	1	**1554652**	1
Plug	A - standard	**1554610**	1	**1554623**	1



M12 flush-type socket



M12 flush-type plug

Device plug-in connector, rear mounting

– Housing material, stainless steel 1.4404



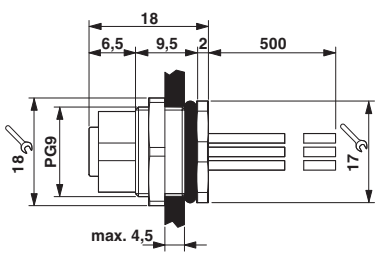
With litz wires



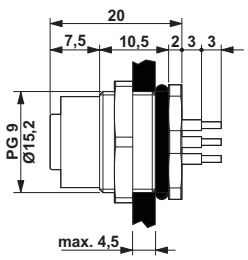
For wave soldering processes

	Technical data	Technical data
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/IP69K	IP67/IP69K
Connection method	Individual wires	Solder pins
Electrical data		
Rated voltage	60 V	60 V
Rated current	4 A	4 A
Volume resistance	≤ 3 mΩ	≤ 3 mΩ
Insulation resistance	≥ 100 MΩ	≥ 100 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 [°C]	-25 ... 85	-25 ... 85

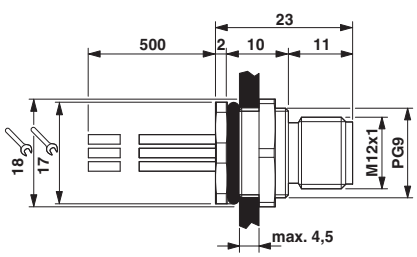
		Ordering data			Ordering data		
Description	Coding	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Device plug-in connectors							
Socket	A - standard	**SACC-DSI-M12FS-5CON-PG9/0,5 VA**	**1554717**	1	**SACC-DSI-M12FS-5CON-L180 VA**	**1554733**	20
Plug	A - standard	**SACC-DSI-M12MS-5CON-PG9/0,5 VA**	**1554681**	1	**SACC-DSI-M12MS-5CON-L180 VA**	**1554746**	20



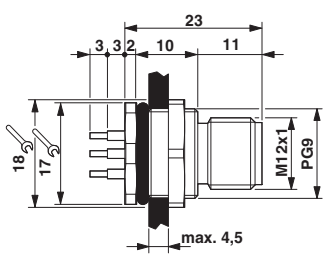
M12 flush-type socket



M12 flush-type socket



M12 flush-type plug



M12 flush-type plug

Plug-in connector, for assembly

– Material for screw connection, stainless steel 1.4405



Insulation displacement connection, unshielded, 4-pos.



Screw connection, shielded, 5-pos.

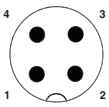
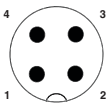
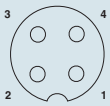
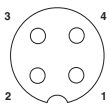
		Technical data		Technical data	
		0.14 mm² - 0.34 mm²	**0.34 mm² - 0.75 mm²**	**0.25 mm² - 0.75 mm²**	
General data					
M12 circular plug-in connector according to:		IEC 61076-2-101		IEC 61076-2-101	-
Pollution degree		3		3	-
Degree of protection		IP65/67		IP67/IP69K	-
Connection method		Insulation displacement connection		Screw connection	-
Electrical data					
Rated voltage		125 V	250 V	60 V	-
Rated current		4 A		4 A	-
Volume resistance		≤ 5 mΩ		≤ 3 mΩ	-
Insulation resistance		≥ 100 MΩ		≥ 100 MΩ	-
Material data					
Material contact / contact surface		CuSn / Ni/Au		CuZn / Au	- / -
Contact carrier material		TPU		PA 66	-
Inflammability class according to UL 94		V0		V0	-
Cable diameter		3.5 mm ... 6 mm	4 mm ... 8 mm	5.5 mm ... 8.6 mm	-
Temperature data					
Plug / socket	[°C]	-25 ... 80		-40 ... 85	-

		Ordering data				Ordering data			
Description	Coding	**Order No.**	Pcs. / Pkt.	**Order No.**	Pcs. / Pkt.	**Order No.**	Pcs. / Pkt.	**Order No.**	Pcs. / Pkt.
		0.14 mm² - 0.34 mm²		**0.34 mm² - 0.75 mm²**		**0.25 mm² - 0.75 mm²**			
Plug-in connector, with stainless steel knurl									
Socket, straight	A - standard	**1440766**	1	**1440782**	1				
Plug, straight	A - standard	**1440753**	1	**1440779**	1				
Plug-in connector, with **M16** screw connection, **cable diameter: 3 mm ... 5.5 mm**									
Socket, straight	A - standard					**1440038**	1		
Plug, straight	A - standard					**1440012**	1		
Plug-in connector, with **M16** screw connection, **cable diameter: 5.5 mm ... 8.6 mm**									
Socket, straight	A - standard					**1440041**	1		
Plug, straight	A - standard					**1440025**	1		

M12 SAC cable, 4-pos., cable type 28X, stainless steel knurl

Notes:

For information about the cable qualities, see page 199

	Free end	M12 plug	
		 	 
	Ordering data	Ordering data	Ordering data
Free end	Order No.	Order No.	Order No.
		2 m **1454040** 5 m **1454053** 10 m **1454066**	2 m **1407965** 5 m **1407966** 10 m **1407967**
M12 socket, straight  	2 m **1454079** 5 m **1454082** 10 m **1454095**	2 m **1454105** 5 m **1454118**	
M12 socket, angled  	2 m **1407968** 5 m **1407969** 10 m **1407970**		

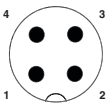
Cable description	Cable type	Color coding	Pin assignment
PE-X, halogen-free - black	**28X**	BN	1
		WH	2
		BK	4
		BU	3

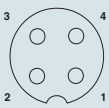
		Technical data
		M12 4-pos.
Rated voltage	[V]	250
Rated current	[A]	4
Volume resistance		≤ 5 mΩ
Contact material		CuSn
Contact surface material		Ni/Au
Material of grip body		PP
Material, knurls		Stainless steel
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68 / IP69K
Temperature data		
Plug / socket	[°C]	-40 ... 105

M12 SAC cable, 4-pos., cable type 28X, stainless steel knurl, shielded

Notes:

For information about the cable qualities, see page 199

	Free end	M12 plug, 360° shielded
		
		

	Ordering data		Ordering data		Ordering data
Free end		**Order No.**		**Order No.**	**Order No.**
			2 m 5 m 10 m	**1454121** **1454134** **1454147**	
M12 socket, straight, 360° shielded					
 	2 m 5 m 10 m	**1454150** **1454163** **1454176**	2 m 5 m	**1454189** **1454192**	

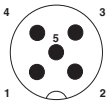
Cable description	Cable type	Color coding	Pin assignment
PE-X, halogen-free - black	**28X**	BN	1
		WH	2
		BK	4
		BU	3

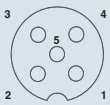
		Technical data
		M12 4-pos.
Rated voltage	[V]	250
Rated current	[A]	4
Volume resistance		≤ 5 mΩ
Contact material		CuSn
Contact surface material		Ni/Au
Material of grip body		PP
Material, knurls		Stainless steel
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68 / IP69K
Temperature data		
Plug / socket	[°C]	-40 ... 105

M12 SAC cable, 5-pos., cable type 28X, stainless steel knurl

Notes:

For information about the cable qualities, see page 199

Free end	M12 plug
	
	

	Ordering data		Ordering data		Ordering data
Free end		**Order No.**		**Order No.**	**Order No.**
			2 m 5 m 10 m	**1407255** **1407256** **1407257**	
M12 socket, straight					
 	2 m 5 m 10 m	**1407258** **1407259** **1407260**	2 m 5 m	**1407261** **1407262**	

Cable description	Cable type
PE-X, halogen-free - black	**28X**

Color coding		Pin assignment
BN		1
WH		2
BK		4
BU		3
GY		5

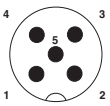
		Technical data
		M12 5-pos.
Rated voltage	[V]	60
Rated current	[A]	4
Volume resistance		≤ 5 mΩ
Contact material		CuSn
Contact surface material		Ni/Au
Material of grip body		PP
Material, knurls		Stainless steel
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68 / IP69K
Temperature data		
Plug / socket	[°C]	-40 ... 105

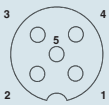
M12 SAC cable, 5-pos., cable type 28X, stainless steel knurl, shielded

Notes:

For information about the cable qualities, see page 199

Free end	M12 plug, 360° shielded
	



	Ordering data		Ordering data		Ordering data
Free end		**Order No.**		**Order No.**	**Order No.**
			2 m 5 m 10 m	**1407263** **1407264** **1407265**	
M12 socket, straight, 360° shielded					
 	2 m 5 m 10 m	**1407266** **1407267** **1407268**	2 m 5 m	**1407269** **1407270**	

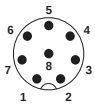
Cable description	Cable type	Color coding	Pin assignment
PE-X, halogen-free - black	**28X**	BN	1
		WH	2
		BK	4
		BU	3
		GY	5

		Technical data
		M12 5-pos., shielded
Rated voltage	[V]	60
Rated current	[A]	4
Volume resistance		≤ 5 mΩ
Contact material		CuSn
Contact surface material		Ni/Au
Material of grip body		PP
Material, knurls		Stainless steel
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68 / IP69K
Temperature data		
Plug / socket	[°C]	-40 ... 105

M12 SAC cable, 8-pos., cable type 28X, stainless steel knurl

Notes:

For information about the cable qualities, see page 199

	Free end	M12 plug
		
		

	Ordering data		Ordering data		Ordering data
Free end		**Order No.**		**Order No.**	**Order No.**
			2 m 5 m 10 m	**1407271** **1407272** **1407273**	
M12 socket, straight					
 	2 m 5 m 10 m	**1407274** **1407275** **1407276**	2 m 5 m	**1407277** **1407278**	

Cable description	Cable type
PE-X, halogen-free - black	**28X**

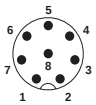
Color coding		Pin assignment
WH		1
BN		2
GN		3
YE		4
GY		5
PK		6
BU		7
RD		8

		Technical data
		M12 8-pos.
Rated voltage	[V]	30
Rated current	[A]	2
Volume resistance		≤ 5 mΩ
Contact material		CuSn
Contact surface material		Ni/Au
Material of grip body		PP
Material, knurls		Stainless steel
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68 / IP69K
Temperature data		
Plug / socket	[°C]	-40 ... 105

M12 SAC cable, 8-pos., cable type 28X, stainless steel knurl, shielded

Notes:

For information about the cable qualities, see page 199

	Free end	M12 plug, 360° shielded
		 

	Ordering data		Ordering data		Ordering data
Free end		**Order No.**		**Order No.**	**Order No.**
			2 m 5 m 10 m	**1407279** **1407280** **1407281**	
M12 socket, straight, 360° shielded					
 	2 m 5 m 10 m	**1407282** **1407283** **1407284**	2 m 5 m	**1407285** **1407286**	

Cable description	Cable type
PE-X, halogen-free - black	**28X**

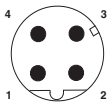
Color coding		Pin assignment
WH		1
BN		2
GN		3
YE		4
GY		5
PK		6
BU		7
RD		8

		Technical data
		M12 8-pos., shielded
Rated voltage	[V]	30
Rated current	[A]	2
Volume resistance		≤ 5 mΩ
Contact material		CuSn
Contact surface material		Ni/Au
Material of grip body		PP
Material, knurls		Stainless steel
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68 / IP69K
Temperature data		
Plug / socket	[°C]	-40 ... 105

M12 Ethernet/PROFINET cable, 4-pos., cable type 93X, stainless steel knurl

M12 plug





Ordering data

Free end		Order No.
	2 m	**1454202**
	5 m	**1454215**
	10 m	**1454228**
M12 plug, straight  	2 m	**1454231**
	5 m	**1454244**

Pin M12	Wire color		Signal
1	YE		TD+
3	OG		TD–
2	WH		RD+
4	BU		RD–

Technical data

		M12 4-pos.
Rated voltage	[V]	250
Rated current	[A]	4
Volume resistance		- -
Contact material		CuSn
Contact surface material		Ni/Au
Material of grip body		PP
Material, knurls		Stainless steel
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68 / IP69K
Temperature data		
Plug / socket	[°C]	-40 ... 105

M12 distributor with corrosion-resistant metal thread

Notes:
For accessories, see page 179
For master cable rings, see page 170
For master cable data, see page 203



With master cable



Plug-in screw connection, horizontal

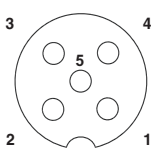
		With master cable	Plug-in screw connection, horizontal
Technical data			
General data			
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101
Degree of protection in acc. with IEC 60529/EN 60529		IP65/IP67/IP69K	IP65/67
Electrical data			
Rated voltage		120 V	120 V
Rated current for each I/O signal		2 A	2 A
Rated current per slot		4 A	4 A
Total rated current		12 A	10 A
Housing material		PBT	PBT
Dimensions			
Width x height x length	[mm]	58 x 26 x 153	58 x 45 x 153
Temperature data			
Distributor box		-30 °C ... 90 °C	-30 °C ... 80 °C
Master cable, fixed installation	[°C]	-40 ... 90	- ... -
Master cable, flexible installation	[°C]	-5 ... 80	- ... -

Ordering data

Description	Cable length	Type	Order No.	Pcs. / Pkt.
Sensor/actuator box, M12 socket, 8 slots, 5-pos., double occupancy, status indicator: no				
	5 m	**SACB-8/16- 5,0PUR OD**	**1457364**	1
	10 m	**SACB-8/16-10,0PUR OD**	**1457377**	1
		SACB-8/16-C OD	**1457380**	1

Accessories

M12 screw plug made of stainless steel 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
Torque screwdriver With preset torque of 0.4 Nm and 4 mm hexagonal drive		**TSD 04 SAC**	**1208429**	1
With preset torque of 2.5 Nm and 4 mm hexagonal drive		**TSD 25 SAC**	**1212315**	1
Nut For mounting M12 plug-in connectors with hexagonal stainless steel knurl, wrench size 14, with 4 mm hexagonal drive		**SAC BIT M12-W14**	**1212513**	1
For reliable tightening of the pressure nuts with a wrench size of 24 mm, for 4 mm hexagonal screwdriver		**SAC BIT HOOD-W 24**	**1212486**	1
Torque screwdriver, accuracy according to standard EN ISO 6789 Adjustable from 0.3 - 1.2 Nm		**TSD-M 1,2NM**	**1212224**	1
Screw bit, PZ cross, E6.3-1/4" drive, hardened, suitable for holder according to DIN 3126-F 6.3/ISO 1173 Size: PZ 1 x 50 mm		**SF-BIT-PZ 1-50**	**1212591**	5



Pin assignment M12 socket, 5-pos.

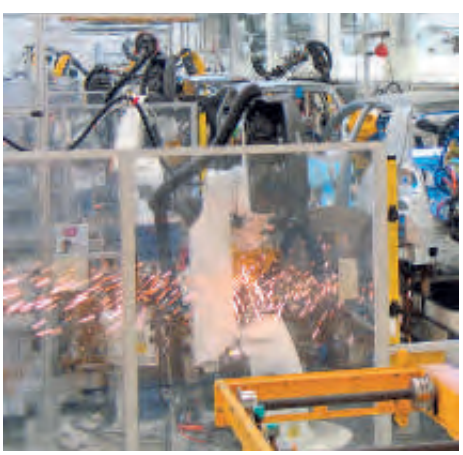
Sensor/actuator cabling for robots and drag chains





High level of durability

With their special design, our cables provide a high level of durability under alternating bending stress, e.g., in drag chains.



High level of resistance to welding sparks

The robust TPE-U outer sheath of the highly flexible cables is resistant to welding sparks and is particularly suitable for use in the field of resistance welding processes.



High level of durability under torsional stress

Our cables achieve a high level of durability - even with large angles of torsion and simultaneous bending stress.



Properties of the highly flexible sensor/actuator cable

Suitable for use with drag chain (min. 15 million cycles), suitable for torsional stress (min. 13 million cycles), resistant to welding sparks, temperature-resistant.



Properties of the master cable

UL style, good oil/chemical resistance, suitable for use with drag chain (min. 5 million cycles), suitable for torsional stress (min. 3 million cycles), flame-retardant.



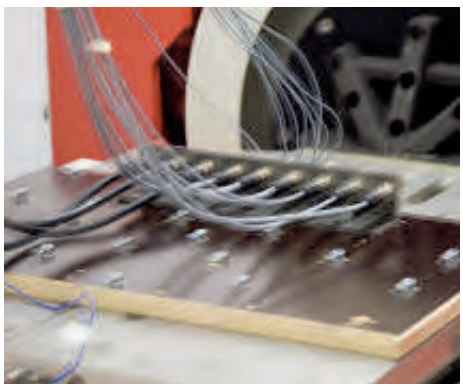
High degree of flexibility

Use the SAC and master cable rings, which are available online, to achieve the required cable lengths - even with highly flexible cable.



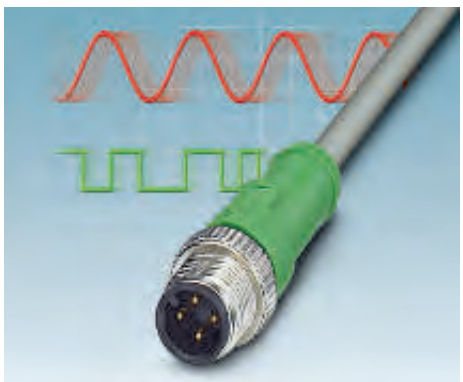
Easy detection

A particularly user-friendly feature is diagnostics in the event of an error. LEDs can be used to detect the error location quickly and easily. This can directly increase your machine availability.



Securely locked

The vibration brake in the form of a wave shape with counterpart prevents the unintentional loosening of the plug-in connection in the event of vibrations.



100% tested

All supplied components are 100% electrically checked by Quality Assurance.



Large selection of number of positions

Our sensor/actuator cables for robots and drag chains are available in 3, 4, and 5-pos. versions.



Large selection of plug-in connectors

Sensor/actuator cables with molded plug-in connectors are available both as plugs and sockets and with a straight or angled cable outlet.



Highly flexible master cable

For the distribution or grouping of signals at industrial robots, we offer a corresponding sensor/actuator box with special master cable.

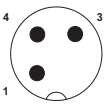
Sensor/actuator cabling for robots and drag chains

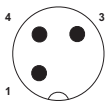
M12 SAC cable, 3-pos., cable type 800

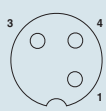
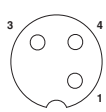
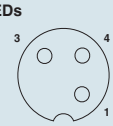
Notes:
For information about the cable qualities, see page 190

Free end	M12 plug





	Ordering data		Ordering data		Ordering data	
Free end		**Order No.**		**Order No.**		**Order No.**
			1.5 m	**1456734**	1.5 m	**1456899**
			3 m	**1456747**	3 m	**1456909**
			5 m	**1456750**	5 m	**1456912**
			10 m	**1456763**	10 m	**1456925**
			Variable	**1696662**	Variable	**1696675**
M12 socket, straight  	1.5 m	**1456679**	0.3 m	**1456776**		
	3 m	**1456682**	0.6 m	**1456789**		
	5 m	**1456695**	1.5 m	**1456792**		
	10 m	**1456705**	3 m	**1456802**		
	Variable	**1696688**	Variable	**1696756**		
M12 socket, angled  	1.5 m	**1454260**	0.3 m	**1456815**		
	3 m	**1456718**	0.6 m	**1456828**		
	5 m	**1454273**	1.5 m	**1456831**		
	10 m	**1454299**	3 m	**1456844**		
	Variable	**1696714**	Variable	**1696772**		
M12 socket, angled, with 2 LEDs  	1.5 m	**1454312**	0.3 m	**1456857**		
	3 m	**1456721**	0.6 m	**1456860**		
	5 m	**1454325**	1.5 m	**1456873**		
	10 m	**1454341**	3 m	**1456886**		
	Variable	**1696730**	Variable	**1696798**		

Ordering data for products with variable cables:

For a sensor/actuator cable, TPE-U 800, 4.5 m long, with a straight 3-pos. M12 plug and free cable end, the ordering data is as follows:

Cable description	Cable type
TPE-U highly flexible - gray Robots and drag chains	800

Color coding		Pin assignment
BN		1
BK		4
BU		3

Order No.		Cable type		Length [m] Max. 40 m
1696662	/	800	/	4.5

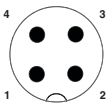
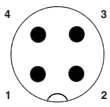
Minimum order amount = 25

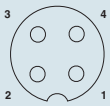
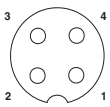
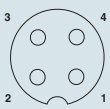
Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

		Technical data	Technical data
		M12 3-pos.	**M12 3-pos., with LEDs**
Rated voltage	[V]	250	24
Rated current	[A]	4	4
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Contact material		CuSn	CuSn
Contact surface material		Ni/Au	Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing
Material, knurls		Zinc die-cast, nickel-plated	Zinc die-cast, nickel-plated
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68	IP65 / IP67 / IP68
Temperature data			
Plug / socket	[°C]	-25 ... 90	-25 ... 90

M12 SAC cable, 4-pos., cable type 800

Notes:
For information about the cable qualities, see page 190

Free end	M12 plug	
		
		

	Ordering data		Ordering data		Ordering data	
Free end		**Order No.**		**Order No.**		**Order No.**
			1.5 m	**1457018**	1.5 m	**1457128**
			3 m	**1457021**	3 m	**1457131**
			5 m	**1457034**	5 m	**1457144**
			10 m	**1457047**	10 m	**1457157**
			Variable	**1696947**	Variable	**1696950**
M12 socket, straight						
 		1.5 m	**1456938**	0.3 m	**1457050**	
		3 m	**1456941**	0.6 m	**1457063**	
		5 m	**1567322**	1.5 m	**1567270**	
		10 m	**1567335**	3 m	**1457076**	
		Variable	**1696963**	Variable	**1697001**	
M12 socket, angled						
 		1.5 m	**1456954**	0.3 m	**1457089**	
		3 m	**1456967**	0.6 m	**1567225**	
		5 m	**1456970**	1.5 m	**1567238**	
		10 m	**1456983**	3 m	**1457092**	
		Variable	**1696989**	Variable	**1697014**	
M12 socket, angled, with 3 LEDs						
 		1.5 m	**1456996**	0.3 m	**1457102**	
		3 m	**1457005**	0.6 m	**1567173**	
		5 m	**1567351**	1.5 m	**1567199**	
		10 m	**1567364**	3 m	**1457115**	
		Variable	**1696992**	Variable	**1697027**	

Ordering data for products with variable cables:

For a sensor/actuator cable, TPE-U 800, 4.5 m long, with a straight 4-pos. M12 plug and free cable end, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 40 m
1696947	**800**	**4.5**

Minimum order amount = 25

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

Cable description	Cable type
TPE-U highly flexible - gray Robots and drag chains	**800**

Color coding	Pin assignment
BN	1
WH	2
BK	4
BU	3

		Technical data	Technical data
		M12 4-pos.	**M12 4-pos., with LED**
Rated voltage	[V]	250	24
Rated current	[A]	4	4
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Contact material		CuSn	CuSn
Contact surface material		Ni/Au	Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing
Material, knurls		Zinc die-cast, nickel-plated	Zinc die-cast, nickel-plated
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68	IP65 / IP67 / IP68
Temperature data			
Plug / socket	[°C]	-25 ... 90	-25 ... 90

M12 SAC cable, 5-pos., cable type 802

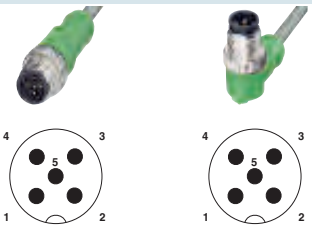
Notes:

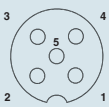
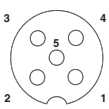
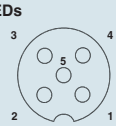
For information about the cable qualities, see page 190

Free end



M12 plug



Free end		Ordering data Order No.	Ordering data	Order No.	Ordering data	Order No.
			1.5 m	**1457225**	1.5 m	**1457322**
			3 m	**1457238**	3 m	**1457335**
			5 m	**1457241**	5 m	**1457348**
			10 m	**1457254**	10 m	**1457351**
			Variable	**1697098**	Variable	**1697108**
M12 socket, straight						
		1.5 m **1454419**	0.3 m	**1457267**		
		3 m **1457160**	0.6 m	**1454561**		
		5 m **1454422**	1.5 m	**1454587**		
		10 m **1454448**	3 m	**1457270**		
		Variable **1697111**	Variable	**1697140**		
M12 socket, angled						
		1.5 m **1457173**	0.3 m	**1457283**		
		3 m **1457186**	0.6 m	**1454516**		
		5 m **1457199**	1.5 m	**1454532**		
		10 m **1457209**	3 m	**1457296**		
		Variable **1697124**	Variable	**1697153**		
M12 socket, angled, with 3 LEDs						
		1.5 m **1454367**	0.3 m	**1457306**		
		3 m **1457212**	0.6 m	**1454464**		
		5 m **1454370**	1.5 m	**1454480**		
		10 m **1454396**	3 m	**1457319**		
		Variable **1697137**	Variable	**1697166**		

Ordering data for products with variable cables:

For a sensor/actuator cable, TPE-U 802, 4.5 m long, with a straight 5-pos. M12 plug and free cable end, the ordering data is as follows:

Order No.	Cable type	Length [m] Max. 40 m
1697098 /	**802** /	**4.5**

Minimum order amount = 25

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

Cable description	Cable type
TPE-U highly flexible - gray Robots and drag chains	**802**

Color coding		Pin assignment
BN		1
WH		2
BK		4
BU		3
GNYE		5

		Technical data M12 5-pos.	Technical data M12 5-pos., with LED
Rated voltage	[V]	60	24
Rated current	[A]	4	4
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Contact material		CuSn	CuSn
Contact surface material		Ni/Au	Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing
Material, knurls		Zinc die-cast, nickel-plated	Zinc die-cast, nickel-plated
M12 circular plug-in connector according to:		IEC 61076-2-101	IEC 61076-2-101
Degree of protection		IP65 / IP67 / IP68	IP65 / IP67 / IP68
Temperature data			
Plug / socket	[°C]	-25 ... 90	-25 ... 90

M12 distributor with metal thread

Notes:
For accessories, see page 179
For master cable data, see page 205



With master cable

Technical data

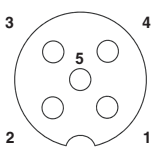
General data		
M12 circular plug-in connector according to:		IEC 61076-2-101
Degree of protection in acc. with IEC 60529/EN 60529		IP65/IP67/IP69K
Electrical data		
Rated voltage		24 V DC
Rated current for each I/O signal		2 A
Rated current per slot		4 A
Total rated current		12 A
Housing material		PBT
Dimensions		
Width x height x length	[mm]	58 x 26 x 153
Temperature data		
Distributor box		-30 °C ... 90 °C
Master cable, fixed installation	[°C]	-40 ... 90
Master cable, flexible installation	[°C]	-5 ... 80

Ordering data

Description	Cable length	Type	Order No.	Pcs. / Pkt.
Sensor/actuator box, M12 SPEEDCON socket, 8 slots, 5-pos., double occupancy, status indicator: yes; master cable connection: 180° fixed connection, PUR, halogen-free, highly flexible, shielding: no	5 m	**SACB-8/16-L- 5,0 80MC SCO**	**1401199**	1
Master cable ring with PE conductor, PUR/PP, halogen-free, highly flexible, unshielded, length: 50 m				
16 x 0.5 mm² / 3 x 1.0 mm²	50 m	**SACB-16X0,5/ 3X1,0-50,0 80MC**	**1402304**	1

Accessories

Torque screwdriver With preset torque of 0.4 Nm and 4 mm hexagonal drive	**TSD 04 SAC**	**1208429**	1
Nut For assembling sensor/actuator cables with M12 plug-in connectors and for M12 plug-in connectors with insulation displacement connection, for 4 mm hexagonal screwdriver	**SAC BIT M12-D15**	**1208432**	1
For assembling SACC M12 plug-in connectors, excluding those with insulation displacement connection, for 4 mm hexagonal screwdriver	**SACC BIT M12-D20**	**1208445**	1
M12 screw plug with SPEEDCON rapid interlock system For unoccupied M12 sockets of sensor/actuator cables, boxes, and flush-type plug-in connectors	**PROT-MS SCO**	**1553129**	5



Pin assignment M12 socket, 5-pos.

Cable rings for sensor cables

The special SAC cables are also available in 100 m cable rings for connecting the M8/M12 plug-in connectors that can be assembled.

Further information on the cable range for sensor/actuator cables can be found from page 184.



Cable sheath: black

Description	Ordering data		
	Type	Order No.	Pcs. / Pkt.
Cable ring, PUR, halogen-free, unshielded			
3 x 0.25 mm², conductor colors: BN/BU/BK	**SAC-3P-100,0-PUR/0,25**	**1501689**	1
3 x 0.34 mm², conductor colors: BN/BU/BK	**SAC-3P-100,0-PUR/0,34**	**1501650**	1
4 x 0.25 mm², conductor colors: BN/WH/BU/BK	**SAC-4P-100,0-PUR/0,25**	**1501692**	1
4 x 0.34 mm², conductor colors: BN/WH/BU/BK	**SAC-4P-100,0-PUR/0,34**	**1501663**	1
5 x 0.34 mm², conductor colors: BN/WH/BU/BK/GNYE	**SAC-5P-100,0-PUR/0,34**	**1501676**	1
6 x 0.25 mm², conductor colors: BN/WH/BU/BK/GY/PK	**SAC-6P-100,0-PUR/0,25**	**1550614**	1
8 x 0.25 mm², conductor colors: WH/BN/GN/YE/GY/PK/BU/RD	**SAC-8P-100,0-PUR/0,25**	**1550630**	1
Cable ring, PUR, halogen-free, shielded			
3 x 0.25 mm², conductor colors: BN/BU/BK	**SAC-3P-100,0-PUR/SH-0,25**	**1526525**	1
3 x 0.34 mm², conductor colors: BN/BU/BK	**SAC-3P-100,0-PUR/SH-0,34**	**1501702**	1
4 x 0.25 mm², conductor colors: BN/WH/BU/BK	**SAC-4P-100,0-PUR/SH-0,25**	**1535794**	1
4 x 0.34 mm², conductor colors: BN/WH/BU/BK	**SAC-4P-100,0-PUR/SH-0,34**	**1501715**	1
5 x 0.34 mm², conductor colors: BN/WH/BU/BK/GY	**SAC-5P-100,0-PUR/SH-0,34**	**1501728**	1
6 x 0.14 mm², conductor colors: BN/WH/BU/BK/GY/PK	**SAC-6P-100,0-PUR/SH-0,14**	**1550627**	1
8 x 0.25 mm², conductor colors: WH/BN/GN/YE/GY/PK/BU/RD	**SAC-8P-100,0-PUR/SH-0,25**	**1550643**	1
Cable ring, PUR/PVC, unshielded			
4 x 0.75 mm², conductor colors: BN/WH/BU/BK	**SAC-4P-100,0-186/0,75**	**1457461**	1
5 x 0.75 mm², conductor colors: BN/WH/BU/BK/GY	**SAC-5P-100,0-186/0,75**	**1535590**	1
Cable ring, PUR/PVC, shielded, twisted pair			
12 x 0.14 mm², conductor colors: (BN/BU)/(WH/GN)/(PK/YE)/(BK/GY)/(RD/VT)/(GYPK/RDBU)	**SAC-12P-100,0-35T/SH-0,14**	**1405789**	1
Cable ring, PVC, unshielded			
3 x 0.25 mm², conductor colors: BN/BU/BK	**SAC-3P-100,0-PVC/0,25**	**1501854**	1
3 x 0.34 mm², conductor colors: BN/BU/BK	**SAC-3P-100,0-PVC/0,34**	**1501825**	1
4 x 0.25 mm², conductor colors: BN/WH/BU/BK	**SAC-4P-100,0-PVC/0,25**	**1501867**	1
4 x 0.34 mm², conductor colors: BN/WH/BU/BK	**SAC-4P-100,0-PVC/0,34**	**1501838**	1
5 x 0.34 mm², conductor colors: BN/WH/BU/BK/GNYE	**SAC-5P-100,0-PVC/0,34**	**1501841**	1
8 x 0.25 mm², conductor colors: WH/BN/GN/YE/GY/PK/BU/RD	**SAC-8P-100,0-PVC/0,25**	**1550698**	1
12 x 0.14 mm², conductor colors: BN/BU/WH/GN/PK/YE/BK/GY/RD/VT/GYPK/RDBU	**SAC-12P-100,0-PVC/0,14**	**1441532**	1
17 x 0.14 mm², conductor colors: BN/BU/WH/GN/PK/YE/BK/GY/RD/VT/GYPK/RDBU/WHGN/BNGN/WHYE/YEBN/WHGY	**SAC-17P-100,0-PVC/0,14**	**1441545**	1
Cable ring, PVC, Shielded			
3 x 0.34 mm², conductor colors: BN/BU/BK	**SAC-3P-100,0-PVC/SH-0,34**	**1550656**	1
4 x 0.34 mm², conductor colors: BN/WH/BU/BK	**SAC-4P-100,0-PVC/SH-0,34**	**1550669**	1
5 x 0.34 mm², conductor colors: BN/WH/BU/BK/GY	**SAC-5P-100,0-PVC/SH-0,34**	**1550672**	1
8 x 0.25 mm², conductor colors: WH/BN/GN/YE/GY/PK/BU/RD	**SAC-8P-100,0-PVC/SH-0,25**	**1550708**	1

Cable rings for valve connector cables

The special SAC cables are also available in 100 m cable rings for connecting the valve plug-in connectors for assembly.

Further information on the cable range for sensor/actuator cables can be found from page 184.



Description	Ordering data		
	Type	Order No.	Pcs. / Pkt.
Cable ring, PUR, halogen-free			
3 x 0.5 mm², conductor colors: BK 1/BK 2/GNYE	**SAC-3P-100,0-PUR/0,5**	**1457393**	1
5 x 0.5 mm², conductor colors: BK 1/BK 2/BK 3/BK 4/GNYE	**SAC-5P-100,0-PUR/0,5**	**1457403**	1
Cable ring, PUR/PVC, cable type: 116			
3 x 0.75 mm², conductor colors: BK 1/BK 2/GNYE	**SAC-3P-100,0-116/0,75**	**1457416**	1
5 x 0.75 mm², conductor colors: BK 1/BK 2/BK 3/BK 4/GNYE	**SAC-5P-100,0-116/0,75**	**1457429**	1
Cable ring, PVC, cable type: 534			
3 x 0.75 mm², conductor colors: BK 1/BK 2/GNYE	**SAC-3P-100,0-534/0,75**	**1457432**	1
5 x 0.75 mm², conductor colors: BK 1/BK 2/BK 3/BK 4/GNYE	**SAC-5P-100,0-534/0,75**	**1457445**	1

Master cable rings for sensor/actuator boxes

Master cable rings are available for distributor boxes with spring-cage connection or plug-in screw connection. Similarly, master cables can also be connected to covers and M23 sockets for assembly.

For further information on the conductor range for sensor/actuator boxes, please refer to page 202.



Description	Ordering data		
	Type	Order No.	Pcs. / Pkt.
Master cable ring with PE conductor, PUR/PVC, unshielded, length: 50 m			
4 x 0.34 mm² / 3 x 0.75 mm²	**SACB- 4X0,34/ 3X0,75-50,0 PUR**	**1503328**	1
6 x 0.34 mm² / 3 x 0.75 mm²	**SACB- 6X0,34/ 3X0,75-50,0 PUR**	**1503331**	1
8 x 0.34 mm² / 3 x 0.75 mm²	**SACB- 8X0,34/ 3X0,75-50,0 PUR**	**1503344**	1
8 x 0.5 mm² / 3 x 1.0 mm²	**SACB- 8X0,5/ 3X1,0-50,0 PUR**	**1503357**	1
12 x 0.5 mm² / 3 x 1.0 mm²	**SACB-12X0,5/ 3X1,0-50,0 PUR**	**1503360**	1
16 x 0.5 mm² / 3 x 1.0 mm²	**SACB-16X0,5/ 3X1,0-50,0 PUR**	**1503373**	1
Master cable ring with PE conductor, PUR/PVC, unshielded, length: 200 m			
16 x 0.5 mm² / 3 x 1.0 mm²	**SACB-16X0,5/ 3X1,0-200,0 PUR**	**1559893**	1
Master cable ring with PE conductor, PUR/PVC, shielded, length: 50 m			
8 x 0.5 mm² / 3 x 1.0 mm²	**SACB-8X0,5/3X1,0-50 PUR SH**	**1401240**	1
12 x 0.5 mm² / 3 x 1.0 mm²	**SACB-12X0,5/3X1,0-50 PUR SH**	**1401239**	1
16 x 0.5 mm² / 3 x 1.0 mm²	**SACB-16X0,5/3X1,0-50 PUR SH**	**1539156**	1
Master cable ring with PE conductor, PUR/PP, halogen-free, unshielded, length: 50 m			
8 x 0.5 mm² / 3 x 1.0 mm²	**SACB-8X0,5/3X1,0-50,0 HPUR**	**1401690**	1
16 x 0.5 mm² / 3 x 1.0 mm²	**SACB-16X0,5/ 3X1,0-50,0 VPUR**	**1430938**	1
Master cable ring with PE conductor, PUR/PP, halogen-free, highly flexible, unshielded, length: 50 m			
16 x 0.5 mm² / 3 x 1.0 mm²	**SACB-16X0,5/ 3X1,0-50,0 80MC**	**1402304**	1
Master cable ring without PE conductor, PUR/PVC, unshielded, length: 50 m			
4 x 0.34 mm² / 2 x 0.75 mm²	**SACB- 4X0,34/2X0,75-50 PUR**	**1517576**	1
6 x 0.34 mm² / 2 x 0.75 mm²	**SACB- 6X0,34/2X0,75-50 PUR**	**1517589**	1
8 x 0.34 mm² / 2 x 0.75 mm²	**SACB- 8X0,34/2X0,75-50 PUR**	**1517592**	1
10 x 0.34 mm² / 2 x 0.75 mm²	**SACB-10X0,34/2X0,75-50 PUR**	**1517602**	1
16 x 0.34 mm² / 2 x 0.75 mm²	**SACB-16X0,34/2X0,75-50 PUR**	**1539350**	1

Assembly tools for sensor/actuator cables

The screwdriver with preset torque is the ideal tool for screwing in all M12 and M8 circular plug-in connectors with longitudinal knurl. The advantage of this tool becomes particularly evident when connecting distributor boxes. The tight arrangement and the large number of slots rarely makes it possible to install them correctly by hand. Thanks to the open design of the top unit, tracking is especially easy when screwing in.



Description	Ordering data		
	Type	Order No.	Pcs. / Pkt.
Torque screwdriver ① With preset torque of 0.2 Nm and 4 mm hexagonal drive	**TSD 02 SAC**	**1208487**	1
Nut ② For assembling sensor/actuator cables with M8 plug-in connectors and for M8 plug-in connectors with insulation displacement connection, for 4 mm hexagonal screwdriver	**SAC BIT M8-D10**	**1208461**	1
Nut ③ For assembling SACC M8 plug-in connectors with longitudinal knurl, excluding those with insulation displacement connection, for 4 mm hexagonal screwdriver	**SACC BIT M8-D12**	**1208474**	1
Torque screwdriver ④ With preset torque of 0.4 Nm and 4 mm hexagonal drive	**TSD 04 SAC**	**1208429**	1
Nut ⑤ For assembling sensor/actuator cables with M12 plug-in connectors and for M12 plug-in connectors with insulation displacement connection, for 4 mm hexagonal screwdriver	**SAC BIT M12-D15**	**1208432**	1
Nut ⑥ For assembling SACC M12 plug-in connectors, excluding those with insulation displacement connection, for 4 mm hexagonal screwdriver	**SACC BIT M12-D20**	**1208445**	1

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 plug-in 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	Type	Order No.	Pcs. / Pkt.
Torque screwdriver ① With preset torque of 0.8 Nm and 4 mm hexagonal drive	**TSD 08 SAC**	**1212597**	1
Nut ② For assembling 7/8" plug-in connectors, with 4 mm hexagonal drive	**SAC BIT MIN-D25**	**1212512**	1
Torque screwdriver ③ With preset torque of 0.4 Nm and 4 mm hexagonal drive	**TSD 04 SAC**	**1208429**	1
Nut ④ For mounting M12 plug-in connectors with hexagonal stainless steel knurl, wrench size 14, with 4 mm hexagonal drive	**SAC BIT M12-W14**	**1212513**	1
Torque screwdriver, accuracy according to standard EN ISO 6789 ⑤			
Adjustable from 0.3 - 1.2 Nm	**TSD-M 1,2NM**	**1212224**	1
Adjustable from 1.2 - 3 Nm	**TSD-M 3NM**	**1212225**	1
Adjustable from 3 - 6 Nm	**TSD-M 6NM**	**1212226**	1
Adapter insert ⑥ For torque screwdrivers with adjustable torque, for accommodating plug attachments with 4 mm hexagonal drive	**TSD-M SAC-BIT ADAPTER**	**1212600**	1

Ordering data

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 sensor/actuator cables, boxes, and flush-type plug-in connectors	PROT-M5	1533288	10
M8 screw plug ② For unoccupied M8 sockets of sensor/actuator cables, boxes, and flush-type plug-in connectors	PROT-M8	1682540	5
M12 screw plug ③ For unoccupied M12 sockets of sensor/actuator cables, boxes, and flush-type plug-in connectors	PROT-M12	1680539	5
M12 screw plug with SPEEDCON rapid interlock system ④ For unoccupied M12 sockets of sensor/actuator cables, boxes, and flush-type plug-in connectors	PROT-MS SCO	1553129	5
M12 sealing cap ⑤ For unoccupied M12 plugs of sensor/actuator cables, flush-type plug-in connectors, and I/O devices in the field	PROT-M12 FS	1560251	5
Metal M12 screw plug ⑥ For unoccupied M12 sockets of shielded sensor/actuator cables, boxes, and flush-type plug-in connectors	PROT-M12 SH	1503302	5
Metal M12 sealing cap ⑦ For unoccupied M12 plugs of sensor/actuator cables, flush-type plug-in connectors, and I/O devices in the field	PROT-M12 FS-M	1430488	10
M12 screw plug made of 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, for closing 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.



Ordering data

Description		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 for M8 distributor boxes with plug-in master cable connection

The torque screwdriver with an M8 nut is the ideal tool for screwing in all M8 plug-in connectors with longitudinal knurl.

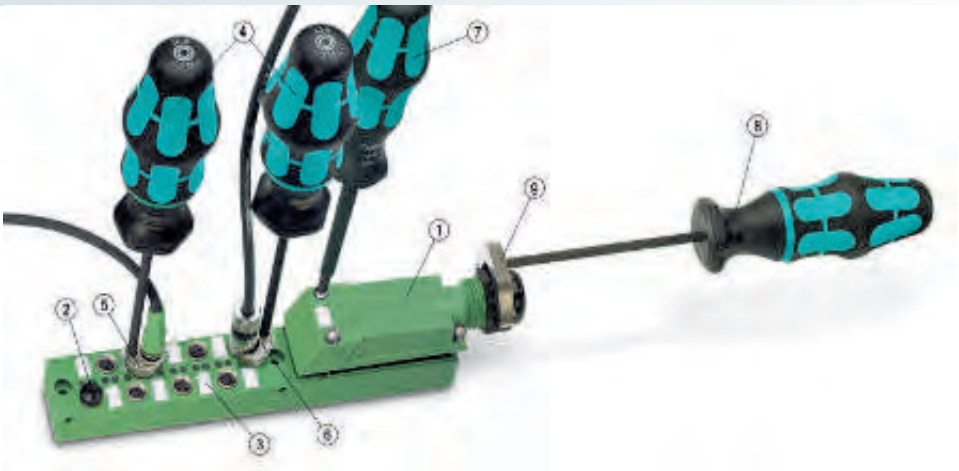
For distributors with 4 to 10 slots, we offer a suitable hood as replacement, a corresponding screwdriver for fastening the hood as well as a torque screwdriver with a W24 nut for tightening the pressure nuts to a defined value.

The PROT M8 screw plug – for unoccupied slots – protects the distributors against foreign bodies and water. IP65/IP67 protection is achieved.

The slots can be marked using marking material. They can be labeled either by hand or using a plotter.

Notes:

Additional marking material and tools can be found in Catalog 5.



Description		Type	Order No.	Pcs. / Pkt.
		Ordering data		
Sensor/actuator connector hood, with marking label, for sensor/actuator box with:	①			
Four single-occupancy M8 slots		**SACB-C-H180- 4/3-M8**	**1521229**	1
Six single-occupancy M8 slots		**SACB-C-H180- 6/3-M8**	**1521216**	1
Eight single-occupancy M8 slots		**SACB-C-H180- 8/3-M8**	**1516425**	1
Ten single-occupancy M8 slots		**SACB-C-H180-10/3-M8**	**1516412**	1
M8 screw plug For unoccupied M8 sockets of sensor/actuator cables, boxes, and flush-type plug-in connectors	②	**PROT-M8**	**1682540**	5
Marking material, 10-section	③			
- Unprinted		**ZBF10:UNBEDRUCKT**	**0809997**	10
- Configurable		**ZBF10 CUS**	**0825031**	1
Torque screwdriver With preset torque of 0.2 Nm and 4 mm hexagonal drive	④	**TSD 02 SAC**	**1208487**	1
Nut For assembling sensor/actuator cables with M8 plug-in connectors and for M8 plug-in connectors with insulation displacement connection, for 4 mm hexagonal screwdriver	⑤	**SAC BIT M8-D10**	**1208461**	1
Nut For assembling SACC M8 plug-in connectors with longitudinal knurl, excluding those with insulation displacement connection, for 4 mm hexagonal screwdriver	⑥	**SACC BIT M8-D12**	**1208474**	1
Screwdriver Size: PZ2 x 100 mm, length: 205 mm	⑦	**SZK PZ2 VDE**	**1206463**	10
Torque screwdriver With preset torque of 2.5 Nm and 4 mm hexagonal drive	⑧	**TSD 25 SAC**	**1212315**	1
Nut For reliable tightening of the pressure nuts with a wrench size of 24 mm, for 4 mm hexagonal screwdriver	⑨	**SAC BIT HOOD-W 24**	**1212486**	1

Accessories for M8 distributor boxes with M12/M16 plug-in connection

Suitable sockets in an angled design with a 5 and 10 meter master cable are available for distributors with 4 to 10 slots. In order to use a master cable as per the specific requirements, sockets are available in straight and angled designs for free assembly.

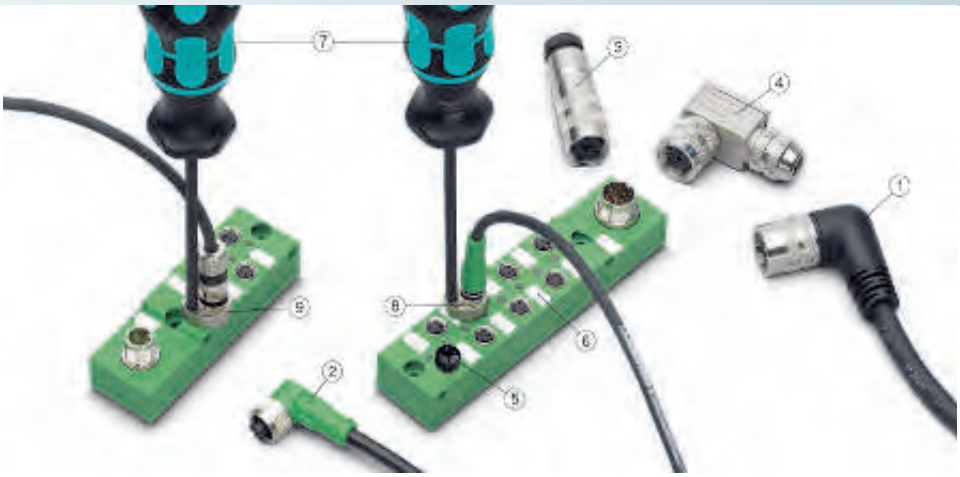
The slots can be marked using marking material. They can be labeled either by hand or using a plotter.

The torque screwdriver with matching nuts is the ideal tool for screwing together all M8 plug-in connectors with longitudinal knurl.

The PROT M8 screw plug – for unoccupied slots – protects the distributors against foreign bodies and water. IP65/IP67 protection is achieved.

Notes:

Additional marking material and tools can be found in Catalog 5.



Ordering data

Description		Type	Order No.	Pcs. / Pkt.
M16 socket, angled, with a master cable, for sensor/actuator box with:	①			
4 slots, cable length: 5 m		**SAC-8P- 5,0-PUR/M16FR**	**1693681**	1
4 slots, cable length: 10 m		**SAC-8P-10,0-PUR/M16FR**	**1693694**	1
6 slots, cable length: 5 m		**SAC-10P- 5,0-PUR/M16FR**	**1693704**	1
6 slots, cable length: 10 m		**SAC-10P-10,0-PUR/M16FR**	**1693717**	1
8 slots, cable length: 5 m		**SAC-12P- 5,0-PUR/M16FR**	**1693720**	1
8 slots, cable length: 10 m		**SAC-12P-10,0-PUR/M16FR**	**1693733**	1
10 slots, cable length: 5 m		**SAC-14P- 5,0-PUR/M16FR**	**1693746**	1
10 slots, cable length: 10 m		**SAC-14P-10,0-PUR/M16FR**	**1693759**	1
M12 socket, angled, with connected master cable, for sensor/actuator box with:	②			
4 slots, cable length: 5 m		**SAC-6P- 5,0-PURMC/M12FR**	**1407820**	1
4 slots, cable length: 10 m		**SAC-6P-10,0-PURMC/M12FR**	**1407821**	1
4 slots, cable length: variable		**SAC-6P-M12FR-PURMC/**	**1520987**	1
6 slots, cable length: 5 m		**SAC-8P- 5,0-PURMC/M12FR**	**1407822**	1
6 slots, cable length: 10 m		**SAC-8P-10,0-PURMC/M12FR**	**1407823**	1
6 slots, cable length: variable		**SAC-8P-M12FR-PURMC/**	**1520990**	1
M16 socket, 14-pos., straight, freely configurable, with solder connection, for an external cable diameter of 6.0 mm ... 8.0 mm	③	**SACC-M16FS-14CON-M**	**1500554**	1
M16 socket, 14-pos., angled, freely configurable, with solder connection, for an external cable diameter of 6.0 mm ... 8.0 mm	④	**SACC-M16FR-14CON-M**	**1500253**	1
M8 screw plug For unoccupied M8 sockets of sensor/actuator cables, boxes, and flush-type plug-in connectors	⑤	**PROT-M8**	**1682540**	5
Marking material, 10-section	⑥			
- Unprinted		**ZBF10:UNBEDRUCKT**	**0809997**	10
- Configurable		**ZBF10 CUS**	**0825031**	1
Torque screwdriver With preset torque of 0.2 Nm and 4 mm hexagonal drive	⑦	**TSD 02 SAC**	**1208487**	1
Nut For assembling sensor/actuator cables with M8 plug-in connectors and for M8 plug-in connectors with insulation displacement connection, for 4 mm hexagonal screwdriver	⑧	**SAC BIT M8-D10**	**1208461**	1
Nut For assembling SACC M8 plug-in connectors with longitudinal knurl, excluding those with insulation displacement connection, for 4 mm hexagonal screwdriver	⑨	**SACC BIT M8-D12**	**1208474**	1

Ordering example for socket with variable master cable:

For an M12 socket for 4 slots and a master cable length of 15 m, the ordering data is as follows:

Order No.		Length [m] Max. 40 m
1520987	/	**15.0**
		Increments: 0.2 ... 3 m = 0.1 m > 3 m = 0.5 m

Accessories for M12 distributor boxes with plastic thread and connector hood

The torque screwdriver with an M12 nut is the ideal tool for screwing in all M12 plug-in connectors with longitudinal knurl.

For the distributors, we offer a suitable hood as replacement, a matching screwdriver for fastening the hood as well as a torque screwdriver with a W24 nut for tightening the pressure nuts to a defined value.

The PROT-MS SCO screw plug – for unoccupied slots – protects the distributors against foreign bodies and water. IP65/IP67 protection is achieved.

The slots can be marked using marking material. They can be labeled either by hand or using a plotter.

Notes:

Additional marking material and tools can be found in Catalog 5.



Description		Ordering data		
		Type	Order No.	Pcs. / Pkt.
Connector hood with integrated connector, for M12 sensor/actuator boxes with plastic thread and plug-in screw connection, for 4, 6 or 8 slots	①	**SACB-C-H180-8/16 SCO P**	**1453229**	1
M12 screw plug with SPEEDCON rapid interlock system For unoccupied M12 sockets of sensor/actuator cables, boxes, and flush-type plug-in connectors	②	**PROT-MS SCO**	**1553129**	5
Marking material, 5-section	③			
- Unprinted, white		**SS-ZB 17,5 WH**	**0804963**	50
- Unprinted, yellow		**SS-ZB 17,5 YE**	**0804976**	50
- Configurable, white		**SS-ZB 17,5 WH CUS**	**0824468**	1
- Configurable, yellow		**SS-ZB 17,5 YE CUS**	**0824469**	1
Torque screwdriver With preset torque of 0.4 Nm and 4 mm hexagonal drive	④	**TSD 04 SAC**	**1208429**	1
Nut For assembling sensor/actuator cables with M12 plug-in connectors and for M12 plug-in connectors with insulation displacement connection, for 4 mm hexagonal screwdriver	⑤	**SAC BIT M12-D15**	**1208432**	1
Nut For assembling SACC M12 plug-in connectors, excluding those with insulation displacement connection, for 4 mm hexagonal screwdriver	⑥	**SACC BIT M12-D20**	**1208445**	1
Screwdriver Size: PZ2 x 100 mm, length: 205 mm	⑦	**SZK PZ2 VDE**	**1206463**	10
Torque screwdriver With preset torque of 2.5 Nm and 4 mm hexagonal drive	⑧	**TSD 25 SAC**	**1212315**	1
Nut For reliable tightening of the pressure nuts with a wrench size of 24 mm, for 4 mm hexagonal screwdriver	⑨	**SAC BIT HOOD-W 24**	**1212486**	1
Screwdriver, suitable for all screw terminal blocks up to 1.5 mm² connection cross section, without VDE approval Blade: 0.4 x 2.0 x 60 mm, length: 157 mm	⑩	**SZS 0,4X2,0**	**1205202**	10
Ferrules, without plastic sleeves, CSA-certified	⑪			
0.5 mm²		**A 0,5 - 6**	**3200218**	1000
0.75 mm²		**A 0,75-10**	**3200234**	1000
1.0 mm²		**A 1 -10**	**3200250**	1000
1.5 mm²		**A 1,5 -10**	**3200276**	1000

Accessories for M12 distributor boxes with metal thread and plug-in screw connection

The torque screwdriver with an M12 nut is the ideal tool for screwing in all M12 plug-in connectors with longitudinal knurl.

For the distributors, we offer a suitable hood as replacement, a matching screwdriver for fastening the hood as well as a torque screwdriver with a W24 nut for tightening the pressure nuts to a defined value.

The PROT-MS SCO screw plug – for unoccupied slots – protects the distributors against foreign bodies and water. IP65/IP67 protection is achieved.

The slots can be marked using marking material. They can be labeled either by hand or using a plotter.

Notes:

Additional marking material and tools can be found in Catalog 5.



Description		Ordering data		
		Type	Order No.	Pcs. / Pkt.
Connector hood with an integrated connector, for M12 sensor/actuator boxes with metal thread and plug-in screw connection, for 4, 6 or 8 slots	①	**SACB-C-H180 8/16 SCO**	**1516713**	10
M12 screw plug with SPEEDCON rapid interlock system For unoccupied M12 sockets of sensor/actuator cables, boxes, and flush-type plug-in connectors	②	**PROT-MS SCO**	**1553129**	5
Marking material, 5-section	③			
- Unprinted, white		**SS-ZB 17,5 WH**	**0804963**	50
- Unprinted, yellow		**SS-ZB 17,5 YE**	**0804976**	50
- Configurable, white		**SS-ZB 17,5 WH CUS**	**0824468**	1
- Configurable, yellow		**SS-ZB 17,5 YE CUS**	**0824469**	1
Torque screwdriver With preset torque of 0.4 Nm and 4 mm hexagonal drive	④	**TSD 04 SAC**	**1208429**	1
Nut For assembling sensor/actuator cables with M12 plug-in connectors and for M12 plug-in connectors with insulation displacement connection, for 4 mm hexagonal screwdriver	⑤	**SAC BIT M12-D15**	**1208432**	1
Nut For assembling SACC M12 plug-in connectors, excluding those with insulation displacement connection, for 4 mm hexagonal screwdriver	⑥	**SACC BIT M12-D20**	**1208445**	1
Screwdriver Size: PZ1 x 80 mm, length: 178 mm	⑦	**SZK PZ1 VDE**	**1206450**	10
Torque screwdriver With preset torque of 2.5 Nm and 4 mm hexagonal drive	⑧	**TSD 25 SAC**	**1212315**	1
Nut For reliable tightening of the pressure nuts with a wrench size of 24 mm, for 4 mm hexagonal screwdriver	⑨	**SAC BIT HOOD-W 24**	**1212486**	1

Accessories for shielded M12 distributor boxes

For the distributors, suitable shielded sockets are available in angled design with a pre-assembled master cable. Further accessories include straight and angled M23 sockets for free assembly.

The PROT M12 SH screw plug – for unoccupied slots – protects the distributors against foreign bodies and water. IP65/IP67 protection is achieved.

The slots can be marked using marking material. They can be labeled either by hand or using a plotter.

The torque screwdriver with matching nuts is the ideal tool for screwing together all M12 plug-in connectors with longitudinal knurl.

Notes:

Additional marking material and tools can be found in Catalog 5.



Description		Ordering data		
		Type	Order No.	Pcs. / Pkt.
M23 socket, 19-pos., angled, shielded, with connected master cable	①			
Conductor length: 5 m		**RCK-TWGM/BL16+3/ 5,0PUR SH**	**1519529**	1
Conductor length: 10 m		**RCK-TWGM/BL16+3/10,0PUR SH**	**1511828**	1
M23 socket, 19-pos., angled, shielded, freely configurable, with solder connection, for cable Ø: 9.5 mm ... 14.5 mm	②	**RC/TGGM/KVD/LBL 16+3**	**1685505**	1
M23 socket, 19-pos., angled, shielded, freely configurable, with solder connection, for cable Ø: 9.5 mm ... 14.5 mm	③	**RC/TWGM/KVD/LBL 16+3**	**1685518**	1
Special pipe key Auxiliary tool for mounting the M23 plug-in connector housing that can be assembled	④	**PLUSCON-RCS**	**1665062**	1
Metal M12 screw plug For unoccupied M12 sockets of shielded sensor/actuator cables, boxes, and flush-type plug-in connectors	⑤	**PROT-M12 SH**	**1503302**	5
Metal M23 sealing cap, for unoccupied M23 plugs	⑥			
- without steel wire		**MSK 1**	**1665897**	1
- with steel wire		**MSK 2**	**1665907**	1
Plastic M23 sealing cap, for unoccupied M23 plugs	⑦	**KSK 1**	**1685013**	10
Marking material	⑧			
- Unprinted, white		**ZBN 18:UNBEDRUCKT**	**2809128**	10
- Unprinted, yellow		**UC-TMF 16 YE**	**0819259**	10
- Configurable, white		**ZBN 18 CUS**	**0825059**	1
- Configurable, yellow		**ZBN 18 YE CUS**	**0825058**	1
Torque screwdriver With preset torque of 0.4 Nm and 4 mm hexagonal drive	⑨	**TSD 04 SAC**	**1208429**	1
Nut For assembling sensor/actuator cables with M12 plug-in connectors and for M12 plug-in connectors with insulation displacement connection, for 4 mm hexagonal screwdriver	⑩	**SAC BIT M12-D15**	**1208432**	1
Nut For assembling SACC M12 plug-in connectors, excluding those with insulation displacement connection, for 4 mm hexagonal screwdriver	⑪	**SACC BIT M12-D20**	**1208445**	1

Accessories for QUICKON distributor boxes with a connection cross section of 0.14 mm² … 0.34 mm²

The Q-PROT 9/11 closing cap – for unoccupied slots – protects the distributors against foreign bodies and water. IP65/IP67 protection is achieved.

A torque screwdriver with a W13 nut, already familiar from M8 or M12 screw connections, is now also available for the fast connection pressure nuts. The handling of the tools is self-explanatory and easy.

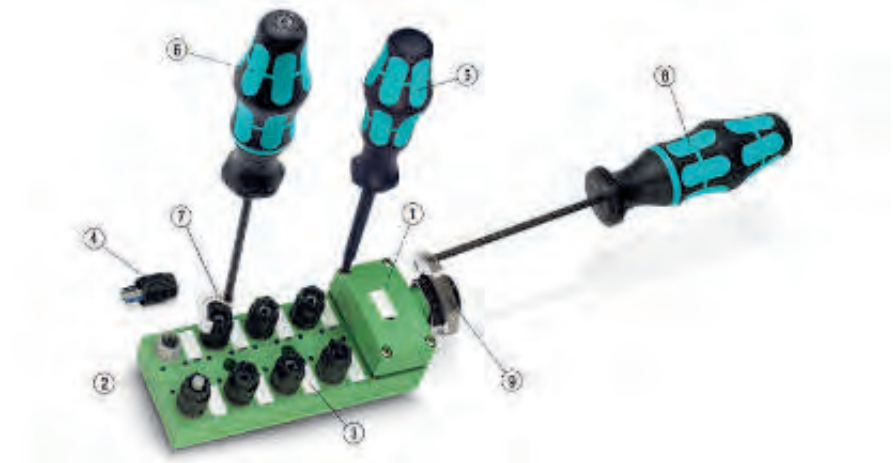
For the distributors, we offer a replacement connector hood, a corresponding screwdriver for fastening the hood as well as a torque screwdriver with a W24 nut for tightening the pressure nuts to a defined value.

The slots can be marked using marking material. They can be labeled either by hand or using a plotter.

The QUICKON set consisting of splice ring, pressure nut, and cable seal can be used for replacement purposes if required.

Notes:

Additional marking material and tools can be found in Catalog 5.



Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Connector hood with an integrated connector, for sensor/actuator boxes with QUICKON fast connection technology and plug-in screw connection, for 4, 6 or 8 slots ①	**SACB-C-H180 8/4 QO-0,34**	**1560235**	1
Closing cap ② For Pg9/ Pg11, for closing unoccupied connections	**Q-PROT 9/11**	**1670235**	10
Marking material, 5-section ③			
- Unprinted, white	**SS-ZB 17,5 WH**	**0804963**	50
- Unprinted, yellow	**SS-ZB 17,5 YE**	**0804976**	50
- Configurable, white	**SS-ZB 17,5 WH CUS**	**0824468**	1
- Configurable, yellow	**SS-ZB 17,5 YE CUS**	**0824469**	1
QUICKON set for replacement purposes, consisting of splice ring, pressure nut, and cable seal ④	**QO-SET**	**1548626**	20
Screwdriver ⑤ Size: PZ1 x 80 mm, length: 178 mm	**SZK PZ1 VDE**	**1206450**	10
Torque screwdriver ⑥ With preset torque of 2.0 Nm and 4 mm hexagonal drive	**TSD 20 SAC**	**1212020**	1
Nut ⑦ For the reliable tightening of the pressure nuts with a wrench size of 13 mm, for 4 mm hexagonal screwdriver	**SAC BIT QUICKON-W13**	**1212033**	1
Torque screwdriver ⑧ With preset torque of 2.5 Nm and 4 mm hexagonal drive	**TSD 25 SAC**	**1212315**	1
Nut ⑨ For reliable tightening of the pressure nuts with a wrench size of 24 mm, for 4 mm hexagonal screwdriver	**SAC BIT HOOD-W 24**	**1212486**	1

Accessories for QUICKON distributor boxes with a connection cross section of 0.34 mm² … 0.75 mm²

The scope of supply of the distributors includes a black rubber seal for an external cable diameter from 6.5 mm to 9.5 mm. Rubber seals are also available for master cables from 4.0 mm to 6.5 mm (yellow seal) or 9.0 mm to 13.0 mm (red seal). The torque screwdriver with a W24 nut is suitable for tightening the pressure nuts to a defined value.

The QUICKON set consisting of pressure nut, cap, cable seal, and splice ring can be used for replacement purposes if required.

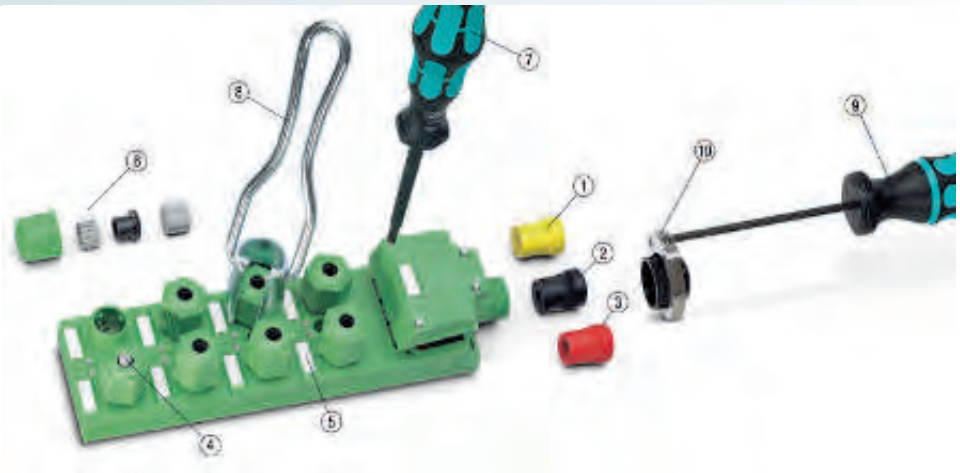
The socket wrench facilitates comfortable loosening or tightening of the QUICKON pressure nuts.

The Q-PROT 9/11 closing cap – for unoccupied slots – protects the distributors against foreign bodies and water. IP65/IP67 protection is achieved.

The slots can be marked using marking material. They can be labeled either by hand or using a plotter.

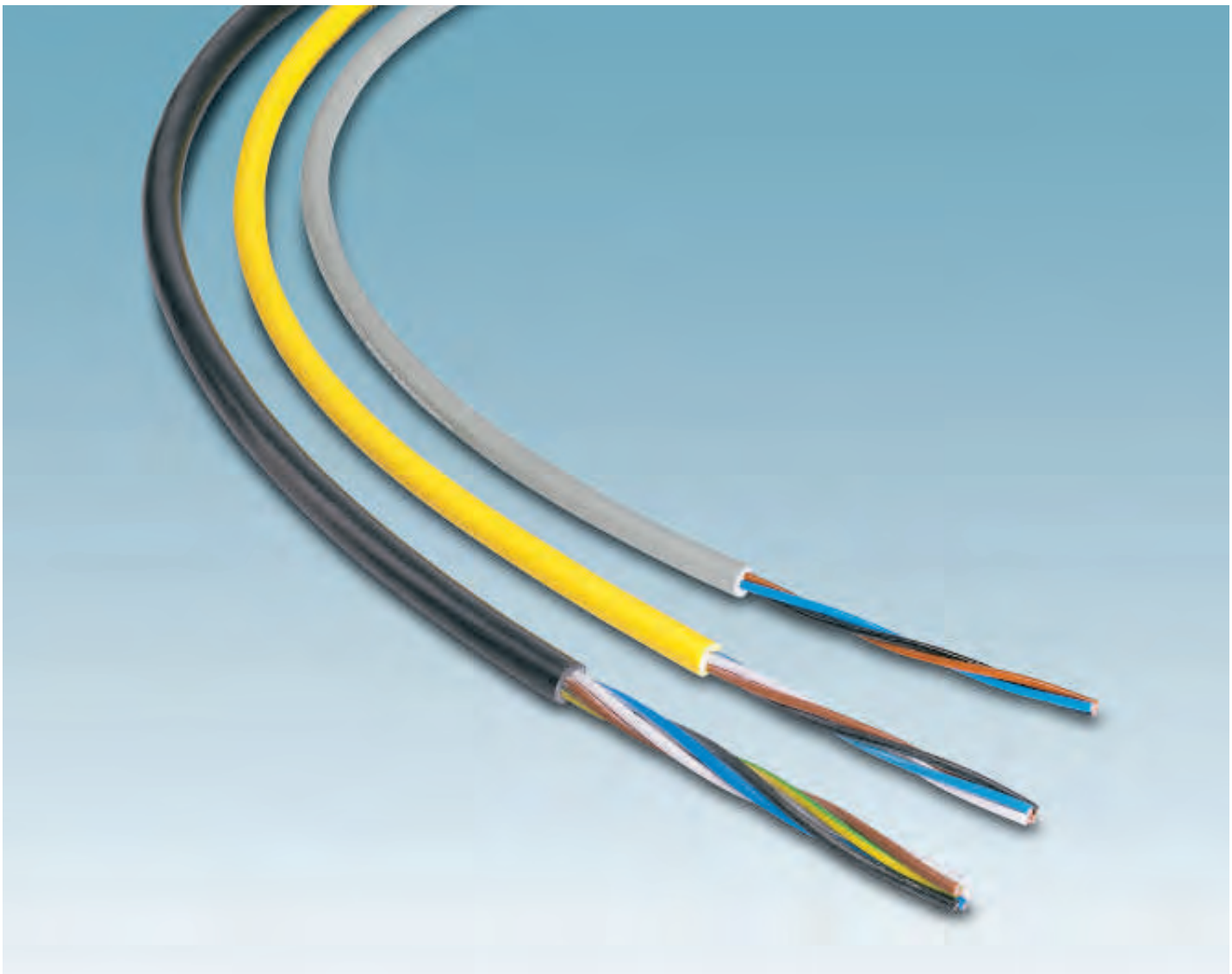
Notes:

Additional marking material and tools can be found in Catalog 5.



Description		Type	Order No.	Pcs. / Pkt.
		Ordering data		
Rubber seal for Pg screw connection 13.5 For cable Ø: 4.0 mm ... 6.5 mm	①	**SACB-D PG 13,5 (4,0-6,5) YE**	**1680377**	10
Rubber seal for Pg screw connection 13.5 For cable Ø: 6.5 mm ... 9.5 mm	②	**SACB-D PG 13,5 (6,5-9,5) BK**	**1680380**	10
Rubber seal for Pg screw connection 13.5 For cable Ø: 9.0 mm ... 13.0 mm	③	**SACB-D PG 13,5 (9,0-13,0) RD**	**1680393**	10
Closing cap For Pg9/ Pg11, for closing unoccupied connections	④	**Q-PROT 9/11**	**1670235**	10
Marking material	⑤			
- Unprinted, white		**ZBN 18:UNBEDRUCKT**	**2809128**	10
- Unprinted, yellow		**UC-TMF 16 YE**	**0819259**	10
- Configurable, white		**ZBN 18 CUS**	**0825059**	1
- Configurable, yellow		**ZBN 18 YE CUS**	**0825058**	1
QUICKON set for replacement purposes, consisting of pressure nut, cap, cable seal, and splice ring	⑥	**Q SET-11/4 COD1 SACB-Q**	**1670743**	25
Screwdriver Size: PZ1 x 80 mm, length: 178 mm	⑦	**SZK PZ1 VDE**	**1206450**	10
Slotted socket wrench for QUICKON nuts and panel feed-throughs, for wrench size: 22 mm	⑧	**QSS 22**	**1670206**	1
Torque screwdriver With preset torque of 2.5 Nm and 4 mm hexagonal drive	⑨	**TSD 25 SAC**	**1212315**	1
Nut For reliable tightening of the pressure nuts with a wrench size of 24 mm, for 4 mm hexagonal screwdriver	⑩	**SAC BIT HOOD-W 24**	**1212486**	1

Sensor/actuator cables - cable range





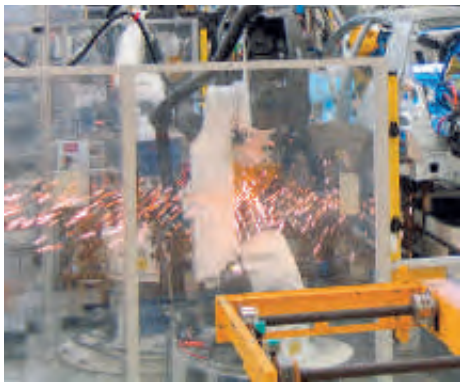
PUR, halogen-free - for extreme loads

Very good chemical resistance, very good resistance to oils and lubricants, very high resistance to abrasion, suitable for use with drag chain (> 4 million), halogen-free



TPE-U highly flexible

Very high level of temperature resistance, suitable for use with drag chain and robots (> 10 million), halogen-free, extremely flame-retardant, resistant to welding sparks, not irradiated, and therefore recyclable



PUR irradiated, resistant to welding sparks

High level of temperature resistance, suitable for use with robots (> 5 million), highly resistant to welding sparks, halogen-free, UV resistant



PUR/PVC - for increased loads

Very easy to strip, good chemical resistance, good resistance to oils and lubricants, low abrasion, suitable for use with drag chain to a limited extent



PVC - for average mechanical strain

Very easy to strip, good chemical resistance, resistant to oils and lubricants to a limited extent, low abrasion



PE-X - for outdoor applications

UV and weather resistant, extremely oil resistant, low smoke gas density, halogen-free



PP - for the food industry

Excellent resistance to cleaning agents and disinfectants, easy detection of dirt due to the light colored outer sheath, halogen-free, FDA-compliant outer sheath material



RADOX® - for railway applications

Flame-retardant according to railway standards, good resistance to oils and lubricants, low smoke gas density, low bending radii

Symbol key

With UL Style

Suitable for use with drag chain

Resistant to welding sparks

UV resistant

Flame-retardant

High temperature resistance

Good oil resistance

Good resistance to chemicals

Suitable for torsional stress

Halogen-free

Suitable for the food industry

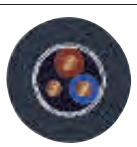
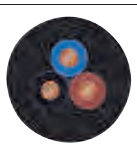
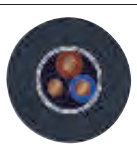
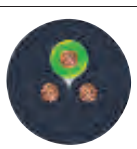
Suitable for railway applications

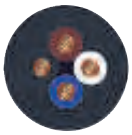
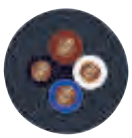
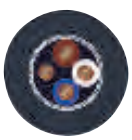
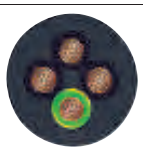
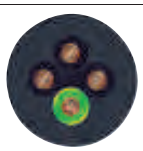
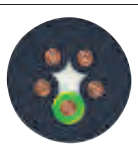
PUR, halogen-free – PHOENIX CONTACT standard

Permanently flexible control cables for use in drag chains, revolving/swivel tables, and as machine control cables for extreme operating conditions. Suitable for bending cycle loads with long-term durability. The special PUR outer sheath offers excellent resistance to oils according to DIN EN 60811-2-1, lubricants, cooling agents, and other aggressive substances.

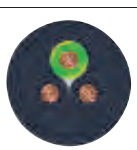
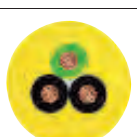
Additional features: halogen and PVC-free, no silicone or substances that would hinder coating with paint or varnish, resistant to hydrolysis and flame-retardant according to UL-FT2.

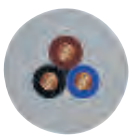
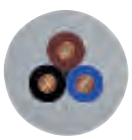
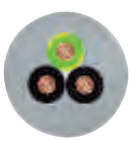
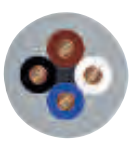
Outer sheath material	**PUR**
Min. bending cycles	**4 million**
Minimum bending radius	**10 x D**
Traverse path	**10 m**
Acceleration	**10 m/s²**
Speed	**3 m/s**
Tested at	**20 ... 25°C**

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
PUR Black	**3-pos.**	M8	3 x 0.25 mm² (32 x 0.1 mm)		Brown, blue, black	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	36 38 42 102 104 168
		M8 Shielded	3 x 0.25 mm² (32 x 0.1 mm) Shielding: copper braid		Brown, blue, black	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	43 168
		M12	3 x 0.34 mm² (42 x 0.1 mm)		Brown, blue, black	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	36 38 104 168
		M12 Shielded	3 x 0.34 mm² (42 x 0.1 mm) Shielding: copper braid		Brown, blue, black	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	42 43
		Valve connector	3 x 0.5 mm² (28 x 0.15 mm)		Black 1, black 2, green-yellow	PP	Mobile: -15°C ... 80°C Fixed: -40°C ... 80°C	86 to 99 169

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
PUR Black	**4-pos.**	M8	4 x 0.25 mm² (32 x 0.1 mm)		Brown, white, blue, black	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	36 44 46 168
		M8 Shielded	4 x 0.25 mm² (32 x 0.1 mm) Shielding: copper braid		Brown, white, blue, black	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	50 168
		M12	4 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	44 46 103 168
		M12 Shielded	4 x 0.34 mm² (42 x 0.1 mm) Shielding: copper braid		Brown, white, blue, black	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	48 50 168
		M12 power	4 x 1.5 mm² (84 x 0.15 mm)		Brown, white, blue, black	PP	Mobile: -30°C ... 90°C Fixed: -40°C ... 90°C	70
		M12 power	4 x 1.5 mm² (84 x 0.15 mm)		Black 1, black 2, black 3, green-yellow	PP	Mobile: -30°C ... 90°C Fixed: -40°C ... 90°C	68
		M12 power Shielded	4 x 1.5 mm² (78 x 0.15 mm) Shielding: copper braid		Brown, white, blue, black	PP	Mobile: -30°C ... 90°C Fixed: -40°C ... 90°C	71
		Valve connector	4 x 0.5 mm² (28 x 0.15 mm)		Black 1, black 2, black 3, green-yellow	PP	Mobile: -20°C ... 80°C Fixed: -40°C ... 80°C	86 to 99
	5-pos.	M12	5 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black, green-yellow	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	52 53 168
		M12 Shielded	5 x 0.34 mm² (42 x 0.1 mm) Shielding: copper braid		Brown, white, blue, black, gray	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	54 55 168
		Valve connector	5 x 0.5 mm² (28 x 0.15 mm)		Black 1, black 2, black 3, black 4, green-yellow	PP	Mobile: -15°C ... 80°C Fixed: -40°C ... 80°C	100 169
	6-pos.	M8	6 x 0.25 mm² (32 x 0.1 mm)		Brown, white, blue, black, gray, pink	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	56 168

Sensor/actuator cables - cable range

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
PUR Black	**6-pos.**	M8 Shielded	6 x 0.14 mm² (18 x 0.1 mm) Shielding: copper braid		Brown, white, blue, black, gray, pink	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	57 168
	8-pos.	M8	8 x 0.14 mm² (18 x 0.1 mm)		According to DIN 47100	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	58
		M8 Shielded	8 x 0.14 mm² (18 x 0.1 mm) Shielding: copper braid		According to DIN 47100	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	61
		M12	8 x 0.25 mm² (32 x 0.1 mm)		According to DIN 47100	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	59 60 168
		M12 Shielded	8 x 0.25 mm² (32 x 0.1 mm) Shielding: copper braid		According to DIN 47100	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	62 63 168
	12-pos.	M12	12 x 0.14 mm² (18 x 0.1 mm)		According to DIN 47100	PP	Mobile: -20°C ... 80°C Fixed: -40°C ... 80°C	64
	17-pos.	M12	17 x 0.14 mm² (18 x 0.1 mm)		According to DIN 47100	PP	Mobile: -20°C ... 80°C Fixed: -40°C ... 80°C	64
PUR Orange	**4-pos.**	M12 power Shielded	4 x 1.5 mm² (78 x 0.15 mm) Shielding: copper braid		Black 1, black 2, black 3, green-yellow	PP	Mobile: -30°C ... 90°C Fixed: -40°C ... 90°C	69
115 Black	**5-pos.**	M8	5 x 0.25 mm² (32 x 0.1 mm)		Brown, white, blue, black, gray	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	51
		M12	5 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black, gray	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	52 53
121 Black	**3-pos.**	Valve connector	3 x 1.0 mm² (32 x 0.20 mm)		Black 1, black 2, green-yellow	PP	Mobile: -20°C ... 80°C Fixed: -40°C ... 80°C	86 87
240 Yellow	**3-pos.**	Valve connector	3 x 0.5 mm² (28 x 0.15 mm)		Black 1, black 2, green-yellow	PP	Mobile: -15°C ... 80°C Fixed: -40°C ... 80°C	86 to 99

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
240 Yellow	**4-pos.**	M12	4 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	44 46
	5-pos.	Valve connector	5 x 0.5 mm² (28 x 0.15 mm)		Black 1, black 2, black 3, black 4, green-yellow	PP	Mobile: -15°C ... 80°C Fixed: -40°C ... 80°C	86 to 99
280 Gray	**3-pos.**	M8	3 x 0.25 mm² (32 x 0.1 mm)		Brown, blue, black	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	36 38 40 104
		M12	3 x 0.34 mm² (42 x 0.1 mm)		Brown, blue, black	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	38 40 104
		Valve connector	3 x 0.5 mm² (28 x 0.15 mm)		Black 1, black 2, green-yellow	PP	Mobile: -15°C ... 80°C Fixed: -40°C ... 80°C	86 to 99
	4-pos.	M12	4 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	44 46
	5-pos.	Valve connector	5 x 0.5 mm² (28 x 0.15 mm)		Black 1, black 2, black 3, black 4, green-yellow	PP	Mobile: -15°C ... 80°C Fixed: -40°C ... 80°C	100
	8-pos.	M12 Shielded	8 x 0.25 mm² (32 x 0.1 mm) Shielding: copper braid		According to DIN 47100	PP	Mobile: -25°C ... 80°C Fixed: -40°C ... 80°C	62 63

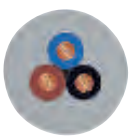
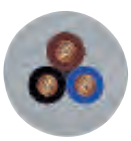
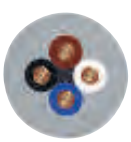
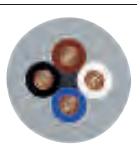
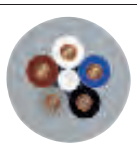
TPE-U highly flexible



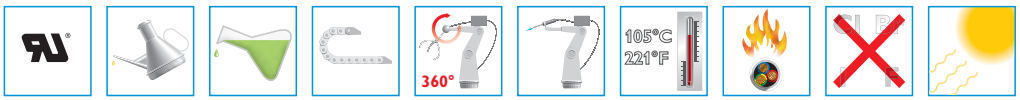
Permanently flexible control cable that is ideal for use in drag chains and industrial robots. The cable can be used wherever extreme bending and torsional stress occur simultaneously and significantly longer durability is desired. It is resistant to welding sparks and is therefore designed exclusively for use in resistance welding processes. The use of new materials eliminates irradiation cross-linking, which makes the cable easier to recycle. The cables therefore meet the requirements of DIN EN ISO 14001. Additional features: halogen and PVC-free, flame-retardant according to UL-FT1, VW1 and 1581 §1061, very good resistance to oils according to VDE 0250 Part 407, chemicals, lubricants, and coolants as well as other aggressive substances.

Due to the extremely robust outer sheath, this cable should only be stripped in 5 cm increments.

Outer sheath material	**TPE-U**
Min. bending cycles	**10 million**
Minimum bending radius	
Fixed	**5 x D**
Mobile	**7.5 x D**
Traverse path	**5 m**
Acceleration	**20 m/s²**
Speed	**3.33 m/s**
Torsion angle	**±360°**
Min. torsion cycles	**13 million**
Tested at	**20 ... 25°C**

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
800 Gray	**3-pos.**	M8	3 x 0.25 mm² (32 x 0.1 mm)		Brown, blue, black	Polyester	Mobile: -30°C ... 90°C Fixed: -40°C ... 90°C 120°C ... 3000 h	36 38 40 104
		M12	3 x 0.34 mm² (42 x 0.1 mm)		Brown, blue, black	Polyester	Mobile: -30°C ... 90°C Fixed: -40°C ... 90°C 120°C ... 3000 h	38 40 104 164
	4-pos.	M8	4 x 0.25 mm² (32 x 0.1 mm)		Brown, white, blue, black	Polyester	Mobile: -30°C ... 90°C Fixed: -40°C ... 90°C 120°C ... 3000 h	36 44 46
		M12	4 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black	Polyester	Mobile: -30°C ... 90°C Fixed: -40°C ... 90°C 120°C ... 3000 h	44 46 165
	5-pos.	M12	5 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black, gray	Polyester	Mobile: -30°C ... 90°C Fixed: -40°C ... 90°C 120°C ... 3000 h	52 53
	8-pos.	M12	8 x 0.25 mm² (32 x 0.1 mm)		According to DIN 47100	Polyester	Mobile: -30°C ... 90°C Fixed: -40°C ... 90°C 120°C ... 3000 h	59 60
802 Gray	**5-pos.**	M12	5 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black, green-yellow	Polyester	Mobile: -30°C ... 90°C Fixed: -40°C ... 90°C 120°C ... 3000 h	166

PUR irradiated, resistant to welding sparks



Due to the irradiation of the PUR outer sheath, the properties typical of PUR, e.g., resistance to temperature, UV, and welding sparks, are greatly improved. The cables are suitable for robust use in robot technology, particularly in welding robots, and are characterized by very long durability. Flame-retardant according to DIN VDE 0472, Part 804, test type B.

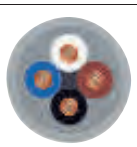
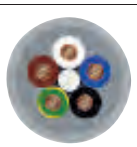
Outer sheath material	**PUR irradiated**
Min. bending cycles	**5 million**
Minimum bending radius	**10 x D**
Traverse path	**10 m**
Acceleration	**10 m/s²**
Speed	**3 m/s**
Torsion	**±360°**
Tested at	**20 ... 25°C**

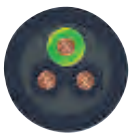
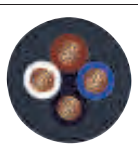
Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
150 Orange	**3-pos.**	M12	3 x 0.34 mm² (42 x 0.1 mm)		Brown, blue, black	Halogen-free polyester-based plastic	Mobile: -40°C ... 105°C Fixed: -50°C ... 105°C	38 40 104
		Valve connector	3 x 0.5 mm² (28 x 0.15 mm)		Black 1, black 2, green-yellow	Halogen-free polyester-based plastic	Mobile: -40°C ... 105°C Fixed: -50°C ... 105°C	86 to 99
	4-pos.	M12	4 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black	Halogen-free polyester-based plastic	Mobile: -40°C ... 105°C Fixed: -50°C ... 105°C	44 46
	5-pos.	M12	4 x 0.34 mm² + 1 x 0.5 mm² (42 x 0.1 mm, 24 x 0.15 mm)		Brown, white, blue, black, green-yellow	Halogen-free polyester-based plastic	Mobile: -40°C ... 105°C Fixed: -50°C ... 105°C	52 53
		Valve connector	5 x 0.5 mm² (28 x 0.15 mm)		Black 1, black 2, black 3, black 4, green-yellow	Halogen-free polyester-based plastic	Mobile: -40°C ... 105°C Fixed: -50°C ... 105°C	100
160 Yellow	**4-pos.**	M12	4 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black	Halogen-free polyester-based plastic	Mobile: -40°C ... 105°C Fixed: -50°C ... 105°C	44 46

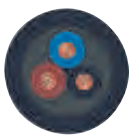
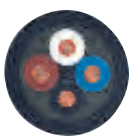
PUR/PVC (also applies to type PUR for M5 plug-in connectors)

The cables are designed for robust use in tooling machines, assembly/production lines, as well as production involving metal cutting. They are free from silicone and substances that would hinder coating with paint or varnish and have a high resistance to abrasion. The outer sheath also offers excellent resistance to oil and chemicals according to DIN EN 60811-2-1 and is flame-retardant according to DIN EN 50265. The outer sheath is manufactured using the coextrusion process.

Outer sheath material	**PUR**
Inner sheath material	**PVC**
Min. bending cycles	**2 million**
Minimum bending radius	**10 x D**
Traverse path	**5 m**
For type 35T	**10 m**
Acceleration	**5 m/s²**
For type 35T	**10 m/s²**
Speed	**3 m/s**
Tested at	**20 ... 25°C**

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
100 Gray	**3-pos.**	M8	3 x 0.25 mm² (32 x 0.1 mm)		Brown, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	36 38 40 104
		M12	3 x 0.34 mm² (42 x 0.1 mm)		Brown, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	38 40 104
		M12 Shielded	3 x 0.34 mm² (42 x 0.1 mm) Shielding: copper braid		Brown, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	42 43
	4-pos.	M8	4 x 0.25 mm² (32 x 0.1 mm)		Brown, white, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	36 44 46
		M12	4 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	44 46
		M12 Shielded	4 x 0.34 mm² (42 x 0.1 mm) Shielding: copper braid		Brown, white, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	48 44
	5-pos.	M12	5 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	52 53
		M12 Shielded	5 x 0.34 mm² (42 x 0.1 mm) Shielding: copper braid		Brown, white, blue, black, gray	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	54 55

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
100 Gray	**8-pos.**	M12	8 x 0.25 mm² (32 x 0.1 mm)		According to DIN 47100	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	59 60
116 Black	**3-pos.**	Valve connector	3 x 0.75 mm² (24 x 0.2 mm)		Black 1, black 2, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 80°C	86 to 99 169
	4-pos.	Valve connector	4 x 0.75 mm² (24 x 0.2 mm)		Black 1, black 2, black 3, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 80°C	88 94 95 100 112 113
	5-pos.	Valve connector	5 x 0.75 mm² (24 x 0.2 mm)		Black 1, black 2, black 3, black 4, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 80°C	100 169
117 Gray	**3-pos.**	Valve connector	3 x 0.75 mm² (24 x 0.2 mm)		Black 1, black 2, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 80°C	86 to 99
140 Yellow	**3-pos.**	M8	3 x 0.25 mm² (32 x 0.1 mm)		Brown, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	36 38 40 104
		M12	3 x 0.34 mm² (42 x 0.1 mm)		Brown, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	38 40 104
	4-pos.	M8	4 x 0.25 mm² (32 x 0.1 mm)		Brown, white, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	36 44 46
		M12	4 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	44 46
	5-pos.	M12	5 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	52 53
186 Black	**4-pos.**	M12	4 x 0.75 mm² (24 x 0.1 mm)		Brown, white, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	44 46 168
	5-pos.	M12	5 x 0.75 mm² (24 x 0.1 mm)		Brown, white, blue, black, gray	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	52 53 168

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
35T Black Twisted pair	**12-pos.**	M12 Shielded	6 x 2 x 0.14 mm² (18 x 0.1 mm) Shielding: copper braid		According to DIN 47100	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 80°C	66
	17-pos.	M12 Shielded	7 x 2 x 0.14 mm² 1 x 3 x 0.14 mm² (18 x 0.1 mm) Shielding: copper braid		According to DIN 47100	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 80°C	67
PUR Black **For M5**	**3-pos.**	M5	3 x 0.14 mm² (18 x 0.1 mm)		Brown, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -15°C ... 80°C	34
	4-pos.	M5	4 x 0.14 mm² (18 x 0.1 mm)		Brown, white, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -15°C ... 80°C	34

PUR/PVC (for 7/8")

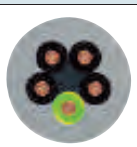


The cables are designed for robust use in tooling machines, assembly/production lines, as well as production involving metal cutting.

They are free from silicone and substances that would hinder coating with paint or varnish and have a high resistance to abrasion. The outer sheath also offers excellent resistance to oil and chemicals according to HD 22.10 and VDE 0282-10 and is flame-retardant according to EN 60332-1-2, UL VW1, and CSA FT1.

Outer sheath material **PUR**

Minimum bending radius
Fixed **7.5 x D**
Mobile **15 x D**

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
440 Gray	**5-pos.**	7/8"	5 x 1.5 mm² (30 x 0.25 mm)		Black 1, black 2, black 3, black 4, green-yellow	PVC	Mobile: -5°C ... 90°C Fixed: -40°C ... 90°C	74
441 Gray	**5-pos.**	7/8"	5 x 2.5 mm² (50 x 0.25 mm)		Black 1, black 2, black 3, black 4, green-yellow	PVC	Mobile: -5°C ... 90°C Fixed: -40°C ... 90°C	75

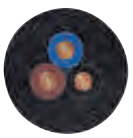
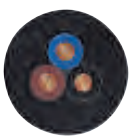
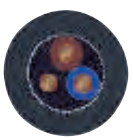
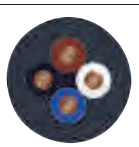
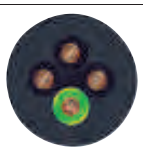
PVC - 80°C and 105°C

These very reasonably priced high-quality cables are suitable for use under dry conditions and average mechanical strain associated with tooling machines, packaging machines, and assembly/production lines. The cable offers a certain degree of resistance to oil and chemicals and is less susceptible to wear. Flame-retardant to VW-1 according to UL 758.

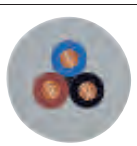
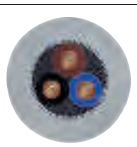
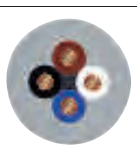
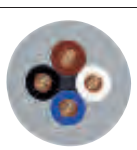
VW-1 is the toughest flame-resistance test for single cables.

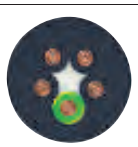
Outer sheath material **PVC**

Minimum bending radius **10 x D**

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
PVC Black	**3-pos.**	M8	3 x 0.25 mm² (32 x 0.1 mm)		Brown, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	38 40 104 168
		M12	3 x 0.34 mm² (42 x 0.1 mm)		Brown, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	38 40 104 168
		M12 Shielded	3 x 0.34 mm² (42 x 0.1 mm) Shielding: copper braid		Brown, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	42 43 168
		Valve connector	3 x 0.5 mm² (16 x 0.2 mm)		Black 1, black 2, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 80°C	86 to 99
	4-pos.	M8	4 x 0.25 mm² (32 x 0.1 mm)		Brown, white, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	44 46 168
		M12	4 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	44 46 168
		M12 Shielded	4 x 0.34 mm² (42 x 0.1 mm) Shielding: copper braid		Brown, white, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	48 50 168
		Valve connector	4 x 0.5 mm² (16 x 0.2 mm)		Black 1, black 2, black 3, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 80°C	100
	5-pos.	M12	5 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	52 53 168

Sensor/actuator cables - cable range

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
PVC Black	**5-pos.**	M12 Shielded	5 x 0.34 mm² (42 x 0.1 mm) Shielding: copper braid		Brown, white, blue, black, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	54 55 168
		Valve connector	5 x 0.5 mm² (28 x 0.15 mm)		Black 1, black 2, black 3, black 4, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 80°C	86 to 99
	8-pos.	M12	8 x 0.25 mm² (32 x 0.1 mm)		White, brown, green, yellow, gray, pink, blue, red	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	59 60 168
		M12 Shielded	8 x 0.25 mm² (32 x 0.1 mm) Shielding: copper braid and filler litz wire		White, brown, green, yellow, gray, pink, blue, red	PVC	Mobile: -5°C ... 105°C Fixed: -25°C ... 105°C	62 63 168
	12-pos.	M12	12 x 0.14 mm² (18 x 0.1 mm)		According to DIN 47100	PVC	Mobile: -5°C ... 90°C Fixed: -40°C ... 90°C	65 168
	17-pos.	M12	17 x 0.14 mm² (18 x 0.1 mm)		According to DIN 47100	PVC	Mobile: -5°C ... 90°C Fixed: -25°C ... 90°C	65 168
500 Gray	**3-pos.**	M8	3 x 0.25 mm² (32 x 0.1 mm)		Brown, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	38 40 104
		M12	3 x 0.34 mm² (42 x 0.1 mm)		Brown, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	38 40 104
		M12 Shielded	3 x 0.34 mm² (42 x 0.1 mm) Shielding: copper braid		Brown, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	42 43
	4-pos.	M8	4 x 0.25 mm² (32 x 0.1 mm)		Brown, white, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	44 46
		M12	4 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	44 46
		M12 Shielded	4 x 0.34 mm² (42 x 0.1 mm) Shielding: copper braid		Brown, white, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	48 50

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
500 Gray	**5-pos.**	M12	5 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	52 53
		M12 Shielded	5 x 0.34 mm² (42 x 0.1 mm) Shielding: copper braid		Brown, white, blue, black, gray	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	54 55
	8-pos.	M12	8 x 0.25 mm² (32 x 0.1 mm)		White, brown, green, yellow, gray, pink, blue, red	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	59 60
515 Black	**5-pos.**	M12	5 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black, gray	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 80°C	52 53
534 Black	**3-pos.**	Valve connector	3 x 0.75 mm² (24 x 0.2 mm)		Black 1, black 2, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 80°C	86 to 99 169
	4-pos.	Valve connector	4 x 0.75 mm² (24 x 0.2 mm)		Black 1, black 2, black 3, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 80°C	100
	5-pos.	Valve connector	5 x 0.75 mm² (24 x 0.2 mm)		Black 1, black 2, black 3, black 4, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 80°C	100 169
540 Yellow	**3-pos.**	M12	3 x 0.34 mm² (42 x 0.1 mm)		Brown, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	38 40 104
	4-pos.	M12	4 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	44 46
	5-pos.	M12	5 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black, gray	PVC	Mobile: -5°C ... 80°C Fixed: -25°C ... 80°C	52 53

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
542 Yellow	**3-pos.**	M12	3 x 0.34 mm² (42 x 0.1 mm)		Brown, blue, black	PVC	Mobile: -5°C ... 105°C Fixed: -25°C ... 105°C	38 40 104
	4-pos.	M12	4 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black	PVC	Mobile: -5°C ... 105°C Fixed: -25°C ... 105°C	44 46
	5-pos.	M12	5 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black, gray	PVC	Mobile: -5°C ... 105°C Fixed: -25°C ... 105°C	52 53

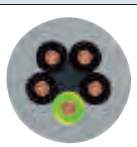
PVC (for 7/8")

These very reasonably priced high-quality cables are suitable for use under dry conditions and average mechanical strain associated with tooling machines, packaging machines, and assembly/production lines.

The cable offers a certain degree of resistance to oil and chemicals and is less susceptible to wear. Flame-retardant according to IEC 60332-1-2 and UL 1581 Cable Flame Test.

Outer sheath material **PVC**

Minimum bending radius
Fixed **4 x D**
Mobile **12.5 x D**

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
430 Gray	**5-pos.**	7/8"	5 x 1.5 mm² (30 x 0.25 mm)		Black 1, black 2, black 3, black 4, green-yellow	PVC	Mobile: -5°C ... 90°C Fixed: -40°C ... 90°C	72
431 Gray	**5-pos.**	7/8"	5 x 2.5 mm² (50 x 0.25 mm)		Black 1, black 2, black 3, black 4, green-yellow	PVC	Mobile: -5°C ... 90°C Fixed: -40°C ... 90°C	73

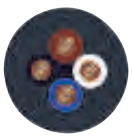
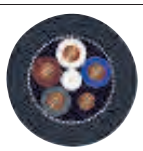
PE-X - for outdoor applications



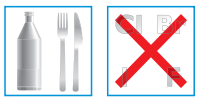
The halogen-free control cable is suitable for outdoor installation in direct sunlight. The insulation and sheath materials offer excellent resistance to weather, UV, and wear. The outstanding resistance to oil, high degree of flexibility, and low smoke gas density also make it suitable for automation technology as well as machine building and systems manufacturing.

Additional features: halogen-free according to DIN VDE 0472 Part 815, flame-retardant according to DIN EN 60332-1-2 and 50266-2-5, UV resistant according to DIN VDE 0276-605, oil resistant according to DIN EN 60811-2-1 (168 h at 100°C) and 50306.

Outer sheath material	**PE copolymer irradiated**
Min. bending cycles	**2 million**
Shielded	**1 million**
Minimum bending radius	**10 x D**
Traverse path	**10 m**
Acceleration	**10 m/s²**
Speed	**3 m/s**
Tested at	**20 ... 25°C**

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
28X Black	**4-pos.**	M12	4 x 0.5 mm² (28 x 0.15 mm)		Brown, white, blue, black	PE copolymer	Mobile: -15°C ... 105°C Fixed: -40°C ... 105°C	153
		M12 Shielded	4 x 0.5 mm² (28 x 0.15 mm)		Brown, white, blue, black	PE copolymer	Mobile: -15°C ... 105°C Fixed: -40°C ... 105°C	154
	5-pos.	M12	5 x 0.5 mm² (28 x 0.15 mm)		Brown, white, blue, black, gray	PE copolymer	Mobile: -15°C ... 105°C Fixed: -40°C ... 105°C	155
		M12 Shielded	5 x 0.5 mm² (28 x 0.15 mm) Shielding: Copper braid		Brown, white, blue, black, gray	PE copolymer	Mobile: -15°C ... 105°C Fixed: -40°C ... 105°C	156
	8-pos.	M12	8 x 0.25 mm² (32 x 0.1 mm)		According to DIN 47100	PE copolymer	Mobile: -15°C ... 105°C Fixed: -40°C ... 105°C	157
		M12 Shielded	8 x 0.25 mm² (32 x 0.1 mm) Shielding: Copper braid		According to DIN 47100	PE copolymer	Mobile: -15°C ... 105°C Fixed: -40°C ... 105°C	158

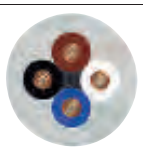
PP-EPDM - for the food industry



This cable with PP-EPDM outer sheath is specifically designed for use in the food industry. Dirt can be easily detected on the light colored surface so that food is not contaminated by coming into contact with the cable. Furthermore, the cable is resistant to common cleaning agents and disinfectants.

Outer sheath material **PP-EPDM**

Minimum bending radius **10 x D**

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
600 Light gray	**3-pos.**	M8	3 x 0.25 mm² (32 x 0.1 mm)		Brown, blue, black	PP	Fixed: -40°C ... 105°C	140
	4-pos.	M8	4 x 0.25 mm² (32 x 0.1 mm)		Brown, white, blue, black	PP	Fixed: -40°C ... 105°C	141
		M12	4 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black	PP	Fixed: -40°C ... 105°C	142 144
		M12 Shielded	4 x 0.34 mm² (42 x 0.1 mm) Shielding: Copper braid		Brown, white, blue, black	PP	Fixed: -40°C ... 105°C	142
	5-pos.	M12	5 x 0.34 mm² (42 x 0.1 mm)		Brown, white, blue, black, gray	PP	Fixed: -40°C ... 105°C	143 145

RADOX® - for railway applications



In railway applications, special demands are placed on the cables used. Special considerations must be made regarding fire protection, in that cables must meet the highest fire safety standards. In addition, the cables are very resistant to mineral oil and fuel.

Outer sheath material **RADOX® GKW S**

Minimum bending radius
Fixed **3 x D**
Mobile **4 x D**

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
28R Black	**3-pos.**	M12	3 x 0.5 mm² (19 x 0.18 mm) Shielding: Copper braid		White 1, white 2, white 3	RADOX® TI303	Mobile: -25°C ... 90°C Fixed: -40°C ... 120°C	130
	4-pos.	M12	4 x 0.5 mm² (19 x 0.18 mm) Shielding: Copper braid		White 1, white 2, white 3, white 4	RADOX® TI303	Mobile: -25°C ... 90°C Fixed: -40°C ... 120°C	131
	5-pos.	M12	5 x 0.5 mm² (19 x 0.18 mm) Shielding: Copper braid		White 1, white 2, white 3, white 4, white 5	RADOX® TI303	Mobile: -25°C ... 90°C Fixed: -40°C ... 120°C	132

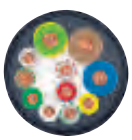
PUR/PVC (for sensor/actuator boxes)



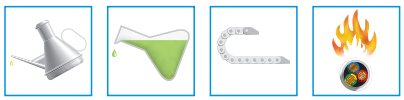
The cables are designed for robust use in tooling machines, assembly/production lines, as well as production involving metal cutting. They are free from silicone and substances that would hinder coating with paint or varnish and have a high resistance to abrasion. The outer sheath also offers excellent resistance to oil and chemicals according to VDE 0472 Part 803, is flame-retardant according to DIN EN 50265, and is resistant to hydrolysis. The outer sheath is manufactured using the coextrusion process.

Outer sheath material	**PUR**
Inner sheath material	**PVC**
Min. bending cycles	**1.5 ... 2 million**
Minimum bending radius	**10 x D**
Traverse path	**2 m**
Speed	**2 m/s**
Tested at	**20 ... 25°C**

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
PUR/PVC Black	**3-pos., single-occupancy**	M8 and QUICKON up to 0.34 mm² 4 slots	4 x 0.34 mm² 2 x 0.75 mm²		White, green, yellow, gray, brown, blue	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 90°C	116 122 170
		M8 and QUICKON up to 0.34 mm² 6 slots	6 x 0.34 mm² 2 x 0.75 mm²		White, green, yellow, gray, pink, red, brown, blue	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 90°C	116 122 170
		M8 and QUICKON up to 0.34 mm² 8 slots	8 x 0.34 mm² 2 x 0.75 mm²		White, green, yellow, gray, pink, red, black, violet, brown, blue	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 90°C	116 122 170
		M8 10 slots	10 x 0.34 mm² 2 x 0.75 mm²		White, green, yellow, gray, pink, red, black, violet, white-pink, pink-brown, brown, blue	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 90°C	116 170
	4-pos., double-occupancy	QUICKON up to 0.34 mm² 4 slots	8 x 0.34 mm² 2 x 0.75 mm²		White, green, yellow, gray, gray-pink, red-blue, white-green, brown-green, brown, blue	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 90°C	122
		QUICKON up to 0.34 mm² 6 slots	12 x 0.34 mm² 2 x 0.75 mm²		White, green, yellow, gray, pink, red, gray-pink, red-blue, white-green, brown-green, white-yellow, yellow-brown, brown, blue	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 90°C	122
		M8 and QUICKON up to 0.34 mm² 8 slots	16 x 0.34 mm² 2 x 0.75 mm²		White, green, yellow, gray, pink, red, black, violet, gray-pink, red-blue, white-green, brown-green, white-yellow, yellow-brown, white-gray, gray-brown, brown, blue	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 90°C	116 122 170

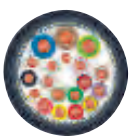
Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
PUR/PVC Black	**4-pos., single-occupancy**	M12 and QUICKON up to 0.75 mm² 4 slots	4 x 0.34 mm² 3 x 0.75 mm²		White, green, yellow, gray, brown, blue, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 90°C	118 120 123 170
		M12 and QUICKON up to 0.75 mm² 6 slots	6 x 0.34 mm² 3 x 0.75 mm²		White, green, yellow, gray, pink, red, brown, blue, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 90°C	118 120 123 170
		M12 and QUICKON up to 0.75 mm² 8 slots	8 x 0.34 mm² 3 x 0.75 mm²		White, green, yellow, gray, pink, red, black, violet, brown, blue, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 90°C	118 120 123 170
	5-pos., double-occupancy	M12 4 slots	8 x 0.50 mm² 3 x 1.00 mm²		White, green, yellow, gray, gray-pink, red-blue, white-green, brown-green, brown, blue, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 90°C	118 120 170
		M12 6 slots	12 x 0.50 mm² 3 x 1.00 mm²		White, green, yellow, gray, pink, red, gray-pink, red-blue, white-green, brown-green, white-yellow, yellow-brown, brown, blue, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 90°C	118 120 170
		M12 8 slots	16 x 0.50 mm² 3 x 1.00 mm²		White, green, yellow, gray, pink, red, black, violet, gray-pink, red-blue, white-green, brown-green, white-yellow, yellow-brown, white-gray, gray-brown, brown, blue, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 90°C	118 120 170

PUR/PVC shielded (for sensor/actuator boxes)



The cables are designed for robust use in tooling machines, assembly/production lines, as well as production involving metal cutting. Analog signals are reliably protected against electromagnetic influences by the tin-plated copper braid with 85% coverage. The cables are free from silicone and substances that would hinder coating with paint or varnish and have a high resistance to abrasion. The outer sheath also offers excellent resistance to oil and chemicals according to VDE 0472 Part 803, is flame-retardant according to DIN EN 50265, and is resistant to hydrolysis.

Outer sheath material	**PUR**
Inner sheath material	**PVC**
Min. bending cycles	**1.5 ... 2 million**
Minimum bending radius	**10 x D**
Traverse path	**2 m**
Speed	**2 m/s**
Tested at	**20 ... 25°C**

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
PUR/PVC shielded Black	**5-pos., double-occupancy**	M12 4 slots	8 x 0.50 mm² 3 x 1.00 mm²		White, green, yellow, gray, gray-pink, red-blue, white-green, brown-green, brown, blue, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 90°C	124 170
		M12 6 slots	12 x 0.50 mm² 3 x 1.00 mm²		White, green, yellow, gray, pink, red, gray-pink, red-blue, white-green, brown-green, white-yellow, yellow-brown, brown, blue, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 90°C	124 170
		M12 8 slots	16 x 0.50 mm² 3 x 1.00 mm²		White, green, yellow, gray, pink, red, black, violet, gray-pink, red-blue, white-green, brown-green, white-yellow, yellow-brown, white-gray, gray-brown, brown, blue, green-yellow	PVC	Mobile: -5°C ... 80°C Fixed: -40°C ... 90°C	124 170

PUR, halogen-free (for sensor/actuator boxes)



Permanently flexible control cables for use in drag chains and as machine control cables for extreme operating conditions. Suitable for bending cycle loads with long-term durability. The special PUR outer sheath offers excellent resistance to oils according to VDE 0472 Part 803, lubricants, cooling agents, and other aggressive substances. Additional features: halogen and PVC-free, no silicone or substances that would hinder coating with paint or varnish, resistant to hydrolysis, and flame-retardant according to DIN EN 50265.

Outer sheath material	**PUR**
Min. bending cycles	**1.5 ... 2 million**
Minimum bending radius	**10 x D**
Traverse path	**2 m**
Speed	**2 m/s**
Tested at	**20 ... 25°C**

Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
PUR Black	**5-pos., double-occupancy**	M12 4 slots	8 x 0.50 mm² 3 x 1.00 mm²		White, green, yellow, gray, gray-pink, red-blue, white-green, brown-green, brown, blue, green-yellow	PP	Mobile: -5°C ... 80°C Fixed: -40°C ... 90°C	120 170
		M12 6 slots	12 x 0.50 mm² 3 x 1.00 mm²		White, green, yellow, gray, pink, red, gray-pink, red-blue, white-green, brown-green, white-yellow, yellow-brown, brown, blue, green-yellow	PP	Mobile: -5°C ... 80°C Fixed: -40°C ... 90°C	120 170
		M12 8 slots	16 x 0.50 mm² 3 x 1.00 mm²		White, green, yellow, gray, pink, red, black, violet, gray-pink, red-blue, white-green, brown-green, white-yellow, yellow-brown, white-gray, gray-brown, brown, blue, green-yellow	PP	Mobile: -5°C ... 80°C Fixed: -40°C ... 90°C	120 170

80 MC - highly flexible



Permanently flexible cables for use in drag chains, industrial robots or portal tables. Suitable for bending cycle loads and torsional stress with long-term durability. The special PUR outer sheath offers excellent resistance to oils according to DIN EN 60811-2-1, chemicals, and hydrolysis.

The cable is also flame-retardant according to DIN EN 50265-2-1 and is halogen-free.

Outer sheath material	**PUR**
Min. bending cycles	**5 million**
Minimum bending radius	**10 x D**
Traverse path	**5 m**
Acceleration	**5 m/s²**
Speed	**3 m/s**
Torsion angle	**±120°**
Min. torsion cycles	**3 million**
Test length	**1 m**
Tested at	**20 ... 25°C**

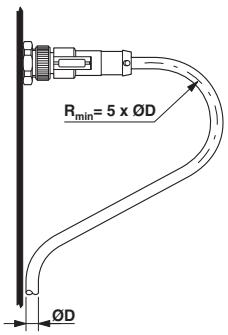
Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
80MC Black	**5-pos., double-occupancy**	M12 8 slots	16 x 0.50 mm² 3 x 1.00 mm²		White, green, yellow, gray, pink, red, black, violet, gray-pink, red-blue, white-green, brown-green, white-yellow, yellow-brown, white-gray, gray-brown, brown, blue, green-yellow	PP	Mobile: +5°C ... 70°C Fixed: -30°C ... 70°C	167 170



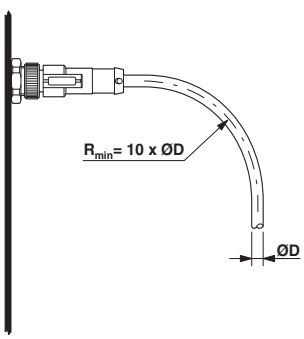
The following pages provide an overview of the appropriate installation of SAC cables in harsh industrial environments that will guarantee a long service life and reduce costs.

Bending radius

In the case of mobile installation, a generous bending radius can be advantageous, since the greater the bending radius, the lower the voltages occurring as a result of the movement. The result is an increased cable service life (the minimum cable-specific bending radii must be taken into consideration).



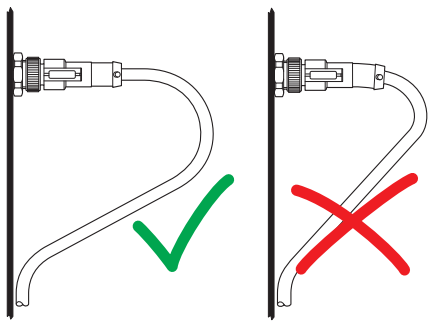
Fixed installation



Mobile installation

Load

A sufficient cable loop at the connection point can prevent the material from becoming prematurely worn and in the case of additional loads, there is sufficient clearance for voltages to be absorbed.



Mobile installation

In the case of mobile installation, the cable length should be sufficient to adequately absorb tensile loads. This can be implemented, for example, using cable loops and C drag chains.



Cables in power track chains

Where possible, cables should be laid individually and loosely next to each other within power track chains. Isolating segments or bridges should be placed between the various cables or these should be arranged in separate holes in the neutral zone of the drag chain.

Laying cables that have very different outside diameters next to or across each other is generally not recommended. If, however, this cannot be avoided for design reasons, isolating segments or bridges should be installed for a reasonable service life. If isolating segments cannot be installed between each cable, we recommend that our cables with an outside diameter < 10 mm should be laid loose, together with cables with similar cross sections in a guide tube in the drag chain.

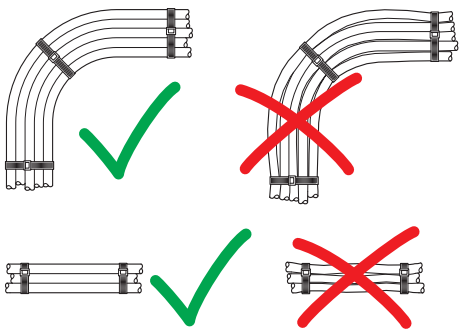
In terms of the arrangement of the cables, it is also important to ensure that heavy cables are routed outwards and light cables, such as our SAC cables, are routed inwards. Strain relief should be provided at both ends or at least at the moving end of the drag chain. A distance of 20 to 30 times the outside diameter of the cable is recommended between the point at which the bending motion ends and attachment.

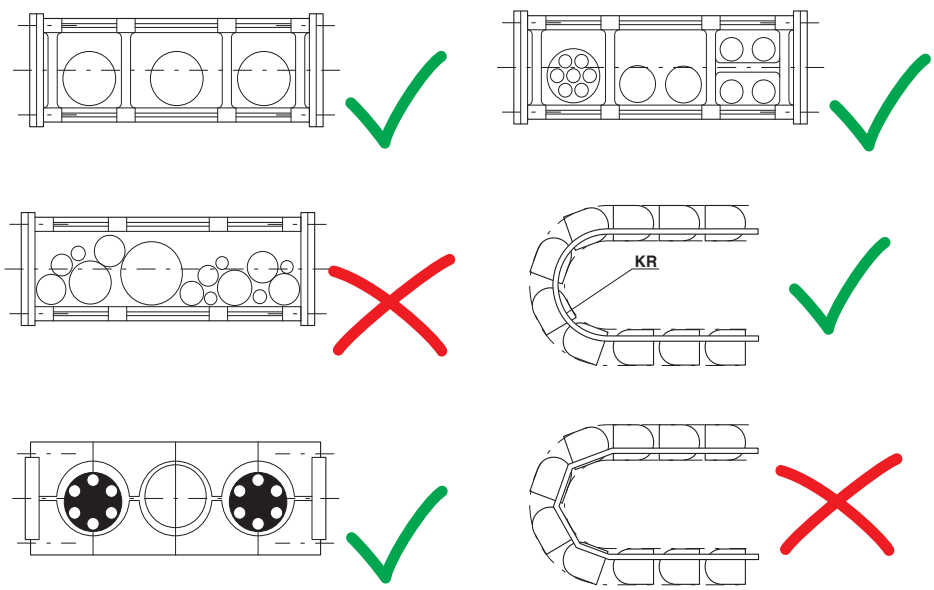
The cables must be able to move completely freely within the radius of curvature in order to prevent forced guidance of the drag chain. Guide value: 10% of the outside diameter should be allocated as free space.

Note: when laying the cables, observe the information provided by the drag chain manufacturer.

Cable bundling

When bundling several individual cables, it is important to ensure that the cables can move freely within the bundle. The cables must not become deformed. Round cables with outside diameters that vary greatly should only be laid next to each other when bridges are used.





KR = radius of curvature



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.
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.

Easy field assembly

User-friendly fast connection technologies are available for plug-in connector assembly, even under the harshest industrial conditions. RJ45 and M12 plug-in connectors with QUICKON or Piercecon® connection are available for Ethernet and PROFINET cabling.

Copper and fiber optics in the same design

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.

System overview - network	**210**
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Network components	
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M12 plug-in connectors	**236**
Assembled cables	**242**
Patch panels, terminal outlets	**262**
Power plug-in connectors	**270**
Fiber optic plug-in connectors	**274**
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Accessories	**316**
Fieldbus components	
Topologies	**320**
D-SUB plug-in connectors	**332**
M12 plug-in connectors	**334**
M12 flush-type plug-in connectors	**336**
Assembled cables	**340**
AS-Interface	**352**
Cable range	**360**
USB plug-in connectors	**371**

	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 RJ45	Plug-in connector M8
TD+	1	1
TD-	2	4
RD+	3	2
RD-	6	3

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

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

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

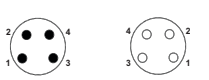
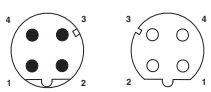
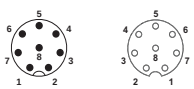
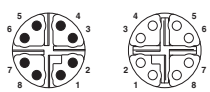
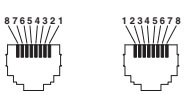
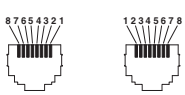
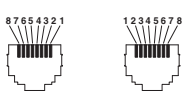
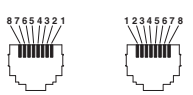
Signal designation, wire assignment

Wire color	Signal
YE	TD+
OG	TD-
WH	RD+
BU	RD-

Wire color	Signal
WHOG	TD+
OG	TD-
WHGN	RD+
GN	RD-

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

Wire color	Signal
WHOG	D1+
OG	D1-
WHBU	D3-
BU	D3+
WHGN	D2+
GN	D2-
WHBN	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 214	See page 214	See page 214	See page 216

Ethernet

	EtherNet/IP™	PROFINET	EtherCAT	sercos III	VARAN
Ethernet hybrid M12 (8-pos.) All industrial environments	Automation applications in industrial control technology	Production, process automation 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 combinations 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 M12
TD+	1
TD-	2
RD+	3
RD-	4

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

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

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

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

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

Wire color	Signal
WHOG	TD+
OG	TD-
WHGN	RD+
GN	RD-
BU	
WH	
BN	
BK	

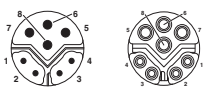
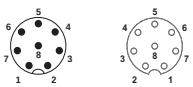
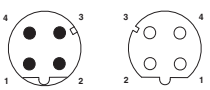
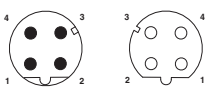
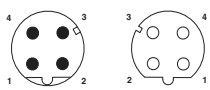
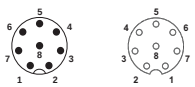
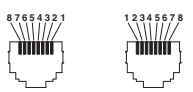
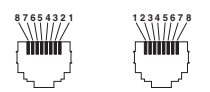
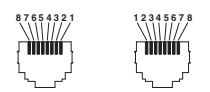
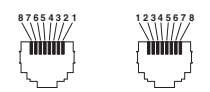
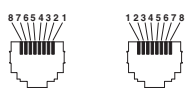
Wire color	Signal
WHOG	TD+
OG	TD-
WHBU	
BU	
WHGN	RD+
GN	RD-
WHBN	
BN	

Wire color	Signal
YE	TD+
OG	TD-
WH	RD+
BU	RD-

Wire color	Signal
YE	TD+
OG	TD-
WH	RD+
BU	RD-

Wire color	Signal
YE	TD+
OG	TD-
WH	RD+
BU	RD-

Wire color	Signal
n. c.	
OG	TD-
WHOG	TD+
n. c.	
WHGN	RD+
BU	
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	www.profibus.com	www.ethercat.org	www.sercos.de	www.varan-bus.net
	IEC 61784-5-2	IEC 61784-5-3	IEC 61784-5-12	IEC 61784-5-16	
					
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	Plug / Socket	Plug / Socket	Plug / Socket	Plug / Socket
	RJ45, 8-pos.	RJ45, 8-pos.	RJ45, 8-pos.	RJ45, 8-pos.	RJ45, 8-pos.

See page 214 | See page 220 | See page 222 | See page 224 | See phoenixcontact.net/products | See phoenixcontact.net/products

	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

Signal designation	Plug-in connector: D-SUB 9	Plug-in connector: M12
DO	1	1
DO	6	2
DI	2	3
DI	7	4
COM	3	5

Signal designation	Plug-in connector: D-SUB 9	Plug-in connector: M12
A cable	8	2
B cable	3	4

Signal designation	Plug-in connector: M12
DATA+	1
DATA-	3
Shield	4

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

Signal designation, wire assignment

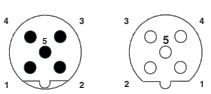
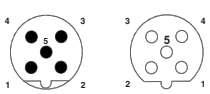
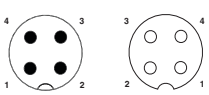
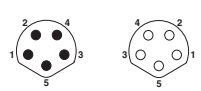
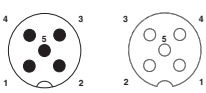
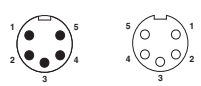
Wire color	Signal
YE	DO
GN	DO
GY	DI
PK	DI
BN	COM
WH	NC

Wire color	Signal
GN	A cable
RD	B cable

Wire color	Signal
OG	DATA+
BU	DATA-

Filler litz wire

Wire color	Signal
BU	CAN_L
WH	CAN_H
RD	V+
BK	V-

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				
	Plug / Socket	Plug / Socket	Plug / Socket	Plug / Socket
	M12, 5-pos., B-coded	M12, 5-pos., B-coded	M12, 3-pos., A-coded	M8, 5-pos., B-coded
				
	Plug / Socket	Plug / Socket		Plug / Socket
	D-SUB 9	D-SUB 9		M12, 5-pos., A-coded
				
				Plug / Socket
				7/8" 16UNF, 5-pos.
Topology	See page 320	See page 322	See page 323	See page 326

CANopen®

Automation technology and for networking within complex devices

Line or tree
(when using repeaters)

10 kbaud to 1 Mbaud

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

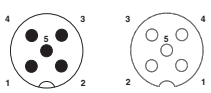
Wire color	Signal
BU	CAN_L
WH	CAN_H
RD	V+
BK	V-

Shield on pin

Up to 1000 m depending on the transmission speed; can be increased by using repeaters

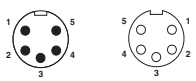
www.can-cia.de

EN 50325-4



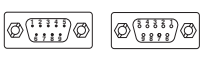
Plug	Socket

M12, 5-pos., A-coded



Plug	Socket

7/8" 16UNF, 5-pos.



Plug	Socket

D-SUB 9

See page 324

AS-Interface

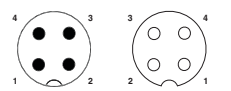
Sensor/actuator level

Bus, star, ring, and tree structures

167 kbps

Signal designation	Plug-in connector
	M12
AS-i+	1
AS-i-	3

Wire color	Signal
BN	AS-i-
WH	
BU	AS-i+
BK	



Plug	Socket

M12, 4-pos., A-coded

See page 328

FOUNDATION Fieldbus

Process automation

Point-to-point line (with branch lines), tree structure, combination of all topologies

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

Signal designation	Plug-in connector	
	M12	7/8"
DATA+	2	1
DATA-	1	4
Shield	3	3

Wire color	Signal
OG	DATA+
BU	DATA-

Filler litz wire

Shield on pin 3

Max. 1900 m; max. 9500 m when using repeaters depending on the selected cable

www.fieldbus.org

IEC 1158, IEC 61158

Plug	Socket

M12, 4-pos., A-coded

Plug	Socket

7/8" 16UNF, 4-pos.

See page 330

USB

All industrial environments

Star topology, the connection is established at the star nodes via hubs

Up to 480 Mbps

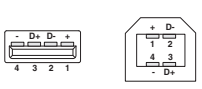
Signal designation	Plug-in connector	
	M12, MINI - USB	USB
V_{BUS}	1	1
D-	2	2
D+	3	3
ID	4	
GND	5	4

Wire color	Signal
WHOG	D-
WH	V_{BUS}
OG	D+
n.c.	ID
BK	GND

5 m per segment

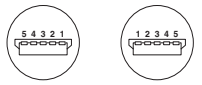
www.usb.org

Not specified



Plug, type A	Socket, type B

USB, 4-pos.



Plug	Socket

M12 mini-USB, 5-pos.

See page 370

CC-Link

Production level applications

Bus, multi-drop, T-branching, star

Up to 10 Mbps

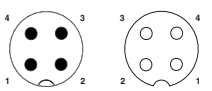
Signal designation	Plug-in connector
	M12
SLD	1
DS	2
DG	3
DA	4

Wire color	Signal
Shield	SLD
WH	DS
YE	DG
BU	DA

Max. 1200 m; max. 13.2 km with repeaters

www.clpa-europe.com

IEC 61784-1 CPF 8

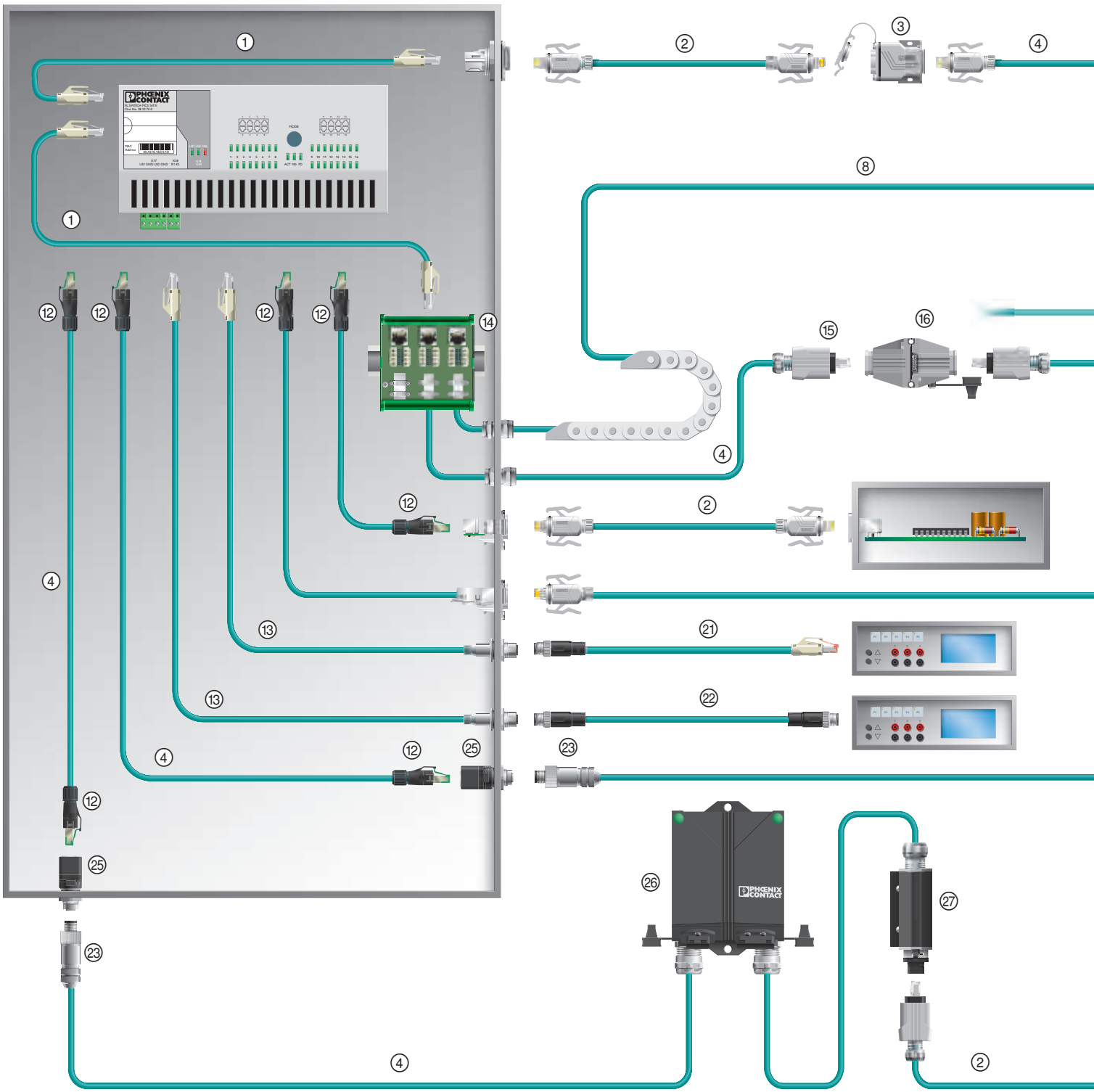


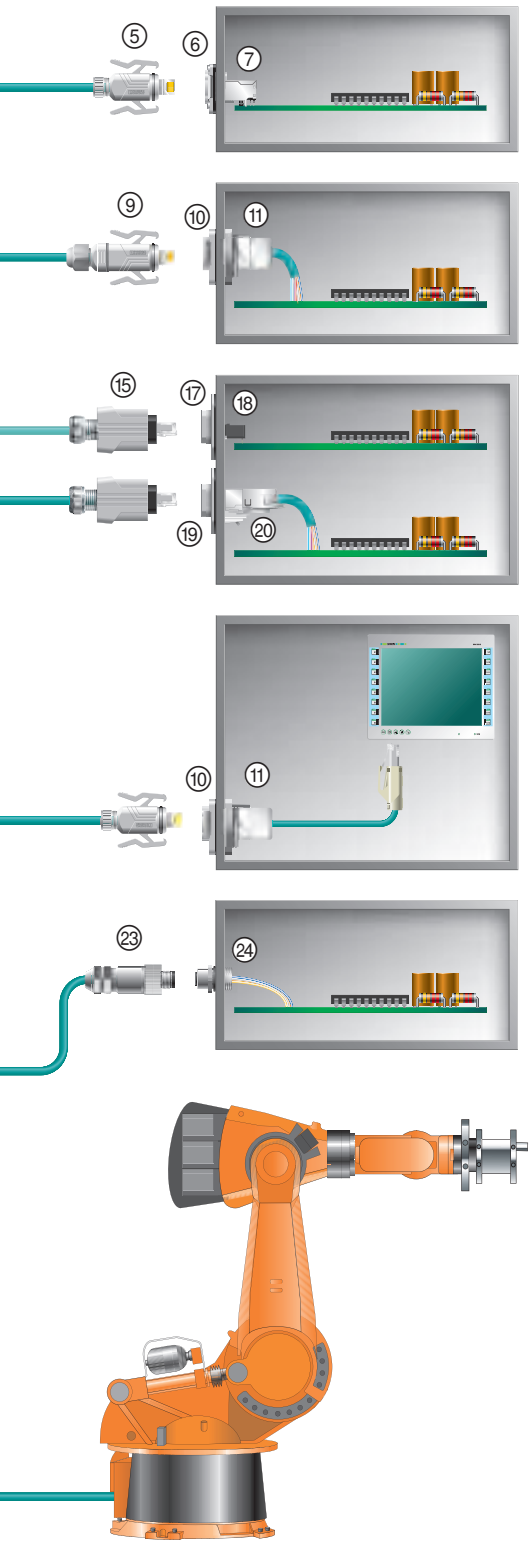
Plug	Socket

M12, 4-pos., A-coded

See phoenixcontact.net/products

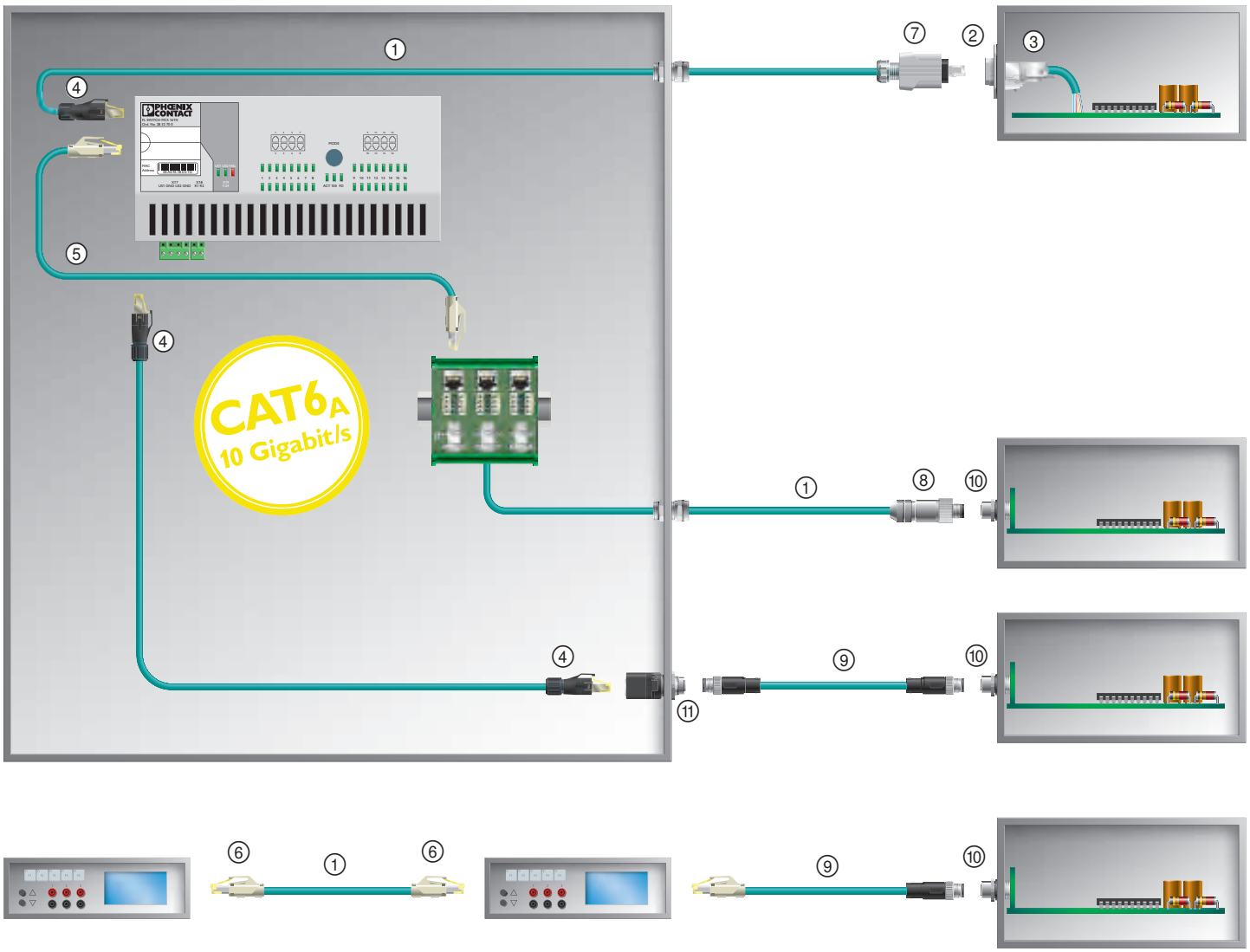
Topology – copper-based cabling for Industrial Ethernet





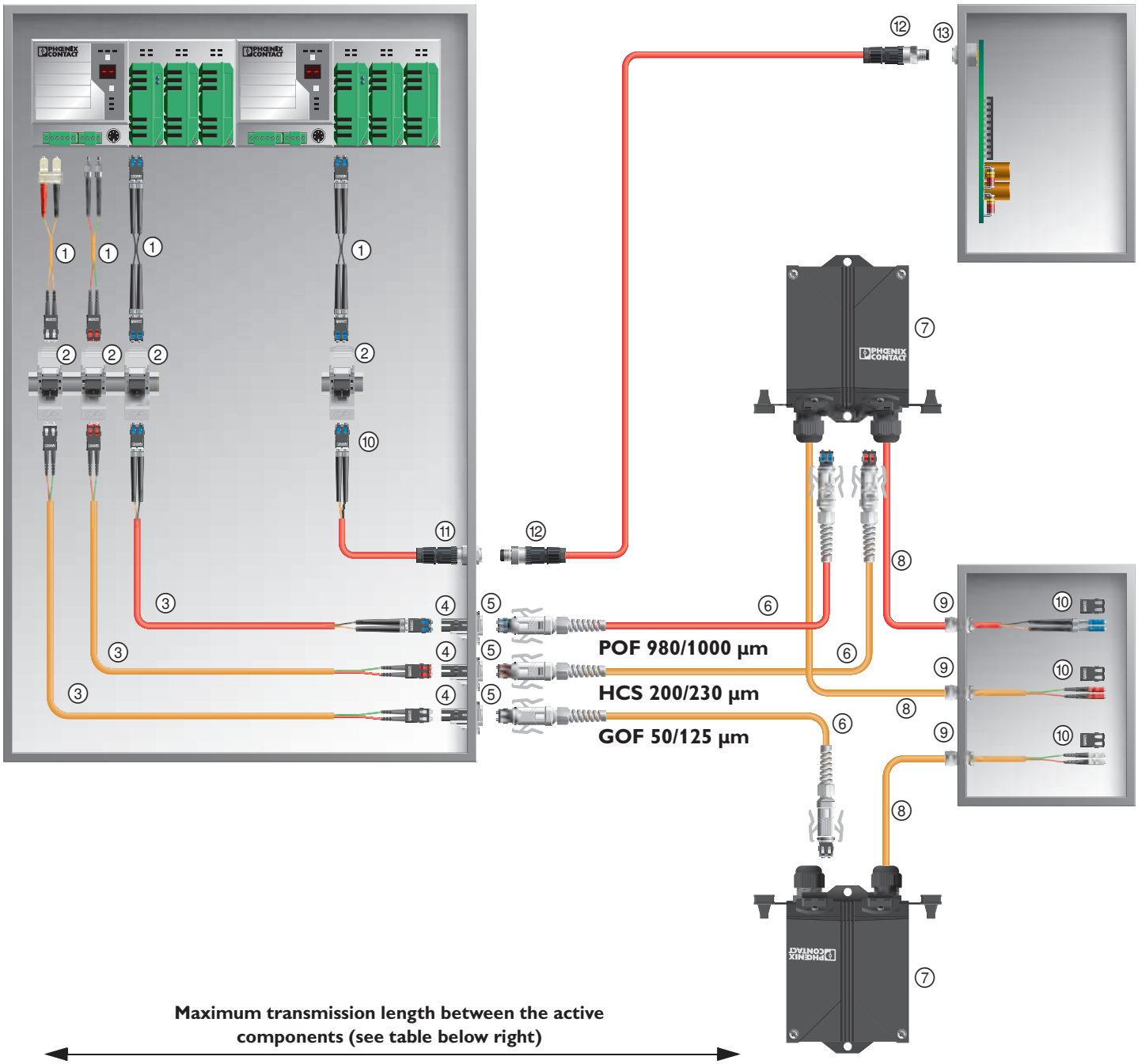
No.	Designation	Page
①	Assembled Ethernet cable with RJ45 plug-in connectors, IP20	246
②	Assembled Ethernet cable with RJ45 plug-in connectors, IP67	246
③	RJ45 coupling, IP67, version 6	265
④	Ethernet cable, by the meter	242
⑤	RJ45 plug-in connector, IP67, version 6, consisting of sleeve housing and pin insert	230
⑥	RJ45 panel mounting frame, IP67, version 6, for PCB socket inserts	231
⑦	RJ45 socket insert for PCB mounting	233
⑧	Ethernet cable, for drag chain, by the meter	242
⑨	RJ45 plug-in connector, IP67, for assembly without special tools	230
⑩	RJ45 panel mounting frame, IP67, for keystones, version 6	232
⑪	RJ45 keystone socket inserts	232
⑫	RJ45 plug-in connector, IP20, CAT5e, 8-pos., for assembly without special tools	226
⑬	Assembled Ethernet cable, RJ45 to M12	244
⑭	RJ45 patch panel for the DIN rail	266
⑮	RJ45 plug-in connector, IP67, push/pull, version 14, for assembly without special tools	228
⑯	RJ45 field couplings, IP67	265
⑰	RJ45 panel mounting frame, IP67, push/pull, for PCB socket inserts, version 14	233
⑱	RJ45 socket insert for PCB mounting, version 14	233
⑲	RJ45 panel mounting frame, IP67, for the Freenet system, version 14	231
⑳	RJ45 socket inserts for the Freenet system	231
㉑	Assembled Ethernet cable with RJ45 and M12 plug-in connectors	244
㉒	Assembled Ethernet cable with M12 plug-in connectors	244
㉓	M12 plug-in connector, shielded, for assembly without special tools	236
㉔	M12 flush-type plug-in connector	238
㉕	RJ45 to M12 bulkhead	240
㉖	Terminal outlets, IP65/IP67	264
㉗	RJ45 multi-port robot interface	263

Topology – 10 Gbps Industrial Ethernet



No.	Designation	Page
①	Ethernet cable, by the meter, for 10 Gbps	242
②	RJ45 panel mounting frame, IP67, for the Freenet system, version 14	231
③	RJ45 socket inserts for the Freenet system	231
④	RJ45 plug-in connector, IP20, for 10 Gbps, for assembly without special tools	226
⑤	Assembled Ethernet cable for 10 Gbps	248
⑥	RJ45 plug-in connector, IP20, consisting of sleeve housing and pin insert for 10 Gbps	226
⑦	RJ45 plug-in connector, IP67, version 14	228
⑧	M12 plug-in connector for 10 Gbps, for assembly without special tools	236
⑨	Assembled Ethernet cable for 10 Gbps	248
⑩	M12 flush-type plug-in connector for 10 Gbps, for PCB mounting	See Catalog 2
⑪	Control cabinet feed-through, $CAT6_A$, M12, 8-pos., X-coded to RJ45 socket	240

Topology – fiber optic cabling for Industrial Ethernet

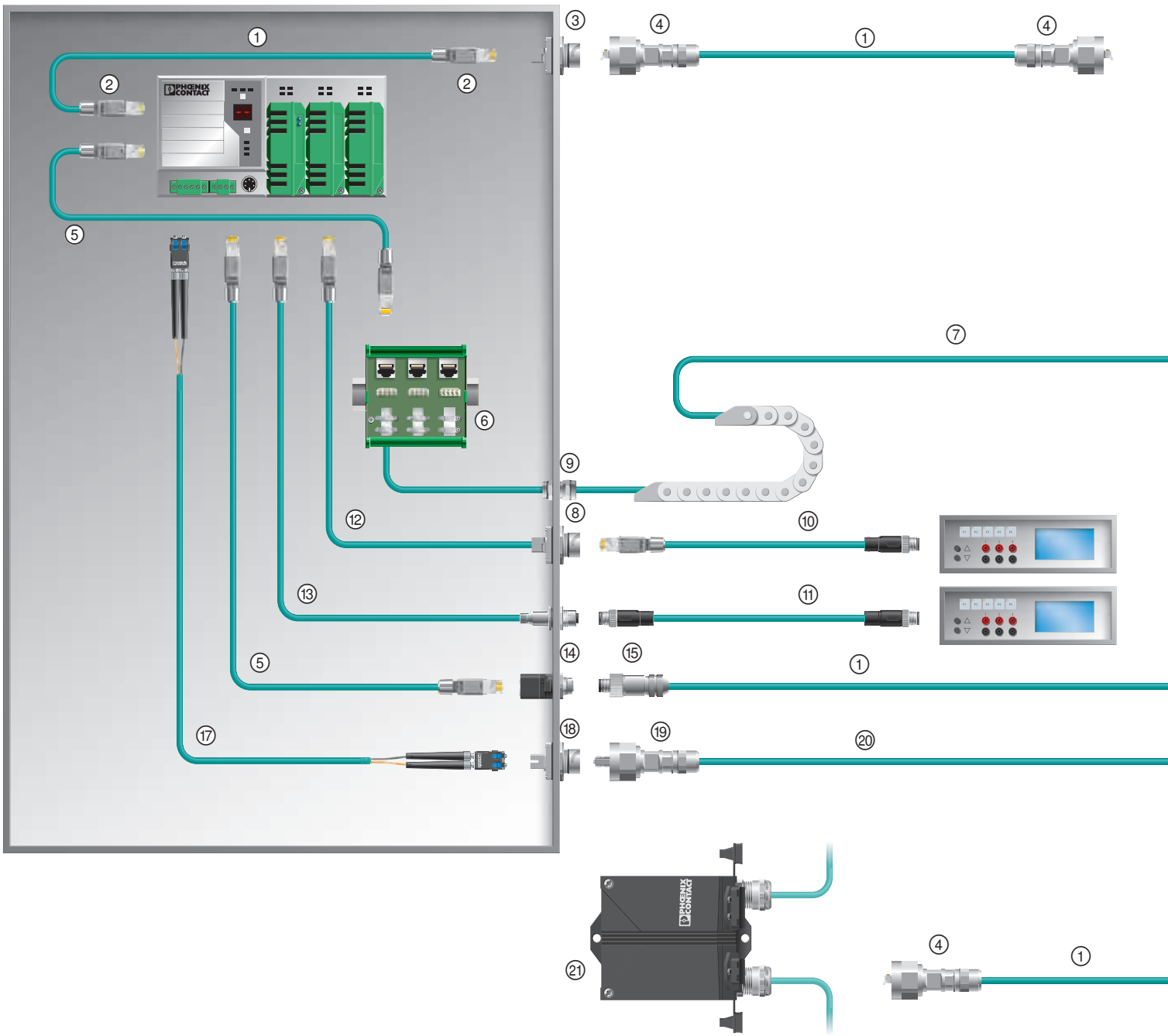


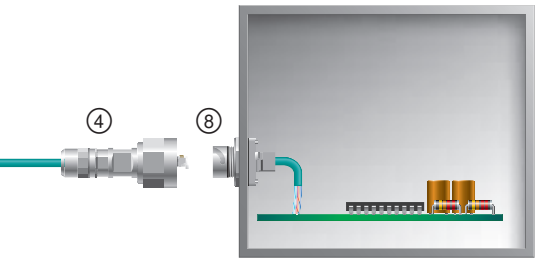
No.	Designation	Page		
		POF	HCS	GOF
①	Adapter cable, SCRJ/IP20 to FSMA (with POF/HCS) or SCRJ/IP20 to SC duplex (with GOF)			
②	Patch panel, SCRJ/IP20, for DIN rail mounting	282	282	282
③	Assembled industrial cable, assembled at both ends with SCRJ/IP20 plug-in connectors	286	300	304
④	SCRJ socket insert for panel mounting frames	From 275	From 278	From 280
⑤	SCRJ/IP67 panel mounting frames	From 275	From 278	From 280
⑥	Assembled fiber optic round cable with SCRJ plug-in connectors, IP67	From 286	From 296	From 304
⑦	IP67 terminal outlet with 2 SCRJ/IP67 slots and integrated SCRJ socket inserts	282	282	282
⑧	Industrial cable for fixed indoor installation	From 286	From 296	From 304
⑨	IP68 cable gland	From 552	From 552	From 552
⑩	SCRJ plug-in connector, IP20	275	278	280
⑪	Panel feed-through assembled with the cable	274		
⑫	M12 plug-in connector	274		
⑬	M12 transceiver	274		

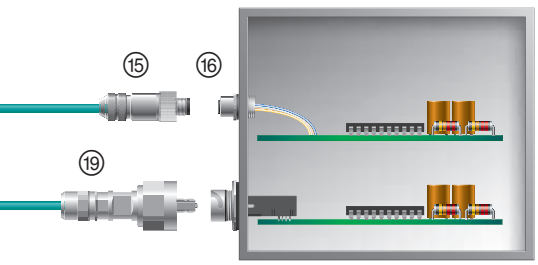
Standard	Transmission speed	Fiber type	Wavelength	Length
–	10 Mbps	POF 980/1000 µm	660 nm	50 m*
–	10 Mbps	HCS 200/230 µm	660 nm	300 m
IEC 61784-5-3 (PROFINET)	100 Mbps	POF 980/1000 µm	660 nm	50 m*
IEC 61784-5-3 (PROFINET)	100 Mbps	HCS 200/230 µm	660 nm	100 m
100Base-SX	100 Mbps	GOF 50/125 µm	850 nm	3800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

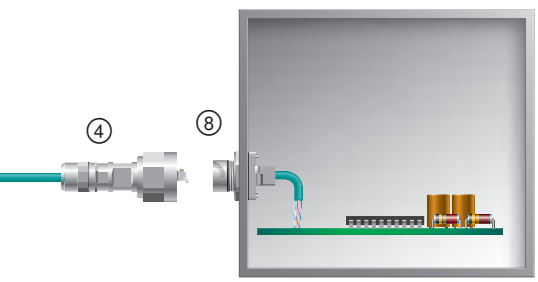
* minus 10 meters per passive coupling, e.g., patch panel, panel feed-through or terminal outlet

Topology – EtherNet/IP™



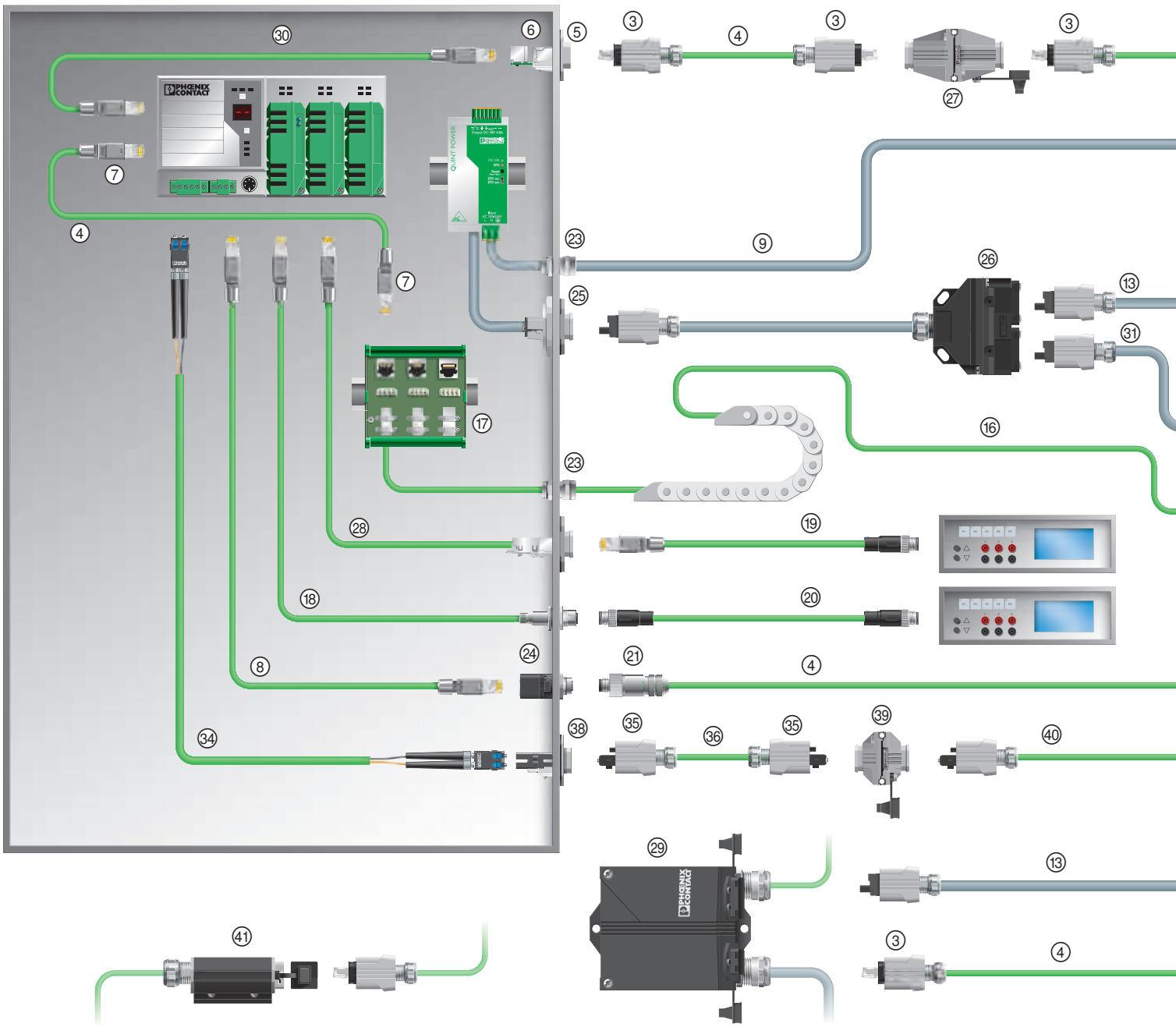




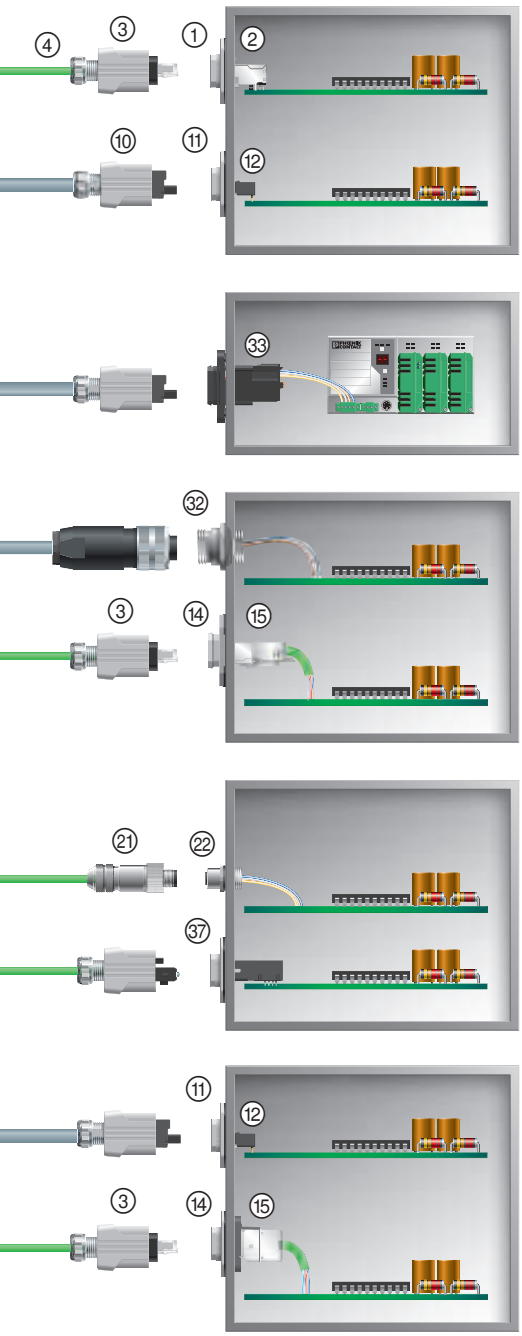


No.	Designation	Page
①	Cables for flexible installation, by the meter	246
②	RJ45 plug-in connector, IP20, for tool-free assembly	226
③	RJ45 panel feed-through, IP67, socket/socket	234
④	RJ45 plug-in connector, IP67, with bayonet locking	230
⑤	Assembled cables with RJ45 plug-in connectors, IP20	246
⑥	RJ45 patch panel, IP20, for DIN rail mounting	266
⑦	Cables for continuous motion applications, suitable for use with drag chain, by the meter	242
⑧	RJ45 panel feed-through, IP67, with cable connection	234
⑨	IP68 cable gland	552
⑩	M12 plug-in connector, with Ethernet cable and assembled RJ45 plug-in connector	244
⑪	Assembled cable with M12 plug-in connectors, IP65/IP67	244
⑫	Assembled cables with RJ45 plug-in connector and free cable end	244
⑬	Assembled cable with M12 flush-type socket to free cable end	244
⑭	Control cabinet feed-through, M12/RJ45, 180°	240
⑮	M12 plug-in connector, IP65/IP67, shielded, for tool-free assembly	237
⑯	M12 flush-type plug-in connector, with litz wires	238
⑰	Assembled fiber optic cable with SCRJ plug-in connector, IP20	292
⑱	SCRJ panel mounting frame, IP67, with bayonet locking, with SCRJ coupling	277
⑲	SCRJ plug-in connector, IP67, with bayonet locking	277
⑳	Fiber optic cable, for flexible installation, by the meter	285
㉑	Terminal outlets, IP65/IP67	264

Topology – PROFINET

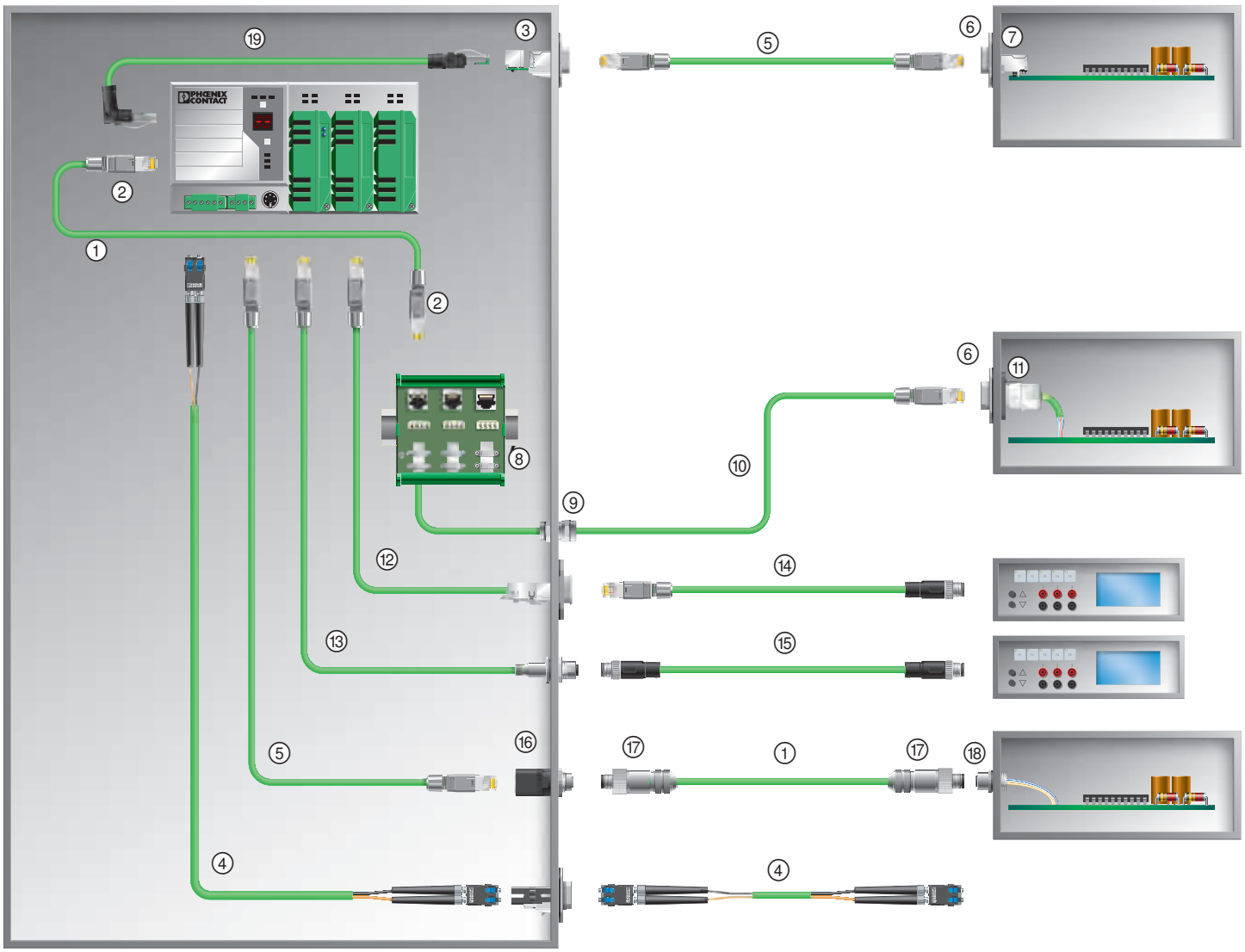


No.	Designation	Page	
		POF	HCS
㉞	Assembled fiber optic cable with SCRJ plug-in connector, IP20	292	296
㉟	SCRJ push/pull plug-in connector, IP67, with fast connection technology	276	279
㊱	PROFINET fiber optic cable, for flexible installation, by the meter	292	296
㊲	SCRJ panel mounting frame, IP67, for push/pull interlocking, for transceivers for PCB mounting	276	276
㊳	SCRJ panel mounting frame, IP67, for push/pull interlocking, with SCRJ coupling, Freenet system	276	276
㊴	SCRJ coupling, IP67, for push/pull interlocking	284	284
㊵	Assembled fiber optic cable with SCRJ plug-in connector, IP67	292	296



No.	Designation	Page
①	RJ45 panel mounting frame, IP67, for push/pull interlocking, for PCB mounting	231
②	RJ45 socket insert, for PCB mounting	231
③	RJ45 push/pull plug-in connector, IP67, for tool-free assembly	228
④	PROFINET cables, for flexible installation, by the meter	251
⑤	RJ45 panel mounting frame, IP67, for push/pull interlocking, for Freenet socket inserts	231
⑥	RJ45 socket insert, socket/socket, Freenet	231
⑦	RJ45 plug-in connector, IP20, for tool-free assembly	226
⑧	Assembled cables with RJ45 plug-in connectors, IP20	252
⑨	Power cables, for flexible installation, by the meter	272
⑩	MSTB push/pull plug-in connector, IP67, for 24 V, 5-pos., for free assembly	270
⑪	MSTB panel mounting frame, IP67, for 24 V, for push/pull interlocking	270
⑫	MSTB contact insert for 24 V, for PCB mounting	270
⑬	Assembled 24 V cable with MSTB push/pull plug-in connectors, IP67	272
⑭	RJ45 panel mounting frame, IP67, for push/pull interlocking	231
⑮	RJ45 socket insert, with cable connection, for tool-free assembly, Freenet	231
⑯	PROFINET cables, for continuous motion applications, suitable for use with drag chain, by the meter	251
⑰	RJ45 patch panel, IP20, for DIN rail mounting	266
⑱	M12 flush-type plug-in connector, with PROFINET cable and assembled RJ45 plug-in connector	252
⑲	M12 plug-in connector, with PROFINET cable and assembled RJ45 plug-in connector	252
⑳	Assembled cable with M12 plug-in connectors, IP65/IP67	252
㉑	M12 plug-in connector, IP65/IP67, shielded, for tool-free assembly	237
㉒	M12 flush-type plug-in connector, with litz wires	238
㉓	IP68 cable gland	552
㉔	Control cabinet feed-through, M12/RJ45, 180°	240
㉕	MSTB panel mounting frame, IP67, for 24 V, for push/pull interlocking, with contact insert for conductor connection	270
㉖	Power Y-distributor, IP67, with push/pull interlocking	271
㉗	Multi-port data coupling	265
㉘	Assembled cables with RJ45 plug-in connector and socket, IP20	252
㉙	Terminal outlet with 1 x RJ45, 1 x power connection, IP67, for push/pull interlocking	264
㉚	PROFINET patch cable, RJ45 to RJ45, IP20	252
㉛	Assembled 24 V cable with MSTB push/pull plug-in connector, IP67, and 7/8" circular plug-in connector	272
㉜	Flush-type plug-in connector, 5-pos., 7/8"	See Catalog 2
㉝	Panel mounting frame, IP67, for 24 V or 400 V, for push/pull interlocking with MSTB contact insert for conductor connection, plastic	270
㊶	Multi-port robot interface	263

Topology – EtherCAT



No.	Designation	Page
①	EtherCAT cable, by the meter	254
②	RJ45 plug-in connector, IP20, for tool-free assembly	226
③	RJ45 socket insert, socket/socket, Freenet	231
④	Assembled fiber optic cable with SCRJ plug-in connector, IP20	292
⑤	Assembled cable with RJ45 plug-in connectors, IP20	254
⑥	RJ45 panel mounting frame, IP20	227
⑦	RJ45 socket insert, for PCB mounting	233
⑧	RJ45 patch panel, IP20, for DIN rail mounting	266
⑨	IP68 cable gland	552
⑩	Assembled cable with RJ45 plug-in connector to free cable end	254
⑪	RJ45 socket insert, with cable connection	231
⑫	Assembled cable with RJ45 plug-in connector to RJ45 socket	254
⑬	Assembled cable with M12 flush-type socket to free cable end	254
⑭	Assembled cable with RJ45 plug to M12 plug	254
⑮	Assembled cable with M12 plug-in connectors	254
⑯	Control cabinet panel feed-through, M12/RJ45, 180°	240
⑰	M12 plug-in connector, shielded, for tool-free assembly	237
⑱	M12 flush-type plug-in connector, with litz wires	238
⑲	EtherCAT patch cable, RJ45 to RJ45, IP20	254

RJ45 plug-in connector, IP20



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



RJ45 pin insert, CAT6$_A$ and CAT5

Technical data

	VS-08-RJ45-10G/Q	VS-...-RJ45-...-Q...
Electrical data		
Transmission characteristics (category)	CAT6$_A$	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
Surge voltage category	I	I
Material data		
Housing material	PA 6.6	PA 6.6
Contact material	CuSn	CuSn
Inflammability class according to UL 94	V2	V2
Pollution degree	2	2
External cable diameter	4.5 mm ... 8 mm	4.5 mm ... 8 mm
Insertion/withdrawal cycles	≥ 750	≥ 750
Temperature data		
Ambient temperature (operation)	-20 °C ... 70 °C	-20 °C ... 70 °C

Technical data

	VS-08-RJ45-10G/C	VS-08-ST-H...-RJ45
Electrical data		
Transmission characteristics (category)	CAT6$_A$	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
Surge voltage category	I	I
Material data		
Housing material	-	-
Contact material	Phosphor bronze	Copper alloy
Inflammability class according to UL 94	V2	V2
Pollution degree	-	2
External cable diameter	-	-
Insertion/withdrawal cycles	-	≥ 750
Temperature data		
Ambient temperature (operation)	-25 °C ... 60 °C	-25 °C ... 60 °C

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
RJ45 plug-in connector, IP20, **CAT6$_A$**, 8-pos., with QUICKON fast connection technology, for 1-wire and 7-wire AWG 26 ... 24 conductors, color: black	**VS-08-RJ45-10G/Q**	**1419001**	1
RJ45 plug-in connector, IP20, **CAT5**, 8-pos., with QUICKON fast connection technology, for 1-wire and 7-wire AWG 26 ... 24 conductors, color: black	**VS-08-RJ45-Q**	**1402420**	1
RJ45 plug-in connector, 4-pos., with QUICKON fast connection technology, for 22 AWG, color: gray	**VS-PN-RJ45-5-Q/IP20**	**1658435**	1
RJ45 pin insert, CAT6$_A$, 10 Gbps			
RJ45 pin insert, 8-pos., shielded, IDC connection technology, for 27 ... 26 AWG litz wires, with strain relief			
CAT5			
RJ45 bend protection sleeve, for VS-08-ST-H11-RJ45 and VS-08-RJ45-10G/C pin insert, for cable diameters up to 7 mm			
Gray			
Green			

Ordering data

Type	Order No.	Pcs. / Pkt.
VS-08-RJ45-10G/C	**1418853**	5
VS-08-ST-H11-RJ45	**1652716**	5
VS-08-KS-H/GY	**1654743**	5
VS-08-KS-H/GN	**1654756**	5

Accessories

Crimp tool, pliers with die, for VS-08-ST-H…-RJ45			
Stripping tool, for multiple-stage repositioning of shielded conductors	**VS-CABLE-STRIP-VARIO**	**1657407**	1
Shielding foil set, 25 pcs., replacement for RJ45 and M12 QUICKON plug-in connectors	**VS-08-RJ45-FOLIEN-SET**	**1417184**	1

Accessories

VS-CT-RJ45-H	**1653265**	1
VS-CABLE-STRIP-VARIO	**1657407**	1

RJ45 panel mounting frames with IP20 protection and socket insert



RJ45 socket insert and panel mounting frame, IP20, modular system, keystone

Technical data

	VS-08-BU-RJ45-6/KA/LSA	VS-08-A-RJ45/MOD-1-IP20
Electrical data		
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 mm² ... 0.32 mm² (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

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



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



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

Technical data

	VS-PPC-C1-...-8/10G
Electrical data	
Nominal voltage U_N	50 V
Rated current	1.75 A
Transmission characteristics (category)	$CAT6_A$
Surge voltage category	I
Material data	
Housing material	Zinc die-cast
Contact material	Copper alloy
Inflammability class according to UL 94	V0
Pollution degree	2
Connection data	
Connection method	IDC fast connection
Connection cross section AWG	26 ... 24 (solid)
Connection cross section AWG	26 ... 24 (7-wire)
External cable diameter	5 mm ... 8 mm
Insertion/withdrawal cycles	≥ 250
Temperature data	
Ambient temperature (operation)	-40 °C ... 70 °C

Technical data

	VS-PPC-C1-...-PG9-8Q5	VS-PPC-C1-...-PG9-4Q5
Electrical data		
Nominal voltage U_N	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	Zinc die-cast	Zinc die-cast
Contact material	Copper alloy	Copper alloy
Inflammability class according to UL 94	V0	V0
Pollution degree	2	2
Connection data		
Connection method	IDC fast connection	IDC fast connection
Connection cross section AWG	26 ... 22 (solid)	26 ... 22 (solid)
Connection cross section AWG	26 ... 22 (stranded)	26 ... 22 (stranded)
External cable diameter	5 mm ... 8 mm	5 mm ... 8 mm
Insertion/withdrawal cycles	≥ 250	≥ 500
Temperature data		
Ambient temperature (operation)	-40 °C ... 70 °C	-40 °C ... 70 °C

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			
Metal housing	**VS-PPC-C1-RJ45-MNNA-8I10G**	**1422108**	1
Plastic housing	**VS-PPC-C1-RJ45-POBK-8I10G**	**1422205**	1
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 housing			
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 housing			

Ordering data

Type	Order No.	Pcs. / Pkt.
VS-PPC-C1-MNNA-4Q5-EMC	**1403366**	1
VS-PPC-C1-MNNA-8Q5-EMC	**1403367**	1
VS-PPC-C1-RJ45-MNNA-PG9-8Q5	**1608016**	1
VS-PPC-C1-RJ45-POBK-PG9-8Q5	**1657834**	1
VS-PPC-C1-RJ45-MNNA-PG9-4Q5	**1608100**	1
VS-PPC-C1-RJ45-POBK-PG9-4Q5	**1608126**	1

Accessories

	Type	Order No.	Pcs. / Pkt.
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 plug-in connectors	**VS-08-RJ45-FOLIEN-SET**	**1417184**	1
Stripping tool, for multiple-stage repositioning of shielded conductors	**VS-CABLE-STRIP-VARIO**	**1657407**	1

Accessories

Type	Order No.	Pcs. / Pkt.
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						
Straight solder pins				**CUC-V04-BU-180**	**1407409**	1
Angled solder pins				**CUC-V04-BU-90**	**1407408**	1
Panel mounting frame						
For 180° socket insert				**CUC-V04-F-POBK-180**	**1407410**	1
For 90° socket insert				**CUC-V04-F-POBK-90**	**1407411**	1
Panel mounting frame set						
Socket/socket				**CUC-V04-F-BU/BU-RJ45**	**1407412**	1

	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 connectors	**FL CRIMPTOOL**	**2744869**	1			

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	**VS-08-RJ45-5-Q/IP67**	**1656990**	1			
Deep black RAL 9005	**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	**VS-08-ST-H11-RJ45**	**1652716**	5			
CAT6	**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	**VS-08-ST-H21P-RJ45**	**1404388**	5			
RJ45 pin insert, CAT6$_A$, 10 Gbps	**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	**VS-08-T-H-RJ45/IP67**	**1652732**	5			
Deep black RAL 9005	**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



Push/pull, version 14, Freenet system



Version 6, Freenet system

Technical data

	VS-08-BU-RJ45/10G-F	VS-PPC-F1-RJ45-MNNA-1R-F	VS-08-BU-RJ45-5-F/PK	VS-A-F-IP67
Electrical data				
Nominal voltage U_N	50 V	-	50 V	-
Rated current	1 A	-	1 A	-
Housing material	Polycarbonate	Zinc die-cast	-	PA
Contact material	CuSn	-	Copper alloy	-
Inflammability class according to UL 94	V0	V0	V0	V0
No. of pos.	8	-	8	-
Connection method	IDC	-	IDC	-
Insertion/withdrawal cycles	≥ 750	-	≥ 750	≥ 1000
Temperature data				
Ambient temperature (operation)	-10 °C ... 60 °C	-40 °C ... 70 °C	-20 °C ... 70 °C	-40 °C ... 80 °C

Ordering data

Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
RJ45 Freenet socket insert, 8-pos., shielded, with cable connection 10 Gbps, CAT6$_A$	**VS-08-BU-RJ45/10G-F**	**1424009**	1	**VS-08-BU-RJ45/10G-F**	**1424009**	1
RJ45 Freenet socket insert, 8-pos., shielded, with cable connection 1 Gbps, CAT5	**VS-08-BU-RJ45-5-F/PK**	**1652936**	1	**VS-08-BU-RJ45-5-F/PK**	**1652936**	1
RJ45 Freenet socket insert, 8-pos., shielded, socket to socket 1 Gbps, CAT5	**VS-08-BU/BU-RJ45-F**	**1405617**	1	**VS-08-BU/BU-RJ45-F**	**1405617**	1
RJ45 Freenet panel mounting frame, version 14, IP65/IP67, for rectangular mounting cutout, with seal, without mounting screws						
Metal housing	**VS-PPC-F1-RJ45-MNNA-1R-F**	**1405358**	1			
Plastic housing	**VS-PPC-F1-RJ45-POBK-1R-F**	**1608197**	1			
RJ45 Freenet panel mounting frame, version 14, IP65/IP67, for round mounting cutout, with seal and central nut						
Metal housing	**VS-PPC-F1-RJ45-MNNA-1C-F**	**1405222**	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

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
Protective cover For data port	**VS-PPC-C1-PC-ROBK-L**	**1405293**	1			
Stripping tool, for multiple-stage repositioning of shielded conductors	**VS-CABLE-STRIP-VARIO**	**1657407**	1	**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

PROFINET

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EtherCAT Technology Group



Push/pull, version 14, with PCB connection

Ethernet



Version 6, with PCB connection

	Technical data		Technical data	
	VS-08-BU-RJ45-6/...	VS-PPC-F1-RJ45-MNNA-1R-PHA	VS-08-BU-RJ45/LP-1	VS-08-A-RJ45/LP-1-IP67...
Electrical data				
Rated voltage	125 V	-	150 V	-
Rated current	1 A	-	1.5 A	-
Housing material	Copper alloy	Zinc die-cast	-	PA
Contact material	Copper alloy	-	Copper alloy	-
Inflammability class according to UL 94	V0	V0	V0	V0
No. of pos.	8	-	8	-
Insertion/withdrawal cycles	≥ 750	≥ 500	≥ 750	≥ 1000
Temperature data				
Ambient temperature (operation)	-25 °C ... 80 °C	-40 °C ... 70 °C	-40 °C ... 85 °C	-40 °C ... 80 °C

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
RJ45 socket insert, for PCB assembly, CAT6, 8-pos., shielded, with angled solder pins, 1x	**VS-08-BU-RJ45-10G/LH-1**	**1420401**	1			
RJ45 socket insert, for PCB mounting, CAT5, 8-pos., shielded, with angled solder pins				**VS-08-BU-RJ45/LP-1**	**1688586**	5
RJ45 socket insert, single, for PCB mounting, CAT6, 8-pos., shielded						
Straight solder pins	**VS-08-BU-RJ45-6/LV-1**	**1653090**	5	**VS-08-BU-RJ45-6/LV-1**	**1653090**	5
Angled solder pins	**VS-08-BU-RJ45-6/LH-1**	**1653087**	5	**VS-08-BU-RJ45-6/LH-1**	**1653087**	5
RJ45 panel mounting frame, version 14, IP65/IP67, for rectangular mounting cutout, with seal, without mounting screws						
Metal housing	**VS-PPC-F1-RJ45-MNNA-1R-PHA**	**1608029**	1			
Plastic housing	**VS-PPC-F1-RJ45-P0BK-1R-PHA**	**1657847**	1			
RJ45 panel mounting frame, version 6, for rectangular mounting cutout, with seal, without mounting screws						
Military gray RAL 7042				**VS-08-A-RJ45/LP-1-IP67**	**1689446**	5
Deep black RAL 9005				**VS-08-A-RJ45/LP-1-IP67-BK**	**1658655**	5
	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						
For data port	**VS-PPC-C1-PC-ROBK-L**	**1405293**	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 including socket inserts

EtherNet/IP



RJ45 panel mounting frame with socket insert, version 1

EtherNet/IP



RJ45 panel mounting frame with socket insert, version 1

Technical data

Electrical data	
Transmission characteristics (category)	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
Housing material	Zinc die-cast
Inflammability class according to UL 94	V0
No. of pos.	8
Connection cross section AWG	-
Insertion/withdrawal cycles	750
Temperature data	
Ambient temperature (operation)	-40 °C ... 70 °C

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

Description	Type	Order No.	Pcs. / Pkt.
RJ45 panel mounting frame, IP67, for bayonet locking, metal, **with socket/socket contact insert**, for round mounting cutout, with seal, without mounting screws	**VS-V1-F-RJ45-MNNA-1-C-S-JJ-S**	**1419184**	1
RJ45 panel mounting frame, IP67, for bayonet locking, metal, **with contact insert for cable connection,** for round mounting cutout, with seal, without mounting screws			

Ordering data

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

Accessories

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

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	Technical data
	VS-08-M12...-10G-P SCO	SACC-M12MSD-4CON-...-SH
Electrical data		
Nominal voltage U_N	48 V	60 V
Rated current	0.5 A	4 A
Transmission characteristics (category)	$CAT6_A$	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
Material contact / contact surface	CuSn / Ni/Au	CuZn / Au
Material of grip body	Zinc die-cast, nickel-plated	Zinc die-cast, nickel-plated
Inflammability class according to UL 94	V0	HB
No. of pos.	8	4
Connection method	Piercecon®	Screw connection
Connection cross section AWG	26	24 ... 18
Insertion/withdrawal cycles	≥ 100	≥ 100
Temperature data		
Ambient temperature (operation)	-40 °C ... 85 °C	-40 °C ... 85 °C

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Plug-in connector, $CAT6_A$, plug, 8-pos., shielded, X-coded, **cable diameter: 4 mm ... 8 mm**						
straight	**VS-08-M12MS-10G-P SCO**	**1417430**	1			
angled	**VS-08-M12MR-10G-P SCO**	**1417443**	1			
Plug-in connector, Pg7 screw connection, 4-pos., D-coded, **cable diameter: 4 mm ... 6 mm**						
Plug, straight				**SACC-M12MSD-4CON-PG 7-SH**	**1521258**	1
Plug-in connector, Pg9 screw connection, 4-pos., D-coded, **cable diameter: 4 mm ... 8 mm**						
Plug, straight				**SACC-M12MSD-4CON-PG 9-SH**	**1521261**	1

	Accessories			Accessories		
Stripping tool, for multiple-stage repositioning of shielded conductors	**VS-CABLE-STRIP-VARIO**	**1657407**	1	**VS-CABLE-STRIP-VARIO**	**1657407**	1

M12 plug-in connector, for assembly

Notes:

For description of connection method, see page 376



M12 plug-in connector, 100 Mbps and 1 Gbps, QUICKON connection



M12 plug-in connector, 100 Mbps, QUICKON connection

Technical data

	SACC-M12...-4Q SH	SACC-M12...-8Q SH
Electrical data		
Nominal voltage U_N	60 V	30 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)
Contact material	CuSn	CuSn
Material of grip body	Zinc die-cast, nickel-plated	Zinc die-cast, nickel-plated
Inflammability class according to UL 94	V0	V0
No. of pos.	4	8
Connection method	Insulation displacement connection	Insulation displacement connection
Connection cross section AWG	26 ... 22	26 ... 22
Insertion/withdrawal cycles	≥ 100	≥ 100
Temperature data		
Ambient temperature (operation)	-40 °C ... 85 °C	-40 °C ... 85 °C

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Plug-in connector, 4-pos., shielded, D-coded, color-coded terminal blocks for Ethernet, **max. cable diameter: 8 mm**			
Plug, straight	**SACC-M12MSD-4Q SH**	**1543223**	1
Plug, angled	**SACC-M12MRD-4Q SH**	**1553624**	1
Socket, straight	**SACC-M12FSD-4Q SH**	**1553611**	1
Socket, angled	**SACC-M12FRD-4Q SH**	**1553637**	1
Plug-in connector, 8-pos., shielded, A-coded, color-coded terminal blocks for Ethernet, **max. cable diameter: 8 mm**			
Plug, straight	**SACC-M12MS-8Q SH**	**1543236**	1
Plug, angled	**SACC-M12MR-8Q SH**	**1553653**	1
Socket, straight	**SACC-M12FS-8Q SH**	**1553640**	1
Socket, angled	**SACC-M12FR-8Q SH**	**1553666**	1

Accessories

Stripping tool, for multiple-stage repositioning of shielded conductors	**VS-CABLE-STRIP-VARIO**	**1657407**	1

Technical data

	SACC-M12...-4Q SH PN	SACC-M12...-6Q SH VARAN
Electrical data		
Nominal voltage U_N	60 V	30 V
Rated current	1.75 A	2 A
Transmission characteristics (category)	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)	-
Contact material	CuSn	CuSn
Material of grip body	Zinc die-cast, nickel-plated	Zinc die-cast, nickel-plated
Inflammability class according to UL 94	V0	V0
No. of pos.	4	6
Connection method	Insulation displacement connection	Insulation displacement connection
Connection cross section AWG	26 ... 22	26 ... 22
Insertion/withdrawal cycles	≥ 100	≥ 100
Temperature data		
Ambient temperature (operation)	-40 °C ... 85 °C	-40 °C ... 85 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
Plug-in connector, 4-pos., shielded, D-coded, color-coded terminal blocks for PROFINET, **max. cable diameter: 8 mm**		
Plug, straight	**SACC-M12MSD-4Q SH PN**	**1554513**	1
Plug, angled	**SACC-M12MRD-4Q SH PN**	**1554539**	1
Socket, straight	**SACC-M12FSD-4Q SH PN**	**1554526**	1
Socket, angled	**SACC-M12FRD-4Q SH PN**	**1554542**	1
Plug-in connector, 6-pos., shielded, A-coded, color-coded terminal blocks for VARAN, **max. cable diameter: 8 mm**			
Plug, straight	**SACC-M12MS-6Q SH VARAN**	**1429130**	1
Plug, angled	**SACC-M12MR-6Q SH VARAN**	**1429156**	1
Socket, straight	**SACC-M12FS-6Q SH VARAN**	**1429143**	1
Socket, angled	**SACC-M12FR-6Q SH VARAN**	**1429169**	1

Accessories

VS-CABLE-STRIP-VARIO	**1657407**	1

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



Front mounting, D-coded



Rear mounting, D-coded

	Technical data	Technical data
	SACC-E-...-4CON-M16/0,5 SCO	SACC-DSI-FSD-4CON...
Electrical data		
Nominal voltage U_N	250 V	250 V
Rated current	4 A	4 A
Transmission characteristics (category)	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
Contact material	CuZn	CuZn
Material of grip body	Zinc die-cast, nickel-plated	Zinc die-cast, nickel-plated
Inflammability class according to UL 94	V0	V0
Connection method	Individual wires	Individual wires
Insertion/withdrawal cycles	≥ 100	≥ 100
Temperature data		
Plug / socket [°C]	-25 ... 85	-25 ... 85

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
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 mm²						
Socket	**SACC-E-FSD-4CON-M16/0,5 SCO**	**1535202**	1			
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 mm²						
Socket	**SACC-EC-FSD-4CON-M16/0,5 SCO**	**1535215**	1			
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 mm²						
Socket				**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

	Technical data	Technical data
	VS-FSBPXS-OE-94F...	VS-FSBPYS-OE-94I...
Electrical data		
Nominal voltage U_N	48 V	30 V (Power and data)
Rated current	0.5 A	6 A (Power) / 0.5 A (Data)
Transmission characteristics (category)	$CAT6_A$	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
Contact material	CuZn	CuZn
Material of grip body	Zinc die-cast, nickel-plated	Zinc die-cast, nickel-plated
Inflammability class according to UL 94	V0	V0
Insertion/withdrawal cycles	≥ 100	≥ 100
Temperature data		
Plug / socket [°C]	-40 ... 90	-40 ... 85

		Ordering data			Ordering data		
Description	Cable length	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
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**	**1424135**	1			
	1 m	**VS-FSBPXS-OE-94F/1,0**	**1424148**	1			
	2 m	**VS-FSBPXS-OE-94F/2,0**	**1424151**	1			
	5 m	**VS-FSBPXS-OE-94F/5,0**	**1424164**	1			
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				**VS-FSBPYS-OE-94I/0,5 SCO**	**1407504**	1
	1 m				**VS-FSBPYS-OE-94I/1,0 SCO**	**1407505**	1
	2 m				**VS-FSBPYS-OE-94I/2,0 SCO**	**1407506**	1
	5 m				**VS-FSBPYS-OE-94I/5,0 SCO**	**1407507**	1

Control cabinet feed-through/ bulkhead, M12/RJ45



Bulkhead, 10 Gbps



Bulkhead, 100 Mbps and 1 Gbps

		Technical data	Technical data	
		VS-BH-M12FSX-10G-RJ45/...	VS-BH-M12FS-8CON-RJ45...	VS-BH-M12FSD-RJ45...
Electrical data				
Nominal voltage U_N		60 V	50 V	50 V
Rated current		0.5 A	1 A	1 A
Transmission characteristics (category)		$CAT6_A$	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
Contact material		Copper alloy	Copper alloy	Copper alloy
Material of grip body		PA	PA	-
Inflammability class according to UL 94		V0	V0	V0
Connection method		-	-	-
Insertion/withdrawal cycles		≥ 100	≥ 100	-
Temperature data				
Plug / socket	[°C]	-25 ... 85	-25 ... 85	-

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Control cabinet feed-through, $CAT6_A$, M12, 8-pos., X-coded to RJ45 socket						
Socket exit 90°	**VS-BH-M12FSX-10G-RJ45/90**	**1404548**	1			
Socket exit 180°	**VS-BH-M12FSX-10G-RJ45/180**	**1404549**	1			
Control cabinet feed-through, M12, 8-pos., A-coded to RJ45 socket						
Socket exit 90°				**VS-BH-M12FS-8CON-RJ45/ 90**	**1405057**	1
Socket exit 180°				**VS-BH-M12FS-8CON-RJ45/180**	**1405060**	1
Control cabinet feed-through, M12, 4-pos., D-coded to RJ45 socket						
Socket exit 90°				**VS-BH-M12FSD-RJ45/90**	**1657261**	1
Socket exit 180°				**VS-BH-M12FSD-RJ45/180**	**1657494**	1

Network cables, sold by the meter, Ethernet, shielded

Ethernet



2-pair, twisted pair

Ethernet



4-pair, twisted pair

Description	Ordering data			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:

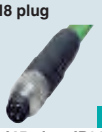
For a network cable type **94A** with a cable length of 34.0 m, the ordering data is as follows:

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

		M8 plug		M8 socket	
					
		M8MS		M8FS	
		Ordering data		Ordering data	
			Order No.		Order No.
Open cable end					
	OE	1 m	1407344		
		2 m	1407345		
		5 m	1407346		
		10 m	1407347		
		Variable	1408719	Variable	1408716
M8 plug					
	M8MS	1 m	1407348		
		2 m	1407349		
		5 m	1407350		
		10 m	1407351		
		Variable	1408718	Variable	1408715
RJ45 plug, IP20					
	R4AC	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

Increments:
0.2 ... 3 m = 0.1 m
> 3 m = 0.5 m

Minimum order amount = 25

Pin M8	Pin RJ45	Wire color	Signal
1	1	YE	TD+
4	2	OG	TD–
2	3	WH	RD+
3	6	BU	RD–

		Technical data
		PROFINET [93B]
Transmission characteristics (category)		CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
Cable structure		1x4xAWG22/7; SF/TQ
Conductor cross section		4x 0.34 mm²
Conductor structure for signal		7x 0.25 mm
AWG signal line		22
Cable diameter		6.5 mm
Conductor resistance		≤ 120 Ω/km
Type of shield		Aluminum-coated foil, tin-plated copper braided shield
Conductor material		Tin-plated Cu litz wires
Outer sheath material		PVC
Color of outer sheath		Green RAL 6018
Color, single wire		White, yellow, blue, orange
Ambient temperature		
Fixed installation	[°C]	-40 ... 70
Flexible installation	[°C]	-40 ... 70

Assembled cables, Ethernet, 4-pos., shielded



Ethernet

	RJ45 plug, IP20	RJ45 plug, version 6	RJ45 plug, version 14, metal
			
	R4AC	R4MC	R4RC
	Ordering data	Ordering data	Ordering data
	Order No.	Order No.	Order No.
Open cable end  OE	1 m 1405633	2 m 1405675	5 m 1405743
RJ45 plug, IP20  R4AC	1 m 1408933 2 m 1408934 5 m 1408935 10 m 1408936	2 m 1405921	5 m 1405992
RJ45 plug, version 6  R4MC		1 m 1408937 2 m 1408938 5 m 1408939 10 m 1408940	
RJ45 plug, version 14, metal  R4RC			1 m 1408941 2 m 1408942 5 m 1408943 10 m 1408945
RJ45 plug, version 14, plastic  R4QC			
M12 plug, SPEEDCON  MSD SCO			
M12 plug, SPEEDCON  MRD SCO			

Information for products with fixed cable lengths:

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

Cable description	Cable type
PUR stranded - blue, 2 x 2, CAT5e	93E

Pin M12	Pin RJ45	Wire color	Signal
1	1	WHOG	TD+
3	2	OG	TD–
2	3	WHGN	RD+
4	6	GN	RD–

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

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.**
		1 m	**1407356**			1 m	**1407380**				
		2 m	**1407357**			2 m	**1407381**			2 m	**1405866**
5 m	**1405772**	5 m	**1407358**			5 m	**1407382**				
		10 m	**1407359**			10 m	**1407383**				
		Variable	**1408713**	Variable	**1408705**	Variable	**1408697**	Variable	**1408690**		
		1 m	**1407360**			1 m	**1407384**				
		2 m	**1407361**			2 m	**1407385**			2 m	**1406085**
5 m	**1406030**	5 m	**1407362**			5 m	**1407386**				
		10 m	**1407363**			10 m	**1407387**				
		Variable	**1408712**	Variable	**1408704**	Variable	**1408696**	Variable	**1408689**		
		1 m	**1407364**			1 m	**1407388**				
		2 m	**1407365**			2 m	**1407389**			2 m	**1406247**
		5 m	**1407366**			5 m	**1407390**				
		10 m	**1407367**			10 m	**1407391**				
		Variable	**1408710**	Variable	**1408703**	Variable	**1408695**	Variable	**1408688**		
		1 m	**1407368**			1 m	**1407392**				
		2 m	**1407369**			2 m	**1407393**			2 m	**1406519**
		5 m	**1407370**			5 m	**1407394**				
		10 m	**1407371**			10 m	**1407395**				
		Variable	**1408709**	Variable	**1408702**	Variable	**1408694**	Variable	**1408687**		
1 m	**1408947**	1 m	**1407372**			1 m	**1407396**				
2 m	**1408948**	2 m	**1407373**			2 m	**1407397**			2 m	**1406603**
5 m	**1408946**	5 m	**1407374**			5 m	**1407398**				
10 m	**1408949**	10 m	**1407375**			10 m	**1407399**				
		Variable	**1408707**	Variable	**1408701**	Variable	**1408693**	Variable	**1408686**		
		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	**1408700**	Variable	**1408692**	Variable	**1408684**		
				Variable	**1408699**	Variable	**1408691**	Variable	**1408683**		

		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-plated 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

Assembled cables, Ethernet, 8-pos., shielded



Ethernet

	RJ45 plug, IP20		RJ45 plug, version 6		RJ45 plug, version 14, metal	
						
	R4AC		R4MC		R4RC	
	Ordering data		Ordering data		Ordering data	
	Order No.		Order No.		Order No.	
Open cable end  OE	5 m	1407699	5 m	1407725	5 m	1407783
RJ45 plug, IP20  R4AC	1 m 2 m 5 m 10 m	1408950 1408951 1408952 1408953	5 m	1407932	5 m	1407990
RJ45 plug, version 6  R4MC			1 m 2 m 5 m 10 m	1408955 1408956 1408954 1408958		
RJ45 plug, version 14, metal  R4RC					1 m 2 m 5 m 10 m	1408961 1408962 1408959 1408963
RJ45 plug, version 14, plastic  R4QC						
M12 plug, SPEEDCON  MS SCO						
M12 plug, SPEEDCON  MR SCO						

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
PUR stranded - blue, 4 x 2, CAT5e	94B
PUR suitable for use with drag chain - blue, 4 x 2, CAT5e	94C

Pin M12	Pin RJ45	Wire color	Signal
6	1	WHOG	D1+
4	2	OG	D1–
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.
		1 m	1407404			1 m	1407439				
		2 m	1407405			2 m	1407440				
5 m	1407819	5 m	1407406			5 m	1407441			5 m	1407877
		10 m	1407407			10 m	1407442				
		Variable	1408682	Variable	1408675	Variable	1408665	Variable	1408657		
		1 m	1407414			1 m	1407443				
		2 m	1407415			2 m	1407444				
5 m	1412024	5 m	1407416			5 m	1407445			5 m	1412082
		10 m	1407417			10 m	1407446				
		Variable	1408681	Variable	1408674	Variable	1408664	Variable	1408655		
		1 m	1407422			1 m	1407451				
		2 m	1407423			2 m	1407452				
		5 m	1407424			5 m	1407453			5 m	1412231
		10 m	1407425			10 m	1407454				
		Variable	1408679	Variable	1408671	Variable	1408662	Variable	1408653		
		1 m	1407426			1 m	1407455				
		2 m	1407427			2 m	1407456				
		5 m	1407428			5 m	1407457			5 m	1412503
		10 m	1407429			10 m	1407458				
		Variable	1408678	Variable	1408670	Variable	1408661	Variable	1408652		
1 m	1408965	1 m	1407430			1 m	1407459				
2 m	1408966	2 m	1407431			2 m	1407460				
5 m	1408964	5 m	1407432			5 m	1407461			5 m	1412590
10 m	1408967	10 m	1407433			10 m	1407462				
		Variable	1408677	Variable	1408668	Variable	1408660	Variable	1408651		
		1 m	1407434			1 m	1407463				
		2 m	1407435			2 m	1407464				
		5 m	1407436			5 m	1407465				
		10 m	1407438			10 m	1407466				
		Variable	1408676	Variable	1408667	Variable	1408659	Variable	1408650		
				Variable	1408666	Variable	1408658	Variable	1408649		

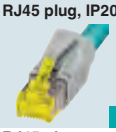
		Technical data	Technical data
		Ethernet [94B]	Ethernet [94C]
Transmission characteristics (category)		CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
Cable structure		4x2xAWG26/7; SF/UTP	4x2xAWG26/19; S-UTP
Conductor cross section		4x 2x 0.14 mm²	4x 2x 0.14 mm²
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

Assembled cables, Ethernet, 8-pos., shielded, CAT6$_A$



CAT6$_A$ 10 Gigabit/s

Ethernet

	RJ45 plug, IP20		M12 plug, SPEEDCON	
			R4AC	MSX SCO
	Ordering data		Ordering data	
	Order No.		Order No.	
Open cable end				
 OE			1 m	1407467
			2 m	1407468
			5 m	1407469
			10 m	1407470
			Variable	1408648
RJ45 plug, IP20				
 R4AC	1 m	1418866	1 m	1407471
	2 m	1408360	2 m	1407472
	5 m	1418879	5 m	1407473
	10 m	1408367	10 m	1407474
			Variable	1408647
RJ45 plug, version 14, metal				
 R4RC			1 m	1407475
			2 m	1407476
			5 m	1407477
			10 m	1407478
			Variable	1408646
RJ45 plug, version 14, plastic				
 R4QC			1 m	1407479
			2 m	1407480
			5 m	1407481
			10 m	1407482
			Variable	1408645
M12 plug, SPEEDCON				
 MSX SCO			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
PUR stranded - blue, 4 x 2, CAT6$_A$	94F

Pin M12	Pin RJ45	Wire color	Signal
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 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		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

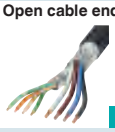
Assembled cables, Ethernet hybrid, 4+4-pos., shielded



Ethernet

SPEEDCON LOCKING

Open cable end



OE

M12 plug, SPEEDCON



MSY SCO

M12 plug, SPEEDCON



MSY SCO

Ordering data

	Order No.
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	

Technical data

		Ethernet hybrid [94H]
Transmission characteristics (category)		CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
Cable structure		1x4xAWG26+1x4xAWG20
Conductor cross section for signal	[mm²]	0.15
Conductor structure for signal		19x 0.10 mm
AWG signal line		26
Conductor cross section for power	[mm²]	0.6
Conductor structure for power		19x 0.20 mm
AWG power supply		20
Cable diameter		7.6 mm
Type of shield		Tin-plated copper braided shield
Conductor material		Bare Cu litz wires
Outer sheath material		PUR
Color of outer sheath		Black RAL 9005
Color, single wire		White/orange-orange, white/green-green, white, blue, brown, black
Ambient temperature		
Fixed installation	[°C]	-40 ... 90
Flexible installation	[°C]	-30 ... 70

Network cables, sold by the meter, PROFINET, shielded



4-wire, star quad

Description	Ordering data		
	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

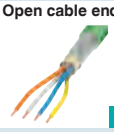
Ordering example for cables with variable cable lengths:

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**

Assembled cables, PROFINET, 4-pos., shielded



	RJ45 plug, IP20	RJ45 plug, IP20	RJ45 plug, version 14, metal
			
	R4AC	R4ACR	R4RC
	Ordering data	Ordering data	Ordering data
	Order No.	Order No.	Order No.
Open cable end  OE			5 m **1416162**
RJ45 plug, IP20  R4AC	1 m **1408968** 2 m **1408969** 5 m **1408970** 10 m **1408971**	1 m **1418248** 2 m **1418277**	5 m **1416138**
RJ45 plug, IP20  R4ACR		1 m **1409002** 2 m **1409003** 5 m **1409004** 10 m **1409005**	
RJ45 plug, version 14, metal  R4RC			1 m **1408974** 2 m **1408975** 5 m **1408972** 10 m **1408976**
RJ45 plug, version 14, plastic  R4QC			
M12 plug, SPEEDCON  MSD SCO			
M12 plug, SPEEDCON  MRD SCO			

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:

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

Cable description	Cable type
PVC stranded - green, 1 x 4, CAT5e	93B
PUR suitable for use with drag chain - green, 1 x 4, CAT5e	93C
PUR for robot applications - green, 1 x 4, CAT5e	93R
RADOX® for railway applications - black, 1 x 4, CAT5e	937
PUR stranded - green, 1 x 4, CAT5e	93M

Pin M12	Pin RJ45	Wire color	Signal
1	1	YE	TD+
3	2	OG	TD–
2	3	WH	RD+
4	6	BU	RD–

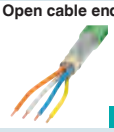
RJ45 plug, version 14, plastic		M12 plug, SPEEDCON		M12 plug, SPEEDCON		M12 socket, SPEEDCON		M12 socket, SPEEDCON		M12 flush-type socket, rear mounting	
											
R4QC		MSD SCO		MRD SCO		FSD SCO		FRD SCO		FSDBP	
Ordering data		**Ordering data**		**Ordering data**		**Ordering data**		**Ordering data**		**Ordering data**	
	Order No.		**Order No.**		**Order No.**		**Order No.**		**Order No.**		**Order No.**
		1 m	**1407495**			1 m	**1407528**			1 m	**1437779**
		2 m	**1407496**			2 m	**1407529**			2 m	**1437782**
5 m	**1416168**	5 m	**1407497**			5 m	**1407530**			5 m	**1437795**
		10 m	**1407498**			10 m	**1407531**				
		Variable	**1408640**	Variable	**1408633**	Variable	**1408623**	Variable	**1408615**		
		1 m	**1407499**			1 m	**1407532**				
		2 m	**1407500**			2 m	**1407533**				
5 m	**1416141**	5 m	**1407501**			5 m	**1407534**				
		10 m	**1407502**			10 m	**1407535**				
		Variable	**1408639**	Variable	**1408632**	Variable	**1408622**	Variable	**1408613**		
		1 m	**1407508**			1 m	**1407536**				
		2 m	**1407509**			2 m	**1407537**				
		5 m	**1407510**			5 m	**1407538**				
		10 m	**1407511**			10 m	**1407539**				
		Variable	**1408638**	Variable	**1408631**	Variable	**1408621**	Variable	**1408612**		
		1 m	**1407516**			1 m	**1407544**				
		2 m	**1407517**			2 m	**1407545**				
		5 m	**1407518**			5 m	**1407546**				
		10 m	**1407519**			10 m	**1407547**				
		Variable	**1408636**	Variable	**1408628**	Variable	**1408619**	Variable	**1408610**		
1 m	**1408978**	1 m	**1407520**			1 m	**1407548**				
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	**1408626**	Variable	**1408618**	Variable	**1408609**		
		1 m	**1407524**			1 m	**1407553**				
		2 m	**1407525**			2 m	**1407554**				
		5 m	**1407526**			5 m	**1407555**				
		10 m	**1407527**			10 m	**1407556**				
		Variable	**1408634**	Variable	**1408625**	Variable	**1408617**	Variable	**1408608**		
				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		1x4xAWG22/7; SF/TQ	1x4xAWG22/7; SF/TQ	1x4xAWG22/19; S/TQ	1x4xAWG22/7; SF/TQ
Conductor cross section		4x 0.34 mm²	4x 0.34 mm²	4x 0.38 mm²	4x 0.34 mm²
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® GKW 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

Assembled cables, EtherCAT, 4-pos., shielded



EtherCAT Technology Group

	RJ45 plug, IP20	RJ45 plug, IP20	M12 plug, SPEEDCON
			
	R4AC	R4ACR	MSD SCO
	Ordering data	Ordering data	Ordering data
	Order No.	Order No.	Order No.
Open cable end  OE			1 m **1407557** 2 m **1407558** 5 m **1407559** 10 m **1407560** Variable **1408600**
RJ45 plug, IP20  R4AC	1 m **1408981** 2 m **1408982** 5 m **1408983** 10 m **1408984**	1 m **1402505** 2 m **1402508**	1 m **1407561** 2 m **1407562** 5 m **1407563** 10 m **1407564** Variable **1408599**
RJ45 plug, IP20  R4ACR		1 m **1409006** 2 m **1409007** 5 m **1409014** 10 m **1409015**	1 m **1407565** 2 m **1407566** 5 m **1407567** 10 m **1407568** Variable **1408598**
M12 plug, SPEEDCON  MSD SCO			1 m **1407569** 2 m **1407570** 5 m **1407571** 10 m **1407572** Variable **1408597**
M12 plug, SPEEDCON  MRD SCO			
RJ45 socket, Freenet  F4AC	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.

Cable description	Cable type
PVC stranded - green, 1 x 4, CAT5e	93G
PUR suitable for use with drag chain - green, 1 x 4, CAT5e	93H

Pin M12	Pin RJ45	Wire color		Signal
1	1	YE		TD+
3	2	OG		TD–
2	3	WH		RD+
4	6	BU		RD–

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

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 mm²	4x 0.34 mm²
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	[°C]	-40 ... 70	-40 ... 70
Flexible installation	[°C]	-40 ... 70	-40 ... 70

Ethernet RJ45, patch cables



Ethernet

	RJ45 plug, IP20, straight		RJ45 plug, IP20, angled	
				
	Ordering data		Ordering data	
		Order No.		Order No.
RJ45 plug, IP20, straight 	0.3 m	**1417993**	0.3 m	**1418002**
	0.5 m	**1418028**	0.5 m	**1418031**
	1 m	**1418057**	1 m	**1418070**
	2 m	**1418109**	2 m	**1418125**
	5 m	**1418141**	5 m	**1418154**
RJ45 plug, IP20, angled 			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 366

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

*) RJ45 assignment according to TIA568B

		Technical data
		Ethernet cable
Transmission characteristics (category)		$CAT6_A$
Cable structure		4x2xAWG26/7; S/FTP
Conductor cross section		4x 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		Tin-plated 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/blue-blue, white/orange-orange, white/green-green, white/brown-brown
Ambient temperature		
Fixed installation	[°C]	-40 ... 70
Flexible installation	[°C]	-10 ... 50

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 mm²	0.14 mm²
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	Length of cable	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

Accessories



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







Ethernet M12 switch

The **FL SWITCH 1605** was developed for use in harsh environments. Thanks to its degree of protection and compact design, it is ideal for use directly in the machine.

Ethernet



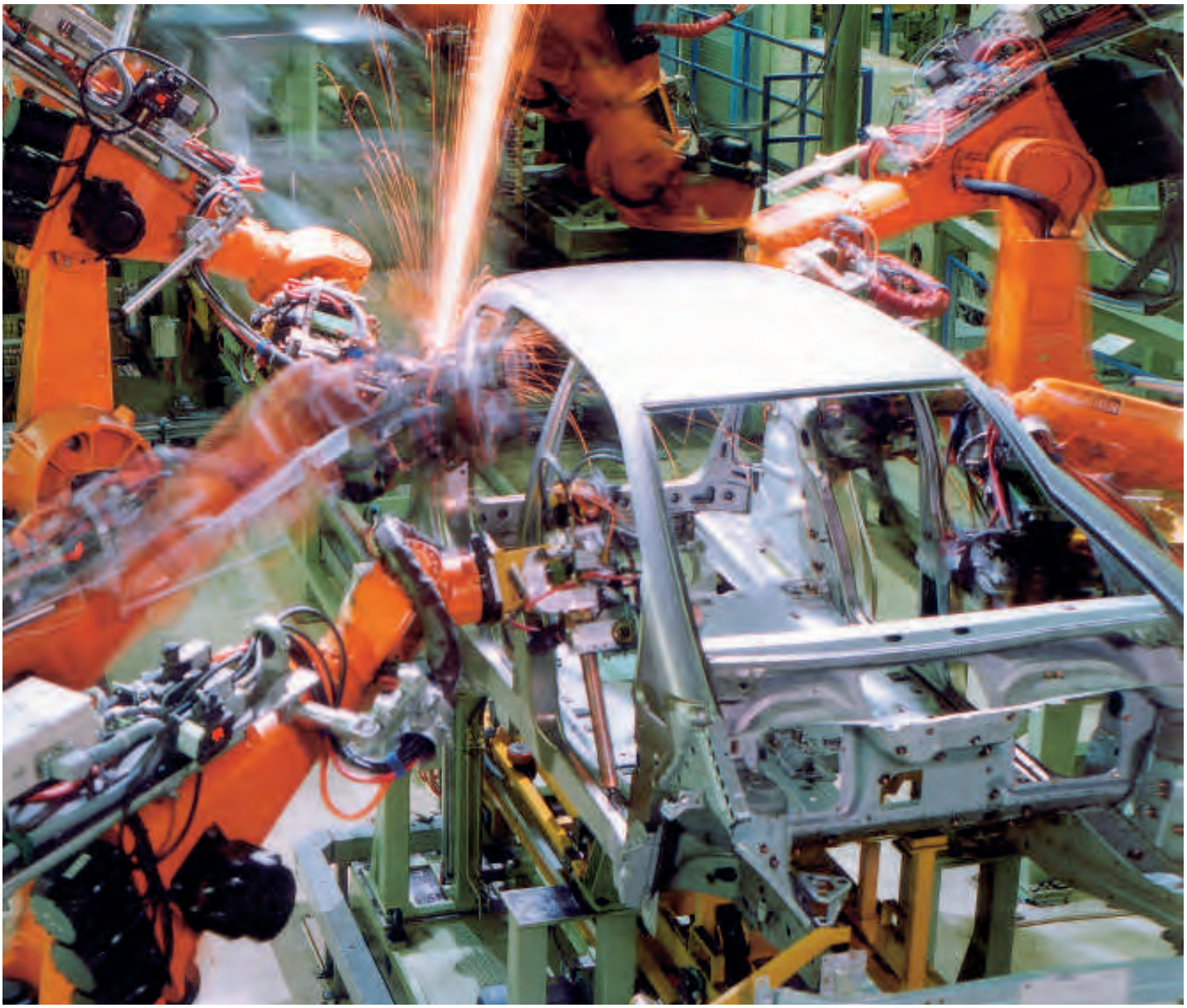
Standard switch, IP67 protection

Technical data

Ethernet interface	
Number of ports	5 (M12 socket)
Transmission speed	10/100 Mbps
Connection method	M12
Function	
Basic functions	Unmanaged switch / autonegotiation, complies with IEEE 802.3, store and forward switching mode
Status and diagnostic indicators	LEDs: U_S (voltage supply), link and activity per port
Network expansion parameters	
Cascading depth	Network, linear, and star structure: any
Maximum conductor length (twisted pair)	100 m
Power supply	
Supply voltage	24 V DC (M12 plug-in connector)
Residual ripple	3.6 V_{PP}
Supply voltage range	18 V DC ... 32 V DC
Typical current consumption	40 mA (24 V DC)
General data	
Weight	220 g
Width	30 mm
Height	200 mm
Depth	41 mm
Degree of protection	IP65/IP66/IP67
Ambient temperature (operation)	-40 °C ... 70 °C
Permissible humidity (operation)	10% ... 95%

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Ethernet switch - 5 Ethernet ports in M12 format	**FL SWITCH 1605 M12**	**2700200**	1





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 cascadable individual components that are coordinated with one another for flexible connection of the hose packs.



Particularly in the field of welding robots or conveyer 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 systems



Push/pull robot interface, with RJ45 and power inserts



Push/pull robot interface, with RJ45 inserts

	Technical data	Technical data
	VS-MP-PPC/CG-PO/10G	VS-MP-PPC/CG-10G
Electrical data		
Transmission characteristics (category)	$CAT6_A$	$CAT6_A$
Material data		
Housing material	Aluminum alloy	Aluminum alloy
Connection data		
Connection method	-	-
Connection cross section AWG	-	-
Cable cross section	5 mm ... 8 mm (Data cable gland)	5 mm ... 8 mm (Data cable gland)
Insertion/withdrawal cycles	> 1000 (Data)	> 1000 (Data)
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.
Multi-port connection, for passive PROFINET cabling to robots, including mounting foot, for **cable diameter**:						
5 mm ... 8 mm	**VS-MP-PPC/CG-PO/10G**	**1403682**	1	**VS-MP-PPC/CG-10G**	**1403678**	1
7 mm ... 10.5 mm	**VS-MP-PPC/CG-XL-PO/10G**	**1403688**	1	**VS-MP-PPC/CG-XL-10G**	**1403686**	1
Multi-port power connection: push/pull power, for passive PROFINET cabling to robots, including mounting foot	**VS-MP-PPC/CG-PO**	**1403681**	1			
Multi-port power coupling: for passive PROFINET cabling to robots, including mounting foot	**VS-MP-PPC/PPC-PO**	**1403684**	1			
Multi-port data coupling: for passive PROFINET cabling to robots, including mounting foot Metal housing				**VS-MP-PPC/PPC-1G**	**1403685**	1

	Accessories			Accessories		
Protective cover						
For data port	**VS-PPC-C1-PC-ROBK-L**	**1405293**	1	**VS-PPC-C1-PC-ROBK-L**	**1405293**	1
For power port	**VS-PPC-C2-PC-ROBK-L**	**1405303**	1	**VS-PPC-C2-PC-ROBK-L**	**1405303**	1
Stripping tool, for multiple-stage repositioning of shielded conductors	**VS-CABLE-STRIP-VARIO**	**1657407**	1	**VS-CABLE-STRIP-VARIO**	**1657407**	1

RJ45 terminal outlets, IP65/IP67

Ethernet

PROFINET

sercos the automation bus



Terminal outlet with RJ45 slots

Ethernet

PROFINET

sercos the automation bus



Terminal outlet with M12 slots

	Technical data	Technical data
	VS-TO-RO-MCBK-F141...	VS-TO-RO-MCBK-F142...
Electrical data		
Transmission characteristics (category)	CAT6	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)
Material data		
Housing material	Aluminum cast alloy, powder-coated	Aluminum cast alloy, powder-coated
Mechanical data		
Color	black	black
Degree of protection	IP65/67	IP65/67

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Terminal outlet, IP65/IP67, 2 slots, version 14, with protective plugs, 2 cable entries Push/pull with 2 x RJ45	**VS-TO-RO-MCBK-F1411/1411**	**1404281**	1			
Terminal outlet, RJ45, IP65/67, 2 slots, version 6, with protective plugs, 2 cable entries 2 x RJ45	**VS-TO-RO-MCBK-F1418/1418**	**1404278**	1			
Terminal outlet, IP65/IP67, 2 slots, version 14, with protective plugs, 2 cable entries Push/pull with 1 x power and 1 x RJ45	**VS-TO-RO-MCBK-F1411/1413**	**1404333**	1			
Terminal outlet, M12, IP65/67, 2 slots, with protective plugs, 2 cable entries						
M12 with 2 x sockets, 8-pos., A-coded				**VS-TO-RO-MCBK-F1422/1422**	**1404304**	1
M12 with 2 x socket, 4-pos., D-coded				**VS-TO-RO-MCBK-F1421/1421**	**1404294**	1

RJ45 couplings, IP65/IP67

Ethernet



RJ45 coupling, version 6, with protective cover



RJ45 push/pull coupling, version 14, with protective cover

	Technical data	Technical data
	VS-08-KU-IP67	VS-PPC-J-1-RJ45-MNBK
Electrical data		
Rated voltage	50 V	-
Rated current	1 A	-
Transmission characteristics (category)	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)	CAT5
Material data		
Housing material	PBT	Aluminum alloy
Contact material	Copper alloy	-
Inflammability class according to UL 94	V0	-
Mechanical data		
No. of pos.	8	-
Degree of protection	IP67	IP65
Temperature data		
Ambient temperature (operation)	-10 °C ... 60 °C	-

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
RJ45 coupling, IP67, CAT5e, with protective cover						
Military gray RAL 7042	**VS-08-KU-IP67**	**1689268**	1			
Deep black RAL 9005	**VS-08-KU-IP67-BK**	**1658684**	1			
Multi-port data coupling: for passive PROFINET cabling to robots, including mounting foot Metal housing				**VS-MP-PPC/PPC-1G**	**1403685**	1

RJ45 patch panel, IP20

Ethernet

PROFINET



Patch panel, 1 port, with various connection types

Ethernet

PROFINET



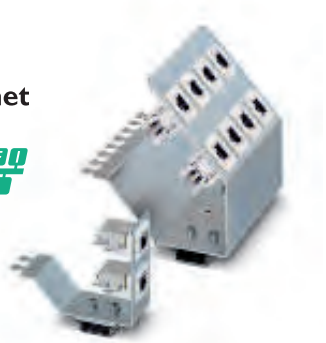
Patch panel with IDC fast connection

	Technical data	Technical data
	FL-PP-RJ45-...	VS-PP-F-RJ45-CAT6
Electrical data		
Rated voltage	-	50 V
Rated current	-	1 A
Transmission characteristics (category)	-	CAT6
Material data		
Housing material	PVC/PA	PC-GF
Contact material	-	Copper alloy
Inflammability class according to UL 94	-	V0
Mechanical data		
No. of pos.	-	8
Color	green	gray
Degree of protection	IP20	IP20
Connection method	-	IDC fast connection
Conductor cross section	-	0.2 mm² ... 0.32 mm²
Connection cross section AWG	-	24 ... 22
Temperature data		
Ambient temperature (operation)	-25 °C ... 70 °C	-10 °C ... 60 °C

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
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	**FL-PP-RJ45-LSA**	**2901645**	1			
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	**FL-PP-RJ45-SC**	**2901643**	1			
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	**FL-PP-RJ45/RJ45**	**2901646**	1			
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	**FL-PP-RJ45-SCC**	**2901642**	1			
RJ45 patch panel, DIN rail mounting, IP20, CAT6 for 1 Gbps				**VS-PP-F-RJ45-CAT6**	**1658118**	1

Patch fields

Ethernet



Patch fields with Freenet RJ45 sockets

Technical data

	FL PF 2TX CAT5E	FL PF 8TX CAT5E
Ethernet interface		
Interface	Ethernet (RJ45)	
Number of ports	2	8
Weight	125 g	260 g
Width	38 mm	124 mm
Height	112 mm	135 mm
Depth	88 mm	140 mm
Degree of protection	IP20	
Ambient temperature (operation)	0 °C ... 55 °C (no condensation)	
Housing material	Metal	

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Patch field, 2 RJ45 network connections			
- CAT5e	**FL PF 2TX CAT5E**	**2891165**	1
- CAT6	**FL PF 2TX CAT 6**	**2891068**	1
Patch field, 8 RJ45 network connections			
- CAT5e	**FL PF 8TX CAT5E**	**2891178**	1
- CAT6	**FL PF 8TX CAT 6**	**2891071**	1

RJ45 patch panel and terminal outlet, IP20



RJ45 patch panel for 19" rack and matching socket inserts



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

Technical data

	VS-PP-19-1HE-16-F	VS-08-BU-RJ45-5-F/PK
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	PC-GF	-
Contact material	-	Copper alloy
Inflammability class according to UL 94	V0	V0
Mechanical data		
No. of pos.	-	8
Color	gray	-
Degree of protection	IP20	IP20
Connection method	-	IDC
Conductor cross section	-	0.2 mm² ... 0.32 mm² (solid)
Connection cross section AWG	-	24 ... 22 (solid)
Temperature data		
Ambient temperature (operation)	5 °C ... 55 °C	-20 °C ... 70 °C

Technical data

	VS-TO-OW-2-F-9010	VS-08-BU-RJ45-6-F/PK
Electrical data		
Rated voltage	-	50 V
Rated current	-	1 A
Transmission characteristics (category)	-	CAT6
Material data		
Housing material	PC+ABS	-
Contact material	-	Copper alloy
Inflammability class according to UL 94	HB	V0
Mechanical data		
No. of pos.	-	8
Color	Pure white RAL 9010	-
Degree of protection	IP20	IP20
Connection method	-	IDC
Conductor cross section	-	0.14 mm² ... 0.35 mm²
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.
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/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

Ordering data

Type	Order No.	Pcs. / Pkt.
VS-TO-IW-2-F-9010	**1653016**	1
VS-TO-OW-2-F-9010	**1653003**	1
VS-08-BU-RJ45-5-F/PK	**1652936**	1
VS-08-BU-RJ45/10G-F	**1424009**	1

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

	Technical data	Technical data	
	VS-PPC-C2-MSTB-MNNA...	VS-MSTBA...-BK-A	VS-PPC-F2-MSTB-MNNA...
Electrical data			
Rated current	16 A	16 A	-
Material data			
Housing material	Zinc die-cast	-	Zinc die-cast
Inflammability class according to UL 94	V0	V0	V0
Conductor cross section	0.75 mm² ... 2.5 mm²	-	-
Connection cross section AWG	18 ... 13	-	-
Insertion/withdrawal cycles	≤ 100	≥ 100	≥ 500
Temperature data			
Ambient temperature (operation)	-40 °C ... 70 °C	-40 °C ... 70 °C	-40 °C ... 80 °C

Description	Ordering data Type	Order No.	Pcs. / Pkt.	Ordering data Type	Order No.	Pcs. / Pkt.
MSTB plug-in connector, IP67, with a push/pull interlocking, 5-pos., with a spring-cage connection, for cable diameter 9.0 mm … 13.0 mm						
Metal housing, 24 V	**VS-PPC-C2-MSTB-MNNA-P13-A5-SP**	**1608074**	1			
Plastic housing, 24 V	**VS-PPC-C2-MSTB-POBK-P13-A5-SP**	**1657892**	1			
Plastic housing, 400 V	**VS-PPC-C2-MSTB-POBK-P13-B5-SP**	**1608236**	1			
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				**VS-MSTBAH 2,5/ 5-GB-5,08-BK-A**	**1657915**	50
Straight solder pins				**VS-MSTBVA 2,5/ 5-GB-5,08-BK-A**	**1609565**	50
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				**VS-MSTBAH 2,5/ 5-GB-5,08-RD-B**	**1609549**	50
Straight solder pins				**VS-MSTBVA 2,5/ 5-GB-5,08-RD-B**	**1609581**	50
MSTB panel mounting frame, IP67, for push/pull interlocking, for PCB connection, for rectangular mounting cutout, with seal, without mounting screws						
Metal housing				**VS-PPC-F2-MSTB-MNNA-1R-P**	**1608087**	1
Plastic housing				**VS-PPC-F2-MSTB-POBK-1R-P**	**1608281**	1
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				**VS-PPC-F2-MSTB-POBK-1R-SPSA5**	**1608294**	1
400 V, plastic				**VS-PPC-F2-MSTB-POBK-1R-SPSB5**	**1608304**	1
24 V, metal				**VS-PPC-F2-MSTB-MNNA-1R-SPSA5**	**1608249**	1
400 V, metal				**VS-PPC-F2-MSTB-MNNA-1R-SPSB5**	**1608252**	1
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				**VS-PPC-F2-MSTB-MNNA-1C-SPSA5**	**1405248**	1
400 V				**VS-PPC-F2-MSTB-MNNA-1C-SPSB5**	**1405167**	1
Protective cover, IP67, to cover the contact insert in the push/pull panel mounting frame for power						
Metal housing				**VS-PPC-C2-PC67-MNNA**	**1404045**	1
Protective cover for push/pull panel mounting frame				**VS-PPC-C2-PC-ROBK**	**1405125**	1
Protective cover						
For power port				**VS-PPC-C2-PC-ROBK-L**	**1405303**	1
Protective cap, IP65, with push/pull interlocking for covering the contact insert in the push-pull connector for power, plastic				**VS-PPC-F2-PC-POBK**	**1405329**	1

POWER distributor, IP67



Push/pull Y-distributor



Power H-distributor

	Technical data	Technical data
	VS-PPC-J-1220-1227-1020-0,2	VS-PPC-J-4X-1227
Electrical data		
Rated voltage	24 V	24 V
Rated current	16 A	16 A
Material data		
Housing material	Aluminum, die-cast	Zinc die-cast
Mechanical data		
No. of pos.	5	5
Degree of protection	IP65/67	IP65/67
Temperature data		
Ambient temperature (operation)	-40 °C ... 70 °C (cable, fixed installation)	-40 °C ... 70 °C

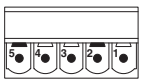
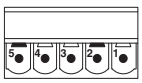
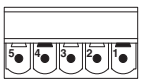
	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
PROFINET Y-distributor with assembled power cable, 5-pos., IP65/IP67, **MSTB connector** with metal housing to 2 x sockets in metal housing, conductor length:						
0.2 m	**VS-PPC-J-1220-1227-1020-0,2**	**1404799**	1			
Variable	**VS-PPC-J-1220-1227-1020-...**	**1405484**	1			
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	**VS-PPC-J-1226-1227-1021-0,2**	**1404812**	1			
Variable	**VS-PPC-J-1226-1227-1021-...**	**1405497**	1			
Power H-distributor, 4 x MSTB contact inserts, metal housing, without mounting screws				**VS-PPC-J-4X-1227**	**1405387**	1
	Accessories			**Accessories**		
Mounting foot for power distributors, plastic	**VS-PPC-J-M**	**1405390**	1	**VS-PPC-J-M**	**1405390**	1

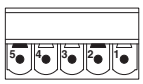
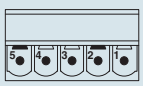
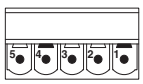
Ordering example for products with variable cable:

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

Assembled POWER cables 2.5 mm²

	Power, metal, 24 V	Power, plastic, 24 V	Power, plastic, 400 V
			
			

	Ordering data		Ordering data		Ordering data	Ordering data		Ordering data	
Power, metal, 24 V		**Order No.**		**Order No.**			**Order No.**		**Order No.**
		1 m	**1609170**						
		2 m	**1609183**						
		5 m	**1609196**						
		Variable	**1609206**						
Power, plastic, 24 V									
				1 m	**1609251**				
				2 m	**1609264**				
				5 m	**1609277**				
				Variable	**1609280**				
Power, plastic, 400 V									
							1 m	**1609374**	
							2 m	**1609387**	
							5 m	**1609390**	
							Variable	**1609400**	

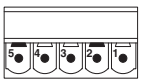
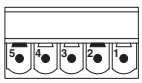
Ordering example for cable with variable cable length:

Assembled PROFINET power cable for 24 V, with two push/pull plug-in connectors in metal design and a cable length of 34.5 m.

Order No.		Length [m] Max. 100 m
1609206	/	**34.5**
1609280 **1609400**		**Increments:** 1.0 m ... 3.0 m = 0.1 m > 3.0 m = 0.5 m

		Technical data	Technical data	Technical data
Technical data		**Power, metal, 24 V**	**Power, plastic, 24 V**	**Power, plastic, 400 V**
Housing material		Zinc die-cast	PA-GF	PA-GF
Outer sheath, material		PVC	PVC	PVC
Conductor cross section	[mm²]	2.5	2.5	2.5
External cable diameter	[mm]	11.8	11.8	11.8
Degree of protection		IP65/67	IP65/67	IP65/67
Ambient temperature				
Fixed installation	[°C]	-40 ... 70	-40 ... 70	-40 ... 70
Flexible installation	[°C]	-5 ... 70	-5 ... 70	-5 ... 70
Plug / socket	[°C]	-40 ... 70	-40 ... 70	-40 ... 70

Assembled POWER cables 1.5 mm²

	Power, metal, 24 V	Power, plastic, 24 V
		
		

		Ordering data		Ordering data		Ordering data
Power, 7/8"			**Order No.**		**Order No.**	**Order No.**
		1 m	**1609219**	1 m	**1609293**	
		2 m	**1609222**	2 m	**1609303**	
		5 m	**1609235**	5 m	**1609316**	
		Variable	**1609248**	Variable	**1609329**	

Ordering example for cable with variable cable length:

Assembled PROFINET power cable for 24 V, with one push/pull plug-in connector in metal design and a 7/8" plug and a cable length of 34.5 m.

Order No.		Length [m] Max. 100 m
1609248	/	**34.5**
1609329		**Increments:** 1.0 ... 3.0 m = 0.1 m > 3.0 m = 0.5 m

		Technical data	Technical data
Technical data		**Power, plastic, 24 V**	**Power, metal, 24 V**
Housing material		Zinc die-cast/PBT	PA-GF/PBT
Outer sheath, material		PVC	PVC
Conductor cross section	[mm²]	1.5	1.5
External cable diameter	[mm]	10	10
Degree of protection		IP65/67	IP65/67
Ambient temperature			
Fixed installation	[°C]	-40 ... 70	-40 ... 70
Flexible installation	[°C]	-5 ... 70	-5 ... 70
Plug / socket	[°C]	-40 ... 70	-40 ... 70

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

	VS-SCRJ-...-IP20	VS-SCRJ-...-IP67
Material data		
Housing material	PBT	PA
Ferrule material	Copper alloy	Copper alloy
Inflammability class according to UL 94	V0	V0
Color	black	gray
Degree of protection	IP20	IP67
Insertion/withdrawal cycles	≥ 1000	≥ 1000
Temperature data		
Ambient temperature (operation)	-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

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
SCRJ fiber optic plug-in connector, duplex, with fast connection			
IP20	**VS-SCRJ-POF-FA-IP20**	**1654879**	1
IP67	**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			
- 1 x SCRJ/SCRJ (duplex)			
VS-SCRJ panel mounting frame, for use with an AVAGO transceiver, type: AFBR5978Z			
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-BU/BU	**1652978**	1
VS-SCRJ-A-TC-IP67	**1658545**	1
VS-A-F-IP67	**1653744**	5
VS-A-F-IP67-BK	**1658668**	5

Accessories

Description	Type	Order No.	Pcs. / Pkt.
Protective cover for version 6 panel mounting frame			
Military gray RAL 7042			
Deep black RAL 9005			
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

Accessories

Type	Order No.	Pcs. / Pkt.
VS-08-SD-F	**1652606**	5
VS-08-SD-F-BK	**1658066**	5

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

Ethernet

PROFINET



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

Ethernet

PROFINET



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

	Technical data		Technical data	
	Metal housing	Plastic housing	Metal housing	Plastic housing
Material data				
Housing material	Zinc die-cast	PA-GF	Zinc die-cast	PA-GF
Ferrule material	Copper alloy	Copper alloy	-	-
Inflammability class according to UL 94	V0	V0	V0	V0
Color	silver	black	silver	black
Degree of protection	IP65/67	IP65/67	IP65/67	IP65/67
Insertion/withdrawal cycles	≥ 500	≥ 500	≥ 500	≥ 500
Temperature data				
Ambient temperature (operation)	-40 °C ... 70 °C	-20 °C ... 70 °C	-40 °C ... 80 °C	-40 °C ... 80 °C

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
SCRJ fiber optic plug-in connector, IP67, with push/pull interlocking, duplex, with fast connection technology						
Metal housing	**VS-PPC-C1-SCRJ-MNNA-PG9-A4D-C**	**1608032**	1			
Plastic housing	**VS-PPC-C1-SCRJ-POBK-PG9-A4D-C**	**1657850**	1			
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				**VS-PPC-F1-SCRJ-MNNA-1RP**	**1608061**	1
Plastic housing				**VS-PPC-F1-SCRJ-POBK-1RP**	**1657889**	1
SCRJ panel mounting frame, IP67, for push/pull interlocking, with Freenet system, for rectangular mounting cutout, with seal, without mounting screws						
Metal housing				**VS-PPC-F1-SCRJ-MNNA-1RF**	**1405374**	1
Plastic housing				**VS-PPC-F1-SCRJ-POBK-1RF**	**1608210**	1
SCRJ panel mounting frame, IP67, for push/pull interlocking, metal, with Freenet system, for round mounting cutout, with seal						
				VS-PPC-F1-SCRJ-MNNA-1C-F	**1405235**	1

	Accessories			Accessories		
Protective cover						
For data port				**VS-PPC-C1-PC-ROBK-L**	**1405293**	1
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			
SCRJ polishing tool set, for polymer fiber, for field assembly of SCRJ/IP20 and SCRJ/IP67 plug-in connectors with fast connection system	**VS-SCRJ-POF-KONFTOOL-POLISH**	**1658820**	1			
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			

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

	Technical data	Technical data
	VS-V1-C-...-A4A-G	VS-V1-F-...-C-S-A1
Material data		
Housing material	Zinc die-cast	Zinc die-cast
Color	silver	-
Degree of protection	IP67	IP67
Insertion/withdrawal cycles	500	500
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.
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	**VS-V1-C-SCRJ-MNNA-PG9-A4A-G**	**1419189**	1			
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				**VS-V1-F-SCRJ-MNNA-PG9-C-S-A1**	**1420197**	1
	Accessories			**Accessories**		
Protective cover, IP67, plastic, for covering the contact insert in the RJ45, LC, and SCRJ connector	**VS-V1-C-PC-POBK**	**1419183**	1			
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

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

	VS-SCRJ-...-IP20	VS-SCRJ-...-IP67
Material data		
Housing material	PBT	PA
Ferrule material	Copper alloy	Copper alloy
Inflammability class according to UL 94	V0	V0
Color	black	gray
Degree of protection	IP20	IP67
Insertion/withdrawal cycles	≥ 1000	≥ 1000
Temperature data		
Ambient temperature (operation)	-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

Ordering data

Description	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	**VS-SCRJ-HCS-FA-IP20**	**1654866**	1
Connector set for HCS fibers (diameter of the individual elements: 2.9 mm), for self-assembly, with bend protection			
- F-SMA set, 4 connectors	**PSM-SET-FSMA/4-HCS**	**2799487**	1
- B-FOC (ST®) set, 4 connectors	**PSM-SET-B-FOC/4-HCS**	**2708481**	1
- SCRJ set, 2 duplex connectors	**PSM-SET-SCRJ-DUP/2-HCS**	**2313070**	1
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-IP67	**1657012**	1
SCRJ socket insert, duplex, for panel mounting frame VARIOSUB IP67, can be used for glass, multi-mode, HCS and polymer			
- 1 x SCRJ/SCRJ (duplex)			
VS-SCRJ panel mounting frame, for use with an AVAGO transceiver, type: AFBR5978Z			
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-BU/BU	**1652978**	1
VS-SCRJ-A-TC-IP67	**1658545**	1
VS-A-F-IP67	**1653744**	5
VS-A-F-IP67-BK	**1658668**	5

Accessories

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	**VS-SCRJ-PC**	**1653757**	5
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	**PSM-HCS-KONFTOOL/SC-RJ**	**2708876**	1

Accessories

VS-08-SD-F	**1652606**	5
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

PROFINET



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

Ethernet

PROFINET



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

Technical data

	Metal housing	Plastic housing
Material data		
Housing material	Zinc die-cast	PA-GF
Ferrule material	Copper alloy	Copper alloy
Inflammability class according to UL 94	V0	V0
Color	silver	black
Degree of protection	IP65/67	IP65/67
Insertion/withdrawal cycles	≥ 500	≥ 500
Temperature data		
Ambient temperature (operation)	-40 °C ... 70 °C	-20 °C ... 70 °C

Technical data

	Metal housing	Plastic housing
Material data		
Housing material	Zinc die-cast	PA-GF
Ferrule material	-	-
Inflammability class according to UL 94	V0	V0
Color	silver	black
Degree of protection	IP65/67	IP65/67
Insertion/withdrawal cycles	≥ 500	≥ 500
Temperature data		
Ambient temperature (operation)	-40 °C ... 80 °C	-40 °C ... 80 °C

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
SCRJ fiber optic plug-in connector, IP67, with push/pull interlocking, duplex, with fast connection technology			
Metal housing	**VS-PPC-C1-SCRJ-MNNA-PG9-A3C-C**	**1608045**	1
Plastic housing	**VS-PPC-C1-SCRJ-POBK-PG9-A3C-C**	**1657863**	1
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	**VS-SCRJ-HCS-FA-IP20-PN**	**1404087**	1
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	**PSM-SET-SC-DUPLEX/2-HCS/PN**	**2313779**	1
- B-FOC (ST®) set, 4 connectors	**PSM-SET-B-FOC/4-HCS/PN**	**2313782**	1
- SCRJ set, 2 duplex connectors	**PSM-SET-SCRJ-DUP/2-HCS/PN**	**2313546**	1
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 housing			
SCRJ panel mounting frame, IP67, for push/pull interlocking, with Freenet system, for rectangular mounting cutout, with seal, without mounting screws			
Metal housing			
Plastic housing			
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-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

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

Accessories

Type	Order No.	Pcs. / Pkt.
VS-PPC-C1-PC-ROBK-L	**1405293**	1

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

	Technical data		Technical data
	VS-SCRJ-...-IP20	VS-SCRJ-...-IP67	VS-SCRJ-GOF-BU/BU
Material data			
Housing material	PBT	PA	PBT
Ferrule material	Zirconia ceramics	Zirconia ceramics	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

Description	Ordering data Type	Order No.	Pcs. / Pkt.	Ordering data Type	Order No.	Pcs. / Pkt.
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	**VS-SCRJ-GOF-FA-IP20**	**1657070**	1			
IP67	**VS-SCRJ-GOF-FA-IP67**	**1657083**	1			
SC duplex fiber optic plug-in connector, IP20, with fast connection technology	**VS-SCDU-GOF-FA-IP20**	**1658529**	1			
SCRJ socket insert, duplex, for panel mounting frame VARIOSUB IP67, can be used for glass, multi-mode, HCS and polymer						
- 1 x SCRJ/SCRJ (duplex)				**VS-SCRJ-GOF-BU/BU**	**1652978**	1
VS-SCRJ panel mounting frame, for use with an AVAGO transceiver, type: AFBR5978Z				**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**		
Assembly tool set for fiberglass, for field assembly of SCRJ and SC duplex plug-in connectors, with fast connection technology						
EU version	**VS-GOF-FA-KONFTOOL-EU**	**1658228**	1			
US version	**VS-GOF-FA-KONFTOOL-US**	**1658231**	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
Protective cover SCRJ/IP67, for covering the SCRJ pin insert on the SCRJ/IP67 sleeve housing	**VS-SCRJ-PC**	**1653757**	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

	Technical data	Technical data
	VS-V1-C-SCRJ-MNNA-PG9...	VS-V1-F-SCRJ-MNNA-PG9-C-S...
Material data		
Housing material	Zinc die-cast	Zinc die-cast
Inflammability class according to UL 94	V0	V0
Color	silver	-
Degree of protection	IP67	IP67
Insertion/withdrawal cycles	500	500
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.
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	**VS-V1-C-SCRJ-MNNA-PG9-A1-G**	**1419187**	1			
For single mode fiber	**VS-V1-C-SCRJ-MNNA-PG9-B1-G**	**1419188**	1			
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	**VS-V1-C-LC-MNNA-PG9-A1-G**	**1419190**	1			
For single mode fiber	**VS-V1-C-LC-MNNA-PG9-B1-G**	**1419191**	1			
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				**VS-V1-F-SCRJ-MNNA-PG9-C-S-A1**	**1420197**	1
Single mode				**VS-V1-F-SCRJ-MNNA-PG9-C-S-B1**	**1420207**	1
LC panel mounting frame, IP67, for bayonet locking, metal, for round mounting cutout, with seal, without mounting screws, **with coupling for:**						
Multi-mode				**VS-V1-F-LC-MNNA-PG9-C-S-A1**	**1420210**	1
Single mode				**VS-V1-F-LC-MNNA-PG9-C-S-B1**	**1420223**	1
	Accessories			**Accessories**		
Protective cover, IP67, plastic, for covering the contact insert in the RJ45, LC, and SCRJ connector	**VS-V1-C-PC-POBK**	**1419183**	1			
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

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

Description	Ordering data			Ordering data		
	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
SCRJ patch panel, DIN rail mounting, IP20, 1 slot	VS-PP-F-SCRJ	1658121	1			
Patch panel, 19" mounting, IP20, 16 slots for Freenet contact inserts				VS-PP-19-1HE-16-F	1652994	1

Fiber optic terminal outlet



IP20 outlet boxes



IP65/IP67 terminal outlet, with SCRJ and power slots

Description	Ordering data			Ordering data		
	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Terminal outlet, IP20, with slots for Freenet contact inserts						
Surface-mounted socket, two slots	VS-TO-OW-2-F-9010	1653003	1			
Flush-type socket, two slots	VS-TO-IW-2-F-9010	1653016	1			
Surface-mounted socket, six slots	VS-TO-0W-6-F-9010	1653029	1			
Terminal outlet, SCRJ/power, IP65/67, push/pull, 2 slots version 14, with protective plugs, 2 cable entries				VS-TO-RO-MCBK-F1417/1413	1404346	1
Terminal outlet, SCRJ, IP65/67, push/pull, 2 slots version 14, with protective plugs, 2 cable entries				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

Technical data

	VS-MP-PPC/CG-PO/FO	VS-MP-PPC/CG-PO
Material data		
Housing material	Aluminum alloy	Aluminum alloy
Connection data		
Connection profile	Data/power: SCRJ/5-pos.	Power: 5-pos.
Insertion/withdrawal cycles	≥ 500 (Data) // ≤ 100 (Power)	≤ 100 (Power)
Temperature data		
Ambient temperature (operation)	-40 °C ... 70 °C	-40 °C ... 70 °C

Technical data

	VS-MP-PPC/CG-FO
Material data	
Housing material	Aluminum alloy
Connection data	
Connection profile	Data: SCRJ
Insertion/withdrawal cycles	≥ 500 (Data)
Temperature data	
Ambient temperature (operation)	-40 °C ... 70 °C

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Multi-port connection, for passive PROFINET cabling to robots, including mounting foot, for **cable diameter**:			
5 mm ... 8 mm	**VS-MP-PPC/CG-PO/FO**	**1404321**	1
7 mm ... 10.5 mm	**VS-MP-PPC/CG-XL-PO/FO**	**1404325**	1
Multi-port power connection: push/pull power, for passive PROFINET cabling to robots, including mounting foot	**VS-MP-PPC/CG-PO**	**1403681**	1
Multi-port power coupling: for passive PROFINET cabling to robots, including mounting foot	**VS-MP-PPC/PPC-PO**	**1403684**	1

Ordering data

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

Accessories

Protective cover			
For data port	**VS-PPC-C1-PC-ROBK-L**	**1405293**	1
For power port	**VS-PPC-C2-PC-ROBK-L**	**1405303**	1
Stripping tool, for multiple-stage repositioning of shielded conductors	**VS-CABLE-STRIP-VARIO**	**1657407**	1

Accessories

VS-CABLE-STRIP-VARIO	**1657407**	1

Fiber optic couplings

Ethernet



SCRJ coupling



Couplings for connecting FO cables

Description	Ordering data			Ordering data		
	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	**VS-SCRJ-GOF-KU**	**1654358**	1			
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				**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 POF cable for assembly, type KDHEAVY-1011



- 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	By the meter	2744319	Variable	2901553	Variable	2901553
FSMA plug, IP20						
 FSMA	Variable	2901553	Variable	2901553	Variable	2901553
SCRJ plug, IP20						
 SCRJ	Variable	2901553	Variable	2901553	Variable	2901553
B-FOC (ST®) plug, IP20						
 BFOC	Variable	2901553	Variable	2901553	Variable	2901553
SCRJ plug, IP67						
 IP67	Variable	1402188	Variable	1402188	Variable	1402188
Push/pull SCRJ, plastic						
 PPCPL	Variable	1402188	Variable	1402188	Variable	1402188
Push/pull SCRJ, metal						
 PPCME	Variable	1402188	Variable	1402188	Variable	1402188

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]
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

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]
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

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

	Technical data
Cable 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 POF cable for free assembly, type RUGGED-1012



- 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	By the meter	2744322	Variable	2901548	Variable	2901548
FSMA plug, IP20						
 FSMA	Variable	2901548	Variable	2901548	Variable	2901548
SCRJ plug, IP20						
 SCRJ	Variable	2901548	Variable	2901548	Variable	2901548
B-FOC (ST®) plug, IP20						
 BFOC	Variable	2901548	Variable	2901548	Variable	2901548
SCRJ plug, IP67						
 IP67	Variable	1402185	Variable	1402185	Variable	1402185
Push/pull SCRJ, plastic						
 PPCPL	Variable	1402185	Variable	1402185	Variable	1402185
Push/pull SCRJ, metal						
 PPCME	Variable	1402185	Variable	1402185	Variable	1402185

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]
1402185 /	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]
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

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

	Technical data
Cable 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	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

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	By the meter	2744335	Variable	2901549	Variable	2901549
FSMA plug, IP20						
 FSMA	Variable	2901549	Variable	2901549	Variable	2901549
SCRJ plug, IP20						
 SCRJ	Variable	2901549	Variable	2901549	Variable	2901549
B-FOC (ST®) plug, IP20						
 BFOC	Variable	2901549	Variable	2901549	Variable	2901549
SCRJ plug, IP67						
 IP67	Variable	1402187	Variable	1402187	Variable	1402187
Push/pull SCRJ, plastic						
 PPCPL	Variable	1402187	Variable	1402187	Variable	1402187
Push/pull SCRJ, metal						
 PPCME	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 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 5 m ... 500 m

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

	Technical data
Cable 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	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

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
			
	OE	FSMA	SCRJ
	Ordering data	Ordering data	Ordering data
	Order No.	Order No.	Order No.
Free end  OE	By the meter 2313397	Variable 2901551	Variable 2901551
FSMA plug, IP20  FSMA	Variable 2901551	Variable 2901551	Variable 2901551
SCRJ plug, IP20  SCRJ	Variable 2901551	Variable 2901551	Variable 2901551
B-FOC (ST®) plug, IP20  BFOC	Variable 2901551	Variable 2901551	Variable 2901551
Push/pull SCRJ, plastic  PPCPL	Variable 1402172	Variable 1402172	Variable 1402172
Push/pull SCRJ, metal  PPCME	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 ... 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 ... 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**

	Technical data
Cable 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

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

PROFINET

	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	By the meter 2313407	Variable 2901552	Variable 2901552
FSMA plug, IP20  FSMA	Variable 2901552	Variable 2901552	Variable 2901552
SCRJ plug, IP20  SCRJ	Variable 2901552	Variable 2901552	Variable 2901552
B-FOC (ST®) plug, IP20  BFOC	Variable 2901552	Variable 2901552	Variable 2901552
Push/pull SCRJ, plastic  PPCPL	Variable 1402175	Variable 1402175	Variable 1402175
Push/pull SCRJ, metal  PPCME	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**

	Technical data
Cable 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						
 OE	Variable	1408459 1408458	Variable	1408460	Variable	1408461
SCRJ plug, IP20						
 SCRJ			Variable	1408466	Variable	1408467
SC duplex plug, IP20						
 SCDUP					Variable	1408471
B-FOC (ST®) plug, IP20						
 BFOC						
Push/pull SCRJ, plastic						
 PPCPL						
Push/pull SCRJ, metal						
 PPCME						

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	1 m ... 5 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

	Technical data
Cable 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:	-

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
			
	OE	FSMA	SCRJ
	Ordering data	Ordering data	Ordering data
	Order No.	Order No.	Order No.
Free end  OE	By the meter 2313410	Variable 2901554	Variable 2901554
FSMA plug, IP20  FSMA	Variable 2901554	Variable 2901554	Variable 2901554
SCRJ plug, IP20  SCRJ	Variable 2901554	Variable 2901554	Variable 2901554
SC duplex plug, IP20  SCDUP	Variable 2901554	Variable 2901554	Variable 2901554
B-FOC (ST®) plug, IP20  BFOC	Variable 2901554	Variable 2901554	Variable 2901554
LC connector  LC	Variable 2901554	Variable 2901554	Variable 2901554
Push/pull SCRJ, plastic  PPCPL	Variable 1402189	Variable 1402189	Variable 1402189
Push/pull SCRJ, metal  PPCME	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.	Plug 1	Plug 2	Length [m]
1402189	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]
2313410	70

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

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**

	Technical data
Cable data	
Cable abbreviation in accordance with IEC 61977:2010	J-V(ZN)12Y(ZN)11Y 2GK200/230 GI-HCS
Fibers	HCS gradient index, 200/230 µm
Attenuation, typical	18 dB/km (at 660 nm), 12 dB/km (at 850 nm)
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

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
	Order No.	Order No.	Order No.
Free end			
 OE	By the meter 2799885	Variable 2901555	Variable 2901555
FSMA plug, IP20			
 FSMA	Variable 2901555	Variable 2901555	Variable 2901555
SCRJ plug, IP20			
 SCRJ	Variable 2901555	Variable 2901555	Variable 2901555
SC duplex plug, IP20			
 SCDUP	Variable 2901555	Variable 2901555	Variable 2901555
B-FOC (ST®) plug, IP20			
 BFOC	Variable 2901555	Variable 2901555	Variable 2901555
LC plug			
 LC	Variable 2901555	Variable 2901555	Variable 2901555
Push/pull SCRJ, plastic			
 PPCPL	Variable 1402191	Variable 1402191	Variable 1402191
Push/pull SCRJ, metal			
 PPCME	Variable 1402191	Variable 1402191	Variable 1402191
SCRJ plug, IP67			
 IP67	Variable 1402191	Variable 1402191	Variable 1402191

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.	Plug 1	Plug 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

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

	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

Outdoor cables for free assembly, type HCSO-1015



- Robust round cable for outdoor installation
- 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	By the meter	2799445	Variable	2901557	Variable	2901557
FSMA plug, IP20						
 FSMA	Variable	2901557	Variable	2901557	Variable	2901557
SCRJ plug, IP20						
 SCRJ	Variable	2901557	Variable	2901557	Variable	2901557
SC duplex plug, IP20						
 SCDUP	Variable	2901557	Variable	2901557	Variable	2901557
B-FOC (ST®) plug, IP20						
 BFOC	Variable	2901557	Variable	2901557	Variable	2901557
LC plug						
 LC	Variable	2901557	Variable	2901557	Variable	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.	Plug 1	Plug 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	1 m ... 5 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

	Technical data
Cable 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	
Material	PE
Color	Black
Diameter	10 - 11 mm
Strain relief elements	Non-metallic, aramid fiber
Rodent protection	Glass fibers
Lengthwise waterproofing	IEC 60794-1-2
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	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

Multi-mode fiberglass cables for free assembly, type GDM-RUGGED-1016



- 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	
	Order No.		Order No.		Order No.	
Free end						
 OE	By the meter	2799322	Variable	2901558	Variable	2901558
FSMA plug, IP20						
 FSMA	Variable	2901558	Variable	2901558	Variable	2901558
SCRJ plug, IP20						
 SCRJ	Variable	2901558	Variable	2901558	Variable	2901558
SC duplex plug, IP20						
 SCDUP	Variable	2901558	Variable	2901558	Variable	2901558
B-FOC (ST®) plug, IP20						
 BFOC	Variable	2901558	Variable	2901558	Variable	2901558
LC plug						
 LC	Variable	2901558	Variable	2901558	Variable	2901558
Push/pull SCRJ, plastic						
 PPCPL	Variable	1402193	Variable	1402193	Variable	1402193
Push/pull SCRJ, metal						
 PPCME	Variable	1402193	Variable	1402193	Variable	1402193
SCRJ plug, IP67						
 IP67	Variable	1402193	Variable	1402193	Variable	1402193

Ordering example for configured cable:

For a **fiberglass 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.	Plug 1	Plug 2	Length [m]
1402193	/ SCRJ	/ PPCPL	/ 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]
2799322	/ 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	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

	Technical data
Cable 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	
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
General data	
Weight	50 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

Outdoor multi-mode fiberglass cables for free assembly, type GDO-1017



- Robust round cable for outdoor installation
- 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	By the meter	2799432	Variable	2901559	Variable	2901559
FSMA plug, IP20  FSMA	Variable	2901559	Variable	2901559	Variable	2901559
SCRJ plug, IP20  SCRJ	Variable	2901559	Variable	2901559	Variable	2901559
SC duplex plug, IP20  SCDUP	Variable	2901559	Variable	2901559	Variable	2901559
B-FOC (ST®) plug, IP20  BFOC	Variable	2901559	Variable	2901559	Variable	2901559
LC plug  LC	Variable	2901559	Variable	2901559	Variable	2901559

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.	Plug 1	Plug 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

	Technical data
Cable 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	
Material	PE
Color	Black
Diameter	10 - 11 mm
Strain relief elements	Non-metallic, aramid fiber
Rodent protection	Glass fibers
Lengthwise waterproofing	IEC 60794-1-2
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	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

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.
SCRJ plug, IP20  SCRJ	2 m	1400697	2 m	1400690	2 m	1400706
	Variable	1405703	Variable	1405700	Variable	1405710
SC duplex plug, IP20  SCDUP			2 m	1400685	2 m	1400703
			Variable	1405697	Variable	1405708
B-FOC (ST®) plug, IP20  BFOC					2 m	1404768
					Variable	1405712
LC plug  LC			2 m	1400639	2 m	1400701
			Variable	1405691	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	I-V(ZN)H
Fibers	50/125 µm OM2
Attenuation, typical	2.7 dB/km (at 850 nm); 0.8 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:	According to IEC 60754-1/2

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.
SCRJ plug, IP20  SCRJ	2 m	1400699	2 m	1400691	2 m	1400711
	Variable	1405704	Variable	1405701	Variable	1405711
SC duplex plug, IP20  SCDUP			2 m	1400688	2 m	1400705
			Variable	1405698	Variable	1405709
SC duplex plug, IP20  LC			2 m	1400673	2 m	1400702
			Variable	1405692	Variable	1405707

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	I-V(ZN)H
Fibers	Fiberglass, 50/125 µm
Attenuation, typical	2.5 dB/km (at 850 nm), 0.7 dB/km (at 1300 nm)
Outer sheath	
Material	-
Color	Aqua
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:	According to IEC 60754-1/2

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	
		Order No.		Order No.		Order No.
SCRJ plug, IP20  SCRJ	2 m	1400700	2 m	1400695	2 m	1400684
	Variable	1405705	Variable	1405702	Variable	1405696
SC duplex plug, IP20  SCDUP			2 m	1400689		
			Variable	1405699		
LC plug  LC			2 m	1400681	2 m	1400622
			Variable	1405693	Variable	1405690

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**

	Technical data
Cable data	
Cable abbreviation in accordance with IEC 61977:2010	I-V(ZN)H
Fibers	Fiberglass, 50/125 µm
Attenuation, typical	2.5 dB/km (at 850 nm), 0.7 dB/km (at 1300 nm)
Outer sheath	
Material	-
Color	Violet
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:	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			
	FSMA	Variable	1406532
SC duplex plug, IP20			
	SCDUP	Variable	1406536
B-FOC (ST®) plug, IP20			
	BFOC	Variable	1406535

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:	According to IEC 60754-1/2

Fiber optics patch cables



LC plug

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

Technical data

Cable, properties	
Individual wire diameter	2.8 mm
Outer sheath, material	FRNC
External 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, aramid 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

Accessories for processing fiber optics





Description	Ordering data			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			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						
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			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

Tool for processing fiber optics





Description	Ordering data			Ordering data		
	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Fiber stripper, for stripping the coating from 250 µm to 125 µm						
For 1 fiber	**FOC-TOOL-STRIPPING-1HOLE-250**	**1407004**	1			
For 2 fibers	**FOC-TOOL-STRIPPING-2HOLE-250**	**1407008**	1			
T-stripper						
18 ... 10 AWG/1.0 mm ... 2.6 mm				**FOC-TOOL-STRIPPING-T-1**	**1407016**	1
30 ... 22 AWG/0.25 mm ... 0.64 mm				**FOC-TOOL-STRIPPING-T-2**	**1407014**	1
	Accessories			**Accessories**		
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	**CUTFOX-ES**	**1212621**	1	**CUTFOX-ES**	**1212621**	1

Tools for FO cabling, POF

Ethernet

PROFINET



Ethernet

PROFINET



Description	Ordering data			Ordering data		
	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
SCRJ polishing tool set, for polymer fiber, for field assembly of SCRJ/IP20 and SCRJ/IP67 plug-in connectors with fast connection system	**VS-SCRJ-POF-KONFTOOL-POLISH**	**1658820**	1			
Refill set for VS-SCRJ-POF-KONFTOOL-POLISH, consisting of two polishers and a polishing disc						
- For SCRJ connectors	**VS-SCRJ-POF-POLISH**	**1656673**	1			
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
Cutting tool, SCRJ, for polymer fiber				**CUTFOX-SCRJ-POF**	**1405247**	1
Sheath stripping tool, for polymer fiber				**WIREFOX-PN POF**	**1405249**	1

Tools for FO cabling, HCS



Assembly tool for fiber optics

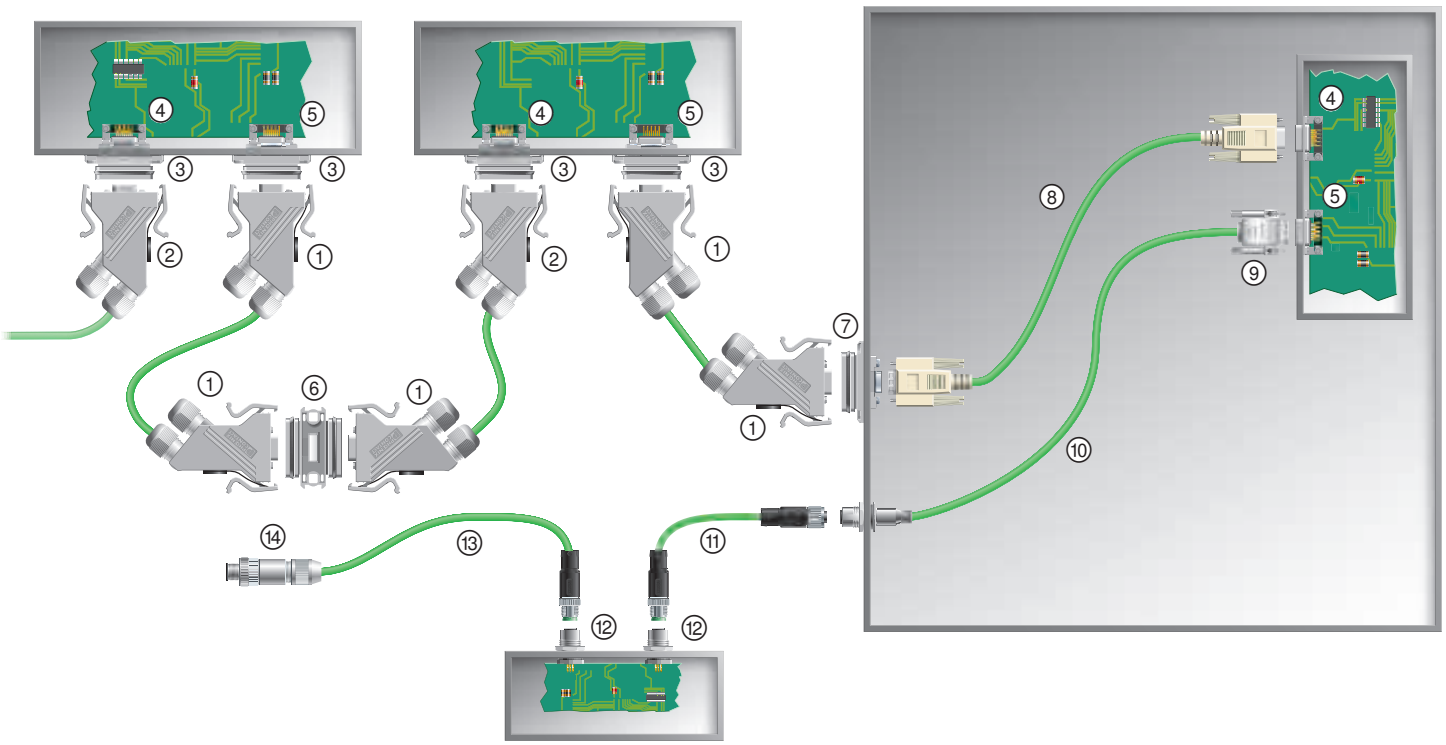
Description	Ordering data		
	Type	Order No.	Pcs. / Pkt.
HCS (GI) DIY case for SCRJ and SC duplex quick mounting connectors, stripping blade, stripping pliers, aramid yarn scissors, fiber stripper, fiber cleaving tool, and microscope			
- For SCRJ/SC duplex connectors	**PSM-HCS-KONFTOOL/SC-RJ**	**2708876**	1
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	**PSM-HCS-KONFTOOL/B-FOC**	**2708465**	1
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	**PSM-HCS-KONFTOOL**	**2799526**	1

Tools for FO cabling, GOF



Description	Ordering data		
	Type	Order No.	Pcs. / Pkt.
Assembly tool set for fiberglass, for field assembly of SCRJ and SC duplex plug-in connectors, with fast connection technology			
EU version	**VS-GOF-FA-KONFTOOL-EU**	**1658228**	1
US version	**VS-GOF-FA-KONFTOOL-US**	**1658231**	1
Consumables for VS-GOF-FA-KONFTOOL-…			
Glue cartridge	**VS-GOF-FA-KONFTOOL-ADHESIVE**	**1658244**	1

Topology – INTERBUS



No.	Designation	Page
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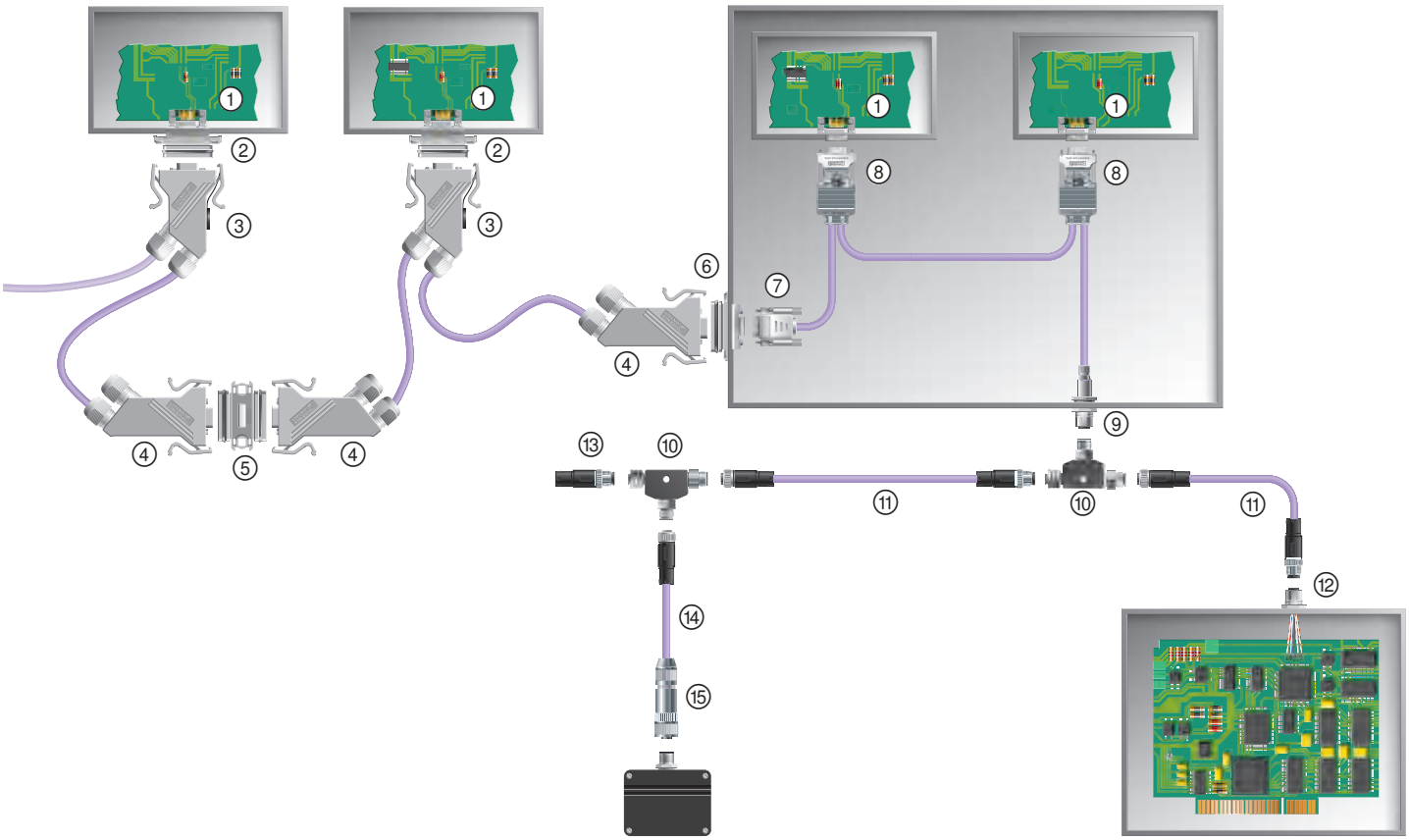
②	IP67 D-SUB complete plug-in connectors, socket	332
③	IP67 D-SUB panel mounting frames for D-SUB contact inserts	See Catalog 2
④	D-SUB contact inserts, pin	See Catalog 2
⑤	D-SUB contact inserts, socket	See Catalog 2
⑥	IP67 D-SUB coupling, socket/socket	333
⑦	IP67 D-SUB panel mounting frames with integrated D-SUB gender changer, socket/socket	333
⑧	Assembled D-SUB cable with D-SUB plug-in connectors, IP20	See Catalog 2
⑨	IP20 D-SUB sleeve housing and D-SUB contact insert, pin	See Catalog 2
⑩	M12 panel feed-through with INTERBUS cable and free cable end	336
⑪	Assembled INTERBUS cable with M12 plug-in connectors	340
⑫	M12 panel feed-through with solder connection	See Catalog 2
⑬	Assembled INTERBUS cable with M12 plug-in connector and free cable end	340
⑭	M12 plug-in connector for free assembly	334

Topology – PROFIBUS DP



No.	Designation	Page
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②	IP67 D-SUB panel mounting frames for D-SUB contact inserts	See Catalog 2
③	IP67 D-SUB complete plug-in connectors	332
④	IP67 D-SUB sleeve housing with accessories and D-SUB contact insert	See Catalog 2
⑤	IP67 D-SUB coupling	333
⑥	IP67 D-SUB panel mounting frames with integrated D-SUB gender changer	333
⑦	IP20 D-SUB sleeve housing and D-SUB contact insert	See Catalog 2
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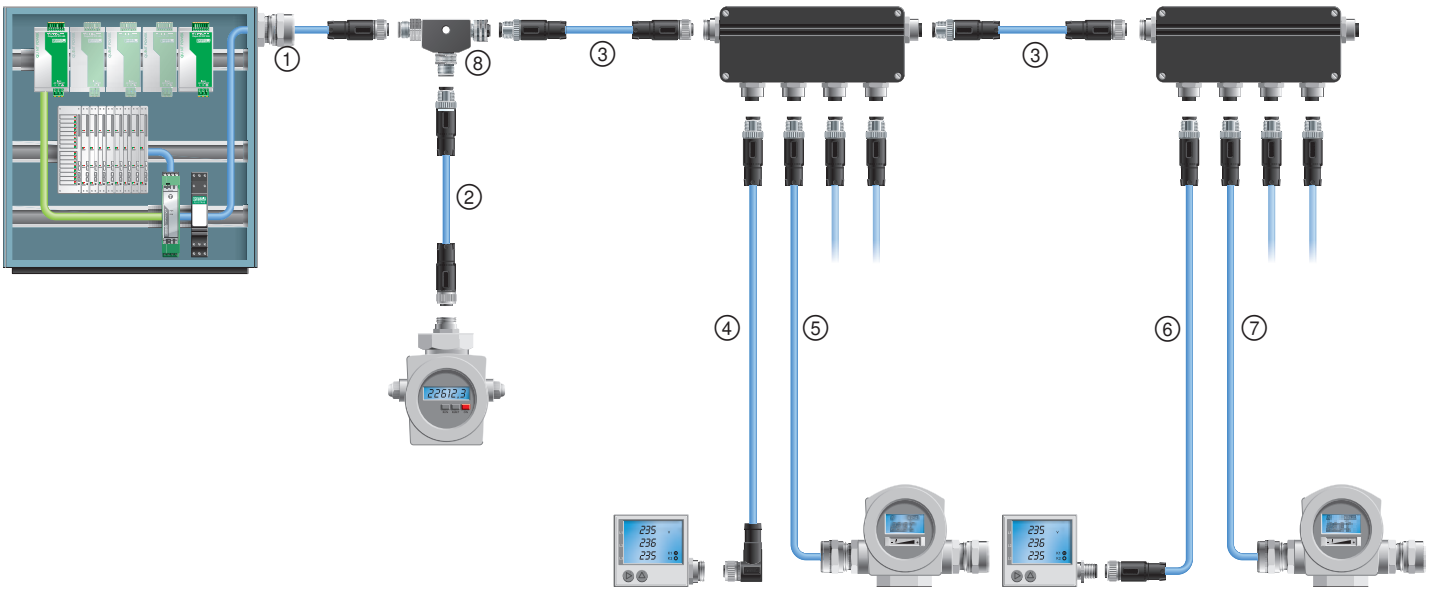
⑪	Assembled fieldbus cable with straight M12 plug-in connector and straight M12 socket	341
⑫	Flush-type plug-in connector	See Catalog 2
⑬	PROFIBUS M12 termination resistor	353
⑭	Assembled fieldbus cable with straight M12 socket and free cable end	341
⑮	M12 plug-in connector, for free assembly	334



No.	Designation	Page
①	Assembled cable with straight M12 socket and free cable end, 2 m	342
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⑦	Assembled cable with straight M12 plug and free cable end, 20 m	342
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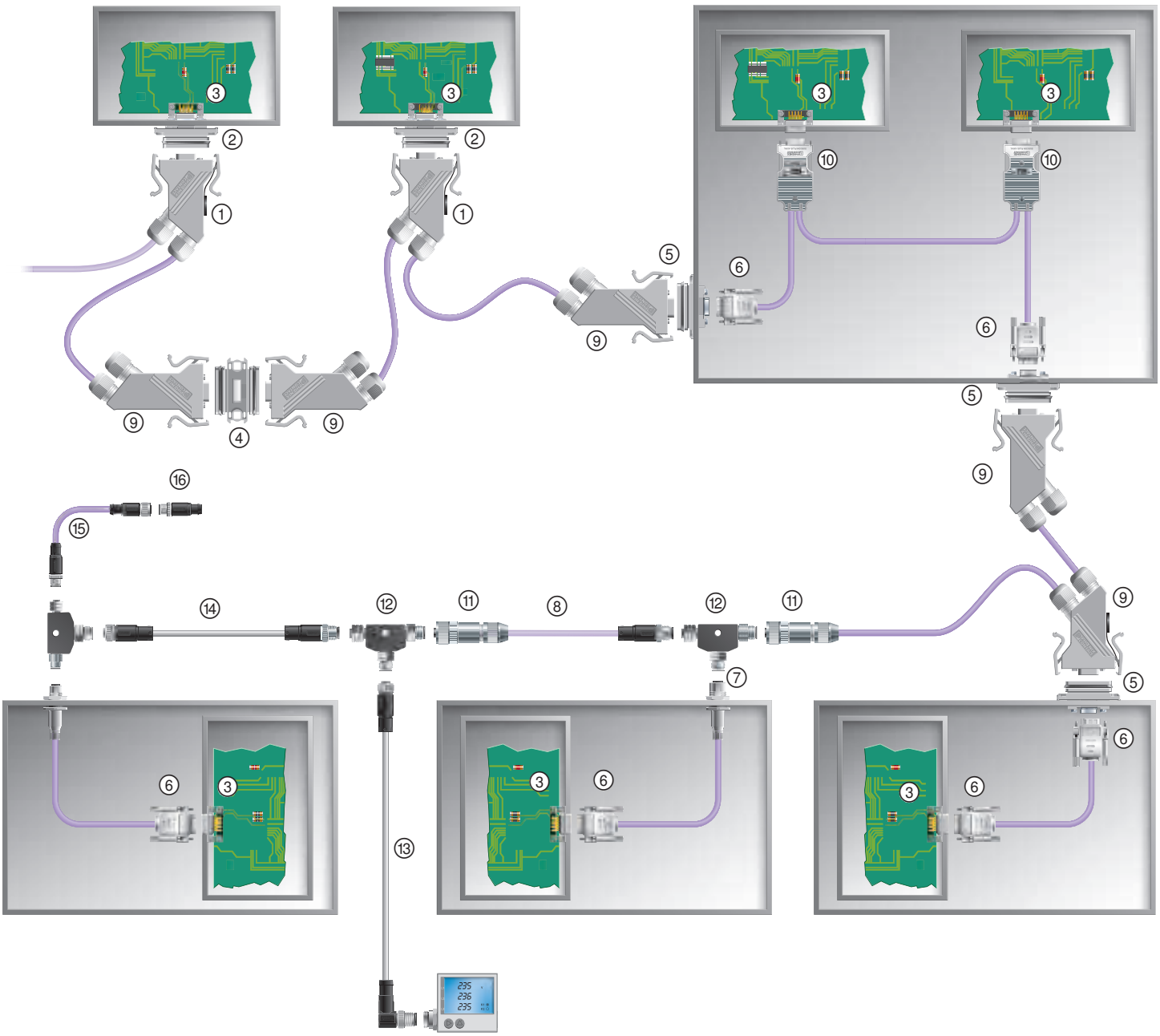
Topology – CANopen®



No.	Designation	Page
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②	IP67 D-SUB panel mounting frames for D-SUB contact inserts	See Catalog 2
③	D-SUB contact inserts	See Catalog 2
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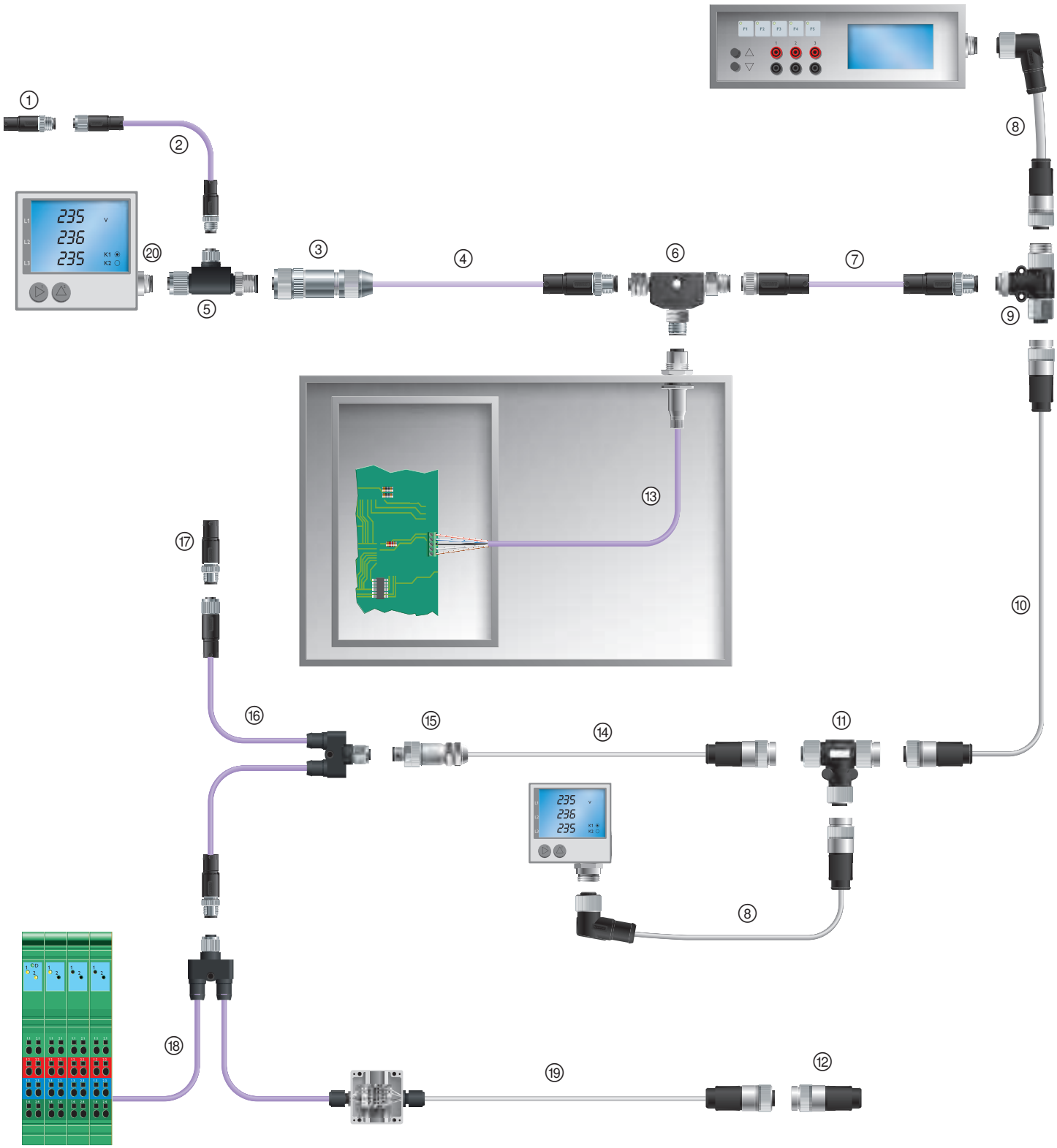
⑯	Assembled fieldbus cable with M8 plug-in connector and M8 socket	344

Topology – DeviceNet™



No.	Designation	Page
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⑨	Bus system T-distributor, 5-pos., M12 socket to 7/8" socket and 7/8" plug, 7/8", stainless steel knurl	352
⑩	Assembled trunk cable with straight 7/8" plug to straight 7/8" socket	347
⑪	Bus system T-distributor, 5-pos., 7/8" socket to 7/8" socket and 7/8" plug, stainless steel knurl	352
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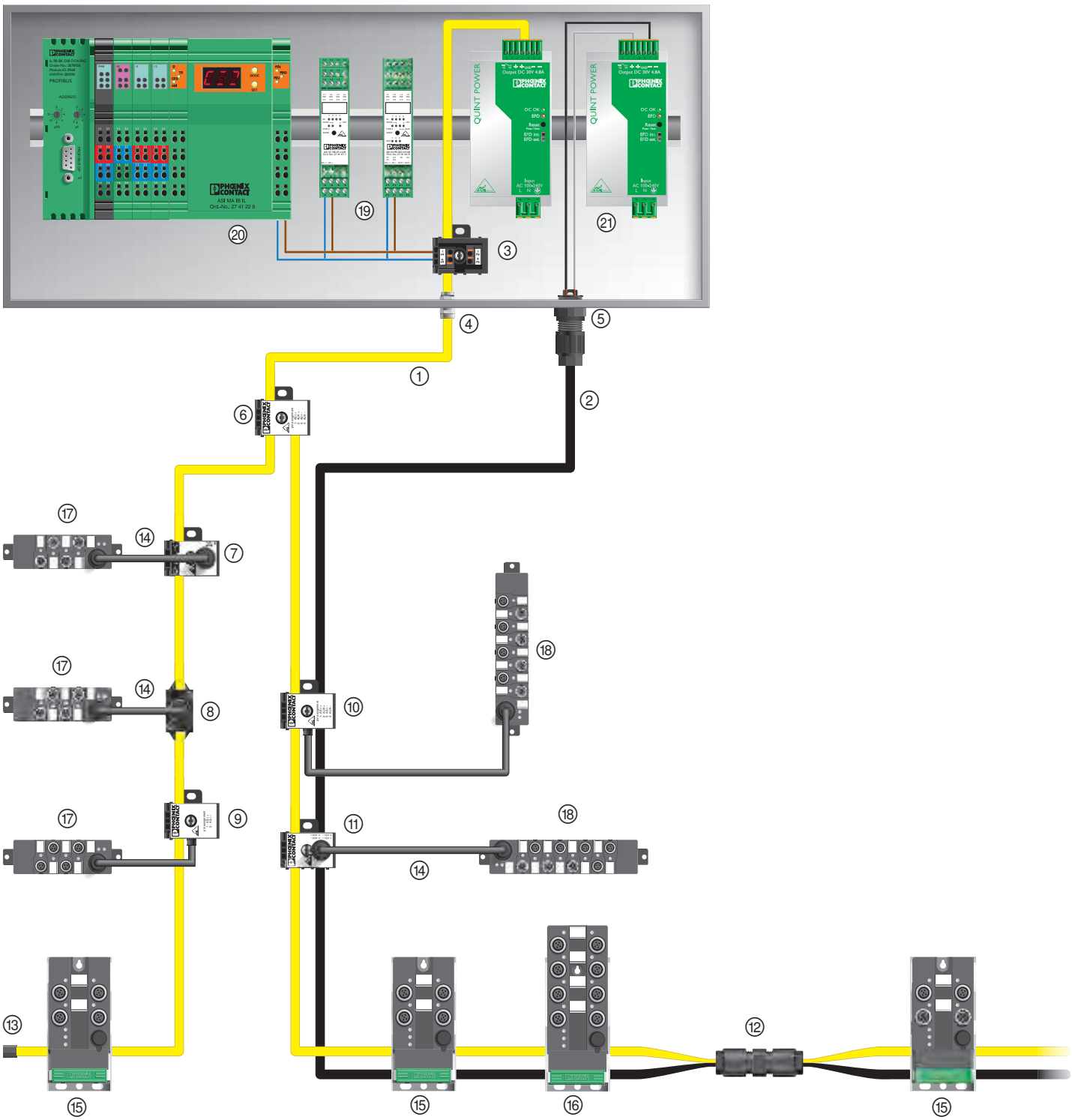
⑱	Y-distributor, bus system cable, straight M12-SPEEDCON socket and 2 free cable ends	348
⑲	7/8" assembled drop cable, straight 7/8" socket and free cable end	346
⑳	M12 panel feed-through with solder connection	See Catalog 2

Topology – AS-Interface



No.	Designation	Page
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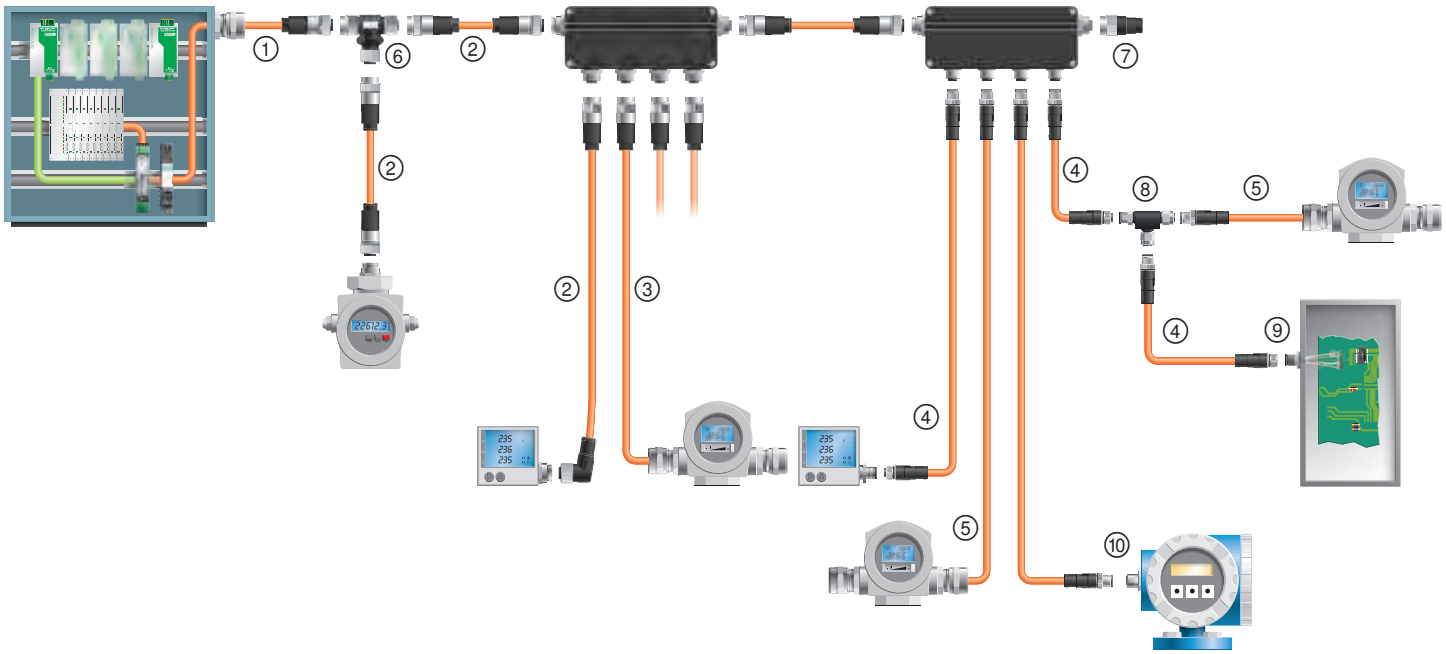
⑲	AS-Interface digital I/O devices, ME-Line, IP20	*
⑳	AS-Interface gateway for Inline Modular, IP20	*
㉑	Power supply unit, primary-switched	*

*) Further AS-Interface components for the control cabinet can be found in Catalog 8.

Topology – FOUNDATION Fieldbus



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①	Assembled FOUNDATION Fieldbus cable with 7/8" socket and free cable end	349
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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 mm² ... 0.5 mm²	-
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.	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				**VS-09-A**	**1688366**	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 plug-in connector set						
D-SUB 09				**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

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

	Technical data		Technical data	
	Spring-cage connection	Screw connection	Spring-cage connection	Screw connection
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	Spring-cage conn.	Screw connection	Spring-cage conn.	Screw connection
Electrical data				
Rated voltage	60 V	60 V	60 V	60 V
Rated current	4 A	4 A	4 A	4 A
Volume resistance	≤ 8 mΩ	≤ 3 mΩ	≤ 8 mΩ	≤ 3 mΩ
Insulation resistance	≥ 100 MΩ	≥ 100 MΩ	≥ 100 MΩ	≥ 100 MΩ
Material data				
Contact material	CuSn	CuSn	CuSn	CuSn
Contact surface material	Ni/Au	Au	Ni/Au	Au
Contact carrier material	TPU	PA 66	TPU	PA 66
Inflammability class according to UL 94	V0	HB	V0	HB
Encoding	B - inverse	B - inverse	B - inverse	B - inverse
No. of pos.	5	5	2	5
Temperature data				
Plug / socket [°C]	-40 ... 85	-40 ... 85	-40 ... 85	-40 ... 85

	Ordering data				Ordering data			
Description	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	Spring-cage connection		Screw connection		Spring-cage connection		Screw connection	
Plug-in connectors								
Socket, straight	**1432826**	1	**1507777**	1	**1432868**	1	**1507777**	1
Plug, straight	**1432800**	1	**1507764**	1	**1432842**	1	**1507764**	1
Socket, angled	**1432839**	1			**1432871**	1		
Plug, angled	**1432813**	1			**1432855**	1		

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		Technical data	
		Spring-cage connection	Screw connection	Spring-cage connection	
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		Spring-cage conn.	Screw connection	Spring-cage conn.	-
Electrical data					
Rated voltage		60 V	60 V	60 V	-
Rated current		4 A	4 A	4 A	-
Volume resistance		≤ 8 mΩ	≤ 3 mΩ	≤ 8 mΩ	-
Insulation resistance		≥ 100 MΩ	≥ 100 MΩ	≥ 100 MΩ	-
Material data					
Contact material		CuSn	CuSn	CuSn	-
Contact surface material		Ni/Au	Au	Ni/Au	-
Contact carrier material		TPU	PA 66	PA 66	-
Inflammability class according to UL 94		V0	HB	V0	-
Encoding		A - standard	A - standard	A - standard	-
Temperature data					
Plug / socket	[°C]	-40 ... 85	-40 ... 85	-40 ... 85	-

	Ordering data		Ordering data		Ordering data		Ordering data	
Description	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	Spring-cage connection		Screw connection		Spring-cage connection			
Plug-in connectors								
Socket, straight	**1432787**	1	**1508365**	1	**1559770**	1		
Plug, straight	**1432761**	1	**1508352**	1	**1559767**	1		
Socket, angled	**1432790**	1						
Plug, angled	**1432774**	1						

Flush-type plug-in connector, with pre-assembled cable, type 900



Rear mounting



Front mounting, can be positioned

		Technical data		Technical data	
		M16 fastening thread	Pg9 fastening thread	M16 fastening thread	
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	60 V	60 V	-
Rated current		4 A	4 A	4 A	-
Volume resistance		≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ	-
Insulation resistance		≥ 100 MΩ	≥ 100 MΩ	≥ 100 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	-
Temperature data					
Plug / socket	[°C]	-25 ... 85	-25 ... 85	-25 ... 85	-

		Ordering data				Ordering data			
Description	Cable length	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		M16 fastening thread		Pg9 fastening thread		M16 fastening thread			
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	**1534546**	1	**1437601**	1	**1529742**	1		
Plug	0.5 m	**1534504**	1	**1437643**	1	**1529629**	1		
Socket	1 m	**1534559**	1	**1437614**	1	**1529755**	1		
Plug	1 m	**1534517**	1	**1437656**	1	**1530223**	1		
Socket	2 m	**1534562**	1	**1437627**	1	**1529768**	1		
Plug	2 m	**1534520**	1	**1437669**	1	**1529726**	1		
Socket	5 m	**1534575**	1	**1437630**	1	**1529771**	1		
Plug	5 m	**1534533**	1	**1437672**	1	**1529739**	1		
EMC hexagonal nuts with fine toothing, for all flush-type plug-in connectors with:									
M16 fastening thread		**1440164**	10						
Pg9 fastening thread				**1440177**	10				

Flush-type plug-in connector, with pre-assembled cable, type 910



Rear mounting



Front mounting, can be positioned

		Technical data		Technical data	
		M16 fastening thread	Pg9 fastening thread	M16 fastening thread	
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	60 V	60 V	-
Rated current		4 A	4 A	4 A	-
Volume resistance		≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ	-
Insulation resistance		≥ 100 MΩ	≥ 100 MΩ	≥ 100 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	-
Temperature data					
Plug / socket	[°C]	-25 ... 85	-25 ... 85	-25 ... 85	-

		Ordering data				Ordering data			
Description	Cable length	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		M16 fastening thread		Pg9 fastening thread		M16 fastening thread			
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	**1534384**	1	**1437449**	1	**1525597**	1		
Plug	0.5 m	**1534342**	1	**1437481**	1	**1525555**	1		
Socket	1 m	**1534397**	1	**1437452**	1	**1525607**	1		
Plug	1 m	**1534355**	1	**1437494**	1	**1525568**	1		
Socket	2 m	**1534407**	1	**1437465**	1	**1519574**	1		
Plug	2 m	**1534368**	1	**1437504**	1	**1519561**	1		
Socket	5 m	**1534410**	1	**1437478**	1	**1525610**	1		
Plug	5 m	**1534371**	1	**1437517**	1	**1525571**	1		
EMC hexagonal nuts with fine toothing, for all flush-type plug-in connectors with:									
M16 fastening thread		**1440164**	10						
Pg9 fastening thread				**1440177**	10				

Flush-type plug-in connector, with pre-assembled cable, type 920



Rear mounting



Front mounting, can be positioned

		Technical data		Technical data	
		M16 fastening thread	Pg9 fastening thread	M16 fastening thread	
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	60 V	60 V	-
Rated current		4 A	4 A	4 A	-
Volume resistance		≤ 3 mΩ	≤ 3 mΩ	≤ 3 mΩ	-
Insulation resistance		≥ 100 MΩ	≥ 100 MΩ	≥ 100 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	-
Temperature data					
Plug / socket	[°C]	-25 ... 85	-25 ... 85	-25 ... 85	-

		Ordering data				Ordering data			
Description	Cable length	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		M16 fastening thread		Pg9 fastening thread		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	**1534465**	1	**1437520**	1	**1525678**	1		
Plug	0.5 m	**1534423**	1	**1437562**	1	**1525623**	1		
Socket	1 m	**1534478**	1	**1437533**	1	**1525681**	1		
Plug	1 m	**1534436**	1	**1437575**	1	**1525636**	1		
Socket	2 m	**1534481**	1	**1437546**	1	**1525694**	1		
Plug	2 m	**1534449**	1	**1437588**	1	**1525649**	1		
Socket	5 m	**1534494**	1	**1437559**	1	**1525704**	1		
Plug	5 m	**1534452**	1	**1437591**	1	**1525652**	1		
EMC hexagonal nuts with fine toothing, for all flush-type plug-in connectors with:									
M16 fastening thread		**1440164**	10						
Pg9 fastening thread				**1440177**	10				

M12 flush-type plug-in connector, shielded



With 0.5 m long litz wires, front 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	[°C]	-25 ... 85

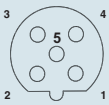
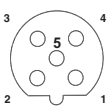
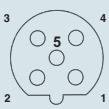
Ordering data

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

Assembled cables, INTERBUS, M12-SPEEDCON and M12

Notes:

For information about the cable qualities, see page 360

Free end			M12 plug, SPEEDCON			M12 plug		
	Ordering data			Ordering data			Ordering data	
		Order No.			Order No.			Order No.
Free end								
			2 m	1517877		2 m	1507065	
			5 m	1517880		5 m	1507078	
			10 m	1517893		10 m	1507081	
			15 m	1517903		15 m	1507094	
	Variable	2723123	Variable	1537996	Variable 1433184	Variable	1537983	
M12 socket, SPEEDCON, straight								
 			0.3 m	1517958				
			0.5 m	1517961				
			1 m	1517974				
	2 m	1517916	2 m	1517987				
	5 m	1517929	5 m	1517990				
	10 m	1517932	10 m	1518009				
	15 m	1517945	15 m	1518012				
	Variable	1538018	Variable	1538034	Variable 1433210			
M12 socket, SPEEDCON, angled								
 	Variable	1433197	Variable	1433207	Variable 1433223			
M12 socket, straight								
 						0.3 m	1507162	
						0.5 m	1507175	
						1 m	1507188	
	2 m	1507117				2 m	1507191	
	5 m	1507120				5 m	1507201	
	10 m	1507133				10 m	1507214	
	15 m	1507146				15 m	1507227	
	Variable	1538005				Variable	1538021	

Ordering example for cable **with** plug-in connector assembly:

For an INTERBUS bus cable, straight M12 socket to straight M12 pin, and a cable length of 34.5 m, the ordering data is as follows:

Order No.	Length [m] Max. 40 m
1538021 /	34.5

Increments:
0.2 ... 3.0 m = 0.1 m
> 3.0 m = 0.5 m

Ordering example for cable **without** plug-in connector assembly:

For an INTERBUS bus cable with a cable length of 34.5 m, the ordering data is as follows:

Order No.	Length [m] Max. 400 m
2723123 /	34.5

Increments:
0.5 ... 400.0 m = 0.5 m

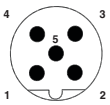
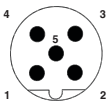
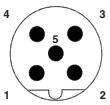
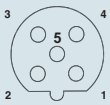
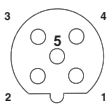
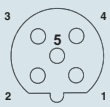
		Technical data
		M12
Rated voltage	[V]	60
Rated current	[A]	4
Volume resistance		≤ 5 mΩ
Conductor cross section for signal	[mm²]	0.25
Conductor structure for signal		32x 0.10 mm
Inflammability class in acc. with UL 94		V0
Cable diameter	[mm]	8
Material contact / contact surface		CuSn // Ni/Au
Contact carrier material		PA 66
Degree of protection		IP65/IP67/IP69K
Temperature data		
Cable, fixed installation	[°C]	-40 ... 80
Cable, flexible installation	[°C]	-30 ... 70
Plug / socket	[°C]	-25 ... 90

Assembled cables, PROFIBUS DP, M12-SPEEDCON and M12

Notes:

For information about the cable qualities, see page 360

PROFIBUS

	Free end		M12 plug, SPEEDCON			M12 plug		
								
								
	Ordering data		Ordering data		Ordering data	Ordering data		Ordering data
Free end		Order No.		Order No.	Order No.		Order No.	Order No.
			2 m	1518025		2 m	1507243	
			5 m	1518038		5 m	1507256	
			10 m	1518041		10 m	1507269	
			15 m	1518054		15 m	1507272	
	Variable	1511491	Variable	1538050	Variable 1433236	Variable	1538047	
M12 socket, SPEEDCON, straight								
 			0.3 m	1518106				
			0.5 m	1518119				
			1 m	1518122				
	2 m	1518067	2 m	1518135				
	5 m	1518070	5 m	1518148				
	10 m	1518083	10 m	1518151				
	15 m	1518096	15 m	1518164				
	Variable	1538076	Variable	1538092	Variable 1433265			
M12 socket, SPEEDCON, angled								
 								
	Variable	1433249	Variable	1433252	Variable 1433278			
M12 socket, straight								
 						0.3 m	1507340	
						0.5 m	1507353	
						1 m	1507366	
	2 m	1507298				2 m	1507379	
	5 m	1507308				5 m	1507382	
	10 m	1507311				10 m	1507395	
	15 m	1507324				15 m	1507405	
	Variable	1538063				Variable	1538089	

Ordering example for cable **with** plug-in connector assembly:

For a PROFIBUS bus cable, straight M12 socket to straight M12 pin, and a cable length of 34.5 m, the ordering data is as follows:

Order No.		Length [m] Max. 40 m
1538089	/	34.5
		Increments: 0.2 ... 3.0 m = 0.1 m > 3.0 m = 0.5 m

Ordering example for cable **without** plug-in connector assembly:

For a PROFIBUS bus cable with a cable length of 34.5 m, the ordering data is as follows:

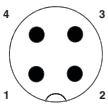
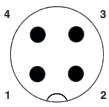
Order No.		Length [m] Max. 400 m
1511491	/	34.5
		Increments: 0.5 ... 400.0 m = 0.5 m

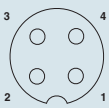
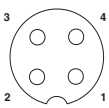
		Technical data
		M12
Rated voltage	[V]	250
Rated current	[A]	4
Volume resistance		≤ 5 mΩ
Conductor cross section for signal	[mm²]	0.25
Conductor structure for signal		19x 0.13 mm
Inflammability class in acc. with UL 94		V0
Cable diameter	[mm]	7.8
Material contact / contact surface		CuSn // Ni/Au
Contact carrier material		PA 66
Degree of protection		IP65/IP67/IP69K
Temperature data		
Cable, fixed installation	[°C]	-40 ... 80
Cable, flexible installation	[°C]	-20 ... 80
Plug / socket	[°C]	-25 ... 90

Assembled cables, PROFIBUS PA, M12 stainless steel

Notes:

For information about the cable qualities, see page 362

Free end	M12 plug
	 
	 

		Ordering data		Ordering data		Ordering data	
Free end			**Order No.**		**Order No.**		**Order No.**
				2 m	**1419092**	2 m	**1419097**
				5 m	**1419093**	5 m	**1419098**
				10 m	**1419094**	10 m	**1419099**
				15 m	**1419095**	15 m	**1419100**
				20 m	**1419096**	20 m	**1419101**
M12 socket, straight							
				0.3 m	**1419102**	0.3 m	**1419110**
				0.5 m	**1419103**	0.5 m	**1419111**
				1 m	**1419104**	1 m	**1419112**
		2 m	**1419082**	2 m	**1419105**	2 m	**1419113**
		5 m	**1419083**	5 m	**1419106**	5 m	**1419114**
		10 m	**1419084**	10 m	**1419107**	10 m	**1419115**
		15 m	**1419085**	15 m	**1419108**	15 m	**1419116**
		20 m	**1419086**	20 m	**1419109**	20 m	**1419117**
M12 socket, angled							
				0.3 m	**1419118**	0.3 m	**1419126**
				0.5 m	**1419119**	0.5 m	**1419127**
				1 m	**1419120**	1 m	**1419128**
		2 m	**1419087**	2 m	**1419121**	2 m	**1419129**
		5 m	**1419088**	5 m	**1419122**	5 m	**1419130**
		10 m	**1419089**	10 m	**1419123**	10 m	**1419131**
		15 m	**1419090**	15 m	**1419124**	15 m	**1419132**
		20 m	**1419091**	20 m	**1419125**	20 m	**1419133**

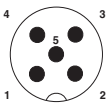
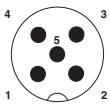
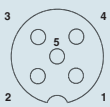
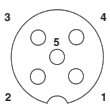
Color coding	Pin assignment M12
OG	1
n.c.	2
BU	3
Shield	4

		Technical data
Rated voltage	[V]	60
Rated current	[A]	4
Volume resistance		≤ 5 mΩ
Contact material		CuSn
Contact surface material		Ni/Au
Material of grip body		TPU, hardly inflammable, self-extinguishing
Degree of protection		IP65/IP67/IP69K
Temperature data		
Plug / socket	[°C]	-25 ... 90

Assembled cables, DeviceNet™/CANopen®, M12-SPEEDCON

Notes:
For information about the cable qualities, see page 361

DeviceNet CANopen

	Free end		M12 plug		M12 plug	
						
						
	Ordering data		Ordering data		Ordering data	
		Order No.		Order No.		Order No.
Free end						
			2 m	**1419039**	2 m	**1419044**
			5 m	**1419040**	5 m	**1419045**
			10 m	**1419041**	10 m	**1419046**
			15 m	**1419042**	15 m	**1419047**
			20 m	**1419043**	20 m	**1419048**
M12 socket, straight						
 			0.3 m	**1419049**	0.3 m	**1419057**
			0.5 m	**1419050**	0.5 m	**1419058**
			1 m	**1419051**	1 m	**1419059**
	2 m	**1419081**	2 m	**1419052**	2 m	**1419060**
	5 m	**1419030**	5 m	**1419053**	5 m	**1419061**
	10 m	**1419031**	10 m	**1419054**	10 m	**1419062**
	15 m	**1419032**	15 m	**1419055**	15 m	**1419063**
	20 m	**1419033**	20 m	**1419056**	20 m	**1419064**
M12 socket, angled						
 			0.3 m	**1419065**	0.3 m	**1419073**
			0.5 m	**1419066**	0.5 m	**1419074**
			1 m	**1419067**	1 m	**1419075**
	2 m	**1419034**	2 m	**1419068**	2 m	**1419076**
	5 m	**1419035**	5 m	**1419069**	5 m	**1419077**
	10 m	**1419036**	10 m	**1419070**	10 m	**1419078**
	15 m	**1419037**	15 m	**1419071**	15 m	**1419079**
	20 m	**1419038**	20 m	**1419072**	20 m	**1419080**

Color coding		Pin assignment M12
Shield		1
RD		2
BK		3
WH		4
BU		5

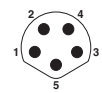
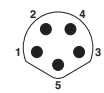
		Technical data
Rated voltage	[V]	60
Rated current	[A]	4
Volume resistance		< 5 mΩ
Contact material		CuSn
Contact surface material		Ni/Au
Material of grip body		TPU
Degree of protection		IP65/IP67/IP69K
Temperature data		
Plug / socket	[°C]	-25 ... 90

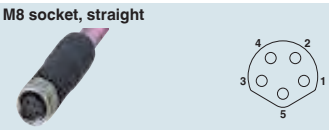
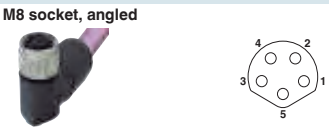
Fieldbus components - assembled cables

Assembled cables, DeviceNet™/CANopen®, M8

Notes:

For information about the cable qualities, see page 361

Free end	M8 plug	
		
		

	Ordering data		Ordering data		Ordering data	
Free end		**Order No.**		**Order No.**		**Order No.**
			2 m	**1575712**		
			5 m	**1575725**		
			10 m	**1575738**		
			15 m	**1575754**		
			Variable	**1575767**	Variable	**1575903**
M8 socket, straight						
			0.3 m	**1575822**		
			0.5 m	**1575835**		
			1 m	**1575848**		
	2 m	**1575770**	2 m	**1575851**		
	5 m	**1575783**	5 m	**1575864**		
	10 m	**1575796**	10 m	**1575877**		
	15 m	**1575806**	15 m	**1575880**		
	Variable	**1575819**	Variable	**1575893**	Variable	**1575932**
M8 socket, angled						
	Variable	**1575916**			Variable	**1575945**

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

For a DeviceNet™ bus cable, straight M8 socket to straight M8 pin and a cable length of 34.5 m, the ordering data is as follows:

Order No.		Length [m] Max. 40 m
1575893	/	**34.5**
		Increments: 0.2 ... 3.0 m = 0.1 m; > 3.0 m = 0.5 m

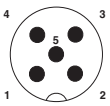
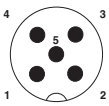
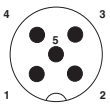
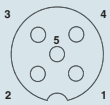
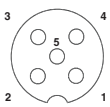
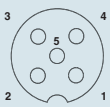
		Technical data
		M8
Rated voltage	[V]	30
Rated current	[A]	4
Volume resistance		≤ 5 mΩ
Conductor cross section for signal	[mm²]	0.2
Conductor cross section for power	[mm²]	0.32
Inflammability class in acc. with UL 94		HB
Cable diameter		6.70 mm
Material contact / contact surface		CuSn // Ni/Au
Contact carrier material		TPU GF
Degree of protection		IP65/IP67/IP69K
Temperature data		
Cable, fixed installation	[°C]	-40 ... 80
Cable, flexible installation	[°C]	-20 ... 75
Plug / socket	[°C]	-25 ... 90

Assembled cables, DeviceNet™/CANopen®, M12-SPEEDCON and M12

Notes:

For information about the cable qualities, see page 361

DeviceNet CANopen

	Free end	M12 plug, SPEEDCON		M12 plug
				
				
	Ordering data	Ordering data	Ordering data	Ordering data	Ordering data
Free end	Order No.	Order No.	Order No.	Order No.	Order No.
		2 m **1518177**		2 m **1507421**	
		5 m **1518180**		5 m **1507434**	
		10 m **1518193**		10 m **1507447**	
		15 m **1518203**		15 m **1507450**	
	Variable **1511504**	Variable **1538115**	Variable **1433281**	Variable **1538102**	
M12 socket, SPEEDCON, straight					
 		0.3 m **1518258**			
		0.5 m **1518261**			
		1 m **1518274**			
	2 m **1518216**	2 m **1518287**			
	5 m **1518229**	5 m **1518290**			
	10 m **1518232**	10 m **1518300**			
	15 m **1518245**	15 m **1518313**			
	Variable **1538131**	Variable **1538157**	Variable **1433317**		
M12 socket, SPEEDCON, angled					
 					
	Variable **1433294**	Variable **1433304**	Variable **1433320**		
M12 socket, straight					
 				0.3 m **1507528**	
				0.5 m **1507531**	
				1 m **1507544**	
	2 m **1507476**			2 m **1507557**	
	5 m **1507489**			5 m **1507560**	
	10 m **1507492**			10 m **1507573**	
	15 m **1507502**			15 m **1507586**	
	Variable **1538128**			Variable **1538144**	

Ordering example for cable **with** plug-in connector assembly:

For a DeviceNet™ bus cable, straight M12 socket to straight M12 pin and a cable length of 34.5 m, the ordering data is as follows:

Order No.		Length [m] Max. 40 m
1538144	/	**34.5**
		Increments: 0.2 ... 3.0 m = 0.1 m > 3.0 m = 0.5 m

Ordering example for cable **without** plug-in connector assembly:

For a DeviceNet™ bus cable with a cable length of 34.5 m, the ordering data is as follows:

Order No.		Length [m] Max. 400 m
1511504	/	**34.5**
		Increments: 0.5 ... 400.0 m = 0.5 m

		Technical data
		M12
Rated voltage	[V]	60
Rated current	[A]	4
Volume resistance		≤ 5 mΩ
Conductor cross section for signal	[mm²]	0.2
Conductor cross section for power	[mm²]	0.32
Inflammability class in acc. with UL 94		HB
Cable diameter		6.70 mm
Material contact / contact surface		CuSn // Ni/Au
Contact carrier material		TPU GF
Degree of protection		IP65/IP67/IP69K
Temperature data		
Cable, fixed installation	[°C]	-40 ... 80
Cable, flexible installation	[°C]	-20 ... 75
Plug / socket	[°C]	-25 ... 90

Assembled drop cable, DeviceNet™, 7/8", type 923

Notes:

For information about the cable qualities, see page 361



Free end





7/8" plug





DeviceNet

		Ordering data		Ordering data		Ordering data	
Free end			**Order No.**		**Order No.**		**Order No.**
				2 m	**1418523**	2 m	**1418578**
				5 m	**1418536**	5 m	**1418581**
				10 m	**1418549**	10 m	**1418594**
				15 m	**1418552**	15 m	**1418604**
				20 m	**1418565**	20 m	**1418617**
7/8" socket, straight							
				0.3 m	**1418620**	0.3 m	**1418701**
				0.5 m	**1418633**	0.5 m	**1418714**
				1 m	**1418646**	1 m	**1418727**
		2 m	**1418426**	2 m	**1418659**	2 m	**1418730**
		5 m	**1418439**	5 m	**1418662**	5 m	**1418743**
		10 m	**1418442**	10 m	**1418675**	10 m	**1418756**
		15 m	**1418455**	15 m	**1418688**	15 m	**1418769**
		20 m	**1418468**	20 m	**1418691**	20 m	**1418772**
7/8" socket, angled							
				0.3 m	**1418785**	0.3 m	**1420045**
				0.5 m	**1418798**	0.5 m	**1420058**
				1 m	**1418808**	1 m	**1420061**
		2 m	**1418471**	2 m	**1418811**	2 m	**1420074**
		5 m	**1418484**	5 m	**1418824**	5 m	**1420087**
		10 m	**1418497**	10 m	**1418837**	10 m	**1420090**
		15 m	**1418507**	15 m	**1420029**	15 m	**1420100**
		20 m	**1418510**	20 m	**1420032**	20 m	**1420113**

Color coding		Pin assignment 7/8"
Shield		1
RD		2
BK		3
WH		4
BU		5

		Technical data
Rated voltage	[V]	30
Rated current	[A]	5.2
Volume resistance		< 5 mΩ
Contact material		CuZn
Contact surface material		Au
Material of grip body		TPU
Degree of protection		IP65/IP67/IP69K
Temperature data		
Plug / socket	[°C]	-25 ... 80

Assembled trunk cable, DeviceNet™, 7/8", type 928

Notes:
For information about the cable qualities, see page 361

Free end	7/8" plug
	 
	 

DeviceNet

		Ordering data		Ordering data		Ordering data	
Free end			**Order No.**		**Order No.**		**Order No.**
				2 m	**1417553**	2 m	**1417605**
				5 m	**1417566**	5 m	**1417618**
				10 m	**1417579**	10 m	**1417621**
				15 m	**1417582**	15 m	**1417634**
				20 m	**1417595**	20 m	**1417647**
7/8" socket, straight							
				0.3 m	**1417650**	0.3 m	**1417731**
				0.5 m	**1417663**	0.5 m	**1417744**
				1 m	**1417676**	1 m	**1417757**
		2 m	**1417456**	2 m	**1417689**	2 m	**1417760**
		5 m	**1417469**	5 m	**1417692**	5 m	**1417773**
		10 m	**1417472**	10 m	**1417702**	10 m	**1417786**
		15 m	**1417485**	15 m	**1417715**	15 m	**1417799**
		20 m	**1417498**	20 m	**1417728**	20 m	**1417809**
7/8" socket, angled							
				0.3 m	**1417812**	0.3 m	**1417896**
				0.5 m	**1417825**	0.5 m	**1417906**
				1 m	**1417838**	1 m	**1417919**
		2 m	**1417508**	2 m	**1417841**	2 m	**1417922**
		5 m	**1417511**	5 m	**1417854**	5 m	**1417935**
		10 m	**1417524**	10 m	**1417867**	10 m	**1417948**
		15 m	**1417537**	15 m	**1417870**	15 m	**1417951**
		20 m	**1417540**	20 m	**1417883**	20 m	**1417964**

Color coding		Pin assignment 7/8''
Shield		1
RD		2
BK		3
WH		4
BU		5

		Technical data
Rated voltage	[V]	30
Rated current	[A]	5.2
Volume resistance		< 5 mΩ
Contact material		CuZn
Contact surface material		Au
Material of grip body		TPU
Degree of protection		IP65/IP67/IP69K
Temperature data		
Plug / socket	[°C]	-25 ... 80

M12 Y-distributor

Notes:

For information about the cable qualities, see page 361



Bus system cable



Bus system cable

		Technical data	Technical data
Electrical data			
Rated voltage		60 V	60 V
Rated current		4 A	4 A
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Material data			
Contact material		CuSn	CuSn
Contact surface material		Ni/Au	Ni/Au
Contact carrier material		TPU GF	-
Inflammability class according to UL 94		HB	HB
Mechanical data			
No. of pos.		5	5
Pollution degree		3	3
Degree of protection		IP65/IP67/IP69K	IP65/IP67/IP69K
External cable diameter		6.70 mm	6.70 mm
Conductor cross section for signal		0.2 mm²	0.2 mm²
Conductor structure signal line		19 x 0.12 mm	19 x 0.12 mm
Conductor cross section for power		0.32 mm²	0.32 mm²
Conductor structure, voltage supply		19 x 0.15 mm	19 x 0.15 mm
Temperature data			
Plug / socket	[°C]	-25 ... 90	-25 ... 90
Cable, fixed installation	[°C]	-40 ... 80	-40 ... 80
Cable, flexible installation	[°C]	-20 ... 75	-20 ... 75

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Bus system Y-cable, 5-pos., PUR, halogen-free, violet, shielded, straight M12 Y-socket to straight M12 socket and straight M12 plug						
- Conductor length 0.3 m	**SAC-5PY-F/2X 0,3-920-MS-FS**	**1436013**	1			
- Conductor length 0.5 m	**SAC-5PY-F/2X 0,5-920-MS-FS**	**1436026**	1			
- Conductor length 1.0 m	**SAC-5PY-F/2X 1,0-920-MS-FS**	**1436039**	1			
- Conductor length 2.0 m	**SAC-5PY-F/2X 2,0-920-MS-FS**	**1436042**	1			
- Conductor length 5.0 m	**SAC-5PY-F/2X 5,0-920-MS-FS**	**1436055**	1			
- Conductor length 10.0 m	**SAC-5PY-F/2X10,0-920-MS-FS**	**1436068**	1			
- Conductor length 15.0 m	**SAC-5PY-F/2X15,0-920-MS-FS**	**1436071**	1			
Bus system Y-cable, 5-pos., PUR, halogen-free, violet, shielded, straight M12 Y-plug to free cable ends						
- Conductor length 2.0 m				**SAC-5PY-M/2X 2,0-920**	**1436084**	1
- Conductor length 5.0 m				**SAC-5PY-M/2X 5,0-920**	**1436097**	1
- Conductor length 10.0 m				**SAC-5PY-M/2X10,0-920**	**1436107**	1
- Conductor length 15.0 m				**SAC-5PY-M/2X15,0-920**	**1436110**	1
Bus system Y-cable, 5-pos., PUR, halogen-free, violet, shielded, straight M12 Y-socket to free cable ends						
- Conductor length 2.0 m				**SAC-5PY-F/2X 2,0-920**	**1436123**	1
- Conductor length 5.0 m				**SAC-5PY-F/2X 5,0-920**	**1436136**	1
- Conductor length 10.0 m				**SAC-5PY-F/2X10,0-920**	**1436149**	1
- Conductor length 15.0 m				**SAC-5PY-F/2X15,0-920**	**1436152**	1

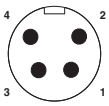
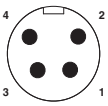
Assembled cables, FOUNDATION Fieldbus, 7/8"

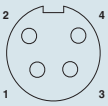
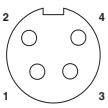
Notes:

For applications in circuits with intrinsic safety protection type "i".

For information about the cable qualities, see page 362

FOUNDATION

	Free end	7/8" plug	
			
			

		Ordering data		Ordering data		Ordering data	
Free end			**Order No.**		**Order No.**		**Order No.**
		Variable	**1434620**	2 m 5 m 10 m	**1433964** **1433977** **1433980**	2 m 5 m 10 m	**1434057** **1434060** **1434073**
7/8" socket, straight							
		2 m 5 m 10 m	**1433786** **1433799** **1433809**	0.3 m 0.5 m 1 m 2 m 5 m 10 m	**1434141** **1434154** **1434167** **1434170** **1434183** **1434196**	0.3 m 0.5 m 1 m 2 m 5 m 10 m	**1434264** **1434277** **1434280** **1434293** **1434303** **1434316**
7/8" socket, angled							
		2 m 5 m 10 m	**1433870** **1433883** **1433896**	0.3 m 0.5 m 1 m 2 m 5 m 10 m	**1434387** **1434390** **1434400** **1434413** **1434426** **1434439**	0.3 m 0.5 m 1 m 2 m 5 m 10 m	**1434507** **1434510** **1434523** **1434536** **1434549** **1434552**

Ordering example for products with **variable** cable:

For a FOUNDATION Fieldbus cable that is 34.5 m in length, the ordering data is as follows:

Order No.	Length [m] max. 50 m
1434620	**34.5**
	Increment: 0.5 m

Color coding		Pin assignment	
		7/8"	M12
BU		1	1
BN		2	2
Shield		3	3
n.c.		4	4

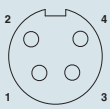
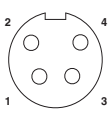
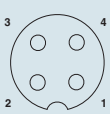
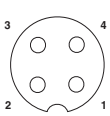
		Technical data
		7/8"
Rated voltage	[V]	-
Rated current	[A]	5.2
Volume resistance		≤ 5 mΩ
Conductor cross section	AWG	18
Contact material		CuZn
Contact surface material		AU
Contact carrier material		PA 66
Material of grip body		TPU
Material, knurls		Stainless steel
Degree of protection		IP67
Temperature data		
Cable, fixed installation	[°C]	-30 ... 105
Plug / socket	[°C]	-40 ... 105

Assembled cables, FOUNDATION Fieldbus, 7/8" and M12 stainless steel

Notes:

For information about the cable qualities, see page 362

FOUNDATION

	Free end		7/8" plug				M12 plug			
	Ordering data		Ordering data		Ordering data		Ordering data		Ordering data	
Free end		**Order No.**		**Order No.**		**Order No.**		**Order No.**		**Order No.**
			2 m	**1429350**	2 m	**1429444**	2 m	**1431173**		
			5 m	**1429363**	5 m	**1429457**	5 m	**1431186**		
			10 m	**1429376**	10 m	**1429460**	10 m	**1431199**		
			15 m	**1429389**	15 m	**1429473**	15 m	**1431209**		
			20 m	**1429392**	20 m	**1429486**				
			25 m	**1429402**	25 m	**1429499**				
			30 m	**1429415**	30 m	**1429509**				
			40 m	**1429428**	40 m	**1429512**				
			50 m	**1429431**	50 m	**1429525**				
	Variable	**1432389**					Variable	**1431322**	Variable	**1431335**
7/8" socket, straight										
 			0.3 m	**1429538**	0.3 m	**1429664**				
			0.5 m	**1429554**	0.5 m	**1429677**				
			1 m	**1429567**	1 m	**1429680**				
	2 m	**1429712**	2 m	**1429570**	2 m	**1429693**				
	5 m	**1429185**	5 m	**1429583**	5 m	**1429703**				
	10 m	**1429198**	10 m	**1429596**	10 m	**1429716**				
	15 m	**1429208**	15 m	**1429606**	15 m	**1429729**				
	20 m	**1429211**	20 m	**1429619**	20 m	**1429732**				
	25 m	**1429224**	25 m	**1429622**	25 m	**1429745**				
	30 m	**1429237**	30 m	**1429635**	30 m	**1429758**				
	40 m	**1429240**	40 m	**1429648**	40 m	**1429761**				
	50 m	**1429253**	50 m	**1429651**	50 m	**1429774**				
7/8" socket, angled										
 			0.3 m	**1429787**	0.3 m	**1429907**				
			0.5 m	**1429790**	0.5 m	**1429910**				
			1 m	**1429800**	1 m	**1429923**				
	2 m	**1429266**	2 m	**1429813**	2 m	**1429936**				
	5 m	**1429279**	5 m	**1429826**	5 m	**1429949**				
	10 m	**1429282**	10 m	**1429839**	10 m	**1429952**				
	15 m	**1429295**	15 m	**1429842**	15 m	**1429965**				
	20 m	**1429305**	20 m	**1429855**	20 m	**1429978**				
	25 m	**1429318**	25 m	**1429868**	25 m	**1429981**				
	30 m	**1429321**	30 m	**1429871**	30 m	**1429994**				
	40 m	**1429334**	40 m	**1429884**	40 m	**1430006**				
	50 m	**1429347**	50 m	**1429897**	50 m	**1430019**				
M12 socket, straight										
 							0.3 m	**1431254**		
							0.5 m	**1431267**		
							1 m	**1431270**		
	2 m	**1431212**					2 m	**1431283**		
	5 m	**1431225**					5 m	**1431296**		
	10 m	**1431238**					10 m	**1431306**		
	15 m	**1431241**					15 m	**1431319**		
	Variable	**1431348**					Variable	**1431364**	Variable	**1431377**
M12 socket, angled										
 	Variable	**1431351**					Variable	**1431380**	Variable	**1431393**

Ordering example for products with **variable** cable:

For a FOUNDATION Fieldbus cable, fitted with a straight M12 plug at one end and an M12 socket at the other end, and 34.5 m in length, the ordering data is as follows:

Order No.	Length [m] max. 50 m
1431364	34.5 **Increment:** 0.5 m

Color coding		Pin assignment	
		7/8"	M12
BU		1	1
BN		2	2
Shield		3	3
n.c.		4	4

		Technical data	Technical data
		7/8"	Plug-in connector M12
Rated voltage	[V]	300	250
Rated current	[A]	5.2	4
Volume resistance		≤ 5 mΩ	≤ 5 mΩ
Conductor cross section	AWG	18	18
Contact material		CuZn	CuSn
Contact surface material		AU	Ni/Au
Contact carrier material		PA 66	TPU GF
Material of grip body		TPU	TPU, hardly inflammable, self-extinguishing
Material, knurls		Stainless steel	Stainless steel
Degree of protection		IP67	IP65/IP67/IP69K
Temperature data			
Cable, fixed installation	[°C]	-30 ... 105	-30 ... 105
Plug / socket	[°C]	-40 ... 105	-25 ... 90

H and T-distributors



H-distributor



T-distributor

	Technical data	Technical data
	SAC-5PH-M-F/2XF SH1 SCO	SAC-5P-M12T/2XM12 VP
Electrical data		
Nominal voltage U_N	60 V	60 V
Volume resistance	<= 3 mΩ	≤ 5 mΩ
Insulation resistance	> 100 MΩ	≥ 10 GΩ
Surge voltage category / pollution degree	II / 3	II / 3
Material data		
Contact material	CuZn	CuZn
Contact surface material	Ni/Au	Ni/Au
Contact carrier material	TPU GF	TPU GF
Material of grip body	TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing
Degree of protection	IP65/67	IP65/67
Temperature data		
Ambient temperature (operation)	-25 °C ... 90 °C (Plug / socket)	-25 °C ... 90 °C

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Bus system **H-distributor**, for **DeviceNet™** M12 plug to 3 x M12 sockets	**SAC-5PH-M-F/2XF SH1 SCO**	**1417414**	1			
Bus system **T-distributor**, for **DeviceNet™**, with stainless steel knurl M12 socket to 7/8" plug and 7/8" socket				**SAC-5P-M12T/2XMIN DN**	**1401028**	1
7/8" socket to 7/8" plug and 7/8" socket				**SAC-5P-MINT/2XMIN DN**	**1401029**	1
Bus system **T-distributor**, for **CANopen®** M12 socket to M12 socket and M12 plug				**SAC-5P-M12T/2XM12 VP**	**1541186**	1
Bus system **T-distributor,** for **CC-Link** M12 socket to M12 socket and M12 plug				**SAC-4P-M12T/2XM12 CCL**	**1559783**	5
Bus system **T-distributor**, for **FOUNDATION Fieldbus**, with stainless steel knurl M12 socket to M12 socket and M12 plug				**SAC-4P-M12T/2XM12 FF VA**	**1431416**	5
7/8" socket to 7/8" plug and 7/8" socket				**SAC-4P-MIN-T/2XMIN FF VA**	**1430035**	1
Bus system **T-distributor**, for **PROFIBUS** M12 plug to M12 plug and socket				**SAC-M12T/2XM12 PBDP**	**1458884**	1

Termination resistors



M8/M12 termination resistors



7/8" termination resistors

Technical data			Technical data
	SAC-5P-M12MS PB TR	SAC-4P-M12MS FF TR VA	SAC-4P-MINMS FF-TR VA
Electrical data			
Nominal voltage U_N	60 V	24 V	50 V
Volume resistance	≤ 5 mΩ	≤ 5 mΩ	≤ 5 mΩ
Insulation resistance	≥ 100 MΩ	≥ 100 MΩ	≥ 10 MΩ
Surge voltage category / pollution degree	II / 3	II / 3	II / 2
Material data			
Contact material	CuSn	CuZn	CuZn
Contact surface material	Ni/Au	Ni/Au	AU
Contact carrier material	TPU GF	TPU GF	PA 66
Material of grip body	TPU, hardly inflammable, self-extinguishing	TPU, hardly inflammable, self-extinguishing	TPU
Degree of protection	IP65/IP67/IP69K	IP65/IP68/IP69K	IP67
Temperature data			
Ambient temperature (operation)	-25 °C ... 90 °C (connector)	-25 °C ... 90 °C (Plug / socket)	-40 °C ... 80 °C (Plug / socket)

Ordering data				Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Termination resistor, M8 plug - DeviceNet™	**SAC-5P-M 8MS DN TR**	**1435988**	5			
Termination resistor, M12 plug - PROFIBUS - DeviceNet™/CANopen® - CC-Link	 **SAC-5P-M12MS PB TR** **SAC-5P-M12MS CAN TR** **SAC-4P-M12MS CCL TR**	 **1507803** **1507816** **1558470**	 5 5 1			
Termination resistor, M12 plug, stainless steel knurl - FOUNDATION Fieldbus	**SAC-4P-M12MS FF TR VA**	**1431403**	5			
Termination resistor, 7/8" plug, stainless steel knurl - FOUNDATION Fieldbus				**SAC-4P-MINMS FF-TR VA**	**1430023**	1
Termination resistor, 7/8" plug - DeviceNet™				**SAC-5P-MINMS TR-DN**	**1434701**	1

Flat-ribbon conductors, flat-ribbon conductor connectors and panel feed-throughs



Flat-ribbon conductors and accessories



Flat-ribbon conductors and panel feed-throughs with QUICKON fast connection technology

Technical data

		VS-ASI-FC-PVC...	VS-ASI-FC-PUR...
Mechanical data			
No. of pos.		2	2
Degree of protection		-	-
Cable data			
Outer sheath material		PVC	PUR
Conductor cross section		1.5 mm²	1.5 mm²
Connector data QUICKON connection			
Conductor cross section [mm²]		- ... -	- ... -
Conductor cross section [AWG]		- ... -	- ... -
Temperature data			
Plug / socket	[°C]	-	-
Cable, fixed installation	[°C]	-30 ... 90	-40 ... 85
Cable, flexible installation	[°C]	-20 ... 90	-30 ... 85

Technical data

	Q 1,5/4IDC	Q 1,5/4M20
Mechanical data		
No. of pos.	4	4
Degree of protection	IP65/67	IP65/67
Cable data		
Outer sheath material	-	-
Conductor cross section	-	-
Connector data QUICKON connection		
Conductor cross section [mm²]	0.75 mm² ... 1.5 mm²	0.75 mm² ... 1.5 mm²
Conductor cross section [AWG]	18 ... 16	18 ... 16
Temperature data		
Plug / socket	-25 ... 80	-25 ... 80
Cable, fixed installation	-	-
Cable, flexible installation	-	-

Ordering data

Description	Cable length	Type	Order No.	Pcs. / Pkt.
AS-Interface EPDM flat-ribbon conductor, 2 x 1.5 mm²				
Yellow	100 m	**VS-ASI-FC-EPDM-YE 100M**	**1432402**	1
Yellow	1000 m	**VS-ASI-FC-EPDM-YE 1000M**	**1434646**	1
Black	100 m	**VS-ASI-FC-EPDM-BK 100M**	**1432415**	1
Black	1000 m	**VS-ASI-FC-EPDM-BK 1000M**	**1434659**	1
AS-Interface PVC flat-ribbon conductor acc. to UL, 2 x 1.5 mm²				
Yellow	100 m	**VS-ASI-FC-PVC-UL-YE 100M**	**1404906**	1
Yellow	1000 m	**VS-ASI-FC-PVC-UL-YE/1000**	**1404867**	1
Black	100 m	**VS-ASI-FC-PVC-UL-BK 100M**	**1404919**	1
Black	1000 m	**VS-ASI-FC-PVC-UL-BK/1000**	**1404870**	1
AS-Interface TPE flat-ribbon conductor acc. to UL, 2 x 1.5 mm²				
Yellow	100 m	**VS-ASI-FC-TPE-UL-YE 100M**	**1404922**	1
Yellow	1000 m	**VS-ASI-FC-TPE-UL-YE 1000M**	**1434662**	1
Black	100 m	**VS-ASI-FC-TPE-UL-BK 100M**	**1404935**	1
Black	1000 m	**VS-ASI-FC-TPE-UL-BK 1000M**	**1434675**	1
AS-Interface PUR flat-ribbon conductor, 2 x 1.5 mm²				
Yellow	100 m	**VS-ASI-FC-PUR-YE 100M**	**1404883**	1
Yellow	1000 m	**VS-ASI-FC-PUR-YE/1000**	**1404841**	1
Black	100 m	**VS-ASI-FC-PUR-BK 100M**	**1404896**	1
Black	1000 m	**VS-ASI-FC-PUR-BK/1000**	**1404854**	1
Flat-ribbon conductor connector, 4-pos., for connecting one or two AS-i flat-ribbon conductors				
		Q 1,5/4IDC/24-24KU-KU-ASI-BK	**1585058**	1
Panel feed-through, for accommodating one or two AS-i flat-ribbon conductors, on the rear side with manual solder/spade connection 4.8 x 0.8 mm		**Q 1,5/4FL/24-M20KU-ESA-ASI BK**	**1437261**	1
Panel feed-through, for accommodating one or two AS-Interface flat-ribbon conductors, on the rear side with four individual 1.5 mm² wires	0.5 m	**Q 1,5/4A50/24-M20KU-ESA-ASI BK**	**1437274**	1
Metal gland, for AS-Interface flat-ribbon conductor				
Thread type: M20		**HC-M-KV-M20(1ASI)**	**1584017**	10
Thread type: M25		**HC-M-KV-M25(1ASI)**	**1584020**	10

Distributor with spring-cage connection and with round cables



Flat-ribbon conductor distributors and distributors with spring-cage connection



Distributor with round cable and molded M12 plug-in connector with SPEEDCON

Technical data

		SAC-ASI-J-Y-B-FFKDS	SAC-ASI-J-Y-Y-N
Electrical data			
Rated voltage		≤ 35 V	≤ 32 V
Rated current		≤ 6 A	≤ 8 A
Material specifications for exit			
Material of grip body		-	-
Material specifications for distributor			
Housing material		PBT	PBT
Mechanical data			
No. of pos.		4	4
Degree of protection		IP20	IP65/IP67/IP69K
Connection data for spring-cage terminal blocks			
Conductor cross section		0.2 mm² ... 1.5 mm²	-
Connection cross section AWG		24 ... 16	-
Cable data			
Outer sheath material		-	-
External cable diameter		-	-
Conductor cross section		-	-
Temperature data			
Plug / socket	[°C]	-25 ... 75	-25 ... 75
Cable, fixed installation	[°C]	-	-
Cable, flexible installation	[°C]	-	-

Technical data

		SAC-ASI-J-Y-N...	SAC-ASI-J-Y-B...
Electrical data			
Rated voltage		≤ 32 V	≤ 32 V
Rated current		≤ 4 A	≤ 4 A
Material specifications for exit			
Material of grip body		-	-
Material specifications for distributor			
Housing material		PBT	PBT
Mechanical data			
No. of pos.		2	4
Degree of protection		IP67	IP67
Connection data for spring-cage terminal blocks			
Conductor cross section		-	-
Connection cross section AWG		-	-
Cable data			
Outer sheath material		PUR	PUR
External cable diameter		-	-
Conductor cross section		4 x 0.34 mm² (signal line)	4 x 0.34 mm² (signal line)
Temperature data			
Plug / socket	[°C]	-25 ... 75	-25 ... 75
Cable, fixed installation	[°C]	-40 ... 80	-40 ... 80
Cable, flexible installation	[°C]	-25 ... 80	-25 ... 80

Ordering data

Description	Cable length	Type	Order No.	Pcs. / Pkt.
AS-Interface distributor with IP20 protection for **two flat-ribbon conductors**, 4-pos., with **spring-cage terminal blocks**		**SAC-ASI-J-Y-B-FFKDS**	**1407579**	1
AS-Interface H-distributor with high degree of protection, **parallel wired,** for distribution from one to two flat-ribbon conductors		**SAC-ASI-J-Y-Y-N**	**1405622**	1
AS-Interface distributor for **1 flat-ribbon conductor**, with **PUR** round cable and molded, **straight**, A-coded, **2-pos.** M12 socket with SPEEDCON	1 m	**SAC-ASI-J-Y-N-PUR-1,0-FS SCO**	**1407573**	1
		SAC-ASI-J-Y-N-PUR-2,0-FS SCO	**1407574**	1
AS-Interface distributor for **2 flat-ribbon conductors**, with **PUR** round cable and molded, **straight**, A-coded, **4-pos.** M12 socket with SPEEDCON	1 m	**SAC-ASI-J-Y-B-PUR-1,0-FS SCO**	**1407575**	1
		SAC-ASI-J-Y-B-PUR-2,0-FS SCO	**1407576**	1
AS-Interface distributor for **2 flat-ribbon conductors**, with **PUR** round cable and molded, **angled**, A-coded, **4-pos.** M12 socket with SPEEDCON		**SAC-ASI-J-Y-B-PUR-1,0-FR SCO**	**1407577**	1
		SAC-ASI-J-Y-B-PUR-2,0-FR SCO	**1407578**	1
AS-Interface distributor for **1 flat-ribbon conductor,** with 2.0 m **PUR** round cable and open cable end		**SAC-ASI-J-Y-N-PUR-2,0-OE**	**1407580**	1
AS-Interface distributor for **2 flat-ribbon conductors,** with 2.0 m **PUR** round cable and open cable end		**SAC-ASI-J-Y-B-PUR-2,0-OE**	**1407581**	1

Distributors with M12 socket, with screw connection, pre-assembled round cable



Distributors with M12 slot and with screw connection



PUR round cables with molded M12-SPEEDCON plug-in connectors

		Technical data		Technical data
		SAC-ASI-J-Y-N-M12FS	VS-ASI-J-Y-N-SWA-LC	-
Material data				
Housing material		PBT	PA	-
Material of grip body		-	-	TPU, hardly inflammable, self-extinguishing
No. of pos.		2	2	4
Degree of protection		IP67	IP67	IP65/IP68/IP69K
Connection data for screw connection				
Conductor cross section		-	0.14 mm² ... 1 mm² (solid)	-
Connection cross section AWG		-	26 ... 17 (solid)	-
Conductor cross section		-	0.14 mm² ... 0.75 mm² (With ferrules)	-
Connection cross section AWG		-	26 ... 18 (With ferrules)	-
Cable data				
Conductor cross section		-	-	0.75 mm²
Temperature data				
Plug / socket	[°C]	-25 ... 75	-25 ... 70	-25 ... 90
Cable, fixed installation	[°C]	-	-	-25 ... 80
Cable, flexible installation	[°C]	-	-	-5 ... 80

		Ordering data			Ordering data		
Description	Cable length	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
AS-Interface distributor for flat-ribbon conductors, with straight, A-coded M12 socket							
One flat-ribbon conductor, 2-pos.		**SAC-ASI-J-Y-N-M12FS**	**1405619**	1			
Two flat-ribbon conductors, 4-pos.		**SAC-ASI-J-Y-B-M12FS**	**1405621**	1			
AS-Interface distributor, with straight, A-coded M12 socket							
One flat-ribbon conductor, 2-pos.		**VS-ASI-J-Y-N-M12FS-LC**	**1433155**	1			
AS-Interface distributor, with screw connection, angled							
One flat-ribbon conductor, 2-pos.		**VS-ASI-J-Y-N-SWA-LC**	**1433168**	1			
Pre-assembled round cable M12 pin, straight, free cable end							
	2 m				**SAC-4P-MS/ 2,0-186 SCO**	**1555606**	1
	5 m				**SAC-4P-MS/ 5,0-186 SCO**	**1555619**	1
	10 m				**SAC-4P-MS/10,0-186 SCO**	**1555622**	1
	15 m				**SAC-4P-MS/15,0-186 SCO**	**1555635**	1
Pre-assembled round cable M12 socket, straight, free cable end							
	2 m				**SAC-4P- 2,0-186/FS SCO**	**1555648**	1
	5 m				**SAC-4P- 5,0-186/FS SCO**	**1555651**	1
	10 m				**SAC-4P-10,0-186/FS SCO**	**1555664**	1
	15 m				**SAC-4P-15,0-186/FS SCO**	**1555677**	1
Pre-assembled round cable M12 pin, straight, M12 socket, straight							
	0.3 m				**SAC-4P-MS/ 0,3-186/FS SCO**	**1555680**	1
	0.5 m				**SAC-4P-MS/ 0,5-186/FS SCO**	**1555693**	1
	1 m				**SAC-4P-MS/ 1,0-186/FS SCO**	**1555703**	1
	2 m				**SAC-4P-MS/ 2,0-186/FS SCO**	**1555716**	1
	5 m				**SAC-4P-MS/ 5,0-186/FS SCO**	**1555729**	1
	10 m				**SAC-4P-MS/10,0-186/FS SCO**	**1555732**	1
	15 m				**SAC-4P-MS/15,0-186/FS SCO**	**1555745**	1

Digital I/O devices with M8 connection method

Notes:

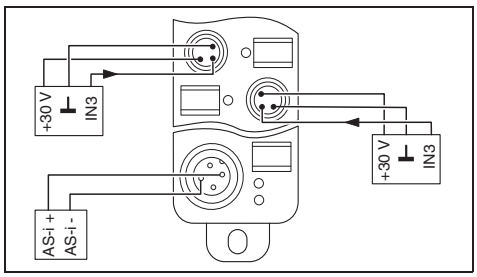
1) EMC: Class A product, see page 636

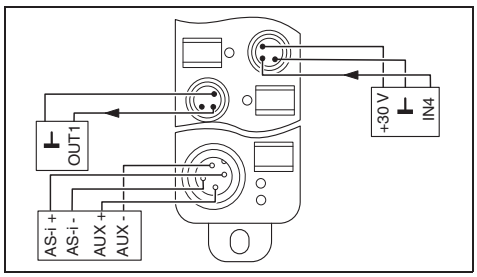


Fieldline Extension
AS-i digital input device, M8,
inputs: 24 V DC



Fieldline Extension
AS-i digital I/O device, M8,
inputs: 24 V DC, outputs: 24 V DC, 1 A





Technical data

Interface		
Fieldbus system	AS-i	AS-i
Connection method	M12 plug-in connector (A-coded)	M12 plug-in connector (A-coded)
AS-Interface		
Slave type	Single slave	Single slave
AS-i specification	2.0	2.0
Required master specification	>= 2.0	>= 2.0
AS-i profile	S-0.0	S-7.0
IO code	0	7
ID code (hex) / ID1 code / ID2 code	0 / - / -	0 / - / -
Digital inputs		
Connection method	M8 plug-in connector	M8 plug-in connector
Connection method	2, 3-wire	2, 3-wire
Number of inputs	-	-
Input characteristic curve	IEC 61131-2 type 2	IEC 61131-2 type 2
Digital outputs		
Connection method	-	M8 plug-in connector
Connection method	-	2-wire
Number of outputs	-	-
Maximum output current per channel	-	1 A
Maximum output current per module/terminal block	-	4 A
General data		
Weight	85 g	125 g
Width	30 mm	30 mm
Height	26 mm	26 mm
Depth	103 mm	143 mm
Degree of protection	IP65/67	IP65/67
Ambient temperature (operation)	-25 °C ... 70 °C	-25 °C ... 70 °C
Ambient temperature (storage/transport)	-25 °C ... 85 °C	-25 °C ... 85 °C

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Fieldline Extension AS-i digital input device			
- 4 inputs	**FLX ASI DI 4 M8[1])**	**2773403**	1
Fieldline Extension AS-i digital I/O device			
- 4 inputs, 4 outputs, 1 A	**FLX ASI DIO 4/4 M8-1A[1])**	**2773416**	1

Accessories

M8 screw plug	**PROT-M8**	**1682540**	5
Zack marker strip, flat, 10-section, without color print	**ZBF 8:UNBEDRUCKT**	**0808781**	10
Manual addressing device, for AS-Interface devices	**ASI CC ADR**	**2741338**	1

Digital I/O devices with M12 connection method

Notes:

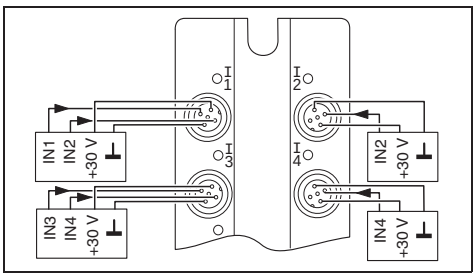
1) EMC: Class A product, see page 636

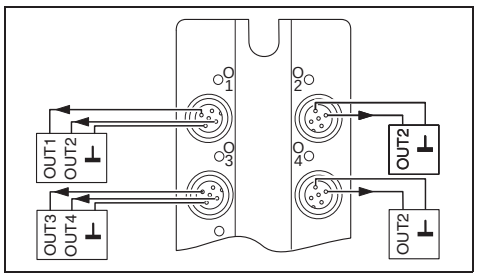


4 digital inputs



4 digital outputs





Technical data

Interface		
Fieldbus system	AS-i	AS-i
Connection method	Flat-ribbon cable penetration technique	Flat-ribbon cable penetration technique
AS-Interface		
AS-i specification	2.1	2.0
Required master specification	>= 2.0	>= 2.0
AS-i profile	S-0.A.2	S-8.1
Digital inputs		
Connection method	M12 plug-in connector	-
Connection method	2, 3-wire	-
Maximum number of inputs	4	-
Input characteristic curve	IEC 61131-2 type 2	-
Digital outputs		
Connection method	-	M12 plug-in connector
Connection method	-	2-wire
Maximum number of outputs	-	4
Maximum output current per channel	-	2 A
Maximum output current per module/terminal block	-	4 A
General data		
Weight	195 g	195 g
Drill hole spacing	108 mm	108 mm
Width	58 mm	58 mm
Height	118 mm	118 mm
Depth	35 mm	35 mm
Degree of protection	IP65/67	IP65/67
Ambient temperature (operation)	-25 °C ... 70 °C	-25 °C ... 70 °C

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Fieldline Extension AS-i digital input device			
- 4 inputs	**FLX ASI DI 4 M12[1])**	**2773429**	1
Fieldline Extension AS-i digital output device			
- Four outputs, 2 A			
Fieldline Extension AS-i digital I/O device			
- 2 inputs, 2 outputs, 2 A			
- Four inputs, three outputs, 2 A			
- 4 inputs, 4 outputs, 2 A			

Ordering data

Type	Order No.	Pcs. / Pkt.
FLX ASI DO 4 M12-2A[1])	**2773458**	1

Accessories

M12 screw plug	**PROT-M12**	**1680539**	5
Label sheet for laser printers, 64 x 16 mm, color: white	**BMKL 64X16 WH**	**0821807**	2
Label sheet for laser printers, 108 x 16 mm, color: white			
Manual addressing device, for AS-Interface devices	**ASI CC ADR**	**2741338**	1
Programming cable, for addressing the AS-i devices	**ASI CC ADR CAB CINCH**	**2741341**	1

Accessories

PROT-M12	**1680539**	5
BMKL 64X16 WH	**0821807**	2
ASI CC ADR	**2741338**	1
ASI CC ADR CAB CINCH	**2741341**	1



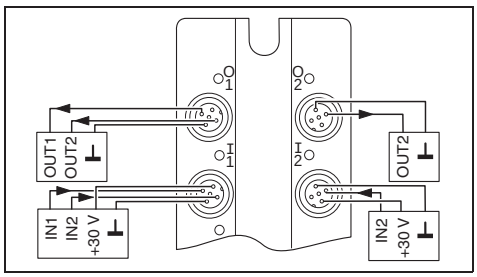
2 digital inputs and 2 digital outputs

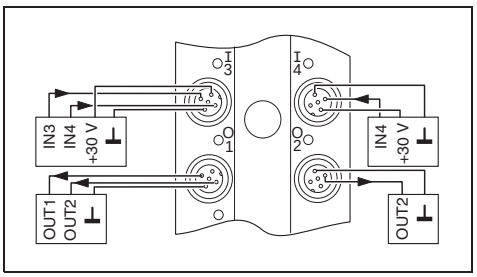


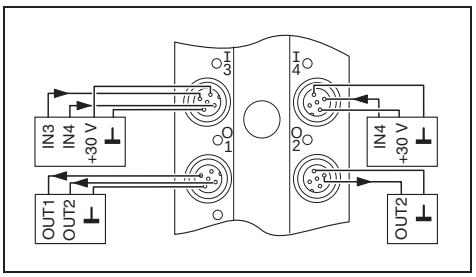
4 digital inputs and 3 digital outputs



4 digital inputs and 4 digital outputs







Technical data

AS-i	
Flat-ribbon cable penetration technique	
2.1	
>= 2.0	
S-B.A.2	
M12 plug-in connector	
2, 3-wire	
2	
IEC 61131-2 type 2	
M12 plug-in connector	
2-wire	
2	
2 A	
4 A	
195 g	
108 mm	
58 mm	
118 mm	
35 mm	
IP65/67	
-25 °C ... 70 °C	

Technical data

AS-i	
Flat-ribbon cable penetration technique	
2.1	
>= 2.0	
S-7.A.2	
M12 plug-in connector	
2, 3-wire	
4	
IEC 61131-2 type 2	
M12 plug-in connector	
2-wire	
3	
2 A	
4 A	
245 g	
108 mm	
58 mm	
150 mm	
35 mm	
IP65/67	
-25 °C ... 70 °C	

Technical data

AS-i	
Flat-ribbon cable penetration technique	
3.0	
>= 3.0	
S-7.A.7	
M12 plug-in connector	
2, 3-wire	
4	
IEC 61131-2 type 2	
M12 plug-in connector	
2-wire	
4	
2 A	
245 g	
108 mm	
58 mm	
150 mm	
35 mm	
IP65/67	
-25 °C ... 70 °C	

Ordering data

Type	Order No.	Pcs. / Pkt.
FLX ASI DIO 2/2 M12-2A[1])	**2773432**	1

Ordering data

Type	Order No.	Pcs. / Pkt.
FLX ASI DIO 4/3 M12-2A[1])	**2773445**	1

Ordering data

Type	Order No.	Pcs. / Pkt.
FLX ASI 3.0 DIO 4/4 M12-2A[1])	**2773474**	1

Accessories

PROT-M12	**1680539**	5
BMKL 64X16 WH	**0821807**	2
ASI CC ADR	**2741338**	1
ASI CC ADR CAB CINCH	**2741341**	1

Accessories

PROT-M12	**1680539**	5
BMKL 11,5 (108X16) WH	**0821797**	2
ASI CC ADR	**2741338**	1
ASI CC ADR CAB CINCH	**2741341**	1

Accessories

PROT-M12	**1680539**	5
BMKL 11,5 (108X16) WH	**0821797**	2
ASI CC ADR	**2741338**	1
ASI CC ADR CAB CINCH	**2741341**	1

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 rooms 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 mm² 32 x 0.1 mm		Yellow, green, white, brown, pink, gray	PE	-30°C ... 70°C	336 340

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	337 341

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	338 344 345 348

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	343 346

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	347

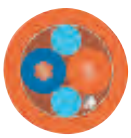
FOUNDATION Fieldbus cable – type 960
FOUNDATION Fieldbus/PROFIBUS PA cable – type 961

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	350
961 **PVC** Blue	2-pos.	7/8", M12	2 x 20 AWG 7 x 0.3 mm		Blue, orange	PO	-30°C ... 105°C	342 349

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	251

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	243 251 252

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	251 252

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	251 252

PROFINET cable – type 937



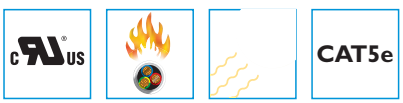
PROFINET cable for railway applications. The cable is oil resistant. It meets fire safety standard BS6853.
The cable's transmission properties meet CAT5e.

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	251 252

EtherCAT cable - type 93G



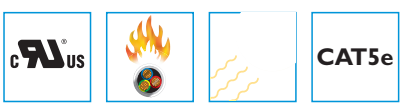
EtherCAT cable for flexible installation. The cable is oil resistant. It is UV resistant according to UL 1581 Sec. 1200 and is therefore also suitable for use in harsh industrial environments. The cable's transmission properties meet CAT5e.

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	254

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	242 244

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	242

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	242 246

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	256

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	242 246

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	242

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	242

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	248

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	250

VARAN cable – type 970

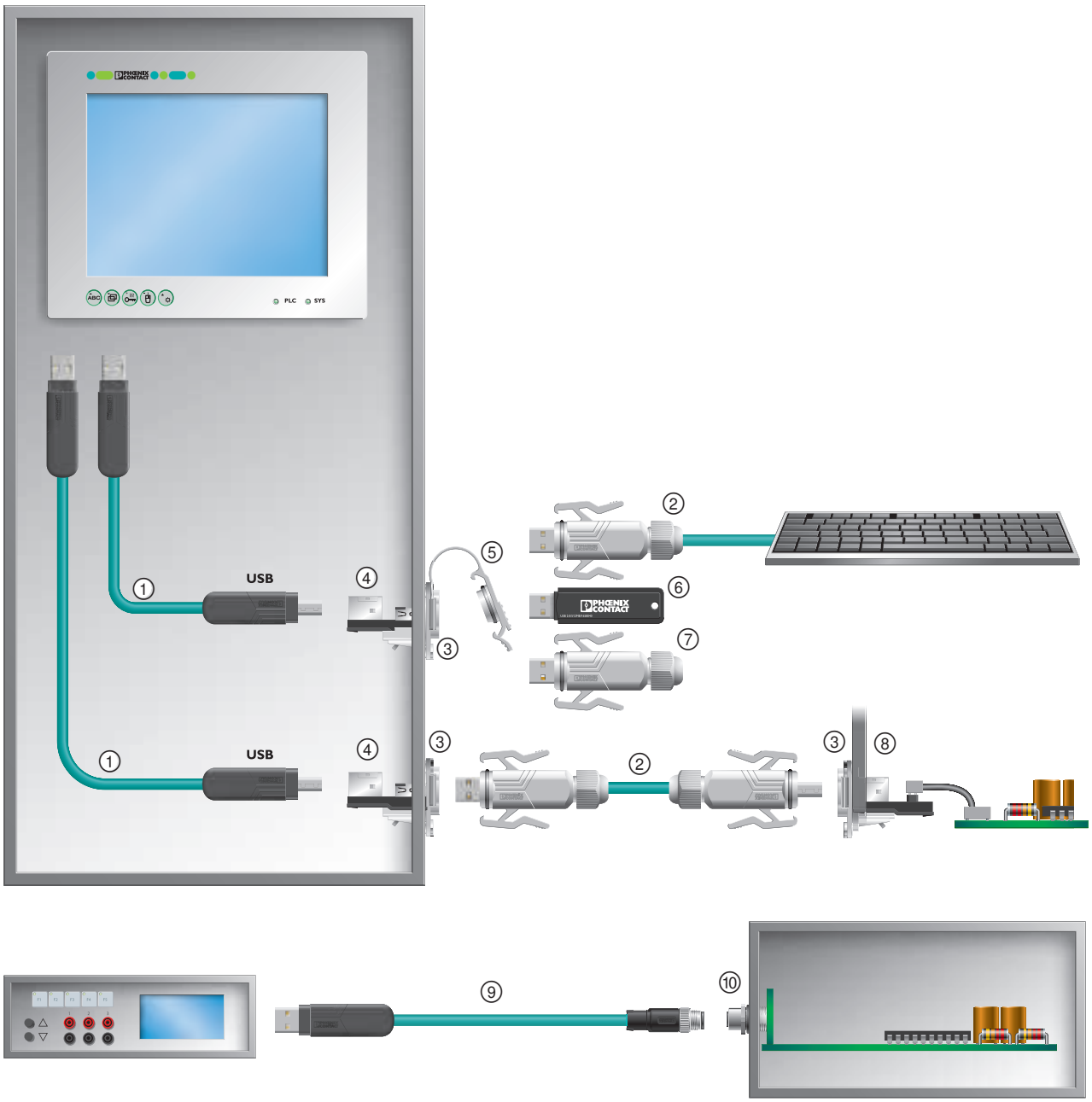
CAT5e

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**

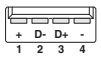
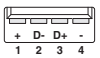
Type	No. of positions	Use	Structure	Cross section	Wire colors	Wire insulation	Temperature range	Page
970 **Santoprene** Black	6-pos.	M12, PP, RJ45	1 x 2 x 22 AWG 19 x 0.1 mm + 2 x 2 x 26 AWG 19 x 0.1 mm		Brown, blue White-orange, orange, white-green, green	PE	-40°C ... 80°C	See: phoenix contact.net/ products

USB

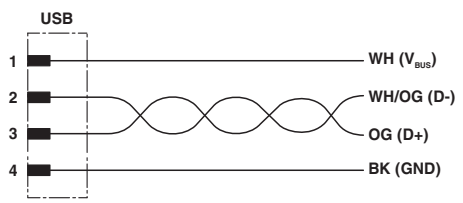


No.	Designation	Page
①	Assembled USB cables	371
②	Assembled USB cables, IP65/IP67	371
③	Panel mounting frame with IP65/IP67 protection for Freenet system, version 6	372
④	Socket-socket modules for Freenet system	372
⑤	Protective cover for the panel mounting frame with IP65/IP67 protection	372
⑥	USB memory stick with IP20 protection	372
⑦	USB memory stick with IP67 protection	372
⑧	USB socket insert with pin plug connection	372
⑨	Assembled USB cables with M12 mini-USB	371
⑩	M12 flush-type plug-in connector, mini-USB, for PCB mounting	371

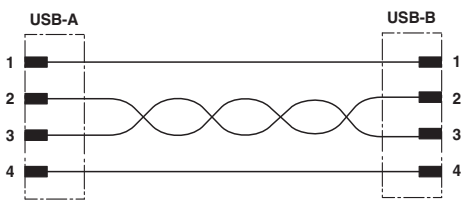
Assembled cables, IP20/IP67

	USB type A plug, IP20	USB type A plug, IP67
		
		

		Ordering data		Ordering data		Ordering data
Free end			**Order No.**		**Order No.**	**Order No.**
		1 m	**1655771**	1 m	**1655742**	
		2 m	**1655784**	2 m	**1655755**	
		5 m	**1655797**	5 m	**1655768**	
USB type B plug, IP20						
		1 m	**1654853**			
		2 m	**1653935**	2 m	**1653896**	
		5 m	**1653948**	5 m	**1653906**	
USB type B plug, IP67						
		2 m	**1653919**	2 m	**1653870**	
		5 m	**1653922**	5 m	**1653883**	
M12 mini-USB, SPEEDCON						
		1 m	**1420168**			
		2 m	**1420171**			
		5 m	**1420184**			



USB cable with a free end



USB connector pin assignment

		Technical data	Technical data
		IP20	**IP67**
Transmission characteristics (category)		USB 2.0	USB 2.0
Cable diameter	[mm]	6.7	6.7
Housing material		PA	PA
Handle color		black	gray
No. of pos.		4	4
Degree of protection		IP20	IP67
Temperature data			
Cable, fixed installation	[°C]	-20 ... 60	-20 ... 60
Cable, flexible installation	[°C]	0 ... 50	0 ... 50

Panel feed-throughs, memory sticks, protective cover

Panel feed-throughs can be implemented with the IP67 panel mounting frame and USB socket inserts. The USB memory sticks with IP67 protection enable wireless data transmission in rough industrial environments.



USB socket inserts and panel mounting frames, IP67, Freenet system

Technical data

	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	-
Mechanical data		
No. of pos.	4	4
Degree of protection	IP20	IP20
Insertion/withdrawal cycles	≥ 1000	-
Temperature data		
Ambient temperature (operation)	-15 °C ... 65 °C	-15 °C ... 60 °C

Ordering data

Description	Cable length	Type	Order No.	Pcs. / Pkt.
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., 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



Installation system

QPD installation system

Industrial power distribution does not have to be time-consuming or complicated. The robust IP68/IP69K installation system for capacities up to 690 V/20 A from Phoenix Contact is proof of this.

Thanks to the proven QUICKON IDC fast connection, cables of up to 5 x 2.5 mm² can be connected quickly and easily, without the need for stripping or special tools.

The system, which consists of H-distributors, panel feed-throughs, plug-in connectors, and cable connectors, offers a wide range of options for power distribution in industrial environments and building installation.

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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.

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.

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.

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

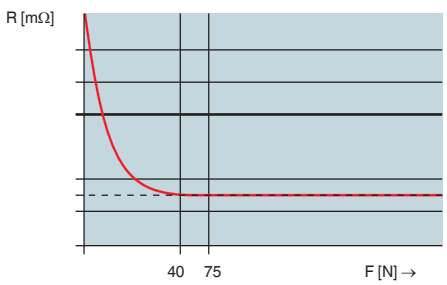


1. Flat contacts are characterized by their space-saving and cost-effective design.

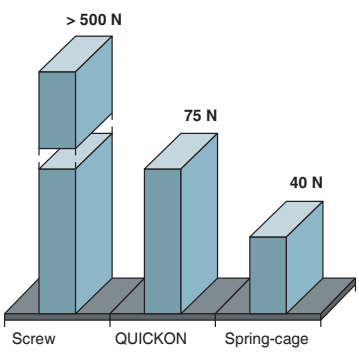


2. Tube contacts cover an even greater cross section range.

Contact resistance



Contact force



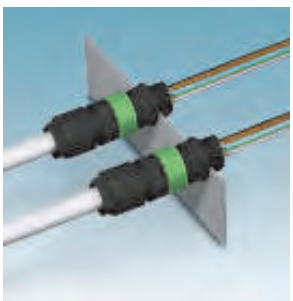
The positive properties and strong market acceptance of QUICKON have encouraged Phoenix Contact to develop a whole range of different products. This range covers numerous modular terminal blocks, PCB plugs, industrial plug-in connectors, and various customer-specific integrations within a cross section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



Heavy-duty plug-in connectors



Sensor/actuator boxes



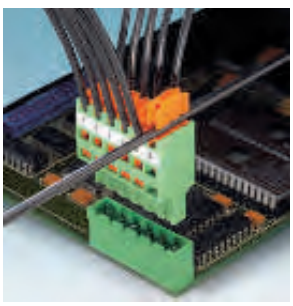
Installation system



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



QUICKON is an insulation displacement connection technology for insulation materials such as PVC, PE, TPE, and rubber that can be cut. This fast connection technology from Phoenix Contact has established and proven itself in various applications in the last few years.

Advantages:

– Considerable time savings during on-site connection since cable wires no longer have to be stripped
– Easy assembly without special tools
– High level of reliability thanks to tried-and-tested connection contacts and robust housing with up to IP68/IP69K protection
– Convenient on-site installation
– Devices no longer need to be opened for connection purposes
– Preparatory installation work can be carried out anywhere within the cable's swiveling range



1. Strip the cable and insert into the nut



2. Cut the ends of the litz wires flush



3. Push on union nut and tighten to the indicated point



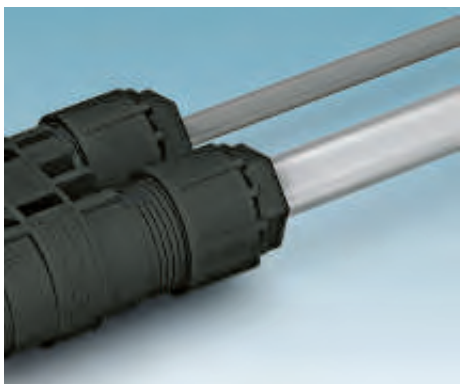
Lagging PE contact

With the QUICKON connection, lagging PE is implemented by routing the PE conductor in a half circle round the live wires.



Reconnection

The QUICKON connection can be rewired up to 10 times with the same cable cross section. In this case, the connection must be completely re-established.



Screwing on correctly

The correct setting for the QUICKON nut is marked on the connection. In the case of thin cables, the cable clamp type cage must close more for the conductor strain relief to take effect.



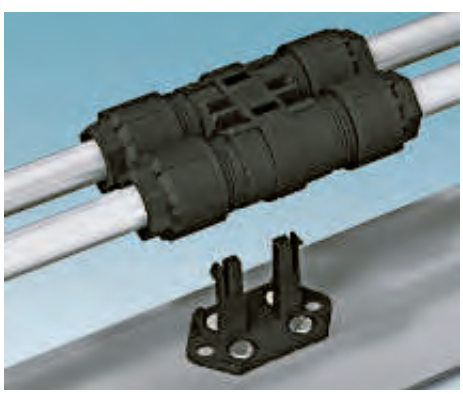
Fast check

The H-distributor has four cable connections. If only three connections are assigned, a cable outlet is available for test purposes.



Additional bridging

A cable outlet can also be used for bridging functions by simply cross-wiring a conductor.



Easy assembly

The QPD CLIP 2,5 BK assembly clip is available for simplifying the assembly of the H-distributor.

H-distributor, 2.5 mm²

- Can be used as an H-distributor with continuous master cable
- Can be used a star distributor
- Can be used as a Y-distributor with a test connection
- Touch-proof in accordance with DIN EN 50274
- Also available as gray color versions



With QUICKON nut



Without QUICKON nut

	Technical data		Technical data	
	3+PE-pos.	4+PE-pos.	3+PE-pos.	4+PE-pos.
General data				
Degree of protection	IP68/IP69K		IP68/IP69K	
Electrical data				
Rated voltage (III/3)	690 V		690 V	
Rated surge voltage	6 kV		6 kV	
Rated current	20 A (see also derating diagram)		20 A (see also derating diagram)	
Surge voltage category / pollution degree	III / 3		III / 3	
Material data				
Housing material	PA		PA	
Contact material	Cu		Cu	
Inflammability class according to UL 94	V0		V0	
Mechanical data				
Impact category	IK07		IK07	
Color	black		black	
Connector data QUICKON connection				
Core insulation	PVC/PE/TPE/rubber		PVC/PE/TPE/rubber	
Litz wire structure / smallest wire diameter	VDE 0295 class 1 to 6 / min. 0.15 mm		VDE 0295 class 1 to 6 / min. 0.15 mm	
Connection frequency	max. 10		max. 10	
Conductor cross section [mm²] solid / stranded	1 mm² ... 2.5 mm² / 1 mm² ... 2.5 mm²		1 mm² ... 2.5 mm² / 1 mm² ... 2.5 mm²	
Conductor cross section [AWG]	16 ... 14		16 ... 14	
Temperature data				
Ambient temperature (operation)	-40 °C ... 80 °C (see also derating diagram)		-40 °C ... 80 °C (see also derating diagram)	
Temperature when conductor connected	-5 °C ... 50 °C		-5 °C ... 50 °C	

	Ordering data				Ordering data			
Description	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	3+PE-pos.		4+PE-pos.		3+PE-pos.		4+PE-pos.	
H-distributor, with **four** QUICKON nuts and one sealing bolt, for cable diameter:								
6 mm ... 10 mm	**1582145**	1						
9 mm ... 14 mm	**1582148**	1						
6 mm ... 11 mm			**1406368**	1				
9 mm ... 16 mm			**1406369**	1				
H-distributor, without QUICKON nuts					**1582154**	1	**1406370**	1
QUICKON nut, for connections up to 2.5 mm², for cable diameter:								
6 mm ... 10 mm					**1582226**	1		
9 mm ... 14 mm					**1582229**	1		
6 mm ... 11 mm							**1459663**	1
9 mm ... 16 mm							**1459647**	1

T-distributor, 2.5 mm²

N

– Also available as gray color versions
– Touch-proof in accordance with DIN EN 50274



With three QUICKON nuts

N



With two QUICKON nuts

	Technical data	Technical data
General data		
Degree of protection	IP68/IP69K	IP68/IP69K
Electrical data		
Rated voltage (III/3)	690 V	690 V
Rated surge voltage	6 kV	6 kV
Rated current	20 A (see also derating diagram)	20 A (see also derating diagram)
Surge voltage category / pollution degree	III / 3	III / 3
Material data		
Housing material	PA	PA
Contact material	Cu	Cu
Inflammability class according to UL 94	V0	V0
Mechanical data		
Impact category	IK07	IK07
Color	black	black
Connector data QUICKON connection		
Core insulation	PVC/PE/TPE/rubber	PVC/PE/TPE/rubber
Litz wire structure / smallest wire diameter	VDE 0295 class 1 to 6 / min. 0.15 mm	VDE 0295 class 1 to 6 / min. 0.15 mm
Connection frequency	max. 10	max. 10
Conductor cross section [mm²] solid / stranded	1 mm² ... 2.5 mm² / 1 mm² ... 2.5 mm²	1 mm² ... 2.5 mm² / 1 mm² ... 2.5 mm²
Conductor cross section [AWG]	16 ... 14	16 ... 14
Temperature data		
Ambient temperature (operation)	-40 °C ... 80 °C (see also derating diagram)	-40 °C ... 80 °C (see also derating diagram)
Temperature when conductor connected	-5 °C ... 50 °C	-5 °C ... 50 °C

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
T-distributor, for cable diameter:						
6 mm ... 11 mm	**QPD T 4PE 3X6-11 BK**	**1405401**	1	**QPD T 4PE 2X6-11 BK**	**1405403**	1
9 mm ... 16 mm	**QPD T 4PE 3X9-16 BK**	**1405402**	1	**QPD T 4PE 2X9-16 BK**	**1405404**	1
QUICKON nut, for connections up to 2.5 mm², for cable diameter:						
6 mm ... 11 mm				**QPD N 4PE2,5 6-11 BK**	**1459663**	1
9 mm ... 16 mm				**QPD N 4PE2,5 9-16 BK**	**1459647**	1

Cable connectors, 0.34 mm² - 1.5 mm²

– Easy cable extension or cable repairs
– The QUICKON connections at opposite ends feature different position markings and mechanical coding

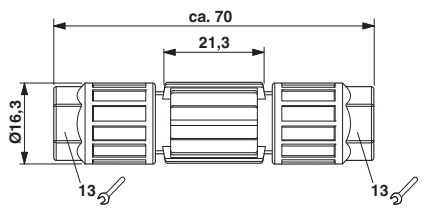


Technical data

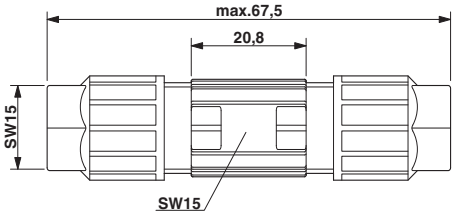
	0.34 mm²	0.75 mm²	1.5 mm²
General data			
Degree of protection		IP65/67	
Electrical data			
Rated voltage (III/3)	125 V	250 V	500 V
Rated surge voltage	2.5 kV	4 kV	6 kV
Rated current	5 A	9 A	15 A
Surge voltage category / pollution degree		III / 3	
Material data			
Housing material		PA	
Contact material	Steel		CuZn
Contact surface material		Tin-plated	
Inflammability class according to UL 94		V0	
Impact category		IK06	
Connector data QUICKON connection			
Core insulation		PVC/PE	
Litz wire structure / smallest wire diameter	VDE 0295 class 1 to 6 / min. 0.10 mm	VDE 0295 class 1 to 6 / min. 0.15 mm	
Connection frequency		10	
Conductor cross section [mm²] solid / stranded	0.14 mm² ... 0.25 mm² / 0.14 mm² ... 0.34 mm²	0.34 mm² ... 0.5 mm² / 0.34 mm² ... 0.75 mm²	0.75 mm² ... 1 mm² / 0.75 mm² ... 1.5 mm²
Conductor cross section [AWG]	26 ... 22	22 ... 18	18 ... 16
Temperature data			
Ambient temperature (operation)	-40 °C ... 80 °C (Specifications of the cable manufacturer must be observed)		
Temperature when conductor connected	-5 °C ... 50 °C (Specifications of the cable manufacturer must be observed)		

Ordering data

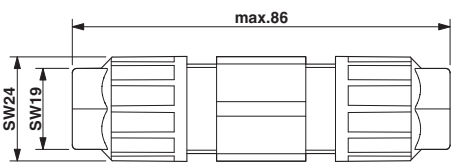
Description	Color	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		0.34 mm²		0.75 mm²		1.5 mm²	
Cable connector, for connecting round cables							
4-pos., cable Ø: 3.5-6 mm	black	**1641879**	1				
4-pos., cable Ø: 4-8 mm	black			**1642140**	1		
4-pos., cable Ø: 6-12 mm	black					**1642153**	1
3+PE-pos., cable Ø: 6-12 mm	black					**1642182**	1



Conductor connector, QUICKON connection: 0.14 mm² ... 0.34 mm²



Conductor connector, QUICKON connection: 0.34 mm² ... 0.75 mm²



Conductor connector, QUICKON connection: 0.75 mm² ... 1.5 mm²

Cable connectors, 2.5 mm²

- Easy cable extension or cable repairs
- The QUICKON connections at opposite ends feature different position markings and mechanical coding
- The 2.5 mm² connector can be used here instead of the QUICKON nut
- Also available as gray color versions

Notes:

For matching connector, 2.5 mm², see page 390



With two QUICKON nuts



With one QUICKON nut

	Technical data		Technical data	
	3+PE-pos.	4+PE-pos.	3+PE-pos.	4+PE-pos.
General data				
Degree of protection	IP68/IP69K		IP68/IP69K	
Electrical data				
Rated voltage (III/3)	690 V		690 V	
Rated surge voltage	6 kV		6 kV	
Rated current	20 A		20 A	
Surge voltage category / pollution degree	III / 3		III / 3	
Material data				
Housing material	PA		PA	
Contact material	Cu		Cu	
Contact surface material	Silver-plated		Silver-plated	
Inflammability class according to UL 94	V0		V0	
Impact category	IK07		IK07	
Color	black		black	
Connector data QUICKON connection				
Core insulation	PVC/PE/TPE/rubber		PVC/PE/TPE/rubber	
Litz wire structure / smallest wire diameter	VDE 0295 class 1 to 6 / min. 0.15 mm		VDE 0295 class 1 to 6 / min. 0.15 mm	
Connection frequency	10		10	
Conductor cross section [mm²] solid / stranded	1 mm² ... 2.5 mm² / 1 mm² ... 2.5 mm²		1 mm² ... 2.5 mm² / 1 mm² ... 2.5 mm²	
Conductor cross section [AWG]	16 ... 14		16 ... 14	
Temperature data				
Ambient temperature (operation)	-40 °C ... 80 °C		-40 °C ... 80 °C	
Temperature when conductor connected	-5 °C ... 50 °C		-5 °C ... 50 °C	

	Ordering data				Ordering data			
Description	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	3+PE-pos.		4+PE-pos.		3+PE-pos.		4+PE-pos.	
Plug-in connectors, for cable diameter:								
6 mm ... 10 mm	**1582211**	1			**1582220**	1		
9 mm ... 14 mm	**1582214**	1			**1582223**	1		
6 mm ... 11 mm			**1403838**	1			**1403834**	1
9 mm ... 16 mm			**1403836**	1			**1403831**	1
QUICKON nut, for connections up to 2.5 mm², for cable diameter:								
6 mm ... 10 mm					**1582226**	1		
9 mm ... 14 mm					**1582229**	1		
6 mm ... 11 mm							**1459663**	1
9 mm ... 16 mm							**1459647**	1

Panel feed-throughs, 2.5 mm², with QUICKON connection on both sides

– Panel cutout with anti-rotation protection
– Interior can be pre-assembled
– QPD connectors can be used on the exterior as an option
– Also available as gray color versions



With two QUICKON nuts



With one QUICKON nut

	Technical data		Technical data	
	3+PE-pos.	4+PE-pos.	3+PE-pos.	4+PE-pos.
General data				
Degree of protection	IP68/IP69K		IP68/IP69K	
Electrical data				
Rated voltage (III/3)	690 V		690 V	
Rated surge voltage	6 kV		6 kV	
Rated current	20 A		20 A	
Surge voltage category / pollution degree	III / 3		III / 3	
Material data				
Housing material	PA		PA	
Contact material	Cu		Cu	
Contact surface material	Silver-plated		Silver-plated	
Inflammability class according to UL 94	V0		V0	
Impact category	IK07		IK07	
Color	black		black	
Connector data QUICKON connection				
Core insulation	PVC/PE/TPE/rubber		PVC/PE/TPE/rubber	
Litz wire structure / smallest wire diameter	VDE 0295 class 1 to 6 / min. 0.15 mm		VDE 0295 class 1 to 6 / min. 0.15 mm	
Connection frequency	10		10	
Conductor cross section [mm²] solid / stranded	1 mm² ... 2.5 mm² / 1.5 mm² ... 2.5 mm²	1 mm² ... 2.5 mm² / 1 mm² ... 2.5 mm²	1 mm² ... 2.5 mm² / 1.5 mm² ... 2.5 mm²	1 mm² ... 2.5 mm² / 1 mm² ... 2.5 mm²
Conductor cross section [AWG]	16 ... 14		16 ... 14	
Temperature data				
Ambient temperature (operation)	-40 °C ... 80 °C		-40 °C ... 80 °C	
Temperature when conductor connected	-5 °C ... 50 °C		-5 °C ... 50 °C	

	Ordering data				Ordering data			
Description	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	3+PE-pos.		4+PE-pos.		3+PE-pos.		4+PE-pos.	
Panel feed-through, with M25 x 1.5 mounting flange, **with** QUICKON nut, for cable diameter:								
6 mm ... 10 mm	**1582542**	1			**1582548**	1		
9 mm ... 14 mm	**1582539**	1			**1582545**	1		
6 mm ... 11 mm			**1403844**	1			**1403848**	1
9 mm ... 16 mm			**1403841**	1			**1403846**	1
QUICKON nut, for connections up to 2.5 mm², for cable diameter:								
6 mm ... 10 mm					**1582226**	1		
9 mm ... 14 mm					**1582229**	1		
6 mm ... 11 mm							**1459663**	1
9 mm ... 16 mm							**1459647**	1

Panel feed-throughs, 1.5 mm²

– Devices no longer need to be opened in order to connect the cables
– User-friendly connection, even on devices that are difficult to access



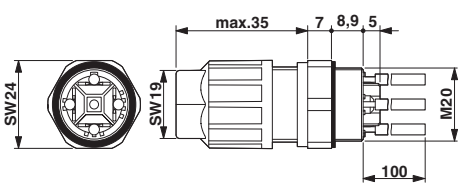
With litz wires



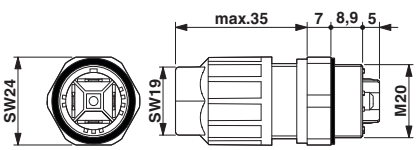
With manual solder/spade connection

	Technical data		Technical data	
	3+PE-pos.	4-pos.	3+PE-pos.	4-pos.
General data				
Degree of protection	IP65/67		IP65/67	
Electrical data				
Rated voltage (III/3)	500 V (with insulating sleeve PT/FS 4,8. Without insulating sleeve 250 V AC.)		500 V (with insulating sleeve PT/FS 4,8. Without insulating sleeve 250 V AC.)	
Rated surge voltage	6 kV		6 kV	
Rated current	15 A		15 A	
Surge voltage category / pollution degree	III / 3		III / 3	
Material data				
Housing material	PA		PA	
Contact material	CuZn		CuZn	
Contact surface material	Tin-plated		Tin-plated	
Inflammability class according to UL 94	V0		V0	
Impact category	IK07		IK07	
Color	black		black	
Connector data QUICKON connection				
Core insulation	PVC/PE		PVC/PE	
Litz wire structure / smallest wire diameter	VDE 0295 class 1 to 6 / min. 0.15 mm		VDE 0295 Cl.2-5, min. wire diameter 0.2 mm	VDE 0295 class 1 to 6 / min. 0.15 mm
Connection frequency	10		10	
Conductor cross section [mm²] solid / stranded	0.75 mm² ... 1 mm² / 0.75 mm² ... 1.5 mm²		0.75 mm² ... 1 mm² / 0.75 mm² ... 1.5 mm²	
Conductor cross section [AWG]	18 ... 16		18 ... 16	
Temperature data				
Ambient temperature (operation)	-40 °C ... 80 °C (Specifications of the cable manufacturer must be observed)		-25 °C ... 80 °C (Specifications of the cable manufacturer must be observed.)	-40 °C ... 80 °C (Specifications of the cable manufacturer must be observed)
Temperature when conductor connected	-5 °C ... 50 °C (Specifications of the cable manufacturer must be observed)		-5 °C ... 50 °C (Specifications of the cable manufacturer must be observed)	

		Ordering data			Ordering data			
Description	Cable length	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		3+PE-pos.		4-pos.		3+PE-pos.		4-pos.	
Panel feed-through, with 1.5 mm² litz wire, connecting thread: M20 x 1.5									
	0.1 m	**1584787**	10						
	0.5 m			**1585045**	10				
Panel feed-through, with 4.8 mm x 0.8 mm manual solder/spade connection, connection thread: M20 x 1.5, color: black, terminal marking: L1, N, PE						**1641594**	10		
Panel feed-through, with 4.8 mm x 0.8 mm manual solder/spade connection, connecting thread: M20 x 1.5, color: black						**1641659**	10	**1643000**	10



Dimensional drawing: panel feed-through with litz wire



Dimensional drawing: panel feed-through with manual solder/spade connection

Panel feed-throughs, 2.5 mm², with litz wires

– Devices no longer need to be opened in order to connect the cables
– User-friendly connection, even on devices that are difficult to access
– Also available as gray color versions



With QUICKON nut



Without QUICKON nut

	Technical data		Technical data	
	3+PE-pos.	4+PE-pos.	3+PE-pos.	4+PE-pos.
General data				
Degree of protection	IP68/IP69K		IP68/IP69K	
Electrical data				
Rated voltage (III/3)	690 V		690 V	
Rated surge voltage	6 kV		6 kV	
Rated current	20 A		20 A	
Surge voltage category / pollution degree	III / 3		III / 3	
Material data				
Housing material	PA		PA	
Contact material	Cu		Cu	
Inflammability class according to UL 94	V0		V0	
Mechanical data				
Impact category	IK07		IK07	
Color	black		black	
Connector data QUICKON connection				
Core insulation	PVC/PE/TPE/rubber		PVC/PE/TPE/rubber	
Litz wire structure / smallest wire diameter	VDE 0295 class 1 to 6 / min. 0.15 mm		VDE 0295 class 1 to 6 / min. 0.15 mm	
Connection frequency	max. 10		max. 10	
Conductor cross section [mm²] solid / stranded	1 mm² ... 2.5 mm² / 1 mm² ... 2.5 mm²		1 mm² ... 2.5 mm² / 1 mm² ... 2.5 mm²	
Conductor cross section [AWG]	16 ... 14		16 ... 14	
Temperature data				
Ambient temperature (operation)	-40 °C ... 80 °C		-40 °C ... 80 °C	
Temperature when conductor connected	-5 °C ... 50 °C		-5 °C ... 50 °C	

		Ordering data				Ordering data			
Description	Cable length	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
		3+PE-pos.		4+PE-pos.		3+PE-pos.		4+PE-pos.	
Panel feed-through, I_N=15 A, with M20 x 1.5 mounting flange, **with** QUICKON nut, for cable diameter:									
6 mm ... 11 mm	0.5 m			**1403725**	1				
6 mm ... 11 mm	1 m			**1403727**	1				
9 mm ... 16 mm	0.5 m			**1403731**	1				
9 mm ... 16 mm	1 m			**1403733**	1				
Panel feed-through, with M25 x 1.5 mounting flange, **with** QUICKON nut, for cable diameter:									
6 mm ... 10 mm	0.5 m	**1582163**	1						
6 mm ... 10 mm	1 m	**1582160**	1						
9 mm ... 14 mm	0.5 m	**1582175**	1						
9 mm ... 14 mm	1 m	**1582172**	1						
6 mm ... 11 mm	0.5 m			**1582557**	1				
6 mm ... 11 mm	1 m			**1582558**	1				
9 mm ... 16 mm	0.5 m			**1582561**	1				
9 mm ... 16 mm	1 m			**1582562**	1				
Panel feed-through, with M20 x 1.5 mounting flange, **without** QUICKON nut									
	0.5 m							**1403737**	1
	1 m							**1403739**	1
Panel feed-through, with M25 x 1.5 mounting flange, **without** QUICKON nut									
	0.5 m					**1582187**	1	**1582565**	1
	1 m					**1582190**	1	**1582566**	1
QUICKON nut, for connections up to 2.5 mm², for cable diameter:									
6 mm ... 10 mm						**1582226**	1		
9 mm ... 14 mm						**1582229**	1		
6 mm ... 11 mm								**1459663**	1
9 mm ... 16 mm								**1459647**	1

Panel feed-throughs, 2.5 mm², with manual solder/spade connection

– Devices no longer need to be opened in order to connect the cables
– User-friendly connection, even on devices that are difficult to access
– Also available as gray color versions



With QUICKON nut



Without QUICKON nut

	Technical data		Technical data	
	3+PE-pos.	4+PE-pos.	3+PE-pos.	4+PE-pos.
General data				
Degree of protection	IP68/IP69K		IP68/IP69K	
Electrical data				
Rated voltage (III/3)	690 V (With insulating sleeve PT/FS 4,8, 1670497 without insulating sleeve 250 V.)		690 V (With insulating sleeve PT/FS 4,8, 1670497 without insulating sleeve 250 V.)	
Rated surge voltage	6 kV		6 kV	
Rated current	20 A	15 A	20 A	15 A
Surge voltage category / pollution degree	III / 3		III / 3	
Material data				
Housing material	PA		PA	
Contact material	Cu		Cu	
Inflammability class according to UL 94	V0		V0	
Mechanical data				
Impact category	IK07		IK07	
Color	black		black	
Connector data QUICKON connection				
Core insulation	PVC/PE/TPE/rubber		PVC/PE/TPE/rubber	
Litz wire structure / smallest wire diameter	VDE 0295 class 1 to 6 / min. 0.15 mm		VDE 0295 class 1 to 6 / min. 0.15 mm	
Connection frequency	max. 10		max. 10	
Conductor cross section [mm²] solid / stranded	1 mm² ... 2.5 mm² / 1 mm² ... 2.5 mm²		1 mm² ... 2.5 mm² / 1 mm² ... 2.5 mm²	
Conductor cross section [AWG]	16 ... 14		16 ... 14	
Temperature data				
Ambient temperature (operation)	-40 °C ... 80 °C		-40 °C ... 80 °C	
Temperature when conductor connected	-5 °C ... 50 °C		-5 °C ... 50 °C	

	Ordering data				Ordering data			
Description	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	3+PE-pos.		4+PE-pos.		3+PE-pos.		4+PE-pos.	
Panel feed-through, I_N=15 A, with M20 x 1.5 mounting flange, **with** QUICKON nut, for cable diameter:								
6 mm ... 11 mm			**1403729**	1				
9 mm ... 16 mm			**1403735**	1				
Panel feed-through, with M25 x 1.5 mounting flange, **with** QUICKON nut, for cable diameter:								
6 mm ... 10 mm	**1582166**	1						
9 mm ... 14 mm	**1582178**	1						
6 mm ... 11 mm			**1582559**	1				
9 mm ... 16 mm			**1582563**	1				
Panel feed-through, with mounting flange, **without** QUICKON nut, connecting thread:								
M20, I_N=15 A							**1403741**	1
Panel feed-through, with M25 x 1.5 mounting flange, **without** QUICKON nut								
M25, I_N=20 A					**1582196**	1	**1582567**	1
QUICKON nut, for connections up to 2.5 mm², for cable diameter:								
6 mm ... 10 mm					**1582226**	1		
9 mm ... 14 mm					**1582229**	1		
6 mm ... 11 mm							**1459663**	1
9 mm ... 16 mm							**1459647**	1

Panel feed-throughs, 2.5 mm², with push-in connection

- Devices no longer need to be opened in order to connect the cables
- User-friendly connection, even on devices that are difficult to access
- For internal push-in connection, solid conductors are simply stripped and inserted in the connection
- Also available as gray color versions



With QUICKON nut



Without QUICKON nut

	Technical data	Technical data
General data		
Degree of protection	IP68/IP69K	IP68/IP69K
Electrical data		
Rated voltage (III/3)	690 V	690 V
Rated surge voltage	6 kV	6 kV
Rated current	20 A	20 A
Surge voltage category / pollution degree	III / 3	III / 3
Material data		
Housing material	PA	PA
Contact material	Cu	Cu
Inflammability class according to UL 94	V0	V0
Mechanical data		
Impact category	IK07	IK07
Color	black	black
Connector data QUICKON connection		
Core insulation	PVC / PE / Rubber / TPE	PVC / PE / Rubber / TPE
Litz wire structure / smallest wire diameter	VDE 0295 class 1 to 6 / min. 0.15 mm	VDE 0295 class 1 to 6 / min. 0.15 mm
Connection frequency	max. 10	max. 10
Conductor cross section [mm²] solid / stranded	1 mm² ... 2.5 mm² / 1 mm² ... 2.5 mm²	1 mm² ... 2.5 mm² / 1 mm² ... 2.5 mm²
Conductor cross section [AWG]	16 ... 14	16 ... 14
Temperature data		
Ambient temperature (operation)	-40 °C ... 80 °C	-40 °C ... 80 °C
Temperature when conductor connected	-5 °C ... 50 °C	-5 °C ... 50 °C

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Panel feed-through, with M25 x 1.5 mounting flange, **with** QUICKON nut, for cable diameter:						
6 mm ... 10 mm	**QPD W 3PE2,5 6-10 M25 DT BK**	**1582169**	1			
9 mm ... 14 mm	**QPD W 3PE2,5 9-14 M25 DT BK**	**1582181**	1			
Panel feed-through, with M25 x 1.5 mounting flange, **without** QUICKON nut				**QPD W 3PE2,5 M25 DT BK**	**1582193**	1
QUICKON nut, for connections up to 2.5 mm², for cable diameter:						
6 mm ... 10 mm				**QPD N 2,5 6-10 BK**	**1582226**	1
9 mm ... 14 mm				**QPD N 2,5 9-14 BK**	**1582229**	1

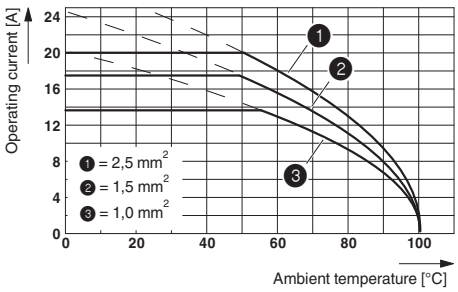
Special solution for motor connection



- Particularly suitable for connecting drives of up to 15 kW using wires with ring cable lugs
- Direct connection without the need to open the motor terminal box

Pin assignment

- Pos. 1 BK (black)
- Pos. 2 BN (brown)
- Pos. 3 GY (gray)
- Pos. ⏚ GNYE (green-yellow)



Derating diagram



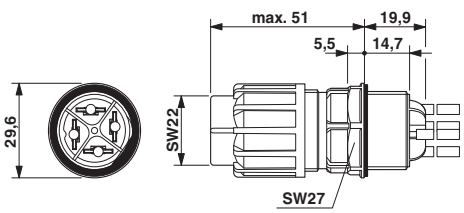
Panel feed-throughs with/without QUICKON nut

Technical data

General data	
Pollution degree	3
Degree of protection	IP68/IP69K
Electrical data	
Rated voltage (III/3)	690 V
Rated surge voltage	6 kV
Rated current	20 A
Surge voltage category	III
Material data	
Housing material	PA
Contact material	Cu
Contact surface material	Silver-plated
Contact carrier material	PA
Inflammability class according to UL 94	V0
Mechanical data	
Wrench size, union nut	22 mm
Tightening torque, union nut	5 Nm
Tightening torque, contact carrier	-
Impact category	IK07
Connector data QUICKON connection	
Core insulation	PVC/PE/TPE/rubber
Litz wire structure / smallest wire diameter	VDE 0295 class 1 to 6 / min. 0.15 mm
Connection frequency	10
Conductor cross section [mm²] solid / stranded	1 mm² ... 2.5 mm² / 1 mm² ... 2.5 mm²
Conductor cross section [AWG]	16 ... 14
Temperature data	
Ambient temperature (operation)	-40 °C ... 80 °C
Temperature when conductor connected	-5 °C ... 50 °C

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Panel feed-through, 3+PE-pos., **with** QUICKON nut, with four welded-on 1.5 mm² cable wires, with ring cable lugs at the end, for cable diameter:			
6 mm ... 10 mm	**QPDW3PE1,5 6-10 M25 0,1 BKKTH**	**1582475**	1
9 mm ... 14 mm	**QPDW3PE1,5 9-14 M25 0,1 BKKTH**	**1582476**	1
Panel feed-through, 3+PE-pos., **without** QUICKON nut, with four welded-on 1.5 mm² cable wires, with ring cable lugs at the end	**QPD W 3PE1,5 M25 0,1 BK K TH**	**1577273**	1



Drawing without line wires and with nuts

Plug-in connectors, 2.5 mm²

- With capacitive PE contact
- Compatible with QUICKON connection
- Can be coded using the two red coding profiles to prevent incorrect connection of similar connectors
- Touch-proof in accordance with DIN EN 50274
- Also available as gray color versions
- 5-pos. version with SPEEDCON rapid interlock system, cannot be released manually



With green screw locking



With black and gray screw locking

	Technical data		Technical data	
	3+PE-pos.		3+PE-pos.	4+PE-pos.
General data				
Degree of protection	IP68/IP69K	-	IP68/IP69K	
Electrical data				
Rated voltage (III/3)	690 V	-	690 V	
Rated surge voltage	6 kV	-	6 kV	
Rated current	20 A	-	20 A	
Surge voltage category / pollution degree	III / 3	/ -	III / 3	
Material data				
Housing material	PA	-	PA	
Contact material	Cu	-	Cu	
Contact surface material	Silver-plated	-	Silver-plated	
Inflammability class according to UL 94	V0	-	V0	
Impact category	IK07	-	IK07	
Color	black	-	black	
Connector data QUICKON connection				
Core insulation	PVC/PE/TPE/rubber	-	PVC/PE/TPE/rubber	
Litz wire structure / smallest wire diameter	VDE 0295 class 1 to 6 / min. 0.15 mm	-	VDE 0295 class 1 to 6 / min. 0.15 mm	
Connection frequency	10	-	10	
Conductor cross section [mm²] solid / stranded	1 mm² ... 2.5 mm² / 1 mm² ... 2.5 mm²	- ... - / - ... -	1 mm² ... 2.5 mm² / 1 mm² ... 2.5 mm²	
Conductor cross section [AWG]	16 ... 14	- ... -	16 ... 14	
Temperature data				
Ambient temperature (operation)	-40 °C ... 80 °C	-	-40 °C ... 80 °C	
Temperature when conductor connected	-5 °C ... 50 °C	-	-5 °C ... 50 °C	

	Ordering data			Ordering data			
Description	Order No.	Pcs. / Pkt.	Order No. Pcs. / Pkt.	Order No.	Pcs. / Pkt.	Order No.	Pcs. / Pkt.
	3+PE-pos.			3+PE-pos.		4+PE-pos.	
Plug-in connectors, for cable diameter:							
6 mm ... 10 mm	**1582202**	1		**1582637**	1		
9 mm ... 14 mm	**1582205**	1		**1582638**	1		
6 mm ... 11 mm						**1403784**	1
9 mm ... 16 mm						**1403782**	1

Accessories

- Mounting clip ① for easily fixing the H-distributor in place without the need for tools
- DIN rail mounting can be achieved using two DIN rail adapters ②
- Plastic labels ③ can be stuck to the middle of the H-distributor
- Red sealing plugs ④ can be easily stuck into the QUICKON nuts and create a seal when screwed tight
- Protective caps with retaining cords ⑤ for closing open QUICKON domes which are going to have a connector (for example) fitted at a later date
- Locking nuts ⑥ for fixing the panel feed-throughs to thin panels that are unable to accommodate a proprietary thread
- Insulating sleeve ⑦ for 4.8 mm spade connections
- Transparent protective caps ⑧ for attaching to the open QUICKON dome
- Transparent protective caps ⑨ at front for attaching to the connector
- Slotted socket wrenches ⑩ enable you to tighten the QUICKON nuts easily and securely
- Red coding profiles ⑪ for preventing QPD connector mix-ups. Simply insert them into the QUICKON dome and connector on the front side. They are marked with an arrow and their symmetrical form enables them to be mounted in four different positions.
- AS-Interface seals ⑫ for connecting 1 or 2 AS-Interface cables
- Aluminum shielding tape ⑬ prevents the splicing of the braided shield and enables a clean shield connection



Ordering data

Description		Type	Order No.	Pcs. / Pkt.
Mounting clip, for the 4-pos. H-distributor, color: black	①	**QPD CLIP 2,5 BK**	**1582235**	10
DIN rail adapter For M5 screws	②	**USA 10/4,6**	**1202713**	10
Plastic label	③			
For plotting and engraving		**GPE 13X 9 WH**	**0806932**	10
Can be printed using thermal transfer printer		**EMLP (13X9)R**	**0819453**	1
Sealing plug, for closing unused bore holes in multiple seals and cable glands	④			
Ø 10 mm		**SEALING PLUG 10X16 RD**	**1400284**	10
Ø 14 mm		**SEALING PLUG 14X22 RD**	**1400270**	10
Protective cap, captive, IP68	⑤			
Color: green		**QPD QSK 2,5 FS**	**1582488**	1
Color: black		**QPD QSK BK 2,5 FS**	**1582645**	1
Color: gray		**QPD QSK GY 5X2,5 FS**	**1404526**	1
Color: black		**QPD QSK BK 5X2,5 FS**	**1404525**	1
Locking nut, (plastic), to lock the contact carrier from the inside of the device	⑥			
M16 / SW22 / color: green		**Q-MU M16**	**1640692**	25
M20 / SW26 / color: green		**Q-MU M20**	**1640702**	25
M25 / SW32 / color: black		**Q-MU M25**	**1640715**	25
Pg21 / SW36 / color: black		**Q-MU PG 21 BK**	**1582655**	50
Insulating sleeve, as shock protection for 4.8 mm slip-on sleeves; first slide over the conductor	⑦			
For 4.8 mm slip-on sleeves		**PT/FS 4,8**	**1670497**	25
Protective cap, transparent plastic, for QUICKON connection, IP54	⑧			
		QPD QSK 2,5	**1582150**	10
		QPD QSK 5X2,5	**1404528**	10
Protective cap, transparent plastic, for QUICKON connection, IP50	⑨			
		QPD PSK 2,5	**1582151**	10
		QPD PSK 5X2,5	**1404529**	10
Slotted socket wrench for QUICKON nuts and panel feed-throughs, for wrench size:	⑩			
15 mm		**QSS 15**	**1641992**	1
19 mm		**QSS 19**	**1670895**	1
22 mm		**QSS 22**	**1670206**	1
24 mm		**QSS 24**	**1670219**	1
27 mm		**QSS 27**	**1670646**	1
Coding profile, for insertion into the plug-in connector and QUICKON dome	⑪			
		CP-QPD	**1582459**	10
		CP-QPD 5X2,5	**1404530**	10
Seal for 4-pos. versions, NBR, black, for IP65/IP67 protection	⑫			
One AS-i cable		**KV-DI-PG16-1XASI**	**1582462**	10
Two AS-i cables		**KV-DI-PG16-2XASI**	**1582464**	10
Shielding tape, aluminum, for the shielded QPD versions	⑬			
		ALU-SB	**1404531**	100

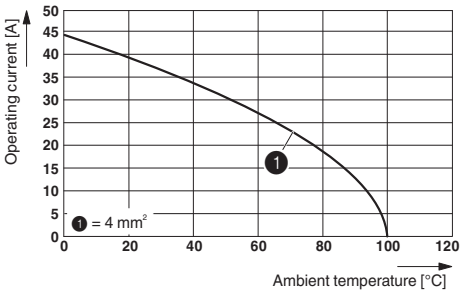
T-distributor with QUICKON fast connection technology



The QUICKON T-distributor allows fast connection to a 5-conductor master cable with stranded single wires. Instead of time-consuming installation, the branch line to the load is connected using the proven insulation displacement connection method without disconnecting the master cable.

For connection, it is simply stripped and inserted in the lower part of the housing. The upper part is then fitted and the electrical connection established by tightening the black wing nut. The branch line is connected using the proven QUICKON fast connection method, with color-coding in acc. with VDE 0293-308.

Notes:
Designed for permanent installation only
There are other insert seals (Q-T-EDG...) available for smaller cable diameters (9 mm to 14 mm)



Derating diagram



Power T-distributor, 5-pos., for 2.5 ... 4.0 mm²

Technical data

Electrical data	
Rated voltage (III/3)	630 V
Rated surge voltage	8 kV
Rated current at 25°C	32 A
Material data	
Housing material	PA
Contact material	Cu alloy
Contact surface material	Pre-nickel plated and tin-plated
Mechanical data	
No. of pos.	5
Pollution degree	3
Degree of protection	IP65
Connector data QUICKON connection	
Core insulation	PVC/PE
Litz wire structure / smallest wire diameter	Class 2 to 5 / 0.25 mm
External cable diameter	9 mm ... 16 mm (branch line)
External cable diameter	9 mm ... 16 mm (Master cable (for diameters < 13.5 mm, additional insert seals are available))
Conductor cross section [mm²]	2.5 mm² ... 4 mm²
Conductor cross section [AWG]	14 ... 12
Temperature data	
Ambient temperature (operation)	-40 °C ... 80 °C
Temperature when conductor connected	10 °C ... 50 °C (Specifications of the cable manufacturer must be observed)

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
T-distributor, for round conductors			
	Q 4,0/5IDC/KU-T	**1641963**	1

Accessories

Fixing nuts with O-ring, plastic, to lock the distributor when mounting in a metal cabinet			
	Q-MU-T	**1640993**	10
Insert seal, for IP65 sealing of thin master cables, clamping range:			
9.0 mm ... 11.0 mm	**Q-T-EDG-K**	**1580011**	10
10.0 mm ... 12.5 mm	**Q-T-EDG-M**	**1580024**	10
11.5 mm ... 14.0 mm	**Q-T-EDG-G**	**1580037**	10
Closing cap, for closing unused bore holes in multiple seals and cable glands			
Ø 14 mm	**SEALING PLUG 14X22 RD**	**1400270**	10
Stripping tool, for stripping conductors of 4.5 – 40–mm–Ø, insulation strength up to 4.5 mm, swiveling knife for round, longitudinal and spiral cuts			
	WIREFOX-D 40	**1212161**	1


HC EVO

Heavy-duty plug-in connectors

HEAVYCON plug-in connectors with IP65 protection have been established in industrial environments for decades. The HEAVYCON ADVANCE housing range is a further development of the classic HEAVYCON range for panel feed-throughs with up to IP68/IP69K protection. The housing is attached directly to the mounting panel by means of screw or bayonet locking, meaning that the panel mounting base is no longer required.

HEAVYCON offers a comprehensive range of plug-in connector solutions for sensitive signals ranging from just a few mA up to high currents of 200 A with various numbers of positions. The contact inserts and contact insert modules are available with screw, crimp, spring-cage, push-in, axial screw, and IDC connection technology. A comprehensive range of accessories rounds off the entire range.

HEAVYCON EVO made from fiberglass-reinforced polyamide is the inexpensive alternative to die-cast aluminum housing. The corresponding cable glands with bayonet locking reduce overall warehousing by 70% and are also fully compatible with HEAVYCON standard die-cast aluminum housing. The capacitive PE design ensures conformance with standards.

Phoenix Contact will also deliver plug-in connector sets and assembled cables on request. We are always ready to share our extensive solution expertise when it comes to special requirements.

DUPLICON stackable plug-in connectors are designed for distributed installation with the focus on power distribution. The plug-in connectors can be easily and flexibly integrated into modular machines and systems. Thanks to this stackable design, DUPLICON offers consistent installation, from the power rail in the control cabinet to the PCB in the field device, and can be extended by simply connecting further plug-in connectors.

HEAVYCON product range overview

HEAVYCON cross-reference list - contact inserts and housing 402

Type D7

Contact inserts 404

Housing 410

Type D

Contact inserts 414

Housing 422

Type B

Contact inserts 428

Housing 482

Type compact

Contact inserts 548

Housing 550

Cable glands 552

Accessories 560

DUPLICON stackable plug-in connectors 588





Flexible thanks to reduced number of versions

Thanks to the unique HEAVYCON EVO bayonet locking, only the swivel cable glands have to be replaced in order to cover the M20, M25, M32, and M40 clamping areas with straight and lateral outlet.



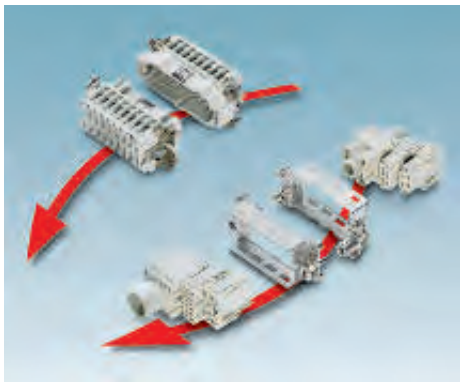
Robust plastic

HEAVYCON EVO plug-in connectors made from high-quality plastic meet virtually all the requirements of heavy-duty industrial plug-in connectors as well as protection class IP65 and shock resistance IK08.



Fully compatible

The HEAVYCON EVO housing is plug-compatible with standard aluminum housing. It fits the standard panel cutouts of heavy-duty industrial plug-in connectors.



Suitable for all inserts

All fixed and modular contact inserts in B series format fit in HEAVYCON EVO housing.



Safety thanks to capacitive PE

Two metal inlays in the housing are used to hold the contact inserts and coding screws. They form the electrical bridge between the PE contacts of the inserts.



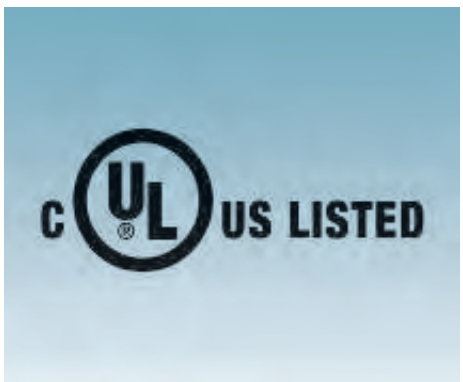
Complete range

The IP65-protected plastic housings are available in B6 to B24 design with double and single locking latch. The supporting base element is available as a panel mounting base, box mounting base, and coupling housing, with and without protective cover.



Also suitable for protection class II

The plastic version is robust, light, and resistant to corrosion and can also be used in applications with protection class II.



UL-listed materials

The plastic housing made from PA and PBT is UL listed and resistant to mechanical loads. Fire protection add-ons according to UL94 V0 are completely halogen-free.



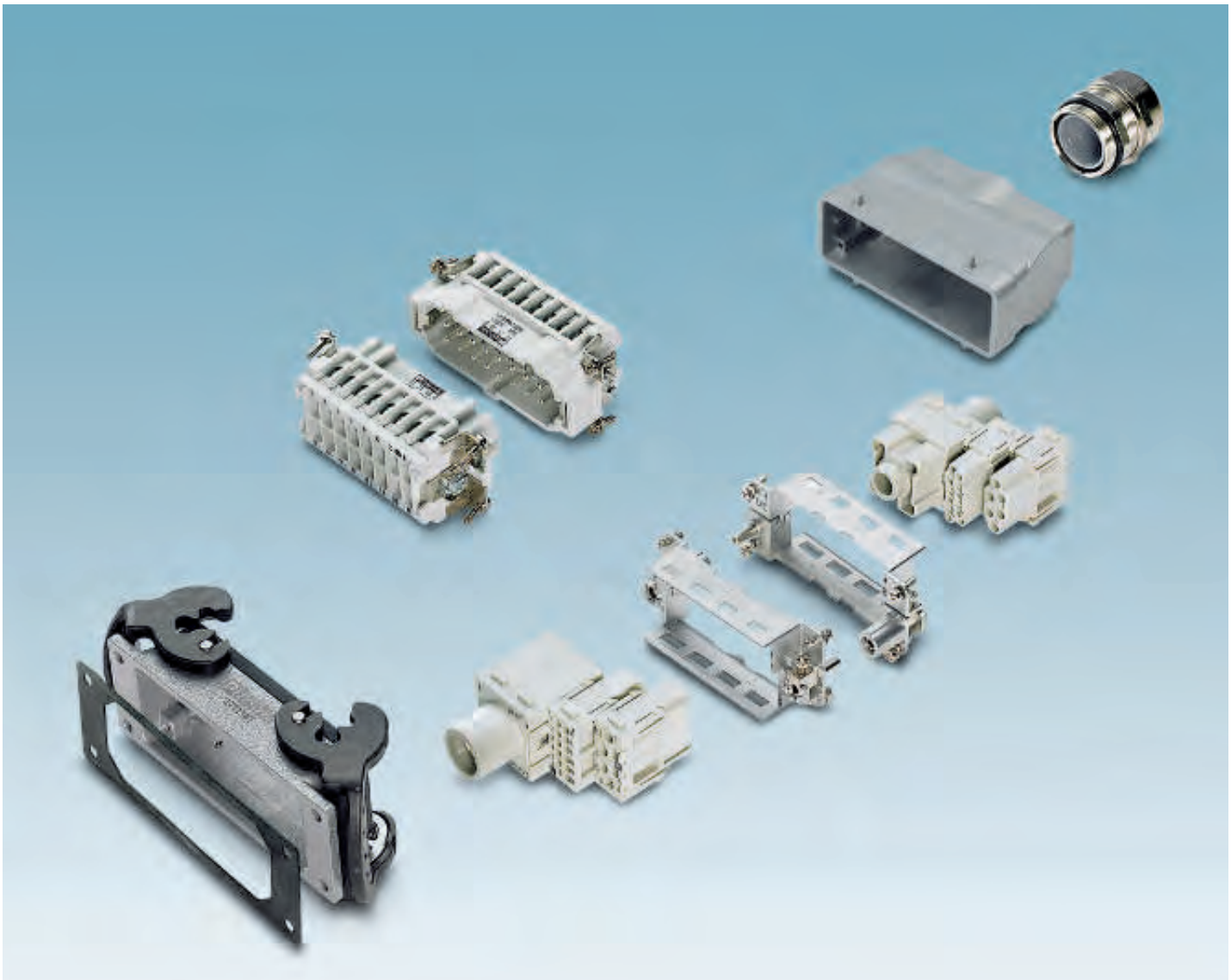
Easy cable assembly

On the HEAVYCON EVO housing, the angled cable inlet is particularly large. This simplifies cable assembly if the cable gland is only mounted at the end of the process.



Ecological aspects

With regard to the resources consumed, factor 9 is positioned between aluminum and plastic. This means that the ecological footprint is significantly smaller.





Housing with locking latch

The double locking latch supports particularly space-saving side-by-side mounting. Housing with single locking latches can be locked with one hand and mounted one on top of the other.



EMC housing with locking latch

A range of EMC housing versions is available for sensitive interfaces. Panel mounting bases are not suitable for terminal adapters.



Contact inserts with a fixed number of positions

The range includes A/B/BB/BBB/D/DD/HS/HV and K series contact inserts. The B series is available with screw, crimp, spring-cage, push-in, and QUICKON connection.



Modular contact inserts

Modular contact inserts enable the efficient, individual design of type B contact inserts, e.g., with bus or D-SUB modules.



Terminal adapters

The terminal adapters have been specially developed for type B and type D industrial plug-in connectors. They combine contact inserts and modular terminal blocks to create a connection element.



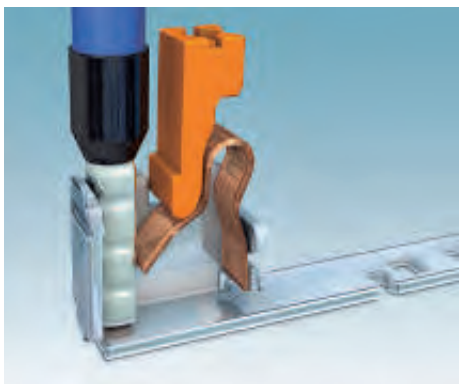
Shield connection

The HEAVYCON D bus contact is used to connect shielded, 2-wire bus cables within a heavy-duty plug-in connector.



IDC QUICKON connection

With the QUICKON connection, the wire no longer needs to be stripped. Here the conductor is inserted directly into the terminal point without preparation and makes contact by means of IDC connection.



Push-in connection

Contact inserts with push-in technology allow wires with ferrules or solid conductors to be inserted directly into the terminal point without having to open the terminal point beforehand.



Coding

Coding profiles enable coding in just a few seconds. The profiles just need to be snapped into the keyways of the contact inserts.



Plug assembly frames

When it comes to mounting standard type B contact inserts directly on the DIN rail, die-cast aluminum plug assembly frames are the ideal solution, see installation and mounting material.



Docking frames

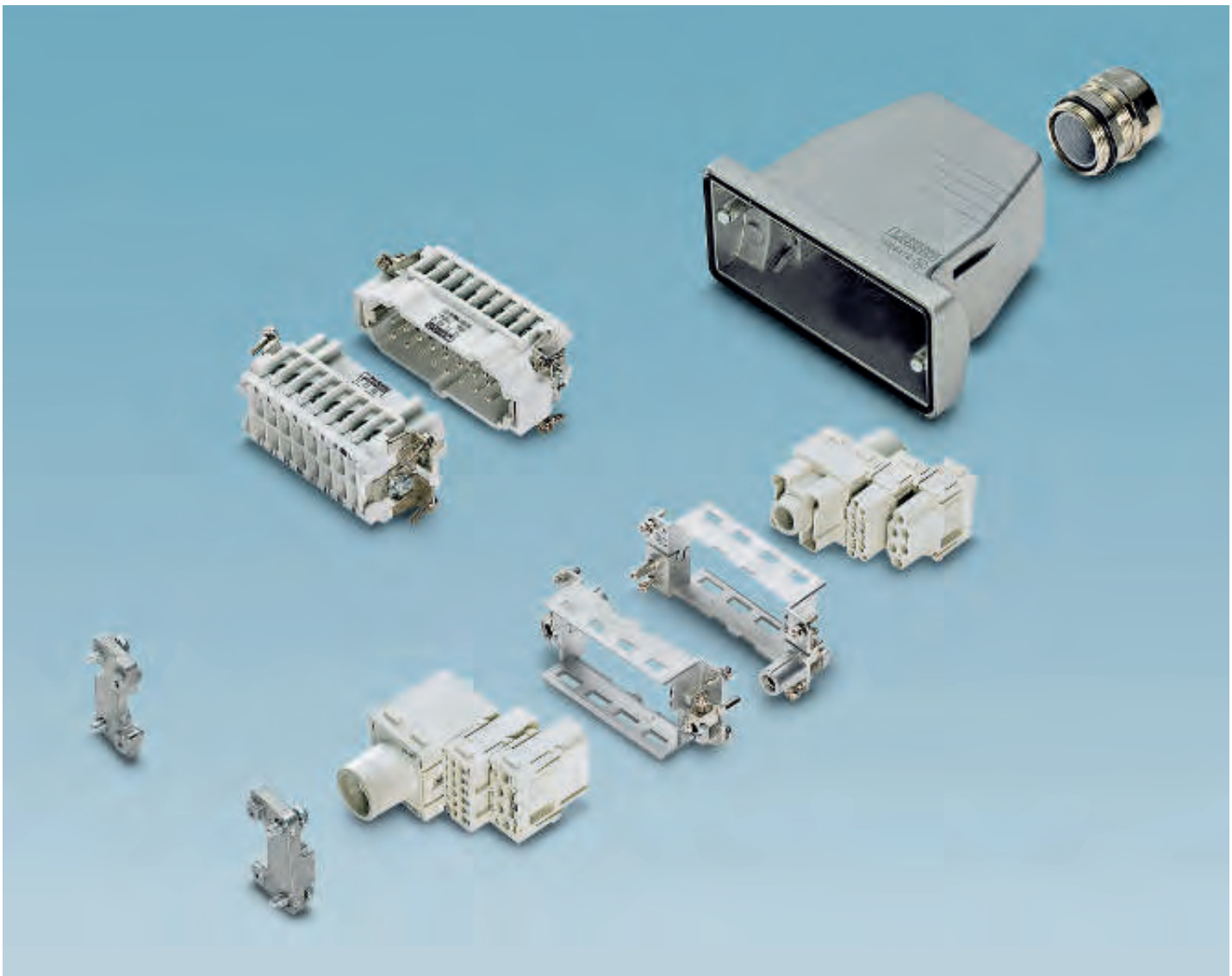
Docking frames ensure that socket and pin inserts are located in insert systems and contact is made reliably.



D-SUB adapter plates

HEAVYCON D-SUB adapter plates can be used to mount D-SUB plug-in connectors in the robust HEAVYCON housing.

HEAVYCON ADVANCE product range overview



Advantages:

– Cost savings, as no panel mounting base is required
– Suitable for all HEAVYCON B series contact inserts
– Compatible with standard panel cutouts
– Effective EMC protection by means of EMC screw connection and conductive seal
– 50% larger cabling space
– IP68/IP69K protection



Standard version (STA)

Field of application:
– For extremely demanding requirements, e.g., in the automotive industry, in machine building and systems manufacturing, and in measurement and control technology

Housing material:
– Aluminum die-cast alloy
– NBR sealing material

Screw locking:
– Made of stainless steel (V2A)



Version for increased environmental requirements (EUA)

Field of application:
– For particularly aggressive ambient conditions and harsh climatic atmospheres in all areas of application, e.g., chemicals, railways, and offshore

Housing material:
– Corrosion-resistant aluminum die-cast alloy
– Viton sealing material

Screw locking:
– Made of stainless steel (V2A)



Version for offshore and EMC applications (EEE)

Field of application:
– On ships, drilling platforms or in wind power plants, also for EMC applications

Housing material:
– Salt-water-resistant die-cast aluminum
– With EMC-conductive NBR seal

Screw locking:
– Made of stainless steel (V2A)



Plastic version (PL)

Field of application:
– For standard applications, with the exception of extremely cold, hot, dry or damp ambient conditions, and with the exception of EMC applications

Housing material:
– Polyamide plastic with NBR seals

Screw locking:
– Made of stainless steel (V2A)



Supporting base element

EEE series supporting base elements can be combined with all ADVANCE sleeve housing types. Coupling housing and box mounting bases are available.

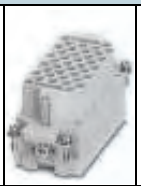
HEAVYCON cross-reference list - contact inserts and housing

The system cross-reference list illustrates in a simple manner which contact insert matches which housing type.

The top rows describe the contact insert according to the number of positions, voltage, current, and connection method.

The marking in the columns denotes the matching housing type.



Series	A					B						BB						BBB	
No. of positions	3	4	10	16	2x16	6	10	16	24	2x16	2x24	10	18	32	46	2x32	2x46	40	64
Size	D7	D7	D15	D25	D50	B6	B10	B16	B24	B32	B48	B6	B10	B16	B24	B32	B48	B16	B24
Rated voltage [V]	230/400		250			500						500						500	
Rated current [A]	16					16						16						16	
Connection method																			
UT = Screw	UT					UT						-						-	
CT = Crimp	-		CT			CT						CT						CT	
PT = Push-in	-					PT						-						-	
Z = Spring-cage	-					-						-						-	
Q = QUICKON	-					Q						-						-	
L = Fiber optic	-					-						-						-	
A = Axial screw	-					-						-						-	
P = Pneumatics	-					-						-						-	

	Size	Housing version: Metal STA	Metal EUA	Metal EEE	Plastic PL	Series	A					B						BB						BBB	
						No. of positions	3	4	10	16	2x16	6	10	16	24	2x16	2x24	10	18	32	46	2x32	2x46	40	64
						Page	404	404	414	416	416	436	438	440	442	440	442	448	448	448	448	448	448	450	450
D housing	D7	●			●	From 410	●	●																	
D housing	D15	●				From 422			●																
D housing	D25	●				From 424				●															
D housing	D50	●				From 426					●														
B housing	B6	●			●	From 486						●						●							
B housing	B10	●			●	From 494							●						●						
B housing	B16	●			●	From 510								●						●				●	
B housing	B24	●			●	From 528									●						●				●
B housing	B32	●				From 544										●						●			
B housing	B48	●				From 546											●						●		
ADVANCE housing	B6	●	●	●	●	From 482						●						●							
ADVANCE housing	B10	●	●	●	●	From 490							●						●						
ADVANCE housing	B16	●	●	●	●	From 506								●						●				●	
ADVANCE housing	B24	●	●	●	●	From 524									●						●				●
ADVANCE housing	B32			●		From 542										●						●			

HEAVYCON contact inserts









	D									DD						HV			HS		Q				K	M
	7	8	15	25	40	2x25	64	2x40	2x64	24	42	72	108	2x72	2x108	3+2	6+2	10+2	6	12	2	5	7	12	Variable	Variable
	D7	D7	D15	D25	B16	D50	B24	B32	B48	B6	B10	B16	B24	B32	B48	B10	B16	B24	B16	B32	D7	D7	D7	D7	B10 - B24	B6 - B48
	250	50	250							250						830			500		400	230/ 400	400		160 - 830	50 - 5000
	10									10						16			35		40	16	10		10 - 80	5 - 200
	-									-						-			UT		-				UT	-
	CT									CT						CT			-		-	CT			CT	CT
	-									-						PT			-		-				-	-
	-									-						-			-		-				-	Z
	-									-						-			-		-				-	-
	L									L						-			-		-				L	L
	-									-						-			-		A	-			A	A
	-									-						-			-		-				-	P

	D									DD						HV			HS		Q				K	M
	7	8	15	25	40	2x25	64	2x40	2x64	24	42	72	108	2x72	2x108	3	6	10	6	12	2	5	7	12	Variable	Variable
	406	406	418	420	428	420	428	428	428	434	434	434	434	434	434	452	454	456	458	458	408	408	408	408	460	464
	●	●																			●	●	●	●		
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A3/A4 series

230/400 V, 16 A

Connection technology:
– Screw connection
– Insulation displacement connection

To determine the matching housings, refer to the cross-reference list on page 402.

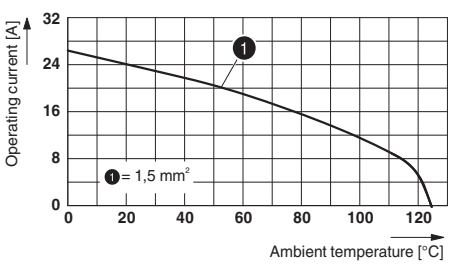
Notes:
For accessories, see from page 552
HC-A 3-EST/HC-A 4-EST profile gaskets made from NBR
HC-A 4-E...S contact inserts already contain an IP65 sealing screw
Connectors may only be operated when under no load.
Observe notes on the connection technology



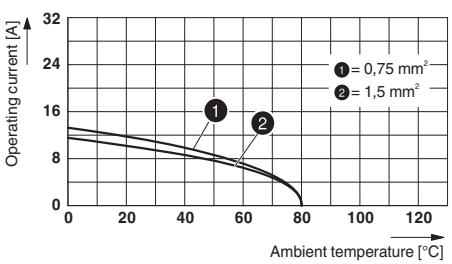
Technical data

Type		HC-A 3-E...S	HC-A3-...Q1,5-TFL-G-PA Sleeve housing	HC-A3-...Q1,5-KML-G-PA Coupling housing	HC-A 4-E...S
Approvals					
IEC data					
Rated current, contacts (at 40°C)	A	16	10	10	16
Surge voltage category		III	III	III	III
Pollution degree		3	3	3	3
Rated voltage (III/3) contacts	V	230 / 400	230 / 400	230 / 400	230 / 400
Rated surge voltage, contacts	kV	4	4	4	4
Connection cross section	mm²	0.5 ... 2.5	0.75 ... 1.5	0.75 ... 1.5	0.5 ... 1.5
UL data					
Rated voltage	V	-	600	600	-
Rated current	A	-	10	10	-
AWG		20-13	18-16	18-16	20-13
CSA data					
Rated voltage	V	600	-	-	600
Rated current	A	10	-	-	10
AWG		20-13	-	-	20-13
Material data					
Contact carrier material		PA	PA / PC	PA / PC	PA
Inflammability class in acc. with UL 94		V0	V0	V0	V0
Contact material		Copper alloy	Copper alloy	Copper alloy	Copper alloy
Contact surface material		Ag	Ag	Ag	Ag
Temperature data					
Ambient temperature range	°C	-40 ... 125	-25 ... 80	-25 ... 80	-40 ... 125
General data					
Connection method		Screw connection	QUICKON connection	QUICKON connection	Screw connection
No. of pos.		3	3	3	4
Contact numbering		1 - 3	1 - 3	1 - 3	1 - 4
Insertion/withdrawal cycles		≥ 500	>= 500	>= 500	≥ 500

Derating curves



HC-A 3.../HC-A 4...

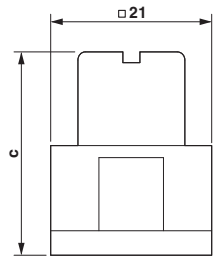


HC-A 3...Q1,5...

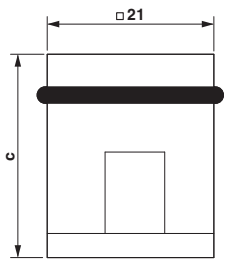
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Screw connection							
	3	1 - 3	D7	① **HC-A 3-E...S**	**1773093**	**1773080**	10
Insulation displacement connection							
	3	1 - 3	D7	Sleeve housing ② **HC-A3-...Q1,5-TFL-G-PA**	**1641510**	**1641581**	1
Insulation displacement connection							
	3	1 - 3	D7	Coupling housing ③ **HC-A3-...Q1,5-KML-G-PA**	**1641617**	**1641604**	1
Screw connection							
	4	1 - 4	D7	④ **HC-A 4-E...S**	**1774908**	**1774911**	10

Dimensions (in mm)



Dimensional drawing: socket



Dimensional drawing: pin

		a	b	c	d
①	**Socket**				
	Plug			**25**	
②	**Socket**				
	Plug			**66**	
③	**Socket**				
	Plug			**62.8**	
④	**Socket**				
	Plug			**30**	

Accessories



Sealing screw, IP65
From page 570



Profile gaskets
From page 571

D7/D8 series

50 - 250 V, 10 A

Connection technology:
– Crimp connection

– Voltages > 42 V only for D7 series contact inserts in conjunction with plastic housing

To determine the matching housings, refer to the cross-reference list on page 402.

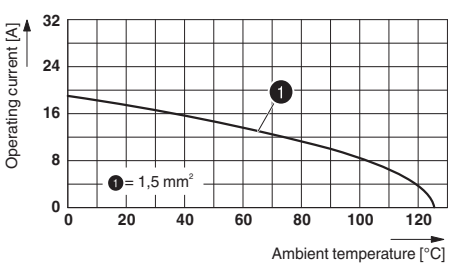
Notes:
For accessories, see from page 552
Coding of HC-D 7-EBUC/HC-D 8-EBUC contact inserts using CK 1,6 ED-BB dummy sockets
HC-D 7-E...F/HC-D 8-E...C contact inserts already contain an IP65 sealing screw
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe notes on the connection technology



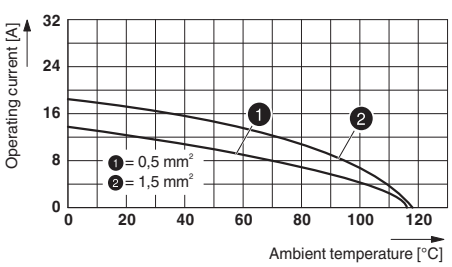
Technical data

Type		HC-D 7-I-CT-...	HC-D 7-E...C-R	HC-D 8-I-CT-... Without PE
Approvals		-		-
IEC data				
Rated current, contacts (at 40°C)	A	10	10	10
Surge voltage category		III	III	III
Pollution degree		3	3	3
Rated voltage (III/3) contacts	V	250	250	50
Rated surge voltage, contacts	kV	4	4	0.8
Connection cross section	mm^2	0.14 ... 2.5	0.14 ... 1.5	0.14 ... 2.5
UL data				
Rated voltage	V	-	600	-
Rated current	A	-	10	-
AWG		-	-	-
CSA data				
Rated voltage	V	-	600	-
Rated current	A	-	10	-
AWG		-	-	-
Material data				
Contact carrier material		PA	PBTP	PA
Inflammability class in acc. with UL 94		V0	V0	V0
Contact material		Copper alloy	Copper alloy	Copper alloy
Contact surface material		Ag (alternatively Au)	Ag (alternatively Au)	Ag (alternatively Au)
Temperature data				
Ambient temperature range	°C	-40 ... 125	-40 ... 125	-40 ... 125
General data				
Connection method		Crimp connection	Crimp connection	Crimp connection
No. of pos.		7	7	8
Contact numbering		1 - 7	1 - 7	1 - 8
Insertion/withdrawal cycles		≥ 500	≥ 500	≥ 500

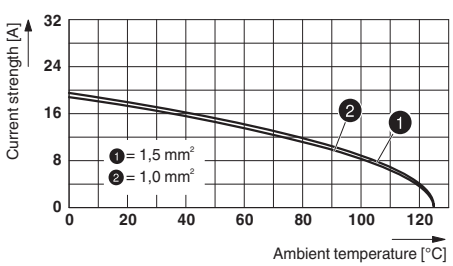
Derating curves



HC-D 7-I-CT-...



HC-D 7-E...C-R

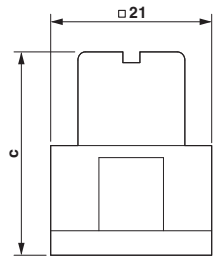


HC-D 8-I-CT-....

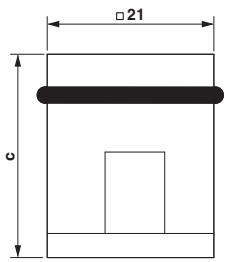
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Crimp connection, turned contacts							
	7	1 - 7	D7	① **HC-D 7-I-CT-...**	**1584347**	**1584334**	10
Crimp connection, rolled contacts							
	7	1 - 7	D7	② **HC-D 7-E...C-R**	**1679508**	**1679456**	10
Crimp connection, turned contacts							
	8	1 - 8	D7	Without PE ③ **HC-D 8-I-CT-...**	**1584363**	**1584350**	10
Turned crimp contacts CK 1,6 Silver-plated	**Cross section mm² / AWG**						
	0.14 - 0.37 / 26 - 22			**CK1,6-ED-0,37... AG**	**1663394**	**1663336**	100
	0.5 / 20			**CK1,6-ED-0,50... AG**	**1663404**	**1663349**	100
	0.75 / 18			**CK1,6-ED-0,75... AG**	**1663417**	**1663352**	100
	0.75 - 1 / 18			**CK1,6-ED-1,00... AG**	**1663420**	**1663365**	100
	1.5 / 16			**CK1,6-ED-1,50... AG**	**1663433**	**1663378**	100
	2.5 / 14			**CK1,6-ED-2,50... AG**	**1663446**	**1663381**	100
Rolled crimp contacts CK 1,6 Silver-plated	**Cross section mm² / AWG**						
	0.14 - 0.5 / 26 - 20			**CK1,6-ER-0,50... AG**	**1884128**	**1884092**	100
	0.5 - 1.5 / 20 - 16			**CK1,6-ER-1,50... AG**	**1884115**	**1884089**	100
	1.5 - 2.5 / 16 - 14			**CK1,6-ER-2,50... AG**	**1884131**	**1884102**	100

Dimensions (in mm)



Dimensional drawing: socket



Dimensional drawing: pin

		a	b	c	d
①	Socket				
	Plug			32	
②	Socket			35.5	
	Plug			33.5	
③	Socket				
	Plug			32	

Accessories



Sealing screw, IP65
From page 570



Profile gaskets
From page 571



Dummy sockets
From page 582



Crimp contacts
From page 564

Q series

250 - 500 V, 10 - 40 A

Connection technology:
– Axial screw connection
– Crimp connection

To determine the matching housings, refer to the cross-reference list on page 402.

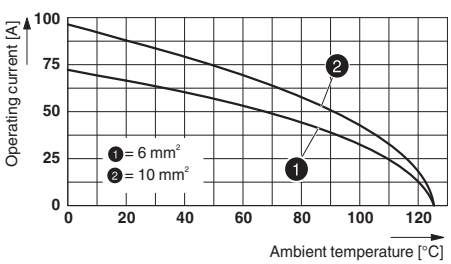
Notes:
For accessories, see from page 552
HC-B 5-E...C does not contain an IP65 sealing screw
HC-B5-ESTC profile gaskets made from NBR
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe notes on the connection technology



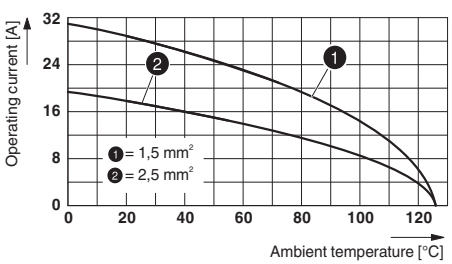
Technical data

Type		HC-HS 2-D7-E...S	HC-B 5-E...C	HC-D 7-E...C-COD	HC-Q 12-I-CT-...
Approvals		cULus	cULus	cULus	-
IEC data					
Rated current, contacts (at 40°C)	A	40	16	10	10
Surge voltage category		III	III	III	III
Pollution degree		3	3	3	3
Rated voltage (III/3) contacts	V	400	230 / 400	400	400
Rated surge voltage, contacts	kV	6	4	6	6
Connection cross section	mm²	4 ... 10	0.5 ... 2.5	0.14 ... 2.5	0.14 ... 2.5
UL data					
Rated voltage	V	600	-	600	-
Rated current	A	28	-	10	-
AWG		-	-	14	-
CSA data					
Rated voltage	V	-	-	-	-
Rated current	A	-	-	-	-
AWG		-	-	-	-
Material data					
Contact carrier material		PC	PA	PC	PC
Inflammability class in acc. with UL 94		V0	V0	V0	V0
Contact material		Copper alloy	Copper alloy	Copper alloy	Copper alloy
Contact surface material		Ag	Ag (alternatively Au)	Ag (alternatively Au)	Ag (alternatively Au)
Temperature data					
Ambient temperature range	°C	-40 ... 125	-40 ... 125	-40 ... 125	-40 ... 125
General data					
Connection method		Axial screw connection	Crimp connection	Crimp connection	Crimp connection
No. of pos.		2	5	7	12
Contact numbering		1 - 2	1 - 5	1 - 7	1 - 12
Insertion/withdrawal cycles		≥ 500	≥ 500	≥ 500	≥ 500

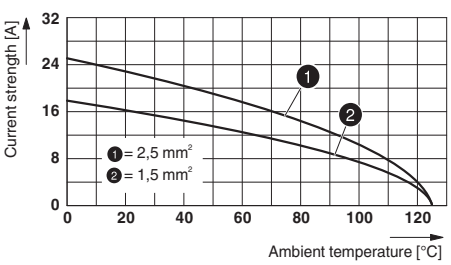
Derating curves



HC-HS 2-D7-E...S

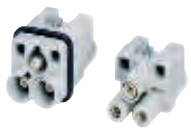


HC-B 5-E...C



HC-D 7-E...C-COD

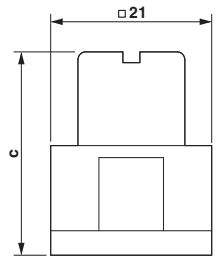
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Axial screw connection							
	2	1 - 2	D7	① HC-HS 2-D7-E...S	1586264	1586277	10
Crimp connection CK 2,5							
	5	1 - 5	D7	② HC-B 5-E...C	1687820	1687817	10
Crimp connection CK 1,6							
	7	1 - 7	D7	③ HC-D 7-E...C-COD	1408588	1408575	10
Crimp connection CK 1,6							
	12	1 - 12	D7	④ HC-Q 12-I-CT-...	1409419	1409422	1

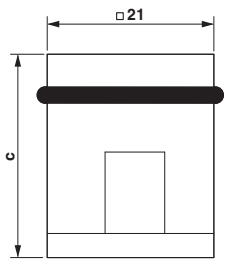
Turned crimp contacts CK 1,6 Silver-plated	Cross section mm² / AWG				
	0.14 - 0.37 / 26 - 22	CK1,6-ED-0,37... AG	1663394	1663336	100
	0.5 / 20	CK1,6-ED-0,50... AG	1663404	1663349	100
	0.75 / 18	CK1,6-ED-0,75... AG	1663417	1663352	100
	0.75 - 1 / 18	CK1,6-ED-1,00... AG	1663420	1663365	100
	1.5 / 16	CK1,6-ED-1,50... AG	1663433	1663378	100
	2.5 / 14	CK1,6-ED-2,50... AG	1663446	1663381	100

Turned crimp contacts CK 2,5 Silver-plated	Cross section mm² / AWG				
	0.5 / 20	CK2,5-ED-0,50... AG	1663640	1663572	100
	0.75 / 18	CK2,5-ED-0,75... AG	1663653	1663585	100
	0.75 - 1 / 18	CK2,5-ED-1,00... AG	1663666	1663598	100
	1.5 / 16	CK2,5-ED-1,50... AG	1663679	1663608	100
	2.5 / 14	CK2,5-ED-2,50... AG	1663682	1663611	100
	4 / 12	CK2,5-ED-4,00... AG	1663705	1663637	100

Dimensions (in mm)



Dimensional drawing: socket



Dimensional drawing: pin

		a	b	c	d
①	Socket			34.8	
	Plug			40	
②	Socket			40	
	Plug			39.5	
③	Socket			40.1	
	Plug			39.5	
④	Socket			43.1	
	Plug			40.8	

Accessories



Dummy sockets
From page 582



Coding profiles
From page 582



Crimp contacts
From page 564

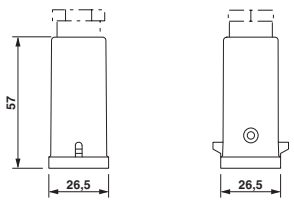
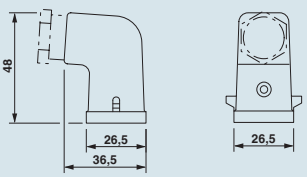
Type D7, metal, sleeve housing for single locking latch



Technical data

General data	
Housing material	Zinc die-cast
Surface material	Powder-coated, gray
Locking latch material	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP54 / IP65 with sealing screw

Ordering data

Description			Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top **Height: 57 mm**	1 x M20		**HC-D 7-TFL-57/O1M20G**	**1604888**	10	
		1 x Pg11	**HC-D 7-TFL-57/M1PG11G**	**1773048**	10	
Cable entry: lateral **Height: 48 mm**	1 x M20		**HC-D 7-TFL-48/O1M20S**	**1604891**	10	
		1 x Pg11	**HC-D 7-TFL-48/M1PG11S**	**1773271**	10	

Notes:

For further accessories, see from page 552

Accessories



Sealing screw, IP65
From page 570



Pressure screw set
From page 556



Flat gaskets
From page 571

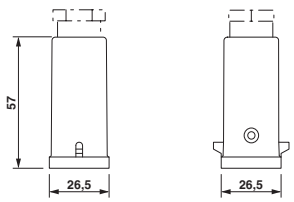
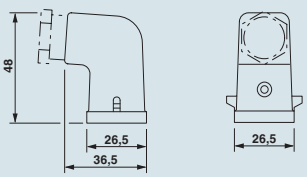
Type D7, plastic, sleeve housing for single locking latch



Technical data

General data	
Housing material	Polyamide
Surface material	PA, light gray
Locking latch material	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP54 / IP65 with sealing screw

Ordering data

Description			Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top **Height: 57 mm**	1 x M20		**HC-D 7-TFL-57/O1M20G/PA**	**1604889**	10	
		1 x Pg11	**HC-D 7-TFL-57/M1PG11G/PA**	**1772269**	10	
Cable entry: lateral **Height: 48 mm**	1 x M20		**HC-D 7-TFL-48/O1M20S/PA**	**1604890**	10	
		1 x Pg11	**HC-D 7-TFL-49/M1PG11S/PA**	**1772256**	10	

Notes:

For further accessories, see from page 552

Accessories



Sealing screw, IP65
From page 570



Pressure screw set
From page 556



Flat gaskets
From page 571



Replacement latch
From page 570

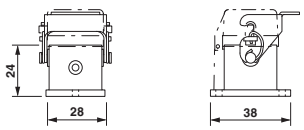
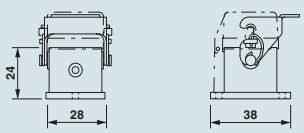
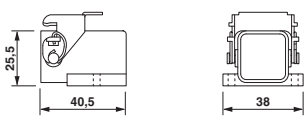
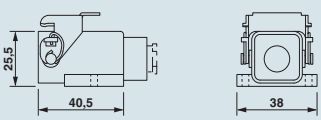
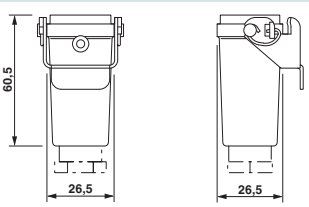
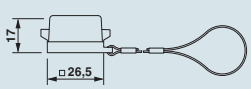
Type D7, metal, supporting base element with single locking latch



Technical data

General data	
Housing material	Zinc die-cast
Surface material	Powder-coated, gray (metal housing)
Locking latch material	Steel, galvanized
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP54 / IP65 with sealing screw

Ordering data

Description		Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 24 mm**		Without cover **HC-D 7-AML-24/GR**	**1773035**	10	
Panel mounting base **Height: 24 mm**		With metal cover, socket **HC-D 7-AMLD-24/GR** With metal cover, plug **HC-D 7-AMLD-24/GR-OD**	**1676970** **1684994**	10 10	
Panel mounting base **Height: 25.5 mm**		Angled version **HC-D 7-AML-26/GW**	**1773022**	10	
Box mounting base **Height: 25.5 mm**	1 x M20 1 x Pg11	**HC-D 7-SML-26/O1M20** **HC-D 7-SML-26/M1PG11**	**1604885** **1773284**	10 10	
Coupling housing **Height: 60.5 mm**	1 x M20 1 x Pg11	**HC-D 7-KML-61/O1M20** **HC-D 7-KML-61/M1PG11**	**1604883** **1773297**	10 10	
Protective cover, plastic		Socket **HC-D 7-SD-FL/FS-MD** Plug **HC-D 7-SD-FL/FS**	**1644300** **1772573**	10 10	













Notes:

For further accessories, see from page 552

Accessories



Sealing screw, IP65
From page 570



Pressure screw set
From page 556



Flat gaskets
From page 571

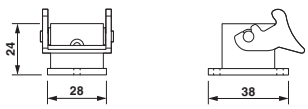
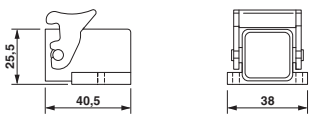
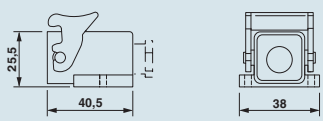
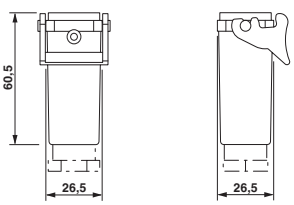
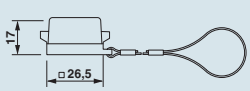
Type D7, plastic, supporting base element with single locking latch



Technical data

General data	
Housing material	Polyamide
Surface material	PA, light gray
Locking latch material	Polyamide
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP54 / IP65 with sealing screw

Ordering data

Description			Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 24 mm**			Without cover **HC-D 7-AML-24/GR/PA**	**1772272**	10	
Panel mounting base **Height: 25.5 mm**			Angled version **HC-D 7-AML-26/GW/PA**	**1772285**	10	
Box mounting base **Height: 25.5 mm**	1 x M20 1 x Pg11		**HC-D 7-SML-57/O1M20/PA** **HC-D 7-SML-57/M1PG11/PA**	**1604886** **1772298**	10 10	
Coupling housing **Height: 60.5 mm**	1 x M20 1 x Pg11		**HC-D 7-KML-61/O1M20/PA** **HC-D 7-KML-61/M1PG11/PA**	**1604884** **1772308**	10 10	
Protective cover, plastic			Socket **HC-D 7-SD-FL/FS-MD** Plug **HC-D 7-SD-FL/FS**	**1644300** **1772573**	10 10	

Notes:

For further accessories, see from page 552

Accessories



Sealing screw, IP65
From page 570



Pressure screw set
From page 556



Flat gaskets
From page 571



Replacement latch
From page 570

A10 series

250 V, 16 A

Connection technology:
– Screw connection
– Crimp connection

To determine the matching housings, refer to the cross-reference list on page 402.

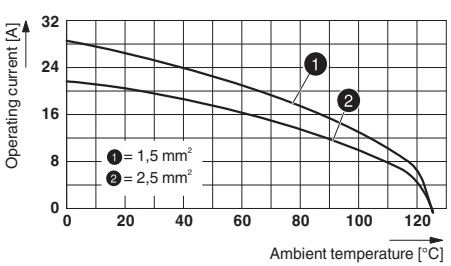
Notes:
For accessories, see from page 552
Type A10/A16 with wire protection
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe notes on the connection technology



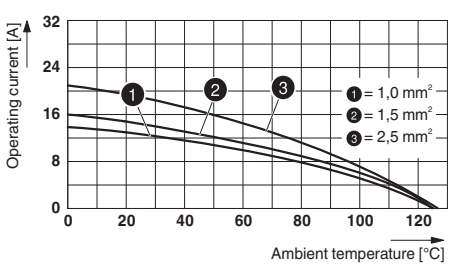
Technical data

Type		HC-A 10-E...S	HC-A 10-E...C
Approvals			
IEC data			
Rated current, contacts (at 40°C)	A	16	16
Surge voltage category		III	III
Pollution degree		3	3
Rated voltage (III/3) contacts	V	250	250
Rated surge voltage, contacts	kV	4	4
Connection cross section	mm²	0.5 ... 2.5	0.5 ... 4
UL data			
Rated voltage	V	600	600
Rated current	A	-	-
AWG		-	-
CSA data			
Rated voltage	V	600	600
Rated current	A	10	10
AWG		20-13	20-13
Material data			
Contact carrier material		PA	PA
Inflammability class in acc. with UL 94		V0	V0
Contact material		Copper alloy	Copper alloy
Contact surface material		Ag	Ag (alternatively Au)
Temperature data			
Ambient temperature range	°C	-40 ... 125	-40 ... 125
General data			
Connection method		Screw connection	Crimp connection
No. of pos.		10	10
Contact numbering		1 - 10	1 - 10
Insertion/withdrawal cycles		≥ 500	≥ 500

Derating curves



HC-A 10-E...S

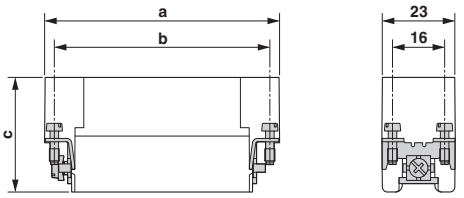


HC-A 10-E...C

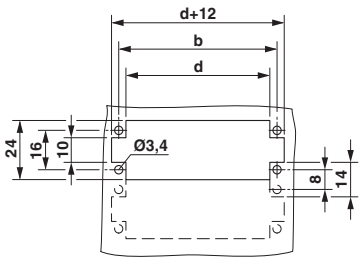
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Screw connection							
	10	1 - 10	D15	① **HC-A 10-E...S**	**1773077**	**1773051**	10
Crimp connection							
	10	1 - 10	D15	② **HC-A 10-E...C**	**1676983**	**1676996**	10
Turned crimp contacts CK 2,5 Silver-plated	**Cross section mm² / AWG**						
	0.5 / 20			**CK2,5-ED-0,50... AG**	**1663640**	**1663572**	100
	0.75 / 18			**CK2,5-ED-0,75... AG**	**1663653**	**1663585**	100
	0.75 - 1 / 18			**CK2,5-ED-1,00... AG**	**1663666**	**1663598**	100
	1.5 / 16			**CK2,5-ED-1,50... AG**	**1663679**	**1663608**	100
	2.5 / 14			**CK2,5-ED-2,50... AG**	**1663682**	**1663611**	100
	4 / 12			**CK2,5-ED-4,00... AG**	**1663705**	**1663637**	100
Turned crimp contacts CK 2,5 Gold-plated	**Cross section mm² / AWG**						
	0.5 / 20			**CK2,5-ED-0,50... AU**	**1674859**	**1674804**	100
	0.75 - 1 / 18			**CK2,5-ED-1,00... AU**	**1674833**	**1674781**	100
	1.5 / 16			**CK2,5-ED-1,50... AU**	**1674820**	**1674778**	100
	2.5 / 14			**CK2,5-ED-2,50... AU**	**1674862**	**1674817**	100
	4 / 12			**CK2,5-ED-4,00... AU**	**1674846**	**1674794**	100

Dimensions (in mm)



Dimensional drawing



Panel cutout

		a	b	c	d
①	Socket	55.5	49.5	33	43.5
	Plug			36	
②	Socket	56.5	49.5	30	43.5
	Plug			33	

Accessories



Coding elements
From page 581



PE screws
From page 580

A16/A32 series

250 V, 16 A

Connection technology:
– Screw connection
– Crimp connection

To determine the matching housings, refer to the cross-reference list on page 402.

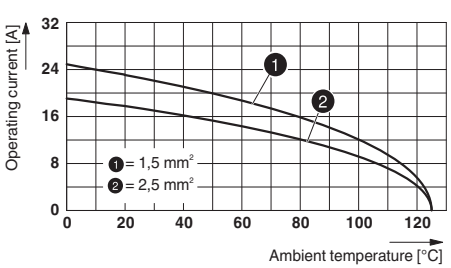
Notes:
For accessories, see from page 552
Type A10/A16 with wire protection
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe notes on the connection technology



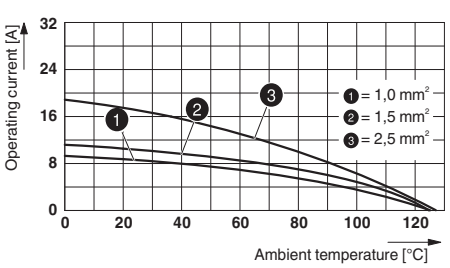
Technical data

Type		HC-A 16-E...S	HC-A 16-E...C
Approvals			
IEC data			
Rated current, contacts (at 40°C)	A	16	16
Surge voltage category		III	III
Pollution degree		3	3
Rated voltage (III/3) contacts	V	250	250
Rated surge voltage, contacts	kV	4	4
Connection cross section	mm²	0.5 ... 2.5	0.5 ... 4
UL data			
Rated voltage	V	600	600
Rated current	A	-	-
AWG		-	-
CSA data			
Rated voltage	V	600	600
Rated current	A	10	10
AWG		20-13	20-13
Material data			
Contact carrier material		PA	PA
Inflammability class in acc. with UL 94		V0	V0
Contact material		Copper alloy	Copper alloy
Contact surface material		Ag	Ag (alternatively Au)
Temperature data			
Ambient temperature range	°C	-40 ... 125	-40 ... 125
General data			
Connection method		Screw connection	Crimp connection
No. of pos.		16	16
Contact numbering		1 - 16	1 - 16
Insertion/withdrawal cycles		≥ 500	≥ 500

Derating curves



HC-A 16-E...S

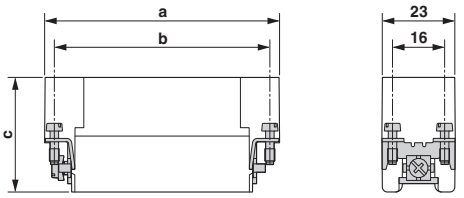


HC-A 16-E...C

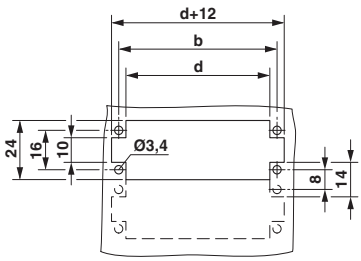
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Screw connection							
	16	1 - 16	D25 / D50	① **HC-A 16-E...S**	**1677005**	**1677021**	10
	16	17 - 32	D25 / D50	② **HC-A 16-E...S-32**	**1677047**	**1677063**	10
Crimp connection							
	16	1 - 16	D25 / D50	③ **HC-A 16-E...C**	**1677018**	**1677034**	10
	16	17 - 32	D25 / D50	④ **HC-A 16-E...C-32**	**1677050**	**1677076**	10
Turned crimp contacts CK 2,5 Silver-plated		**Cross section mm² / AWG**					
		0.5 / 20		**CK2,5-ED-0,50... AG**	**1663640**	**1663572**	100
		0.75 / 18		**CK2,5-ED-0,75... AG**	**1663653**	**1663585**	100
		0.75 - 1 / 18		**CK2,5-ED-1,00... AG**	**1663666**	**1663598**	100
		1.5 / 16		**CK2,5-ED-1,50... AG**	**1663679**	**1663608**	100
		2.5 / 14		**CK2,5-ED-2,50... AG**	**1663682**	**1663611**	100
		4 / 12		**CK2,5-ED-4,00... AG**	**1663705**	**1663637**	100
Turned crimp contacts CK 2,5 Gold-plated		**Cross section mm² / AWG**					
		0.5 / 20		**CK2,5-ED-0,50... AU**	**1674859**	**1674804**	100
		0.75 - 1 / 18		**CK2,5-ED-1,00... AU**	**1674833**	**1674781**	100
		1.5 / 16		**CK2,5-ED-1,50... AU**	**1674820**	**1674778**	100
		2.5 / 14		**CK2,5-ED-2,50... AU**	**1674862**	**1674817**	100
		4 / 12		**CK2,5-ED-4,00... AU**	**1674846**	**1674794**	100

Dimensions (in mm)



Dimensional drawing



Panel cutout

		a	b	c	d
①	Socket	72.5	66	33	60
	Plug			36	
②	Socket	75.5	66	33	60
	Plug	72.5		36	
③	Socket	73	66	30	60
	Plug			31.8	
④	Socket	73	66	30	60
	Plug			31.8	

Accessories



Coding elements
From page 581



PE screws
From page 580

D15 series

250 V, 10 A

Connection technology:
– Crimp connection

Coding pins and sockets are mandatory for HC-D... and HC-DD series contact inserts.

To determine the matching housings, refer to the cross-reference list on page 402.

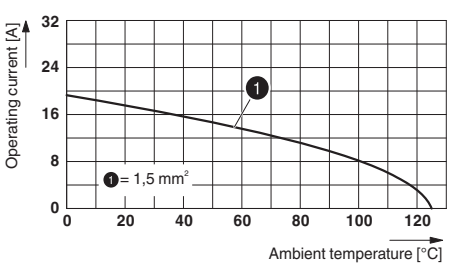
Notes:
For accessories, see from page 552
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe notes on the connection technology



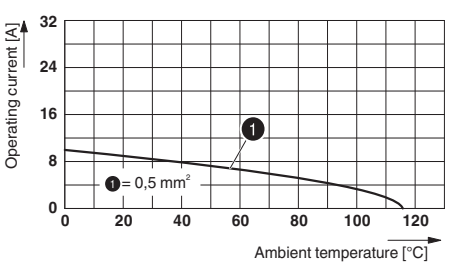
Technical data

Type		HC-D 15-I-CT-...	HC-D 15-E...C-R
Approvals		-	
IEC data			
Rated current, contacts (at 40°C)	A	10	10
Surge voltage category		III	III
Pollution degree		3	3
Rated voltage (III/3) contacts	V	250	250
Rated surge voltage, contacts	kV	4	4
Connection cross section	mm²	0.14 ... 2.5	0.14 ... 1.5
UL data			
Rated voltage	V	-	600
Rated current	A	-	10
AWG		-	-
CSA data			
Rated voltage	V	-	600
Rated current	A	-	10
AWG		-	-
Material data			
Contact carrier material		PA	PC
Inflammability class in acc. with UL 94		V0	V0
Contact material		Copper alloy	Copper alloy
Contact surface material		Ag (alternatively Au)	Ag (alternatively Au)
Temperature data			
Ambient temperature range	°C	-40 ... 125	-40 ... 125
General data			
Connection method		Crimp connection	Crimp connection
No. of pos.		15	15
Contact numbering		-	-
Insertion/withdrawal cycles		≥ 500	≥ 500

Derating curves



HC-D 15-I-CT-....

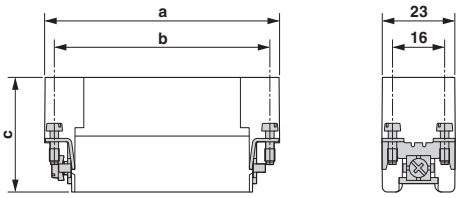


HC-D 15-E...C-R

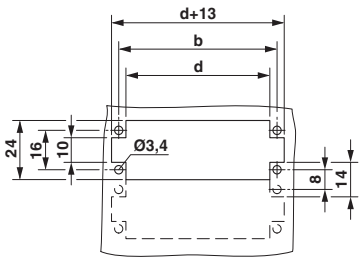
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Crimp connection, turned contacts							
	15		D15	① **HC-D 15-I-CT-...**	**1584389**	**1584376**	10
Crimp connection, rolled contacts							
	15		D15	② **HC-D 15-E...C-R**	**1679511**	**1679469**	10
Turned crimp contacts CK 1,6 Silver-plated		**Cross section mm² / AWG**					
		0.14 - 0.37 / 26 - 22		**CK1,6-ED-0,37... AG**	**1663394**	**1663336**	100
		0.5 / 20		**CK1,6-ED-0,50... AG**	**1663404**	**1663349**	100
		0.75 / 18		**CK1,6-ED-0,75... AG**	**1663417**	**1663352**	100
		0.75 - 1 / 18		**CK1,6-ED-1,00... AG**	**1663420**	**1663365**	100
		1.5 / 16		**CK1,6-ED-1,50... AG**	**1663433**	**1663378**	100
		2.5 / 14		**CK1,6-ED-2,50... AG**	**1663446**	**1663381**	100
Rolled crimp contacts CK 1,6 Silver-plated		**Cross section mm² / AWG**					
		0.14 - 0.5 / 26 - 20		**CK1,6-ER-0,50... AG**	**1884128**	**1884092**	100
		0.5 - 1.5 / 20 - 16		**CK1,6-ER-1,50... AG**	**1884115**	**1884089**	100
		1.5 - 2.5 / 16 - 14		**CK1,6-ER-2,50... AG**	**1884131**	**1884102**	100

Dimensions (in mm)



Dimensional drawing



Panel cutout

		a	b	c	d
①	Socket	55.4	49.5	33.5	43.5
	Plug			34.2	
②	Socket	56	49.5	36	43.5
	Plug			34	

Accessories



Coding elements
From page 581



PE screws
From page 580



Crimp contacts
From page 564

D25/D50 series

250 V, 10 A

Connection technology:
– Crimp connection

Coding pins and sockets are mandatory for HC-D... and HC-DD series contact inserts.

To determine the matching housings, refer to the cross-reference list on page 402.

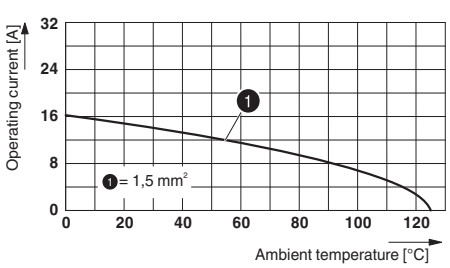
Notes:
For accessories, see from page 552
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe notes on the connection technology



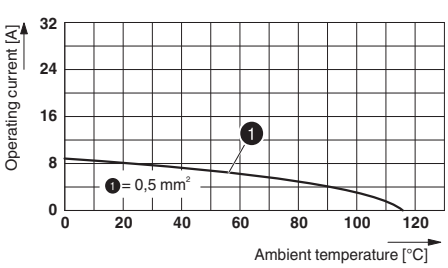
Technical data

Type		HC-D 25-I-CT-...	HC-D 25-E...C-R
Approvals		-	
IEC data			
Rated current, contacts (at 40°C)	A	10	10
Surge voltage category		III	III
Pollution degree		3	3
Rated voltage (III/3) contacts	V	250	250
Rated surge voltage, contacts	kV	4	4
Connection cross section	mm²	0.14 ... 2.5	0.14 ... 1.5
UL data			
Rated voltage	V	-	600
Rated current	A	-	10
AWG		-	-
CSA data			
Rated voltage	V	-	600
Rated current	A	-	10
AWG		-	-
Material data			
Contact carrier material		PA	PC
Inflammability class in acc. with UL 94		V0	V0
Contact material		Copper alloy	Copper alloy
Contact surface material		Ag (alternatively Au)	Ag (alternatively Au)
Temperature data			
Ambient temperature range	°C	-40 ... 125	-40 ... 125
General data			
Connection method		Crimp connection	Crimp connection
No. of pos.		25	25
Contact numbering		-	-
Insertion/withdrawal cycles		≥ 500	≥ 500

Derating curves



HC-D 25-I-CT-...

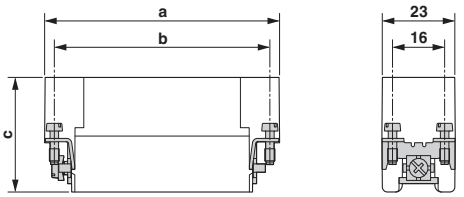


HC-D 25-E...C-R

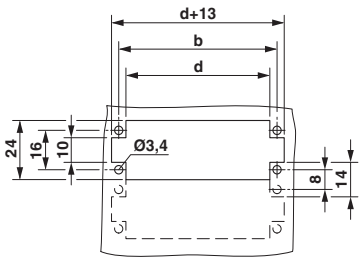
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Crimp connection, turned contacts							
	25		D25 / D50	① **HC-D 25-I-CT-...**	**1584402**	**1584392**	10
	25		D25 / D50	② **HC-D 25-I-CT-...**	**1584402**	**1584392**	10
Crimp connection, rolled contacts							
	25		D25 / D50	③ **HC-D 25-E...C-R**	**1679524**	**1679472**	10
	25		D25 / D50	④ **HC-D 25-E...C-R**	**1679524**	**1679472**	10
Turned crimp contacts CK 1,6 Silver-plated		**Cross section mm² / AWG**					
		0.14 - 0.37 / 26 - 22		**CK1,6-ED-0,37... AG**	**1663394**	**1663336**	100
		0.5 / 20		**CK1,6-ED-0,50... AG**	**1663404**	**1663349**	100
		0.75 / 18		**CK1,6-ED-0,75... AG**	**1663417**	**1663352**	100
		0.75 - 1 / 18		**CK1,6-ED-1,00... AG**	**1663420**	**1663365**	100
		1.5 / 16		**CK1,6-ED-1,50... AG**	**1663433**	**1663378**	100
		2.5 / 14		**CK1,6-ED-2,50... AG**	**1663446**	**1663381**	100
Rolled crimp contacts CK 1,6 Silver-plated		**Cross section mm² / AWG**					
		0.14 - 0.5 / 26 - 20		**CK1,6-ER-0,50... AG**	**1884128**	**1884092**	100
		0.5 - 1.5 / 20 - 16		**CK1,6-ER-1,50... AG**	**1884115**	**1884089**	100
		1.5 - 2.5 / 16 - 14		**CK1,6-ER-2,50... AG**	**1884131**	**1884102**	100

Dimensions (in mm)



Dimensional drawing



Panel cutout

		a	b	c	d
①	Socket	72	66	33.5	60
	Plug			34.2	
②	Socket	72	66	33.5	60
	Plug			34.2	
③	Socket	73	66	36	60
	Plug			34	
④	Socket	73	66	36	60
	Plug			34	

Accessories



Coding elements
From page 581



PE screws
From page 580



Crimp contacts
From page 564

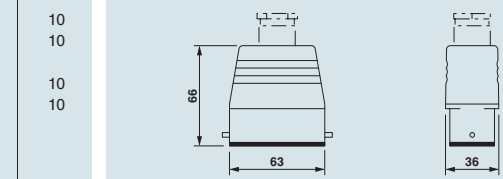
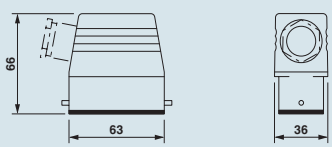
Type D15, metal, sleeve housing for single locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Material, lock	-
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

Description		Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top **Height: 66 mm**	1 x M20 1 x M25	**HC-D 15-TFL-66/O1STM20G** **HC-D 15-TFL-66/O1STM25G**	**1645163** **1645176**	10 10	
	1 x Pg16 1 x Pg21	**HC-D 15-TFL-66/M1PG16G** **HC-D 15-TFL-66/M1PG21G**	**1772353** **1772366**	10 10	
Cable entry: lateral **Height: 66 mm**	1 x M20 1 x M25	**HC-D 15-TFL-66/O1STM20S** **HC-D 15-TFL-66/O1STM25S**	**1636046** **1636059**	10 10	
	1 x Pg16 1 x Pg21	**HC-D 15-TFL-66/M1PG16S** **HC-D 15-TFL-66/M1PG21S**	**1772337** **1772340**	10 10	

Notes:

For further accessories, see from page 552

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Cover plates
From page 572

Type D15, metal, supporting base element with single locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Material, lock	Steel, galvanized
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 26 mm**		Without cover **HC-D 15-AML**	**1772379**	10	
Panel mounting base **Height: 26 mm**		With cover **HC-D 15-AMLD**	**1678363**	10	
Box mounting base **Height: 52 mm**	1 x M25	**HC-D 15-SML-52/O1M25**	**1604893**	10	
	1 x Pg16	**HC-D 15-SML-52/M1PG16**	**1772382**	10	
	2 x M20	**HC-D 15-SML-52/O2M20**	**1604894**	10	
	2 x M25	**HC-D 15-SML-52/O2M25**	**1604895**	10	
	2 x Pg16	**HC-D 15-SML-52/M2PG16**	**1772395**	10	
Coupling housing **Height: 48 mm**	1 x M20	**HC-D 15-KML-48/O1M20**	**1604892**	10	
	1 x Pg16	**HC-D 15-KML-48/M1PG16**	**1674639**	10	
Protective cover, plastic		**HC-D 15-SD-FL/FS**	**1660164**	10	

Notes:

For further accessories, see from page 552

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Cover plates
From page 572

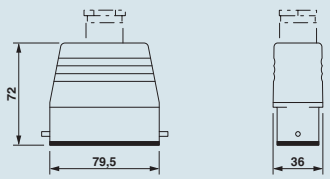
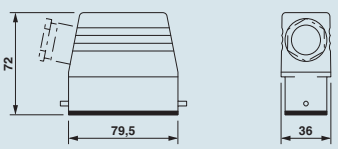
Type D25, metal, sleeve housing for single locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Material, lock	-
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

Description		Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top **Height: 72 mm**	1 x M20 1 x M25	**HC-D 25-TFL-72/O1STM20G** **HC-D 25-TFL-72/O1STM25G**	**1636075** **1645189**	10 10	
	1 x Pg16 1 x Pg21	**HC-D 25-TFL-72/M1PG16G** **HC-D 25-TFL-72/M1PG21G**	**1772447** **1772450**	10 10	
Cable entry: lateral **Height: 72 mm**	1 x M20 1 x M25	**HC-D 25-TFL-72/O1STM20S** **HC-D 25-TFL-72/O1STM25S**	**1636062** **1645273**	10 10	
	1 x Pg16 1 x Pg21	**HC-D 25-TFL-72/M1PG16S** **HC-D 25-TFL-72/M1PG21S**	**1772421** **1772434**	10 10	

Notes:

For further accessories, see from page 552

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Cover plates
From page 572

Type D25, metal, supporting base element with single locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Material, lock	Steel, galvanized
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 26 mm**		Without cover **HC-D 25-AML**	**1772463**	10	
Panel mounting base **Height: 26 mm**		With cover **HC-D 25-AMLD**	**1672754**	10	
Box mounting base **Height: 57 mm**	1 x M25	**HC-D 25-SML-57/O1M25**	**1604901**	10	
	1 x Pg16	**HC-D 25-SML-57/M1PG16**	**1772476**	10	
	1 x Pg21	**HC-D 25-SML-57/M1PG21**	**1677571**	10	
	2 x M20	**HC-D 25-SML-57/O2M20**	**1604902**	10	
	2 x M25	**HC-D 25-SML-57/O2M25**	**1604903**	10	
	2 x Pg16	**HC-D 25-SML-57/M2PG16**	**1772489**	10	
	2 x Pg21	**HC-D 25-SML-57/M2PG21**	**1677584**	10	
Coupling housing **Height: 57 mm**	1 x M20	**HC-D 25-KML-53/O1M20**	**1604900**	10	
	1 x Pg16	**HC-D 25-KML-53/M1PG16G**	**1674642**	10	
Protective cover, plastic		**HC-D 25-SD-FL/FS**	**1660135**	10	

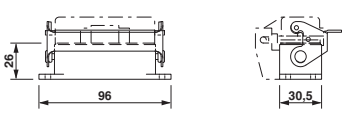


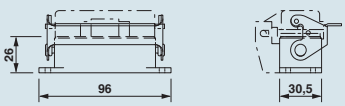


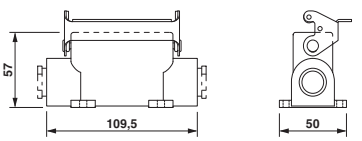


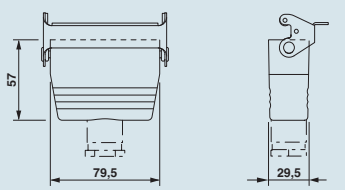


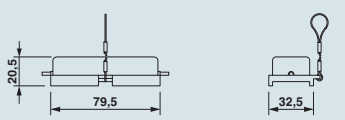












Notes:

For further accessories, see from page 552

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Cover plates
From page 572

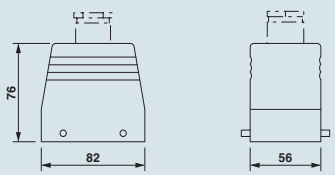
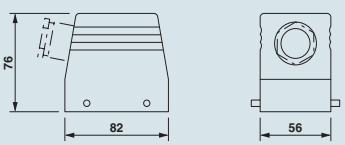
Type D50, metal, sleeve housing for single locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Material, lock	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

Description		Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top **Height: 76 mm**	1 x M25 1 x M32	**HC-D 50-TFQ-76/O1STM25G** **HC-D 50-TFQ-76/O1STM32G**	**1645192** **1645215**	10 10	
	1 x Pg21 1 x Pg29	**HC-D 50-TFQ-76/M1PG21G** **HC-D 50-TFQ-76/M1PG29G**	**1775800** **1775813**	10 10	
Cable entry: lateral **Height: 76 mm**	1 x M25 1 x M32	**HC-D 50-TFQ-76/O1STM25S** **HC-D 50-TFQ-76/O1STM32S**	**1645202** **1645286**	10 10	
	1 x Pg21 1 x Pg29	**HC-D 50-TFQ-76/M1PG21S** **HC-D 50-TFQ-76/M1PG29S**	**1775787** **1775790**	10 10	

Notes:

For further accessories, see from page 552

Accessories

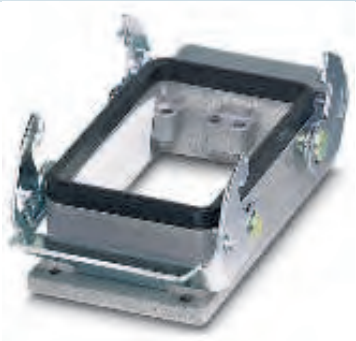


Flat gaskets
From page 571



Pressure screw set
From page 556

Type D50, metal, supporting base element with single locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Material, lock	Steel, galvanized
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 28 mm**		Without cover **HC-D 50-AMQ**	**1775868**	10	
Box mounting base **Height: 81 mm**	1 x M25 1 x M32 1 x Pg21 1 x Pg29 2 x M32 2 x Pg21	**HC-D 50-SMQ-81/O1M25** **HC-D 50-SMQ-81/O1M32** **HC-D 50-SMQ-81/M1PG21** **HC-D 50-SMQ-81/M1PG29** **HC-D 50-SMQ-81/O2M32** **HC-D 50-SMQ-81/M2PG21**	**1604908** **1604909** **1775884** **1775907** **1604910** **1775897**	10 10 10 10 10 10	
Coupling housing **Height: 76 mm**	1 x M25 1 x M32 1 x Pg21	**HC-D 50-KMQ-76/O1M25** **HC-D 50-KMQ-76/O1M32** **HC-D 50-KMQ-76/M1PG21**	**1604970** **1604971** **1672945**	10 10 10	
Protective cover, plastic		**HC-D 50-SD-FQ/FS**	**1660193**	10	

Notes:

For further accessories, see from page 552

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556

D40/D64 series

250 V, 10 A

Connection technology:
– Crimp connection

Coding pins and sockets are mandatory for HC-D... and HC-DD series contact inserts.

To determine the matching housings, refer to the cross-reference list on page 402.

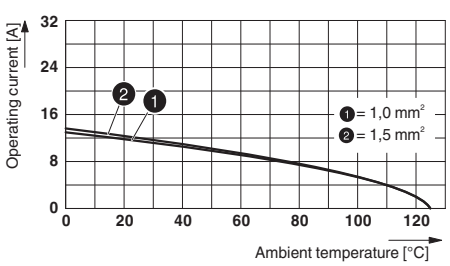
Notes:
For accessories, see from page 552
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe notes on the connection technology



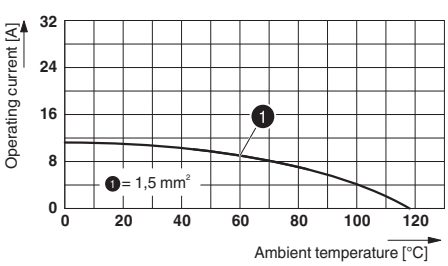
Technical data

Type		HC-D 40-I-CT-...	HC-D 64-I-CT-...	HC-D 40-E...C-R	HC-D 64-E...C-R
Approvals		-	-		
IEC data					
Rated current, contacts (at 40°C)	A	10	10	10	10
Surge voltage category		III	III	III	III
Pollution degree		3	3	3	3
Rated voltage (III/3) contacts	V	250	250	250	250
Rated surge voltage, contacts	kV	4	4	4	4
Connection cross section	mm^2	0.14 ... 2.5	0.14 ... 2.5	0.14 ... 1.5	0.14 ... 1.5
UL data					
Rated voltage	V	-	-	600	600
Rated current	A	-	-	10	10
AWG		-	-	-	-
CSA data					
Rated voltage	V	-	-	600	600
Rated current	A	-	-	10	10
AWG		-	-	-	-
Material data					
Contact carrier material		PA	PA	PC	PC
Inflammability class in acc. with UL 94		V0	V0	V0	V0
Contact material		Copper alloy	Copper alloy	Copper alloy	Copper alloy
Contact surface material		Ag (alternatively Au)	Ag (alternatively Au)	Ag (alternatively Au)	Ag (alternatively Au)
Temperature data					
Ambient temperature range	°C	-40 ... 125	-40 ... 125	-40 ... 125	-40 ... 125
General data					
Connection method		Crimp connection	Crimp connection	Crimp connection	Crimp connection
No. of pos.		40	64	40	64
Contact numbering		-	-	-	-
Insertion/withdrawal cycles		≥ 500	≥ 500	≥ 500	≥ 500

Derating curves

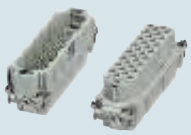


HC-D 40-I-CT-... / HC-D 64-I-CT-...

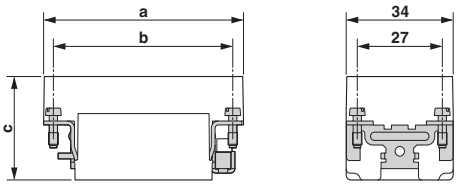


HC-D 40-E...C-R / HC-D 64-E...C-R

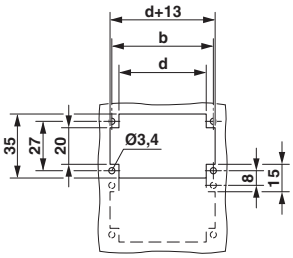
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Crimp connection, turned contacts							
	40		B16 / B32	① **HC-D 40-I-CT-...**	**1584428**	**1584415**	10
Crimp connection, turned contacts							
	64		B24 / B48	② **HC-D 64-I-CT-...**	**1584444**	**1584431**	10
Crimp connection, rolled contacts							
	40		B16 / B32	③ **HC-D 40-E...C-R**	**1679537**	**1679485**	10
Crimp connection, rolled contacts							
	64		B24 / B48	④ **HC-D 64-E...C-R**	**1679546**	**1679498**	10
Turned crimp contacts CK 1,6 Silver-plated		**Cross section mm² / AWG**					
		0.14 - 0.37 / 26 - 22		**CK1,6-ED-0,37... AG**	**1663394**	**1663336**	100
		0.5 / 20		**CK1,6-ED-0,50... AG**	**1663404**	**1663349**	100
		0.75 / 18		**CK1,6-ED-0,75... AG**	**1663417**	**1663352**	100
		0.75 - 1 / 18		**CK1,6-ED-1,00... AG**	**1663420**	**1663365**	100
		1.5 / 16		**CK1,6-ED-1,50... AG**	**1663433**	**1663378**	100
		2.5 / 14		**CK1,6-ED-2,50... AG**	**1663446**	**1663381**	100
Rolled crimp contacts CK 1,6 Silver-plated		**Cross section mm² / AWG**					
		0.14 - 0.5 / 26 - 20		**CK1,6-ER-0,50... AG**	**1884128**	**1884092**	100
		0.5 - 1.5 / 20 - 16		**CK1,6-ER-1,50... AG**	**1884115**	**1884089**	100

Dimensions (in mm)



Dimensional drawing



Panel cutout

		a	b	c	d
①	Socket	83.5	77.5	34.2	72
	Plug			32.8	
②	Socket	110.5	104.5	34.2	98
	Plug			32.8	
③	Socket	83	77.5	36	72
	Plug			34	
④	Socket	110	104	36	98
	Plug			34	

Accessories



Coding elements
From page 581



PE screws
From page 580



Crimping tools
From page 562



Crimp contacts
From page 564

D-A series, 40/64, terminal adapter

250 V, 10 A

Connection technology:
– Screw connection

To determine the matching housings, refer to the cross-reference list on page 402.

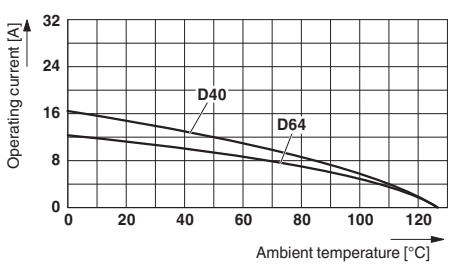
Notes:
For accessories, see from page 552
Connectors may only be operated when under no load.
Observe notes on the connection technology



Technical data

Type		HC-D 40-A-UT-PEL-...	HC-D 64-A-UT-PEL-...
Approvals		-	-
IEC data			
Rated current, contacts (at 40°C)	A	10	10
Surge voltage category		III	III
Pollution degree		3	3
Rated voltage (III/3) contacts	V	250	250
Rated surge voltage, contacts	kV	4	4
Connection cross section	mm^2	0.5 ... 2.5	0.2 ... 2.5
UL data			
Rated voltage	V	-	-
Rated current	A	-	-
AWG		-	-
CSA data			
Rated voltage	V	-	-
Rated current	A	-	-
AWG		-	-
Material data			
Contact carrier material		PA	PA
Inflammability class in acc. with UL 94		V0	V0
Contact material		Copper alloy	Copper alloy
Contact surface material		Ag	Ag
Temperature data			
Ambient temperature range	°C	-40 ... 125	-40 ... 125
General data			
Connection method		Screw connection	Screw connection
No. of pos.		40	64
Contact numbering		-	-
Insertion/withdrawal cycles		≥ 500	≥ 500

Derating curves

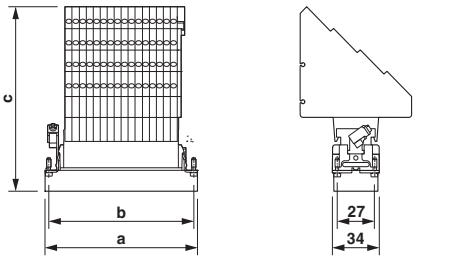


HC-D 40-A-UT-PER-.../HC-D 40-A-UT-PER-...

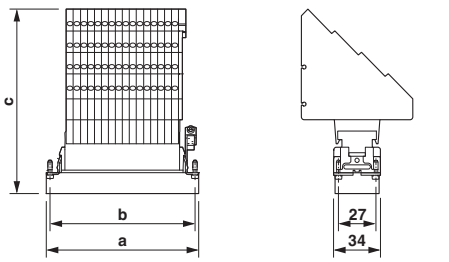
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Screw connection							
				PE left			
	40		B16	① **HC-D 40-A-UT-PEL-...**	**1584253**	**1584240**	1
				PE right			
	40		B16	② **HC-D 40-A-UT-PER-...**	**1584279**	**1584266**	1
Screw connection							
				PE left			
	64		B24	③ **HC-D 64-A-UT-PEL-...**	**1584295**	**1584282**	1
				PE right			
	64		B24	④ **HC-D 64-A-UT-PER-...**	**1584321**	**1584318**	1
Foot element							
				**HC-KA-FE**	**1775240**		10
Locking screw barrel							
				**HC-VSH**	**1660083**		10

Dimensions (in mm)

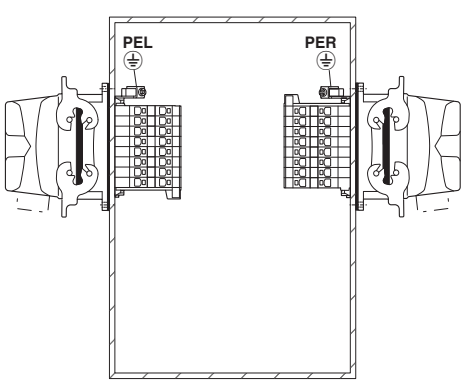


PEL



PER

		a	b	c	d
①	Socket	83	77.5	129.9	
	Plug				
②	Socket	83	77.5	129.9	
	Plug				
③	Socket	110	104	132.6	
	Plug				
④	Socket	110	104	132.6	
	Plug				



Mounting position PEL/PER

D-A series, 40/64, terminal adapter

250 V, 10 A

Connection technology:
– Push-in connection

To determine the matching housings, refer to the cross-reference list on page 402.
– For 2 wires per position

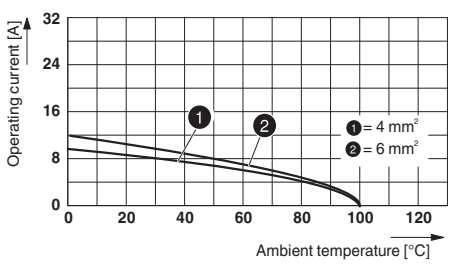
Notes:
For accessories, see from page 552
Connectors may only be operated when under no load.
Observe notes on the connection technology



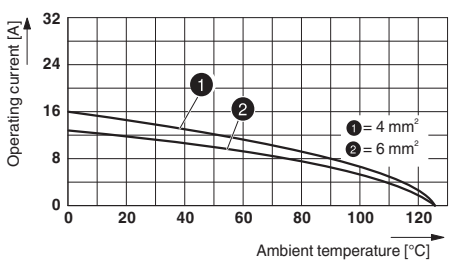
Technical data

Type		HC-D 40-A-TWIN-PEL-...	HC-D 64-A-TWIN-PEL-...
Approvals		-	-
IEC data			
Rated current, contacts (at 40°C)	A	10	10
Surge voltage category		III	III
Pollution degree		3	3
Rated voltage (III/3) contacts	V	250	250
Rated surge voltage, contacts	kV	6	6
Connection cross section	mm^2	0.5 ... 2.5	0.5 ... 2.5
UL data			
Rated voltage	V	-	-
Rated current	A	-	-
AWG		-	-
CSA data			
Rated voltage	V	-	-
Rated current	A	-	-
AWG		-	-
Material data			
Contact carrier material		PA	PA
Inflammability class in acc. with UL 94		V0	V0
Contact material		Copper alloy	Copper alloy
Contact surface material		Ag	Ag
Temperature data			
Ambient temperature range	°C	-40 ... 125	-40 ... 125
General data			
Connection method		Push-in connection	Push-in connection
No. of pos.		40	64
Contact numbering		-	-
Insertion/withdrawal cycles		≥ 500	≥ 500

Derating curves



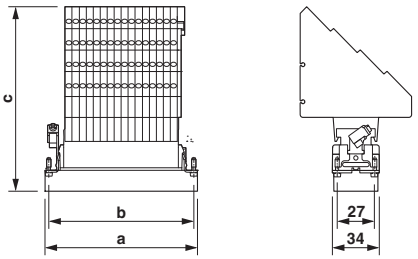
HC-D 40-A-TWIN-PER-...



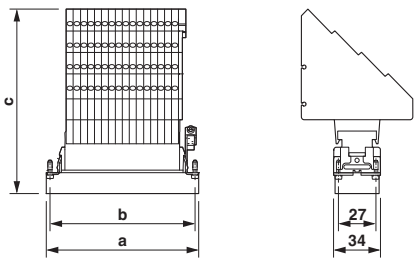
HC-D 64-A-TWIN-PER-...

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Push-in connection							
				PE left			
	40		B16	① HC-D 40-A-TWIN-PEL-...	1580147	1580150	4
				PE right			
	40		B16	② HC-D 40-A-TWIN-PER-...	1580163	1580176	4
Push-in connection							
				PE left			
	64		B24	③ HC-D 64-A-TWIN-PEL-...	1580189	1580192	4
				PE right			
	64		B24	④ HC-D 64-A-TWIN-PER-...	1580202	1580215	4
Foot element							
				HC-KA-FE	1775240		10
Locking screw barrel							
				HC-VSH	1660083		10

Dimensions (in mm)

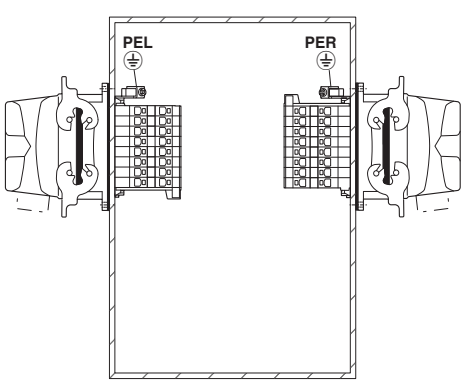


PEL



PER

		a	b	c	d
①	Socket	83	77.5	141.1	
	Plug			139.3	
②	Socket	83	77.5	141.1	
	Plug			139.3	
③	Socket	110	104	141.1	
	Plug			139.3	
④	Socket	110	104	141.1	
	Plug			139.3	



Mounting position PEL/PER

DD series, 24 - 108

250 V, 10 A

Connection technology:
– Crimp connection

Coding pins and sockets are mandatory for HC-D... and HC-DD series contact inserts.

To determine the matching housings, refer to the cross-reference list on page 402.

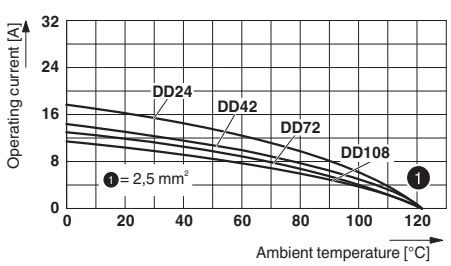
Notes:
For accessories, see from page 552
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe notes on the connection technology



Technical data

Type		HC-DD24-I-CT-...	HC-DD42-I-CT-...	HC-DD72-I-CT-...	HC-DD108-I-CT-...
Approvals					
IEC data					
Rated current, contacts (at 40°C)	A	10	10	10	10
Surge voltage category		III	III	III	III
Pollution degree		3	3	3	3
Rated voltage (III/3) contacts	V	250	250	250	250
Rated surge voltage, contacts	kV	4	4	4	4
Connection cross section	mm^2	0.14 ... 2.5	0.14 ... 2.5	0.14 ... 2.5	0.14 ... 2.5
UL data					
Rated voltage	V	250	250	250	250
Rated current	A	10	10	10	10
AWG		14	14	14	14
CSA data					
Rated voltage	V	250	250	250	250
Rated current	A	7	7	7	7
AWG		26-14	26-14	26-14	26-14
Material data					
Contact carrier material		PA	PA	PA	PA
Inflammability class in acc. with UL 94		V0	V0	V0	V0
Contact material		Copper alloy	Copper alloy	Copper alloy	Copper alloy
Contact surface material		Ag (alternatively Au)	Ag (alternatively Au)	Ag (alternatively Au)	Ag (alternatively Au)
Temperature data					
Ambient temperature range	°C	-40 ... 125	-40 ... 125	-40 ... 125	-40 ... 125
General data					
Connection method		Crimp connection	Crimp connection	Crimp connection	Crimp connection
No. of pos.		24	42	72	108
Contact numbering		1 - 24	1 - 42	1 - 72	1 - 108
Insertion/withdrawal cycles		≥ 500	≥ 500	≥ 500	≥ 500

Derating curves

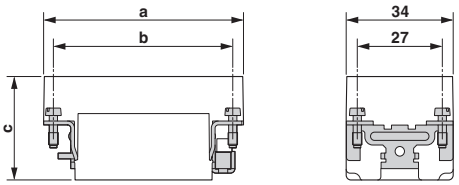


HC-DD...

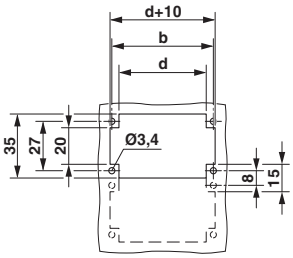
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Crimp connection							
	24	1 - 24	B6	① HC-DD24-I-CT-...	1584046	1584033	10
Crimp connection							
	42	1 - 42	B10	② HC-DD42-I-CT-...	1584062	1584059	10
Crimp connection							
	72	1 - 72	B16 / B32	③ HC-DD72-I-CT-...	1584091	1584075	10
	72	73 - 144	B16 / B32	④ HC-DD72-I-CT-...-144	1584101	1584088	10
Crimp connection							
	108	1 - 108	B24 / B48	⑤ HC-DD108-I-CT-...	1584130	1584114	10
	108	109-216	B24 / B48	⑥ HC-DD108-I-CT-...-216	1584143	1584127	10
Turned crimp contacts CK 1,6 Silver-plated		**Cross section mm² / AWG**					
		0.14 - 0.37 / 26 - 22		CK1,6-ED-0,37... AG	1663394	1663336	100
		0.5 / 20		CK1,6-ED-0,50... AG	1663404	1663349	100
		0.75 / 18		CK1,6-ED-0,75... AG	1663417	1663352	100
		0.75 - 1 / 18		CK1,6-ED-1,00... AG	1663420	1663365	100
		1.5 / 16		CK1,6-ED-1,50... AG	1663433	1663378	100
Turned crimp contacts Gold-plated		**Cross section mm² / AWG**					
		0.14 - 0.37 / 22 - 24		CK1,6-ED-0,37... AU	1674969	1674901	100
		0.75 / 18		CK1,6-ED-0,75... AU	1672440	1672453	100
		0.75 / 18		CK1,6-ED-0,75... AU	1672440	1674914	100
		0.75 - 1 / 18		CK1,6-ED-1,00... AU	1674943	1674888	100
		1.5 / 16		CK1,6-ED-1,50... AU	1674930	1674875	100

Dimensions (in mm)



Dimensional drawing



Panel cutout

		a	b	c	d
①	Socket	50.5	44	34.5	36
	Plug			32.5	
②	Socket	64	57	34.5	49
	Plug			32.5	
③	Socket	84	77.5	34.5	72
	Plug			32.5	
④	Socket	84	77.5	34.5	72
	Plug			32.5	
⑤	Socket	111	104	34.5	98
	Plug			32.5	
⑥	Socket	111	104	34.5	98
	Plug			32.5	

Accessories



Coding elements
From page 581



PE screws
From page 580



Crimping tools
From page 562

B6 series

500 V, 16 A

Connection technology:
– Screw connection
– Push-in connection
– Insulation displacement connection
– Crimp connection

To determine the matching housings, refer to the cross-reference list on page 402.

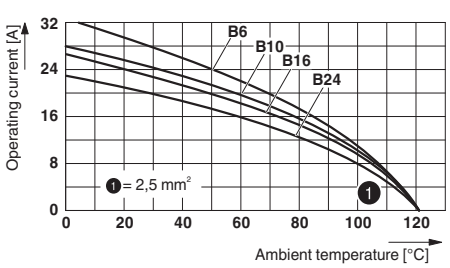
Notes:
For accessories, see from page 552
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe notes on the connection technology



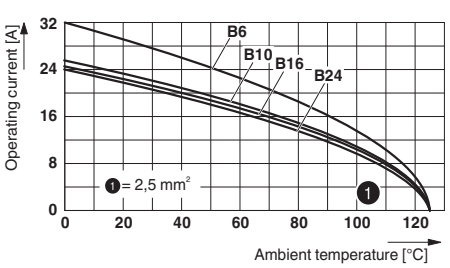
Technical data

Type		HC-B 6-I-UT-...	HC-B 6-I-PT-...	HC-B 6-E...Q-2,5	HC-B 6-I-CT-...
Approvals			-		
IEC data					
Rated current, contacts (at 40°C)	A	16	16	16	16
Surge voltage category		III	III	III	III
Pollution degree		3	3	3	3
Rated voltage (III/3) contacts	V	500	500	400	500
Rated surge voltage, contacts	kV	6	6	6	6
Connection cross section	mm^2	0.5 ... 2.5	0.14 ... 2.5	0.34 ... 2.5	0.5 ... 4
UL data					
Rated voltage	V	600	-	600	600
Rated current	A	13	-	10	13
AWG		22-14	-	16-14	22-14
CSA data					
Rated voltage	V	600	-	600	600
Rated current	A	13	-	10	20
AWG		22-14	-	16	20-12
Material data					
Contact carrier material		PA	PA	PA	PA
Inflammability class in acc. with UL 94		V0	V0	V0	V0
Contact material		Copper alloy	Copper alloy	Copper alloy	Copper alloy
Contact surface material		Ag	Ag	Ag	Ag (alternatively Au)
Temperature data					
Ambient temperature range	°C	-40 ... 125	-40 ... 125	-40 ... 125	-40 ... 125
General data					
Connection method		Screw connection	Push-in connection	QUICKON connection	Crimp connection
No. of pos.		6	6	6	6
Contact numbering		1 - 6	1 - 6	1 - 6	1 - 6
Insertion/withdrawal cycles		≥ 500	≥ 500	≥ 500	≥ 500

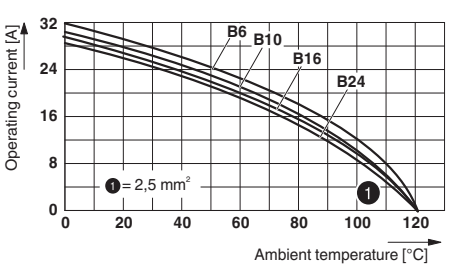
Derating curves



HC-B 6-I-UT-...



HC-B 6-E...Q-2,5

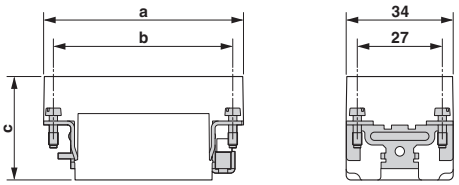


HC-B 6-I-CT-...

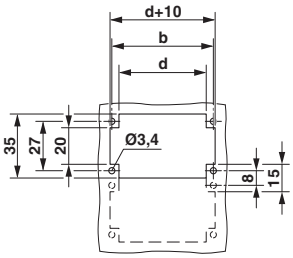
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Screw connection							
	6	1 - 6	B6	① HC-B 6-I-UT-...	1648128	1648115	10
Push-in connection							
	6	1 - 6	B6	② HC-B 6-I-PT-...	1407727	1407728	1
Insulation displacement connection							
	6	1 - 6	B6	③ HC-B 6-E...Q-2,5	1605556	1605611	10
Crimp connection							
	6	1 - 6	B6	④ HC-B 6-I-CT-...	1648160	1648157	10
Turned crimp contacts CK 2,5 Silver-plated		**Cross section mm² / AWG**					
		0.5 / 20		CK2,5-ED-0,50... AG	1663640	1663572	100
		0.75 / 18		CK2,5-ED-0,75... AG	1663653	1663585	100
		0.75 - 1 / 18		CK2,5-ED-1,00... AG	1663666	1663598	100
		1.5 / 16		CK2,5-ED-1,50... AG	1663679	1663608	100
		2.5 / 14		CK2,5-ED-2,50... AG	1663682	1663611	100
		4 / 12		CK2,5-ED-4,00... AG	1663705	1663637	100
Turned crimp contacts CK 2,5 Gold-plated		**Cross section mm² / AWG**					
		0.5 / 20		CK2,5-ED-0,50... AU	1674859	1674804	100
		0.75 - 1 / 18		CK2,5-ED-1,00... AU	1674833	1674781	100
		1.5 / 16		CK2,5-ED-1,50... AU	1674820	1674778	100
		2.5 / 14		CK2,5-ED-2,50... AU	1674862	1674817	100
		4 / 12		CK2,5-ED-4,00... AU	1674846	1674794	100

Dimensions (in mm)



Dimensional drawing



Panel cutout

		a	b	c	d
①	Socket	50.5	44	34.6	36
	Plug			32	
②	Socket	50.5	44	37	36
	Plug			34.4	
③	Socket	51	44	37	36
	Plug	51.5		35	
④	Socket	50.5	44	34.6	36
	Plug			32	

Accessories



Coding elements
From page 582



PE screws
From page 580



Crimping tools
From page 562

B10 series

500 V, 16 A

Connection technology:
– Screw connection
– Push-in connection
– Insulation displacement connection
– Crimp connection

To determine the matching housings, refer to the cross-reference list on page 402.

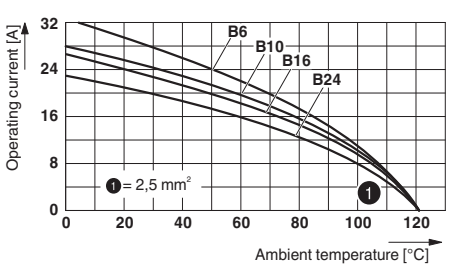
Notes:
For accessories, see from page 552
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe notes on the connection technology



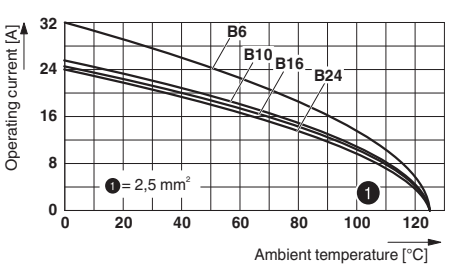
Technical data

Type		HC-B 10-I-UT-...	HC-B 10-I-PT-...	HC-B 10-E...Q-2,5	HC-B 10-I-CT-...
Approvals			-		
IEC data					
Rated current, contacts (at 40°C)	A	16	16	16	16
Surge voltage category		III	III	III	III
Pollution degree		3	3	3	3
Rated voltage (III/3) contacts	V	500	500	400	500
Rated surge voltage, contacts	kV	6	6	6	6
Connection cross section	mm^2	0.5 ... 2.5	0.14 ... 2.5	0.34 ... 2.5	0.5 ... 4
UL data					
Rated voltage	V	600	-	600	600
Rated current	A	13	-	10	13
AWG		22-14	-	16-14	22-14
CSA data					
Rated voltage	V	600	-	600	600
Rated current	A	13	-	10	20
AWG		22-14	-	16	20-12
Material data					
Contact carrier material		PA	PA	PA	PA
Inflammability class in acc. with UL 94		V0	V0	V0	V0
Contact material		Copper alloy	Copper alloy	Copper alloy	Copper alloy
Contact surface material		Ag	Ag	Ag	Ag (alternatively Au)
Temperature data					
Ambient temperature range	°C	-40 ... 125	-40 ... 125	-40 ... 125	-40 ... 125
General data					
Connection method		Screw connection	Push-in connection	QUICKON connection	Crimp connection
No. of pos.		10	10	10	10
Contact numbering		1 - 10	1 - 10	1 - 10	1 - 10
Insertion/withdrawal cycles		≥ 500	≥ 500	≥ 500	≥ 500

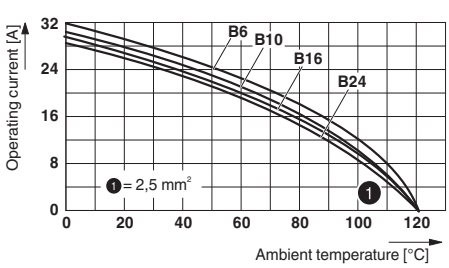
Derating curves



HC-B 10-I-UT-...



HC-B 10-E...Q-2,5

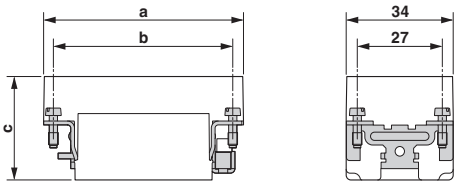


HC-B 10-I-CT-...

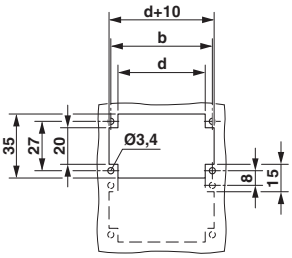
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Screw connection							
	10	1 - 10	B10	① HC-B 10-I-UT-...	1648186	1648173	10
Push-in connection							
	10	1 - 10	B10	② HC-B 10-I-PT-...	1407729	1407730	1
Insulation displacement connection							
	10	1 - 10	B10	③ HC-B 10-E...Q-2,5	1605569	1605624	10
Crimp connection							
	10	1 - 10	B10	④ HC-B 10-I-CT-...	1648225	1648212	10
Turned crimp contacts CK 2,5 Silver-plated		**Cross section mm² / AWG**					
		0.5 / 20		CK2,5-ED-0,50... AG	1663640	1663572	100
		0.75 / 18		CK2,5-ED-0,75... AG	1663653	1663585	100
		0.75 - 1 / 18		CK2,5-ED-1,00... AG	1663666	1663598	100
		1.5 / 16		CK2,5-ED-1,50... AG	1663679	1663608	100
		2.5 / 14		CK2,5-ED-2,50... AG	1663682	1663611	100
		4 / 12		CK2,5-ED-4,00... AG	1663705	1663637	100
Turned crimp contacts CK 2,5 Gold-plated		**Cross section mm² / AWG**					
		0.5 / 20		CK2,5-ED-0,50... AU	1674859	1674804	100
		0.75 - 1 / 18		CK2,5-ED-1,00... AU	1674833	1674781	100
		1.5 / 16		CK2,5-ED-1,50... AU	1674820	1674778	100
		2.5 / 14		CK2,5-ED-2,50... AU	1674862	1674817	100
		4 / 12		CK2,5-ED-4,00... AU	1674846	1674794	100

Dimensions (in mm)



Dimensional drawing



Panel cutout

		a	b	c	d
①	Socket	64	57	34.6	49
	Plug			32	
②	Socket	64	57	37	49
	Plug			34.4	
③	Socket	64	57	37	49
	Plug			35	
④	Socket	64	57	34.6	49
	Plug			32	

Accessories



Coding elements
From page 582



PE screws
From page 580



Crimping tools
From page 562

B16/B32 series

500 V, 16 A

Connection technology:
– Screw connection
– Push-in connection
– Insulation displacement connection
– Crimp connection

To determine the matching housings, refer to the cross-reference list on page 402.

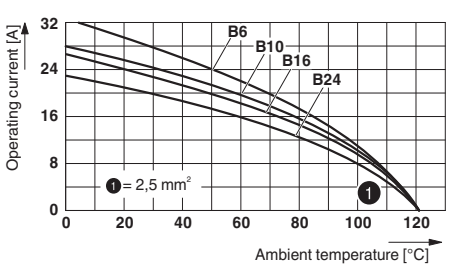
Notes:
For accessories, see from page 552
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe notes on the connection technology



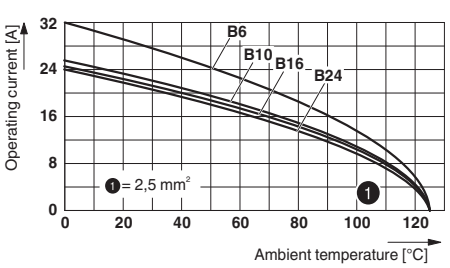
Technical data

Type		HC-B 16-I-UT-...	HC-B 16-I-PT-...	HC-B 16-E...Q-2,5	HC-B 16-I-CT-...
Approvals			-		
IEC data					
Rated current, contacts (at 40°C)	A	16	16	16	16
Surge voltage category		III	III	III	III
Pollution degree		3	3	3	3
Rated voltage (III/3) contacts	V	500	500	400	500
Rated surge voltage, contacts	kV	6	6	6	6
Connection cross section	mm^2	0.5 ... 2.5	0.14 ... 2.5	0.34 ... 2.5	0.5 ... 4
UL data					
Rated voltage	V	600	-	600	600
Rated current	A	13	-	10	13
AWG		22-14	-	16-14	22-14
CSA data					
Rated voltage	V	600	-	600	600
Rated current	A	13	-	10	20
AWG		22-14	-	16	20-12
Material data					
Contact carrier material		PA	PA	PA	PA
Inflammability class in acc. with UL 94		V0	V0	V0	V0
Contact material		Copper alloy	Copper alloy	Copper alloy	Copper alloy
Contact surface material		Ag	Ag	Ag	Ag (alternatively Au)
Temperature data					
Ambient temperature range	°C	-40 ... 125	-40 ... 125	-40 ... 125	-40 ... 125
General data					
Connection method		Screw connection	Push-in connection	QUICKON connection	Crimp connection
No. of pos.		16	16	16	16
Contact numbering		1 - 16	1 - 16	1 - 16	1 - 16
Insertion/withdrawal cycles		≥ 500	≥ 500	≥ 500	≥ 500

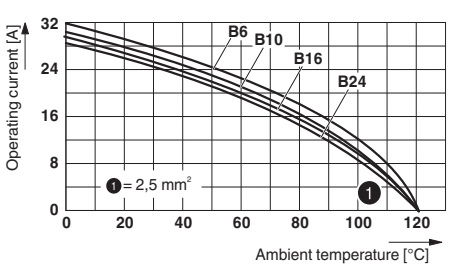
Derating curves



HC-B 16-I-UT-...



HC-B 16-E...Q-2,5

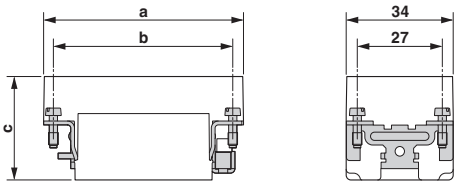


HC-B 16-I-CT-...

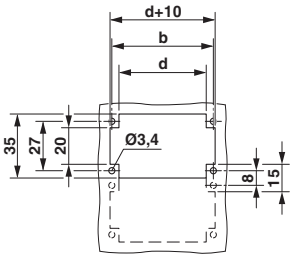
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Screw connection							
	16	1 - 16	B16 / B32	① HC-B 16-I-UT-...	1648241	1648238	10
	16	17 - 32	B16 / B32	② HC-B 16-I-UT-...-32	1584884	1584871	10
Push-in connection							
	16	1 - 16	B16 / B32	③ HC-B 16-I-PT-...	1407731	1407732	1
	16	17 - 32	B16 / B32	④ HC-B 16-I-PT-...-32	1407733	1407734	1
Insulation displacement connection							
	16	1 - 16	B16 / B32	⑤ HC-B 16-E...Q-2,5	1605572	1605637	10
	16	17 - 32	B16 / B32	⑥ HC-B 16-E...Q-2,5-32	1605598	1605653	10
Crimp connection							
	16	1 - 16	B16 / B32	⑦ HC-B 16-I-CT-...	1648283	1648270	10
	16	17 - 32	B16 / B32	⑧ HC-B 16-I-CT-...-32	1584923	1584910	10
Turned crimp contacts CK 2,5 Silver-plated		**Cross section mm² / AWG**					
		0.5 / 20		CK2,5-ED-0,50... AG	1663640	1663572	100
		0.75 / 18		CK2,5-ED-0,75... AG	1663653	1663585	100
		0.75 - 1 / 18		CK2,5-ED-1,00... AG	1663666	1663598	100
		1.5 / 16		CK2,5-ED-1,50... AG	1663679	1663608	100
		2.5 / 14		CK2,5-ED-2,50... AG	1663682	1663611	100
		4 / 12		CK2,5-ED-4,00... AG	1663705	1663637	100
Turned crimp contacts CK 2,5 Gold-plated		**Cross section mm² / AWG**					
		0.5 / 20		CK2,5-ED-0,50... AU	1674859	1674804	100
		0.75 - 1 / 18		CK2,5-ED-1,00... AU	1674833	1674781	100
		1.5 / 16		CK2,5-ED-1,50... AU	1674820	1674778	100
		2.5 / 14		CK2,5-ED-2,50... AU	1674862	1674817	100
		4 / 12		CK2,5-ED-4,00... AU	1674846	1674794	100

Dimensions (in mm)



Dimensional drawing



Panel cutout

		a	b	c	d
①	Socket	84	77.5	34.6	72
	Plug			32	
②	Socket	84	77.5	34.6	72
	Plug			32	
③	Socket	84	77.5	37	72
	Plug			34.4	
④	Socket	84	77.5	37	72
	Plug			34.4	
⑤	Socket	84.5	77.5	37	72
	Plug			35	
⑥	Socket	84.5	77.5	37	72
	Plug			35	
⑦	Socket	84	77.5	34.6	72
	Plug			32	
⑧	Socket	84	77.5	34.6	72
	Plug			32	

Accessories



Coding elements
From page 582



PE screws
From page 580



Crimping tools
From page 562

B24/B48 series

500 V, 16 A

Connection technology:
– Screw connection
– Push-in connection
– Insulation displacement connection
– Crimp connection

To determine the matching housings, refer to the cross-reference list on page 402.

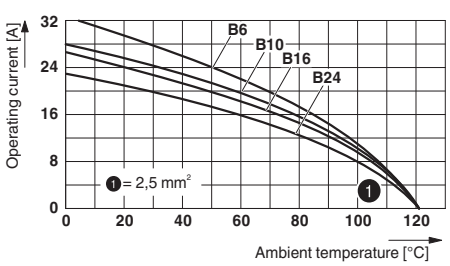
Notes:
For accessories, see from page 552
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe notes on the connection technology



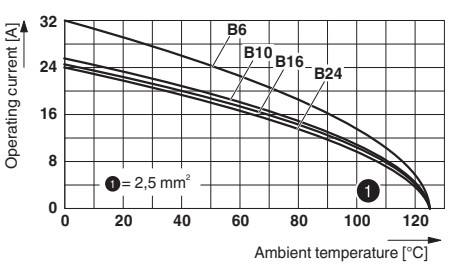
Technical data

Type		HC-B 24-I-UT-...	HC-B 24-I-PT-...	HC-B 24-E...Q-2,5	HC-B 24-I-CT-...
Approvals			-		
IEC data					
Rated current, contacts (at 40°C)	A	16	16	16	16
Surge voltage category		III	III	III	III
Pollution degree		3	3	3	3
Rated voltage (III/3) contacts	V	500	500	400	500
Rated surge voltage, contacts	kV	6	6	6	6
Connection cross section	mm²	0.5 ... 2.5	0.14 ... 2.5	0.34 ... 2.5	0.5 ... 4
UL data					
Rated voltage	V	600	-	600	600
Rated current	A	13	-	10	13
AWG		22-14	-	16-14	22-14
CSA data					
Rated voltage	V	600	-	600	600
Rated current	A	13	-	10	20
AWG		22-14	-	16	20-12
Material data					
Contact carrier material		PA	PA	PA	PA
Inflammability class in acc. with UL 94		V0	V0	V0	V0
Contact material		Copper alloy	Copper alloy	Copper alloy	Copper alloy
Contact surface material		Ag	Ag	Ag	Ag (alternatively Au)
Temperature data					
Ambient temperature range	°C	-40 ... 125	-40 ... 125	-40 ... 125	-40 ... 125
General data					
Connection method		Screw connection	Push-in connection	QUICKON connection	Crimp connection
No. of pos.		24	24	24	24
Contact numbering		1 - 24	1 - 24	1 - 24	1 - 24
Insertion/withdrawal cycles		≥ 500	≥ 500	≥ 500	≥ 500

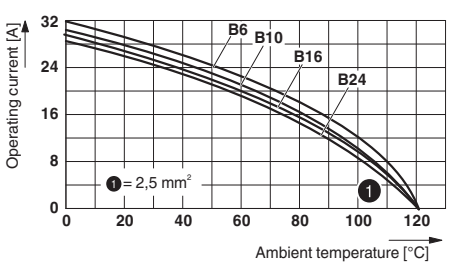
Derating curves



HC-B 24-I-UT-...



HC-B 24-E...Q-2,5

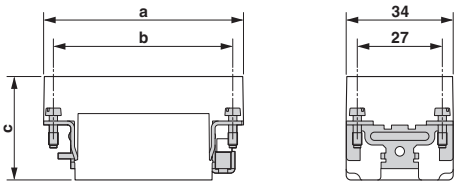


HC-B 24-I-CT-...

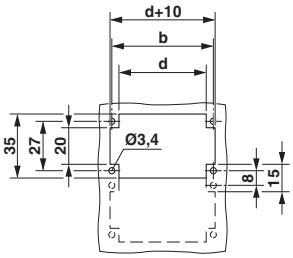
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Screw connection							
	24	1 - 24	B24 / B48	① HC-B 24-I-UT-...	1648306	1648296	10
	24	25 - 48	B24 / B48	② HC-B 24-I-UT-...-48	1584949	1584936	10
Push-in connection							
	24	1 - 24	B24 / B48	③ HC-B 24-I-PT-...	1407735	1407736	1
	24	25 - 48	B24 / B48	④ HC-B 24-I-PT-...-48	1407737	1407738	1
Insulation displacement connection							
	24	1 - 24	B24 / B48	⑤ HC-B 24-E...Q-2,5	1605585	1605640	10
	24	1 - 24	B24 / B48	⑥ HC-B 24-E...Q-2,5-48	1605608	1605666	10
Crimp connection							
	24	1 - 24	B24 / B48	⑦ HC-B 24-I-CT-...	1648348	1648335	10
	24	25 - 48	B24 / B48	⑧ HC-B 24-I-CT-...-48	1584981	1584978	10
Turned crimp contacts CK 2,5 Silver-plated		**Cross section mm² / AWG**					
		0.5 / 20		CK2,5-ED-0,50... AG	1663640	1663572	100
		0.75 / 18		CK2,5-ED-0,75... AG	1663653	1663585	100
		0.75 - 1 / 18		CK2,5-ED-1,00... AG	1663666	1663598	100
		1.5 / 16		CK2,5-ED-1,50... AG	1663679	1663608	100
		2.5 / 14		CK2,5-ED-2,50... AG	1663682	1663611	100
		4 / 12		CK2,5-ED-4,00... AG	1663705	1663637	100
Turned crimp contacts CK 2,5 Gold-plated		**Cross section mm² / AWG**					
		0.5 / 20		CK2,5-ED-0,50... AU	1674859	1674804	100
		0.75 - 1 / 18		CK2,5-ED-1,00... AU	1674833	1674781	100
		1.5 / 16		CK2,5-ED-1,50... AU	1674820	1674778	100
		2.5 / 14		CK2,5-ED-2,50... AU	1674862	1674817	100
		4 / 12		CK2,5-ED-4,00... AU	1674846	1674794	100

Dimensions (in mm)



Dimensional drawing



Panel cutout

		a	b	c	d
①	Socket	111	104	34.6	98
	Plug			32	
②	Socket	111	104	34.6	98
	Plug			32	
③	Socket	111	104	37	98
	Plug			34.4	
④	Socket	111	104	37	98
	Plug			34.4	
⑤	Socket	111	104	37	98
	Plug			35	
⑥	Socket	111	104	37	98
	Plug			35	
⑦	Socket	111	104	34.6	98
	Plug			32	
⑧	Socket	111	104	34.6	98
	Plug			32	

Accessories



Coding elements
From page 582



PE screws
From page 580



Crimping tools
From page 562

B-A series, 6 - 24, terminal adapter

500 V, 16 A

Connection technology:
– Screw connection

To determine the matching housings, refer to the cross-reference list on page 402.

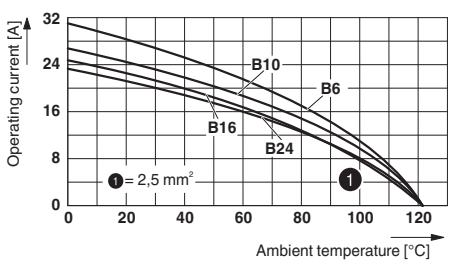
Notes:
For accessories, see from page 552
Connectors may only be operated when under no load.
Observe notes on the connection technology



Technical data

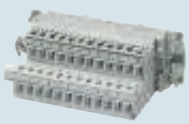
Type		HC-B 6-A-UT-PEL-...	HC-B 10-A-UT-PEL-...	HC-B 16-A-UT-PEL-...	HC-B 24-A-UT-PEL-...
Approvals					
IEC data					
Rated current, contacts (at 40°C)	A	16	16	16	16
Surge voltage category		III	III	III	III
Pollution degree		3	3	3	3
Rated voltage (III/3) contacts	V	500	500	500	500
Rated surge voltage, contacts	kV	6	6	6	6
Connection cross section	mm^2	0.5 ... 2.5	0.5 ... 2.5	0.5 ... 2.5	0.5 ... 2.5
UL data					
Rated voltage	V	600	600	600	600
Rated current	A	13	13	13	13
AWG		22-14	22-14	22-14	22-14
CSA data					
Rated voltage	V	600	600	600	600
Rated current	A	13	13	13	13
AWG		22-14	22-14	22-14	22-14
Material data					
Contact carrier material		PA	PA	PA	PA
Inflammability class in acc. with UL 94		V0	V0	V0	V0
Contact material		Copper alloy	Copper alloy	Copper alloy	Copper alloy
Contact surface material		Ag	Ag	Ag	Ag
Temperature data					
Ambient temperature range	°C	-40 ... 125	-40 ... 125	-40 ... 125	-40 ... 125
General data					
Connection method		Screw connection	Screw connection	Screw connection	Screw connection
No. of pos.		6	10	16	24
Contact numbering		1 - 6	1 - 10	1 - 16	1 - 24
Insertion/withdrawal cycles		≥ 500	≥ 500	≥ 500	≥ 500

Derating curves

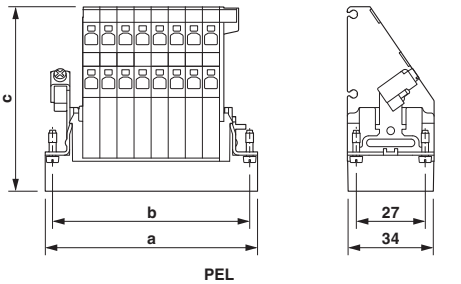


HC-B ...-A-UT-...

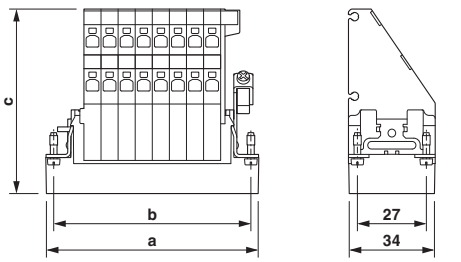
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Screw connection							
				PE left			
	6	1 - 6	B6	① **HC-B 6-A-UT-PEL-...**	**1648018**	**1648024**	5
				PE right			
	6	1 - 6	B6	② **HC-B 6-A-UT-PER-...**	**1648066**	**1648072**	5
Screw connection							
				PE left			
	10	1 - 10	B10	③ **HC-B 10-A-UT-PEL-...**	**1648030**	**1648036**	5
				PE right			
	10	1 - 10	B10	④ **HC-B 10-A-UT-PER-...**	**1648078**	**1648084**	5
Screw connection							
				PE left			
	16	1 - 16	B16	⑤ **HC-B 16-A-UT-PEL-...**	**1648042**	**1648048**	5
				PE right			
	16	1 - 16	B16	⑥ **HC-B 16-A-UT-PER-...**	**1648090**	**1648096**	5
Screw connection							
				PE left			
	24	1 - 24	B24	⑦ **HC-B 24-A-UT-PEL-...**	**1648054**	**1648060**	5
				PE right			
	24	1 - 24	B24	⑧ **HC-B 24-A-UT-PER-...**	**1648102**	**1648108**	5
Foot element							
				**HC-KA-FE**	**1775240**		10
Locking screw barrel							
				**HC-VSH**	**1660083**		10

Dimensions (in mm)

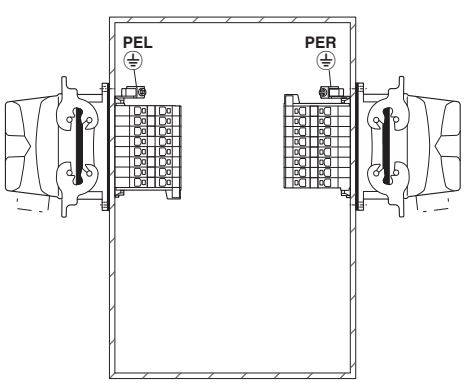


PEL



PER

		a	b	c	d
①	Socket	51	44	74.2	
	Plug			71.6	
②	Socket	51	44	74.2	
	Plug			71.6	
③	Socket	64	57	74.2	
	Plug			71.6	
④	Socket	64	57	74.2	
	Plug			71.6	
⑤	Socket	84.5	77.5	74.2	
	Plug			71.6	
⑥	Socket	84.5	77.5	74.2	
	Plug			71.6	
⑦	Socket	111	104	74.2	
	Plug			71.6	
⑧	Socket	111	104	74.2	
	Plug			71.6	



Mounting position PEL/PER

Accessories



Coding elements
From page 582

B-A series, 6 - 24, terminal adapter

500 V, 16 A

Connection technology:
– Push-in connection

To determine the matching housings, refer to the cross-reference list on page 402.

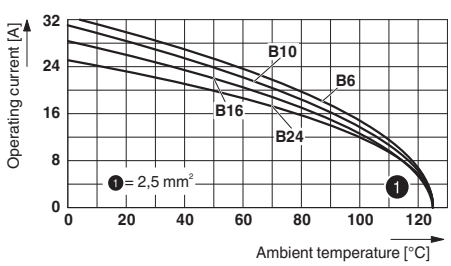
Notes:
For accessories, see from page 552
Connectors may only be operated when under no load.
Observe notes on the connection technology



Technical data

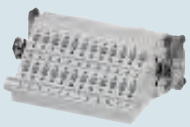
Type		HC-B 6-A-DT-PEL-...	HC-B 10-A-DT-PEL-...	HC-B 16-A-DT-PEL-...	HC-B 24-A-DT-PEL-...
Approvals					
IEC data					
Rated current, contacts (at 40°C)	A	16	16	16	16
Surge voltage category		III	III	III	III
Pollution degree		3	3	3	3
Rated voltage (III/3) contacts	V	500	500	500	500
Rated surge voltage, contacts	kV	6	6	6	6
Connection cross section	mm^2	0.5 ... 2.5	0.5 ... 2.5	0.5 ... 2.5	0.5 ... 2.5
UL data					
Rated voltage	V	600	600	600	600
Rated current	A	13	13	13	13
AWG		22-14	22-14	22-14	22-14
CSA data					
Rated voltage	V	600	600	600	600
Rated current	A	13	13	13	13
AWG		22-14	22-14	22-14	22-14
Material data					
Contact carrier material		PA	PA	PA	PA
Inflammability class in acc. with UL 94		V0	V0	V0	V0
Contact material		Copper alloy	Copper alloy	Copper alloy	Copper alloy
Contact surface material		Ag	Ag	Ag	Ag
Temperature data					
Ambient temperature range	°C	-40 ... 125	-40 ... 125	-40 ... 125	-40 ... 125
General data					
Connection method		Push-in connection	Push-in connection	Push-in connection	Push-in connection
No. of pos.		6	10	16	24
Contact numbering		1 - 6	1 - 10	1 - 16	1 - 24
Insertion/withdrawal cycles		≥ 500	≥ 500	≥ 500	≥ 500

Derating curves

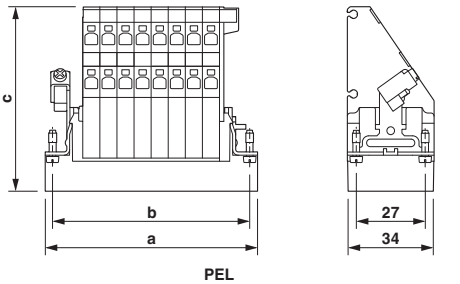


HC-B ...-A-DT-PER-...

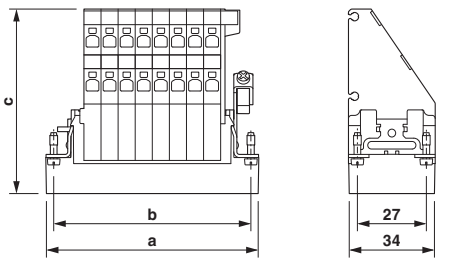
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Push-in connection							
	6	1 - 6	B6	PE left ① **HC-B 6-A-DT-PEL-...**	**1648351**	**1648364**	5
	6	1 - 6	B6	PE right ② **HC-B 6-A-DT-PER-...**	**1648377**	**1648380**	5
Push-in connection							
	10	1 - 10	B10	PE left ③ **HC-B 10-A-DT-PEL-...**	**1648393**	**1648403**	5
	10	1 - 10	B10	PE right ④ **HC-B 10-A-DT-PER-...**	**1648416**	**1648429**	5
Push-in connection							
	16	1 - 16	B16	PE left ⑤ **HC-B 16-A-DT-PEL-...**	**1648432**	**1648445**	5
	16	1 - 16	B16	PE right ⑥ **HC-B 16-A-DT-PER-...**	**1648458**	**1648461**	5
Push-in connection							
	24	1 - 24	B24	PE left ⑦ **HC-B 24-A-DT-PEL-...**	**1648474**	**1648487**	5
	24	1 - 24	B24	PE right ⑧ **HC-B 24-A-DT-PER-...**	**1648490**	**1648500**	5
Foot element							
				**HC-KA-FE**	**1775240**		10
Locking screw barrel							
				**HC-VSH**	**1660083**		10

Dimensions (in mm)

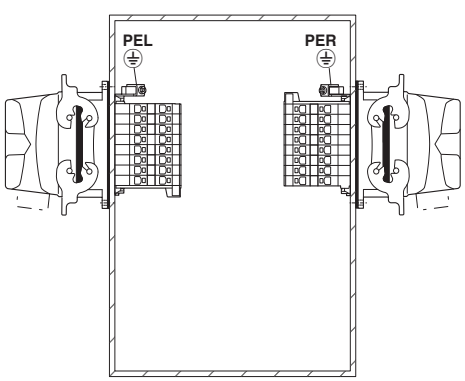


PEL



PER

		a	b	c	d
①	Socket	50.5	44	72.1	
	Plug			70.5	
②	Socket	50.5	44	72.1	
	Plug			70.5	
③	Socket	64	57	72.1	
	Plug			70.5	
④	Socket	64	57	72.1	
	Plug			70.5	
⑤	Socket	84	77.5	72.1	
	Plug			70.5	
⑥	Socket	84	77.5	72.1	
	Plug			70.5	
⑦	Socket	111	104	72.1	
	Plug			70.5	
⑧	Socket	111	104	72.1	
	Plug			70.5	



Mounting position PEL/PER

Accessories



Coding elements
From page 582

BB series, 10 - 92

500 V, 16 A

Connection technology:
– Crimp connection

To determine the matching housings, refer to the cross-reference list on page 402.

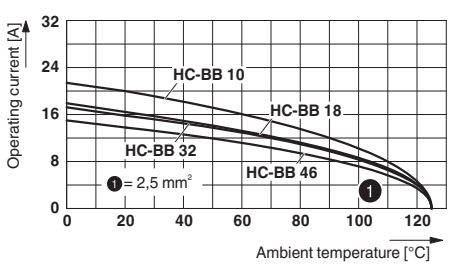
Notes:
For accessories, see from page 552
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe notes on the connection technology



Technical data

Type		HC-BB 10-E...C	HC-BB 18-E...C	HC-BB 32-E...C	HC-BB 46-E...C
Approvals					
IEC data					
Rated current, contacts (at 40°C)	A	16	16	16	16
Surge voltage category		III	III	III	III
Pollution degree		3	3	3	3
Rated voltage (III/3) contacts	V	500	500	500	500
Rated surge voltage, contacts	kV	6	6	6	6
Connection cross section	mm^2	0.5 ... 4	0.5 ... 4	0.5 ... 4	0.5 ... 4
UL data					
Rated voltage	V	-	-	-	-
Rated current	A	-	-	-	-
AWG		-	-	-	-
CSA data					
Rated voltage	V	600	600	600	600
Rated current	A	16	16	16	16
AWG		20-12	20-12	20-12	20-12
Material data					
Contact carrier material		PC	PC	PC	PC
Inflammability class in acc. with UL 94		V0	V0	V0	V0
Contact material		Copper alloy	Copper alloy	Copper alloy	Copper alloy
Contact surface material		Ag (alternatively Au)	Ag (alternatively Au)	Ag (alternatively Au)	Ag (alternatively Au)
Temperature data					
Ambient temperature range	°C	-40 ... 125	-40 ... 125	-40 ... 125	-40 ... 125
General data					
Connection method		Crimp connection	Crimp connection	Crimp connection	Crimp connection
No. of pos.		10	18	32	46
Contact numbering		1 - 10	1 - 18	1 - 32	1 - 46
Insertion/withdrawal cycles		≥ 500	≥ 500	≥ 500	≥ 500

Derating curves

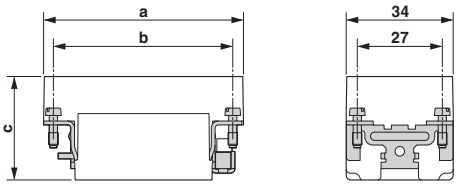


HC-BB ...

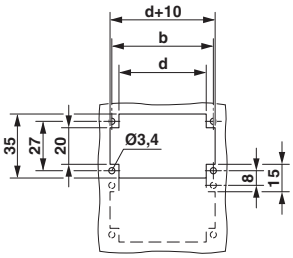
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Crimp connection							
	10	1 - 10	B6	① HC-BB 10-E...C	1687435	1687448	1
Crimp connection							
	18	1 - 18	B10	② HC-BB 18-E...C	1687451	1687464	1
Crimp connection							
	32	1 - 32	B16 / B32	③ HC-BB 32-E...C	1687477	1687480	1
	32	33 - 64	B16 / B32	④ HC-BB 32-E...C 64	1410615	1410628	1
Crimp connection							
	46	1 - 46	B24 / B48	⑤ HC-BB 46-E...C	1687493	1687503	1
	46	47 - 92	B24 / B48	⑥ HC-BB 46-E...C-92	1410631	1410644	1
Turned crimp contacts CK 2,5 Silver-plated		**Cross section mm² / AWG**					
		0.5 / 20		CK2,5-ED-0,50... AG	1663640	1663572	100
		0.75 / 18		CK2,5-ED-0,75... AG	1663653	1663585	100
		0.75 - 1 / 18		CK2,5-ED-1,00... AG	1663666	1663598	100
		1.5 / 16		CK2,5-ED-1,50... AG	1663679	1663608	100
		2.5 / 14		CK2,5-ED-2,50... AG	1663682	1663611	100
		4 / 12		CK2,5-ED-4,00... AG	1663705	1663637	100
Turned crimp contacts CK 2,5 Gold-plated		**Cross section mm² / AWG**					
		0.5 / 20		CK2,5-ED-0,50... AU	1674859	1674804	100
		0.75 - 1 / 18		CK2,5-ED-1,00... AU	1674833	1674781	100
		1.5 / 16		CK2,5-ED-1,50... AU	1674820	1674778	100
		2.5 / 14		CK2,5-ED-2,50... AU	1674862	1674817	100
		4 / 12		CK2,5-ED-4,00... AU	1674846	1674794	100

Dimensions (in mm)



Dimensional drawing



Panel cutout

		a	b	c	d
①	Socket	51	44	36.2	35
	Plug			33.2	
②	Socket	64	57	36.2	48
	Plug			33.2	
③	Socket	84.5	77.5	36.2	68.5
	Plug			33.2	
④	Socket	84.5	77.5	36.2	78.5
	Plug			33.2	
⑤	Socket	111	104	36.2	95
	Plug			33.2	
⑥	Socket	111	104	36.2	105
	Plug			33.2	

Accessories



Coding elements
From page 581



PE screws
From page 580



Crimping tools
From page 562

HEAVYCON type B - contact inserts

BBB40/BBB64 series

500 V, 16 A

Connection technology:
– Crimp connection

To determine the matching housings, refer to the cross-reference list on page 402.

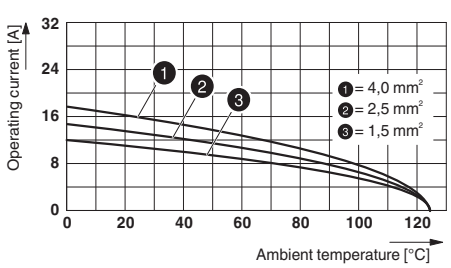
Notes:
For accessories, see from page 552
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe notes on the connection technology



Technical data

Type		HC-BBB 40-E...C	HC-BBB 64-E...C
Approvals		-	-
IEC data			
Rated current, contacts (at 40°C)	A	16	16
Surge voltage category		III	III
Pollution degree		3	3
Rated voltage (III/3) contacts	V	500	500
Rated surge voltage, contacts	kV	6	6
Connection cross section	mm^2	0.5 ... 4	0.5 ... 4
UL data			
Rated voltage	V	-	-
Rated current	A	-	-
AWG		-	-
CSA data			
Rated voltage	V	-	-
Rated current	A	-	-
AWG		-	-
Material data			
Contact carrier material		PC	PC
Inflammability class in acc. with UL 94		V0	V0
Contact material		Copper alloy	Copper alloy
Contact surface material		Ag (alternatively Au)	Ag (alternatively Au)
Temperature data			
Ambient temperature range	°C	-40 ... 125	-40 ... 125
General data			
Connection method		Crimp connection	Crimp connection
No. of pos.		40	64
Contact numbering		1 - 40	1 - 64
Insertion/withdrawal cycles		≥ 500	≥ 500

Derating curves

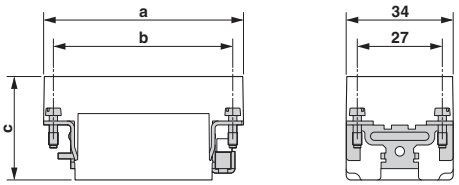


HC-BBB ...

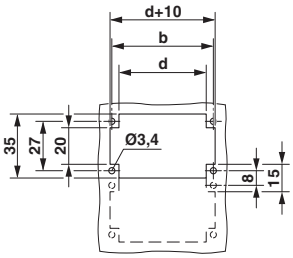
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Crimp connection							
	40	1 - 40	B16 / B32	① **HC-BBB 40-E...C**	**1409930**	**1409921**	1
Crimp connection							
	64	1 - 64	B24 / B48	② **HC-BBB 64-E...C**	**1409914**	**1409901**	1
Turned crimp contacts CK 2,5 Silver-plated		**Cross section mm² / AWG**					
		0.5 / 20		**CK2,5-ED-0,50... AG**	**1663640**	**1663572**	100
		0.75 / 18		**CK2,5-ED-0,75... AG**	**1663653**	**1663585**	100
		0.75 - 1 / 18		**CK2,5-ED-1,00... AG**	**1663666**	**1663598**	100
		1.5 / 16		**CK2,5-ED-1,50... AG**	**1663679**	**1663608**	100
		2.5 / 14		**CK2,5-ED-2,50... AG**	**1663682**	**1663611**	100
		4 / 12		**CK2,5-ED-4,00... AG**	**1663705**	**1663637**	100
Turned crimp contacts CK 2,5 Gold-plated		**Cross section mm² / AWG**					
		0.5 / 20		**CK2,5-ED-0,50... AU**	**1674859**	**1674804**	100
		0.75 - 1 / 18		**CK2,5-ED-1,00... AU**	**1674833**	**1674781**	100
		1.5 / 16		**CK2,5-ED-1,50... AU**	**1674820**	**1674778**	100
		2.5 / 14		**CK2,5-ED-2,50... AU**	**1674862**	**1674817**	100
		4 / 12		**CK2,5-ED-4,00... AU**	**1674846**	**1674794**	100

Dimensions (in mm)



Dimensional drawing



Panel cutout

		a	b	c	d
①	Socket	84	77.5	37	68.5
	Plug	84.5		34.4	
②	Socket	111	104	39	95
	Plug			36.4	

Accessories



Coding elements
From page 581



PE screws
From page 580



Crimping tools
From page 562

HV3 series, high-voltage applications

830 V, 16 A

Connection technology:
– Push-in connection
– Crimp connection

– With 2 lagging switch contacts
– For all type B housing

To determine the matching housings, refer to the cross-reference list on page 402.

Notes:
For accessories, see from page 552
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe notes on the connection technology

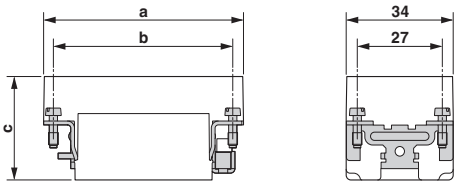


		Technical data			
Type		**HC-HV03-I-PT-...**	**HC-HV 3-E...C**		
Approvals		-			
IEC data					
Rated current, contacts (at 40°C)	A	16	16		
Surge voltage category		III	III		
Pollution degree		3	3		
Rated voltage (III/3) contacts	V	830	400 / 690		
Rated surge voltage, contacts	kV	8	6		
Connection cross section	mm²	0.14 ... 2.5	0.37 ... 4		
UL data					
Rated voltage	V	-	-		
Rated current	A	-	-		
AWG		-	-		
CSA data					
Rated voltage	V	-	-		
Rated current	A	-	-		
AWG		-	-		
Material data					
Contact carrier material		PA	PA		
Inflammability class in acc. with UL 94		V0	V0		
Contact material		Copper alloy	Copper alloy		
Contact surface material		Ag	Ag (alternatively Au)		
Temperature data					
Ambient temperature range	°C	-40 ... 125	-40 ... 125		
General data					
Connection method		Push-in connection	Crimp connection		
No. of pos.		3	3		
Contact numbering		-	-		
Insertion/withdrawal cycles		≥ 500	≥ 500		

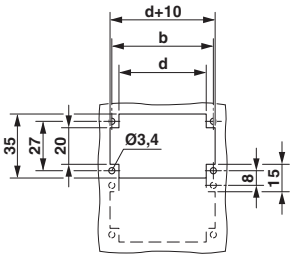
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Push-in connection							
	3		B10	① HC-HV03-I-PT-...	1407743	1407739	1
Crimp connection							
	3		B10	② HC-HV 3-E...C	1773349	1773336	10
Turned crimp contacts CK 2,5 Silver-plated		**Cross section mm² / AWG**					
		0.5 / 20		CK2,5-ED-0,50... AG	1663640	1663572	100
		0.75 / 18		CK2,5-ED-0,75... AG	1663653	1663585	100
		0.75 - 1 / 18		CK2,5-ED-1,00... AG	1663666	1663598	100
		1.5 / 16		CK2,5-ED-1,50... AG	1663679	1663608	100
		2.5 / 14		CK2,5-ED-2,50... AG	1663682	1663611	100
		4 / 12		CK2,5-ED-4,00... AG	1663705	1663637	100
Turned switch contacts CK 2,5 Pin, silver-plated		**Cross section mm² / AWG**					
		1 / 18		CK2,5-ED-1,00ST-S AG		1663857	
		1.5 / 16		CK2,5-ED-1,50ST-S AG		1663860	
		2.5 / 14		CK2,5-ED-2,50ST-S AG		1663873	

Dimensions (in mm)



Dimensional drawing



Panel cutout

		a	b	c	d
①	Socket	64	57	34.6	49
	Plug			32	
②	Socket	64	57	34.6	49
	Plug			32	

Accessories



Coding elements
From page 581



PE screws
From page 580



Crimping tools
From page 562



Crimp contacts
From page 564

HV6 series, high-voltage applications

830 V, 16 A

Connection technology:
– Push-in connection
– Crimp connection

– With 2 lagging switch contacts
– For all type B housing

To determine the matching housings, refer to the cross-reference list on page 402.

Notes:
For accessories, see from page 552
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe notes on the connection technology

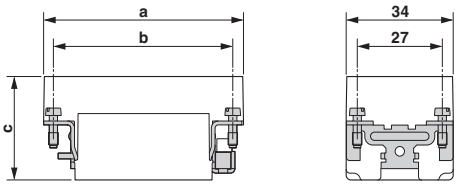


		Technical data			
Type		**HC-HV06-I-PT-...**	**HC-HV 6-E...C**		
Approvals		-			
IEC data					
Rated current, contacts (at 40°C)	A	16	16		
Surge voltage category		III	III		
Pollution degree		3	3		
Rated voltage (III/3) contacts	V	830	400 / 690		
Rated surge voltage, contacts	kV	8	6		
Connection cross section	mm²	0.14 ... 2.5	0.37 ... 4		
UL data					
Rated voltage	V	-	-		
Rated current	A	-	-		
AWG		-	-		
CSA data					
Rated voltage	V	-	-		
Rated current	A	-	-		
AWG		-	-		
Material data					
Contact carrier material		PA	PA		
Inflammability class in acc. with UL 94		V0	V0		
Contact material		Copper alloy	Copper alloy		
Contact surface material		Ag	Ag (alternatively Au)		
Temperature data					
Ambient temperature range	°C	-40 ... 125	-40 ... 125		
General data					
Connection method		Push-in connection	Crimp connection		
No. of pos.		6	6		
Contact numbering		-	-		
Insertion/withdrawal cycles		≥ 500	≥ 500		

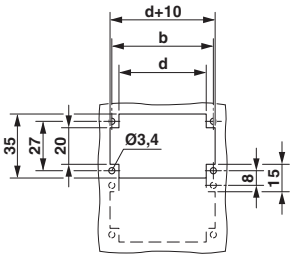
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Push-in connection							
	6		B16 / B32	① **HC-HV06-I-PT-...**	**1407744**	**1407740**	1
Crimp connection							
	6		B16 / B32	② **HC-HV 6-E...C**	**1773381**	**1773378**	10
Turned crimp contacts CK 2,5 Silver-plated		**Cross section mm² / AWG**					
		0.5 / 20		**CK2,5-ED-0,50... AG**	**1663640**	**1663572**	100
		0.75 / 18		**CK2,5-ED-0,75... AG**	**1663653**	**1663585**	100
		0.75 - 1 / 18		**CK2,5-ED-1,00... AG**	**1663666**	**1663598**	100
		1.5 / 16		**CK2,5-ED-1,50... AG**	**1663679**	**1663608**	100
		2.5 / 14		**CK2,5-ED-2,50... AG**	**1663682**	**1663611**	100
		4 / 12		**CK2,5-ED-4,00... AG**	**1663705**	**1663637**	100
Turned switch contacts CK 2,5 Pin, silver-plated		**Cross section mm² / AWG**					
		1 / 18		**CK2,5-ED-1,00ST-S AG**		**1663857**	
		1.5 / 16		**CK2,5-ED-1,50ST-S AG**		**1663860**	
		2.5 / 14		**CK2,5-ED-2,50ST-S AG**		**1663873**	

Dimensions (in mm)



Dimensional drawing



Panel cutout

		a	b	c	d
①	Socket	84	77.5	34.6	72
	Plug			32	
②	Socket	84	77.5	34.6	72
	Plug			32	

Accessories



Coding elements
From page 581



PE screws
From page 580



Crimping tools
From page 562



Crimp contacts
From page 564

HV10 series, high-voltage applications

830 V, 16 A

Connection technology:
– Push-in connection
– Crimp connection

– With 2 lagging switch contacts
– For all type B housing

To determine the matching housings, refer to the cross-reference list on page 402.

Notes:
For accessories, see from page 552
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe notes on the connection technology

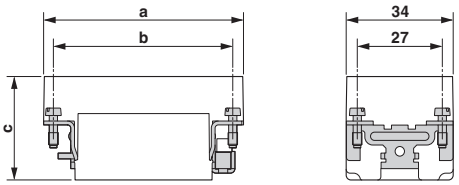


		Technical data			
Type		**HC-HV10-I-PT-...**	**HC-HV 10-E...C**		
Approvals		-			
IEC data					
Rated current, contacts (at 40°C)	A	16	16		
Surge voltage category		III	III		
Pollution degree		3	3		
Rated voltage (III/3) contacts	V	830	400 / 690		
Rated surge voltage, contacts	kV	8	6		
Connection cross section	mm²	0.14 ... 2.5	0.37 ... 4		
UL data					
Rated voltage	V	-	-		
Rated current	A	-	-		
AWG		-	-		
CSA data					
Rated voltage	V	-	-		
Rated current	A	-	-		
AWG		-	-		
Material data					
Contact carrier material		PA	PA		
Inflammability class in acc. with UL 94		V0	V0		
Contact material		Copper alloy	Copper alloy		
Contact surface material		Ag	Ag (alternatively Au)		
Temperature data					
Ambient temperature range	°C	-40 ... 125	-40 ... 125		
General data					
Connection method		Push-in connection	Crimp connection		
No. of pos.		10	10		
Contact numbering		-	-		
Insertion/withdrawal cycles		≥ 500	≥ 500		

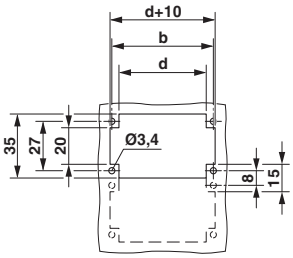
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Push-in connection							
	10		B24 / B48	① **HC-HV10-I-PT-...**	**1407745**	**1407741**	1
Crimp connection							
	10		B24 / B48	② **HC-HV 10-E...C**	**1773420**	**1773417**	10
Turned crimp contacts CK 2,5 Silver-plated		**Cross section mm² / AWG**					
		0.5 / 20		**CK2,5-ED-0,50... AG**	**1663640**	**1663572**	100
		0.75 / 18		**CK2,5-ED-0,75... AG**	**1663653**	**1663585**	100
		0.75 - 1 / 18		**CK2,5-ED-1,00... AG**	**1663666**	**1663598**	100
		1.5 / 16		**CK2,5-ED-1,50... AG**	**1663679**	**1663608**	100
		2.5 / 14		**CK2,5-ED-2,50... AG**	**1663682**	**1663611**	100
		4 / 12		**CK2,5-ED-4,00... AG**	**1663705**	**1663637**	100
Turned switch contacts CK 2,5 Pin, silver-plated		**Cross section mm² / AWG**					
		1 / 18		**CK2,5-ED-1,00ST-S AG**		**1663857**	
		1.5 / 16		**CK2,5-ED-1,50ST-S AG**		**1663860**	
		2.5 / 14		**CK2,5-ED-2,50ST-S AG**		**1663873**	

Dimensions (in mm)



Dimensional drawing



Panel cutout

		a	b	c	d
①	Socket	111	104	34.6	98
	Plug			32	
②	Socket	111	104	34.6	98
	Plug			32	

Accessories



Coding elements
From page 581



PE screws
From page 580



Crimping tools
From page 562



Crimp contacts
From page 564

HS series/K series, high-current applications

500 V, 35 A
– 1000 V, 80 A

Connection technology:
– Screw connection

To determine the matching housings, refer to the cross-reference list on page 402.

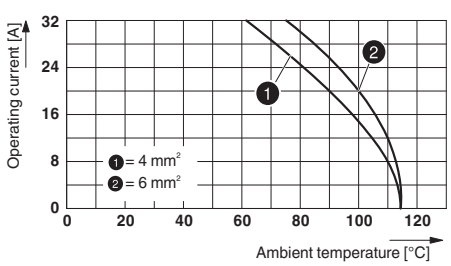
Notes:
For accessories, see from page 552
Connectors may only be operated when under no load.
Observe notes on the connection technology



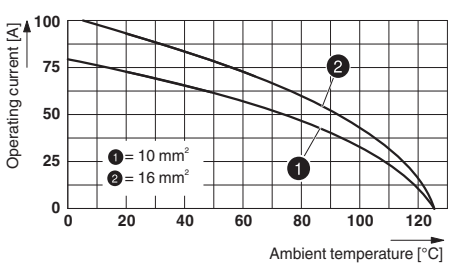
Technical data

Type		HC-HS 6-E...S	HC-K 6/0-E...S
Approvals			-
IEC data			
Rated current, contacts (at 40°C)	A	35	80
Surge voltage category		III	III
Pollution degree		3	3
Rated voltage (III/3) contacts	V	500	1000
Rated surge voltage, contacts	kV	6	8
Connection cross section	mm²	0.5 ... 6	6 ... 16
UL data			
Rated voltage	V	600	-
Rated current	A	35	-
AWG		10	-
CSA data			
Rated voltage	V	600	-
Rated current	A	35	-
AWG		20-10	-
Material data			
Contact carrier material		PA	PA
Inflammability class in acc. with UL 94		V0	V0
Contact material		Copper alloy	Copper alloy
Contact surface material		Ag	Ag
Temperature data			
Ambient temperature range	°C	-40 ... 125	-40 ... 125
General data			
Connection method		Screw connection	Screw connection
No. of pos.		6	6
Contact numbering		1 - 6	1-6
Insertion/withdrawal cycles		≥ 500	≥ 500

Derating curves



HC-HS 6-E...S

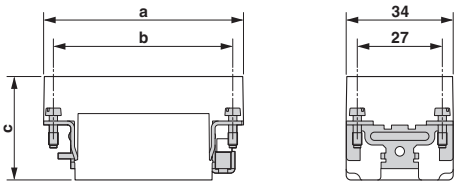


HC-K 6/0-E...S

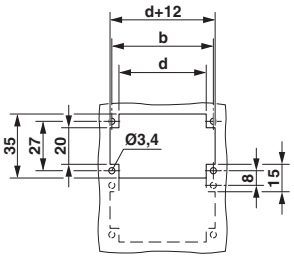
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Screw connection							
	6	1 - 6	B16 / B32	① **HC-HS 6-E...S**	**1773132**	**1773129**	10
	6	7 - 12	B16 / B32	② **HC-HS 6-E...S-12**	**1674561**	**1674574**	10
Screw connection							
	6	1-6	B16 / B32	③ **HC-K 6/0-E...S**	**1580537**	**1580538**	10

Dimensions (in mm)



Dimensional drawing



Panel cutout

		a	b	c	d
①	Socket	84.5	77.5	33	72
	Plug			34	
②	Socket	84.5	77.5	33	72
	Plug			34	
③	Socket	84	77.4	49.7	72
	Plug			46.3	

Accessories



Coding elements
From page 581



PE screws
From page 580



Crimping tools
From page 562

K series, combination applications

400 - 830 V, 40 - 80 A

Connection technology:
– Power and control contacts
– Screw connection

To determine the matching housings, refer to the cross-reference list on page 402.

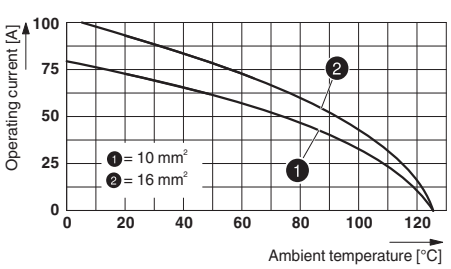
Notes:
For accessories, see from page 552
Connectors may only be operated when under no load.
Observe notes on the connection technology



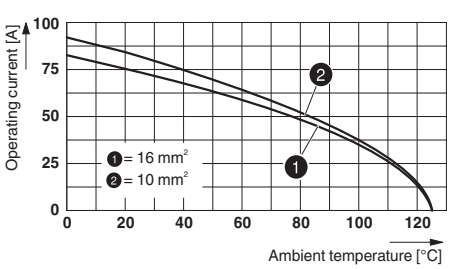
Technical data

Type		HC-K 4/0-E...S		HC-K 4/8-E...S		HC-K 6/12-E...S	
		Power contacts	Control contacts	Power contacts	Control contacts	Power contacts	Control contacts
Approvals							
IEC data							
Rated current	A	80	-	80	16	40	10
Surge voltage category		III		III		III	
Pollution degree		3		3		3	
Rated voltage (III/3) contacts	V	830	-	400	400	690	230 / 400
Rated surge voltage, contacts	kV	8	-	6	6	8	4
Connection cross section	mm²	1.5 ... 16	-	1.5 ... 16	0.5 ... 2.5	2.5 ... 8	0.2 ... 2.5
UL data							
Rated voltage	V	-	-	-	-	-	-
Rated current	A	-	-	-	-	-	-
AWG		-	-	-	-	-	-
CSA data							
Rated voltage	V	600	-	-	-	600	-
Rated current	A	80	-	-	-	40	-
AWG		5	-	-	-	13-7	-
Material data							
Contact carrier material		PC		PA		PC	
Inflammability class in acc. with UL 94		V0		HB		V0	
Contact material		Cu alloy		Cu alloy		Cu alloy	
Contact surface material		Ag	-	Ag	Ag	Ag	Ag
Temperature data							
Ambient temperature range	°C	-40 ... 125		-40 ... 125		-40 ... 125	
General data							
Connection method		Screw connection	-	Screw connection	Screw connection	Axial screw connection	Screw connection
No. of pos.		4	-	4	8	6	12
Contact numbering		1-4	-	1-4	1-8	1-6	1-12
Insertion/withdrawal cycles		≥ 500		≥ 500		≥ 500	

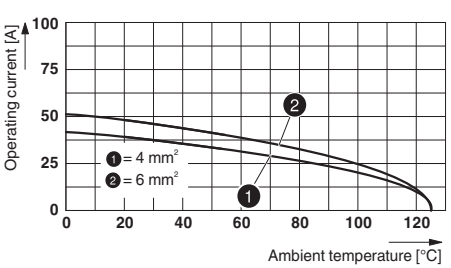
Derating curves



HC-K 4/0-E...S

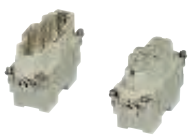


HC-K 4/8-E...S

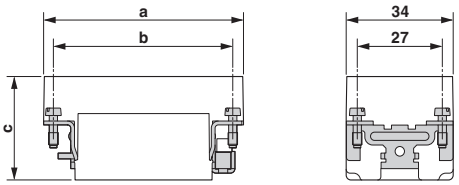


HC-K 6/12-E...S

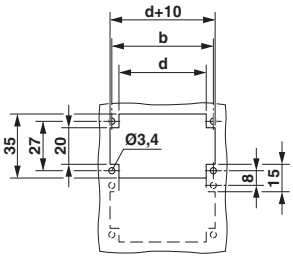
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Screw connection							
	4	1-4	B16 / B32	① **HC-K 4/0-E...S**	**1679427**	**1679414**	1
Screw connection							
	4 / 8	1-4	B24 / B48	② **HC-K 4/8-E...S**	**1679320**	**1679333**	1
Axial screw connection							
	6 / 12	1-6	B16 / B32	③ **HC-K 6/12-E...S**	**1636363**	**1636350**	1

Dimensions (in mm)



Dimensional drawing



Panel cutout

		a	b	c	d
①	Socket	84.5	77.5	44.2	72
	Plug			42	
②	Socket	111	104	44.2	98
	Plug			42	
③	Socket	84.1	77.5	47	68.5
	Plug	84.5		47.2	

Accessories



Coding elements
From page 581



PE screws
From page 580

K series, combination applications

400 - 690 V, 16 - 40 A

Connection technology:
– Power and control contacts
– Crimp connection

To determine the matching housings, refer to the cross-reference list on page 402.

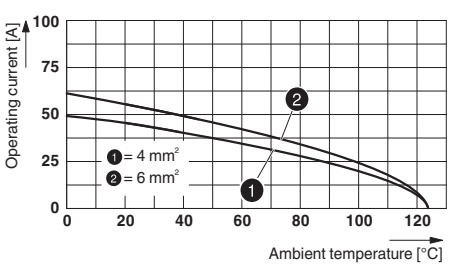
Notes:
For accessories, see from page 552
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe notes on the connection technology



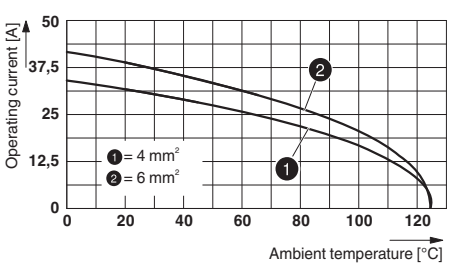
Technical data

Type		HC-K 6/36-E...C		HC-K12/ 2-E...C		HC-K 8/24-E...C	
		Power contacts	Control contacts	Power contacts	Control contacts	Power contacts	Control contacts
Approvals							
IEC data							
Rated current	A	40	10	40	10	16	10
Surge voltage category		III		III		III	
Pollution degree		3		3		3	
Rated voltage (III/3) contacts	V	690	160	690	250	230 / 400	160
Rated surge voltage, contacts	kV	8	2.5	8	4	4	2.5
Connection cross section	mm²	1.5 ... 6	0.14 ... 2.5	1.5 ... 6	0.14 ... 2.5	0.5 ... 4	0.14 ... 2.5
UL data							
Rated voltage	V	-	-	-	-	-	-
Rated current	A	-	-	-	-	-	-
AWG		-	-	-	-	-	-
CSA data							
Rated voltage	V	600	-	600	-	600	-
Rated current	A	40	-	40	-	16	-
AWG		13-9	-	13-8	-	20-12	-
Material data							
Contact carrier material		PC		PC		PA	
Inflammability class in acc. with UL 94		V0		V0		V0	
Contact material		Cu alloy		Cu alloy		Cu alloy	
Contact surface material		Ag	Ag (alternatively Au)	Ag	Ag (alternatively Au)	Ag (alternat. Au)	Ag (alternatively Au)
Temperature data							
Ambient temperature range	°C	-40 ... 125		-40 ... 125		-40 ... 125	
General data							
Connection method		Crimp connection	Crimp connection	Crimp connection	Crimp connection	Crimp connection	Crimp connection
No. of pos.		6	36	12	2	8	24
Contact numbering		1-6	1-36	1-12	1-2	1-8	1-24
Insertion/withdrawal cycles		≥ 500		≥ 500		≥ 500	

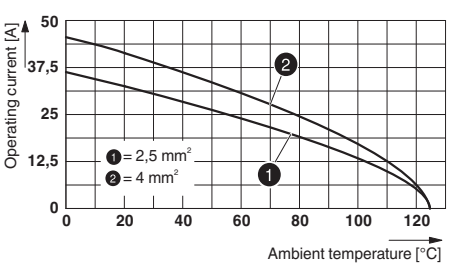
Derating curves



HC-K 6/36 E...C

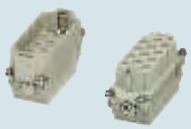


HC-K 12/2 E...C

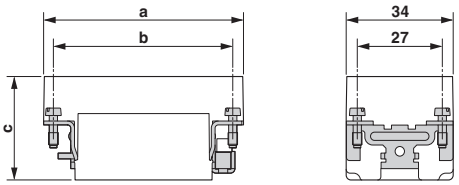


HC-K 8/24 E...C

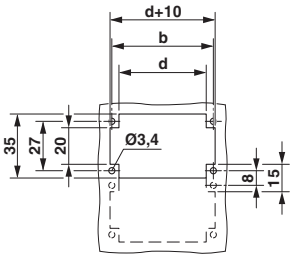
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Crimp connection CK 4,0/CK 1,6							
	6 / 36	1-6	B16 / B32	① **HC-K 6/36-E...C**	**1636389**	**1636376**	1
Crimp connection CK 4,0/CK 1,6							
	12 / 2	1-12	B16 / B32	② **HC-K12/ 2-E...C**	**1636347**	**1636334**	1
Crimp connection CK 2,5/CK 1,6							
	8 / 24	1-8	B10	③ **HC-K 8/24-E...C**	**1636321**	**1636318**	1
Turned crimp contacts CK 1,6 Silver-plated		**Cross section mm² / AWG**					
		0.14 - 0.37 / 26 - 22		**CK1,6-ED-0,37... AG**	**1663394**	**1663336**	100
		0.5 / 20		**CK1,6-ED-0,50... AG**	**1663404**	**1663349**	100
		0.75 / 18		**CK1,6-ED-0,75... AG**	**1663417**	**1663352**	100
		0.75 - 1 / 18		**CK1,6-ED-1,00... AG**	**1663420**	**1663365**	100
		1.5 / 16		**CK1,6-ED-1,50... AG**	**1663433**	**1663378**	100
		2.5 / 14		**CK1,6-ED-2,50... AG**	**1663446**	**1663381**	100
Turned crimp contacts CK 2,5 Silver-plated		**Cross section mm² / AWG**					
		0.5 / 20		**CK2,5-ED-0,50... AG**	**1663640**	**1663572**	100
		0.75 / 18		**CK2,5-ED-0,75... AG**	**1663653**	**1663585**	100
		0.75 - 1 / 18		**CK2,5-ED-1,00... AG**	**1663666**	**1663598**	100
		1.5 / 16		**CK2,5-ED-1,50... AG**	**1663679**	**1663608**	100
		2.5 / 14		**CK2,5-ED-2,50... AG**	**1663682**	**1663611**	100
		4 / 12		**CK2,5-ED-4,00... AG**	**1663705**	**1663637**	100
Turned crimp contacts CK 4,0 Silver-plated		**Cross section mm² / AWG**					
		1.5 / 16		**CK4,0-ED-1,50... AG**	**1663271**	**1663239**	25
		2.5 / 14		**CK4,0-ED-2,50... AG**	**1663284**	**1663242**	25
		4 / 12		**CK4,0-ED-4,00... AG**	**1663297**	**1663255**	25
		6 / 10		**CK4,0-ED-6,00... AG**	**1663307**	**1663268**	25
		10 / 8		**CK4,0-ED-10,00... AG**	**1586183**	**1586198**	25

Dimensions (in mm)



Dimensional drawing



Panel cutout

		a	b	c	d
①	Socket	84.5	77.5	41.5	68.5
	Plug			39	
②	Socket	84.5	77.5	41.5	72
	Plug			39.6	
③	Socket	64	57	38	49
	Plug			36	

Accessories



Coding elements
From page 581



PE screws
From page 580



Crimping tools
From page 562



Crimp contacts
From page 564

Modular contact inserts, high-current modules

1000 V, 200 A

Connection technology:
– Axial screw connection

To determine the matching housings, refer to the cross-reference list on page 402.

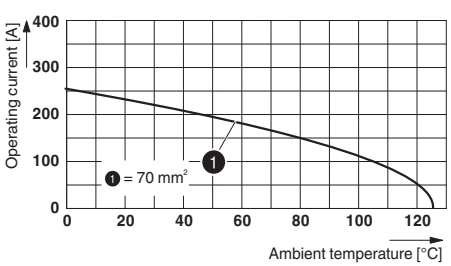
Notes:
For accessories, see from page 552
Connectors may only be operated when under no load.
Observe housing height
Observe notes on the connection technology



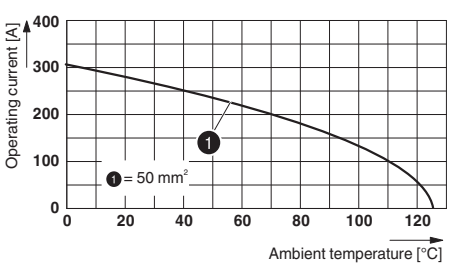
Technical data

Type		HC-M-HS 200/70-MOD-...	HC-M-HS 200/70-MOD-...-PE	HC-M-HS 200/40-MOD-...	HC-M-HS 200/40-MOD-...-PE
Approvals					
IEC data					
Rated current, contacts (at 40°C)	A	200	200	200	200
Surge voltage category		III	-	III	-
Pollution degree		3	-	3	-
Rated voltage (III/3) contacts	V	1000	-	1000	-
Rated surge voltage, contacts	kV	8	-	8	-
Connection cross section	mm²	40 ... 70	40 ... 70	25 ... 40	25 ... 40
UL data					
Rated voltage	V	600	-	600	-
Rated current	A	200	200	200	200
AWG		2-0	2-0	2-0	2-0
CSA data					
Rated voltage	V	-	-	-	-
Rated current	A	-	-	-	-
AWG		-	-	-	-
Material data					
Contact carrier material		PC	PC	PC	PC
Inflammability class in acc. with UL 94		V0	V0	V0	V0
Contact material		Copper alloy	Copper alloy	Copper alloy	Copper alloy
Contact surface material		Ag	Ag	Ag	Ag
Temperature data					
Ambient temperature range	°C	-40 ... 125	-40 ... 125	-40 ... 125	-40 ... 125
General data					
Connection method		Axial screw connection	Axial screw connection	Axial screw connection	Axial screw connection
No. of pos.		1	1	1	1
Contact numbering		-	-	-	-
Insertion/withdrawal cycles		≥ 500	≥ 500	≥ 500	≥ 500

Derating curves



HC-M-HS 200/70-MOD-...

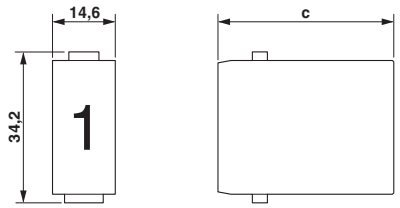


HC-M-HS 200/40-MOD-...

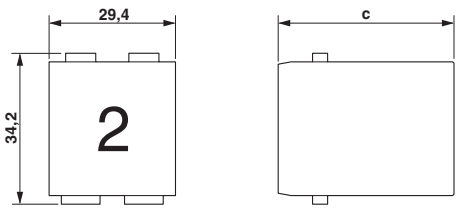
Ordering data

Description	Pos.	Number	Slots	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Axial screw connection	1		2	① HC-M-HS 200/70-MOD-...	1636897	1636884	1
Axial screw connection	1		2	② HC-M-HS 200/70-MOD-...-PE	1636910	1636907	1
Axial screw connection	1		2	③ HC-M-HS 200/40-MOD-...	1637171	1637168	1
Axial screw connection	1		2	④ HC-M-HS 200/40-MOD-...-PE	1637197	1637184	1

Dimensions (in mm)



1 module slot



2 module slots

		a	b	c	d
①	Socket	29.4		60	
	Plug			54.5	
②	Socket	29.4		54.3	
	Plug			54.5	
③	Socket	29.4		60	
	Plug			54.5	
④	Socket	29.4		54.3	
	Plug			54.5	

Accessories



Hinged retaining frames
From page 480

Modular contact inserts, 2-pos. modules

1000 V, 40 - 100 A

Connection technology:
– Axial screw connection

To determine the matching housings, refer to the cross-reference list on page 402.

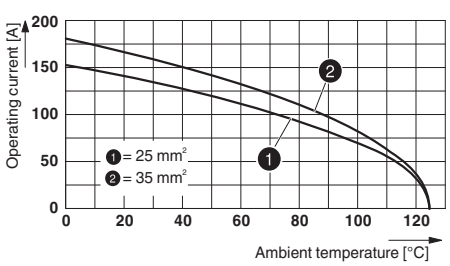
Notes:
For accessories, see from page 552
Connectors may only be operated when under no load.
Observe housing height
Observe notes on the connection technology



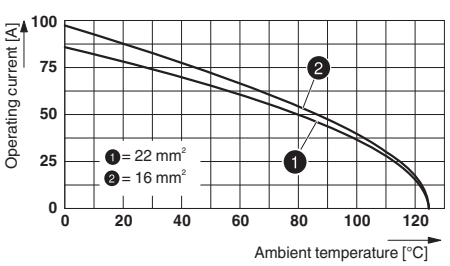
Technical data

Type		HC-M-HS-MOD-...	HC-M-02-HS-70/22-MOD-...	HC-M-02-HS-70/16-MOD-...	HC-M-02-MOD-...
Approvals					
IEC data					
Rated current, contacts (at 40°C)	A	100	70	70	40
Surge voltage category		III	III	III	III
Pollution degree		3	3	3	3
Rated voltage (III/3) contacts	V	1000	1000	1000	1000
Rated surge voltage, contacts	kV	8	8	8	8
Connection cross section	mm²	16 ... 35	14 ... 22	6 ... 16	2.5 ... 8
UL data					
Rated voltage	V	600	600	600	600
Rated current	A	100	70	70	40
AWG		2	4	4	-
CSA data					
Rated voltage	V	-	-	-	-
Rated current	A	-	-	-	-
AWG		-	-	-	-
Material data					
Contact carrier material		PC	PC	PC	PC
Inflammability class in acc. with UL 94		V0	V0	V0	V0
Contact material		Copper alloy	Copper alloy	Copper alloy	Copper alloy
Contact surface material		Ag	Ag	Ag	Ag
Temperature data					
Ambient temperature range	°C	-40 ... 125	-40 ... 125	-40 ... 125	-40 ... 125
General data					
Connection method		Axial screw connection	Axial screw connection	Axial screw connection	Axial screw connection
No. of pos.		2	2	2	2
Contact numbering		1 - 2	1 - 2	1 - 2	1 - 2
Insertion/withdrawal cycles		≥ 500	≥ 500	≥ 500	≥ 500

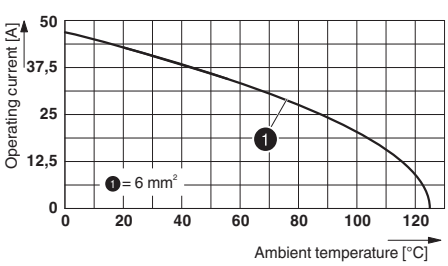
Derating curves



HC-M-HS-MOD-...



HC-M-02-HS- 70/...-MOD-...

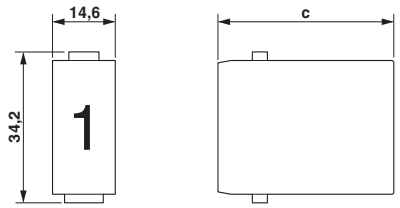


HC-M-02-MOD-...

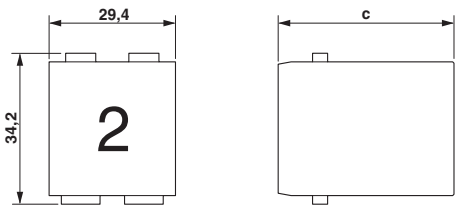
Ordering data

Description	Pos.	Number	Slots	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Axial screw connection							
	2	1 - 2	2	① HC-M-HS-MOD-...	1605001	1605000	1
Axial screw connection							
	2	1 - 2	1	② HC-M-02-HS-70/22-MOD-...	1585731	1585728	2
Axial screw connection							
	2	1 - 2	1	③ HC-M-02-HS-70/16-MOD-...	1585715	1585702	2
Axial screw connection							
	2	1 - 2	1	④ HC-M-02-MOD-...	1679359	1679346	2

Dimensions (in mm)



1 module slot



2 module slots

		a	b	c	d
①	Socket	29.4		50.3	
	Plug			49	
②	Socket	14.6		46.5	
	Plug			45	
③	Socket	14.6		46.5	
	Plug			45	
④	Socket	14.6		40.6	
	Plug			41.8	

Accessories



Hinged retaining frames
From page 480

Modular contact inserts

500 - 1000 V, 40 A

Connection technology:
– Crimp connection CK 4,0

To determine the matching housings, refer to the cross-reference list on page 402.

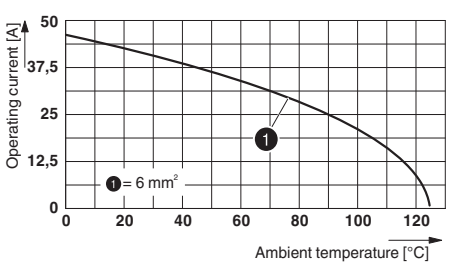
Notes:
For accessories, see from page 552
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe housing height
Observe notes on the connection technology



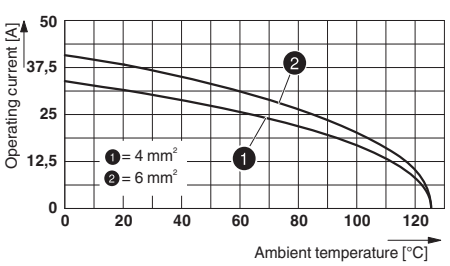
Technical data

Type		HC-M-02-MOD-...C	HC-M-03-MOD-...C	HC-M-04-MOD-...C	HC-M-03/04-MOD-...C
Approvals					
IEC data					
Rated current, contacts (at 40°C)	A	40	40	40	40
Surge voltage category		III	III	III	III
Pollution degree		3	3	3	3
Rated voltage (III/3) contacts	V	1000	500	830	830
Rated surge voltage, contacts	kV	8	6	8	8
Connection cross section	mm²	1.5 ... 10	1.5 ... 10	1.5 ... 6	1.5 ... 6
UL data					
Rated voltage	V	600	600	600	600
Rated current	A	40	-	-	-
AWG		-	-	-	18-10
CSA data					
Rated voltage	V	-	-	-	-
Rated current	A	-	-	-	-
AWG		-	-	-	-
Material data					
Contact carrier material		PC	PC	PC	PC
Inflammability class in acc. with UL 94		V0	V0	V0	V0
Contact material		Copper alloy	Copper alloy	Copper alloy	Copper alloy
Contact surface material		Ag	Ag	Ag	-
Temperature data					
Ambient temperature range	°C	-40 ... 125	-40 ... 125	-40 ... 125	-40 ... 125
General data					
Connection method		Crimp connection	Crimp connection	Crimp connection	Crimp connection
No. of pos.		2	3	4	-
Contact numbering		1 - 2	1 - 3	1 - 4	1-3
Insertion/withdrawal cycles		≥ 500	≥ 500	≥ 500	≥ 500

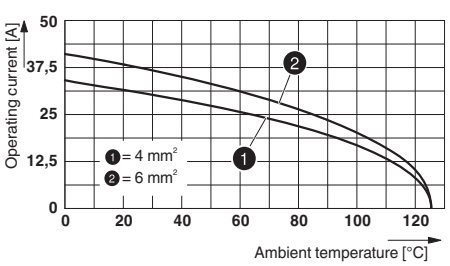
Derating curves



HC-M-02-MOD-...C



HC-M-03-MOD-...C

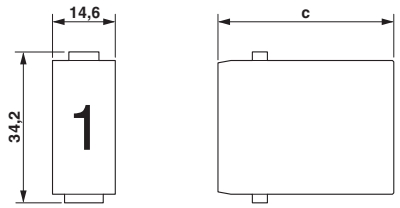


HC-M-04-MOD-...C

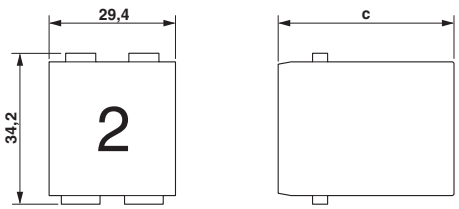
Ordering data

Description	Pos.	Number	Slots	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Crimp connection CK 4,0							
	2	1 - 2	1	① HC-M-02-MOD-...C	1587519	1587506	2
Crimp connection CK 4,0							
	3	1 - 3	1	② HC-M-03-MOD-...C	1645972	1645969	2
Crimp connection CK 4,0							
	4	1 - 4	1	③ HC-M-04-MOD-...C	1585605	1585618	2
Crimp connection CK 4,0/CK 1,6							
	3 / 4	1-3	1	④ HC-M-03/04-MOD-...C	1585786	1585799	2
Turned crimp contacts CK 1,6 Silver-plated		**Cross section mm² / AWG**					
		0.14 - 0.37 / 26 - 22		CK1,6-ED-0,37... AG	1663394	1663336	100
		0.5 / 20		CK1,6-ED-0,50... AG	1663404	1663349	100
		0.75 / 18		CK1,6-ED-0,75... AG	1663417	1663352	100
		0.75 - 1 / 18		CK1,6-ED-1,00... AG	1663420	1663365	100
		1.5 / 16		CK1,6-ED-1,50... AG	1663433	1663378	100
		2.5 / 14		CK1,6-ED-2,50... AG	1663446	1663381	100
Turned crimp contacts CK 4,0 Silver-plated		**Cross section mm² / AWG**					
		1.5 / 16		CK4,0-ED-1,50... AG	1663271	1663239	25
		2.5 / 14		CK4,0-ED-2,50... AG	1663284	1663242	25
		4 / 12		CK4,0-ED-4,00... AG	1663297	1663255	25
		6 / 10		CK4,0-ED-6,00... AG	1663307	1663268	25
		10 / 8		CK4,0-ED-10,00... AG	1586183	1586198	25

Dimensions (in mm)



1 module slot



2 module slots

		a	b	c	d
①	Socket	14.6		42.4	
	Plug			43.7	
②	Socket	14.6		44.7	
	Plug			43.1	
③	Socket	14.6		40.9	
	Plug			44.6	
④	Socket	14.6		39.1	
	Plug			44.3	

Accessories



Hinged retaining frames
From page 480



Crimping tools
From page 562



Crimp contacts
From page 564



Crimp contacts
From page 564

Modular contact inserts

400 - 830 V, 16 A

Connection technology:
– Crimp connection CK 2,5

To determine the matching housings, refer to the cross-reference list on page 402.

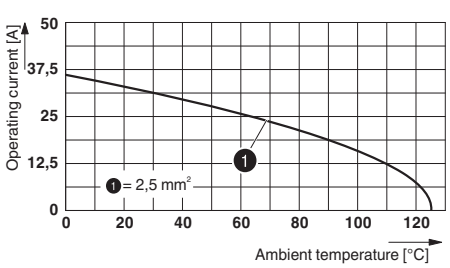
Notes:
For accessories, see from page 552
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe housing height
Observe notes on the connection technology



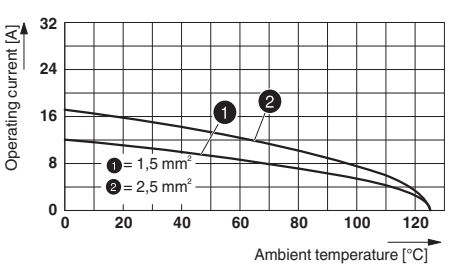
Technical data

Type		HC-M-HV-MOD-...	HC-M-06P-MOD-...	HC-M-06-MOD-...	HC-M-08-MOD-...	HC-M-20-MOD-...
Approvals						
IEC data						
Rated current, contacts (at 40°C)	A	16	16	16	16	16
Surge voltage category		III	III	III	III	III
Pollution degree		3	3	3	3	3
Rated voltage (III/3) contacts	V	2900 / 5000	830	500	400	500
Rated surge voltage, contacts	kV	15	8	6	6	6
Connection cross section	mm²	0.5 ... 4	0.5 ... 4	0.5 ... 4	0.5 ... 4	0.5 ... 4
UL data						
Rated voltage	V	-	600	600	600	600
Rated current	A	-	16	16	16	16
AWG		-	12	12	12	12
CSA data						
Rated voltage	V	-	-	600	-	-
Rated current	A	-	-	32	-	-
AWG		-	-	16-10	-	-
Material data						
Contact carrier material		PC / PTFE	PC	PC	PC	PC
Inflammability class in acc. with UL 94		V0	V0	V0	V0	V0
Contact material		Copper alloy	Copper alloy	Copper alloy	Copper alloy	Copper alloy
Contact surface material		Ag (alternatively Au)	Ag (alternatively Au)	Ag (alternatively Au)	Ag (alternatively Au)	Ag (alternatively Au)
Temperature data						
Ambient temperature range	°C	-40 ... 125	-40 ... 125	-40 ... 125	-40 ... 125	-40 ... 125
General data						
Connection method		Crimp connection	Crimp connection	Crimp connection	Crimp connection	Crimp connection
No. of pos.		2	6	6	8	20
Contact numbering		I, II	1 - 6	1 - 6	1 - 8	1 - 20
Insertion/withdrawal cycles		≥ 500	≥ 500	≥ 500	≥ 500	≥ 500

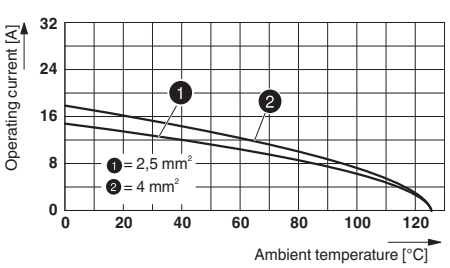
Derating curves



HC-M-HV-MOD-...



HC-M-06-MOD-...

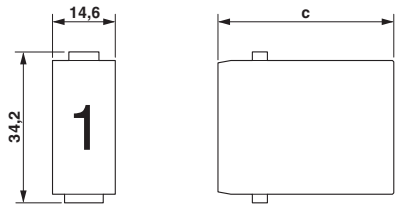


HC-M-20-MOD-...

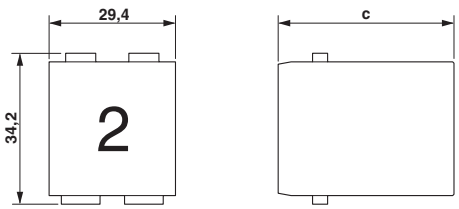
Ordering data

Description	Pos.	Number	Slots	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Crimp connection CK 2,5							
	2	I, II	2	① HC-M-HV-MOD-...	1604999	1604998	1
Crimp connection CK 2,5							
	6	1 - 6	1	② HC-M-06P-MOD-...	1636460	1636457	2
Crimp connection CK 2,5							
	6	1 - 6	1	③ HC-M-06-MOD-...	1663462	1663459	2
Crimp connection CK 2,5							
	8	1 - 8	1	④ HC-M-08-MOD-...	1605003	1605002	2
Crimp connection CK 2,5							
	20	1 - 20	2	⑤ HC-M-20-MOD-...	1636936	1636923	1
Turned crimp contacts CK 2,5 Silver-plated		**Cross section mm² / AWG**					
		0.5 / 20		CK2,5-ED-0,50... AG	1663640	1663572	100
		0.75 / 18		CK2,5-ED-0,75... AG	1663653	1663585	100
		0.75 - 1 / 18		CK2,5-ED-1,00... AG	1663666	1663598	100
		1.5 / 16		CK2,5-ED-1,50... AG	1663679	1663608	100
		2.5 / 14		CK2,5-ED-2,50... AG	1663682	1663611	100
		4 / 12		CK2,5-ED-4,00... AG	1663705	1663637	100

Dimensions (in mm)



1 module slot



2 module slots

		a	b	c	d
①	Socket	29.4		62	
	Plug			59	
②	Socket	14.6		37.4	
	Plug			39.2	
③	Socket	14.6		35.8	
	Plug			34	
④	Socket	14.6		35.8	
	Plug			34.5	
⑤	Socket	29.4		39.95	
	Plug			37.6	

Accessories



Hinged retaining frames
From page 480



Crimping tools
From page 562



Crimp contacts
From page 564



Crimp contacts
From page 564

Modular contact inserts

50 - 250 V, 10 A

Connection technology:
– Crimp connection CK 1,6

To determine the matching housings, refer to the cross-reference list on page 402.

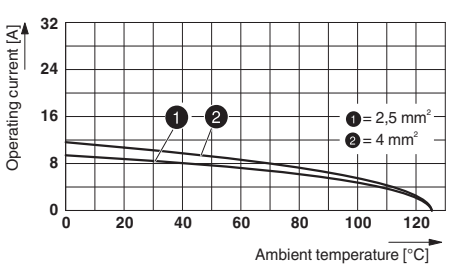
Notes:
For accessories, see from page 552
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe housing height
Observe notes on the connection technology



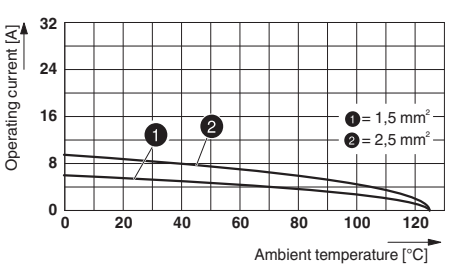
Technical data

Type		HC-M-12-MOD-...	HC-M-17-MOD-...	HC-M-EMV-MOD-...	HC-M-EMV-.../3-9,5
Approvals					
IEC data					
Rated current, contacts (at 40°C)	A	10	10	-	10
Surge voltage category		III	III	-	III
Pollution degree		3	3	-	3
Rated voltage (III/3) contacts	V	250	160	-	50
Rated surge voltage, contacts	kV	3	2.5	-	0.8
Connection cross section	mm²	0.14 ... 2.5	0.14 ... 2.5	-	0.14 ... 2.5
UL data					
Rated voltage	V	600	250	-	-
Rated current	A	-	-	-	-
AWG		-	-	-	-
CSA data					
Rated voltage	V	600	-	-	-
Rated current	A	12	-	-	-
AWG		26-14	-	-	-
Material data					
Contact carrier material		PC	PC	PC	PC
Inflammability class in acc. with UL 94		V0	V0	V0	V0
Contact material		Copper alloy	Copper alloy	-	Copper alloy
Contact surface material		Ag (alternatively Au)	Ag (alternatively Au)	-	Ag (alternatively Au)
Temperature data					
Ambient temperature range	°C	-40 ... 125	-40 ... 125	-40 ... 125	-40 ... 85
General data					
Connection method		Crimp connection	Crimp connection	-	Crimp connection
No. of pos.		12	17	-	4
Contact numbering		1 - 12	1 - 17	-	1-4
Insertion/withdrawal cycles		≥ 500	≥ 500	≥ 500	≥ 500

Derating curves



HC-M-12-MOD-...



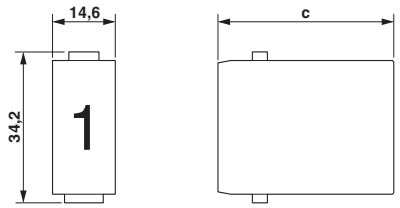
HC-M-17-MOD-...

Ordering data

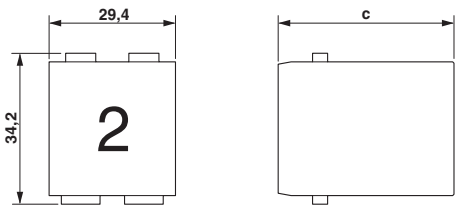
Description	Pos.	Number	Slots	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Crimp connection CK 1,6							
	12	1 - 12	1	① HC-M-12-MOD-...	1663323	1663310	2
Crimp connection CK 1,6							
	17	1 - 17	1	② HC-M-17-MOD-...	1636486	1636473	2
EMC module							
			2	③ HC-M-EMV-MOD-...	1678570	1678567	2
EMC plug-in connector, crimp connection CK 1,6							
	4	1-4	2	④ HC-M-EMV-.../3-9,5	1636091	1636088	1

Turned crimp contacts CK 1,6 Silver-plated	Cross section mm² / AWG				
	0.14 - 0.37 / 26 - 22	CK1,6-ED-0,37... AG	1663394	1663336	100
	0.5 / 20	CK1,6-ED-0,50... AG	1663404	1663349	100
	0.75 / 18	CK1,6-ED-0,75... AG	1663417	1663352	100
	0.75 - 1 / 18	CK1,6-ED-1,00... AG	1663420	1663378	100
	1.5 / 16	CK1,6-ED-1,50... AG	1663433	1663378	100
	2.5 / 14	CK1,6-ED-2,50... AG	1663446	1663381	100

Dimensions (in mm)



1 module slot



2 module slots

		a	b	c	d
①	Socket	14.6		34	
	Plug				
②	Socket	14.6		34	
	Plug				
③	Socket	29.4		34	
	Plug				
④	Socket				
	Plug				

Accessories



Hinged retaining frames
From page 480



Crimping tools
From page 562



Crimp contacts
From page 564



Crimp contacts
From page 564

Modular contact inserts, Ethernet and D-SUB 09

50 V, 1 - 5 A

Connection technology:
– Crimp connection VS 1,0

Coding pins and sockets are mandatory when using HC-M-25-MOD-... and HC-M-DSUB 09-MOD-... modules.

To determine the matching housings, refer to the cross-reference list on page 402.

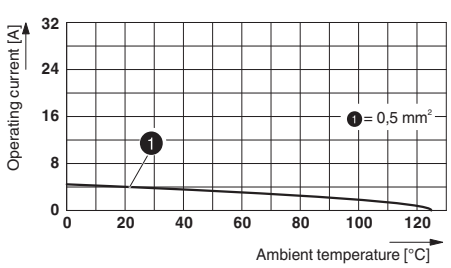
Notes:
For accessories, see from page 552
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe housing height
Observe notes on the connection technology



Technical data

Type		HC-M-25-MOD-...	HC-M-08-GBIT-...C	HC-M-08-GBIT-MOD-...	HC-M-DSUB 09-MOD-...	HC-M-DSUB 09/O2T-MOD-... 2-pos.
Approvals			-	-	-	-
IEC data						
Rated current, contacts (at 40°C)	A	5	5	-	1	5
Surge voltage category		III	III	-	III	III
Pollution degree		3	3	-	3	3
Rated voltage (III/3) contacts	V	50	50	-	50	50
Rated surge voltage, contacts	kV	0.8	0.8	-	0.8	0.8
Connection cross section	mm²	0.08 ... 0.5	0.08 ... 0.5	-	0.08 ... 0.5	0.09 ... 0.5
UL data						
Rated voltage	V	-	-	-	-	-
Rated current	A	-	-	-	-	-
AWG		-	-	-	-	-
CSA data						
Rated voltage	V	-	-	-	-	-
Rated current	A	-	-	-	-	-
AWG		-	-	-	-	-
Material data						
Contact carrier material		PC	PC	PC	PC	PC
Inflammability class in acc. with UL 94		V0	V0	V0	V0	V0
Contact material		Copper alloy	Copper alloy	-	Copper alloy	Copper alloy
Contact surface material		Au	Au	-	Au	Au
Temperature data						
Ambient temperature range	°C	-40 ... 125	-40 ... 85	-40 ... 85	-40 ... 125	-40 ... 125
General data						
Connection method		Crimp connection	Crimp connection	-	Crimp connection	Screw connection
No. of pos.		25	8	-	9	2
Contact numbering		1 - 25	1-8	-	1-9	A,B
Insertion/withdrawal cycles		≥ 500	≥ 500	≥ 500	≥ 500	≥ 500

Derating curves

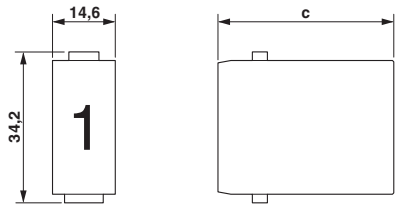


HC-M-25-MOD-...

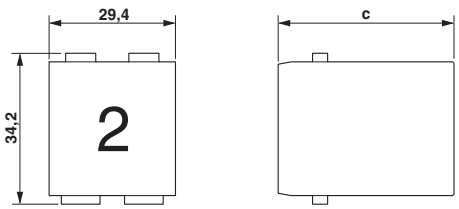
Ordering data

Description	Pos.	Number	Slots	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Crimp connection VS 1,0							
	25	1 - 25	1	① HC-M-25-MOD-...	1605005	1605004	2
Ethernet plug-in connector, crimp connection VS 1,0							
	8	1-8	1	② HC-M-08-GBIT-...C	1587726	1587713	1
Module, Ethernet plug-in connector							
			1	③ HC-M-08-GBIT-MOD-...	1587700	1587690	1
D-SUB 09 module, crimp connection VS 1,0							
	9	1-9	1	④ HC-M-DSUB 09-MOD-...	1647543	1647530	2
D-SUB 09 module, crimp connection VS 1,0							
	2	A,B	1	2-pos. ⑤ HC-M-DSUB 09/02T-MOD-...	1636444		2
Turned crimp contacts VS 1,0 Gold-plated		**Cross section mm² / AWG**					
		0.08 - 0.2 / 28 - 24		VS-...-CD-1,0/14,4/0,2	1688997	1688971	30
		0.2 - 0.5 / 24 - 20		VS-...-CD-1,0/14,4/0,5	1688984	1688968	30

Dimensions (in mm)



1 module slot



2 module slots

		a	b	c	d
①	Socket	14.6		30.65	
	Plug			34	
②	Socket	13.9		40.3	
	Plug			41.4	
③	Socket	14.6		28.1	
	Plug			40.85	
④	Socket	14.6		35.2	
	Plug				
⑤	Socket	14.6		35.2	
	Plug				

Accessories



Hinged retaining frames
From page 480



Crimping tools
From page 562



Crimp contacts
See Catalog 2

Modular contact inserts, pneumatic modules

Connection technology:
– Pneumatic contact with valve
– Pneumatic contact without valve

To determine the matching housings, refer to the cross-reference list on page 402.

Notes:
For accessories, see from page 552
Connectors may only be operated when under no load.
Observe housing height
Observe notes on the connection technology

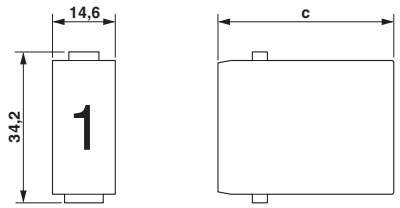


		Technical data			
Type		**HC-M-PN2-MOD-...**	**HC-M-PN3-MOD-...**		
Approvals					
IEC data					
Rated current, contacts (at 40°C)	A	-	-		
Surge voltage category		-	-		
Pollution degree		-	-		
Rated voltage (III/3) contacts	V	-	-		
Rated surge voltage, contacts	kV	-	-		
Connection cross section	mm²	-	-		
UL data					
Rated voltage	V	-	-		
Rated current	A	-	-		
AWG		-	-		
CSA data					
Rated voltage	V	-	-		
Rated current	A	-	-		
AWG		-	-		
Material data					
Contact carrier material		PC	PC		
Inflammability class in acc. with UL 94		V0	V0		
Contact material		-	-		
Contact surface material		-	-		
Temperature data					
Ambient temperature range	°C	-40 ... 80	-40 ... 80		
General data					
Connection method		-	-		
No. of pos.		2	3		
Contact numbering		1 - 2	1 - 3		
Insertion/withdrawal cycles		≥ 500	≥ 500		

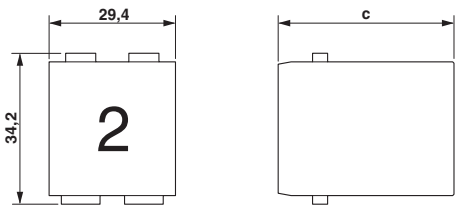
Ordering data

Description	Pos.	Number	Slots	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
PN2 pneumatic module							
	2	1 - 2	1	① HC-M-PN2-MOD-...	1674998	1674998	2
PN3 pneumatic module							
	3	1 - 3	1	② HC-M-PN3-MOD-...	1663475	1663475	2
PN2 pneumatic contact With valve							
				HC-M-PN2-6,00-...-V	1676776		10
PN2 pneumatic contact Without valve							
				HC-M-PN2-6,00-...	1676763	1676750	10
PN3 pneumatic contact With valve							
				HC-M-PN3-1,60-BU-V HC-M-PN3-3,00-BU-V HC-M-PN3-4,00-BU-V	1663543 1663556 1663569		10 10 10
PN3 pneumatic contact Without valve							
				HC-M-PN3-1,60-... HC-M-PN3-3,00-... HC-M-PN3-4,00-...	1663514 1663527 1663530	1663488 1663491 1663501	10 10 10

Dimensions (in mm)



1 module slot



2 module slots

		a	b	c	d
①	Socket Plug	14.6		27.2	
②	Socket Plug	14.6		27.2	

Accessories



Hinged retaining frames
From page 480

Modular contact inserts

400 V, 16 A

Connection technology:
– Spring-cage connection
– Coaxial contacts

To determine the matching housings, refer to the cross-reference list on page 402.

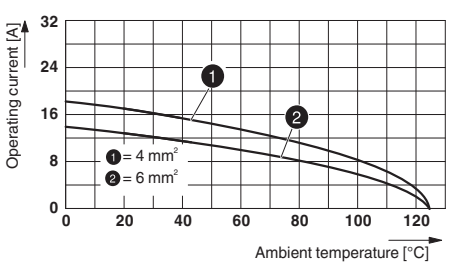
Notes:
For accessories, see from page 552
Connectors may only be operated when under no load.
Observe housing height
Observe notes on the connection technology
Coaxial module with coding pin and coding socket



Technical data

Type		HC-M-05-MOD-...Z	HC-M-04-MOD-...
Approvals			
IEC data			
Rated current, contacts (at 40°C)	A	16	1.5
Surge voltage category		III	III
Pollution degree		3	3
Rated voltage (III/3) contacts	V	400	50
Rated surge voltage, contacts	kV	6	3
Connection cross section	mm²	0.14 ... 2.5	-
UL data			
Rated voltage	V	600	-
Rated current	A	16	-
AWG		12	-
CSA data			
Rated voltage	V	-	-
Rated current	A	-	-
AWG		-	-
Material data			
Contact carrier material		PC	PC
Inflammability class in acc. with UL 94		V0	V0
Contact material		Copper alloy	Copper alloy
Contact surface material		Ag	AU
Temperature data			
Ambient temperature range	°C	-40 ... 125	-40 ... 125
General data			
Connection method		Spring-cage connection	Soldering and crimp connection
No. of pos.		5	4
Contact numbering		1 - 5	1 - 4
Insulation resistance	GΩ	-	≥ 10
Volume resistance	mΩ	-	-
Insertion/withdrawal cycles		≥ 500	≥ 500

Derating curves

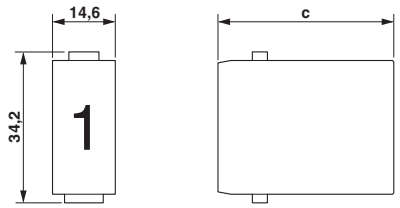


HC-M-05-MOD-...Z

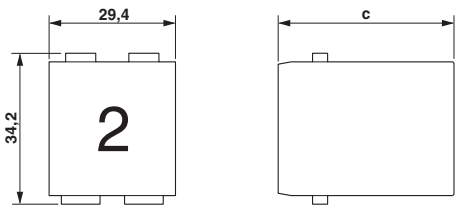
Ordering data

Description	Pos.	Number	Slots	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Spring-cage connection							
	5	1 - 5	1	① HC-M-05-MOD-...Z	1647721	1647718	2
Coaxial module							
	4	1 - 4	1	② HC-M-04-MOD-...	1676789	1676792	2
Coaxial contacts, 50 Ω							
				HC-M-04-...-KOAX-50	1676815	1676802	10
Coaxial contacts, 75 Ω							
				HC-M-04-...-KOAX-75	1686245	1686258	10

Dimensions (in mm)



1 module slot



2 module slots

		a	b	c	d
①	Socket	14.6		34	
	Plug			35.5	
②	Socket	14.6		32.6	
	Plug			31.5	

Accessories



Hinged retaining frames
From page 480



Crimping tools
From page 562

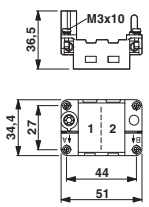
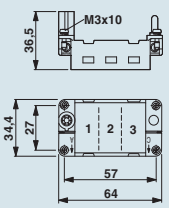
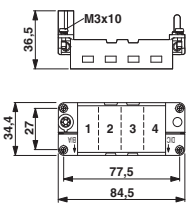
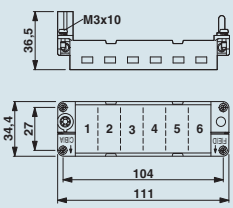
Modular contact inserts, hinged retaining frames



Technical data

General data	
Housing material	-
Surface material	-
Material, lock	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	-

Ordering data

Description	Type	Order No.	Pcs. / Pkt.	Dimensions
Hinged retaining frames 	For sleeve housing (A, B, C, etc.) **HC-M-MHR-T2-N** For panel mounting base (a, b, c, etc.) **HC-M-MHR-A2-N**	 **1679249** **1679281**	 2 2	
Hinged retaining frames 	For sleeve housing (A, B, C, etc.) **HC-M-MHR-T3-N** For panel mounting base (a, b, c, etc.) **HC-M-MHR-A3-N**	 **1679252** **1679294**	 2 2	
Hinged retaining frames 	For sleeve housing (A, B, C, etc.) **HC-M-MHR-T4-N** For panel mounting base (a, b, c, etc.) **HC-M-MHR-A4-N**	 **1679265** **1679304**	 2 2	
Hinged retaining frames 	For sleeve housing (A, B, C, etc.) **HC-M-MHR-T6-N** For panel mounting base (a, b, c, etc.) **HC-M-MHR-A6-N**	 **1679278** **1679317**	 2 2	
Fixing wedges 	**HC-M-MHR-FIX**	**1585155**	2	
Cable lug 	PE extension to 16 mm² **HC-M-MHR-PE16**	**1636981**	50	

Notes:
For accessories, see from page 552
Observe notes on the connection technology

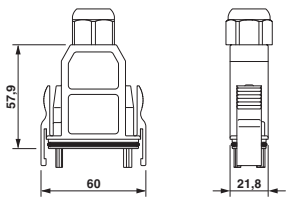
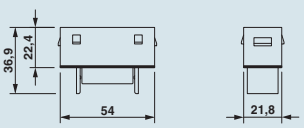
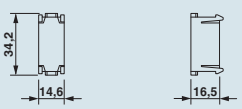
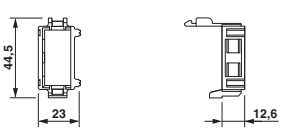
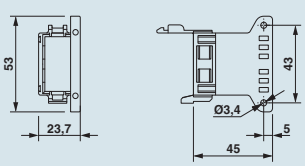
Modular contact inserts, accessories



Technical data

General data	
Housing material	Polycarbonate
Surface material	-
Material, lock	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 85 °C
Type of protection (when plugged in)	IP65 protection when the connector is inserted

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Sleeve housing **Height: 57.9 mm** 	1x M20	**HC-MOD-K-TMS-M1M20-G-PE**	**1408520**	2	
Panel mounting base **Height: 22.4 mm** 		**HC-MOD-K-AFS-PE**	**1408533**	2	
Coding profile 		**HC-MOD-K-CP**	**1408562**	10	
Dummy modules 		**HC-M-BM**	**1676828**	2	
Contact insert frame 		Without strain relief **HC-M-MHOZ**	**1676844**	2	
Contact insert frame 		With strain relief **HC-M-MHMZ**	**1676831**	2	

Notes:
For accessories, see from page 552
Observe notes on the connection technology

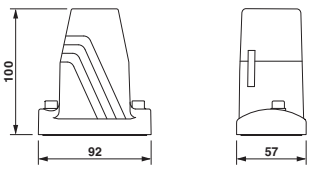
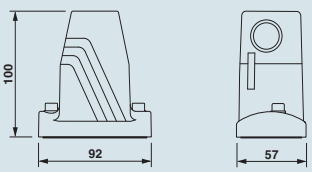
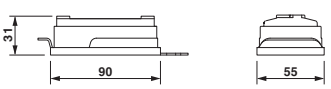
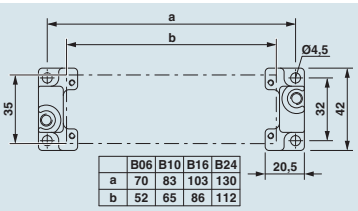
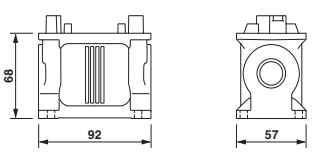
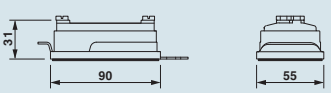
Type B6, metal, ADVANCE sleeve housing, STA - standard



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Material, lock	Stainless steel
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65 / IP68 (0.2 bar, 24h) / IP69K

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top[1]) **Height: 100 mm** 	1 x M20 1 x M25	**HC-B 6-TMS-100/O1STM20G-STA** **HC-B 6-TMS-100/O1STM25G-STA**	**1604052** **1604117**	10 10	
Cable entry: lateral[1]) **Height: 100 mm** 	1 x M20 1 x M25	**HC-B 6-TMS-100/O1STM20S-STA** **HC-B 6-TMS-100/O1STM25S-STA**	**1604081** **1604146**	10 10	
IP50 protective cover 		For the sleeve side **HC-B 6-TMS-SD-IP50**	**1690736**	10	
Panel mounting flange[2]) 		2 pcs. per housing **HC-B-AF** Set with 2 panel mounting flanges **HC-B-AF-SET**	 **1686533** **1604638**	 20 1	 B06 B10 B16 B24 a 70 83 103 130 b 52 65 86 112
Box mounting base **Height: 68 mm** 	2 x M20 2 x M25	**HC-ADV-B06-SHFH-2STM20-EEE** **HC-ADV-B06-SHFH-2STM25-EEE**	**1408630** **1408656**	1 1	
IP65 protective cover 		For the panel mounting side **HC-B 6-TMS-SD-IP65**	**1690778**	10	

Notes:

Pozidriv®
Trademark of European Ind. Serv. Ltd.

[1]) Screw locking with M6 Pozidriv® screws

[2]) Bore hole Ø 4.5 mm when using M4 screws, bore hole Ø 3.6 mm when using self-tapping M4 screws (Torx®)

Accessories



Screw connections
From page 552

Type B6, metal, ADVANCE sleeve housing, EEE - offshore/EMC

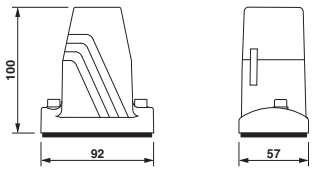
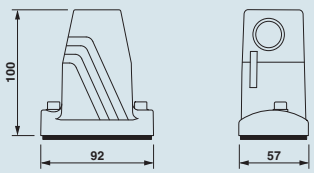
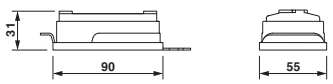
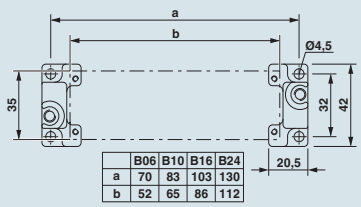
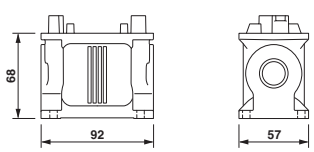
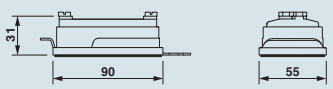




Technical data

General data	
Housing material	Die-cast aluminum, salt water resistant
Surface material	Uncoated
Material, lock	Stainless steel
Sealing material	NBR, conductive
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65 / IP68 (0.2 bar, 24h) / IP69K

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top[1]) **Height: 100 mm** 	1 x M20 1 x M25 1 x M32	**HC-B 6-TMS-100/O1STM20G-EEE** **HC-B 6-TMS-100/O1STM25G-EEE** **HC-B 6-TMS-100/O1STM32G-EEE**	**1580480** **1408229** **1580477**	10 10 10	
Cable entry: lateral[1]) **Height: 100 mm** 	1 x M20 1 x M25	**HC-B 6-TMS-100/O1STM20S-EEE** **HC-B 6-TMS-100/O1STM25S-EEE**	**1587645** **1460356**	10 10	
IP50 protective cover 		For the sleeve side **HC-B 6-TMS-SD-IP50**	**1690736**	10	
Panel mounting flange[2]) 		2 pcs. per housing **HC-B-AF** Set with 2 panel mounting flanges **HC-B-AF-SET**	**1686533** **1604638**	20 1	 B06 B10 B16 B24 a 70 83 103 130 b 52 65 86 112
Box mounting base **Height: 68 mm** 	2 x M20 2 x M25	**HC-ADV-B06-SHFH-2STM20-EEE** **HC-ADV-B06-SHFH-2STM25-EEE**	**1408630** **1408656**	1 1	
IP65 protective cover 		For the panel mounting side **HC-B 6-TMS-SD-IP65**	**1690778**	10	

Notes:

In order to achieve optimum shielding results, the mounting surface must be conductive

[1]) Screw locking with M6 Allen screws

[2]) Bore hole Ø 4.5 mm when using M4 screws, bore hole Ø 3.6 mm when using self-tapping M4 screws (Torx®)

Accessories



Screw connections
From page 552

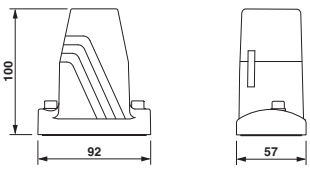
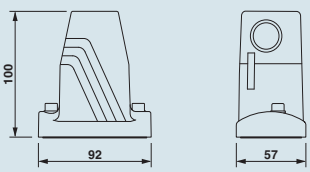
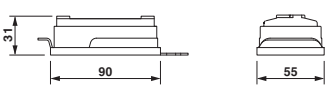
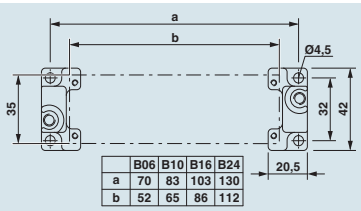
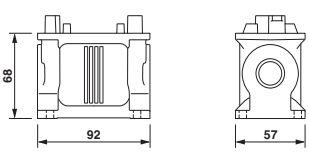
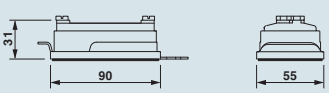
Type B6, metal, ADVANCE sleeve housing, EUA - increased environmental requirements



Technical data

General data	
Housing material	Die-cast aluminum, salt water resistant
Surface material	Powder-coated, black
Material, lock	Stainless steel
Sealing material	Viton
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65 / IP68 (0.2 bar, 24h) / IP69K

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top[1]) **Height: 100 mm** 	1 x M20 1 x M25	**HC-B 6-TMS-100/O1STM20G-EUA** **HC-B 6-TMS-100/O1STM25G-EUA**	**1604049** **1604104**	10 10	
Cable entry: lateral[1]) **Height: 100 mm** 	1 x M20 1 x M25	**HC-B 6-TMS-100/O1STM20S-EUA** **HC-B 6-TMS-100/O1STM25S-EUA**	**1604078** **1604133**	10 10	
IP50 protective cover 		For the sleeve side **HC-B 6-TMS-SD-IP50**	**1690736**	10	
Panel mounting flange[2]) 		2 pcs. per housing **HC-B-AF** Set with 2 panel mounting flanges **HC-B-AF-SET**	 **1686533** **1604638**	 20 1	 |	B06	B10	B16	B24 | | a | 70 | 83 | 103 | 130 | | b | 52 | 65 | 86 | 112 |
Box mounting base **Height: 68 mm** 	2 x M20 2 x M25	**HC-ADV-B06-SHFH-2STM20-EEE** **HC-ADV-B06-SHFH-2STM25-EEE**	**1408630** **1408656**	1 1	
IP65 protective cover 		For the panel mounting side **HC-B 6-TMS-SD-IP65**	**1690778**	10	

Notes:

Pozidriv®
Trademark of European Ind. Serv. Ltd.

[1]) Screw locking with M6 Pozidriv® screws

[2]) Bore hole Ø 4.5 mm when using M4 screws, bore hole Ø 3.6 mm when using self-tapping M4 screws (Torx®)

Accessories



Screw connections
From page 552

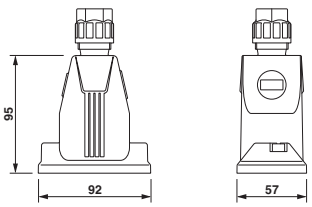
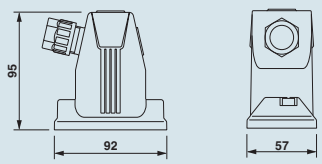
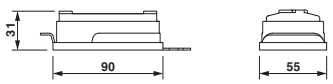
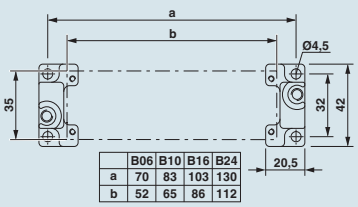
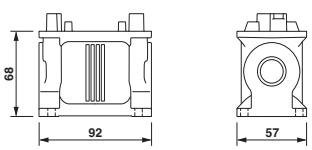
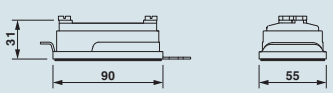
Type B6, plastic, ADVANCE PL sleeve housing with cable gland



Technical data

General data	
Housing material	Polyamide
Surface material	-
Material, lock	V2A
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65/67

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top[1]) **Height: 95 mm** 	1 x M20 1 x M25	**HC-ADV-B06-HHWH-1TGM20-PL** **HC-ADV-B06-HHWH-1TGM25-PL**	**1404222** **1404225**	1 1	
Cable entry: lateral[1]) **Height: 95 mm** 	1 x M20 1 x M25	**HC-ADV-B06-HHWH-1SGM20-PL** **HC-ADV-B06-HHWH-1SGM25-PL**	**1404224** **1404226**	1 1	
IP50 protective cover 		For the sleeve side **HC-B 6-TMS-SD-IP50**	**1690736**	10	
Panel mounting flange[2]) 		2 pcs. per housing **HC-B-AF** Set with 2 panel mounting flanges **HC-B-AF-SET**	**1686533** **1604638**	20 1	 B06 B10 B16 B24 a 70 83 103 130 b 52 65 86 112
Box mounting base **Height: 68 mm** 	2 x M20 2 x M25	**HC-ADV-B06-SHFH-2STM20-EEE** **HC-ADV-B06-SHFH-2STM25-EEE**	**1408630** **1408656**	1 1	
IP65 protective cover 		For the panel mounting side **HC-B 6-TMS-SD-IP65**	**1690778**	10	

Notes:

For further accessories, see from page 552

[1]) Corresponding marking label: US-EMP (20X9), Order No. 0829439

[2]) Bore hole Ø 4.5 mm when using M4 screws, bore hole Ø 3.6 mm when using self-tapping M4 screws (Torx®)

Accessories



Screw connections
From page 552

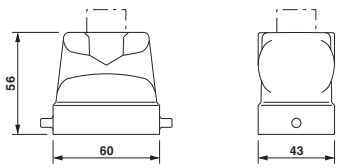
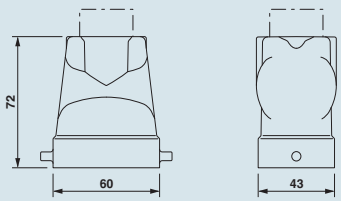
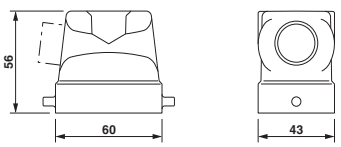
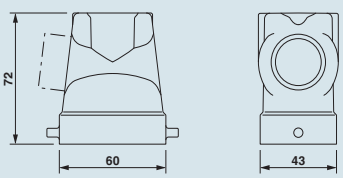
Type B6, metal, sleeve housing for single locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

Description			Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top **Height: 56 mm**	1 x M20		**HC-B 6-TFL-N-O1STM20G**	**1460339**	10	
	1 x M25		**HC-B 6-TFL-N-O1STM25G**	**1460258**	10	
		1 x Pg13.5	**HC-B 6-TFL-N-O1PG13.5G**	**1460340**	10	
		1 x Pg16	**HC-B 6-TFL-N-O1PG16G**	**1460341**	10	
Cable entry: top **Height: 72 mm**	1 x M25		**HC-B 6-TFL-H-O1STM25G**	**1460027**	10	
	1 x M32		**HC-B 6-TFL-H-O1STM32G**	**1460029**	10	
		1 x Pg21	**HC-B 6-TFL-H-O1PG21G**	**1460021**	10	
		1 x Pg29	**HC-B 6-TFL-H-O1PG29G**	**1460023**	10	
Cable entry: lateral **Height: 56 mm**	1 x M20		**HC-B 6-TFL-N-O1STM20S**	**1460346**	10	
	1 x M25		**HC-B 6-TFL-N-O1STM25S**	**1460347**	10	
		1 x Pg13.5	**HC-B 6-TFL-N-O1PG13.5S**	**1460348**	10	
		1 x Pg16	**HC-B 6-TFL-N-O1PG16S**	**1460349**	10	
Cable entry: lateral **Height: 72 mm**	1 x M25		**HC-B 6-TFL-H-O1STM25S**	**1460028**	10	
	1 x M32		**HC-B 6-TFL-H-O1STM32S**	**1460030**	10	
		1 x Pg21	**HC-B 6-TFL-H-O1PG21S**	**1460022**	10	
		1 x Pg29	**HC-B 6-TFL-H-O1PG29S**	**1460024**	10	

Notes:

For further accessories, see from page 552

Accessories



Screw connections
From page 552



Pressure screw set
From page 556

N

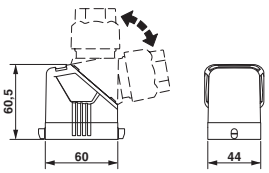
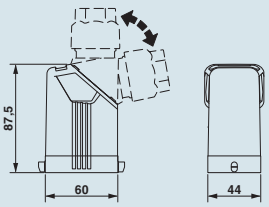
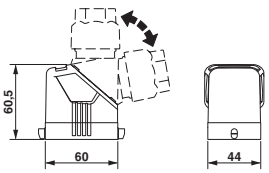
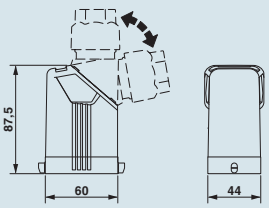
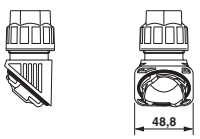
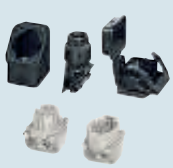
Type B6, plastic, EVO sleeve housing for single locking latch



Technical data

General data	
Housing material	Polyamide
Surface material	-
Locking latch material	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top/lateral Height: 60.5 mm 		**HC-EVO-B06-HLFS-PLBK**	**1407619**	1	
Cable entry: top/lateral Height: 87.5 mm 		**HC-EVO-B06-HHFS-PLBK**	**1407620**	1	
Cable entry: top/lateral Height: 60.5 mm 		**HC-EVO-B06-HLFS-PLBK**	**1407619**	1	
Cable entry: top/lateral Height: 87.5 mm 		**HC-EVO-B06-HHFS-PLBK**	**1407620**	1	
Cable gland 	1 x M20 1 x M25 1 x M32 1 x M40	**HC-B-G-M20-PLRBK** **HC-B-G-M25-PLRBK** **HC-B-G-M32-PLRBK** **HC-B-G-M40-PLRBK**	**1407669** **1407670** **1407671** **1407672**	1 1 1 1	
Plug-in connector set 		Push-in connection **HC-EVO-B06PT-BWSC-HL-M20-PLRBK**	**1407710**	1	

Notes:
For further accessories, see from page 552
Corresponding marking label: US-EMP (20X9), Order No. 0829439

Accessories



Protective cover
From page 578



Corrugated pipe adapter
From page 584

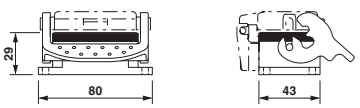
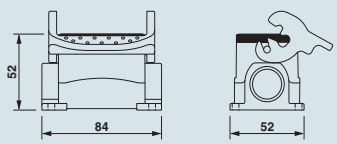
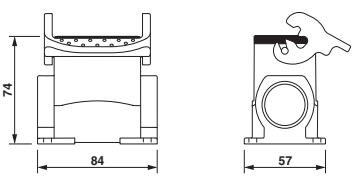
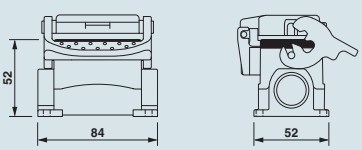
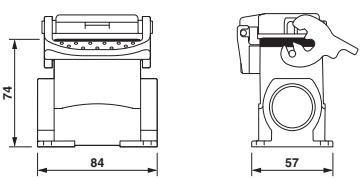
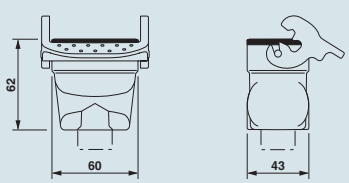
Type B6, metal, supporting base element with single locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	Stainless steel, handle: PA
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65 protection when the connector is inserted

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 29 mm**		Without cover **HC-B 6-AML** With plastic cover **HC-B 6-AMLD** With metal cover **HC-B 6-AMLD-AL**	 **1771134** **1771147** **1645464**	 10 10 10	
Box mounting base **Height: 52 mm**	1 x M20 1 x M25 1 x Pg16 2 x M20 2 x M25 2 x Pg16	**HC-B 6-SML-52/O1M20** **HC-B 6-SML-52/O1M25** **HC-B 6-SML-52/O1PG16** **HC-B 6-SML-52/O2M20** **HC-B 6-SML-52/O2M25** **HC-B 6-SML-52/O2PG16**	**1604721** **1604722** **1675214** **1604723** **1604724** **1675230**	10 10 10 10 10 10	
Box mounting base **Height: 74 mm**	1 x M25 1 x M32 1 x Pg21 1 x Pg29 2 x M25 2 x M32 2 x Pg21 2 x Pg29	**HC-B 6-SML-74/O1M25** **HC-B 6-SML-74/O1M32** **HC-B 6-SML-74/O1PG21** **HC-B 6-SML-74/O1PG29** **HC-B 6-SML-74/O2M25** **HC-B 6-SML-74/O2M32** **HC-B 6-SML-74/O2PG21** **HC-B 6-SML-74/O2PG29**	**1604725** **1646845** **1678114** **1678127** **1460195** **1646858** **1678130** **1678143**	10 10 10 10 10 10 10 10	
Box mounting base with cover **Height: 52 mm**	1 x M25 1 x Pg16 2 x M20 2 x M25 2 x Pg16	**HC-B 6-SMLD-52/O1M25** **HC-B 6-SMLD-52/O1PG16** **HC-B 6-SMLD-52/O2M20** **HC-B 6-SMLD-52/O2M25** **HC-B 6-SMLD-52/O2PG16**	**1604728** **1675269** **1604729** **1604730** **1675272**	10 10 10 10 10	
Box mounting base with cover **Height: 74 mm**	1 x Pg21 1 x Pg29 2 x M32 2 x Pg21 2 x Pg29	**HC-B 6-SMLD-74/O1PG21** **HC-B 6-SMLD-74/O1PG29** **HC-B 6-SMLD-74/O2M32** **HC-B 6-SMLD-74/O2PG21** **HC-B 6-SMLD-74/O2PG29**	**1678156** **1678169** **1646861** **1678172** **1678185**	10 10 10 10 10	
Coupling housing **Height: 62 mm**	1 x M20 1 x Pg13.5	**HC-B 6-KML-N-O1STM20** **HC-B 6-KML-N-O1PG13.5**	**1460137** **1460168**	10 10	

Notes:

For further accessories, see from page 552

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

N

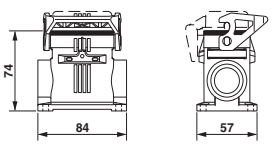
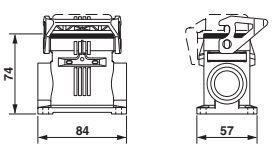
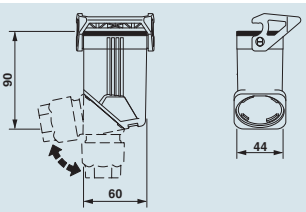
Type B6, plastic, EVO supporting base element with single locking latch



Technical data

General data	
Housing material	Polyamide
Surface material	-
Locking latch material	Polyamide
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65 protection when the connector is inserted

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 30.5 mm** 		Without cover **HC-EVO-B06-BWS-PLRBK** With cover **HC-EVO-B06-BWSC-PLRBK**	 **1407621** **1407622**	 1 1	
Box mounting base **Height: 74 mm**	2 x M32	**HC-EVO-B06-SHWS-2SSM32-PLRBK**	**1407623**	1	
Box mounting base with cover **Height: 74 mm** 	2 x M32	**HC-EVO-B06-SHWSC-2SSM32-PLRBK**	**1407624**	1	
Coupling housing **Height: 90 mm** 	 1 x M40 1 x M32 1 x M25 1 x M20	**HC-EVO-B06-CHWS-PLRBK** Cable gland **HC-B-G-M40-PLRBK** **HC-B-G-M32-PLRBK** **HC-B-G-M25-PLRBK** **HC-B-G-M20-PLRBK**	**1407625** **1407672** **1407671** **1407670** **1407669**	1 1 1 1 1	

Notes:

- For further accessories, see from page 552
- Corresponding marking label: US-EMP (20X9), Order No. 0829439
- Replacement hinged cover: Order No. 1407692

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

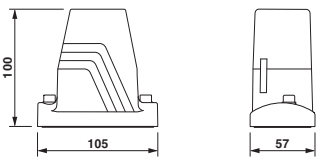
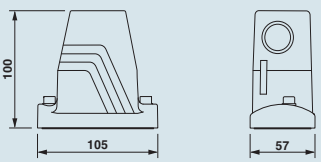
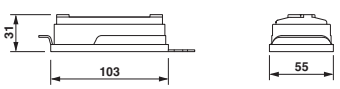
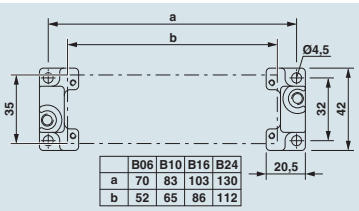
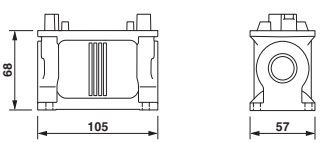
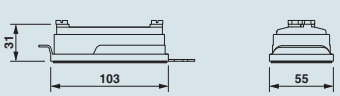
Type B10, metal, ADVANCE sleeve housing, STA - standard



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Material, lock	Stainless steel
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65 / IP68 (0.2 bar, 24h) / IP69K

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top[1]) **Height: 100 mm** 	1 x M25 1 x M32	**HC-B 10-TMS-100/O1STM25G-STA** **HC-B 10-TMS-100/O1STM32G-STA**	**1690040** **1690121**	10 10	
Cable entry: lateral[1]) **Height: 100 mm** 	1 x M25 1 x M32	**HC-B 10-TMS-100/O1STM25S-STA** **HC-B 10-TMS-100/O1STM32S-STA**	**1690082** **1690163**	10 10	
IP50 protective cover 		For the sleeve side **HC-B 10-TMS-SD-IP50**	**1690749**	10	
Panel mounting flange[2]) 		2 pcs. per housing **HC-B-AF** Set with 2 panel mounting flanges **HC-B-AF-SET**	 **1686533** **1604638**	 20 1	 | | B06 | B10 | B16 | B24 | | a | 70 | 83 | 103 | 130 | | b | 52 | 65 | 86 | 112 |
Box mounting base **Height: 68 mm** 	2 x M25	**HC-ADV-B10-SHFH-2STM25-EEE**	**1408753**	1	
IP65 protective cover 		For the panel mounting side **HC-B 10-TMS-SD-IP65**	**1690781**	10	

Notes:

Pozidriv®
Trademark of European Ind. Serv. Ltd.

[1]) Screw locking with M6 Pozidriv® screws

[2]) Bore hole Ø 4.5 mm when using M4 screws, bore hole Ø 3.6 mm when using self-tapping M4 screws (Torx®)

Accessories



Screw connections
From page 552

Type B10, metal, ADVANCE sleeve housing, EEE - offshore/EMC



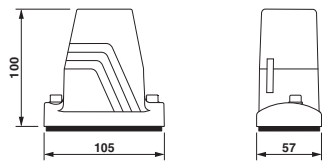
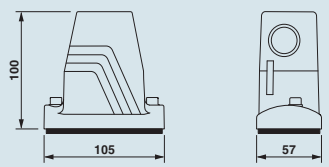
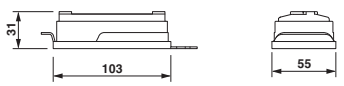
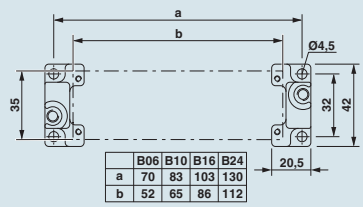
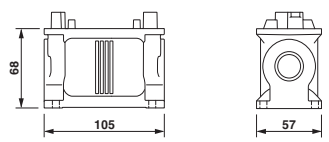
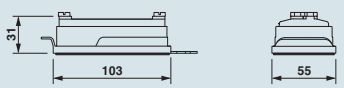




Technical data

General data	
Housing material	Die-cast aluminum, salt water resistant
Surface material	Uncoated
Material, lock	Stainless steel
Sealing material	NBR, conductive
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65 / IP68 (0.2 bar, 24h) / IP69K

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top[1]) **Height: 100 mm**	1 x M25 1 x M32	**HC-B 10-TMS-100/O1STM25G-EEE** **HC-B 10-TMS-100/O1STM32G-EEE**	**1580486** **1580483**	10 10	
Cable entry: lateral[1]) **Height: 100 mm**	1 x M25 1 x M32	**HC-B 10-TMS-100/O1STM25S-EEE** **HC-B 10-TMS-100/O1STM32S-EEE**	**1587658** **1460357**	10 10	
IP50 protective cover		For the sleeve side **HC-B 10-TMS-SD-IP50**	**1690749**	10	
Panel mounting flange[2])		2 pcs. per housing **HC-B-AF** Set with 2 panel mounting flanges **HC-B-AF-SET**	**1686533** **1604638**	20 1	
Box mounting base **Height: 68 mm**	2 x M25	**HC-ADV-B10-SHFH-2STM25-EEE**	**1408753**	1	
IP65 protective cover		For the panel mounting side **HC-B 10-TMS-SD-IP65**	**1690781**	10	













Notes:
In order to achieve optimum shielding results, the mounting surface must be conductive
[1]) Screw locking with M6 Allen screws
[2]) Bore hole Ø 4.5 mm when using M4 screws, bore hole Ø 3.6 mm when using self-tapping M4 screws (Torx®)

Accessories



Screw connections
From page 552

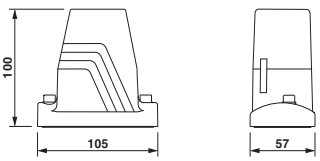
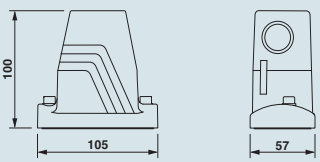
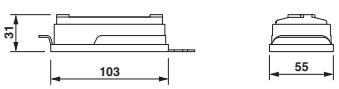
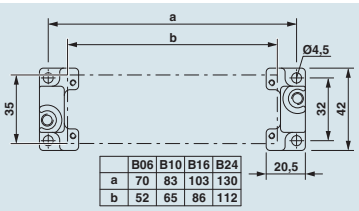
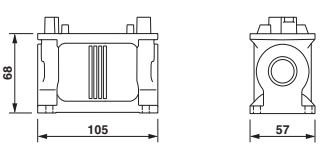
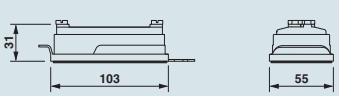
Type B10, metal, ADVANCE sleeve housing, EUA - increased environmental requirements



Technical data

General data	
Housing material	Die-cast aluminum, salt water resistant
Surface material	Powder-coated, black
Material, lock	Stainless steel
Sealing material	Viton
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65 / IP68 (0.2 bar, 24h) / IP69K

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top[1]) **Height: 100 mm** 	1 x M25 1 x M32	**HC-B 10-TMS-100/O1STM25G-EUA** **HC-B 10-TMS-100/O1STM32G-EUA**	**1690037** **1690118**	10 10	
Cable entry: lateral[1]) **Height: 100 mm** 	1 x M25 1 x M32	**HC-B 10-TMS-100/O1STM25S-EUA** **HC-B 10-TMS-100/O1STM32S-EUA**	**1690079** **1690150**	10 10	
IP50 protective cover 		For the sleeve side **HC-B 10-TMS-SD-IP50**	**1690749**	10	
Panel mounting flange[2]) 		2 pcs. per housing **HC-B-AF** Set with 2 panel mounting flanges **HC-B-AF-SET**	 **1686533** **1604638**	 20 1	 |	B06	B10	B16	B24 | | a | 70 | 83 | 103 | 130 | | b | 52 | 65 | 86 | 112 |
Box mounting base **Height: 68 mm** 	2 x M25	**HC-ADV-B10-SHFH-2STM25-EEE**	**1408753**	1	
IP65 protective cover 		For the panel mounting side **HC-B 10-TMS-SD-IP65**	**1690781**	10	

Notes:

Pozidriv®
Trademark of European Ind. Serv. Ltd.

[1]) Screw locking with M6 Pozidriv® screws

[2]) Bore hole Ø 4.5 mm when using M4 screws, bore hole Ø 3.6 mm when using self-tapping M4 screws (Torx®)

Accessories



Screw connections
From page 552

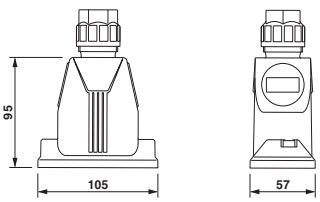
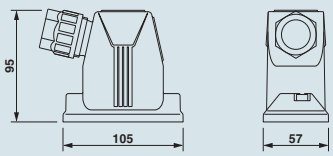
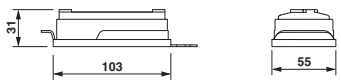
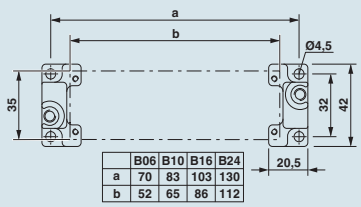
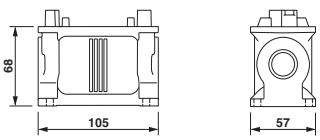
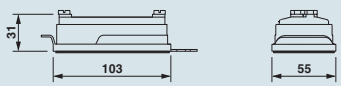
Type B10, plastic, ADVANCE PL sleeve housing with cable gland



Technical data

General data	
Housing material	Polyamide
Surface material	-
Material, lock	V2A
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65/67

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top[1]) **Height: 95 mm** 	1 x M25 1 x M32	**HC-ADV-B10-HHWH-1TGM25-PL** **HC-ADV-B10-HHWH-1TGM32-PL**	**1404227** **1404229**	1 1	
Cable entry: lateral[1]) **Height: 95 mm** 	1 x M25 1 x M32	**HC-ADV-B10-HHWH-1SGM25-PL** **HC-ADV-B10-HHWH-1SGM32-PL**	**1404228** **1404230**	1 1	
IP50 protective cover 		For the sleeve side **HC-B 10-TMS-SD-IP50**	**1690749**	10	
Panel mounting flange[2]) 		2 pcs. per housing **HC-B-AF** Set with 2 panel mounting flanges **HC-B-AF-SET**	**1686533** **1604638**	20 1	 B06 B10 B16 B24 a 70 83 103 130 b 52 65 86 112
Box mounting base **Height: 68 mm** 	2 x M25	**HC-ADV-B10-SHFH-2STM25-EEE**	**1408753**	1	
IP65 protective cover 		For the panel mounting side **HC-B 10-TMS-SD-IP65**	**1690781**	10	

Notes:

For further accessories, see from page 552

[1]) Corresponding marking label: US-EMP (20X9), Order No. 0829439

[2]) Bore hole Ø 4.5 mm when using M4 screws, bore hole Ø 3.6 mm when using self-tapping M4 screws (Torx®)

Accessories



Screw connections
From page 552

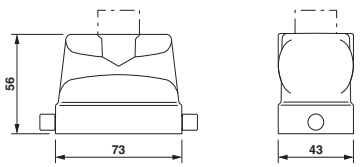
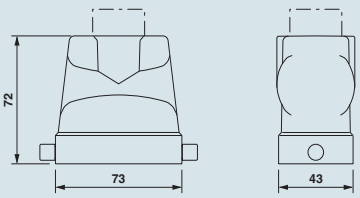
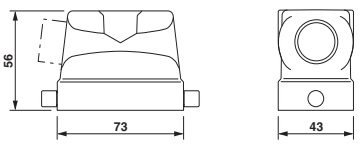
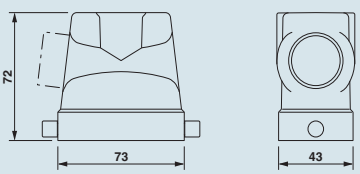
Type B10, metal, sleeve housing for single locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

Description			Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top **Height: 56 mm**	1 x M20		**HC-B 10-TFL-N-O1STM20G**	**1460034**	10	
	1 x M25		**HC-B 10-TFL-N-O1STM25G**	**1460039**	10	
		1 x Pg16	**HC-B 10-TFL-N-O1PG16G**	**1460036**	10	
Cable entry: top **Height: 72 mm**	1 x M25		**HC-B 10-TFL-H-O1STM25G**	**1460054**	10	
	1 x M32		**HC-B 10-TFL-H-O1STM32G**	**1460056**	10	
		1 x Pg16	**HC-B 10-TFL-H-O1PG21G**	**1460048**	10	
		1 x Pg29	**HC-B 10-TFL-H-O1PG29G**	**1460050**	10	
Cable entry: lateral **Height: 56 mm**	1 x M20		**HC-B 10-TFL-N-O1STM20S**	**1460035**	10	
	1 x M25		**HC-B 10-TFL-N-O1STM25S**	**1460040**	10	
		1 x Pg29	**HC-B 10-TFL-N-O1PG16S**	**1460041**	10	
Cable entry: lateral **Height: 72 mm**	1 x M25		**HC-B 10-TFL-H-O1STM25S**	**1460055**	10	
	1 x M32		**HC-B 10-TFL-H-O1STM32S**	**1460057**	10	
		1 x Pg29	**HC-B 10-TFL-H-O1PG21S**	**1460049**	10	
		1 x Pg29	**HC-B 10-TFL-H-O1PG29S**	**1460051**	10	

Notes:

For further accessories, see from page 552

Accessories



Screw connections
From page 552



Pressure screw set
From page 556

N

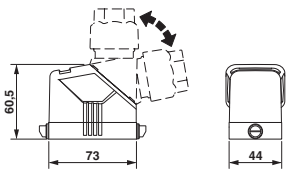
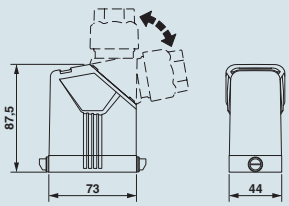
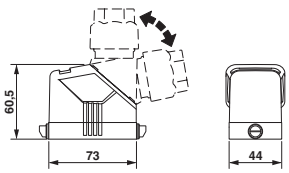
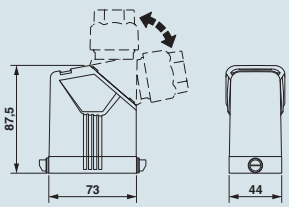
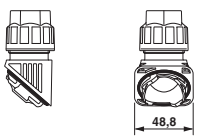
Type B10, plastic, EVO sleeve housing for single locking latch



Technical data

General data	
Housing material	Polyamide
Surface material	-
Locking latch material	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top/lateral Height: 60.5 mm 		**HC-EVO-B10-HLFS-PLBK**	**1407626**	1	
Cable entry: top/lateral Height: 87.5 mm 		**HC-EVO-B10-HHFS-PLBK**	**1407627**	1	
Cable entry: top/lateral Height: 60.5 mm 		**HC-EVO-B10-HLFS-PLBK**	**1407626**	1	
Cable entry: top/lateral Height: 87.5 mm 		**HC-EVO-B10-HHFS-PLBK**	**1407627**	1	
Cable gland 	1 x M20 1 x M25 1 x M32 1 x M40	**HC-B-G-M20-PLRBK** **HC-B-G-M25-PLRBK** **HC-B-G-M32-PLRBK** **HC-B-G-M40-PLRBK**	**1407669** **1407670** **1407671** **1407672**	1 1 1 1	
Plug-in connector set 		Push-in connection **HC-EVO-B10PT-BWSC-HL-M25-PLRBK**	**1408791**	1	

Notes:

For further accessories, see from page 552

Corresponding marking label: US-EMP (20X9), Order No. 0829439

Accessories



Protective cover
From page 578



Corrugated pipe adapter
From page 584

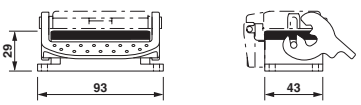
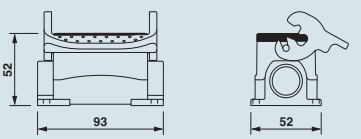
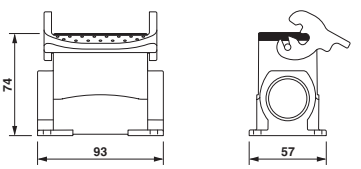
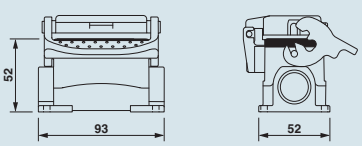
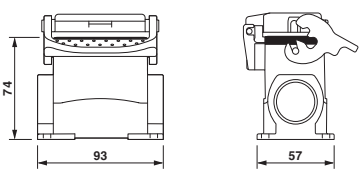
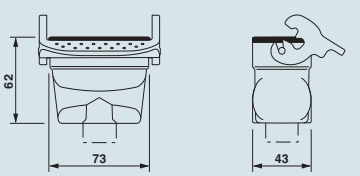
Type B10, metal, supporting base element with single locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	Stainless steel, handle: PA
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65 protection when the connector is inserted

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 29 mm**		Without cover **HC-B 10-AML** With plastic cover **HC-B 10-AMLD** With metal cover **HC-B 10-AMLD-AL**	 **1771338** **1771354** **1645477**	 10 10 10	
Box mounting base **Height: 52 mm**	1 x M20 1 x M25 1 x Pg16 2 x M20 2 x Pg16	**HC-B 10-SML-52/O1M20** **HC-B 10-SML-52/O1M25** **HC-B 10-SML-52/O1PG16** **HC-B 10-SML-52/O2M20** **HC-B 10-SML-52/O2PG16**	**1646269** **1604749** **1673449** **1646272** **1673452**	10 10 10 10 10	
Box mounting base **Height: 74 mm**	1 x M25 1 x M32 1 x Pg21 1 x Pg29 2 x M25 2 x M32 2 x Pg21	**HC-B 10-SML-74/O1M25** **HC-B 10-SML-74/O1M32** **HC-B 10-SML-74/O1PG21** **HC-B 10-SML-74/O1PG29** **HC-B 10-SML-74/O2M25** **HC-B 10-SML-74/O2M32** **HC-B 10-SML-74/O2PG21**	**1646395** **1646418** **1677636** **1677649** **1646285** **1646421** **1677652**	10 10 10 10 10 10 10	
Box mounting base with cover **Height: 52 mm**	1 x M20 1 x Pg16 2 x M20 2 x M25 2 x Pg16	**HC-B 10-SMLD-52/O1M20** **HC-B 10-SMLD-52/O1PG16** **HC-B 10-SMLD-52/O2M20** **HC-B 10-SMLD-52/O2M25** **HC-B 10-SMLD-52/O2PG16**	**1646434** **1673465** **1604750** **1604751** **1673478**	10 10 10 10 10	
Box mounting base with cover **Height: 74 mm**	1 x M25 1 x M32 1 x Pg21 1 x Pg29 2 x M25 2 x M32 2 x Pg21 2 x Pg29	**HC-B 10-SMLD-74/O1M25** **HC-B 10-SMLD-74/O1M32** **HC-B 10-SMLD-74/O1PG21** **HC-B 10-SMLD-74/O1PG29** **HC-B 10-SMLD-74/O2M25** **HC-B 10-SMLD-74/O2M32** **HC-B 10-SMLD-74/O2PG21** **HC-B 10-SMLD-74/O2PG29**	**1646447** **1646463** **1677678** **1677681** **1646450** **1646476** **1677694** **1677704**	10 10 10 10 10 10 10 10	
Coupling housing **Height: 62 mm**	1 x M20 1 x Pg16	**HC-B 10-KML-N-O1STM20** **HC-B 10-KML-N-O1PG16**	**1460316** **1460287**	10 10	

Notes:

For further accessories, see from page 552

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

N

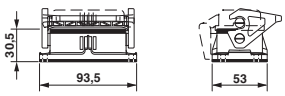
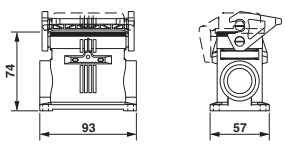
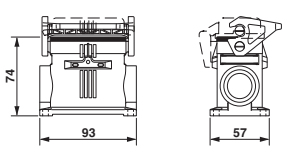
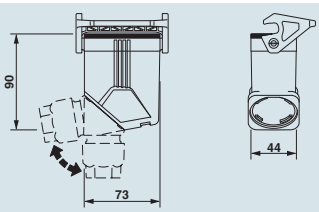
Type B10, plastic, EVO supporting base element with single locking latch



Technical data

General data	
Housing material	Polyamide
Surface material	-
Locking latch material	Polyamide
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65 protection when the connector is inserted

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 30.5 mm** 		Without cover **HC-EVO-B10-BWS-PLRBK** With cover **HC-EVO-B10-BWSC-PLRBK**	 **1407632** **1407633**	 1 1	
Box mounting base **Height: 74 mm**	2 x M32	**HC-EVO-B10-SHWS-2SSM32-PLRBK**	**1407636**	1	
Box mounting base with cover **Height: 74 mm** 	2 x M32	**HC-EVO-B10-SHWSC-2SSM32-PLRBK**	**1407637**	1	
Coupling housing **Height: 90 mm** 	 1 x M40 1 x M32 1 x M25 1 x M20	**HC-EVO-B10-CHWS-PLRBK** Cable gland **HC-B-G-M40-PLRBK** **HC-B-G-M32-PLRBK** **HC-B-G-M25-PLRBK** **HC-B-G-M20-PLRBK**	**1407640** **1407672** **1407671** **1407670** **1407669**	1 1 1 1 1	

Notes:
For further accessories, see from page 552
Corresponding marking label: US-EMP (20X9), Order No. 0829439
Replacement hinged cover: Order No. 1407693

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

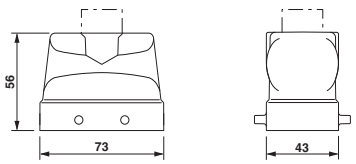
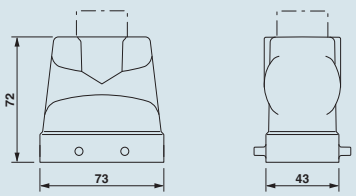
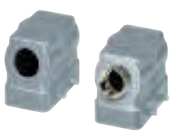
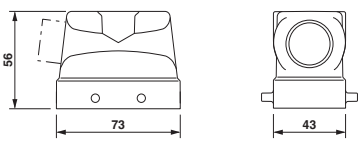
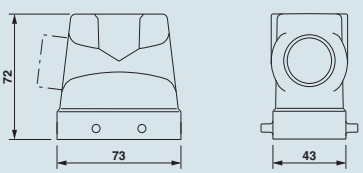
Type B10, metal, sleeve housing for double locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

Description			Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top **Height: 56 mm**	1 x M20		**HC-B 10-TFQ-N-O1STM20G**	**1460061**	10	
	1 x M25		**HC-B 10-TFQ-N-O1STM25G**	**1460066**	10	
		1 x Pg16	**HC-B 10-TFQ-N-O1PG16G**	**1460063**	10	
Cable entry: top **Height: 72 mm**	1 x M25		**HC-B 10-TFQ-H-O1STM25G**	**1460080**	10	
	1 x M32		**HC-B 10-TFQ-H-O1STM32G**	**1460082**	10	
		1 x Pg21	**HC-B 10-TFQ-H-O1PG21G**	**1460074**	10	
		1 x Pg29	**HC-B 10-TFQ-H-O1PG29G**	**1460076**	10	
Cable entry: lateral **Height: 56 mm**	1 x M20		**HC-B 10-TFQ-N-O1STM20S**	**1460062**	10	
	1 x M25		**HC-B 10-TFQ-N-O1STM25S**	**1460067**	10	
		1 x Pg16	**HC-B 10-TFQ-N-O1PG16S**	**1460068**	10	
Cable entry: lateral **Height: 72 mm**	1 x M25		**HC-B 10-TFQ-H-O1STM25S**	**1460081**	10	
	1 x M32		**HC-B 10-TFQ-H-O1STM32S**	**1460083**	10	
		1 x Pg21	**HC-B 10-TFQ-H-O1PG21S**	**1460075**	10	
		1 x Pg29	**HC-B 10-TFQ-H-O1PG29S**	**1460077**	10	

Notes:

For further accessories, see from page 552

Accessories



Screw connections
From page 552



Pressure screw set
From page 556

N

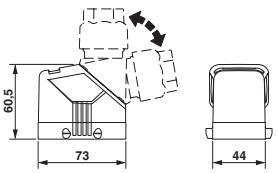
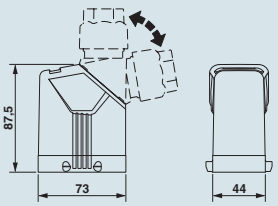
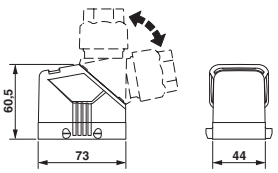
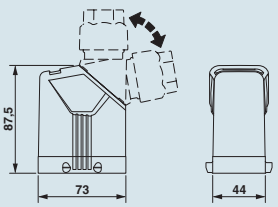
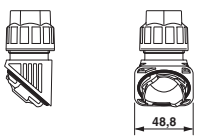
Type B10, plastic, EVO sleeve housing for double locking latch



Technical data

General data	
Housing material	Polyamide
Surface material	-
Locking latch material	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top/lateral Height: 60.5 mm 		**HC-EVO-B10-HLFD-PLBK**	**1407628**	1	
Cable entry: top/lateral Height: 87.5 mm 		**HC-EVO-B10-HHFD-PLBK**	**1407629**	1	
Cable entry: top/lateral Height: 60.5 mm 		**HC-EVO-B10-HLFD-PLBK**	**1407628**	1	
Cable entry: top/lateral Height: 87.5 mm 		**HC-EVO-B10-HHFD-PLBK**	**1407629**	1	
Cable gland 	1 x M20 1 x M25 1 x M32 1 x M40	**HC-B-G-M20-PLRBK** **HC-B-G-M25-PLRBK** **HC-B-G-M32-PLRBK** **HC-B-G-M40-PLRBK**	**1407669** **1407670** **1407671** **1407672**	1 1 1 1	
Plug-in connector set 		Push-in connection **HC-EVO-B10PT-BWD-HL-M25-PLRBK**	**1407711**	1	

Notes:
For further accessories, see from page 552
Corresponding marking label: US-EMP (20X9), Order No. 0829439

Accessories



Protective cover
From page 578



Corrugated pipe adapter
From page 584

Type B10, metal, supporting base element with double locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	Stainless steel, handle: PA
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65 protection when the connector is inserted

Ordering data

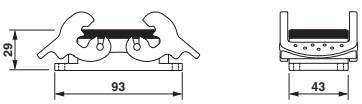
Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 29 mm**		**HC-B 10-AMQ**	**1771325**	10	
Box mounting base **Height: 52 mm**	1 x M20	**HC-B 10-SMQ-52/O1M20**	**1604752**	10	
	1 x Pg16	**HC-B 10-SMQ-52/O1PG16**	**1673481**	10	
	2 x M20	**HC-B 10-SMQ-52/O2M20**	**1604753**	10	
	2 x M25	**HC-B 10-SMQ-52/O2M25**	**1604754**	10	
	2 x Pg16	**HC-B 10-SMQ-52/O2PG16**	**1673494**	10	
Box mounting base **Height: 74 mm**	1 x M25	**HC-B 10-SMQ-74/O1M25**	**1604755**	10	
	1 x M32	**HC-B 10-SMQ-74/O1M32**	**1604756**	10	
	1 x Pg21	**HC-B 10-SMQ-74/O1PG21**	**1677717**	10	
	1 x Pg29	**HC-B 10-SMQ-74/O1PG29**	**1678415**	10	
	2 x M25	**HC-B 10-SMQ-74/O2M25**	**1604757**	10	
	2 x M32	**HC-B 10-SMQ-74/O2M32**	**1645820**	10	
	2 x Pg21	**HC-B 10-SMQ-74/O2PG21**	**1677720**	10	
	2 x Pg29	**HC-B 10-SMQ-74/O2PG29**	**1678444**	10	
Coupling housing **Height: 62 mm**	1 x M20	**HC-B 10-KMQ-N-O1STM20**	**1460151**	10	
	1 x Pg16	**HC-B 10-KMQ-N-O1PG16**	**1460042**	10	

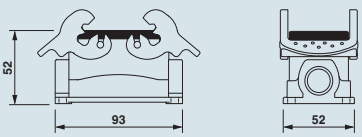


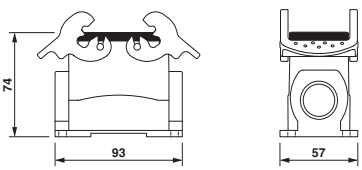


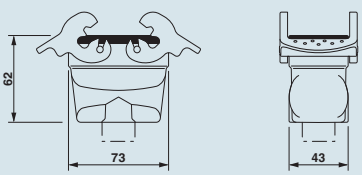












Notes:

For further accessories, see from page 552

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

N

Type B10, plastic, EVO supporting base element with double locking latch



Technical data

General data	
Housing material	Polyamide
Surface material	-
Locking latch material	Polyamide
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65 protection when the connector is inserted

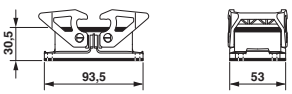
Ordering data

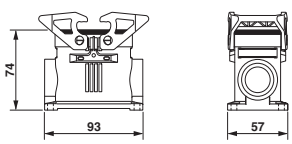
Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 30.5 mm**		**HC-EVO-B10-BWD-PLRBK**	**1407634**	1	
Box mounting base **Height: 74 mm**	2 x M32	**HC-EVO-B10-SHWD-2SSM32-PLRBK**	**1407638**	1	
Coupling housing **Height: 90 mm**		**HC-EVO-B10-CHWD-PLRBK**	**1407641**	1	
		Cable gland			
	1 x M40	**HC-B-G-M40-PLRBK**	**1407672**	1	
	1 x M32	**HC-B-G-M32-PLRBK**	**1407671**	1	
	1 x M25	**HC-B-G-M25-PLRBK**	**1407670**	1	
	1 x M20	**HC-B-G-M20-PLRBK**	**1407669**	1	

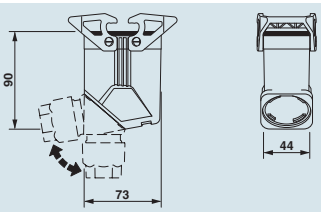












Notes:
For further accessories, see from page 552
Corresponding marking label: US-EMP (20X9), Order No. 0829439
Replacement hinged cover: Order No. 1407693

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

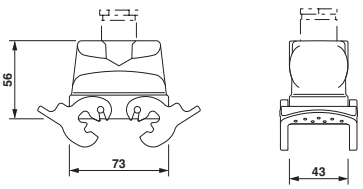
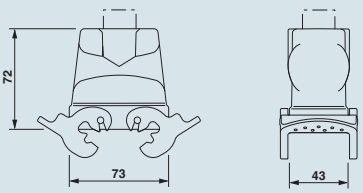
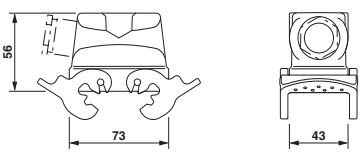
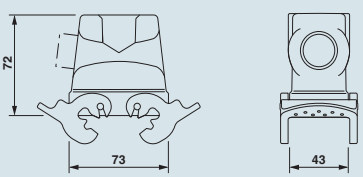
Type B10, metal, sleeve housing with double locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	Stainless steel, handle: PA
Sealing material	-
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

Description			Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top **Height: 56 mm**	1 x M20		**HC-B 10-TMQ-N-O1STM20G**	**1460088**	10	
		1 x Pg16	**HC-B 10-TMQ-N-M1PG16G**	**1460086**	10	
Cable entry: top **Height: 72 mm**	1 x M25		**HC-B 10-TMQ-H-O1STM25G**	**1460097**	10	
						
Cable entry: lateral **Height: 56 mm**		1 x Pg16	**HC-B 10-TMQ-N-M1PG16S**	**1460090**	10	
						
Cable entry: lateral **Height: 72 mm**	1 x M20		**HC-B 10-TMQ-H-O1STM20S**	**1460096**	10	
	1 x M25		**HC-B 10-TMQ-H-O1STM25S**	**1460098**	10	

Notes:

For further accessories, see from page 552

Accessories



Screw connections
From page 552



Pressure screw set
From page 556

N

Type B10, plastic, EVO sleeve housing with double locking latch



Technical data

General data	
Housing material	Polyamide
Surface material	-
Locking latch material	Polyamide
Sealing material	-
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top/lateral **Height: 60.5 mm**		**HC-EVO-B10-HLWD-PLBK**	**1407630**	1	
Cable entry: top/lateral **Height: 87.5 mm**		**HC-EVO-B10-HHWD-PLBK**	**1407631**	1	
Cable entry: top/lateral **Height: 60.5 mm**		**HC-EVO-B10-HLWD-PLBK**	**1407630**	1	
Cable entry: top/lateral **Height: 87.5 mm**		**HC-EVO-B10-HHWD-PLBK**	**1407631**	1	
Cable gland	1 x M20 1 x M25 1 x M32 1 x M40	**HC-B-G-M20-PLRBK** **HC-B-G-M25-PLRBK** **HC-B-G-M32-PLRBK** **HC-B-G-M40-PLRBK**	**1407669** **1407670** **1407671** **1407672**	1 1 1 1	

Notes:

For further accessories, see from page 552

Corresponding marking label: US-EMP (20X9), Order No. 0829439

Accessories



Replacement latch
From page 570



Protective cover
From page 578



Corrugated pipe adapter
From page 584

Type B10, metal, supporting base element for double locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	-
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65 protection when the connector is inserted

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base with cover **Height: 29 mm**		**HC-B 10-AFQD**	**1771341**	10	
Box mounting base with cover **Height: 52 mm**	1 x M20	**HC-B 10-SFQD-52/O1M20**	**1646489**	10	
	1 x Pg16	**HC-B 10-SFQD-52/O1PG16**	**1673423**	10	
	2 x M20	**HC-B 10-SFQD-52/O2M20**	**1646492**	10	
	2 x M25	**HC-B 10-SFQD-52/O2M25**	**1604748**	10	
	2 x Pg16	**HC-B 10-SFQD-52/O2PG16**	**1673436**	5	
Box mounting base with cover **Height: 74 mm**	1 x M25	**HC-B 10-SFQD-74/O1M25**	**1646502**	10	
	1 x M32	**HC-B 10-SFQD-74/O1M32**	**1646528**	10	
	2 x M25	**HC-B 10-SFQD-74/O2M25**	**1646515**	10	
	2 x M32	**HC-B 10-SFQD-74/O2M32**	**1646531**	10	

Notes:

For further accessories, see from page 552

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

N

Type B10, plastic, EVO supporting base element for double locking latch



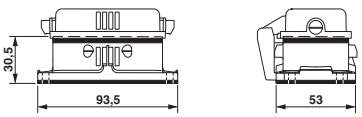
Technical data

General data	
Housing material	Polyamide
Surface material	-
Locking latch material	-
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65 protection when the connector is inserted

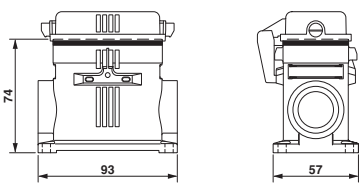
Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base with cover **Height: 30.5 mm**		**HC-EVO-B10-BFDC-PLRBK**	**1407635**	1	
Box mounting base with cover **Height: 74 mm**	2 x M32	**HC-EVO-B10-SHFDC-2SSM32-PLRBK**	**1407639**	1	









Notes:
For further accessories, see from page 552
Corresponding marking label: US-EMP (20X9), Order No. 0829439
Replacement hinged cover: Order No. 1407693

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

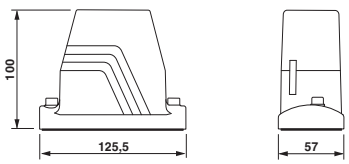
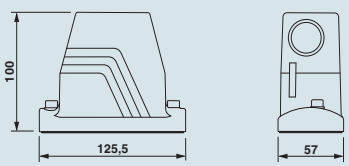
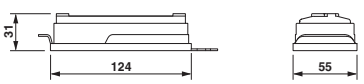
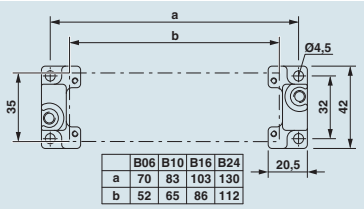
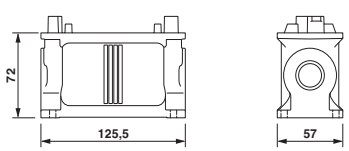
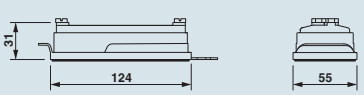
Type B16, metal, ADVANCE sleeve housing, STA - standard



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Material, lock	Stainless steel
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65 / IP68 (0.2 bar, 24h) / IP69K

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top[1]) **Height: 100 mm** 	1 x M25 1 x M32 1 x M40	**HC-B 16-TMS-100/O1STM25G-STA** **HC-B 16-TMS-100/O1STM32G-STA** **HC-B 16-TMS-100/O1STM40G-STA**	**1644630** **1690202** **1690286**	10 10 10	
Cable entry: lateral[1]) **Height: 100 mm** 	1 x M25 1 x M32 1 x M40	**HC-B 16-TMS-100/O1STM25S-STA** **HC-B 16-TMS-100/O1STM32S-STA** **HC-B 16-TMS-100/O1STM40S-STA**	**1644643** **1690244** **1690325**	10 10 10	
IP50 protective cover 		For the sleeve side **HC-B 16-TMS-SD-IP50**	**1690752**	10	
Panel mounting flange[2]) 		2 pcs. per housing **HC-B-AF** Set with 2 panel mounting flanges **HC-B-AF-SET**	 **1686533** **1604638**	 20 1	 B06 B10 B16 B24 a 70 83 103 130 b 52 65 86 112
Box mounting base **Height: 72 mm** 	2 x M32	**HC-ADV-B16-SHFH-2STM32-EEE**	**1408850**	1	
IP65 protective cover 		For the panel mounting side **HC-B 16-TMS-SD-IP65**	**1690794**	10	

Notes:

Pozidriv®
Trademark of European Ind. Serv. Ltd.

[1]) Screw locking with M6 Pozidriv® screws

[2]) Bore hole Ø 4.5 mm when using M4 screws, bore hole Ø 3.6 mm when using self-tapping M4 screws (Torx®)

Accessories



Screw connections
From page 552

Type B16, metal, ADVANCE sleeve housing, EEE - offshore/EMC



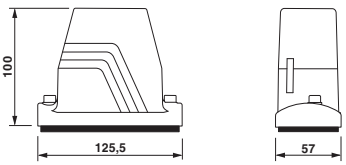
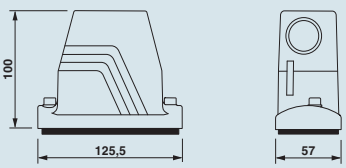
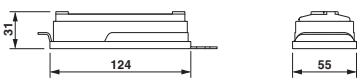
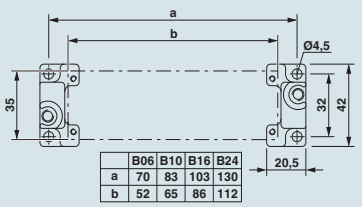
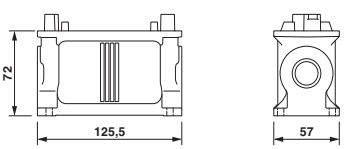
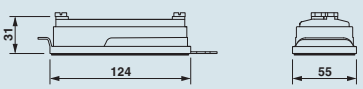




Technical data

General data	
Housing material	Die-cast aluminum, salt water resistant
Surface material	Uncoated
Material, lock	Stainless steel
Sealing material	NBR, conductive
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65 / IP68 (0.2 bar, 24h) / IP69K

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top[1]) **Height: 100 mm**	1 x M32 1 x M40	**HC-B 16-TMS-100/O1STM32G-EEE** **HC-B 16-TMS-100/O1STM40G-EEE**	**1587661** **1580507**	10 10	
					
Cable entry: lateral[1]) **Height: 100 mm**	1 x M32 1 x M40	**HC-B 16-TMS-100/O1STM32S-EEE** **HC-B 16-TMS-100/O1STM40S-EEE**	**1587674** **1460358**	10 10	
					
IP50 protective cover		For the sleeve side **HC-B 16-TMS-SD-IP50**	**1690752**	10	
					
Panel mounting flange[2])		2 pcs. per housing **HC-B-AF** Set with 2 panel mounting flanges **HC-B-AF-SET**	 **1686533** **1604638**	 20 1	
					
Box mounting base **Height: 72 mm**	2 x M32	**HC-ADV-B16-SHFH-2STM32-EEE**	**1408850**	1	
					
IP65 protective cover		For the panel mounting side **HC-B 16-TMS-SD-IP65**	**1690794**	10	
					

	B06	B10	B16	B24
a	70	83	103	130
b	52	65	86	112

Notes:

In order to achieve optimum shielding results, the mounting surface must be conductive

[1]) Screw locking with M6 Allen screws

[2]) Bore hole Ø 4.5 mm when using M4 screws, bore hole Ø 3.6 mm when using self-tapping M4 screws (Torx®)

Accessories



Screw connections
From page 552

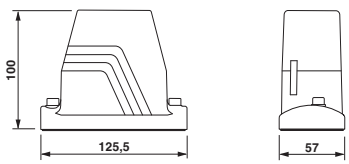
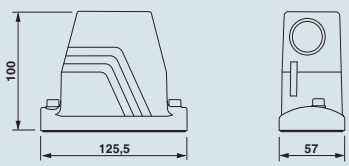
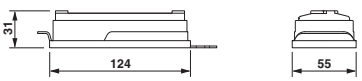
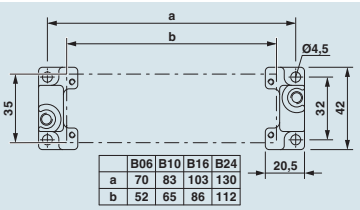
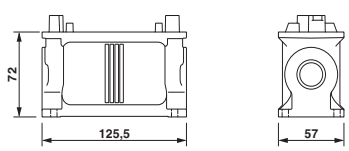
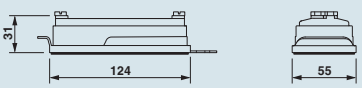
Type B16, metal, ADVANCE sleeve housing, EUA - increased environmental requirements



Technical data

General data	
Housing material	Die-cast aluminum, salt water resistant
Surface material	Powder-coated, black
Material, lock	Stainless steel
Sealing material	Viton
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65 / IP68 (0.2 bar, 24h) / IP69K

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top[1]) **Height: 100 mm** 	1 x M32 1 x M40	**HC-B 16-TMS-100/O1STM32G-EUA** **HC-B 16-TMS-100/O1STM40G-EUA**	**1690192** **1690273**	10 10	
Cable entry: lateral[1]) **Height: 100 mm** 	1 x M32 1 x M40	**HC-B 16-TMS-100/O1STM32S-EUA** **HC-B 16-TMS-100/O1STM40S-EUA**	**1690231** **1690312**	10 10	
IP50 protective cover 		For the sleeve side **HC-B 16-TMS-SD-IP50**	**1690752**	10	
Panel mounting flange[2]) 		2 pcs. per housing **HC-B-AF** Set with 2 panel mounting flanges **HC-B-AF-SET**	 **1686533** **1604638**	 20 1	
Box mounting base **Height: 72 mm** 	2 x M32	**HC-ADV-B16-SHFH-2STM32-EEE**	**1408850**	1	
IP65 protective cover 		For the panel mounting side **HC-B 16-TMS-SD-IP65**	**1690794**	10	

Notes:

Pozidriv®
Trademark of European Ind. Serv. Ltd.

[1]) Screw locking with M6 Pozidriv® screws

[2]) Bore hole Ø 4.5 mm when using M4 screws, bore hole Ø 3.6 mm when using self-tapping M4 screws (Torx®)

Accessories



Screw connections
From page 552

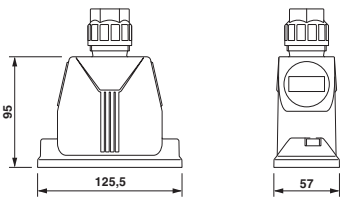
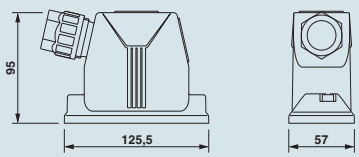
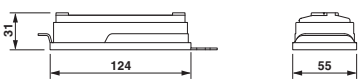
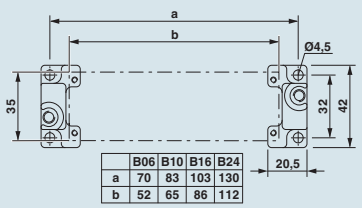
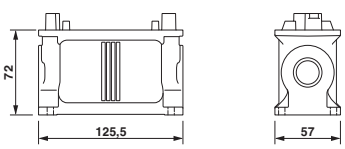
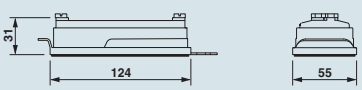
Type B16, plastic, ADVANCE PL sleeve housing with cable gland



Technical data

General data	
Housing material	Polyamide
Surface material	-
Material, lock	V2A
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65/67

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top[1]) **Height: 95 mm** 	1 x M32 1 x M40	**HC-ADV-B16-HHWH-1TGM32-PL** **HC-ADV-B16-HHWH-1TGM40-PL**	**1404231** **1404233**	1 1	
Cable entry: lateral[1]) **Height: 95 mm** 	1 x M32 1 x M40	**HC-ADV-B16-HHWH-1SGM32-PL** **HC-ADV-B16-HHWH-1SGM40-PL**	**1404232** **1404234**	1 1	
IP50 protective cover 		For the sleeve side **HC-B 16-TMS-SD-IP50**	**1690752**	10	
Panel mounting flange[2]) 		2 pcs. per housing **HC-B-AF** Set with 2 panel mounting flanges **HC-B-AF-SET**	 **1686533** **1604638**	 20 1	 B06 B10 B16 B24 a 70 83 103 130 b 52 65 86 112
Box mounting base **Height: 72 mm** 	2 x M32	**HC-ADV-B16-SHFH-2STM32-EEE**	**1408850**	1	
IP65 protective cover 		For the panel mounting side **HC-B 16-TMS-SD-IP65**	**1690794**	10	

Notes:

For further accessories, see from page 552

[1]) Corresponding marking label: US-EMP (20X9), Order No. 0829439

[2]) Bore hole Ø 4.5 mm when using M4 screws, bore hole Ø 3.6 mm when using self-tapping M4 screws (Torx®)

Accessories



Screw connections
From page 552

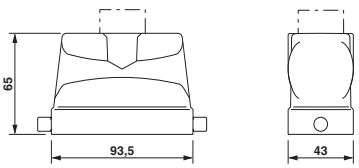
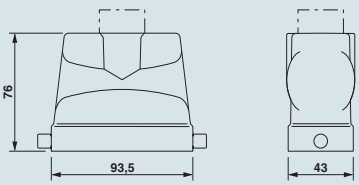
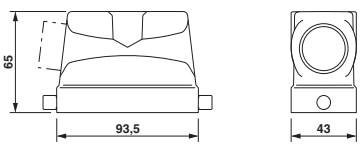
Type B16, metal, sleeve housing for single locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

Description			Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top **Height: 65 mm**	1 x M25		**HC-B 16-TFL-N-O1STM25G**	**1460100**	10	
	1 x M32		**HC-B 16-TFL-N-O1STM32G**	**1460095**	10	
		1 x Pg21	**HC-B 16-TFL-N-O1PG21G**	**1460101**	10	
Cable entry: top **Height: 76 mm**	1 x M32		**HC-B 16-TFL-H-O1STM32G**	**1460124**	10	
	1 x M40		**HC-B 16-TFL-H-O1STM40G**	**1460126**	10	
		1 x Pg21	**HC-B 16-TFL-H-O1PG21G**	**1460118**	10	
		1 x Pg29	**HC-B 16-TFL-H-O1PG29G**	**1460120**	10	
Cable entry: lateral **Height: 65 mm**	1 x M25		**HC-B 16-TFL-N-O1STM25S**	**1460102**	10	
	1 x M32		**HC-B 16-TFL-N-O1STM32S**	**1460109**	10	
		1 x Pg21	**HC-B 16-TFL-N-O1PG21S**	**1460103**	10	
Cable entry: lateral **Height: 76 mm**	1 x M32		**HC-B 16-TFL-H-O1STM32S**	**1460125**	10	
	1 x M40		**HC-B 16-TFL-H-O1STM40S**	**1460127**	10	
		1 x Pg21	**HC-B 16-TFL-H-O1PG21S**	**1460119**	10	
		1 x Pg29	**HC-B 16-TFL-H-O1PG29S**	**1460121**	10	

Notes:

For further accessories, see from page 552

Accessories



Screw connections
From page 552



Pressure screw set
From page 556

N

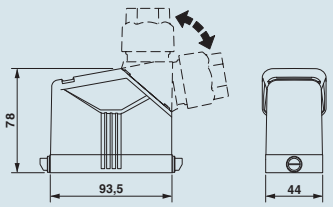
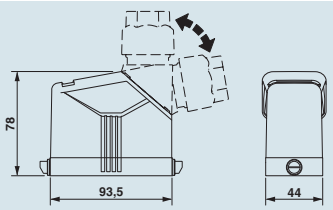
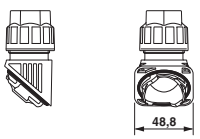
Type B16, plastic, EVO sleeve housing for single locking latch



Technical data

General data	
Housing material	Polyamide
Surface material	-
Locking latch material	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top/lateral Height: 76 mm 		**HC-EVO-B16-HHFS-PLBK**	**1407642**	1	
Cable entry: top/lateral Height: 76 mm 		**HC-EVO-B16-HHFS-PLBK**	**1407642**	1	
Cable gland 	1 x M20 1 x M25 1 x M32 1 x M40	**HC-B-G-M20-PLRBK** **HC-B-G-M25-PLRBK** **HC-B-G-M32-PLRBK** **HC-B-G-M40-PLRBK**	**1407669** **1407670** **1407671** **1407672**	1 1 1 1	
Plug-in connector set 		Push-in connection **HC-EVO-B16PT-BWSC-HH-M25-PLRBK**	**1408793**	1	

Notes:

For further accessories, see from page 552

Corresponding marking label: US-EMP (20X9), Order No. 0829439

Accessories



Protective cover
From page 578



Corrugated pipe adapter
From page 584

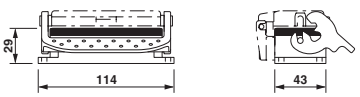
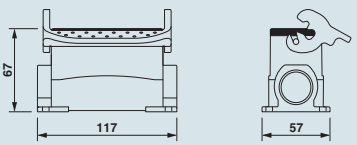
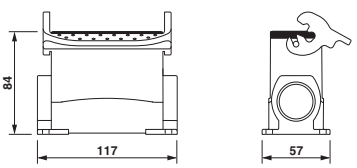
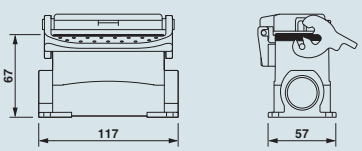
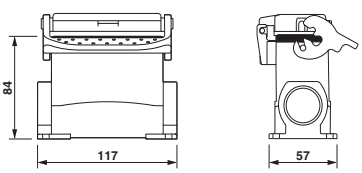
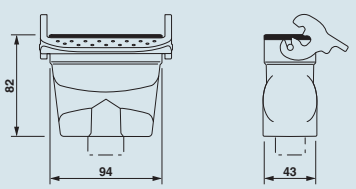
Type B16, metal, supporting base element with single locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	Stainless steel, handle: PA
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65 protection when the connector is inserted

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 29 mm**		Without cover **HC-B 16-AML** With plastic cover **HC-B 16-AMLD** With metal cover **HC-B 16-AMLD-AL**	 **1771590** **1771613** **1645480**	 10 10 10	
Box mounting base **Height: 67 mm**	1 x M25 1 x Pg21 2 x M25 2 x Pg21	**HC-B 16-SML-67/O1M25** **HC-B 16-SML-67/O1PG21** **HC-B 16-SML-67/O2M25** **HC-B 16-SML-67/O2PG21**	**1604784** **1673698** **1604785** **1673708**	10 10 10 10	
Box mounting base **Height: 84 mm**	1 x M32 1 x M40 1 x Pg21 1 x Pg29 2 x M32 2 x M40 2 x Pg21 2 x Pg29	**HC-B 16-SML-84/O1M32** **HC-B 16-SML-84/O1M40** **HC-B 16-SML-84/O1PG21** **HC-B 16-SML-84/O1PG29** **HC-B 16-SML-84/O2M32** **HC-B 16-SML-84/O2M40** **HC-B 16-SML-84/O2PG21** **HC-B 16-SML-84/O2PG29**	**1646299** **1646311** **1677869** **1677843** **1646308** **1646324** **1677872** **1677856**	10 10 10 10 10 10 5 10	
Box mounting base with cover **Height: 67 mm**	1 x M25 1 x Pg21 2 x M25 2 x Pg21	**HC-B 16-SMLD-67/O1M25** **HC-B 16-SMLD-67/O1PG21** **HC-B 16-SMLD-67/O2M25** **HC-B 16-SMLD-67/O2PG21**	**1604786** **1673711** **1604787** **1673724**	10 10 10 10	
Box mounting base with cover **Height: 84 mm**	1 x M32 1 x M40 1 x Pg21 1 x Pg29 2 x M32 2 x M40 2 x Pg21 2 x Pg29	**HC-B 16-SMLD-84/O1M32** **HC-B 16-SMLD-84/O1M40** **HC-B 16-SMLD-84/O1PG21** **HC-B 16-SMLD-84/O1PG29** **HC-B 16-SMLD-84/O2M32** **HC-B 16-SMLD-84/O2M40** **HC-B 16-SMLD-84/O2PG21** **HC-B 16-SMLD-84/O2PG29**	**1645671** **1645697** **1677908** **1677885** **1645684** **1645707** **1677911** **1677898**	10 10 10 10 10 10 10 10	
Coupling housing **Height: 82 mm**	1 x M32 1 x M40 1 x Pg21 1 x Pg29	**HC-B 16-KML-H-O1STM32** **HC-B 16-KML-H-O1STM40** **HC-B 16-KML-H-O1PG21** **HC-B 16-KML-H-O1PG29**	**1460172** **1460309** **1460306** **1460307**	10 10 10 10	

Notes:

For further accessories, see from page 552

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

N

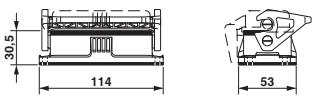
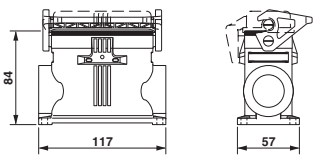
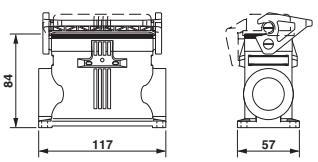
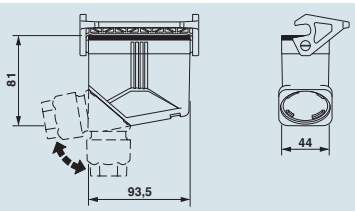
Type B16, plastic, EVO supporting base element with single locking latch



Technical data

General data	
Housing material	Polyamide
Surface material	-
Locking latch material	Polyamide
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65 protection when the connector is inserted

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 30.5 mm** 		Without cover **HC-EVO-B16-BWS-PLRBK** With cover **HC-EVO-B16-BWSC-PLRBK**	 **1407646** **1407647**	 1 1	
Box mounting base **Height: 84 mm**	2 x M40	**HC-EVO-B16-SHWS-2SSM40-PLRBK**	**1407650**	1	
Box mounting base with cover **Height: 84 mm**	2 x M40	**HC-EVO-B16-SHWSC-2SSM40-PLRBK**	**1407651**	1	
Coupling housing **Height: 81 mm** 	 1 x M40 1 x M32 1 x M25 1 x M20	**HC-EVO-B16-CHWS-PLRBK** Cable gland **HC-B-G-M40-PLRBK** **HC-B-G-M32-PLRBK** **HC-B-G-M25-PLRBK** **HC-B-G-M20-PLRBK**	**1407654** **1407672** **1407671** **1407670** **1407669**	1 1 1 1 1	

Notes:

For further accessories, see from page 552

Corresponding marking label: US-EMP (20X9), Order No. 0829439

Replacement hinged cover: Order No. 1407694

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

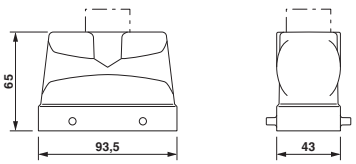
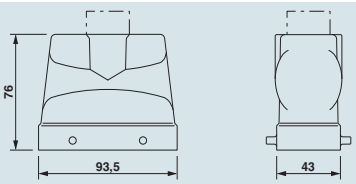
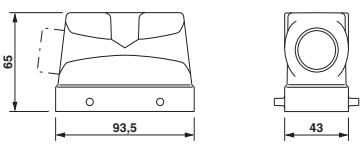
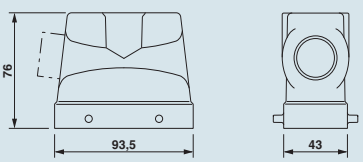
Type B16, metal, sleeve housing for double locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

Description			Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top **Height: 65 mm**	1 x M25		**HC-B 16-TFQ-N-O1STM25G**	**1460128**	10	
	1 x M32		**HC-B 16-TFQ-N-O1STM32G**	**1460134**	10	
		1 x Pg21	**HC-B 16-TFQ-N-O1PG21G**	**1460129**	10	
Cable entry: top **Height: 76 mm**	1 x M32		**HC-B 16-TFQ-H-O1STM32G**	**1460155**	10	
	1 x M40		**HC-B 16-TFQ-H-O1STM40G**	**1460157**	10	
		1 x Pg21	**HC-B 16-TFQ-H-O1PG21G**	**1460146**	10	
		1 x Pg29	**HC-B 16-TFQ-H-O1PG29G**	**1460148**	10	
Cable entry: lateral **Height: 65 mm**	1 x M25		**HC-B 16-TFQ-N-O1STM25S**	**1460130**	10	
	1 x M32		**HC-B 16-TFQ-N-O1STM32S**	**1460160**	10	
		1 x Pg21	**HC-B 16-TFQ-N-O1PG21S**	**1460131**	10	
Cable entry: lateral **Height: 76 mm**	1 x M32		**HC-B 16-TFQ-H/O1STM32S**	**1409354**	10	
	1 x M40		**HC-B 16-TFQ-H-O1STM40S**	**1460158**	10	
		1 x Pg21	**HC-B 16-TFQ-H-O1PG21S**	**1460147**	10	
		1 x Pg29	**HC-B 16-TFQ-H-O1PG29S**	**1460149**	10	

Notes:

For further accessories, see from page 552

Accessories



Screw connections
From page 552



Pressure screw set
From page 556

N

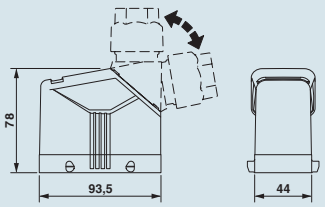
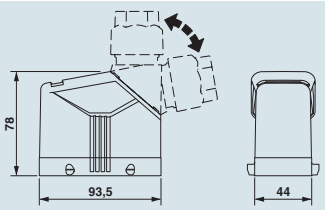
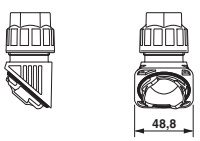
Type B16, plastic, EVO sleeve housing for double locking latch



Technical data

General data	
Housing material	Polyamide
Surface material	-
Locking latch material	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top/lateral Height: 78 mm 		**HC-EVO-B16-HHFD-PLBK**	**1407643**	1	
Cable entry: top/lateral Height: 78 mm 		**HC-EVO-B16-HHFD-PLBK**	**1407643**	1	
Cable gland 	1 x M20 1 x M25 1 x M32 1 x M40	**HC-B-G-M20-PLRBK** **HC-B-G-M25-PLRBK** **HC-B-G-M32-PLRBK** **HC-B-G-M40-PLRBK**	**1407669** **1407670** **1407671** **1407672**	1 1 1 1	
Plug-in connector set 		Push-in connection **HC-EVO-B16PT-BWD-HH-M25-PLRBK**	**1407712**	1	

Notes:

For further accessories, see from page 552

Corresponding marking label: US-EMP (20X9), Order No. 0829439

Accessories



Protective cover
From page 578



Corrugated pipe adapter
From page 584

Type B16, metal, supporting base element with double locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	Stainless steel, handle: PA
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

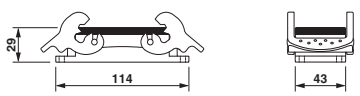
Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 29 mm**		Without cover **HC-B 16-AMQ**	**1771587**	10	
Box mounting base **Height: 67 mm**	1 x M25	**HC-B 16-SMQ-67/O1M25**	**1604788**	10	
	1 x M32	**HC-B 16-SMQ-67/O1M32**	**1604789**	10	
	1 x Pg21	**HC-B 16-SMQ-67/O1PG21**	**1673740**	10	
	2 x M25	**HC-B 16-SMQ-67/O2M25**	**1604790**	10	
	2 x M32	**HC-B 16-SMQ-67/O2M32**	**1604791**	10	
	2 x Pg21	**HC-B 16-SMQ-67/O2PG21**	**1673753**	10	
Box mounting base **Height: 84 mm**	1 x M32	**HC-B 16-SMQ-84/O1M32**	**1604793**	10	
	1 x Pg21	**HC-B 16-SMQ-84/O1PG21**	**1677924**	10	
	1 x Pg29	**HC-B 16-SMQ-67/O1PG29**	**1678428**	10	
	2 x M32	**HC-B 16-SMQ-84/O2M32**	**1604794**	10	
	2 x Pg21	**HC-B 16-SMQ-84/O2PG21**	**1677937**	10	
	2 x Pg29	**HC-B 16-SMQ-67/O2PG29**	**1678457**	10	
Coupling housing **Height: 82 mm**	1 x M25	**HC-B 16-KMQ-H-O1STM25**	**1460315**	10	
	1 x M32	**HC-B 16-KMQ-H-O1STM32**	**1460312**	10	
	1 x Pg21	**HC-B 16-KMQ-H-O1PG21**	**1460313**	10	
	1 x Pg29	**HC-B 16-KMQ-H-O1PG29**	**1460314**	10	

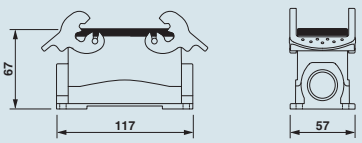


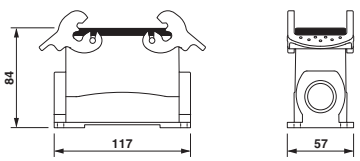


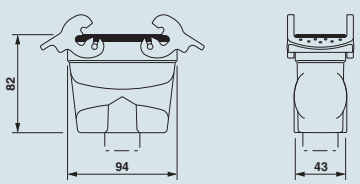












Notes:

For further accessories, see from page 552

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

N

Type B16, plastic, EVO supporting base element with double locking latch



Technical data

General data	
Housing material	Polyamide
Surface material	-
Locking latch material	Polyamide
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65 protection when the connector is inserted

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 30.5 mm**		Without cover **HC-EVO-B16-BWD-PLRBK**	**1407648**	1	
Box mounting base **Height: 84 mm**	2 x M40	**HC-EVO-B16-SHWD-2SSM40-PLRBK**	**1407652**	1	
Coupling housing **Height: 84 mm**		**HC-EVO-B16-CHWD-PLRBK**	**1407655**	1	
		Cable gland			
	1 x M40	**HC-B-G-M40-PLRBK**	**1407672**	1	
	1 x M32	**HC-B-G-M32-PLRBK**	**1407671**	1	
	1 x M25	**HC-B-G-M25-PLRBK**	**1407670**	1	
	1 x M20	**HC-B-G-M20-PLRBK**	**1407669**	1	

Notes:
For further accessories, see from page 552
Corresponding marking label: US-EMP (20X9), Order No. 0829439
Replacement hinged cover: Order No. 1407694

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

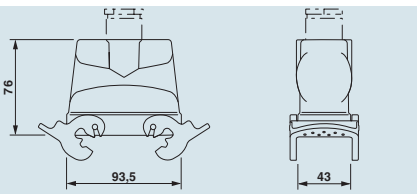
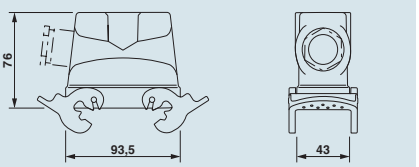
Type B16, metal, sleeve housing with double locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	Stainless steel, handle: PA
Sealing material	-
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

Description		Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top **Height: 76 mm**	1 x Pg21 1 x Pg29	**HC-B 16-TMQ-H-M1PG21G** **HC-B 16-TMQ-H-M1PG29G**	**1460170** **1460173**	10 10	
Cable entry: lateral **Height: 76 mm**	1 x M25 1 x M32 1 x Pg21 1 x Pg29	**HC-B 16-TMQ-H-O1STM25S** **HC-B 16-TMQ-H-O1STM32S** **HC-B 16-TMQ-H-M1PG21S** **HC-B 16-TMQ-H-M1PG29S**	**1460182** **1460184** **1460171** **1460175**	10 10 10 10	

Notes:

For further accessories, see from page 552

Accessories



Screw connections
From page 552



Pressure screw set
From page 556

N

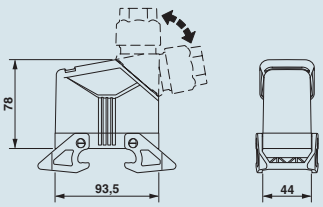
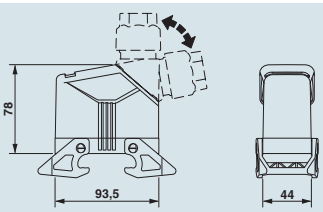
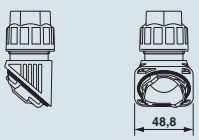
Type B16, plastic, EVO sleeve housing with double locking latch



Technical data

General data	
Housing material	Polyamide
Surface material	-
Locking latch material	Polyamide
Sealing material	-
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top/lateral Height: 78 mm 		**HC-EVO-B16-HHWD-PLBK**	**1407644**	1	
Cable entry: top/lateral Height: 78 mm 		**HC-EVO-B16-HHWD-PLBK**	**1407644**	1	
Cable gland 	1 x M20 1 x M25 1 x M32 1 x M40	**HC-B-G-M20-PLRBK** **HC-B-G-M25-PLRBK** **HC-B-G-M32-PLRBK** **HC-B-G-M40-PLRBK**	**1407669** **1407670** **1407671** **1407672**	1 1 1 1	

Notes:

For further accessories, see from page 552

Corresponding marking label: US-EMP (20X9), Order No. 0829439

Accessories



Replacement latch
From page 570



Protective cover
From page 578



Corrugated pipe adapter
From page 584

Type B16, metal, supporting base element for double locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	-
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65 protection when the connector is inserted

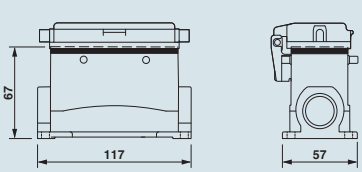
Ordering data

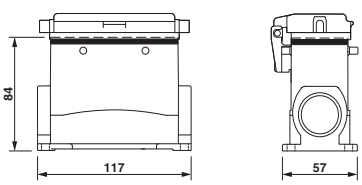
Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base with cover **Height: 29 mm**		**HC-B 16-AFQD**	**1771600**	10	
Box mounting base with cover **Height: 67 mm**	1 x M25	**HC-B 16-SFQD-68/O1M25**	**1646366**	10	
	1 x Pg21	**HC-B 16-SFQD-67/O1PG21**	**1673672**	10	
	2 x M25	**HC-B 16-SFQD-67/O2M25**	**1604783**	10	
	2 x Pg21	**HC-B 16-SFQD-67/O2PG21**	**1673685**	10	
Box mounting base with cover **Height: 84 mm**	1 x M32	**HC-B 16-SFQD-84/O1M32**	**1645655**	10	
	2 x M32	**HC-B 16-SFQD-84/O2M32**	**1645668**	10	











Notes:

For further accessories, see from page 552

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

N

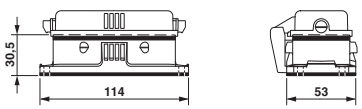
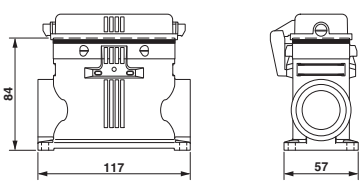
Type B16, plastic, EVO supporting base element for double locking latch



Technical data

General data	
Housing material	Polyamide
Surface material	-
Locking latch material	-
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65 protection when the connector is inserted

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base with cover **Height: 30.5 mm** 		**HC-EVO-B16-BFDC-PLRBK**	**1407649**	1	
Box mounting base with cover **Height: 84 mm** 	2 x M25	**HC-EVO-B16-SHFDC-2SSM40-PLRBK**	**1407653**	1	

Notes:
For further accessories, see from page 552
Corresponding marking label: US-EMP (20X9), Order No. 0829439
Replacement hinged cover: Order No. 1407694

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

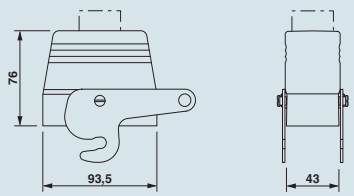
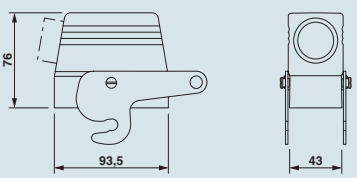
Type B16, metal, sleeve housing for central locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	Steel, galvanized
Sealing material	-
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

Description		Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top **Height: 76 mm** 	1 x M32	**HC-B 16-TMZ-76/O1STM32G**	**1584635**	10	
Cable entry: lateral **Height: 76 mm** 	1 x M32	**HC-B 16-TMZ-76/O1STM32S**	**1584648**	10	

Notes:

For further accessories, see from page 552

Accessories



Screw connections
From page 552



Pressure screw set
From page 556

Type B16, metal, supporting base element for central locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	-
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 29 mm**		**HC-B 16-AFZ**	**1584622**	10	
Box mounting base **Height: 84 mm**	1 x M32	**HC-B 16-SFZ-84/O1M32**	**1584619**	10	

Notes:

For further accessories, see from page 552

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

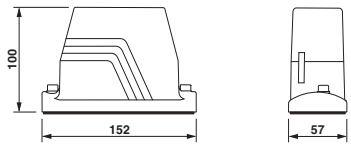
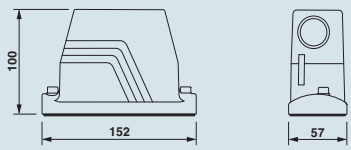
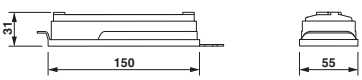
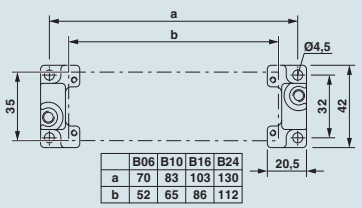
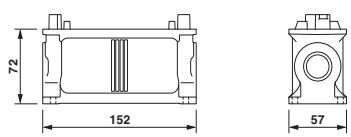
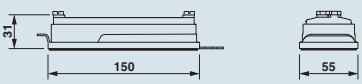
Type B24, metal, ADVANCE sleeve housing, STA - standard



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Material, lock	Stainless steel
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65 / IP68 (0.2 bar, 24h) / IP69K

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top[1]) **Height: 100 mm** 	1 x M32 1 x M40	**HC-B 24-TMS-100/O1STM32G-STA** **HC-B 24-TMS-100/O1STM40G-STA**	**1690367** **1690448**	10 10	
Cable entry: lateral[1]) **Height: 100 mm** 	1 x M32 1 x M40	**HC-B 24-TMS-100/O1STM32S-STA** **HC-B 24-TMS-100/O1STM40S-STA**	**1690406** **1690480**	10 10	
IP50 protective cover 		For the sleeve side **HC-B 24-TMS-SD-IP50**	**1690765**	10	
Panel mounting flange[2]) 		2 pcs. per housing **HC-B-AF** Set with 2 panel mounting flanges **HC-B-AF-SET**	 **1686533** **1604638**	 20 1	 | | B06 | B10 | B16 | B24 | | a | 70 | 83 | 103 | 130 | | b | 52 | 65 | 86 | 112 |
Box mounting base **Height: 72 mm** 	2 x M32 2 x M40	**HC-ADV-B24-SHFH-2STM32-EEE** **HC-ADV-B24-SHFH-2STM40-EEE**	**1408957** **1408973**	1 1	
IP65 protective cover 		For the panel mounting side **HC-B 24-TMS-SD-IP65**	**1690804**	10	

Notes:

Pozidriv®
Trademark of European Ind. Serv. Ltd.

[1]) Screw locking with M6 Pozidriv® screws

[2]) Bore hole Ø 4.5 mm when using M4 screws, bore hole Ø 3.6 mm when using self-tapping M4 screws (Torx®)

Accessories



Screw connections
From page 552

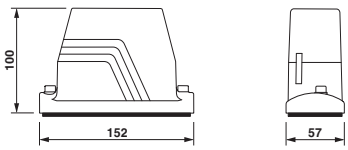
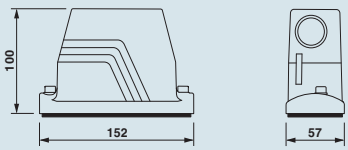
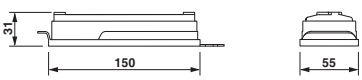
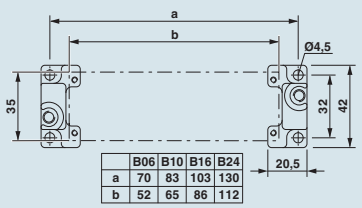
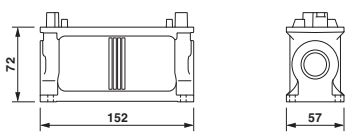
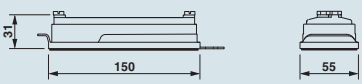
Type B24, metal, ADVANCE sleeve housing, EEE - offshore/EMC



Technical data

General data	
Housing material	Die-cast aluminum, salt water resistant
Surface material	Uncoated
Material, lock	Stainless steel
Sealing material	NBR, conductive
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65 / IP68 (0.2 bar, 24h) / IP69K

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top[1]) **Height: 100 mm**	1 x M32 1 x M40	**HC-B 24-TMS-100/O1STM32G-EEE** **HC-B 24-TMS-100/O1STM40G-EEE**	**1580504** **1460359**	10 10	
Cable entry: lateral[1]) **Height: 100 mm**	1 x M32 1 x M40	**HC-B 24-TMS-100/O1STM32S-EEE** **HC-B 24-TMS-100/O1STM40S-EEE**	**1587687** **1460360**	10 10	
IP50 protective cover		For the sleeve side **HC-B 24-TMS-SD-IP50**	**1690765**	10	
Panel mounting flange[2])		2 pcs. per housing **HC-B-AF** Set with 2 panel mounting flanges **HC-B-AF-SET**	**1686533** **1604638**	20 1	
Box mounting base **Height: 72 mm**	2 x M32 2 x M40	**HC-ADV-B24-SHFH-2STM32-EEE** **HC-ADV-B24-SHFH-2STM40-EEE**	**1408957** **1408973**	1 1	
IP65 protective cover		For the panel mounting side **HC-B 24-TMS-SD-IP65**	**1690804**	10	

Notes:

In order to achieve optimum shielding results, the mounting surface must be conductive

[1]) Screw locking with M6 Allen screws

[2]) Bore hole Ø 4.5 mm when using M4 screws, bore hole Ø 3.6 mm when using self-tapping M4 screws (Torx®)

Accessories



Screw connections
From page 552

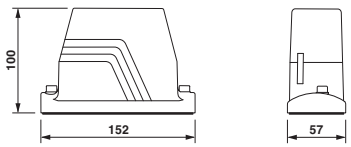
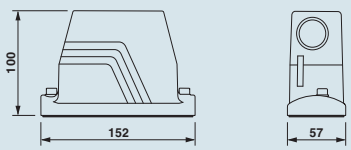
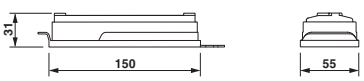
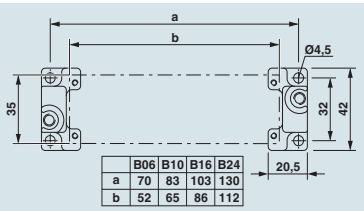
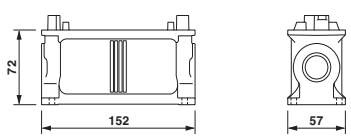
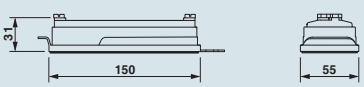
Type B24, metal, ADVANCE sleeve housing, EUA - increased environmental requirements



Technical data

General data	
Housing material	Die-cast aluminum, salt water resistant
Surface material	Powder-coated, black
Material, lock	Stainless steel
Sealing material	Viton
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65 / IP68 (0.2 bar, 24h) / IP69K

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top[1]) **Height: 100 mm** 	1 x M32 1 x M40	**HC-B 24-TMS-100/O1STM32G-EUA** **HC-B 24-TMS-100/O1STM40G-EUA**	**1690354** **1690435**	10 10	
Cable entry: lateral[1]) **Height: 100 mm** 	1 x M32 1 x M40	**HC-B 24-TMS-100/O1STM32S-EUA** **HC-B 24-TMS-100/O1STM40S-EUA**	**1690396** **1690477**	10 10	
IP50 protective cover 		For the sleeve side **HC-B 24-TMS-SD-IP50**	**1690765**	10	
Panel mounting flange[2]) 		2 pcs. per housing **HC-B-AF** Set with 2 panel mounting flanges **HC-B-AF-SET**	 **1686533** **1604638**	 20 1	 |	B06	B10	B16	B24 | | a | 70 | 83 | 103 | 130 | | b | 52 | 65 | 86 | 112 |
Box mounting base **Height: 72 mm** 	2 x M32 2 x M40	**HC-ADV-B24-SHFH-2STM32-EEE** **HC-ADV-B24-SHFH-2STM40-EEE**	**1408957** **1408973**	1 1	
IP65 protective cover 		For the panel mounting side **HC-B 24-TMS-SD-IP65**	**1690804**	10	

Notes:

[1]) Screw locking with M6 Pozidriv® screws

[2]) Bore hole Ø 4.5 mm when using M4 screws, bore hole Ø 3.6 mm when using self-tapping M4 screws (Torx®)

Accessories



Screw connections

From page 552

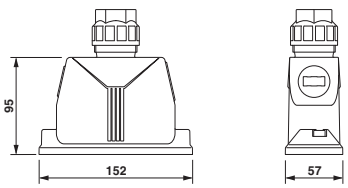
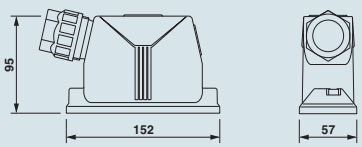
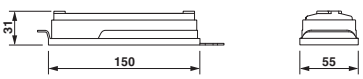
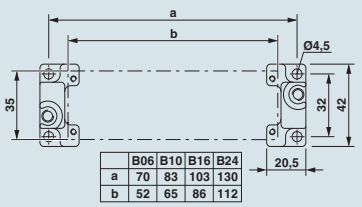
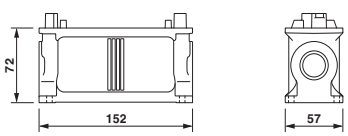
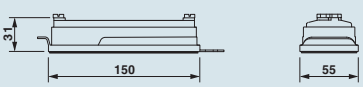
Type B24, plastic, ADVANCE PL sleeve housing with cable gland



Technical data

General data	
Housing material	Polyamide
Surface material	-
Material, lock	V2A
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65/67

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top[1]) **Height: 95 mm**	1 x M32 1 x M40	**HC-ADV-B24-HHWH-1TGM32-PL** **HC-ADV-B24-HHWH-1TGM40-PL**	**1404235** **1404238**	1 1	
Cable entry: lateral[1]) **Height: 95 mm**	1 x M32 1 x M40	**HC-ADV-B24-HHWH-1SGM32-PL** **HC-ADV-B24-HHWH-1SGM40-PL**	**1404237** **1404239**	1 1	
IP50 protective cover		For the sleeve side **HC-B 24-TMS-SD-IP50**	**1690765**	10	
Panel mounting flange[2])		2 pcs. per housing **HC-B-AF** Set with 2 panel mounting flanges **HC-B-AF-SET**	**1686533** **1604638**	20 1	
Box mounting base **Height: 72 mm**	2 x M32 2 x M40	**HC-ADV-B24-SHFH-2STM32-EEE** **HC-ADV-B24-SHFH-2STM40-EEE**	**1408957** **1408973**	1 1	
IP65 protective cover		For the panel mounting side **HC-B 24-TMS-SD-IP65**	**1690804**	10	

B06	B10	B16	B24
a	70	83	103	130
b	52	65	86	112

Notes:

For further accessories, see from page 552

[1]) Corresponding marking label: US-EMP (20X9), Order No. 0829439

[2]) Bore hole Ø 4.5 mm when using M4 screws, bore hole Ø 3.6 mm when using self-tapping M4 screws (Torx®)

Accessories



Screw connections
From page 552

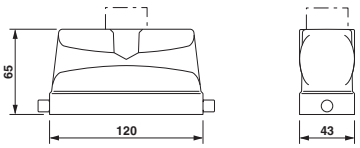
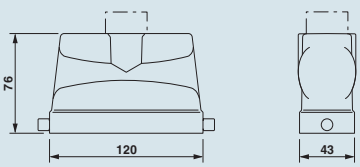
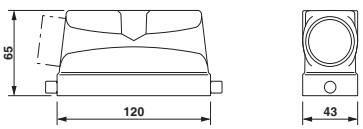
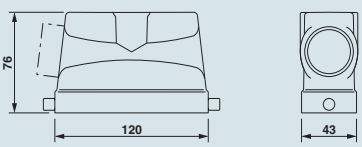
Type B24, metal, sleeve housing for single locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

Description			Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top **Height: 65 mm**	1 x M25		**HC-B 24-TFL-N-O1STM25G**	**1460189**	10	
	1 x M32		**HC-B 24-TFL-N-O1STM32G**	**1460297**	10	
		1 x Pg21	**HC-B 24-TFL-N-O1PG21G**	**1460190**	10	
		1 x Pg29	**HC-B 24-TFL-N-O1PG29G**	**1460293**	10	
Cable entry: top **Height: 76 mm**	1 x M32		**HC-B 24-TFL-H-O1STM32G**	**1460212**	10	
	1 x M40		**HC-B 24-TFL-H-O1STM40G**	**1460214**	10	
		1 x Pg21	**HC-B 24-TFL-H-O1PG21G**	**1460342**	10	
		1 x Pg29	**HC-B 24-TFL-H-O1PG29G**	**1460207**	10	
Cable entry: lateral **Height: 65 mm**	1 x M25		**HC-B 24-TFL-N-O1STM25S**	**1460191**	10	
	1 x M32		**HC-B 24-TFL-N-O1STM32S**	**1460192**	10	
		1 x Pg21	**HC-B 24-TFL-N-O1PG21S**	**1460193**	10	
		1 x Pg29	**HC-B 24-TFL-N-O1PG29S**	**1460194**	10	
Cable entry: lateral **Height: 76 mm**	1 x M32		**HC-B 24-TFL-H-O1STM32S**	**1460213**	10	
	1 x M40		**HC-B 24-TFL-H-O1STM40S**	**1460215**	10	
		1 x Pg21	**HC-B 24-TFL-H-O1PG21S**	**1460206**	10	
		1 x Pg29	**HC-B 24-TFL-H-O1PG29S**	**1460208**	10	

Notes:

For further accessories, see from page 552

Accessories



Screw connections
From page 552



Pressure screw set
From page 556

N

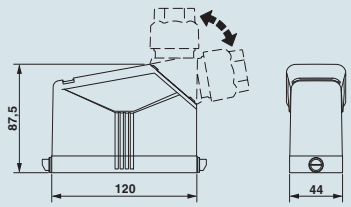
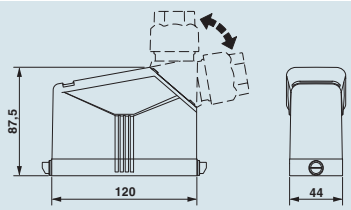
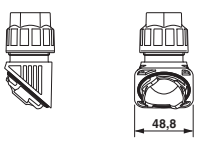
Type B24, plastic, EVO sleeve housing for single locking latch



Technical data

General data	
Housing material	Polyamide
Surface material	-
Locking latch material	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top/lateral Height: 87.5 mm 		**HC-EVO-B24-HHFS-PLBK**	**1407656**	1	
Cable entry: top/lateral Height: 87.5 mm 		**HC-EVO-B24-HHFS-PLBK**	**1407656**	1	
Cable gland 	1 x M20 1 x M25 1 x M32 1 x M40	**HC-B-G-M20-PLRBK** **HC-B-G-M25-PLRBK** **HC-B-G-M32-PLRBK** **HC-B-G-M40-PLRBK**	**1407669** **1407670** **1407671** **1407672**	1 1 1 1	
Plug-in connector set 		Push-in connection **HC-EVO-B24PT-BWSC-HH-M32-PLRBK**	**1408794**	1	

Notes:
For further accessories, see from page 552
Corresponding marking label: US-EMP (20X9), Order No. 0829439

Accessories



Protective cover
From page 578



Corrugated pipe adapter
From page 584

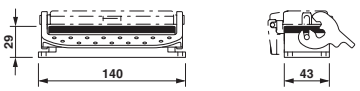
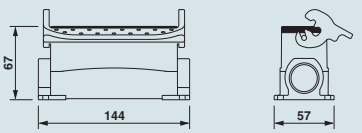
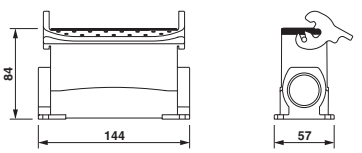
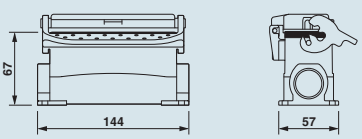
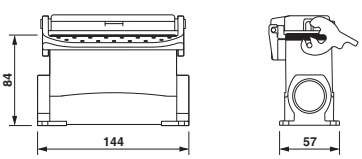
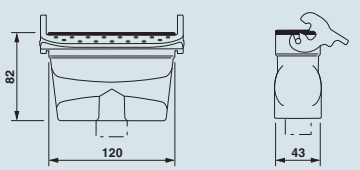
Type B24, metal, supporting base element with single locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	Stainless steel, handle: PA
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65 protection when the connector is inserted

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 29 mm**		Without cover **HC-B 24-AML** With plastic cover **HC-B 24-AMLD** With metal cover **HC-B 24-AMLD-AL**	 **1771930** **1771943** **1645493**	 10 10 10	
Box mounting base **Height: 68 mm**	1 x M25 1 x Pg21 2 x M25	**HC-B 24-SML-68/O1M25** **HC-B 24-SML-67/O1PG21** **HC-B 24-SML-68/O2M25**	**1646337** **1674134** **1646340**	10 10 10	
Box mounting base **Height: 84 mm**	1 x M32 1 x M40 1 x Pg21 1 x Pg29 2 x M32 2 x M40 2 x Pg21 2 x Pg29	**HC-B 24-SML-84/O1M32** **HC-B 24-SML-84/O1M40** **HC-B 24-SML-84/O1PG21** **HC-B 24-SML-84/O1PG29** **HC-B 24-SML-84/O2M32** **HC-B 24-SML-84/O2M40** **HC-B 24-SML-84/O2PG21** **HC-B 24-SML-84/O2PG29**	**1645752** **1645765** **1677966** **1677979** **1604832** **1645778** **1677982** **1677995**	10 10 10 10 10 10 10 10	
Box mounting base with cover **Height: 67 mm**	1 x M25 1 x Pg21 2 x M25 2 x Pg21	**HC-B 24-SMLD-67/O1M25** **HC-B 24-SMLD-67/O1PG21** **HC-B 24-SMLD-67/O2M25** **HC-B 24-SMLD-67/O2PG21**	**1604833** **1674150** **1604834** **1674163**	10 10 10 10	
Box mounting base with cover **Height: 84 mm**	1 x M32 1 x Pg21 1 x Pg29 2 x M32 2 x M40 2 x Pg21 2 x Pg29	**HC-B 24-SMLD-84/O1M32** **HC-B 24-SMLD-84/O1PG21** **HC-B 24-SMLD-84/O1PG29** **HC-B 24-SMLD-84/O2M32** **HC-B 24-SMLD-84/O2M40** **HC-B 24-SMLD-84/O2PG21** **HC-B 24-SMLD-84/O2PG29**	**1645781** **1678004** **1678017** **1645794** **1645817** **1678020** **1678033**	10 10 10 10 10 10 5	
Coupling housing **Height: 82 mm**	1 x M32 1 x M40 1 x Pg29	**HC-B 24-KML-H-O1STM32** **HC-B 24-KML-H-O1STM40** **HC-B 24-KML-H-O1PG29**	**1460325** **1460326** **1460250**	10 10 10	

Notes:

For further accessories, see from page 552

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

N

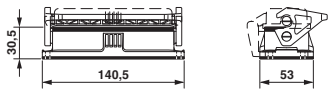
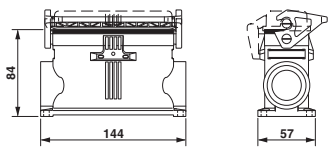
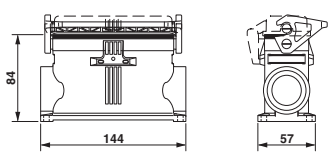
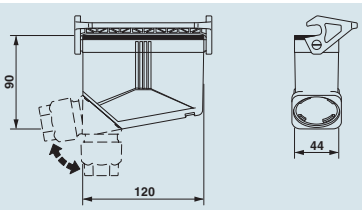
Type B24, plastic, EVO supporting base element with single locking latch



Technical data

General data	
Housing material	Polyamide
Surface material	-
Locking latch material	Polyamide
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65 protection when the connector is inserted

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 30.5 mm** 		Without cover **HC-EVO-B24-BWS-PLRBK** With cover **HC-EVO-B24-BWSC-PLRBK**	 **1407659** **1407660**	 1 1	
Box mounting base **Height: 84 mm**	2 x M40	**HC-EVO-B24-SHWS-2SSM40-PLRBK**	**1407663**	1	
Box mounting base with cover **Height: 84 mm**	2 x M40	**HC-EVO-B24-SHWSC-2SSM40-PLRBK**	**1407664**	1	
Coupling housing **Height: 90 mm** 	 1 x M40 1 x M32 1 x M25 1 x M20	**HC-EVO-B24-CHWS-PLRBK** Cable gland **HC-B-G-M40-PLRBK** **HC-B-G-M32-PLRBK** **HC-B-G-M25-PLRBK** **HC-B-G-M20-PLRBK**	**1407667** **1407672** **1407671** **1407670** **1407669**	1 1 1 1 1	

Notes:

- For further accessories, see from page 552
- Corresponding marking label: US-EMP (20X9), Order No. 0829439
- Replacement hinged cover: Order No. 1407695

Accessories



Screw connections
From page 552



Replacement latch
From page 570

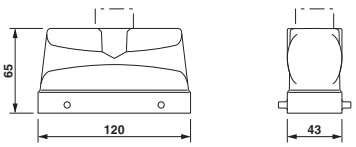
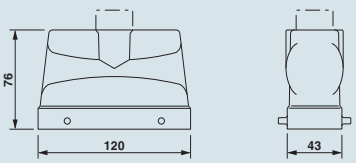
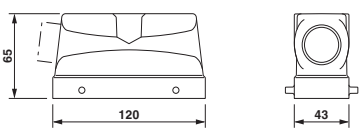
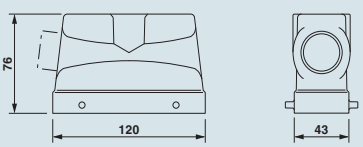
Type B24, metal, sleeve housing for double locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

Description			Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top **Height: 65 mm**	1 x M25		**HC-B 24-TFQ-N-O1STM25G**	**1460218**	10	
	1 x M32		**HC-B 24-TFQ-N-O1STM32G**	**1460222**	10	
		1 x Pg29	**HC-B 24-TFQ-N-O1PG29G**	**1460332**	10	
Cable entry: top **Height: 76 mm**	1 x M32		**HC-B 24-TFQ-H-O1STM32G**	**1460243**	10	
	1 x M40		**HC-B 24-TFQ-H-O1STM40G**	**1460245**	10	
		1 x Pg21	**HC-B 24-TFQ-H-O1PG21G**	**1460350**	10	
		1 x Pg29	**HC-B 24-TFQ-H-O1PG29G**	**1460239**	10	
Cable entry: lateral **Height: 65 mm**	1 x M25		**HC-B 24-TFQ-N-O1STM25S**	**1460219**	10	
	1 x M32		**HC-B 24-TFQ-N-O1STM32S**	**1460223**	10	
		1 x Pg21	**HC-B 24-TFQ-N-O1PG21S**	**1460224**	10	
Cable entry: lateral **Height: 76 mm**	1 x M32		**HC-B 24-TFQ-H-O1STM32S**	**1409367**	10	
	1 x M40		**HC-B 24-TFQ-H-O1STM40S**	**1460246**	10	
		1 x Pg21	**HC-B 24-TFQ-H-O1PG21S**	**1460238**	10	
		1 x Pg29	**HC-B 24-TFQ-H-O1PG29S**	**1460240**	10	

Notes:

For further accessories, see from page 552

Accessories



Screw connections
From page 552



Pressure screw set
From page 556

N

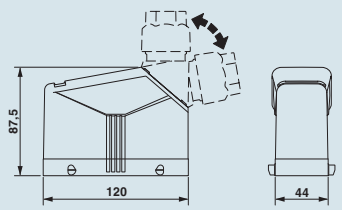
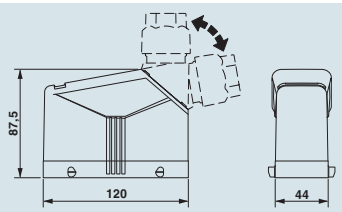
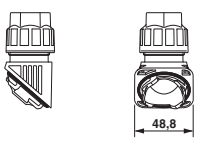
Type B24, plastic, EVO sleeve housing for double locking latch



Technical data

General data	
Housing material	Polyamide
Surface material	-
Locking latch material	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top/lateral Height: 87.5 mm 		**HC-EVO-B24-HHFD-PLBK**	**1407657**	1	
Cable entry: top/lateral Height: 87.5 mm 		**HC-EVO-B24-HHFD-PLBK**	**1407657**	1	
Cable gland 	1 x M20 1 x M25 1 x M32 1 x M40	**HC-B-G-M20-PLRBK** **HC-B-G-M25-PLRBK** **HC-B-G-M32-PLRBK** **HC-B-G-M40-PLRBK**	**1407669** **1407670** **1407671** **1407672**	1 1 1 1	
Plug-in connector set 		Push-in connection **HC-EVO-B24PT-BWD-HH-M32-PLRBK**	**1407713**	1	

Notes:
For further accessories, see from page 552
Corresponding marking label: US-EMP (20X9), Order No. 0829439

Accessories



Protective cover
From page 578



Corrugated pipe adapter
From page 584

Type B24, metal, base element with double locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	Stainless steel, handle: PA
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

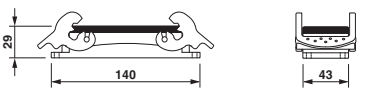
Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 29 mm**		Without cover **HC-B 24-AMQ**	**1771927**	10	
Box mounting base **Height: 67 mm**	1 x M25	**HC-B 24-SMQ-67/O1M25**	**1604835**	10	
	1 x Pg21	**HC-B 24-SMQ-67/O1PG21**	**1674176**	10	
	2 x M25	**HC-B 24-SMQ-68/O2M25**	**1646353**	10	
	2 x Pg21	**HC-B 24-SMQ-67/O2PG21**	**1674189**	10	
Box mounting base **Height: 84 mm**	1 x M32	**HC-B 24-SMQ-84/O1M32**	**1604836**	10	
	1 x M40	**HC-B 24-SMQ-84/O1M40**	**1645419**	10	
	1 x Pg21	**HC-B 24-SMQ-84/O1PG21**	**1678046**	10	
	1 x Pg29	**HC-B 24-SMQ-84/O1PG29**	**1678402**	10	
	2 x M32	**HC-B 24-SMQ-84/O2M32**	**1604837**	10	
	2 x M40	**HC-B 24-SMQ-84/O2M40**	**1645723**	10	
	2 x Pg21	**HC-B 24-SMQ-84/O2PG21**	**1678059**	10	
	2 x Pg29	**HC-B 24-SMQ-84/O2PG29**	**1678431**	10	
Coupling housing **Height: 82 mm**	1 x M32	**HC-B 24-KMQ-H-O1STM32**	**1460335**	10	
	1 x M40	**HC-B 24-KMQ-H-O1STM40**	**1460336**	10	
	1 x Pg21	**HC-B 24-KMQ-H-O1PG21**	**1460329**	10	
	1 x Pg29	**HC-B 24-KMQ-H-O1PG29**	**1460330**	10	

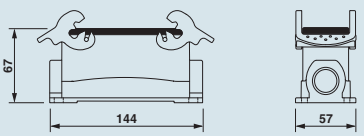


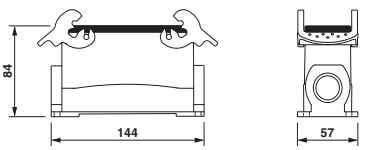


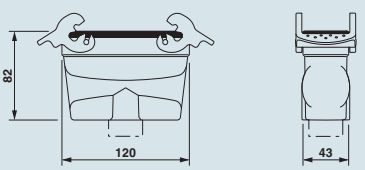












Notes:

For further accessories, see from page 552

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

N

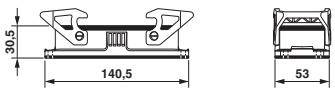
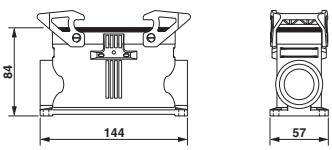
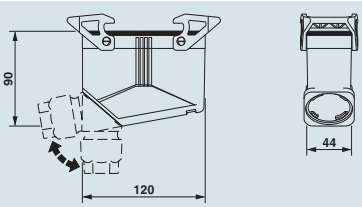
Type B24, plastic, EVO supporting base element with double locking latch



Technical data

General data	
Housing material	Polyamide
Surface material	-
Locking latch material	Polyamide
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65 protection when the connector is inserted

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 30.5 mm** 		Without cover **HC-EVO-B24-BWD-PLRBK**	**1407661**	1	
Box mounting base **Height: 84 mm** 	2 x M40	**HC-EVO-B24-SHWD-2SSM40-PLRBK**	**1407665**	1	
Coupling housing **Height: 90 mm** 		**HC-EVO-B24-CHWD-PLRBK**	**1407668**	1	
		Cable gland			
	1 x M40	**HC-B-G-M40-PLRBK**	**1407672**	1	
	1 x M32	**HC-B-G-M32-PLRBK**	**1407671**	1	
	1 x M25	**HC-B-G-M25-PLRBK**	**1407670**	1	
	1 x M20	**HC-B-G-M20-PLRBK**	**1407669**	1	

Notes:

For further accessories, see from page 552

Corresponding marking label: US-EMP (20X9), Order No. 0829439

Replacement hinged cover: Order No. 1407695

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

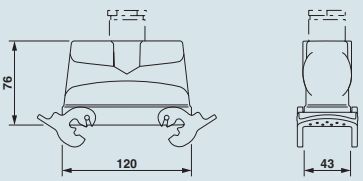
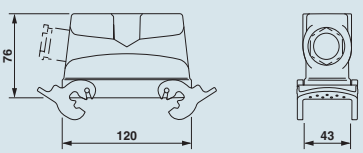
Type B24, metal, sleeve housing with double locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	Stainless steel, handle: PA
Sealing material	-
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

Description		Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top **Height: 76 mm**	1 x M32 1 x M40	**HC-B 24-TMQ-H-O1STM32G** **HC-B 24-TMQ-H-O1STM40G**	**1460269** **1460271**	10 10	
	1 x Pg21 1 x Pg29	**HC-B 24-TMQ-H-M1PG21G** **HC-B 24-TMQ-H-M1PG29G**	**1460255** **1460257**	10 10	
Cable entry: lateral **Height: 76 mm**	1 x M32 1 x M40	**HC-B 24-TMQ-H-O1STM32S** **HC-B 24-TMQ-H-O1STM40S**	**1460270** **1460272**	10 10	
	1 x Pg21 1 x Pg29	**HC-B 24-TMQ-H-M1PG21S** **HC-B 24-TMQ-H-M1PG29S**	**1460256** **1460259**	10 10	

Notes:

For further accessories, see from page 552

Accessories



Screw connections
From page 552



Pressure screw set
From page 556

N

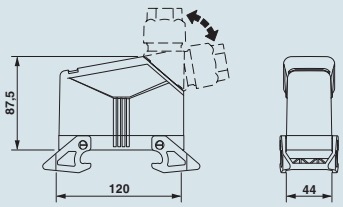
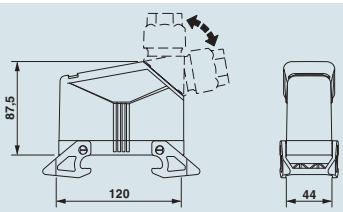
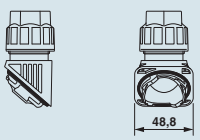
Type B24, plastic, EVO sleeve housing with double locking latch



Technical data

General data	
Housing material	Polyamide
Surface material	-
Locking latch material	Polyamide
Sealing material	-
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top/lateral **Height: 78 mm** 		**HC-EVO-B24-HHWD-PLBK**	**1407658**	1	
Cable entry: top/lateral **Height: 78 mm** 		**HC-EVO-B24-HHWD-PLBK**	**1407658**	1	
Cable gland 	1 x M20 1 x M25 1 x M32 1 x M40	**HC-B-G-M20-PLRBK** **HC-B-G-M25-PLRBK** **HC-B-G-M32-PLRBK** **HC-B-G-M40-PLRBK**	**1407669** **1407670** **1407671** **1407672**	1 1 1 1	

Notes:

Corresponding marking label: US-EMP (20X9), Order No. 0829439

Accessories



Replacement latch
From page 570



Corrugated pipe adapter
From page 584

Type B24, metal, supporting base element for double locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	-
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

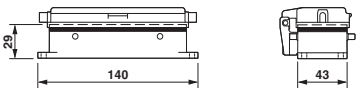
Ordering data

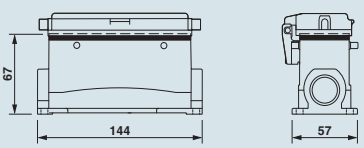
Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base with cover **Height: 29 mm**		With cover **HC-B 24-AFQD**	**1771956**	10	
Box mounting base with cover **Height: 67 mm**	1 x M25	**HC-B 24-SFQD-67/O1M25**	**1604830**	10	
	1 x Pg21	**HC-B 24-SFQD-67/O1PG21**	**1674118**	10	
	2 x M25	**HC-B 24-SFQD-67/O2M25**	**1604831**	10	
	2 x Pg21	**HC-B 24-SFQD-67/O2PG21**	**1674121**	10	
Box mounting base with cover **Height: 84 mm**	1 x M32	**HC-B 24-SFQD-84/O1M32**	**1645736**	10	
	2 x M32	**HC-B 24-SFQD-84/O2M32**	**1645749**	10	

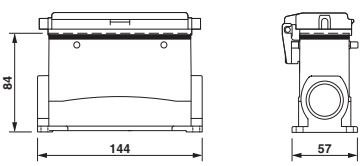












Notes:

For further accessories, see from page 552

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

N

Type B24, plastic, EVO supporting base element for double locking latch



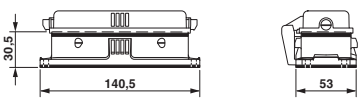
Technical data

General data	
Housing material	Polyamide
Surface material	-
Locking latch material	-
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65 protection when the connector is inserted

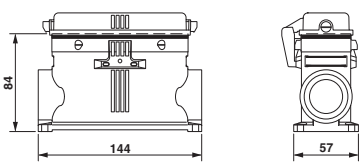
Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base with cover **Height: 30.5 mm**		With cover **HC-EVO-B24-BFDC-PLRBK**	**1407662**	1	
Box mounting base with cover **Height: 84 mm**	2 x M40	**HC-EVO-B24-SHFDC-2SSM40-PLRBK**	**1407666**	1	









Notes:
For further accessories, see from page 552
Corresponding marking label: US-EMP (20X9), Order No. 0829439
Replacement hinged cover: Order No. 1407695

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

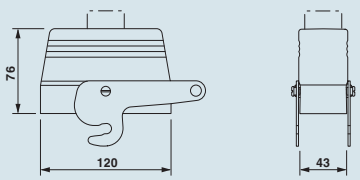
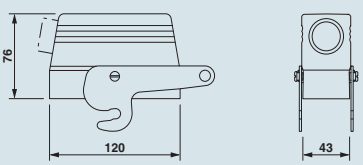
Type B24, metal, sleeve housing for central locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	Steel, galvanized
Sealing material	-
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

Description		Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top **Height: 76 mm** 	1 x M32	**HC-B 24-TMZ-76/O1STM32G**	**1584596**	10	
Cable entry: lateral **Height: 76 mm** 	1 x M32	**HC-B 24-TMZ-76/O1STM32S**	**1584606**	10	

Notes:

For further accessories, see from page 552

Accessories



Screw connections
From page 552



Pressure screw set
From page 556

Type B24, metal, supporting base element for central locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	-
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 29 mm**		**HC-B 24-AFZ**	**1584583**	10	
Box mounting base **Height: 84 mm**	1 x M32	**HC-B 24-SFZ-84/O1M32**	**1584570**	10	

Notes:

For further accessories, see from page 552

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556

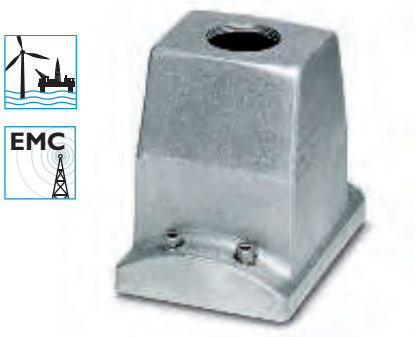


Screw connections
From page 552



Cover plates
From page 572

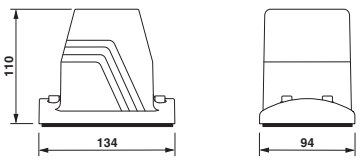
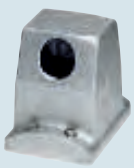
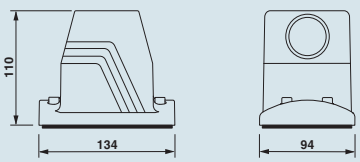
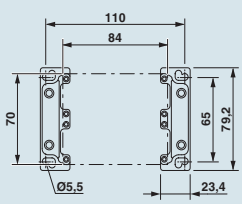
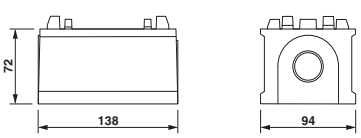
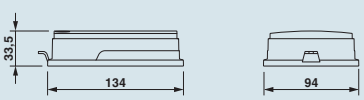
Type B32, metal, ADVANCE sleeve housing, EEE - offshore/EMC



Technical data

General data	
Housing material	Die-cast aluminum, salt water resistant
Surface material	Uncoated
Material, lock	Stainless steel
Sealing material	NBR, conductive
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65 / IP68 (0.2 bar, 24h) / IP69K

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top[1]) **Height: 110 mm**	1 x M32	**HC-B 32-TMS-100-O1STM32G-EEE**	**1580516**	6	
	1 x M40	**HC-B 32-TMS-100-O1STM40G-EEE**	**1580518**	6	
	1 x M50	**HC-B 32-TMS-100-O1STM50G-EEE**	**1580522**	6	
Cable entry: lateral[1]) **Height: 110 mm**	1 x M32	**HC-B 32-TMS-100-O1STM32S-EEE**	**1580517**	6	
	1 x M40	**HC-B 32-TMS-100-O1STM40S-EEE**	**1580519**	6	
	1 x M50	**HC-B 32-TMS-100-O1STM50S-EEE**	**1580521**	6	
Panel mounting flange[2])		2 pcs. per housing			
		**HC-B 32/48-AF**	**1580524**	20	
		Set with 2 panel mounting flanges			
		HC-B 32/48-AF-SET	**1580523**	1	
Box mounting base **Height: 72 mm**	1 x M32	**HC-B 32-SFS-72-O1M32-EEE**	**1580526**	6	
	1 x M40	**HC-B 32-SFS-72-O1M40-EEE**	**1580528**	6	
	1 x M50	**HC-B 32-SFS-72-O1M50-EEE**	**1580530**	6	
	2 x M32	**HC-B 32-SFS-72-O2M32-EEE**	**1580527**	6	
IP65 protective cover		**HC-B 32-TMS-SD-IP65**	**1580539**	6	
					

Notes:

In order to achieve optimum shielding results, the mounting surface must be conductive

[1]) Screw locking with M6 Allen screws

[2]) Bore hole Ø 5.5 mm when using M4 screws, bore hole Ø 4.5 mm when using self-tapping M5 screws (Torx®)

Accessories



Screw connections

From page 552

Technical data

General data	
Housing material	-
Surface material	-
Material, lock	-
Sealing material	-
Ambient temperature (operation)	-
Type of protection (when plugged in)	-

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions

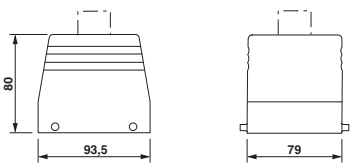
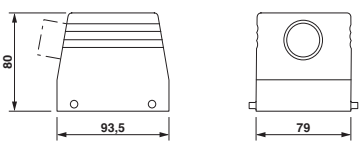
Type B32, metal, sleeve housing for double locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

Ordering data

Description			Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top **Height: 80 mm**	1 x M32		**HC-B 32-TFQ-80/O1STM32G**	**1645383**	10	
	1 x M40		**HC-B 32-TFQ-80/O1STM40G**	**1647307**	10	
		1 x Pg29	**HC-B 32-TFQ-80/O1PG29G**	**1675081**	10	
Cable entry: lateral **Height: 80 mm**	1 x M32		**HC-B 32-TFQ-80/O1STM32S**	**1645150**	10	
	1 x M40		**HC-B 32-TFQ-80/O1STM40S**	**1645451**	10	
	1 x M50		**HC-B 32-TFQ-80/O1STM50S**	**1585980**	10	
		1 x Pg29	**HC-B 32-TFQ-80/O1PG29S**	**1675094**	10	
		1 x Pg36	**HC-B 32-TFQ-80/O1PG36S**	**1644818**	10	

Notes:

For further accessories, see from page 552

Accessories

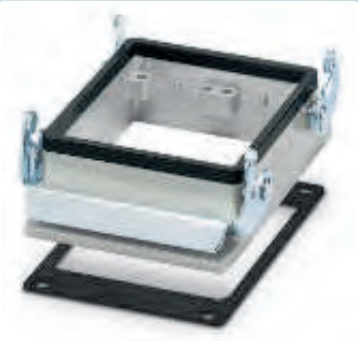


Screw connections
From page 552



Pressure screw set
From page 556

Type B32, metal, supporting base element with double locking latch

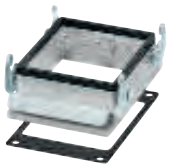


Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	Steel, galvanized
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

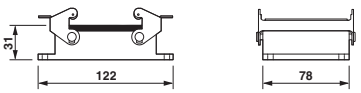
Ordering data

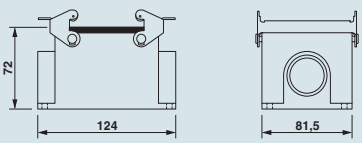
Description		Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 31 mm**		**HC-B 32-AMQ**	**1775693**	10	
Box mounting base **Height: 72 mm**	1 x M32	**HC-B 32-SMQ-72/O1M32**	**1604867**	10	
	1 x Pg29	**HC-B 32-SMQ-72/O1PG29**	**1675036**	10	
	2 x M32	**HC-B 32-SMQ-72/O2M32**	**1604868**	10	
	2 x M40	**HC-B 32-SMQ-72/O2M40**	**1604869**	10	
	2 x Pg29	**HC-B 32-SMQ-72/O2PG29**	**1675049**	10	
Coupling housing **Height: 82 mm**	1 x M32 1 x M40	**HC-B 32-KMQ-82/O1STM32** **HC-B 32-KMQ-82/O1STM40**	**1647284** **1647297**	10 10	
	1 x Pg21	**HC-B 32-KMQ-82/O1PG21**	**1675010**	10	
	1 x Pg29	**HC-B 32-KMQ-82/O1PG29**	**1675023**	10	

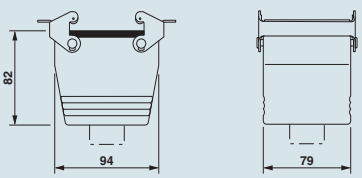












Notes:

For further accessories, see from page 552

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

Type B48, metal, sleeve housing for single locking latch



Technical data

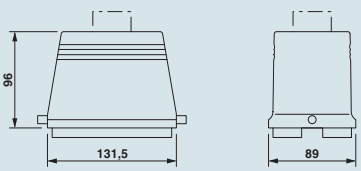
General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65

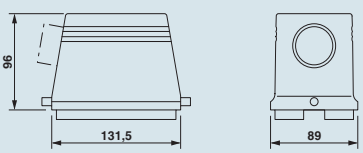
Ordering data

Description		Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top **Height: 96 mm**	1 x M32	**HC-B 48-TFL-96/O1STM32G**	**1647349**	1	
	1 x M40	**HC-B 48-TFL-96/O1STM40G**	**1647310**	1	
	1 x Pg29	**HC-B 48-TFL-96/O1PG29G**	**1675159**	1	
	1 x Pg36	**HC-B 48-TFL-96/O1PG36G**	**1675175**	1	
Cable entry: lateral **Height: 96 mm**	1 x M32	**HC-B 48-TFL-96/O1STM32S**	**1647336**	1	
	1 x M40	**HC-B 48-TFL-96/O1STM40S**	**1647323**	1	
	1 x Pg29	**HC-B 48-TFL-96/O1PG29S**	**1675162**	1	
	1 x Pg36	**HC-B 48-TFL-96/O1PG36S**	**1675188**	1	









Notes:

For further accessories, see from page 552

Accessories



Screw connections
From page 552



Pressure screw set
From page 556

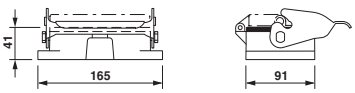
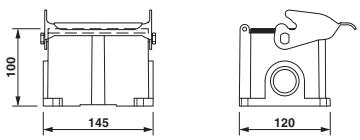
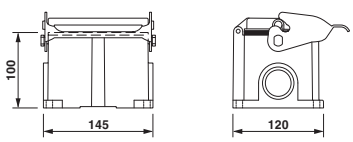
Type B48, metal, supporting base element with single locking latch



Technical data

General data	
Housing material	Aluminum, die-cast
Surface material	Powder-coated, gray
Locking latch material	Steel, galvanized
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 125 °C
Type of protection (when plugged in)	IP65 protection when the connector is inserted

Ordering data

Description			Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 41 mm**			Without cover **HC-B 48-AML** With plastic cover **HC-B 48-AMLD**	 **1772175** **1772188**	 1 1	
Box mounting base **Height: 100 mm**	1 x M32 2 x M40	1 x Pg29 2 x Pg29	**HC-B 48-SML-100/O1M32** **HC-B 48-SML-100/O1PG29** **HC-B 48-SML-100/O2M40** **HC-B 48-SML-100/O2PG29**	**1604875** **1675117** **1604876** **1675120**	1 1 1 1	
Box mounting base with cover **Height: 100 mm**	 2 x M40	1 x Pg29 	**HC-B 48-SML-100/O1PG29** **HC-B 48-SMLD-100/O2M40**	**1675117** **1604878**	1 1	

Notes:

For further accessories, see from page 552

Accessories



Flat gaskets
From page 571



Pressure screw set
From page 556



Screw connections
From page 552



Cover plates
From page 572

Compact series

200 - 690 V, 10 - 40 A

Connection technology:
– Crimp connection

To determine the matching housings, refer to the cross-reference list on page 402.

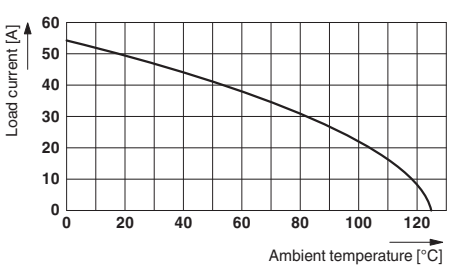
Notes:
Order crimp contacts separately
Connectors may only be operated when under no load.
Observe notes on the connection technology



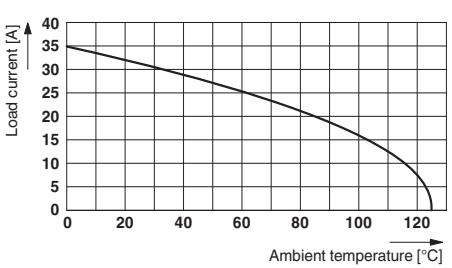
Technical data

Type		HC-COM- 8-E...C	HC-COM- 17-E...C	HC-COM- 4/2-E...C Power contacts	HC-COM- 4/2-E...C Control contacts
Approvals		cULus	cULus	cULus	
IEC data					
Rated current, contacts (at 40°C)	A	16	10	40	10
Surge voltage category		III	III	III	
Pollution degree		3	3	3	
Rated voltage (III/3) contacts	V	500	200	400 / 690	250
Rated surge voltage, contacts	kV	6	4	6	4
Connection cross section	mm²	0.5 ... 4	0.14 ... 2.5	1.5 ... 6	0.14 ... 2.5
UL data					
Rated voltage	V	600	600	250	-
Rated current	A	19	19.5	15	-
AWG		20-12	22-14	22-14	-
CSA data					
Rated voltage	V	-	-	-	-
Rated current	A	-	-	-	-
AWG		-	-	-	-
Material data					
Contact carrier material		PC	PC	PC	
Inflammability class in acc. with UL 94		V0	V0	V0	
Contact material		Copper alloy	Copper alloy	Copper alloy	
Contact surface material		Ag (alternatively Au)	Ag (alternatively Au)	Ag	Ag (alternatively Au)
Temperature data					
Ambient temperature range	°C	-40 ... 100	-40 ... 100	-40 ... 100	
General data					
Connection method		Crimp connection	Crimp connection	Crimp connection	Crimp connection
No. of pos.		8	17	4	2
Contact numbering		1 - 8	1 - 17	1-4	1-2
Insertion/withdrawal cycles		≥ 500	≥ 500	≥ 500	

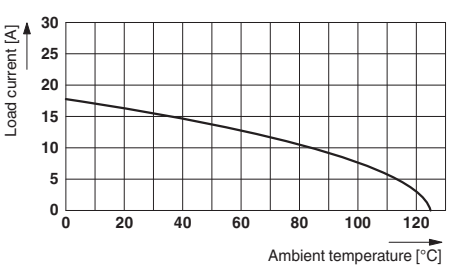
Derating curves



HC-COM- 4/2-E...C



HC-COM- 8-E...C

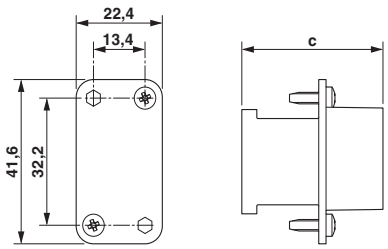


HC-COM- 17-E...C

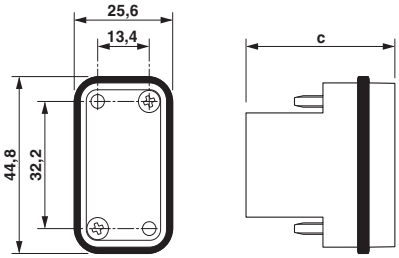
Ordering data

Description	Pos.	Number	Housing	Type	Order No. Socket	Order No. Plug	Pcs. / Pkt.
Crimp connection CK 2,5							
	8	1 - 8	COM	① HC-COM- 8-E...C	1408494	1408481	2
Crimp connection CK 1,6							
	17	1 - 17	COM	② HC-COM- 17-E...C	1408478	1408465	2
Crimp connection CK 4,0/CK 1,6							
	4 / 2	1-4	COM	③ HC-COM- 4/2-E...C	1408517	1408504	2
Turned crimp contacts CK 1,6 Silver-plated			**Cross section mm² / AWG**				
			0.14 - 0.37 / 26 - 22	CK1,6-ED-0,37... AG	1663394	1663336	100
			0.5 / 20	CK1,6-ED-0,50... AG	1663404	1663349	100
			0.75 / 18	CK1,6-ED-0,75... AG	1663417	1663352	100
			0.75 - 1 / 18	CK1,6-ED-1,00... AG	1663420	1663365	100
			1.5 / 16	CK1,6-ED-1,50... AG	1663433	1663378	100
			2.5 / 14	CK1,6-ED-2,50... AG	1663446	1663381	100
Turned crimp contacts CK 2,5 Silver-plated			**Cross section mm² / AWG**				
			0.5 / 20	CK2,5-ED-0,50... AG	1663640	1663572	100
			0.75 / 18	CK2,5-ED-0,75... AG	1663653	1663585	100
			0.75 - 1 / 18	CK2,5-ED-1,00... AG	1663666	1663598	100
			1.5 / 16	CK2,5-ED-1,50... AG	1663679	1663608	100
			2.5 / 14	CK2,5-ED-2,50... AG	1663682	1663611	100
			4 / 12	CK2,5-ED-4,00... AG	1663705	1663637	100
Turned crimp contacts CK 4,0 Silver-plated			**Cross section mm² / AWG**				
			1.5 / 16	CK4,0-ED-1,50... AG	1663271	1663239	25
			2.5 / 14	CK4,0-ED-2,50... AG	1663284	1663242	25
			4 / 12	CK4,0-ED-4,00... AG	1663297	1663255	25
			6 / 10	CK4,0-ED-6,00... AG	1663307	1663268	25

Dimensions (in mm)



Dimensional drawing: socket



Dimensional drawing: pin

		a	b	c	d
①	Socket			38.5	
	Plug				
②	Socket			36.7	
	Plug			38.7	
③	Socket			48.05	
	Plug				

Accessories



Dummy sockets
From page 582



Crimping tools
From page 562



Crimp contacts
From page 564

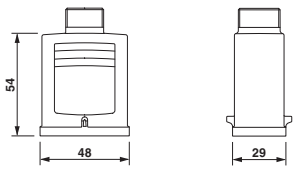
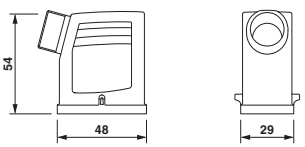
Type compact, plastic, sleeve housing



Technical data

General data	
Housing material	PC
Surface material	-
Material, lock	-
Sealing material	-
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65/IP66

Ordering data

Description		Type	Order No.	Pcs. / Pkt.	Dimensions
Cable entry: top **Height: 54 mm**	1 x Pg16	**HC-COM-K-TFL-O1PG16-G**	**1408342**	2	
Cable entry: lateral **Height: 54 mm**	1 x Pg16	**HC-COM-K-TFL-O1PG16-S**	**1408339**	2	
Pg16 cable gland		**VC-K-KV-PG16(9-13)** **VC-K-KV-PG16(11,5-15,5)**	**1853764** **1854844**	5 5	

Notes:

For further accessories, see from page 552

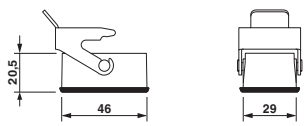
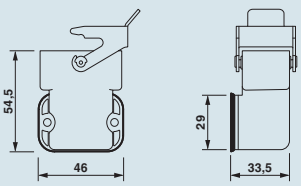
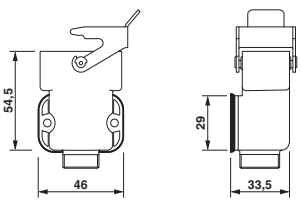
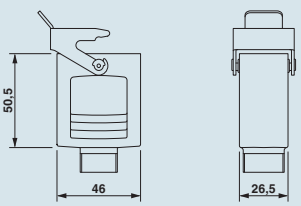
Type compact, plastic, supporting base element



Technical data

General data	
Housing material	PC
Surface material	-
Material, lock	Stainless steel
Sealing material	NBR
Ambient temperature (operation)	-40 °C ... 100 °C
Type of protection (when plugged in)	IP65/IP66

Ordering data

Description	Thread	Type	Order No.	Pcs. / Pkt.	Dimensions
Panel mounting base **Height: 20.5 mm** 		Straight version **HC-COM-K-AML-GR**	**1408355**	2	
Panel mounting base **Height: 33.5 mm** 		Angled version **HC-COM-K-AML-GW**	**1408368**	2	
Box mounting base **Height: 33.5 mm** 	1 x Pg16	**HC-COM-K-SML-O1PG16**	**1408371**	2	
Coupling housing **Height: 50.5 mm** 	1 x Pg16	**HC-COM-K-KML-O1PG16**	**1408384**	2	
Pg16 cable gland 		**HC-COM-K-KV-PG16(9-12) SML** **HC-COM-K-KV-PG16(11,5-15) SML**	**1409286** **1409299**	2 2	
Protective cover, plastic 		Socket **HC-COM-K-SD-FLU-BU/FS** Plug **HC-COM-K-SD-FLU-ST/FS**	**1408397** **1408407**	2 2	

Notes:

For further accessories, see from page 552

Box mounting base with open bottom

Accessories for full cable glands



Plastic cable glands 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	Polyamide
Material, insert	-
Seal material	Neoprene
Material, O-ring	-
Inflammability class according to UL 94	V2
Mechanical data	
Degree of protection	IP68, up to 5 bar
Temperature data	
Ambient temperature (operation)	-20 °C ... 100 °C

Ordering data

Description	Thread type	Type	Order No.	Pcs. / Pkt.
Plastic gland, gray, for cable diameter [mm]:				
5 mm ... 10 mm	M16	**HC-K-KV-M16(5-10)**	**1690613**	25
8 mm ... 13 mm	M20	**HC-K-KV-M20(8-13)**	**1690626**	25
11 mm ... 17 mm	M25	**HC-K-KV-M25(11-17)**	**1690639**	25
15 mm ... 21 mm	M32	**HC-K-KV-M32(15-21)**	**1690642**	10
19 mm ... 28 mm	M40	**HC-K-KV-M40(19-28)**	**1690655**	10
Plastic gland, black, for cable diameter [mm]:				
12 mm ... 21 mm	M32	**HC-K-KV-M32(12-21)BK**	**1407673**	10
16 mm ... 28 mm	M40	**HC-K-KV-M40(16-28)BK**	**1407674**	10
Metal gland, for cable diameter [mm]:				
5 mm ... 9 mm	M16			
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			
19 mm ... 27 mm	M40			
27 mm ... 34 mm	M40			
EMC screw connection, for cable diameter [mm]:				
4.5 mm ... 9 mm	M16			
7 mm ... 12.5 mm	M20			
9 mm ... 16.5 mm	M25			
11 mm ... 21 mm	M32			
19 mm ... 28 mm	M40			
Metal gland, for AS-Interface flat-ribbon conductor				
Thread type: M20	M20			
Thread type: M25	M25			
Special cable gland, M25, brass				
With 10 mm and 11 mm hole	M25			

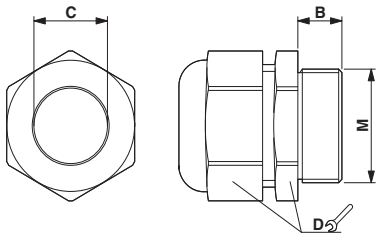


Metal gland



EMC gland

Type	Dimensions [mm] B	C	Thread M	D
HC-K-KV-M16...	8	10.5	16	20
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
HC-K-KV-M40...	10	28.5	40	46



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

Technical data

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

Technical data

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

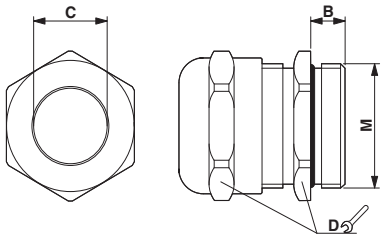
Ordering data

Type	Order No.	Pcs. / Pkt.
HC-M-KV-M16(5-9)	**1690558**	25
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-M40(19-27)	**1690590**	10
HC-M-KV-M40(27-34)	**1607729**	10
HC-M-KV-M20(1ASI)	**1584017**	10
HC-M-KV-M25(1ASI)	**1584020**	10
HC-M-KV-M25(1X10/1X11)	**1580228**	10

Ordering data

Type	Order No.	Pcs. / Pkt.
HC-EMV-KV-M16(4,5-9)	**1690493**	25
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
HC-EMV-KV-M40(19-28)	**1690545**	10

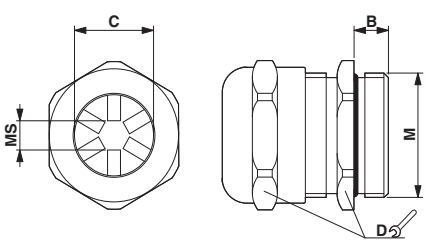
Type	Dimensions [mm] B	C	Thread M	D
HC-M-KV-M16...	5	9.1	16	17
HC-M-KV-M20(9-13)	6	13.3	20	22
HC-M-KV-M20(11-16	6	16.2	20	27
HC-M-KV-M25(11-16)	7	17.3	25	27
HC-M-KV-M25(14-21)	7	21.2	25	34
HC-M-KV-M32(14-21)	8	21.3	32	34
HC-M-KV-M32(19-27)	8	27.5	32	43
HC-M-KV-M40(19-27)	8	28.3	40	43
HC-M-KV-M40(27-34)	8	34.5	40	50
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-M16...	7	9.0	16	4	20
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
HC-EMV-KV-M40...	9	28.0	40	15	45

[1] Minimum shield diameter



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

Pg16 cable glands for several cables

The screw connection glands allow multiple grommets to be used.



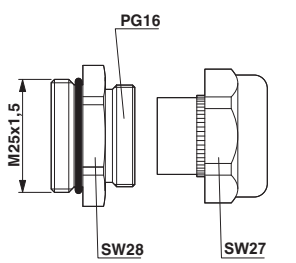
Screw connection with plastic pressure screw



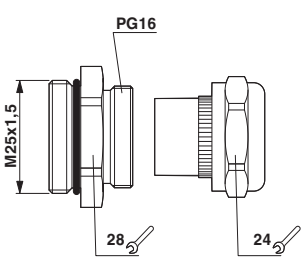
Screw connection with brass pressure screw

Technical data			Technical data	
	VC-K-KV.../...	VC-M-KV...ST	VC-M-KV.../...	VC-M-KV...ST
Material data				
Material	-	Brass, nickel-plated	Brass, nickel-plated	Brass, nickel-plated
Sealing material	TPE	-	TPE	-
Material, O-ring	-	NBR	-	NBR
Degree of protection	IP65	-	IP65	-
Temperature data				
Ambient temperature (operation)	-20 °C ... 100 °C	-	-40 °C ... 125 °C	-

Description	Cable Ø [mm]	Ordering data Type	Order No.	Pcs. / Pkt.	Ordering data Type	Order No.	Pcs. / Pkt.
Cable screw connection glands, for adapting the Pg half screw connections to metric cable entry, M25							
		VC-M-KV-PG16/M25 ST	**1644407**	10	**VC-M-KV-PG16/M25 ST**	**1644407**	10
Half screw connection Pg16, consisting of rubber seal with several holes and a pressure screw, for type VC1 housing and HEAVYCON, additional types available on request							
	1 x 3 / 1 x 8	**VC-K-KV-PG16 1X3/1X8**	**1885376**	5	**VC-M-KV-PG16 1X3/1X8**	**1885457**	5
	1 x 3 / 1 x 9	**VC-K-KV-PG16 1X3/1X9**	**1885389**	5	**VC-M-KV-PG16 1X3/1X9**	**1885460**	5
	1 x 6 / 1 x 8	**VC-K-KV-PG16 1X6/1X8**	**1885392**	5	**VC-M-KV-PG16 1X6/1X8**	**1885473**	5
	1 x 5 / 1 x 9	**VC-K-KV-PG16 1X5/1X9**	**1885402**	5	**VC-M-KV-PG16 1X5/1X9**	**1885486**	5
	1 x 3 / 2 x 8	**VC-K-KV-PG16 1X3/2X8**	**1885415**	5	**VC-M-KV-PG16 1X3/2X8**	**1885499**	5
	1 x 5 / 2 x 6	**VC-K-KV-PG16 1X5/2X6**	**1885428**	5	**VC-M-KV-PG16 1X5/2X6**	**1885509**	5
	2 x 6 / 1 x 7	**VC-K-KV-PG16 2X6/1X7**	**1885431**	5	**VC-M-KV-PG16 2X6/1X7**	**1885512**	5
	3 x 7	**VC-K-KV-PG16 3X7**	**1885444**	5	**VC-M-KV-PG16 3X7**	**1885525**	5
Closing cap, for closing unused bore holes in multiple seals and cable glands							
Ø 3 mm		**SEALING PLUG 3X12 RD**	**1400238**	10	**SEALING PLUG 3X12 RD**	**1400238**	10
Ø 5 mm		**SEALING PLUG 5X12 RD**	**1400253**	10	**SEALING PLUG 5X12 RD**	**1400253**	10
Ø 6 mm		**SEALING PLUG 6X16 RD**	**1400254**	10	**SEALING PLUG 6X16 RD**	**1400254**	10
Ø 7 mm		**SEALING PLUG 7X16 RD**	**1400255**	10	**SEALING PLUG 7X16 RD**	**1400255**	10
Ø 8 mm		**SEALING PLUG 8X16 RD**	**1400257**	10	**SEALING PLUG 8X16 RD**	**1400257**	10
Ø 12 mm		**SEALING PLUG 12X22 RD**	**1400260**	10	**SEALING PLUG 12X22 RD**	**1400260**	10
Ø 13 mm		**SEALING PLUG 13X22 RD**	**1400265**	10	**SEALING PLUG 13X22 RD**	**1400265**	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 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 data		
Material	PA	Brass, nickel-plated
Sealing material	TPE	-
Material, O-ring	-	NBR
Degree of protection	IP65	-
Temperature data		
Ambient temperature (operation)	-20 °C ... 100 °C	-

Technical data

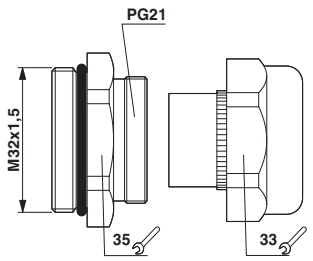
	VC-M-KV.../...	VC-M-KV...ST
Material data		
Material	Brass, nickel-plated	Brass, nickel-plated
Sealing material	TPE	-
Material, O-ring	-	NBR
Degree of protection	IP65	-
Temperature data		
Ambient temperature (operation)	-40 °C ... 125 °C	-

Ordering data

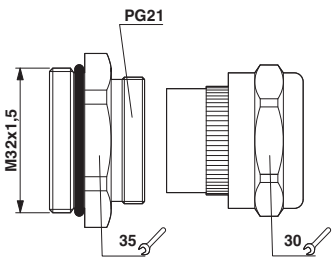
Description	Cable Ø [mm]	Type	Order No.	Pcs. / Pkt.
Cable screw connection glands, for adapting the Pg half screw connections to metric cable entry, M32				
		VC-M-KV-PG21/M32 ST	1644397	10
Half screw connection Pg21, consisting of rubber seal, several holes and a pressure screw, for type VC2 ... VC4 and HEAVYCON housing, additional types available on request				
	1 x 6 / 2 x 9	VC-K-KV-PG21 1X6/2X9	1885538	5
	1 x 8,5 / 1 x 12	VC-K-KV-PG21-1X8,5/1X12	1885279	5
	2 x 4,5 / 1 x 13	VC-K-KV-PG21-2X4,5/1X13	1885282	5
	2 x 6 / 2 x 8	VC-K-KV-PG21 2X6/2X8	1885554	5
	2 x 7,2 / 1 x 10,5	VC-K-KV-PG21 2X7,2/1X10,5	1885567	5
	3 x 7	VC-K-KV-PG21 3X7	1885570	5
	3 x 9	VC-K-KV-PG21 3X9	1885583	5
	4 x 6,5	VC-K-KV-PG21 4X6,5	1885596	5
	4 x 8	VC-K-KV-PG21 4X8	1885606	5
Closing cap, for closing unused bore holes in multiple seals and cable glands				
	Ø 3 mm	SEALING PLUG 3X12 RD	1400238	10
	Ø 5 mm	SEALING PLUG 5X12 RD	1400253	10
	Ø 6 mm	SEALING PLUG 6X16 RD	1400254	10
	Ø 7 mm	SEALING PLUG 7X16 RD	1400255	10
	Ø 8 mm	SEALING PLUG 8X16 RD	1400257	10
	Ø 12 mm	SEALING PLUG 12X22 RD	1400260	10
	Ø 13 mm	SEALING PLUG 13X22 RD	1400265	10

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



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



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

Half screw connection accessories, pressure screws, seals

- For applications with higher requirements in terms of bend protection and strain relief
- Pressure screws with flared cable bend protection and strain relief clamps
- Half screw connection for use in housing with gland



Pressure screw

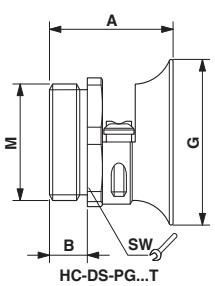


Pressure screw set/seal

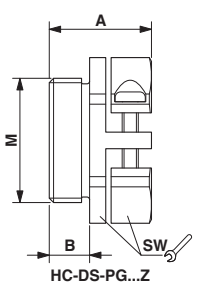
	Technical data	Technical data
Material data		
Material, pressure screw	Nickel-plated brass	Nickel-plated brass
Cable seal material	-	Perbunan
Degree of protection	-	IP65
Temperature data		
Ambient temperature (operation)	-	-20 °C ... 80 °C

Description	Thread type	Ordering data: Type	Order No.	Pcs. / Pkt.	Ordering data: Type	Order No.	Pcs. / Pkt.
Pressure screws, with flared cable bend protection, for housing with Pg glands, clamping range:							
8 mm ...11 mm	Pg11	**HC-DS-PG11-T**	**1686779**	10			
8 mm ... 13.5 mm	Pg13.5	**HC-DS-PG13-T**	**1772683**	10			
9 mm ... 15 mm	Pg16	**HC-DS-PG16-T**	**1772696**	10			
13 mm ... 20 mm	Pg21	**HC-DS-PG21-T**	**1772706**	10			
20 mm ... 27 mm	Pg29	**HC-DS-PG29-T**	**1772719**	10			
Pressure screws, with strain relief clamp, for housing with Pg glands, clamping range:							
10 mm ... 14 mm	Pg13.5	**HC-DS-PG13-Z**	**1772625**	10			
11 mm ... 15 mm	Pg16	**HC-DS-PG16-Z**	**1772638**	10			
12 mm ... 20 mm	Pg21	**HC-DS-PG21-Z**	**1772641**	10			
19 mm ... 27 mm	Pg29	**HC-DS-PG29-Z**	**1772654**	10			
25.5 mm ... 34 mm	Pg36	**HC-DS-PG36-Z**	**1772667**	10			
Pressure screw set, consisting of notched seal, two washers and pressure screw, for housing with Pg glands, sealing range:							
7.5 mm ... 12.5 mm	Pg11				**HC-DS-PG11-E**	**1675476**	10
7.5 mm ... 12.5 mm	Pg13.5				**HC-DS-PG13-E**	**1676873**	10
7.5 mm ... 15 mm	Pg16				**HC-DS-PG16-E**	**1676899**	10
10 mm ... 19 mm	Pg21				**HC-DS-PG21-E**	**1676886**	10
18 mm ... 27 mm	Pg29				**HC-DS-PG29-E**	**1676909**	10
24 mm ... 33 mm	Pg36				**HC-DS-PG36-E**	**1676912**	10
Pressure screw set, consisting of notched seal, two washers and pressure screw, for housing with metric glands, sealing range:							
4 mm ... 13 mm	M20				**HC-M-DE-M20**	**1647967**	10
8.5 mm ... 18 mm	M25				**HC-M-DE-M25**	**1647970**	10
16 mm ... 25 mm	M32				**HC-M-DE-M32**	**1647983**	10
23 mm ... 32 mm	M40				**HC-M-DE-M40**	**1647996**	10
Notched seals, for Pg pressure screws, sealing range:							
7.5 mm ... 12.5 mm	Pg11				**HC-DR-PG11**	**1686795**	10
7.5 mm ... 12.5 mm	Pg13.5				**HC-DR-PG13**	**1686575**	10
7.5 mm ... 15 mm	Pg16				**HC-DR-PG16**	**1686588**	10
10 mm ... 19 mm	Pg21				**HC-DR-PG21**	**1686591**	10
18 mm ... 27 mm	Pg29				**HC-DR-PG29**	**1686601**	10
24 mm ... 33 mm	Pg36				**HC-DR-PG36**	**1686614**	10

Type	A	B	M	SW
HC-DS-PG11-T	22.5	6	Pg11	20
HC-DS-PG13-T	23.5	7.5	Pg13.5	22
HC-DS-PG16-T	23.5	7.5	Pg16	24
HC-DS-PG21-T	26.5	8	Pg21	30
HC-DS-PG29-T	30.5	8	Pg29	41
HC-DS-PG13-Z	18	6.5	Pg13.5	24
HC-DS-PG16-Z	19	7.5	Pg16	27
HC-DS-PG21-Z	21	8	Pg21	34
HC-DS-PG29-Z	22	8	Pg29	42
HC-DS-PG36-Z	25.5	9.5	Pg36	52



HC-DS-PG...T



HC-DS-PG...Z

Full cable screw connection accessories with bend protection, strain relief clamps

– For applications with extreme requirements in terms of bend protection and strain relief
– Screw connections with flared bend protection and strain relief clamps
– Full screw connection for use in housing with thread



Metal screw connection with conductor bend protection and strain relief



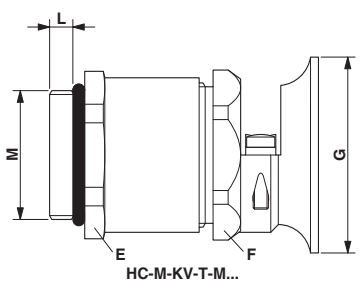
Metal screw connection with strain relief clamp

	Technical data	Technical data
Material data		
Cable gland material	Nickel-plated brass	Nickel-plated brass
Material, O-ring	NBR	NBR
Cable seal material	Perbunan	Perbunan
Degree of protection	IP65	IP65
Temperature data		
Ambient temperature (operation)	-20 °C ... 80 °C	-20 °C ... 80 °C

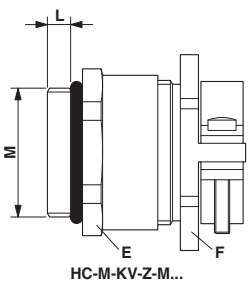
Description	Thread type	Ordering data: Type	Order No.	Pcs. / Pkt.	Ordering data: Type	Order No.	Pcs. / Pkt.
Metal screw connection with conductor bend protection and strain relief, conductor sealing range/thread length:							
7.5 ... 15 mm / 10 ... 16 mm	M20	**HC-M-KV-T-M20**	**1646188**	10			
10 ... 19 mm / 14 ... 21 mm	M25	**HC-M-KV-T-M25**	**1646191**	10			
18 ... 27 mm / 20 ... 30 mm	M32	**HC-M-KV-T-M32**	**1646201**	10			
Metal screw connection with strain relief clamp, conductor sealing range/thread length:							
7.5 ... 15 mm / 11 ... 17 mm	M20				**HC-M-KV-Z-M20**	**1646146**	10
10 ... 19 mm / 12 ... 22 mm	M25				**HC-M-KV-Z-M25**	**1646159**	10
18 ... 27 mm / 20 ... 30 mm	M32				**HC-M-KV-Z-M32**	**1646162**	10
24 ... 33 mm / 26 ... 36 mm	M40				**HC-M-KV-Z-M40**	**1646175**	10

Type	L [mm]	E [WAF]	F [WAF]	G [mm]	M
HC-M-KV-T-M20	6	24	24	32	M20
HC-M-KV-T-M25	7	30	30	38	M25
HC-M-KV-T-M32	8	40	41	50	M32

Type	L [mm]	E [WAF]	F [WAF]	M
HC-M-KV-Z-M20	6	24	27	M20
HC-M-KV-Z-M25	7	30	34	M25
HC-M-KV-Z-M32	8	40	42	M32
HC-M-KV-Z-M40	8	50	52	M40



HC-M-KV-T-M...



HC-M-KV-Z-M...

Accessories
Extension, reducing, NPT adapters and filler plugs

The area of application of existing housings can be extended with extension, reducing, and NPT adapters.

A housing with an M32 screw thread can, for example, be equipped with an M25 screw connection by using the REDUC-M-KV-M 32/M 25 reducing adapter.

NPT adapters make it possible to use US cable glands with the conical National Pipe Thread (NPT thread).

Filler plugs are used to seal unused screw connection openings in housing.



Extension adapter

Technical data

Material data	
Material	Nickel-plated brass
Material, O-ring	NBR
Degree of protection	-
Temperature data	
Ambient temperature (operation)	-20 °C ... 80 °C

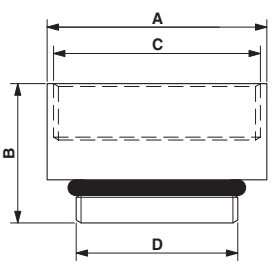
Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Extension adapter, including O-ring			
M16 to M20	**ENLAR-M-KV-M16/M20**	**1647653**	10
M20 to M25	**ENLAR-M-KV-M20/M25**	**1647666**	10
M25 to M32	**ENLAR-M-KV-M25/M32**	**1647679**	10
M32 to M40	**ENLAR-M-KV-M32/M40**	**1647682**	10
Reducing adapter, including O-ring			
M20 to M16			
M25 to M20			
M32 to M25			
M40 to M32			
NPT adapter, including O-ring seal			
1/2" to M20			
3/4" to M25			
1" to M32			
1 1/4" to M40			
Filler plug, for metric screw connection openings, including O-ring			
M16			
M20			
M25			
M32			
M40			
Filler plug, for Pg screw connection openings, including O-ring			
Pg11			
Pg13.5			
Pg16			
Pg21			
Pg29			
Pg36			

Type	Cable diameter [mm]	A [mm]	B [mm]	C [mm]	D [mm]
ENLAR-M-KV-M16/M20	≤ 12	22	17.5	M20	M16
ENLAR-M-KV-M20/M25	≤ 15	27	19	M25	M20
ENLAR-M-KV-M25/M32	≤ 20	34	21	M32	M25
ENLAR-M-KV-M32/M40	≤ 26	42	23	M40	M32

Type	Dimensions [mm]				Dimension ["]	Thread
	A	B	C	D	E	M
HC-NPT-1/2-M20	25.0	6.5	24	15	1/2	20
HC-NPT-3/4-M25	28.0	7.0	30	18	3/4	25
HC-NPT-1-M32	33.0	8.0	38	27	1	32
HC-NPT-1 1/4-M40	34.0	8.0	46	34	1 1/4	40

Type	A [mm]	B [mm]	C [mm]	D [mm]
REDUC-M-KV-M20/M16	24	9	M16	M20
REDUC-M-KV-M25/M20	30	10	M20	M25
REDUC-M-KV-M32/M25	37	11.5	M25	M32
REDUC-M-KV-M40/M32	43	11.5	M32	M40



ENLAR-M-KV-M...



Reducing adapter



NPT adapter



Filler plug

Technical data	
Nickel-plated brass	
NBR	
-	
-20 °C ... 80 °C	

Technical data	
Nickel-plated brass	
NBR	
-	
-20 °C ... 80 °C	

Technical data	
Nickel-plated brass	
NBR	
IP68	
-20 °C ... 80 °C	

Ordering data

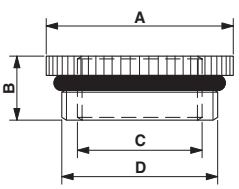
Type	Order No.	Pcs. / Pkt.
REDUC-M-KV-M20/M16	1647611	10
REDUC-M-KV-M25/M20	1647624	10
REDUC-M-KV-M32/M25	1647637	10
REDUC-M-KV-M40/M32	1647640	10

Ordering data

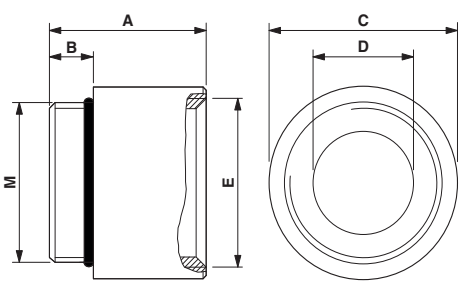
Type	Order No.	Pcs. / Pkt.
HC-NPT-1/2-M20	1686847	25
HC-NPT-3/4-M25	1686850	25
HC-NPT-1/1-M32	1686863	10
HC-NPT-1 1/4-M40	1687587	10

Ordering data

Type	Order No.	Pcs. / Pkt.
HC-M-BS-M16	1646227	10
HC-M-BS-M20	1645846	10
HC-M-BS-M25	1645859	10
HC-M-BS-M32	1645862	10
HC-M-BS-M40	1645875	10
HC-BS-PG11	1674493	10
HC-BS-PG13	1674503	10
HC-BS-PG16	1674516	10
HC-BS-PG21	1674529	10
HC-BS-PG29	1674532	10
HC-BS-PG36	1674545	10



REDUC-M-KV-M...



HC-NPT-...



Tools for crimp connection

The crimp connection belongs to the group of non-releasable electrical connections.

The use of crimp profiles that are exactly tailored to the crimp sleeve and the conductor and the deliberate deformation of the crimp sleeve and the conductor (by closing the crimping pliers) establishes a reliable electrical connection between the wire and the crimp contact.

The crimping pliers are equipped with locators, which enable the exact positioning of the crimp contact and wire.



Available crimping tools

Matching pliers are available for various crimp contacts.

Crimping pliers are available for copper litz wires, coaxial contacts, and fiber optic contacts.

To guarantee a reliable crimp connection, the pliers must be closed correctly. This is achieved by means of a pressure lock. With this in place, the pliers can only be opened after the crimping process is complete.

The key advantages of crimp connections are the efficient processing of contacts using a crimping machine and the consistent crimp quality.



Crimping tools for polymer conductors

Polymer conductors are being used increasingly outside the realm of vehicles. Easy and reliable installation in the field must therefore be possible. The connection between the POF conductor and POF plug-in connection is established quickly and easily using crimping pliers.

Here, line losses (attenuation) at the junction must be as low as possible. A prerequisite for this is a set of high-quality POF crimping pliers.

The CRIMPFOX-1,6 ED-POF crimping pliers ensure:

- A precise press-in depth
- Exact positioning of the POF contacts
- Exact length positioning of the POF conductor



CF 500 crimping machine

The compact CF 500 crimping machine is characterized by its high press capacity and the easy replaceability of its dies. Thanks to the large number of dies available, the machine is a real all-rounder.

- Ferrules up to 50 mm
- TWIN ferrules up to 2 x 10 mm
- Insulated cable lugs up to 6 mm
- Uninsulated cable lugs up to 6 mm
- Tube lugs up to 10 mm
- Slip-on sleeves and flat plugs up to 6 mm
- Turned contacts up to 10 mm²

Further dies are available on request or from the Phoenix Contact e-shop. A user video can be downloaded from the Internet.

Assembly/contact removal tools

In the case of small conductor cross sections, assembly tools must occasionally be used. These are used to insert the crimp contact securely into the contact insert.

In the event of assembly errors or changes to the wiring, a snapped-in contact may have to be removed. This is performed using a contact removal tool.

Each crimp contact has a matching contact removal tool.

CK 1,6... series contacts are removed from the front of the contact inserts using the VC-EW 1,6 tool. For turned and rolled CK 1,6...ST... pin contacts and turned CK 1,6 ED...BU... socket contacts, for example, the sleeve side of the VC-EW 1,6 tool is used.

To remove rolled CK 1,6 ER-BU... socket contacts, the needle side of the VC-EW 1,6 tool must be inserted into the socket contact in order to open the socket release. By pulling the wire, the appropriate contact can then be pulled out of the crimp chamber.

The requirements for crimp connections are described in EN 60352-2.

A key quality feature for the crimp connection is the tensile strength of the connection. This can be measured easily.





Tensile strength of the conductor from the crimp contact (according to EN 60352-2)

Conductor cross section		Tensile strength
mm²	AWG	N
0.05	30	6
0.08	28	11
0.12	26	15
0.14		18
0.22	24	28
0.25		32
0.32	22	40
0.50	20	60
0.75		85
0.82	18	90
1.00		108
1.30	16	135
1.50		150
2.10	14	200
2.50		230
3.30	12	275
4.00		310
5.30	10	355
6.00		360
8.40	8	370
10.00		380

Accessories
Crimping tools



Crimp contacts must be connected to the conductors. This is done by means of crimping. Crimping pliers are available for copper litz wires, coaxial contacts, and fiber optic contacts. The crimping pliers have locators that facilitate accurate positioning of the crimp contact and conductor. To ensure a reliable crimp connection, the pliers must be closed correctly. This is guaranteed by means of a pressure lock.

The requirements placed on crimp connections are described in EN 60352-2. A major feature of the quality of the crimp connection is the tensile strength of the connection. It is simple to measure.



Crimping tools/stripping pliers

Description	Ordering data		
	Type	Order No.	Pcs. / Pkt.
Crimping pliers, for turned contacts with 1.6 / 2.5 / 4.0 mm pin diameters, each with locator			
- For CK1,6-ED ... , CK2,5-ED..., CK4.0-E D... 0.5-4 mm² turned contacts	**CRIMPFOX-TC 4**	**1212113**	1
- For CK4,0-ED... 6 - 10 mm² turned contacts	**CRIMPFOX-TC 10**	**1212114**	1
- For VS...CD turned contacts (D-SUB contacts); crimping tool with four mandrels	**CRIMPFOX RC 2,5**	**1205448**	1
- For CK1,6-ED ... CK2,5-ED; 0.14 - 4 mm² turned contacts	**CRIMPFOX-1,6/2,5-ED-4,0**	**1687419**	1
Coaxial plug-in connector, 1.69 mm, 3.25 mm, 4.52 mm, three marked die stations, pressure lock can be released, lateral entry, hex crimp	**CRIMPFOX-CX 4,52**	**1212094**	1
Crimping pliers			
- For CK1,6-ER... rolled contacts	**CRIMPFOX-1,6-ER-1,50-AT**	**1884843**	1
- For CK1,6-ED...POF turned fiber optic contacts	**CRIMPFOX-1,6-ED-POF-N**	**1584839**	1
Replacement die			
- For CRIMPFOX 1,6/2,5-ED-4,0	**CRIMPFOX-1,6/2,5-ED-4,0 DIE**	**1886948**	1
- For CRIMPFOX-TC 4	**CRIMPFOX-TC 4/DIE**	**1212295**	1
- For CRIMPFOX-TC 10	**CRIMPFOX-TC 10/DIE**	**1212296**	1
Stripping tool for FO cables - **Stripping pliers** for individual elements	**PSM-FO-STRIP**	**2744199**	1
Crimping machine, with quantity counter and foot switch			
230 V version	**CF 500-230V**	**1208348**	1
120 V version	**CF 500-120V**	**1208351**	1
Die for turned contacts with pin diameters of 2.5 and 4.0 mm (CK 2,5…,CK 4,0) 0.14 - 4 mm²	**CF 500/DIE TC 4**	**1212237**	1
Die for (CK 4,0) 6 - 10 mm² turned contacts	**CF 500/DIE TC 10**	**1212260**	1
Cover for insulated cable lugs (RCI..., TC4)	**CF 500/COV RCI**	**1212255**	1
Cover for unassigned dies for self-assembly, TC 10, among others	**CF 500/COV**	**1212250**	1
For TWIN ferrules (AI–TWIN...)	**CF 500/COV AI TWIN**	**1212266**	1
Basic pliers, for accommodating dies for various contact types, pressure lock can be unlocked, lateral entry	**CRIMPFOX-M**	**1212072**	1
Dies, for CRIMPFOX-M For turned contacts with pin diameters of 2.5 mm and 4.0 mm (CK 2,5…,CK 4,0), cross section: 0.14 - 4 mm²	**CRIMPFOX-M TC 4/DIE**	**1212075**	1
For turned contacts with pin diameter of 4 mm (CK 4,0...), cross section: 6 - 10 mm²	**CRIMPFOX-M TC 10/DIE**	**1212076**	1

Accessories
Assembly/removal tools



It is sometimes necessary to use assembly tools in cases of small conductor cross sections. They are used to press the crimp contact firmly into the contact insert.

If incorrect components are installed or alterations are made to the wiring, it will be necessary to remove a contact that is already engaged. This is done with the aid of a removal tool.



Assembly/removal tools

Description	Ordering data		
	Type	Order No.	Pcs. / Pkt.
Assembly tool			
- For CK1,6-ED.../CK2,5-ED.../CK1,6-ER... contacts	**CK1,6/2,5-MWZ**	**1676734**	1
Removal tool			
- For CK1,6-ED.../CK1,6-ER.../CK1,6...POF contacts	**VC-EW 1,6**	**1884869**	1
- For CK2,5-ED... contacts	**CK2,5-EWZ**	**1662722**	1
- For CK4,0-ED... contacts	**CK4,0-EWZ**	**1662735**	1
- For VS-...CD... D-SUB contacts	**EWR**	**1665075**	1
- For HC-M-04...KOAX... coaxial contacts	**HC-M4-KOAX-EWZ**	**1676747**	1
- For HC-M-EMV... EMC plug-in connectors	**HC-M-EMV-KON-EWZ**	**1678635**	1
- For locking sleeve of the HC-M-HV-MOD... module	**HC-M-AH-EWZ**	**1584826**	1

Accessories, crimp contacts

Crimp machines for turned/rolled contacts available on request.

Notes:

For voltages less than 5 V and currents less than 5 mA, gold-plated contacts are recommended.



Ø 1.6 mm, turned crimp contacts, for HC-D, HC-DD-, HC-M-03/04-, HC-M-12-, HC-M-17-, HC-M-EMV-



Ø 2.5 mm, turned crimp contacts, for HC-A-, HC-B-, HC-BB-, HC-HV-, HC-M-06-, HC-M-08-, HC-M-20-, HC-M-HV

Technical data

Material data	Hard silver-plated	Hard gold-plated
Contact material	Copper alloy	Copper alloy
Stripping length of the individual wire	8 mm (6 mm for 2.5 mm²)	8 mm (6 mm for 2.5 mm²)
Insertion/withdrawal cycles	≥ 500	≥ 500
Ambient temperature (operation)	-40 °C ... 125 °C	-40 °C ... 125 °C

Technical data

	Hard silver-plated	Hard gold-plated
	Copper alloy	Copper alloy
	7.5 mm (9.5 mm for HC-M-HV...)	7.5 mm (9.5 mm for HC-M-HV...)
	≥ 500	≥ 500
	-40 °C ... 125 °C	-40 °C ... 125 °C

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Turned socket contacts, silver-plated contact surface, for conductor cross section:			
0.14 mm² ... 0.37 mm²/26 ... 22 AWG	**CK1,6-ED-0,37BU AG**	**1663394**	100
0.50 mm² / AWG 20	**CK1,6-ED-0,50BU AG**	**1663404**	100
0.75 mm² / AWG 18	**CK1,6-ED-0,75BU AG**	**1663417**	100
0.75 mm² ... 1.00 mm² / AWG 18	**CK1,6-ED-1,00BU AG**	**1663420**	100
1.50 mm² / AWG 16	**CK1,6-ED-1,50BU AG**	**1663433**	100
2.50 mm² / AWG 14	**CK1,6-ED-2,50BU AG**	**1663446**	100
4.00 mm² / AWG 12			
6.00 mm² / AWG 10			
10 mm²/AWG 8			
Turned pin contacts, silver-plated contact surface, for conductor cross section:			
0.14 mm² ... 0.37 mm² / AWG 26 ... 22	**CK1,6-ED-0,37ST AG**	**1663336**	100
0.50 mm² / AWG 20	**CK1,6-ED-0,50ST AG**	**1663349**	100
0.75 mm² / AWG 18	**CK1,6-ED-0,75ST AG**	**1663352**	100
0.75 mm² ... 1.00 mm² / AWG 18	**CK1,6-ED-1,00ST AG**	**1663365**	100
1.50 mm² / AWG 16	**CK1,6-ED-1,50ST AG**	**1663378**	100
2.50 mm² / AWG 14	**CK1,6-ED-2,50ST AG**	**1663381**	100
4.00 mm² / AWG 12			
6.00 mm² / AWG 10			
10 mm²/AWG 8			
Turned socket contacts, gold-plated contact surface, for conductor cross section:			
0.14 mm² ... 0.37 mm²/26 ... 22 AWG	**CK1,6-ED-0,37BU AU**	**1674969**	100
0.50 mm² / AWG 20	**CK1,6-ED-0,50BU AU**	**1674480**	100
0.75 mm² / AWG 18	**CK1,6-ED-0,75BU AU**	**1672440**	100
0.75 mm² ... 1.00 mm² / AWG 18	**CK1,6-ED-1,00BU AU**	**1674943**	100
1.50 mm² / AWG 16	**CK1,6-ED-1,50BU AU**	**1674930**	100
2.50 mm² / AWG 14	**CK1,6-ED-2,50BU AU**	**1674985**	100
4.00 mm² / AWG 12			
Turned pin contacts, gold-plated contact surface, for conductor cross section:			
0.14 mm² ... 0.37 mm² / AWG 26 ... 22	**CK1,6-ED-0,37ST AU**	**1674901**	100
0.50 mm² / AWG 20	**CK1,6-ED-0,50ST AU**	**1672453**	100
0.75 mm² / AWG 18	**CK1,6-ED-0,75ST AU**	**1674914**	100
0.75 mm² ... 1.00 mm² / AWG 18	**CK1,6-ED-1,00ST AU**	**1674888**	100
1.50 mm² / AWG 16	**CK1,6-ED-1,50ST AU**	**1674875**	100
2.50 mm² / AWG 14	**CK1,6-ED-2,50ST AU**	**1674927**	100
4.00 mm² / AWG 12			
Turned switch contacts, (pin, 2 mm, lagging), for HC-HV contact carriers, silver-plated contact surface, for conductor cross section:			
1.00 mm²/18 AWG			
1.50 mm² / AWG 16			
2.50 mm² / AWG 14			
Rolled pin contacts, silver-plated contact surface, for conductor cross section:			
0.14 mm² ... 0.50 mm² / AWG 26 ... 20			
0.50 mm² ... 1.50 mm² / AWG 20 ... 16			
Rolled socket contacts, silver-plated contact surface, for conductor cross section:			
0.14 mm² ... 0.50 mm² / AWG 26 ... 20			
0.50 mm² ... 1.50 mm² / AWG 20 ... 16			

Ordering data

Type	Order No.	Pcs. / Pkt.
CK2,5-ED-0,50BU AG	**1663640**	100
CK2,5-ED-0,75BU AG	**1663653**	100
CK2,5-ED-1,00BU AG	**1663666**	100
CK2,5-ED-1,50BU AG	**1663679**	100
CK2,5-ED-2,50BU AG	**1663682**	100
CK2,5-ED-4,00BU AG	**1663705**	100
CK2,5-ED-0,50ST AG	**1663572**	100
CK2,5-ED-0,75ST AG	**1663585**	100
CK2,5-ED-1,00ST AG	**1663598**	100
CK2,5-ED-1,50ST AG	**1663608**	100
CK2,5-ED-2,50ST AG	**1663611**	100
CK2,5-ED-4,00ST AG	**1663637**	100
CK2,5-ED-0,50BU AU	**1674859**	100
CK2,5-ED-1,00BU AU	**1674833**	100
CK2,5-ED-1,50BU AU	**1674820**	100
CK2,5-ED-2,50BU AU	**1674862**	100
CK2,5-ED-4,00BU AU	**1674846**	100
CK2,5-ED-0,50ST AU	**1674804**	100
CK2,5-ED-1,00ST AU	**1674781**	100
CK2,5-ED-1,50ST AU	**1674778**	100
CK2,5-ED-2,50ST AU	**1674817**	100
CK2,5-ED-4,00ST AU	**1674794**	100
CK2,5-ED-1,00ST-S AG	**1663857**	100
CK2,5-ED-1,50ST-S AG	**1663860**	100
CK2,5-ED-2,50ST-S AG	**1663873**	100



Ø 4.0 mm, turned crimp contacts, for HC-M-02, HC-M-03-, HC-M-03/04-, HC-M-04-



Ø 1.6 mm, rolled crimp contacts, taped, for HC-D...R



Ø 1.6 mm, rolled crimp contacts, single contacts, for HC-D...R

Technical data

Copper alloy	
9 mm	
(9.6 mm (4 - 6 mm²)/18 mm (10 mm²))	
≥ 500	
-40 °C ... 125 °C	

Ordering data

Type	Order No.	Pcs. / Pkt.
CK4,0-ED-1,50BU AG	**1663271**	25
CK4,0-ED-2,50BU AG	**1663284**	25
CK4,0-ED-4,00BU AG	**1663297**	25
CK4,0-ED-6,00BU AG	**1663307**	25
CK4,0-ED-10,00BU AG	**1586183**	25
CK4,0-ED-1,50ST AG	**1663239**	25
CK4,0-ED-2,50ST AG	**1663242**	25
CK4,0-ED-4,00ST AG	**1663255**	25
CK4,0-ED-6,00ST AG	**1663268**	25
CK4,0-ED-10,00ST AG	**1586198**	25

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

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

Technical data

CK1,6-ER-0,5...	CK1,6-ER-1,5...
Copper alloy	Copper alloy
3 mm +0.5	3.5 mm +1
≥ 500	≥ 500
-40 °C ... 125 °C	-40 °C ... 125 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
CK1,6-ER-0,50ST AG	**1884092**	100
CK1,6-ER-1,50ST AG	**1884089**	100
CK1,6-ER-0,50BU AG	**1884128**	100
CK1,6-ER-1,50BU AG	**1884115**	100

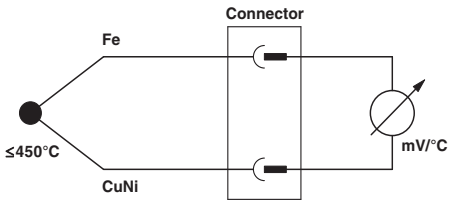
Type J iron and constantan crimp contacts

In hot-channel injection molding machines, temperatures are often measured using iron/constantan thermocouples. Iron/constantan elements are used for temperatures of up to approximately 450°C.

When measuring the temperatures using iron/constantan elements, the control system is connected with iron/constantan conductors. The connection point of the iron or constantan conductor to a brass crimp contact of a connector would result in thermoelectric voltages that can falsify the measuring result. We therefore recommend using iron/constantan crimp contacts.

Iron/constantan crimp contacts can be used in A/B/BB/HV series contact inserts and in HC-M-HV-..., HC-M-06..., HC-M-08..., HC-M-20-... modules.

A combination (standard contacts/thermal contacts) of crimp contact inserts is also possible.





Turned crimp contacts, for contact inserts: HC-M-06, HC-M-HV, HC-M-08, HC-M-20, HC-B, HC-BB, HC-A, HC-HV

Technical data

Material data	CK2,5-ED...FE	CK2,5-ED...CUNI
Contact material	Iron	Copper-nickel (constantan)
Contact surface material	Hard gold-plated	-
Stripping length of the individual wire	7.5 mm (9.5 mm for HC-M-HV...)	7.5 mm (9.5 mm for HC-M-HV...)
Insertion/withdrawal cycles	≥ 500	≥ 500
Temperature data		
Ambient temperature (operation)	-40 °C ... 125 °C	-40 °C ... 125 °C

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Turned socket contacts, 0.5 mm²			
Iron (Fe), Au surface	**CK2,5-ED-0,5BU FE**	**1585773**	25
Constantan (CuNi), uncoated	**CK2,5-ED-0,5BU CUNI**	**1585757**	25
Turned pin contacts, 0.5 mm²			
Iron (Fe), Au surface	**CK2,5-ED-0,5ST FE**	**1585760**	25
Constantan (CuNi), uncoated	**CK2,5-ED-0,5ST CUNI**	**1585744**	25

Accessories
Fiber optic crimp contacts

Fiber optic crimp contacts (980/1000 µm) are suitable for coupling fiber optic cables (polymer fiber optic cable). These can be used in the following crimp contact carriers:
– VC-D (for turned contacts)
– HC M 12... / HC-M-17... / HC-M-03/04...
– HC-D... (for turned contacts)
– HC-DD...

The optical fibers are polished, stripped, and then crimped.



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

Technical data

Material data	
Contact material	Nickel silver
Insertion/withdrawal cycles	≥ 500

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
POF fiber optic contact, turned, for VC-D contact carriers			
Socket	**CK1,6-ED-BU-POF**	**1885004**	50
Plug	**CK1,6-ED-ST-POF**	**1884995**	50
Polisher, metal, for CK1,6-...POF contacts, POF conductor diameter: 2.2 mm	**POLISHER-POF**	**1686122**	1
Crimping pliers			
- For CK1,6-ED...POF turned fiber optic contacts	**CRIMPFOX-1,6-ED-POF-N**	**1584839**	1
Stripping tool for FO cables			
- **Stripping pliers** for individual elements	**PSM-FO-STRIP**	**2744199**	1
Removal tool			
- For CK1,6-ED.../CK1,6-ER.../CK1,6...POF contacts	**VC-EW 1,6**	**1884869**	1
Polishing foil	**POLFOL 1 MIC-POF**	**1636800**	10
Polishing paper	**POLPAP 1500-POF**	**1636813**	10

Accessories
Shield connection



The HEAVYCON D bus contact is used to connect shielded, 2-core bus conductors.

The connection occupies 4 adjacent positions in the contact carrier and is also suitable for use as a T-coupler (two positions for the conductor shield).



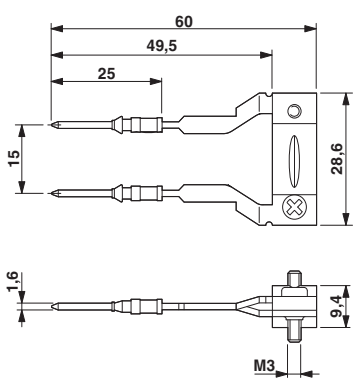
For HC-D40/-D64/HC-M-12 series crimp contact carriers

Technical data

Electrical data	
Rated voltage	60 V
Rated current	10 A
Transmission speed	3 Mbps
Material data	
Contact material	Copper alloy
Contact surface material	Hard silver-plated
Mechanical data	
External cable diameter	6 mm ... 9 mm
Temperature data	
Ambient temperature (operation)	-40 °C ... 60 °C

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Shield connection, for two shielded cables, incl. two loose socket crimp contacts for PROFIBUS cables	**HC-D 4-BU-2BUS**	**1886139**	1
Shield connection, for one shielded cable on pin contact carriers, incl. two loose crimp contacts for PROFIBUS cable	**HC-D 4-ST-1BUS**	**1886142**	1
Shield connection, for shielded cables on socket contact carriers, without loose crimp contacts			
For one bus cable	**HC-D 4-1BU**	**1886143**	1
For two bus cables	**HC-D 4-2BU**	**1886140**	1
Shield connection, for shielded cables on pin contact carriers, without loose crimp contacts			
For one bus cable	**HC-D 4-1ST**	**1886144**	1
For two bus cables	**HC-D 4-2ST**	**1886141**	1
Crimping pliers - For CK1,6-ED ... CK2,5-ED; 0.14 - 4 mm² turned contacts	**CRIMPFOX-1,6/2,5-ED-4,0**	**1687419**	1
Removal tool - For CK1,6-ED.../CK1,6-ER.../CK1,6...POF contacts	**VC-EW 1,6**	**1884869**	1
Assembly tool - For CK1,6-ED.../CK2,5-ED.../CK1,6-ER... contacts	**CK1,6/2,5-MWZ**	**1676734**	1



HC-D 4-...BUS

Replacement locking latch, bolt, locking screw



Replacement latch



Replacement bolt/locking screw

Description	Ordering data			Ordering data		
	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Replacement single locking latch, plastic, for standard housing type:						
B6	**HC-B 6-LB**	**1584211**	10			
B10	**HC-B 10-LB**	**1584651**	10			
B16	**HC-B 16-LB**	**1584664**	10			
B24	**HC-B 24-LB**	**1584677**	10			
Replacement single locking latch, plastic, for standard housing type:						
D7	**HC-D 7-LB-KU**	**1584680**	10			
Replacement double locking latch, plastic, for standard housing type:						
B10 ... B24	**HC-B 10-24-QB**	**1637265**	10			
Replacement bolt, steel, for HEAVYCON sleeve housing HC-B...-TFL... (no EMC housing), for type:						
B48				**HC-B 48-LB ERSBOLZ**	**1636114**	10
Replacement locking screw, stainless steel, for HEAVYCON ADVANCE housing type:						
B6 ... B24				**HC-B-TMS-ERSSCHR**	**1584198**	10
HC-B..TMS...EEE	**HC-B-TMS-ERSSCHR-IMB**	**1409244**	10			
Replacement bearing block for housing:						
B/D series with plastic protective cover				**HC-B/D-ERSLABO-SD-KU**	**1408070**	1
B series with ALU protective cover				**HC-B-ERSLABO-SD-AL**	**1408067**	1
Replacement single locking latch, plastic, for HEAVYCON EVO plastic housing type:						
B6	**HC-B06-SL-PLBK**	**1407697**	1			
B10	**HC-B10-SL-PLBK**	**1407698**	1			
B16	**HC-B16-SL-PLBK**	**1407700**	1			
B24	**HC-B24-SL-PLBK**	**1407701**	1			
Replacement double locking latch, plastic, for HEAVYCON EVO plastic housing type:						
B10 ... B24	**HC-B10-24-DL-PLBK**	**1407696**	1			
Sealing screw, IP65, for standard housing type:						
D7				**HC-D 7-DS-IP65**	**1686229**	100

Replacement flat gaskets, profile gaskets

- Replacement seals not for EMC housing.
- Replacement profile gaskets for EMC housing.
- Profile gaskets must be stuck to the housing.



Replacement flat gasket



Replacement profile gasket

	Technical data	Technical data
Material data		
Material	NBR	NBR
Temperature data		
Ambient temperature (operation)	-40 °C ... 125 °C	-40 °C ... 125 °C

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Replacement flat gasket, self-adhesive, for HEAVYCON panel mounting base type:						
B6	**HC-B 6-FL-DI**	**1663019**	10			
B10	**HC-B 10-FL-DI**	**1662146**	10			
B16	**HC-B 16-FL-DI**	**1661451**	10			
B24	**HC-B 24-FL-DI**	**1774665**	10			
B32	**HC-B 32-FL-DI**	**1687778**	10			
B48	**HC-B 48-FL-DI**	**1774678**	10			
D7	**HC-D 7-FL-DI**	**1645503**	10			
D15	**HC-D 15-FL-DI**	**1679582**	10			
D25	**HC-D 25-FL-DI**	**1679595**	10			
Replacement profile gasket, for supporting base element type:						
B6				**HC-B 6-PR-DI**	**1663022**	10
B10				**HC-B 10-PR-DI**	**1663035**	10
B16				**HC-B 16-PR-DI**	**1661079**	10
B24				**HC-B 24-PR-DI**	**1663048**	10
D15				**HC-D 15-PR-DI**	**1661189**	10
D25				**HC-D 25-PR-DI**	**1408054**	10
Replacement flat gasket, self-adhesive, for HEAVYCON EVO plastic panel mounting base type:						
B6	**HC-B06-SG-RBK**	**1407702**	1			
B10	**HC-B10-SG-RBK**	**1407703**	1			
B16	**HC-B16-SG-RBK**	**1407704**	1			
B24	**HC-B24-SG-RBK**	**1407705**	1			
Replacement profile gasket, for HEAVYCON EVO plastic supporting base element type:						
B6				**HC-B06-SP-RBK**	**1407706**	1
B10				**HC-B10-SP-RBK**	**1407707**	1
B16				**HC-B16-SP-RBK**	**1407708**	1
B24				**HC-B24-SP-RBK**	**1407709**	1
Replacement profile gasket, for uneven mounting panels, for ADVANCE sleeve housing EEE type:						
B6				**HC-B 6-TMS-EEE-PR-DI**	**1409794**	10
B10				**HC-B 10-TMS-EEE-PR-DI**	**1409804**	10
B16				**HC-B 16-TMS-EEE-PR-DI**	**1409817**	10
B24				**HC-B 24-TMS-EEE-PR-DI**	**1409820**	10

Cover and adapter plates



Partition plates with prefabricated plug-in connector cutouts are often used in modern control cabinet construction. However, not all of these cutouts are necessarily used. The unused cutouts can be closed using the HC-...AP cover plates.

The HC-ADP 24 adapter plates can be used to mount panel mounting base types B6, B10, and B16 (or other types with an identical design) on a 35 mm x 113 mm B24 standard cutout.

Adapters are also available for HC-D7-AML... and M23 circular plug-in connectors for the wall opening according to type B24.

Note:

– HC-B..-ADP-B...GY adapter plates can be used for HC-B...-AMLD housing with protective covers.



Cover plate

Technical data

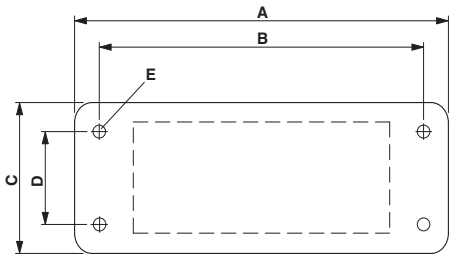
Material data	
Material	PA
Inflammability class according to UL 94	HB
Color	Light gray
Degree of protection	IP54
Temperature data	
Ambient temperature (operation)	-20 °C ... 100 °C

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Cover plate, height: 3.5 mm, for HEAVYCON panel cutout type:			
B6 (cutout: 35 mm x 52 mm)	**HC-B 6-AP-GY**	**1660368**	10
B10, HV3 (cutout: 35 mm x 65 mm)	**HC-B 10-AP-GY**	**1660371**	10
B16, HV6 (cutout: 35 mm x 86 mm)	**HC-B 16-AP-GY**	**1660384**	10
B24, HV10/16 (cutout: 35 mm x 113 mm)	**HC-B 24-AP-GY**	**1660397**	10
D15 (cutout: 24 mm x 58 mm)	**HC-D 15-AP-GY**	**1660342**	10
D25 (cutout: 24 mm x 74 mm)	**HC-D 25-AP-GY**	**1660355**	10
Cover plate, height: 7 mm, for individual processing, for HEAVYCON panel cutout type:			
B16 (cutout: 35 mm x 86 mm)	**HC-B 16-APV-GY**	**1661121**	10
B24 (cutout: 35 mm x 113 mm)	**HC-B 24-APV-GY**	**1661037**	10
Adapter plate, for reducing HEAVYCON B24 panel cutouts to:			
B16 (cutout: 35 mm x 86 mm)			
B10 (cutout: 35 mm x 65 mm)			
B6 (cutout: 35 mm x 52 mm)			
Adapter plate, for adapting HEAVYCON B24 panel cutouts to 3 x D7 (cutout: 21.5 mm x 21.5 mm)			
Adapter plate, for adapting HEAVYCON B24 panel cutouts to 3 circular plug-in connector cutouts (Ø 21 mm)			



Adapter plate



Type	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
HC-B 6-AP	86	70	52	32	4.5
HC-B 10-AP	103	83	52	32	4.5
HC-B 16-AP	123	103	52	32	4.5
HC-B 24-AP	150	130	52	32	4.5
HC-D 15-AP	87	70	40	17.5	3.5
HC-D 25-AP	103	86	45	17.5	3.5

Dimensions table: HC-...-AP...

Technical data

PA	
HB	
Light gray	
IP54	
-20 °C ... 100 °C	

Ordering data

Type	Order No.	Pcs. / Pkt.

D-SUB adapter plates

Notes:
Fur D-SUB plug-in connectors with crimp or manual solder connection that can be used, see Catalog 2
D-SUB assembly in the adapter plate: front mounting



With the HEAVYCON D-SUB adapter plates, D-SUB plug-in connectors according to IEC 60807-2/DIN 41652 can be mounted in sturdy HEAVYCON housings.

When locked, the HEAVYCON housings fulfill the requirements of IP65 protection (IP69K in the case of HC-ADVANCE). This ensures that interference such as moisture, dirt, and dust are kept away from the plug-in connectors.

Depending on the application, a single or double-row version is available with 9, 15, 25, 37 or 50 positions. The delivery includes mounting screws, but not the D-SUB plug-in connector.



Adapter plate
for one D-SUB plug-in connector

Technical data

Material data	
Material	PA
Inflammability class according to UL 94	HB
Color	gray
Temperature data	
Ambient temperature (operation)	-20 °C ... 100 °C

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
D-SUB adapter plate, for fitting HEAVYCON housing with **one** D-SUB plug-in connector. For housing type / D-SUB type:			
B6 / D-SUB 09	**HC-B 6-ADP/1 DSUB 9**	**1775457**	2
B6 / D-SUB 15	**HC-B 6-ADP/1 DSUB 15**	**1775473**	2
B10 / D-SUB 25	**HC-B 10-ADP/1 DSUB 25**	**1775499**	2
B16 / D-SUB 37	**HC-B 16-ADP/1 DSUB 37**	**1775512**	2
B16 / D-SUB 50	**HC-B 16-ADP/1 DSUB 50**	**1775538**	2
D-SUB adapter plate, for fitting HEAVYCON housing with **two** D-SUB plug-in connectors. For housing type / D-SUB type:			
B6 / D-SUB 09			
B6 / D-SUB 15			
B10 / D-SUB 25			
B16 / D-SUB 37			
B16 / D-SUB 50			
D-SUB adapter plate, for fitting HC-D15... housing with **one** D-SUB plug-in connector. D-SUB type:			
D-SUB 09			
D-SUB 15			
D-SUB 25			



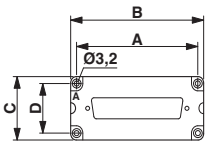
**Adapter plate
for two D-SUB plug-in connectors**



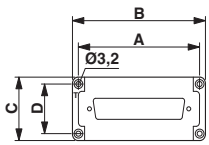
**Adapter plate
for one D-SUB plug-in connector**

HC	D-SUB	A [mm]	B [mm]	C [mm]	D[mm]
B6	9	44	51.5	34.5	27
B6	15	44	51.5	34.5	27
B10	25	57	64.5	34.5	27
B16	37	77.5	85	34.5	27
B16	50	77.5	85	34.5	27
D15	15	49.5	57	23	16
D15	25	49.5	57	23	16

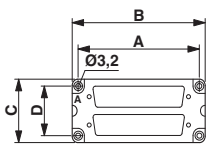
Dimensions table: D-SUB adapter plates



Mounting position for panel mounting bases, box mounting bases, and coupling housing (identification letter A is visible)



Mounting position of sleeve housing (identification letter T is visible)



Mounting position for panel mounting bases, box mounting bases, and coupling housing (identification letter A is visible)

Technical data

PA	
HB	
gray	
-20 °C ... 100 °C	

Ordering data

Type	Order No.	Pcs. / Pkt.
HC-B 6-ADP/2 DSUB 9	**1775460**	2
HC-B 6-ADP/2 DSUB 15	**1775486**	2
HC-B 10-ADP/2 DSUB 25	**1775509**	2
HC-B 16-ADP/2 DSUB 37	**1775525**	2
HC-B 16-ADP/2 DSUB 50	**1775541**	2

Technical data

PA	
HB	
gray	
-20 °C ... 100 °C	

Ordering data

Type	Order No.	Pcs. / Pkt.
HC-D 15-ADP/1 DSUB 9	**1661312**	2
HC-D 15-ADP/1 DSUB 15	**1775253**	2
HC-D 15-ADP/1 DSUB 25	**1775266**	2

Docking frames

Docking frames have been designed for use in the rear panel of control cabinet inserts, for example. The docking frames ensure that the socket insert and pin insert make contact correctly.

The docking frames enable different insert depths to be compensated for:
– X-axis ±1.5 mm
– Y-axis ±1.5 mm

The mounting panel must be grounded due to the floating frame.



Docking frames

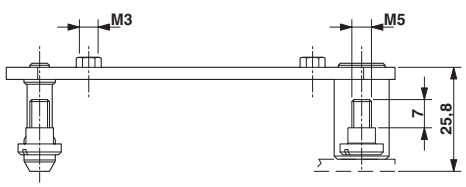
Technical data

Material data	
Material	Stainless steel
Insertion/withdrawal cycles	≥ 500
Temperature data	
Ambient temperature (operation)	-40 °C ... 125 °C

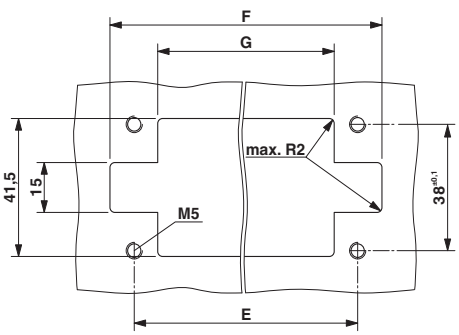
Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Docking frame, with 4 flat headed screws with lug, for contact insert type:			
B6, DD24, BB10, K, M	**HC-B 6-ANDOCK**	**1586112**	1
B10, DD42, BB 18, K, M	**HC-B 10-ANDOCK**	**1586125**	1
B16, D40, DD72, BB32, K, M	**HC-B 16-ANDOCK**	**1586138**	1
B24, D64, DD108, BB46, K, M	**HC-B 24-ANDOCK**	**1586141**	1

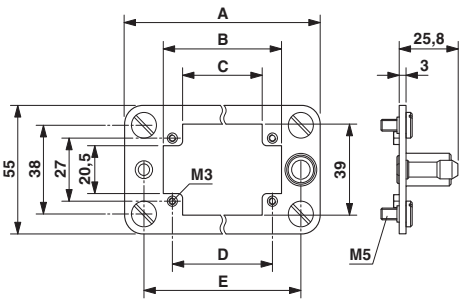
Type	A	B	C	D	E	F	G
HC-B 6-ANDOCK	86	52	35	44	69	84	54.5
HC-B 10-ANDOCK	99	65	48	57	82	97	67.5
HC-B 16-ANDOCK	119.5	85.5	68.5	77.5	102.5	117.5	88
HC-B 24-ANDOCK	146	112	95	104	129	144	114.5



Clearance



Panel cutout



Dimensional drawing

Docking frames for HEAVYCON modular

– The docking frame can be used to combine a wide range of modules to create one plug-in connection (IP20).

Notes:
Use of docking frames, e.g., in the back panel of control cabinet racks.
A metal mounting panel must be grounded separately, as the plastic frame does not have a PE connection.
Docking frames ensure correct contacting of plug and socket modules



Floating assembly, location ID A/B/C/etc.



Fixed assembly, location ID a/b/c/etc.

	Technical data	Technical data
Material data		
Material	PC	PC
Inflammability class according to UL 94	V0	V0
Insertion/withdrawal cycles	≥ 500	≥ 500
Temperature data		
Ambient temperature (operation)	-40 °C ... 125 °C	-40 °C ... 125 °C

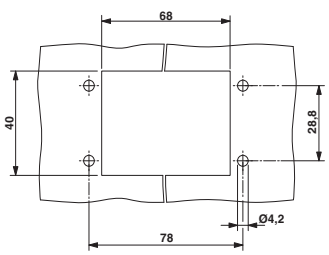
Ordering data

Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Docking frame for:						
Four module slots	**HC-B 16-ANDOCK-MOD-T**	**1587454**	2	**HC-B 16-ANDOCK-MOD-A**	**1587467**	2
Six module slots	**HC-B 24-ANDOCK-MOD-T**	**1587470**	2	**HC-B 24-ANDOCK-MOD-A**	**1587483**	2

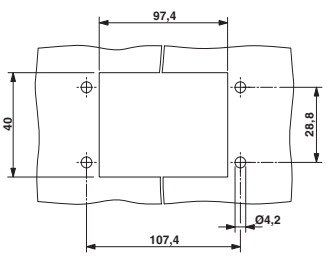
Accessories

Special washer for floating assembly of docking frame, for M4 cylinder head screws	**HC-MOD-ANDOCK-USCH**	**1587496**	2			

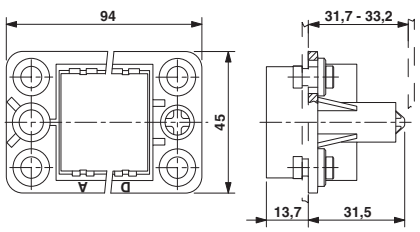
Note about special washer	The special washer enables rack compensation of ±2 mm in the X and Y-axis for docking frames.



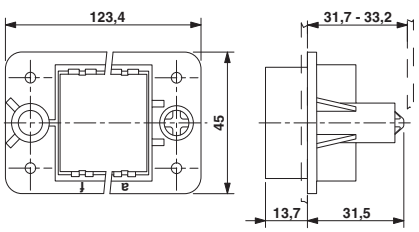
Mounting cutout for HC-B 16-ANDOCK-MOD...



Mounting cutout for HC-B 24-ANDOCK-MOD...



Dimensional drawing of HC-B 16-ANDOCK-MOD...



Dimensional drawing of HC-B 24-ANDOCK-MOD...

Protective cover

- HC-D7 protective cover with a seal for socket contact inserts.
- HC-D7 protective cover without a seal for pin contact inserts.
- Not for HC-B...EMC housing
- In the case of aluminum protective covers and when coding sockets, pins, and bolts are used, the guide pins of the protective cover must be removed.
- Plastic protective cover: for short-term protection



Plastic protective cover



Metal protective cover

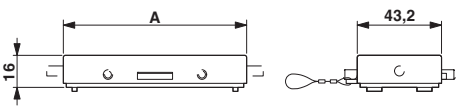
Technical data		
Material data	Without latch	With latch
Material, protective cover	PA	PA
Locking latch material	-	Stainless steel, handle: PA-GF
Inflammability class according to UL 94	HB	HB
Degree of protection	IP54	IP54
Ambient temperature (operation)	-20 °C ... 100 °C	-20 °C ... 100 °C

Technical data	
Without latch	With latch
Al	Al
-	Stainless steel, handle: PA-GF
-	-
IP65	IP65
-40 °C ... 125 °C	-40 °C ... 125 °C

Description	Ordering data: Type	Order No.	Pcs. / Pkt.	Ordering data: Type	Order No.	Pcs. / Pkt.
Protective cover, for panel mounting bases, box mounting bases, and coupling housing **with single locking latch**, with retaining cord, **without** seal, for housing type:						
B6	**HC-B 6-SD-FL/FS**	**1660180**	10	**HC-B 6-SD-FLU/FS-AL**	**1644559**	10
B10, HV3	**HC-B 10-SD-FL/FS**	**1660177**	10	**HC-B 10-SD-FLU/FS-AL**	**1644562**	10
B16, HV6	**HC-B 16-SD-FL/FS**	**1660151**	10	**HC-B 16-SD-FLU/FS-AL**	**1644588**	10
B24, HV10/16	**HC-B 24-SD-FL/FS**	**1660148**	10	**HC-B 24-SD-FLU/FS-AL**	**1644601**	10
D7	**HC-D 7-SD-FL/FS**	**1772573**	10			
Protective cover, plastic						
D7	**HC-D 7-SD-FL/FS-MD**	**1644300**	10			
D15	**HC-D 15-SD-FL/FS**	**1660164**	10			
D25	**HC-D 25-SD-FL/FS**	**1660135**	10			
Protective cover, for panel mounting bases, box mounting bases, and coupling housing **with double locking latch**, with retaining cord, **without** seal, for housing type:						
B10, HV3	**HC-B 10-SD-FQ/FS**	**1772586**	10	**HC-B 10-SD-FQU/FS-AL**	**1644575**	10
B16, HV6	**HC-B 16-SD-FQ/FS**	**1772599**	10	**HC-B 16-SD-FQU/FS-AL**	**1644591**	10
B24, HV10/16	**HC-B 24-SD-FQ/FS**	**1772609**	10	**HC-B 24-SD-FQU/FS-AL**	**1644614**	10
B32	**HC-B 32-SD-FQU/FS**	**1646120**	10			
D50	**HC-D 50-SD-FQ/FS**	**1660193**	10			
Protective cover, for sleeve housing **without single locking latch**, with retaining cord, **with** seal, for housing type:						
B6	**HC-B 6-SD-ML/FS**	**1678282**	10	**HC-B 6-SD-MLT/FS-AL**	**1644546**	10
B10, HV3	**HC-B 10-SD-ML/FS**	**1678295**	10	**HC-B 10-SD-MLT/FS-AL**	**1584512**	10
B16, HV6	**HC-B 16-SD-ML/FS**	**1678318**	10	**HC-B 16-SD-MLT/FS-AL**	**1584525**	10
B24, HV10/16	**HC-B 24-SD-ML/FS**	**1678334**	10	**HC-B 24-SD-MLT/FS-AL**	**1584538**	10
Protective cover, for sleeve housing **without double locking latch**, with retaining cord, **with** seal, for housing type:						
B10, HV3	**HC-B 10-SD-MQ/FS**	**1678305**	10	**HC-B 10-SD-MQT/FS-AL**	**1584541**	10
B16, HV6	**HC-B 16-SD-MQ/FS**	**1678321**	10	**HC-B 16-SD-MQT/FS-AL**	**1584554**	10
B24, HV10/16	**HC-B 24-SD-MQ/FS**	**1678347**	10	**HC-B 24-SD-MQT/FS-AL**	**1584567**	10
Protective cover, for sleeve housing **with double locking latch**, with retaining cord, **with** seal, for housing type:						
B10, HV3	**HC-B 10-SD-FQT/FS**	**1687260**	10	**HC-B 10-SD-FQT/FS-AL**	**1647750**	10
B16, HV6	**HC-B 16-SD-FQT/FS**	**1687273**	10	**HC-B 16-SD-FQT/FS-AL**	**1647763**	10
B24, HV10/16	**HC-B 24-SD-FQT/FS**	**1687286**	10	**HC-B 24-SD-FQT/FS-AL**	**1647776**	10

Type	A [mm]
HC-B 6-SD-.../FS-AL	60.2
HC-B 10-SD-.../FS-AL	73.4
HC-B 16-SD-.../FS-AL	94.0
HC-B 24-SD-.../FS-AL	120.0

Dimensions table: metal protective cover



HC-B...-SD-.../FS-AL

Protective cover for HEAVYCON ADVANCE

Not for HEAVYCON modular assembled with the following modules:
– HC-M-02-HS-70/....
– HC-M-03/04-MOD...
– HC-M-04-MOD...



Protective cover with screw locking

Technical data

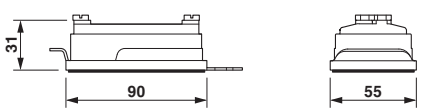
Material data	HC-B...TMS-SD-IP65	HC-B...TMS-SD-IP50
Seal material	NBR	-
Material, protective cover	PA	PA
Locking latch material	Stainless steel	-
Inflammability class according to UL 94	V0	V0
Diameter of retaining cord eyelet	3.5 mm	3.5 mm
Color	gray	gray
Degree of protection	IP65	IP50
Temperature data		
Ambient temperature (operation)	-20 °C ... 100 °C	-20 °C ... 100 °C

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
IP65 protective cover, for panel mounting side, with retaining cord			
B6	**HC-B 6-TMS-SD-IP65**	**1690778**	10
B10	**HC-B 10-TMS-SD-IP65**	**1690781**	10
B16	**HC-B 16-TMS-SD-IP65**	**1690794**	10
B24	**HC-B 24-TMS-SD-IP65**	**1690804**	10
IP50 protective cover			
B6	**HC-B 6-TMS-SD-IP50**	**1690736**	10
B10	**HC-B 10-TMS-SD-IP50**	**1690749**	10
B16	**HC-B 16-TMS-SD-IP50**	**1690752**	10
B24	**HC-B 24-TMS-SD-IP50**	**1690765**	10

Type	A [mm]
HC-B 6-TM...SD-IP...	92
HC-B 10-TM...SD-IP...	105
HC-B 16-TM...SD-IP...	126
HC-B 24-TM...SD-IP...	152

Dimensions table: protective cover



HC-B...-TMS-SD-IP...

PE screws, PE multiplier

If more than one PE conductor is to be routed via a contact insert, additional PE connections must be made. This is achieved with additional screws or with the PE multiplier.

Note:

If the PE multiplier is used, a housing height of ≥ 72 mm is required.

HC-B-3PE cannot be used for HC-B....ZZ terminal adapters.



Technical data

Material data	HC-...PES	HC-B-3PE
Material	Steel, galvanized	Brass, nickel-plated
Conductor cross section	-	0.5 mm² ... 2.5 mm²
Connection cross section AWG	-	20 ... 14

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
PE screw, for contact inserts:			
HC-B / HC-BB / HC-DD / HC-D40 / HC-D64	**HC-B-PES**	**1604997**	10
HC-A... / HC-D15 / HC-D25	**HC-A-PES**	**1584868**	10
HC-HS 6...	**HC-HS-PES**	**1586219**	100
PE extension, for HC-K 6/0-E... contact inserts			
	HC-K 6 PE 16 QMM F	**1583869**	25
	HC-K 6 PE 16 QMM M	**1583870**	25
PE multiplier, for three PE connections, for HC-B (except for HC-B..E..ZZ) / HC-BB / HC-DD / HC-D40 / HC-D64 contact inserts			
	HC-B-3PE	**1644326**	1

Strain relief clamps



Cable trees with crimp contacts must not put a strain on the engaged contacts with their weight.

This is avoided by the use of strain relief clamps.



Technical data

Material data	
Material	Steel

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Strain relief clamps, for contact inserts from the following series: B-, BB-, D40, D64, DD, and HV			
- Straight cable outlet	**HC-B-ZG**	**1685327**	10
- Lateral cable outlet	**HC-B-ZS**	**1685330**	10

Coding pin, coding socket



Coding sockets/pins are used to prevent incorrect connections when connecting identical plug-in connectors.

As far as possible, coding pins and sockets prevent the plug from being inserted or removed at an angle.

Coding pins and sockets are mandatory for HC-D... and HC-DD series contact inserts.

Up to 16 plug-in connections can be protected against mismatching with coding pins and sockets.

For coding principle, see page 583.



Technical data

Material data	
Material	Steel

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Coding sockets and pins, for coding to protect against mismatching and as a guide to prevent accidentally jamming the connector in at an angle, cannot be used with HC-Modular and HC-D7 ...			
Coding pin	**HC-CST**	**1676857**	10
Coding socket	**HC-CBU**	**1676860**	10

Coding pin, coding socket

For housing with modular contact inserts.

Coding pins/sockets are mandatory when using the following modules:

– HC-M-25-MOD...
– HC-M-04MOD...
– HC-M-DSUB09...

Up to 16 plug-in connections can be protected against mismatching with coding pins/sockets.

For coding principle, see page 583.



Technical data

Material data	
Material	Steel

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Coding sockets/pins, for coding to protect against mismatching and as a guide to prevent accidentally jamming the connector in at an angle, for HC-Modular			
Coding pin	**HC-CST-MOD**	**1636127**	10
Coding socket	**HC-CBU-MOD**	**1636130**	10

Coding bolt, coding profile





Technical data

Material data	HC-CB	CP-HC
Material	Steel	PA

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Coding bolts prevent mismatching of up to six plug-in connectors	**HC-CB**	**1772722**	10
Coding profile, for HC-B... contact inserts with screw, crimp, QUICKON, and push-in connection. For HC-B..A-UT.../ HC-B..A-DT... series terminal adapters.	**CP-HC**	**1686478**	40
Coding profile, for coding HC-HS 2-D7-E...S contact inserts	**HC-HS 2-CP**	**1586280**	50
Coding profile, prevents mismatching of similar plug-in connectors Coding profile	**CP-HCC 4**	**1600027**	100

Dummy sockets





Dummy sockets prevent a plug-in connection from being inserted if a pin is present at the coding position in the pin insert. Identical plug-in connectors can therefore be protected against mismatching.

Technical data

Material data	CK1,6-ED-BB	CK2,5-ED-BB
Material	Copper alloy	PA

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Dummy sockets, for contact carriers with turned socket contacts of type:			
CK-1,6-ED...	**CK1,6-ED-BB**	**1645888**	50
CK-2,5-ED...	**CK2,5-ED-BB**	**1584693**	100

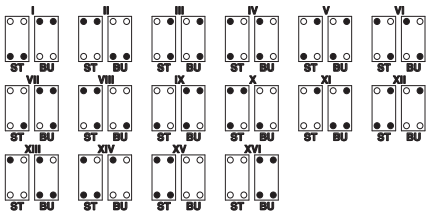


Figure 1: Coding with coding pins and sockets for housing with one contact insert

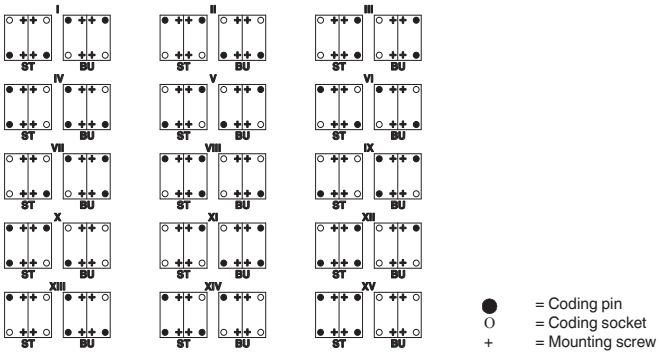


Figure 2: Coding with coding pins and sockets for housing with two contact inserts

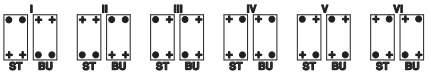


Figure 3: Coding with coding bolts for housing with one contact insert

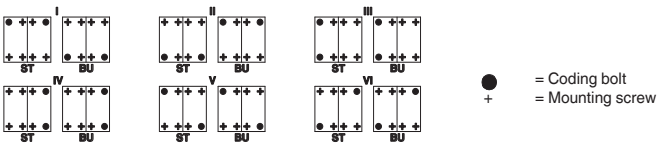


Figure 4: Coding with coding bolts for housing with two contact inserts



Figure 5: Use of coding pin and coding socket

Plastic protective hoses and corrugated pipe adapters



The plastic hose screw connection (corrugated pipe adapter) is available with IP68 protection for the protective hose and with IP66 protection for the plug thread. When used in conjunction with a sealing agent such as Loctite®, IP68 protection can also be achieved on the plug side. The corrugated pipe adapter offers the following features:

– Vibration-resistant, automatic protective hose latching
– Metric trapezoidal thread
– Resistant to oils and gasoline, as well as acids and solvents
– Free from silicone, halogen, and cadmium

The hose screw connection (corrugated pipe adapter) can be mounted without any tools. When used in conjunction with new HEAVYCON EVO and HEAVYCON ADVANCE, the hose screw connections (corrugated pipe adapters) are an ideal combination for ensuring a secure connection between the protective hose and plug.



Notes:

Pcs. / Pkt. specifies the protective hose length in [m].



Slotted, outside diameter of 21.2 - 42.5 mm

Technical data

General data		
Material		PA
Degree of protection		-
Thread type		-
Components		Free from silicone, halogen and cadmium
Inflammability class according to UL 94		HB
Temperature range	[°C]	-40 ... 105

Ordering data

Description		Color	Type	Order No.	Pcs. / Pkt.
Protective hose, slotted, for retrofitting					
Diameter [mm] Outside/inside	Bending radius [mm] Static				
21.2 / 16.5	40	black	**WP-PA HF-SL 21,2 BK**	**3240845**	10
28.5 / 23	45	black	**WP-PA HF-SL 28,5 BK**	**3240846**	10
34.5 / 29	55	black	**WP-PA HF-SL 34,5 BK**	**3240847**	10
42.5 / 36	65	black	**WP-PA HF-SL 42,5 BK**	**3240848**	10
Protective hose					
Diameter [mm] Outside/inside	Bending radius [mm] Static/dynamic				
10 / 6.5	13 / 35	black			
13 / 10	20 / 45	black			
15.8 / 12	35 / 55	black			
21.2 / 16.5	45 / 75	black			
28.5 / 23	55 / 100	black			
34.5 / 29	65 / 120	black			
42.5 / 36	90 / 150	black			
Protective hose					
Diameter [mm] Outside/inside	Bending radius [mm] Static/dynamic				
10 / 6.5	13 / 35	black			
13 / 10	20 / 45	black			
15.8 / 12	35 / 55	black			
21.2 / 16.5	45 / 75	black			
28.5 / 23	55 / 100	black			
34.5 / 29	65 / 120	black			
42.5 / 36	90 / 150	black			
Screw connection, IP66, straight, with metric thread, for protective hose outside diameter [mm]					
21.2		black			
28.5		black			
34.5		black			
42.5		black			



PA 6.6 V0 plastic protective hose, outside diameter of 10 - 42.5 mm



PA 6.6 HB plastic protective hose, outside diameter of 10 - 42.5 mm



Corrugated pipe adapter, IP66/IP68 protection, M20 - M40 metric thread

Technical data

PA
-
-
Free from silicone, halogen and cadmium
V0
-40 ... 115

Ordering data

Type	Order No.	Pcs. / Pkt.
WP-PA HF 10,0 BK	**3240680**	50
WP-PA HF 13,0 BK	**3240681**	50
WP-PA HF 15,8 BK	**3240682**	50
WP-PA HF 21,2 BK	**3240683**	50
WP-PA HF 28,5 BK	**3240684**	50
WP-PA HF 34,5 BK	**3241088**	25
WP-PA HF 42,5 BK	**3241089**	25

Technical data

PA
-
-
Free from silicone, halogen and cadmium
HB
-40 ... 105

Ordering data

Type	Order No.	Pcs. / Pkt.
WP-PA HF-HB 10,0 BK	**3240838**	50
WP-PA HF-HB 13,0 BK	**3240839**	50
WP-PA HF-HB 15,8 BK	**3240840**	50
WP-PA HF-HB 21,2 BK	**3240841**	50
WP-PA HF-HB 28,5 BK	**3240842**	50
WP-PA HF-HB 34,5 BK	**3240843**	25
WP-PA HF-HB 42,5 BK	**3240844**	25

Technical data

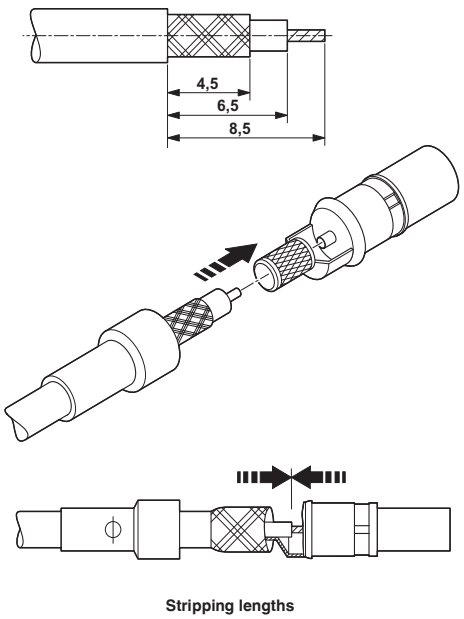
PA
IP66/IP68
metric
Free from silicone, halogen and cadmium
V0
-40 ... 115

Ordering data

Type	Order No.	Pcs. / Pkt.
WP-GR HF CTA M20 BK	**3241220**	20
WP-GR HF CTA M25 BK	**3241221**	10
WP-GR HF CTA M32 BK	**3241222**	10
WP-GR HF CTA M40 BK	**3241223**	10

Assembly instructions for modular contact inserts HC-M-04-MOD....

– Strip the cable (see drawing).
– Slide the sleeve over the cable.
– Solder the wires to the coaxial contact.
– Lay the braided shield over the ridges of the contact.
– Slide the sleeve over the braided shield and crimp the cable along the narrow contact collar.



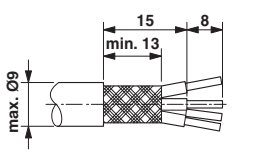
Stripping lengths

Cable designation	Wave impedance	Sheath Ø [mm]	Inner conductor Ø [mm]	Attenuation [dB/100 m] at		
				100 MHz	200 MHz	800 MHz
RG 174/U	50 Ω	2.5	0.48	29	–	84
RG 188 A/U	50 Ω	2.6	0.54	–	40	–
RG 316/U	50 Ω	2.5	0.54	–	40	–
RG 179 B/U	75 Ω	2.55	0.3	–	41	–
RG 187 A/U	75 Ω	2.7	0.3	–	41	–

Cables that can be used for coaxial contacts

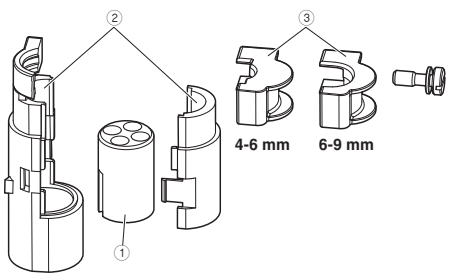
Assembly instructions for modular contact inserts HC-M-EMV-MOD....

– Strip the cable as specified, lay the braided shield around the cable sheath, and secure with shrink sleeve.
– Mount the contact carrier ① in the EMC plug-in connector.
– Attach the metal half shells ②.
– Crimp the wires with crimp contacts and snap the contacts into the contact carrier ① ensuring correct position assignment.
– Mount the clamp ③.
– Snap the EMC plug-in connector into the EMC module.
– Place the module in the hinged retaining frame.

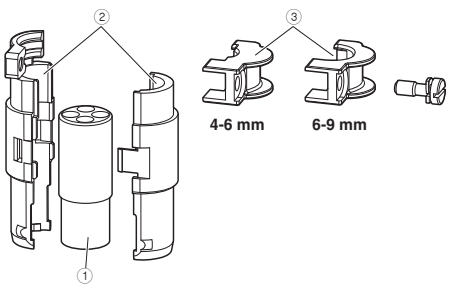


Stripping length of the litz wires at 2.5 mm²: 6 mm

Stripping lengths for HC-M-EMV-....

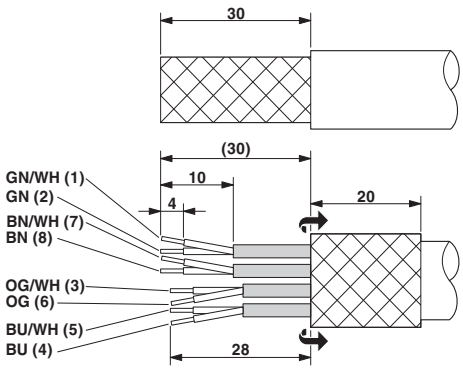


HC-M-EMV-ST/3-9,5



HC-M-EMV-BU/3-9,5

Assembly instructions for GBIT module HC-M-08-GBIT....



Stripping lengths for HC-M-GBIT....

Assembly instructions for modular contact inserts HC-M-HV-MOD....

– Insert the wire through the locking sleeve
– Strip 9.5 mm off the wire
– Crimp the wires with CK 2,5...ED crimp contact
– Snap the locking sleeve and crimp contact together with the insulating body of the module

	Cable diameter in [mm]
Pg11/13.5	7.5 - 12.5
Pg16	7.5 - 15.0
Pg21	10.0 - 19.0
Pg29	18.0 - 27.0
Pg36	24.0 - 33.0
M20	5.0 - 12.0
M25	9.0 - 18.0
M32	16.0 - 21.0
M40	23.0 - 32.0

Cable sealing range for housing with screw connection

Notes on using axial screw technology

Axial connection technology can be used for stranded wires.

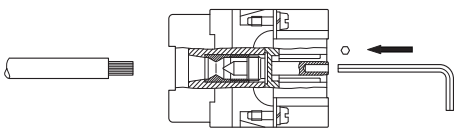
The conductor cross sections specified in the catalog refer to the geometric cross section of the cable used. Use of cables with a geometric cross section that differs greatly from the nominal cross section of the cable should be checked before use. The wiring space for axial screw technology is designed for fine strand cables according to VDE 0295 Class 5. Deviating cable structures (e.g., Class 6 cables) should be checked before use.

Assembly instructions:

Before assembly, ensure that the tapered screw is turned back all the way (chamber is open). The cables must not be twisted. The wires should be inserted as far as they will go into the contact chamber (until the insulation touches the contact). Hold the wires in position and use the socket wrench to tighten.

The used wire end should be cut off before connecting again.

The connection screw may only be retightened once to prevent the litz wires from breaking.



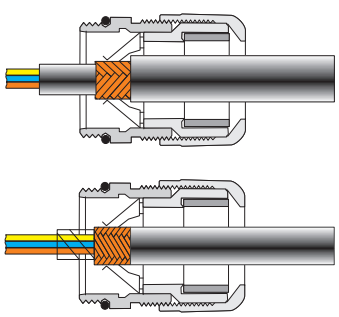
Notes on the EMC screw connection HC-EMV-KV-M...

Method 1

– Cut the outer sheath at around 15 mm, but do not remove it
– Feed the cable through the screw connection
– Remove the outer sheath
– Pull the cable back until the connection is established between the cable shield and the contact spring

Method 2

– Strip the outer sheath
– Push the braided shield back approx. 15 - 20 mm over the outer sheath
– Insert the cables into the screw connection until the connection is established between the cable shield and the contact spring



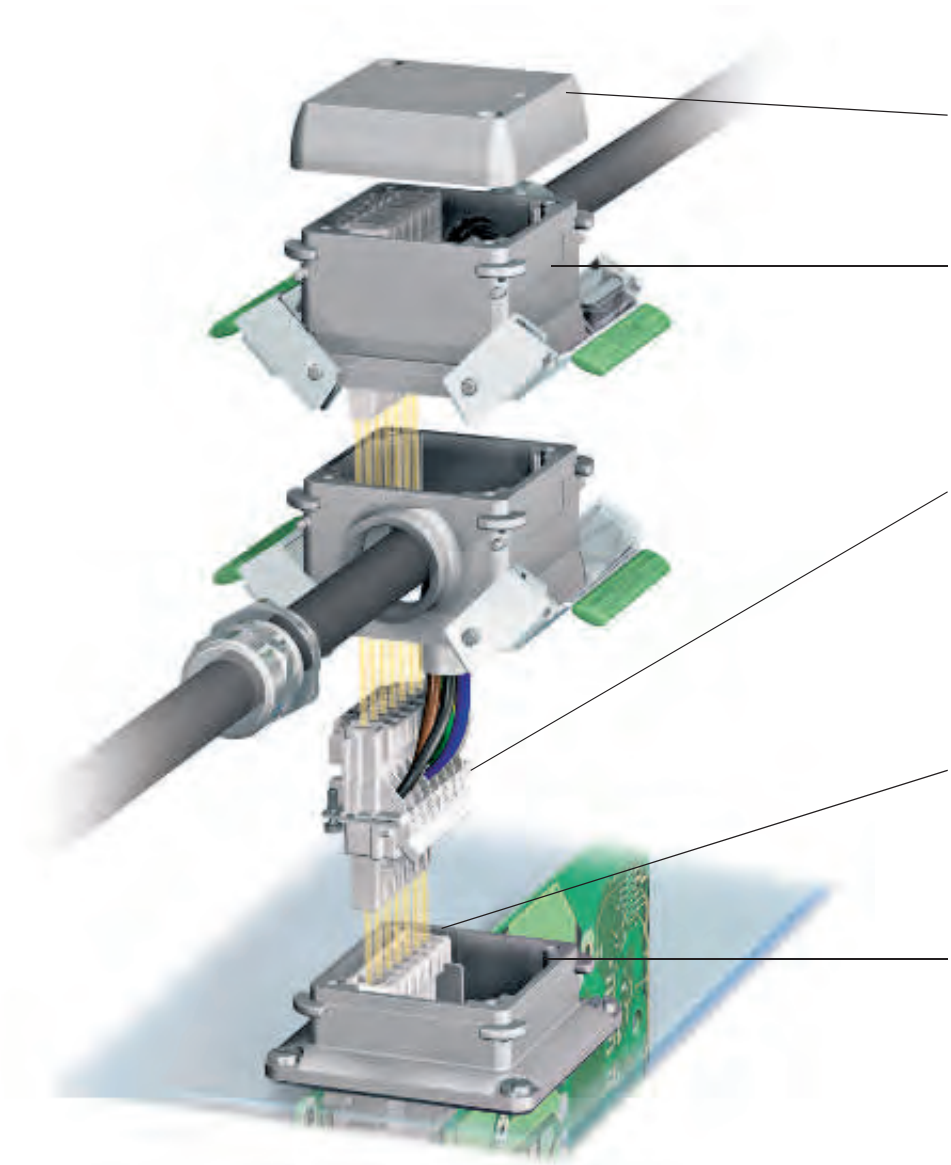
DUPLICON



DUPLICON is a consistent power distributor system for 6 x 4 mm² + PE conductors (25 A/400/690 V), from the power rail to ST-COMBI in the control cabinet right up to the PCB or plug-in connection on the power load. The system has a minimum of components and handling is extremely flexible. The robust metal housing with innovative locking latches means that DUPLICON is qualified for the harshest operating conditions.

The design meets the requirements for IP67 protection. The contact inserts have a capacitive PE contact and the screw connections can be assembled using standard tools. DUPLICON acts as an interface between the control cabinet and the device or actuators/drives. With connection options of 24 V or two-wire bus cables for AS-i or PROFIBUS, DUPLICON also provides a connection to the signal world, which opens up a broad range of possible applications.

Thanks to the plug-in design, all cables can be conveniently assembled in the workshop and quickly connected together in the system. All connections are touch proof in accordance with DIN VDE 0105 and meet the requirements of BGV A2 accident prevention regulations.



Cover (removable)
Testing possible when plugged in

Stackable housing
The square design enables three cable outlet directions

Contact insert
400/690 V/25 A
6 x 4.0 mm² + PE
0.2 - 4.0 mm²/24 - 12 AWG
Capacitive PE
Touch proof, IP20
Screw connection

PCB contact insert
With a choice of screw connection or plug-in with an ST-COMBI coupling

Panel mounting base
Extremely robust for a flexible number of stackable housings

The product range

Plug-in connector sets

These simplify your initial order and reduce logistics expenses. Sets are available for typical DUPLICON applications, with the stackable plug, panel feed-through, cable coupling, three-way distributor, and T-box.

The housing is available with M20 or M25 threads. Please order cable glands separately.



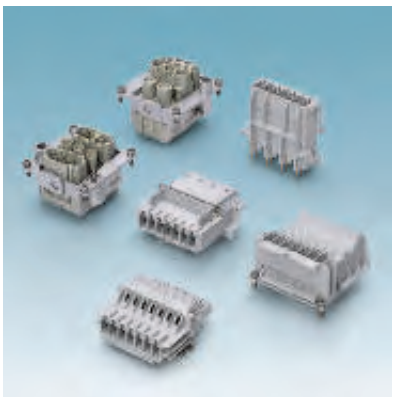
from page 592

Contact inserts

The current range of contact inserts is designed for the consistent distribution of power and 24 V or a two-wire bus system such as AS-i or PROFIBUS. The contact inserts feature screw connections in the stackable plug-in connectors, two connections per position in the T-box, and a direct PCB connection in the device.

The advantages of the screw connection technology include maximum reliability, universal use, minimal contact resistance, and a compact design. The range can, however, be extended on request with other connection technology or numbers of positions. Contact us for more information.

When connecting motors, where signals and power are often combined in a single plug-in connector, 3 modules from the HEAVYCON range can be integrated into the module frame.



from page 594

Housing

The housing range consists of flat assembly housing with closed base and panel mounting bases with open base for plug-in panel feed-throughs. The stackable housing with one or two cable entries and typical sleeve housing for accommodating modular contact inserts can be attached to these. The patented locking latches are made from stainless spring steel and provide maximum resistance to vibrations with very low operating forces. The T-box can be used to implement cost-optimized power distribution, whereby the main power cable does not have to support plug-in capability throughout. All housings versions are made from salt-water-resistant die-cast aluminum and are suitable for EMC applications.



from page 596

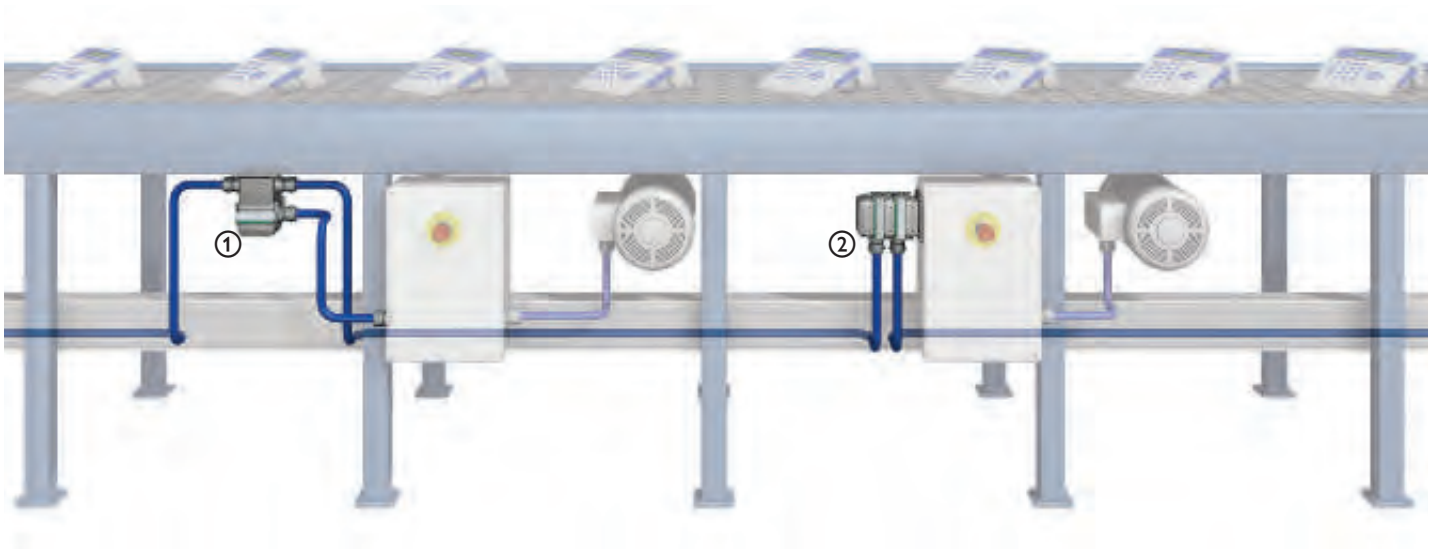
Accessories

A mounting bracket with two different limb lengths rounds off the DUPLICON plug-in connector range. The self-tapping mounting screws with Torx head simplify mounting. Replacement seals are available for servicing work. The dust protection cover made of ABS is simply snapped on and can be coated if necessary. The M12 adapter is used, for example, to supply small loads in the field with 24 V and is equipped with M12-SPEEDCON.



from page 600

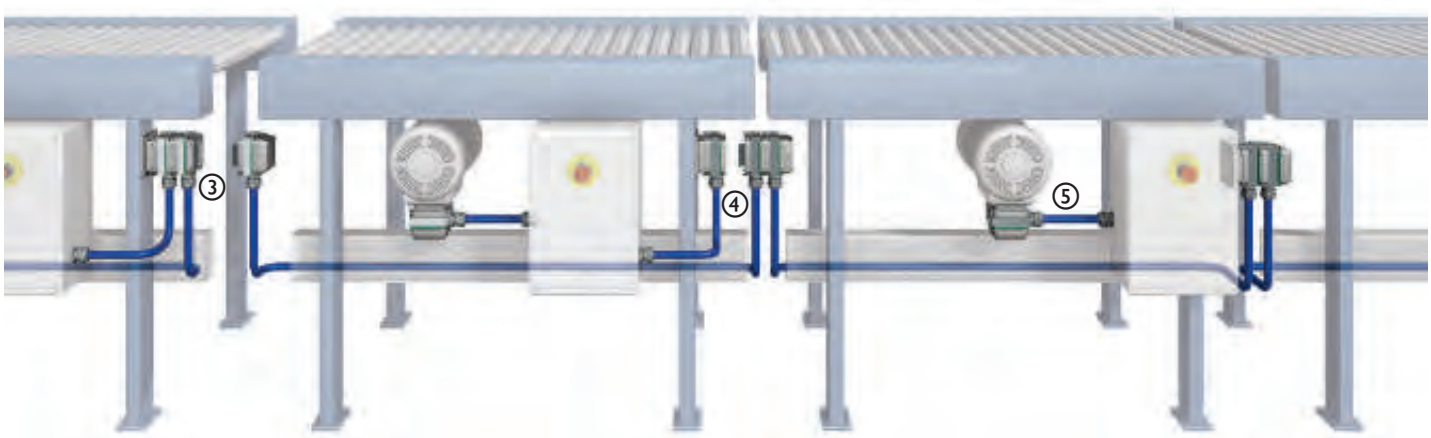
Stationary power distribution



There are essentially two DUPLICON options for stationary power distribution:
① Using the T-box, which is installed permanently next to the power load and has a plug-in cable outlet.
② Using a stackable device connection. Direct device connection is always the best option, but this requires design-based integration.

The main advantages are separate plug-in capability of the cables during startup and uninterrupted device replacement during future servicing.

Modular power distribution



③ Your power distribution can be configured in advance, thanks the stackable design. Plug and play ensures quick and reliable startup.
④ During servicing, the main power cable is disconnected from the load without causing any interruption and the system continues running.
⑤ DUPLICON is also suitable for use as a motor plug-in connector. The square design enables three different cable outlet directions and the vibration-resistant locking mechanism can withstand the harshest of operating conditions.
The modular contact inserts offer a wide range of possible applications.

Please contact us if you have any special requests relating to contact inserts.

Cable routing options



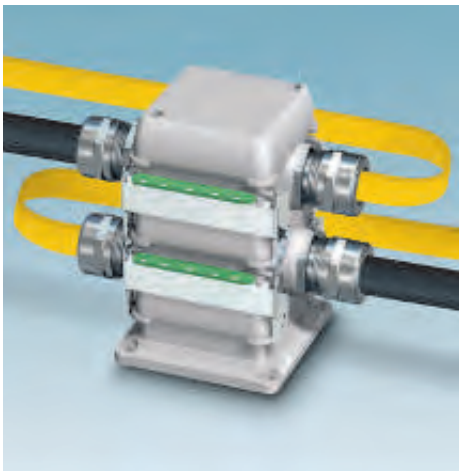
With hybrid cables

In the classic and simplest case, one cable is introduced per stackable housing. With the aid of an M25 adapter screw connection, cables with a diameter of up to 21 mm can be connected.



With separate cables

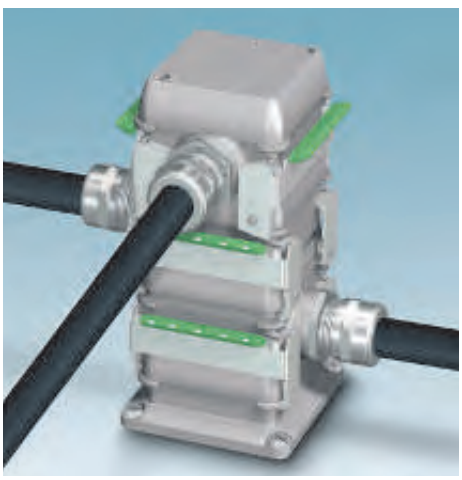
The cable glands with two holes allow thin power and 24 V cables to be routed separately into stackable housing.



With opposing cables

The housing with two cable entries allows cables with larger diameters or combinations, e.g., with AS-i cables or PROFIBUS, to be routed in.

Power distribution options



Stackable distributor

Thanks to its stackable design, DUPLICON supports a flexible number of cable outlets. The square design allows cable outlets to be implemented in 90° increments. DUPLICON is easy to retrofit into existing installations. Disconnect the power line, assemble with stackable plugs, connect together – and you're done!



T-box

For fixed installations, the DUPLICON T-box is the inexpensive and compact alternative to the stackable distributor. The contact insert has two screw connections per position for looping through the power cable. The cable outlet on the top supports connection in any of the four directions.



Device connection

As a device connection, DUPLICON is the most effective and inexpensive version of distributed power distribution. The direct PCB connection in the 90° and 180° version saves a jumpering level in the device. The contact insert is compatible with ST-COMBI (CLIPLINE) plug-in modular terminal blocks.

Plug-in connector sets

Suitable standard and EMC cable glands are listed in PLUSCON industrial plug-in connectors under HEAVYCON and VARIOCON accessories.

Notes:
For cable glands, see from page 552
For accessories, see page 600



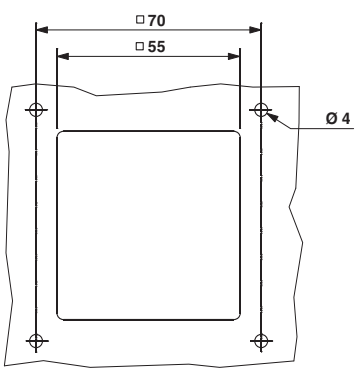
Stackable plug set (stackable housing, contact insert)



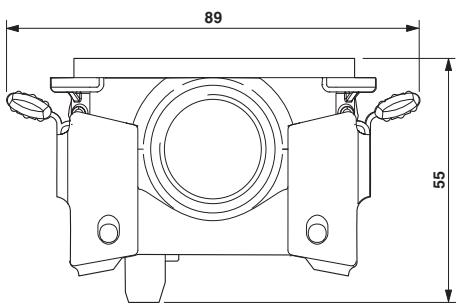
Panel feed-through set (panel mounting base, stackable housing, 2 contact inserts, housing cover)

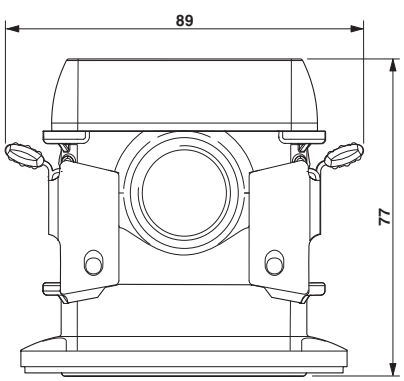
	Technical data	Technical data
Technical data		
Electrical data in acc. with IEC 61076-2-101		
Rated voltage (III/3)	400 V (L-PE) / 690 V (L-L)	400 V (L-PE) / 690 V (L-L)
Rated surge voltage	6 kV	6 kV
Rated current	25 A	25 A
Surge voltage category / pollution degree	III / 3	III / 3
Volume resistance	1.5 mΩ	1.5 mΩ
Material data		
Housing material	Aluminum, die-cast	Aluminum, die-cast
Housing surface material	EMC-conductive	EMC-conductive
Seal material	NBR	NBR
Locking latch material	Stainless steel	Stainless steel
Contact material	Cu	Cu
Contact surface material	Ag	Ag
Contact carrier material	PA	PA
Material grip body interlock	PA	PA
Inflammability class according to UL 94	V0	V0
Mechanical data		
Degree of protection	IP65/IP66/IP67	IP65/IP66/IP67
Insertion/withdrawal cycles	≥ 100	≥ 100
Connection data		
Connection method	Screw connection	Screw connection
Stripping length of the individual wire	10 mm	10 mm
Conductor cross section	0.2 mm² ... 4 mm² (6 mm² without ferrule)	0.2 mm² ... 4 mm² (6 mm² without ferrule)
Connection cross section AWG	24 ... 12 (AWG 10 without ferrule)	24 ... 12 (AWG 10 without ferrule)
Tightening torque	0.5 Nm ... 0.6 Nm	0.5 Nm ... 0.6 Nm
Temperature data		
Ambient temperature (operation)	-40 °C ... 100 °C	-40 °C ... 100 °C

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
DUPLICON sets, stackable housing without cable gland						
With M20 thread	**DC-B 6-SET-HD-M20-M-7X4-UT**	**1602216**	1	**DC-B 6-SET-WF-M20R-M-7X4-UT**	**1602232**	1
With M25 thread	**DC-B 6-SET-HD-M25-M-7X4-UT**	**1602229**	1	**DC-B 6-SET-WF-M25R-M-7X4-UT**	**1602258**	1
	Accessories			**Accessories**		
Special cable gland, M25, brass						
With 10 mm and 11 mm hole	**HC-M-KV-M25(1X10/1X11)**	**1580228**	10	**HC-M-KV-M25(1X10/1X11)**	**1580228**	10



Panel cutout: DC-B 6-SET-WF...







Coupling set
(basic housing, 2 stackable housings, 2 contact inserts, housing cover)



Distributor set
(basic housing, 3 stackable housings, 3 contact inserts, housing cover)



T-box set
(T-box with contact insert, stackable housing with contact insert, housing cover)

Technical data

400 V (L-PE) / 690 V (L-L)	
6 kV	
25 A	
III / 3	
1.5 mΩ	
Aluminum, die-cast	
EMC-conductive	
NBR	
Stainless steel	
Cu	
Ag	
PA	
PA	
V0	
IP65/IP66/IP67	
≥ 100	
Screw connection	
10 mm	
0.2 mm² ... 4 mm² (6 mm² without ferrule)	
24 ... 12 (AWG 10 without ferrule)	
0.5 Nm ... 0.6 Nm	
-40 °C ... 100 °C	

Ordering data

Type	Order No.	Pcs. / Pkt.
DC-B 6-SET-CO-M20-M-7X4-UT	**1602274**	1
DC-B 6-SET-CO-M25-M-7X4-UT	**1602287**	1

Accessories

HC-M-KV-M25(1X10/1X11)	**1580228**	10

Technical data

400 V (L-PE) / 690 V (L-L)	
6 kV	
25 A	
III / 3	
1.5 mΩ	
Aluminum, die-cast	
EMC-conductive	
NBR	
Stainless steel	
Cu	
Ag	
PA	
PA	
V0	
IP65/IP66/IP67	
≥ 100	
Screw connection	
10 mm	
0.2 mm² ... 4 mm² (6 mm² without ferrule)	
24 ... 12 (AWG 10 without ferrule)	
0.5 Nm ... 0.6 Nm	
-40 °C ... 100 °C	

Ordering data

Type	Order No.	Pcs. / Pkt.
DC-B 6-SET-3D-M20-M-7X4-UT	**1602290**	1
DC-B 6-SET-3D-M25-M-7X4-UT	**1602300**	1

Accessories

HC-M-KV-M25(1X10/1X11)	**1580228**	10

Technical data

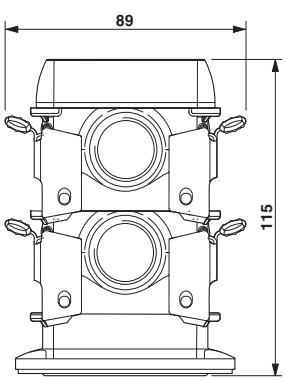
400 V (L-PE) / 690 V (L-L)	
6 kV	
25 A	
- / 3	
1.5 mΩ	
Aluminum, die-cast	
EMC-conductive	
NBR	
Stainless steel	
Cu	
Ag	
PA	
PA	
V0	
IP65/IP66/IP67	
≥ 100	
Screw connection	
10 mm	
0.2 mm² ... 4 mm² (6 mm² without ferrule)	
24 ... 12	
0.5 Nm ... 0.6 Nm	
-40 °C ... 100 °C	

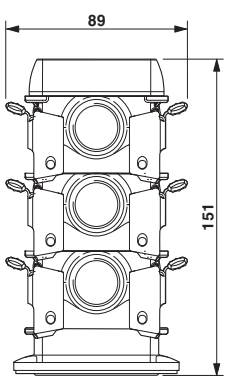
Ordering data

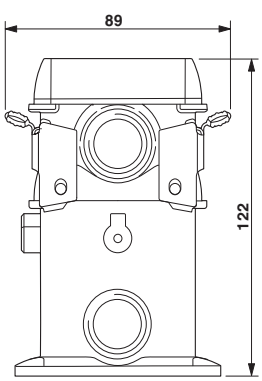
Type	Order No.	Pcs. / Pkt.
DC-B 6-SET-TB-M20-M-7X4-UT	**1581023**	1
DC-B 6-SET-TB-M25-M-7X4-UT	**1581036**	1

Accessories

HC-M-KV-M25(1X10/1X11)	**1580228**	10

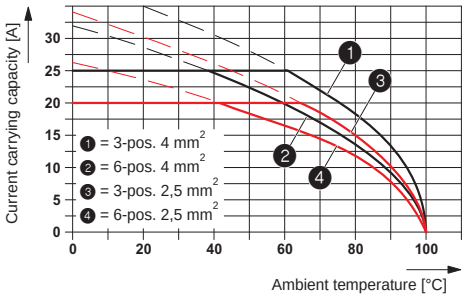






Contact inserts





Derating diagram



Stacked contact insert

With the stackable contact inserts, the power conductors for modular mechanical and plant engineering can be pre-assembled and combined on site to form power distributors quickly, easily and reliably.

The T-box contact insert is predestined for stationary installations. With two connections per position, it is used to loop through power conductors on site. Compared to the DUPLICON 3-way distributor, the design height is reduced by 20% with T-box plug-in connectors and they also save on a complete stackable plug.

DUPLICON is the first IP67 plug-in connector that can be tested from the outside while it is plugged in. All that is necessary is to unscrew both screws in the cover, after which all the contacts will be immediately accessible to conventional testing devices. For safety reasons, all the contacts are IP20 touch proof in acc. with DIN VDE 0105.

Note:

Coding stars with 4 coding branches are available for coding several similar plug-in connectors in order to prevent mismatching, Order No. 3040588.

EB 2-6 dual insertion bridges with a 2 mm pitch (Order No. 0201155) are available for bridging two adjacent connections.

Technical data

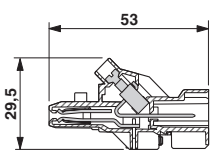
Technical data	
Electrical data in acc. with IEC 61076-2-101	
Rated voltage (III/3)	400 V (L-PE) / 690 V (L-L)
Rated surge voltage	6 kV
Rated current	25 A
Surge voltage category / pollution degree	III / 3
No. of pos.	6
Material data	
Contact material	Cu
Contact surface material	Ag
Contact carrier material	PA
Inflammability class according to UL 94	V0
Mechanical data	
Degree of protection	IP20, touch proof
Insertion/withdrawal cycles	≥ 100
Connection data	
Connection method	Screw connection
Stripping length of the individual wire	10 mm
Conductor cross section	0.2 mm² ... 4 mm² (6 mm² without ferrule)
Connection cross section AWG	24 ... 12 (AWG 10 without ferrule)
Tightening torque	0.5 Nm ... 0.6 Nm
Temperature data	
Ambient temperature (operation)	-40 °C ... 100 °C

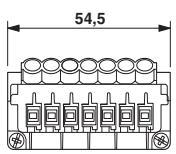
Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Stacked contact insert, 6 x 4 mm² + PE Screw connection	**DC-B 6-ID-7X4-UT**	**1602203**	10
T-box contact insert, 6 x 4 mm² + PE With two screw connections per position			
Panel mounting contact insert, 6 x 4 mm² + PE 180° PCB connection			
Panel mounting contact insert, 6 x 4 mm² + PE 90° PCB connection			

Accessories

Coding star, with four coding branches, for coding plug-in connectors	**PC**	**3040588**	50
Insertion bridge, insulated	**EB 2- 6**	**0201155**	100
Replacement screws			
M3 screw, V2A, for fixing the contact inserts for PCB connection in the panel mounting base			







T-box contact insert



Panel mounting contact insert, 180° PCB connection



Panel mounting contact insert, 90° PCB connection

Technical data

400 V (L-PE) / 690 V (L-L)	
6 kV	
25 A	
III / 3	
6	
Cu	
Ag	
PA	
V0	
IP20, touch proof	
≥ 100	
Screw connection	
10 mm	
0.2 mm² ... 4 mm² (6 mm² without ferrule)	
24 ... 12 (AWG 10 without ferrule)	
0.5 Nm ... 0.6 Nm	
-40 °C ... 100 °C	

Ordering data

Type	Order No.	Pcs. / Pkt.
DC-B 6-IBT-7X4-UT	**1581065**	10

Accessories

PC	**3040588**	50
EB 2- 6	**0201155**	100

Technical data

400 V (L-PE) / 690 V (L-L)	
6 kV	
25 A	
III / 3	
6	
Cu	
Ag	
PA	
V0	
IP20, touch proof	
≥ 100	
Solder connection	
-	
-	
-	
-	
-40 °C ... 100 °C	

Ordering data

Type	Order No.	Pcs. / Pkt.
DC-B 6-IB-7X4-PCB-180	**1602177**	10

Accessories

PC	**3040588**	50
VC-TR-S	**1607826**	50
DC-PCB-M3X20	**1602407**	100

Technical data

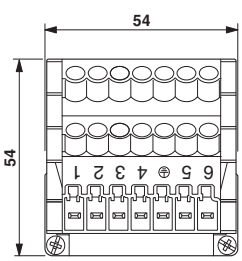
400 V (L-PE) / 690 V (L-L)	
6 kV	
25 A	
III / 3	
6	
Cu	
Ag	
PA	
V0	
IP20, touch proof	
≥ 100	
Solder connection	
-	
-	
-	
-	
-40 °C ... 100 °C	

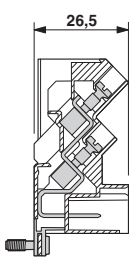
Ordering data

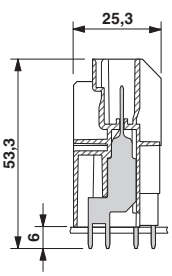
Type	Order No.	Pcs. / Pkt.
DC-B 6-IB-7X4-PCB- 90	**1602180**	10

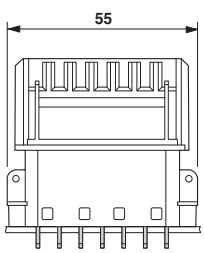
Accessories

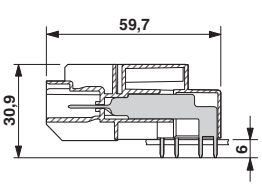
PC	**3040588**	50
VC-TR-S	**1607826**	50
DC-PCB-M3X20	**1602407**	100

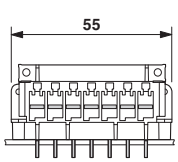












Housing

Notes:

For cable glands, see from page 552



Housing cover

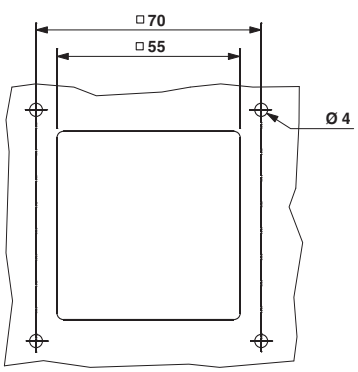


Panel mounting base with open bottom

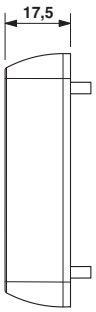
	Technical data	Technical data
Technical data		
Material data		
Housing material	Aluminum, die-cast	Aluminum, die-cast
Housing surface material	EMC-conductive	EMC-conductive
Seal material	NBR	NBR
Locking latch material	-	-
Material grip body interlock	-	-
Mechanical data		
Degree of protection	IP65/IP66/IP67	IP65/IP66/IP67
Temperature data		
Ambient temperature (operation)	-40 °C ... 125 °C	-40 °C ... 125 °C

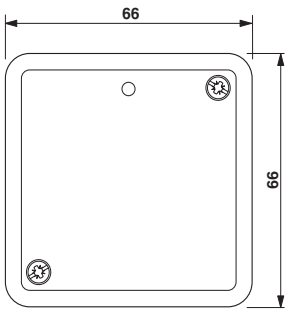
	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Aluminum housing cover	**DC-B 6-CT-M**	**1602025**	10			
Aluminum panel mounting base, with open base				**DC-B 6-HB-M**	**1602038**	10
Aluminum basic housing with closed base						
Aluminum stackable housing						
With 2 x M20 thread						
With 2 x M25 thread						
With 1 x M20 thread						
With 1 x M25 thread						
T-box housing						
With 2 x M20 thread						
With 2 x M25 thread						

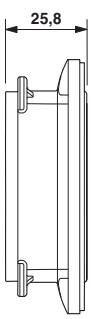
	Accessories	Accessories
Special cable gland, M25, brass With 10 mm and 11 mm hole		

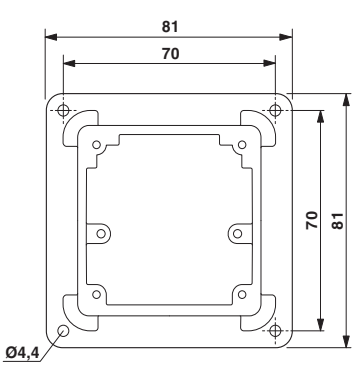


Panel cutout: DC-B 6-HB-M











Basic housing
with closed bottom



Stackable housing
without cable gland



T-box, box mounting base

Technical data

Aluminum, die-cast
EMC-conductive
-
-
-

IP65/IP66/IP67

-40 °C ... 125 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
DC-B 6-HM-M	1602164	10

Accessories

Technical data

Aluminum, die-cast
EMC-conductive
NBR
Stainless steel
PA

IP65/IP66/IP67

-40 °C ... 125 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
DC-B 6-HD-M20/M20-M	1602067	10
DC-B 6-HD-M25/M25-M	1602070	10
DC-B 6-HD-M20-M	1602041	10
DC-B 6-HD-M25-M	1602054	10

Accessories

HC-M-KV-M25(1X10/1X11)	1580228	10

Technical data

Aluminum, die-cast
EMC-conductive
-
-
-

IP65/IP66/IP67

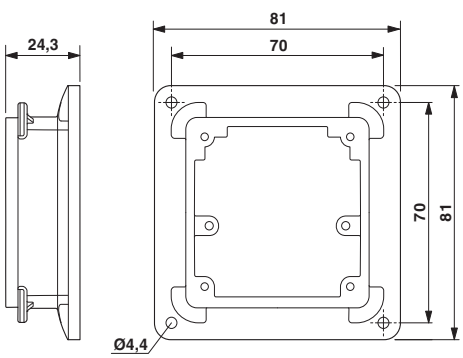
-40 °C ... 125 °C

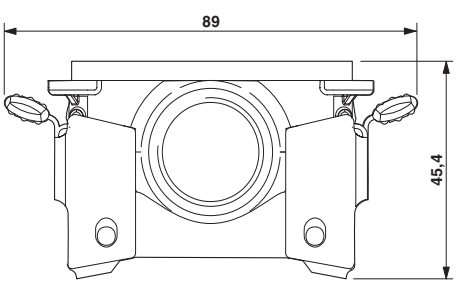
Ordering data

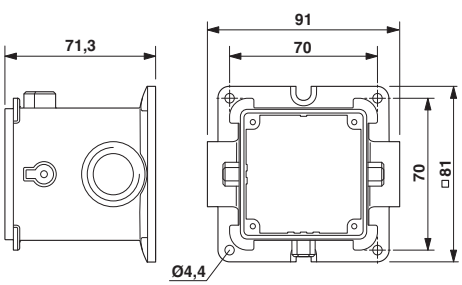
Type	Order No.	Pcs. / Pkt.
DC-B 6-HTC-M20-M20-M	1581049	10
DC-B 6-HTC-M25-M25-M	1581052	10

Accessories

HC-M-KV-M25(1X10/1X11)	1580228	10







Sleeve housing, EMC-protected

Notes:
For cable glands, see from page 552
For accessories, see page 600



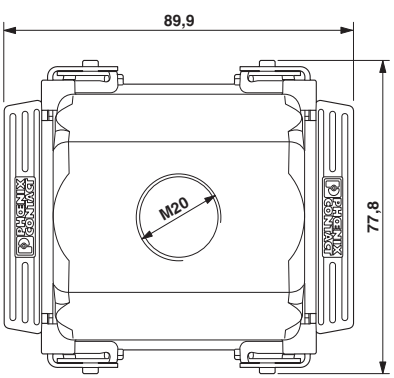
Sleeve housing, one cable entry, without cable gland



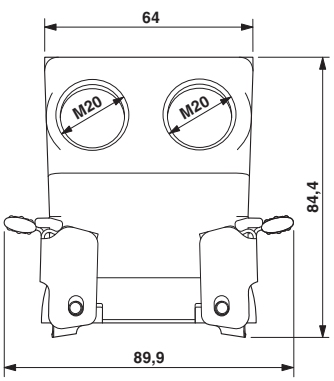
Sleeve housing, two cable entries, without cable gland

	Technical data	Technical data
Technical data		
Material data		
Housing material	Aluminum, die-cast	Aluminum, die-cast
Housing surface material	EMC-conductive	EMC-conductive
Seal material	NBR	NBR
Locking latch material	Stainless steel	Stainless steel
Material grip body interlock	PA	PA
Mechanical data		
Degree of protection	IP65/IP66/IP67	IP65/IP66/IP67
Temperature data		
Ambient temperature (operation)	-40 °C ... 125 °C	-40 °C ... 125 °C

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Sleeve housing, with one cable entry						
1 x M20, straight	**DC-B 6-H-80/O1STM20G-M**	**1581173**	10			
1 x M20, lateral	**DC-B 6-H-80/O1STM20S-M**	**1581117**	10			
1 x M25, straight	**DC-B 6-H-80/O1STM25G-M**	**1581194**	10			
1 x M25, lateral	**DC-B 6-H-80/O1STM25S-M**	**1581138**	10			
1 x M32, straight	**DC-B 6-H-80/O1STM32G-M**	**1581215**	10			
1 x M32, lateral	**DC-B 6-H-80/O1STM32S-M**	**1581159**	10			
Sleeve housing, with two cable entries						
2 x M20, straight				**DC-B 6-H-80/O2STM20G-M**	**1581180**	10
2 x M20, lateral				**DC-B 6-H-80/O2STM20S-M**	**1581124**	10
2 x M25, straight				**DC-B 6-H-80/O2STM25G-M**	**1581201**	10
2 x M25, lateral				**DC-B 6-H-80/O2STM25S-M**	**1581145**	10



Dimensional drawing with straight cable outlet



Dimensional drawing with lateral cable outlet

Hinged retaining frame



DUPLICON modular has been designed for use in drives in the power distribution field. The square-shaped housing supports flexible cable outlet directions and the absolutely vibration-free locking latch can withstand the roughest of conditions. The requirements of railway standard EN 50155 are met and even greatly exceeded.

The modularity of contact inserts from the HEAVYCON range offers numerous applications.

The hinged retaining frames have been designed with capacitive PE contacts and can accommodate up to 3 contact insert modules.

The housings have one or two conductor entries in different sizes, depending on the type of cable entry.

Notes:

For contact insert modules, see from page 464



Hinged retaining frame

Technical data

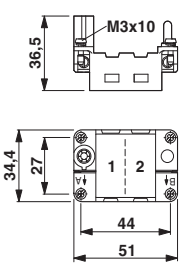
Material data		
Hinged retaining frame material		Die-cast zinc alloy
Connection data		
Connection cross section	[mm²]	4 mm² ... 6 mm² (for PE conductor – power side)
Connection cross section	[mm²]	1 mm² ... 2.5 mm² (for PE conductor – control side)
Connection cross section	AWG	12 ... 10 (for PE conductor – power side)
Connection cross section	AWG	18 ... 14 (for PE conductor – control side)
Temperature data		
Ambient temperature (operation)		-40 °C ... 125 °C

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Hinged retaining frame, for sleeve housing, labeling: upper case letters (A, B, C, ...)	**DC-B 6-MHR-T3**	**1581285**	10
Hinged retaining frame, for panel mounting base, labeling: lower case letters (a, b, c, ...)	**DC-B 6-MHR-A3**	**1581287**	10
Cable lug PE extension to 16 mm²	**HC-M-MHR-PE16**	**1636981**	50

Accessories

Cable lug PE extension to 16 mm²	**HC-M-MHR-PE16**	**1636981**	50
Coding elements	See from page 581		



Accessories

The DUPLICON M12 adapter can be used to tap 24 V branches for active sensor/actuator boxes on site. The 5-pos. M12 plug-in connectors have therefore only been pre-wired parallel to the plug-in connector.



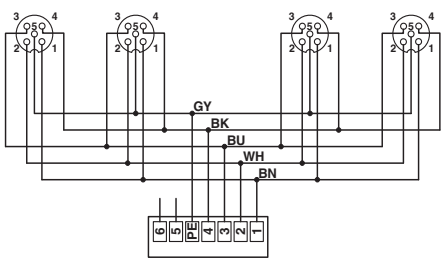
M12 adapter



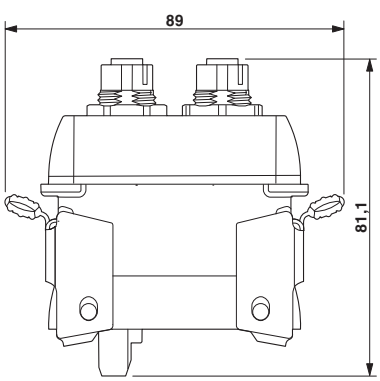
Mounting bracket

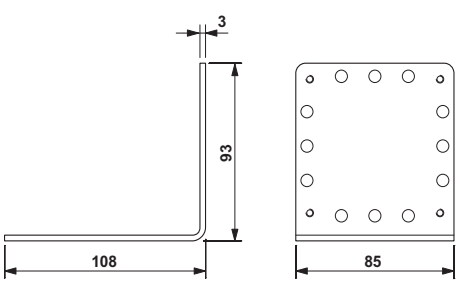
	Technical data	Technical data
Technical data		
Material data		
Material	-	Stainless steel V2A
Housing material	Aluminum, die-cast	-
Housing surface material	EMC-conductive	-
Material, protective cover	-	-
Seal material	NBR	-
Locking latch material	Stainless steel	-
Material grip body interlock	PA	-
Mechanical data		
Color	pearl gray	gray
Design	DC-B6	DC-B6
Degree of protection	IP65/IP66/IP67	-
Tightening torque	-	-
Temperature data		
Ambient temperature (operation)	-40 °C ... 100 °C	-

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
M12 adapter for low-voltage distribution, A-coded	**DC-B 6-ADP-4M12-FS-5CON-7X4-UT**	**1581010**	1			
Mounting bracket, made of 3 mm stainless steel plate, with predrilled holes, with long and short sides				**DC-B 6-A-SA**	**1602313**	5
M4 Torx® screw T20, 12 mm long, self-tapping, consisting of high-strength steel, anti-corrosive, for housing assembly						
Profile gasket for stackable housing						
Flat gasket for panel mounting base						
Dust protection cover, for snapping on, with retaining cord eyelet, can be painted over						



Circuit diagram







Screw



Replacement seals



Dust protection cover

Technical data	Technical data	Technical data
Steel	-	-
-	-	-
-	-	-
-	-	Polyamide
-	NBR	-
-	-	-
-	-	-
chromated	black	black
-	DC-B6	DC-B6
-	-	IP54
1.5 Nm ... 2 Nm	-	-
-	-	-40 °C ... 100 °C

Ordering data

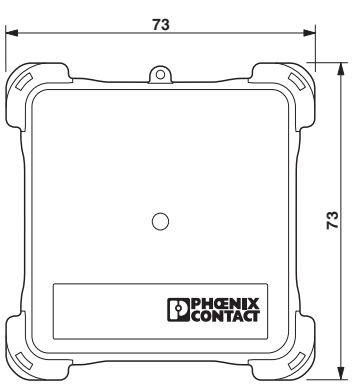
Type	Order No.	Pcs. / Pkt.
T20-M4X12	**1602410**	100

Ordering data

Type	Order No.	Pcs. / Pkt.
DC-B 6-A-HD-G	**1602326**	10
DC-B 6-A-HB-G	**1602339**	10

Ordering data

Type	Order No.	Pcs. / Pkt.
DC-B 6-CT-P	**1581078**	10





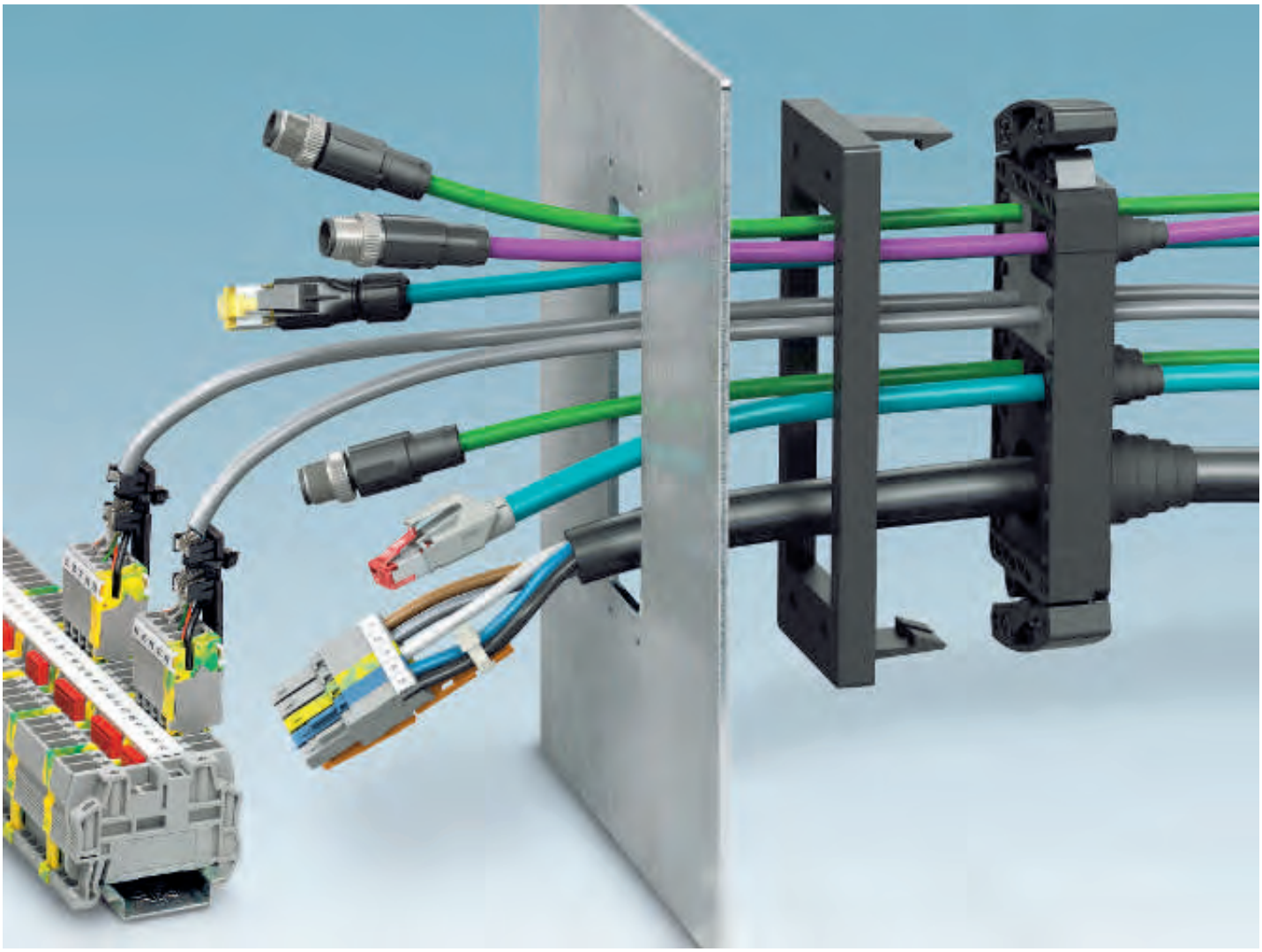
Installation and mounting material

Cable entry systems are in increasing demand as an efficient alternative to heavy-duty plug-in connectors and cable glands. They can be used to route assembled cables directly into the control cabinet, to devices, and onto DIN rails without an additional plug-in connection. With the CES cable entry system, Phoenix Contact offers a well-designed system solution from system and field cabling to the DIN rail.

Plug assembly frames from Phoenix Contact can be easily mounted on standard DIN rails and so save entire jumpering levels in the control cabinet. They accommodate pre-assembled contact inserts and can be combined with HEAVYCON standard sleeve housing. Thanks to the robust, conductive die-cast aluminum design, capacitive PE contact is ensured.

Clear and permanent marking of all cables and distributor boxes considerably improves transparency in control cabinets and systems. It makes assembly and maintenance work easier and assists in rectifying faults. Phoenix Contact cable marking systems provide the ideal marking option for any application. Just select an assembly method. The markers can be threaded on, clipped on, adhered in place or secured with cable binders.

CES cable entry system	**604**
Sealing frames	**606**
Rubber cable sleeves	**608**
Plastic cable sleeves	**610**
Accessories	**612**
Cable feed-throughs	**614**
Cable glands	**615**
Plug assembly frames	**616**
Service interfaces	**618**
Marking systems, tools, and mounting material	**624**

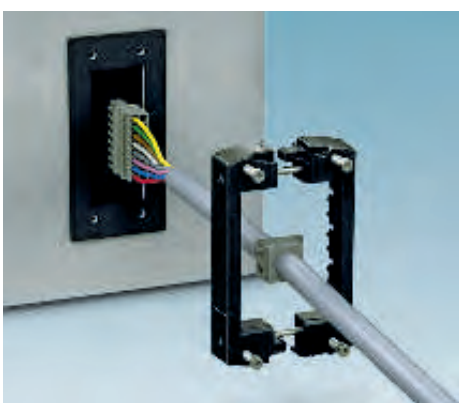




Saves space and costs

The cable entry system (CES) allows water and dust-proof insertion of a variety of cables and protective hoses into areas with limited space in control cabinets, distributor boxes or devices.

– For protective hoses, see page 584



Sealing frames with metal reinforcement

Because the sealing frames can be split, it is possible to guide pre-assembled plug-in connectors through panel cutouts and subsequently seal with a high degree of protection and reduce the strain according to DIN EN 50262. Thanks to the integrated metal reinforcement, only two locking elements are required on the front.



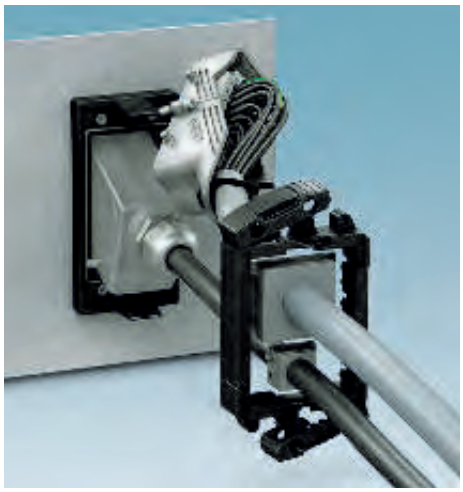
Variable mounting options

The CES sealing frames can be directly mounted on standard panel cutouts (e.g., Rittal) for industrial plug-in connectors. Snap-on frames are available to simplify on-site installation.



Optional locking

Sealing frames with screw locking and locking latches are available. The locking latch does not require any tools, which makes it really quick and easy to use, even in places that are difficult to access.



Also for industrial plug-in connectors

Due to a widening of the standard Rittal cutouts from 35 to 51 mm, even wide rectangular industrial plug-in connectors for double locking latches and plug assembly frames can be swiveled through mounting panels and sealed and provided with strain relief using the CES.



Plastic vs. rubber sleeves

The gray thermoplastic sleeves exhibit a low level of flammability according to UL 94 V0 and are highly resistant to acids and lyes. The black rubber sleeves (NBR) perform significantly better in the long term, particularly in the event of temperature fluctuations. They are also resistant to oil, fuels, and grease. All cable sleeves are halogen-free.



Faster installation and a reliable seal

It only takes two coned sleeves to seal any cable diameter ranging from 2 to 24 mm. The coned sleeves are cut to the relevant length and pushed on before the cables are assembled. There is no longer any need to select corresponding slotted rubber seals on site, which can be a time-consuming process, and the reliability of the seal has been improved for ratings up to IP65.

Sealing frames for cable sleeves



- Sealing frame with integrated metal reinforcement to protect against deformation
- Only two locking elements are required (screws or latch)
- Suitable for standard panel cutouts (e.g., Rittal)
- Snap-on frame for simplifying on-site installation
- Sealing frame with convenient locking latch for tool-free actuation
- Marking for cable sleeve location on the underside of the frame

Notes:

For dimensional drawings, see page 613

If the panel cutout width is 51 mm, HC industrial plug-in connectors and CIF plug assembly frames can also be fed through the panel using the cable entry system (CES).



Sealing frame with locking latch

Technical data

General data		
Material		PA
Degree of protection		IP54
Torque		-
Inflammability class according to UL 94		V0
Temperature range	[°C]	-40 ... 120

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Sealing frame, including flat gasket, for accommodating cable sleeves, **for standard cutout:**			
B10 (cutout: 35 mm x 65 mm), for up to 6 cable sleeves	**CES-B10-HFFS-PLBK**	**0801663**	1
B16 (cutout: 35 mm x 86 mm), for up to 8 cable sleeves	**CES-B16-HFFS-PLBK**	**0801662**	1
B24 (cutout: 35 mm x 113 mm), for up to 10 cable sleeves	**CES-B24-HFFS-PLBK**	**0801661**	1
Snap-on frame, including integrated seal for mounting panel, for accommodating sealing frames, **for standard cutouts:**			
B10 (cutout: 35 mm x 65 mm)			
B16 (cutout: 35 mm x 86 mm)			
B24 (cutout: 35 mm x 113 mm)			
Locking plate, metal, locks an unused snap-on frame, transport protection, **for standard cutouts:**			
B10			
B16			
B24			

Accessories

Replacement flat gasket, for sealing frame with **standard cutout:**			
B10 (cutout: 35 mm x 65 mm)	**CES-B10-WRG-BK**	**0801725**	10
B16 (cutout: 35 mm x 86 mm)	**CES-B16-WRG-BK**	**0801726**	10
B24 (cutout: 35 mm x 113 mm)	**CES-B24-WRG-BK**	**0801727**	10
M4 replacement screw, with 4 mm Allen screw head, for sealing frame with screw locking			
Bit screwdriver, with 1/4" quick-action chuck, suitable for bits according to DIN 3126-C 6.3 and E 6.3/ISO 1173, magnetic			
Screw bit, hexagonal, E6.3-1/4" drive, hardened, suitable for holder according to DIN 3126-F6.3/ISO 1173			
Size: hex 3 x 50 mm			



Sealing frame with screw locking



Snap-on frame



Locking plates

Technical data

PA	
IP55 / IP65 (when using a CES-SRC../CES-LRC.. cone sleeve and a cable binder)	
2 Nm ... 4 Nm (Locking screw)	
V0	
-40 ... 120	

Ordering data

Type	Order No.	Pcs. / Pkt.
CES-B10-SFFS-PLBK	**0801660**	1
CES-B16-SFFS-PLBK	**0801659**	1
CES-B24-SFFS-PLBK	**0801658**	1

Accessories

CES-B10-WRG-BK	**0801725**	10
CES-B16-WRG-BK	**0801726**	10
CES-B24-WRG-BK	**0801727**	10
CES-SFFS-H	**0801728**	10
SF-M BH	**1212070**	1
SF-BIT-HEX 3-50	**1212647**	5

Technical data

PA	
IP54 / IP55 (when using a CES-B...-SFFS-PLBK sealing frame with screw locking) IP65 (when using a CES-B...-SFFS-PLBK sealing frame with screw locking and a cone sleeve with cable binder)	
-	
V0	
-20 ... 80	

Ordering data

Type	Order No.	Pcs. / Pkt.
CES-B10-SF-PLBK	**0801655**	10
CES-B16-SF-PLBK	**0801651**	10
CES-B24-SF-PLBK	**0801647**	10

Accessories

Technical data

Steel, galvanized	
-	
-	
-	
-	

Ordering data

Type	Order No.	Pcs. / Pkt.
CES-B10-SFC-M	**0801645**	10
CES-B16-SFC-M	**0801642**	10
CES-B24-SFC-M	**0801641**	10

Accessories

Cable sleeves, rubber

- Significantly improved long-term performance
- Resistant to oil, fuels, and grease
- Halogen-free

Notes:

The CES cable entry system was developed according to DIN EN 50262 (Cable glands for electrical installations).

The cable sleeves must be mounted in accordance with the mounting instructions provided.



Cable sleeves, small



Cable sleeves, large

	Technical data	Technical data
General data		
Material	NBR	NBR
Degree of protection	IP54 / IP55 (when using a CES-B...-SFFS-PLBK sealing frame with screw locking)	IP54 / IP55 (when using a CES-B...-SFFS-PLBK sealing frame with screw locking)
Temperature range [°C]	-40 ... 80	-40 ... 80

		Ordering data			Ordering data		
Description	Color	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Cone-shaped cable sleeves, IP65 in sealing frames with screw locking and cable binders, IP54 in sealing frames with locking latch. For cables with a diameter of:							
2 - 11 mm	black	**CES-SRC-BK**	**0801718**	10			
7 - 24 mm	black				**CES-LRC-BK**	**0801719**	10
Cable sleeves, IP65, without bore hole, can be used in sealing frames with locking latch and screw locking							
	black	**CES-SRG-BK**	**0801670**	10	**CES-LRG-BK**	**0801671**	10
Cable sleeves, small, slotted, can be used in sealing frames with locking latch and screw locking, for cable diameter of:							
1 - 2 mm	black	**CES-SRG-BK-2**	**0801635**	10			
2 - 3 mm	black	**CES-SRG-BK-3**	**0801633**	10			
3 - 4 mm	black	**CES-SRG-BK-4**	**0801632**	10			
4 - 5 mm	black	**CES-SRG-BK-5**	**0801630**	10			
5 - 6 mm	black	**CES-SRG-BK-6**	**0801628**	10			
6 - 7 mm	black	**CES-SRG-BK-7**	**0801627**	10			
7 - 8 mm	black	**CES-SRG-BK-8**	**0801625**	10			
8 - 9 mm	black	**CES-SRG-BK-9**	**0801622**	10			
9 - 10 mm	black	**CES-SRG-BK-10**	**0801620**	10			
10 - 11 mm	black	**CES-SRG-BK-11**	**0801618**	10			
11 - 12 mm	black	**CES-SRG-BK-12**	**0801617**	10			
12 - 13 mm	black	**CES-SRG-BK-13**	**0801616**	10			
13 - 14 mm	black	**CES-SRG-BK-14**	**0801615**	10			
14 - 15 mm	black	**CES-SRG-BK-15**	**1410563**	10			
15 - 16 mm	black	**CES-SRG-BK-16**	**1410576**	10			
16 - 17 mm	black	**CES-SRG-BK-17**	**1410589**	10			
Cable sleeves, large, slotted, can be used in sealing frames with locking latch and screw locking, for cable diameter of:							
14 - 15 mm	black				**CES-LRG-BK-15**	**0801619**	10
15 - 16 mm	black				**CES-LRG-BK-16**	**0801621**	10
16 - 17 mm	black				**CES-LRG-BK-17**	**0801624**	10
17 - 18 mm	black				**CES-LRG-BK-18**	**0801626**	10
18 - 19 mm	black				**CES-LRG-BK-19**	**0801629**	10
19 - 20 mm	black				**CES-LRG-BK-20**	**0801631**	10
20 - 21 mm	black				**CES-LRG-BK-21**	**0801634**	10
21 - 22 mm	black				**CES-LRG-BK-22**	**0801637**	10
22 - 23 mm	black				**CES-LRG-BK-23**	**0801638**	10
23 - 24 mm	black				**CES-LRG-BK-24**	**0801639**	10
24 - 25 mm	black				**CES-LRG-BK-25**	**0801640**	10
25 - 26 mm	black				**CES-LRG-BK-26**	**0801643**	10
26 - 27 mm	black				**CES-LRG-BK-27**	**0801644**	10
27 - 28 mm	black				**CES-LRG-BK-28**	**0801646**	10
28 - 29 mm	black				**CES-LRG-BK-29**	**0801648**	10
29 - 30 mm	black				**CES-LRG-BK-30**	**0801650**	10
30 - 31 mm	black				**CES-LRG-BK-31**	**0801653**	10
31 - 32 mm	black				**CES-LRG-BK-32**	**0801654**	10
32 - 33 mm	black				**CES-LRG-BK-33**	**0801656**	10

Cable sleeves, rubber, special formats

- Significantly improved long-term performance
- Resistant to oil, fuels, and grease
- Halogen-free

Notes:

The CES cable entry system was developed according to DIN EN 50262 (Cable glands for electrical installations).

The cable sleeves must be mounted in accordance with the mounting instructions provided.



Cable sleeves, small, with several bore holes



Cable sleeves, small, for AS-Interface cables

		Technical data	Technical data
General data			
Material		NBR	NBR
Degree of protection		IP54 / IP55 (when using a CES-B...-SFFS-PLBK sealing frame with screw locking)	IP54
Temperature range	[°C]	-40 ... 80	-40 ... 80

		Ordering data			Ordering data		
Description	Color	**Type**	**Order No.**	Pcs. / Pkt.	**Type**	**Order No.**	Pcs. / Pkt.
Cable sleeves, with 2 bore holes, small, slotted, can be used in sealing frames with locking latch and screw locking, for cable diameter of:							
2 x 2 mm ... 3 mm	black	**CES-SRG-BK-2X3**	**1410398**	10			
2 x 3 mm ... 4 mm	black	**CES-SRG-BK-2X4**	**1410408**	10			
2 x 4 mm ... 5 mm	black	**CES-SRG-BK-2X5**	**0801657**	10			
2 x 5 mm ... 6 mm	black	**CES-SRG-BK-2X6**	**0801664**	10			
2 x 6 mm ... 7 mm	black	**CES-SRG-BK-2X7**	**1410084**	10			
2 x 7 mm ... 8 mm	black	**CES-SRG-BK-2X8**	**1410097**	10			
2 x 8 mm ... 9 mm	black	**CES-SRG-BK-2X9**	**1410411**	10			
Cable sleeves, with 4 bore holes, small, slotted, can be used in sealing frames with locking latch and screw locking, for cable diameter of:							
4 x 2 mm ... 3 mm	black	**CES-SRG-BK-4X3**	**0801665**	10			
4 x 3 mm ... 4 mm	black	**CES-SRG-BK-4X4**	**0801666**	10			
4 x 4 mm ... 5 mm	black	**CES-SRG-BK-4X5**	**1410107**	1			
4 x 5 mm ... 6 mm	black	**CES-SRG-BK-4X6**	**1410152**	1			
Cable sleeve, IP54, slotted, for **one AS-I**nterface cable, **cable arrangement:**							
L	black				**CES-SRG-BK-1ASI-L**	**1410042**	10
R	black				**CES-SRG-BK-1ASI-R**	**0801667**	10
Cable sleeve, IP54, slotted, for **two AS-I**nterface cables, **cable arrangement:**							
LL	black				**CES-SRG-BK-2ASI-LL**	**1410055**	10
RR	black				**CES-SRG-BK-2ASI-RR**	**0801668**	10
LR	black				**CES-SRG-BK-2ASI-LR**	**0801669**	10

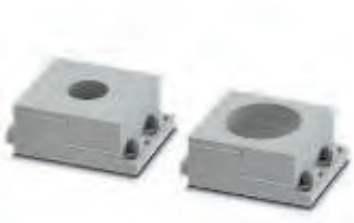
Cable sleeves, thermoplastics

– Thermoplastic sleeves exhibit a low level of flammability according to UL 94 V0
– They have a high level of resistance to acids and lyes

Notes:
The CES cable entry system was developed according to DIN EN 50262 (Cable glands for electrical installations).
The cable sleeves must be mounted in accordance with the mounting instructions provided.



Cable sleeves, small



Cable sleeves, large

		Technical data	Technical data
General data			
Material		SEBS	SEBS
Degree of protection		IP54 / IP55 (when using a CES-B...-SFFS-PLBK sealing frame with screw locking)	IP54 / IP55 (when using a CES-B...-SFFS-PLBK sealing frame with screw locking)
Inflammability class according to UL 94		V0	V0
Temperature range	[°C]	-40 ... 80	-40 ... 80

		Ordering data			Ordering data		
Description	Color	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Cable sleeves, small, slotted, can be used in sealing frames with locking latch and screw locking, for cable diameter of:							
1 - 2 mm	gray	**CES-STPG-GY-2**	**0801672**	10			
2 - 3 mm	gray	**CES-STPG-GY-3**	**0801673**	10			
3 - 4 mm	gray	**CES-STPG-GY-4**	**0801674**	10			
4 - 5 mm	gray	**CES-STPG-GY-5**	**0801675**	10			
5 - 6 mm	gray	**CES-STPG-GY-6**	**0801676**	10			
6 - 7 mm	gray	**CES-STPG-GY-7**	**0801677**	10			
7 - 8 mm	gray	**CES-STPG-GY-8**	**0801679**	10			
8 - 9 mm	gray	**CES-STPG-GY-9**	**0801680**	10			
9 - 10 mm	gray	**CES-STPG-GY-10**	**0801682**	10			
10 - 11 mm	gray	**CES-STPG-GY-11**	**0801683**	10			
11 - 12 mm	gray	**CES-STPG-GY-12**	**0801684**	10			
12 - 13 mm	gray	**CES-STPG-GY-13**	**0801685**	10			
13 - 14 mm	gray	**CES-STPG-GY-14**	**0801686**	10			
14 - 15 mm	gray	**CES-STPG-GY-15**	**1410521**	10			
15 - 16 mm	gray	**CES-STPG-GY-16**	**1410534**	10			
16 - 17 mm	gray	**CES-STPG-GY-17**	**1410547**	10			
Cable sleeves, large, slotted, can be used in sealing frames with locking latch and screw locking, for cable diameter of:							
14 - 15 mm	gray				**CES-LTPG-GY-15**	**0801687**	10
15 - 16 mm	gray				**CES-LTPG-GY-16**	**0801688**	10
16 - 17 mm	gray				**CES-LTPG-GY-17**	**0801689**	10
17 - 18 mm	gray				**CES-LTPG-GY-18**	**0801690**	10
18 - 19 mm	gray				**CES-LTPG-GY-19**	**0801691**	10
19 - 20 mm	gray				**CES-LTPG-GY-20**	**0801692**	10
20 - 21 mm	gray				**CES-LTPG-GY-21**	**0801693**	10
21 - 22 mm	gray				**CES-LTPG-GY-22**	**0801695**	10
22 - 23 mm	gray				**CES-LTPG-GY-23**	**0801696**	10
23 - 24 mm	gray				**CES-LTPG-GY-24**	**0801697**	10
24 - 25 mm	gray				**CES-LTPG-GY-25**	**0801698**	10
25 - 26 mm	gray				**CES-LTPG-GY-26**	**0801699**	10
26 - 27 mm	gray				**CES-LTPG-GY-27**	**0801700**	10
27 - 28 mm	gray				**CES-LTPG-GY-28**	**0801701**	10
28 - 29 mm	gray				**CES-LTPG-GY-29**	**0801702**	10
29 - 30 mm	gray				**CES-LTPG-GY-30**	**0801703**	10
30 - 31 mm	gray				**CES-LTPG-GY-31**	**0801705**	10
31 - 32 mm	gray				**CES-LTPG-GY-32**	**0801706**	10
32 - 33 mm	gray				**CES-LTPG-GY-33**	**0801707**	10
Cable sleeves, IP65, without bore hole, can be used in sealing frames with locking latch and screw locking							
	gray	**CES-STPG-GY**	**0801715**	10	**CES-LTPG-GY**	**0801716**	10

Cable sleeves, thermoplastics, special formats

– Thermoplastic sleeves exhibit a low level of flammability according to UL 94 V0
– They have a high level of resistance to acids and lyes

Notes:
The CES cable entry system was developed according to DIN EN 50262 (Cable glands for electrical installations).
The cable sleeves must be mounted in accordance with the mounting instructions provided.



Cable sleeves, small, with several bore holes



Cable sleeves, small, for AS-Interface cables

		Technical data	Technical data
General data			
Material		SEBS	SEBS
Degree of protection		IP54 / IP55 (when using a CES-B...-SFFS-PLBK sealing frame with screw locking)	IP54
Inflammability class according to UL 94		V0	V0
Temperature range	[°C]	-40 ... 80	-40 ... 80

		Ordering data			Ordering data		
Description	Color	**Type**	**Order No.**	Pcs. / Pkt.	**Type**	**Order No.**	Pcs. / Pkt.
Cable sleeves, with 2 bore holes, small, slotted, can be used in sealing frames with locking latch and screw locking, for cable diameter of:							
2 x 2 mm ... 3 mm	gray	**CES-STPG-GY-2X3**	**1410424**	10			
2 x 3 mm ... 4 mm	gray	**CES-STPG-GY-2X4**	**1410438**	10			
2 x 4 mm ... 5 mm	gray	**CES-STPG-GY-2X5**	**0801708**	10			
2 x 5 mm ... 6 mm	gray	**CES-STPG-GY-2X6**	**0801709**	10			
2 x 6 mm ... 7 mm	gray	**CES-STPG-GY-2X7**	**1410110**	10			
2 x 7 mm ... 8 mm	gray	**CES-STPG-GY-2X8**	**1410123**	10			
2 x 8 mm ... 9 mm	gray	**CES-STPG-GY-2X9**	**1410440**	10			
Cable sleeves, with 4 bore holes, small, slotted, can be used in sealing frames with locking latch and screw locking, for cable diameter of:							
4 x 2 mm ... 3 mm	gray	**CES-STPG-GY-4X3**	**0801710**	10			
4 x 3 mm ... 4 mm	gray	**CES-STPG-GY-4X4**	**0801711**	10			
4 x 4 mm ... 5 mm	gray	**CES-STPG-GY-4X5**	**1410136**	10			
4 x 5 mm ... 6 mm	gray	**CES-STPG-GY-4X6**	**1410149**	10			
Cable sleeve, IP54, slotted, for **one AS-I**nterface cable, **cable arrangement:**							
L	gray				**CES-STPG-GY-1ASI-L**	**1410068**	10
R	gray				**CES-STPG-GY-1ASI-R**	**0801712**	10
Cable sleeve, IP54, slotted, for **two AS-I**nterface cables, **cable arrangement:**							
LL	gray				**CES-STPG-GY-2ASI-LL**	**1410071**	10
RR	gray				**CES-STPG-GY-2ASI-RR**	**0801713**	10
LR	gray				**CES-STPG-GY-2ASI-LR**	**0801714**	10

Accessories, filler plugs, seals, replacement screws



Diameter of 3 to 17 mm

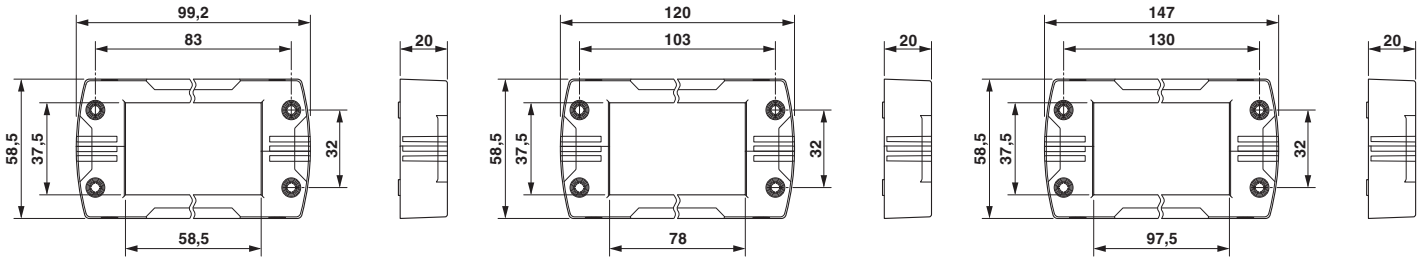


For mounting on CES sealing frames

		Technical data	Technical data
General data			
Material		PA	Stainless steel
Degree of protection		IP54 / IP55 (when using a CES-B...-SFFS-PLBK sealing frame with screw locking)	-
Inflammability class according to UL 94		V0	-
Temperature range	[°C]	-20 ... 80	-

Description	Color	Ordering data: Type	Order No.	Pcs. / Pkt.	Ordering data: Type	Order No.	Pcs. / Pkt.
Plugs, for closing unoccupied cable sleeves with a diameter of:							
2 mm	white	**KDT-ST 2**	**1410220**	25			
3 mm	white	**KDT-ST 3**	**3063921**	25			
4 mm	white	**KDT-ST 4**	**3063934**	25			
5 mm	white	**KDT-ST 5**	**3063947**	25			
6 mm	white	**KDT-ST 6**	**3063950**	25			
7 mm	white	**KDT-ST 7**	**3063963**	25			
8 mm	white	**KDT-ST 8**	**3063976**	25			
9 mm	white	**KDT-ST 9**	**3063989**	25			
10 mm	white	**KDT-ST 10**	**3063992**	25			
11 mm	white	**KDT-ST 11**	**3064001**	25			
12 mm	white	**KDT-ST 12**	**3062016**	25			
13 mm	white	**KDT-ST 13**	**3062029**	25			
14 mm	white	**KDT-ST 14**	**3062032**	25			
15 mm	white	**KDT-ST 15**	**3062045**	25			
16 mm	white	**KDT-ST 16**	**3062058**	25			
17 mm	white	**KDT-ST 17**	**3062061**	25			
EMC cable catch rail, for mounting on the **longitudinal side** of CES sealing frame CES-B16...					**KEL-EMV 16-4**	**3063507**	5
EMC cable catch rail, for mounting on the **longitudinal side** of CES sealing frame CES-B24...					**KEL-EMV 24-5**	**3063510**	5
EMC cable catch rail, for mounting on the **diagonal side** of CES sealing frames CES-B16… and CES-24…					**KEL-EMV-F**	**3063523**	5

Dimensional drawings
CES... sealing frame

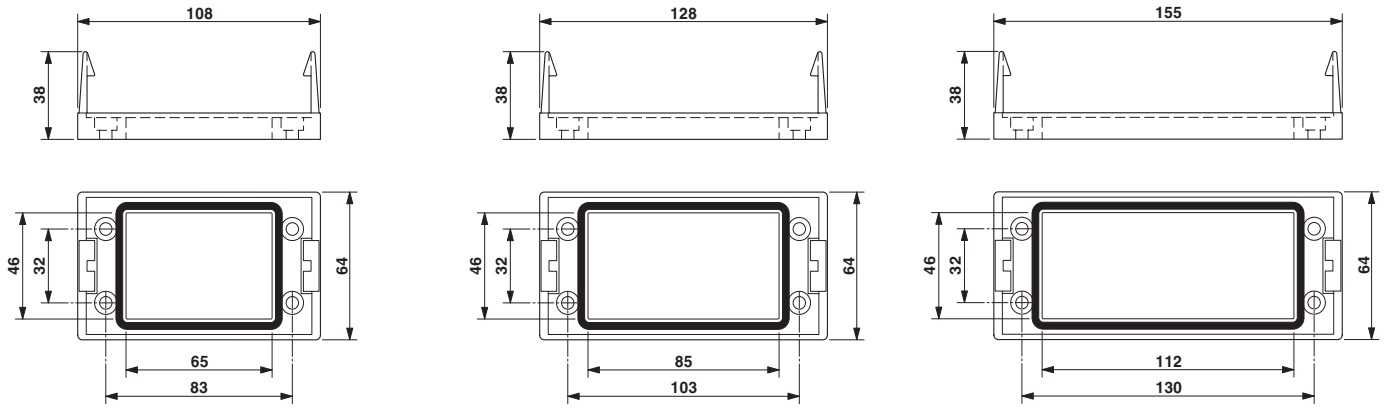


CES-B10-HFFS-PLBK
CES-B10-SFFS-PLBK

CES-B16-HFFS-PLBK
CES-B16-SFFS-PLBK

CES-B24-HFFS-PLBK
CES-B24-SFFS-PLBK

Dimensional drawings
CES... snap-on frame

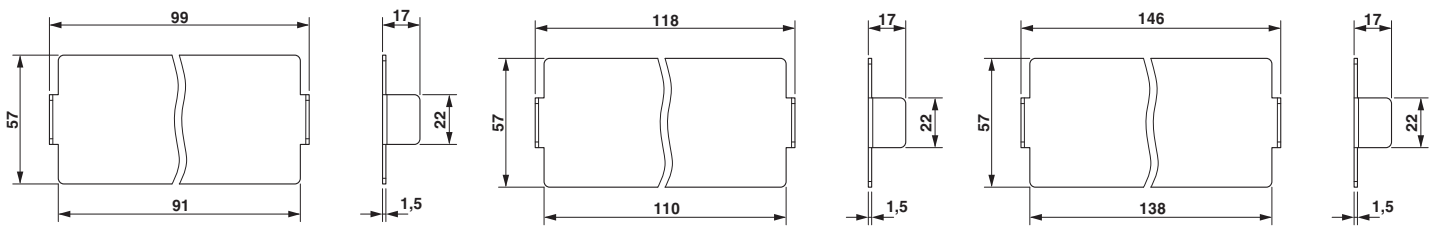


CES-B10-SF-PLBK

CES-B16-SF-PLBK

CES-B24-SF-PLBK

Dimensional drawings
CES... locking plate



CES-B10-SFC-M

CES-B16-SFC-M

CES-B24-SFC-M

Cable feed-throughs



The cable feed-throughs enable IP54-rated sealing when leading pre-assembled cables into the control cabinet.

This is done by pushing the slotted sleeves over the cable, positioning them, and placing them in the cable feed-through housing.

Unused feed-through positions are filled with filler plugs.



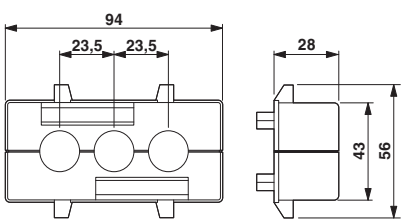
Cable feed-throughs/cable

Technical data

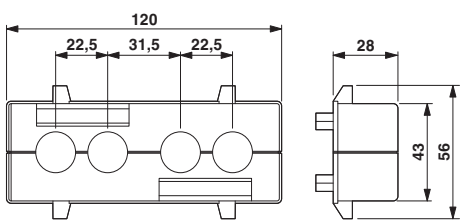
Material data		
Material	PC; gray similar to RAL 7044	Thermoplastic rubber
Inflammability class according to UL 94	V0	HB
Degree of protection	IP54	IP54
Temperature data		
Ambient temperature (operation)	-40 °C ... 125 °C	-40 °C ... 125 °C

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Cable feed-through, for plug-in connector housing:			
HC-B16-AMQ (Order No. 1771587)	**HC-KD/SG 16/ 3**	**1644012**	1
HC-B24-AMQ (Order No. 1771927)	**HC-KD/SG 24/ 4**	**1644025**	1
Cable feed-through sleeves, for insertion in the cable feed-through, for cable diameters:			
3 mm - 4 mm	**HC-KDT 3-4**	**1644038**	10
4 mm - 5 mm	**HC-KDT 4-5**	**1644041**	10
5 mm - 6 mm	**HC-KDT 5-6**	**1644054**	10
6 mm - 7 mm	**HC-KDT 6-7**	**1644067**	10
7 mm - 8 mm	**HC-KDT 7-8**	**1644070**	10
8 mm - 9 mm	**HC-KDT 8-9**	**1644083**	10
9 mm - 10 mm	**HC-KDT 9-10**	**1644093**	10
Cable feed-through sleeves, for insertion in the cable feed-through, in addition to the strain relief, a cable binder can be used, for cable diameters:			
10 mm - 11 mm	**HC-KDT 10-11**	**1644106**	10
11 mm - 12 mm	**HC-KDT 11-12**	**1644119**	10
12 mm - 13 mm	**HC-KDT 12-13**	**1644122**	10
13 mm - 14 mm	**HC-KDT 13-14**	**1644135**	10
14 mm - 15 mm	**HC-KDT 14-15**	**1644148**	10
15 mm - 16 mm	**HC-KDT 15-16**	**1644151**	10
Filler plug, to close the unused openings of the HC-KD/SG-... cable feed-through	**HC-KDG-B**	**1644164**	10
Marker tags, 5-section, unprinted, labeling with X-PEN, M-PEN, plotter or BKMT 20 x 8 label			



HC-KD/SG 16/ 3



HC-KD/SG 24/ 4

Cable glands for data plug-in connectors



In plant and mechanical engineering, it is often necessary to route cables with pre-assembled data plug-in connectors through a control cabinet panel. The HEAVYCON HC-KD/... cable feed-throughs use the standard panel cutout of the heavy-duty plug-in connectors. An alternative to this is the use of the classical screw connection principle. With the KV-M-M50-GD... cable gland, data plug-in connectors with diameters of up to 42 mm (inside diameter of screw connection) can be routed through the control cabinet panel.

Assembly is quick and easy:

– Screw M50 screw connection gland into the control cabinet panel
– Thread the plug-in connector with the cable through the gland and union nut (Ø plug-in connector ≤ inside diameter)
– Fit the two halves of the seal around the cable
– Screw the union nut tight
– And you're done!

Screw connections for other cable diameters are available on request.

The seal is divided along the axis of the hole.



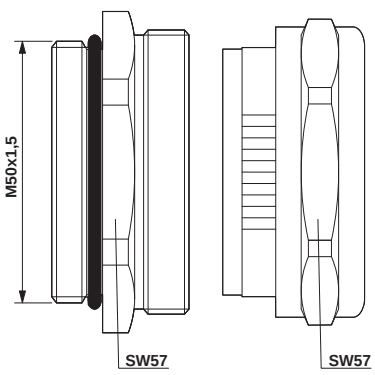
Cable gland with divided seal

Technical data

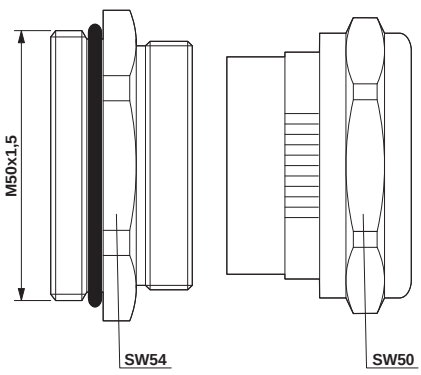
Material data	
Cable gland material	Nickel-plated brass
Seal material	TPE
Material, O-ring	NBR
Material, pressure screw	Nickel-plated brass
Degree of protection	IP65
Temperature data	
Ambient temperature (operation)	-40 °C ... 125 °C

Ordering data

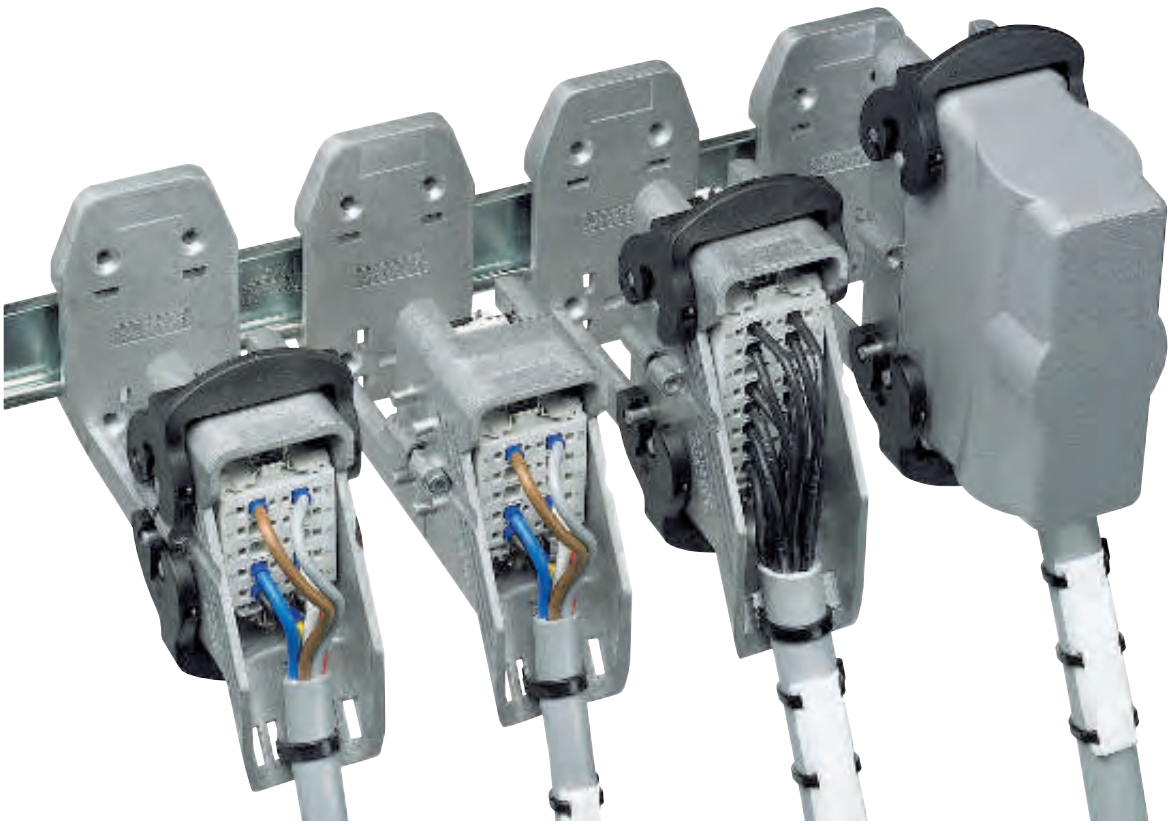
Description	Type	Order No.	Pcs. / Pkt.
Cable gland, panel feed-through for data plug-in connectors, M50 thread, with divided seal, for 1 cable, hole diameter: 8 mm, inside diameter: 37 mm	KV-M-M50-GD-(8)	1636509	5
Cable gland, panel feed-through for data plug-in connectors, M50 thread, with divided seal, for 1 cable, hole diameter: 10 mm, inside diameter: 37 mm	KV-M-M50-GD-(10)	1636512	5
Cable gland, panel feed-through for data plug-in connectors, M50 thread, with divided seal, for 2 cables, hole diameter: 6 mm, inside diameter: 37 mm	KV-M-M50-GD-(2X6)	1636525	5
Cable gland, panel feed-through for data plug-in connectors, M50 thread, with divided seal, for 2 cables, hole diameter: 6 mm, inside diameter: 42 mm	KV-M-M50-GD-(2X9)	1636538	5



KV-M-M50-GD-(2x9)



KV-M-M50-GD-(8); ...-GD-(10); ...-GD-(2x6)





Base frame for screw locking



Base frame with locking latch



Compatible with standard HEAVYCON housing



The open base frame enables easy mounting of pre-assembled contact inserts



The U-shaped side profile can be used as a cable duct



The usual coding and guide elements can be used with the standard IP65 housing

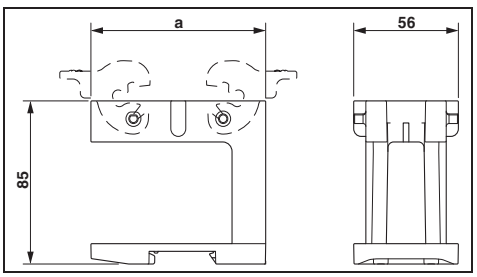
Advantages:

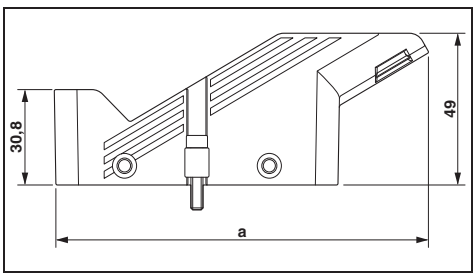
- For standard HEAVYCON contact inserts on NS35/7,5 DIN rail
- Robust die-cast aluminum housing
- Base frame for pre-assembled contact inserts
- Cable duct function
- Grounding for DIN rail
- Coding function





Notes:
The bridging function of the aluminum design ensures that there is a capacitive PE.
Stainless steel locking latch, handle: PA-GF
On delivery, there is no pre-assembled bracket (HC-CIF..BF-WD..). The bracket is assembled after the contact insert.





Technical data

Material data	
Material	Die-cast aluminum, uncoated
Tightening torque	-
Temperature data	
Ambient temperature (operation)	-40 °C ... 125 °C

Technical data

Material data	
Material	Die-cast aluminum, uncoated
Tightening torque	2 Nm (Locking screw)
Temperature data	
Ambient temperature (operation)	-40 °C ... 125 °C

Ordering data

Description	Design	Type	Order No.	Pcs. / Pkt.
Base frame, with double locking latch				
a = 93.5 mm	For B10	**HC-CIF-B10-BFWD-FH-AL**	**1404220**	1
a = 93.5 mm	For B16	**HC-CIF-B16-BFWD-FH-AL**	**1404217**	1
a = 120.0 mm	For B24	**HC-CIF-B24-BFWD-FH-AL**	**1404212**	1
Base frame, without double locking latch, for screw locking				
a = 120.0 mm	For 2 x B6	**HC-CIF-2B6-BFFD-FH-AL**	**1404214**	1
a = 93.5 mm	For B10	**HC-CIF-B10-BFFD-FH-AL**	**1404219**	1
a = 93.5 mm	For B16	**HC-CIF-B16-BFFD-FH-AL**	**1404216**	1
a = 120.0 mm	For B24	**HC-CIF-B24-BFFD-FH-AL**	**1404211**	1
Top frame, for double locking latch and with locking screws as an option, Allen screw, WAF 3				
a = 150.2 mm	For 2 x B6	**HC-CIF-2B6-HFFD-WH-AL**	**1404215**	1
a = 103.2 mm	For B10	**HC-CIF-B10-HFFD-WH-AL**	**1404221**	1
a = 123.7 mm	For B16	**HC-CIF-B16-HFFD-WH-AL**	**1404218**	1
a = 150.2 mm	For B24	**HC-CIF-B24-HFFD-WH-AL**	**1404213**	1

Ordering data

Type	Order No.	Pcs. / Pkt.

Accessories

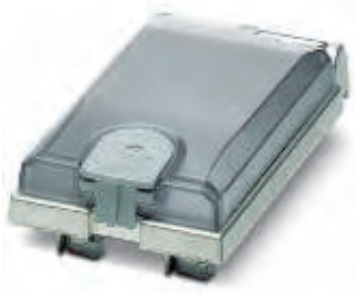
Bit screwdriver, with 1/4" quick-action chuck, suitable for bits according to DIN 3126-C 6.3 and E 6.3/ISO 1173, magnetic	**SF-M BH**	**1212070**	1
Screw bit, hexagonal, E6.3-1/4" drive, hardened, suitable for holder according to DIN 3126-F6.3/ISO 1173			
Size: hex 3 x 50 mm	**SF-BIT-HEX 3-50**	**1212647**	5

Accessories

Mounting frame, front plates and socket inserts

Notes:

For RJ45 socket inserts, see page 622



EMC mounting frame for front plates



Mounting frame for front plates

	Technical data	Technical data
	VS-SI-EB-EMV-...	SI-M...
Electrical data		
Rated voltage	-	-
Rated current	-	-
Housing material	Zinc alloy	PBT
Inflammability class according to UL 94	V0	V0
Degree of protection	IP65	IP65
Connection method	-	-
Conductor cross section	-	-
Connection cross section AWG	-	-
Ambient temperature (operation)	-10 °C ... 60 °C	-30 °C ... 70 °C

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Mounting frame, metal frame, matt nickel-plated, electrically conductive, transparent cover						
Single	**VS-SI-EB-EMV-1**	**1656482**	1			
Double	**VS-SI-EB-EMV-2**	**1656495**	1			
Mounting frame, black, transparent PC plastic cover, closed with 3 mm two-way key bit						
Single				**SI-M1A**	**1404493**	1
Double				**SI-M1B**	**1404494**	1
Mounting frame, black, transparent PC plastic cover, closed with turn knob						
Single				**SI-M1A-T**	**1407586**	1
Double				**SI-M1B-T**	**1407587**	1
Mounting frame, black, metallic ABS plastic cover, closed with 3 mm two-way key bit						
Single				**SI-M1A-ML**	**1407588**	1
Double				**SI-M1B-ML**	**1407589**	1
Mounting frame, black, metallic ABS plastic cover, closed with turn knob						
Single				**SI-M1A-MT**	**1407590**	1
Double				**SI-M1B-MT**	**1407591**	1
Mounting frame, black, gray PBT plastic cover, closed with 3 mm two-way key bit						
Single				**SI-M1A-GL**	**1407592**	1
Double				**SI-M1B-GL**	**1407593**	1
Mounting frame, black, gray PBT plastic cover, closed with turn knob						
Single				**SI-M1A-GT**	**1407594**	1
Double				**SI-M1B-GT**	**1407595**	1
Front plate						
2 x RJ (with shroud)						
2 x D-SUB 09						
1 x D-SUB 09, 1 x D-SUB 15						
1 x D-SUB 09, 1 x D-SUB 25						
2 x D-SUB 15						
1 x D-SUB 15, 1 x D-SUB 25						
2 x D-SUB 25						
Socket inserts						
Germany						
Germany, yellow						
USA						
France						
Great Britain						
Italy						

	Accessories			Accessories		
Marker labels, for identifying mounting frames and front plates, one sheet of 20 labels	**VS-SI-BZ**	**1656660**	1	**VS-SI-BZ**	**1656660**	1
Dummy plate, plastic				**VS-SI-FP-BP**	**1656657**	1



Front plate, without contact inserts



Data front plate with contact inserts RJ45 (socket to socket), D-SUB (socket to plug)



Socket inserts

Technical data

VS-SI-FP-2RJ-MOD
-
-
PBT
V0
-
-
-
-
-10 °C ... 60 °C

Technical data

VS-SI-FP...RJ45...	VS-SI-FP...DSUB...
50 V	125 V
1 A	3 A
PBT	PBT
V0	V0
IP20	IP20
-	-
-	-
-	-
-10 °C ... 60 °C	-10 °C ... 60 °C

Technical data

VS-SI-SD-DE	VS-SI-SD-USA
250 V	125 V
16 A	15 A
PA	PA
V0	V0
IP20	IP20
Screw connection	Spade connection
2.5 mm²	2.5 mm²
14	14
-10 °C ... 60 °C	-10 °C ... 60 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
VS-SI-FP-2RJ-MOD	**1656631**	1
VS-SI-FP-2DSUB9	**1656563**	1
VS-SI-FP-DSUB9-DSUB15	**1656576**	1
VS-SI-FP-DSUB9-DSUB25	**1656589**	1
VS-SI-FP-2DSUB15	**1656592**	1
VS-SI-FP-DSUB15-DSUB25	**1656602**	1
VS-SI-FP-2DSUB25	**1656615**	1

Ordering data

Type	Order No.	Pcs. / Pkt.
VS-SI-FP-2RJ45-5-MOD-BU/BU	**1657766**	1
VS-SI-FP-2DSUB9-GC-BU/ST	**1657708**	1
VS-SI-FP-DSUB9-DSUB15-GC-BU/ST	**1657711**	1
VS-SI-FP-DSUB9-DSUB25-GC-BU/ST	**1657724**	1
VS-SI-FP-2DSUB15-GC-BU/ST	**1657737**	1
VS-SI-FP-DSUB15DSUB25-GC-BU/ST	**1657740**	1
VS-SI-FP-2DSUB25-GC-BU/ST	**1657753**	1

Ordering data

Type	Order No.	Pcs. / Pkt.
VS-SI-SD-DE	**1656505**	1
VS-SI-SD-DE-G	**1656518**	1
VS-SI-SD-USA	**1656521**	1
VS-SI-SD-FR	**1656534**	1
VS-SI-SD-GB	**1656547**	1
VS-SI-SD-IT	**1656550**	1

Accessories

Accessories

Accessories

Data front plates, service sockets, and programming interfaces



Front plates



Service sockets

	Technical data	Technical data
Material data		
Housing material	PBT	PA
Mechanical data		
Degree of protection	IP20	IP65
Temperature data		
Ambient temperature (operation)	-10 °C ... 60 °C	-25 °C ... 70 °C

	Ordering data			Ordering data		
Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Front plate, with the following contact inserts:						
D-SUB9	**SI-FP-D1A**	**1404501**	1			
D-SUB9, D-SUB9-BP	**SI-FP-D1D-D1E**	**1404509**	1			
2 x D-SUB9	**SI-FP-2D1D**	**1404510**	1			
D-SUB9, D-SUB9, RJ45	**SI-FP-R1A-D1A-D1C**	**1404507**	1			
D-SUB9, RJ45	**SI-FP-R1A-D1A**	**1404496**	1			
D-SUB9, D-SUB25, RJ45	**SI-FP-R1A-D1B-D3B**	**1404502**	1			
D-SUB9, RJ45, USB with 0.7 m cable	**SI-FP-R1A-D1B-U1A/0,7**	**1404504**	1			
D-SUB9 BP, RJ45	**SI-FP-R1A-D1E**	**1404500**	1			
RJ45, RJ12, 2 x USB	**SI-FP-R1A-R2A-2U1A**	**1404503**	1			
RJ45, USB	**SI-FP-R1A-U1A**	**1404499**	1			
RJ45, USB with 0.7 m cable	**SI-FP-R1A-U1A/0,7**	**1404512**	1			
D-SUB9, RJ45, USB	**SI-FP-R1A-U1A-D1A**	**1404497**	1			
D-SUB9, RJ45, USB	**SI-FP-R1A-U1A-D1B**	**1404495**	1			
2 x RJ45, USB	**SI-FP-2R1A-U1A**	**1404506**	1			
USB	**SI-FP-U1A**	**1404505**	1			
Service sockets						
RJ45				**SI-SES-R1A**	**1404513**	1
USB with 0.6 m cable				**SI-SES-U1A/0,6**	**1404514**	1
USB with 1.0 m cable				**SI-SES-U1A/1**	**1404515**	1
Programming interface for HEAVYCON panel mounting base, with:						
2 x RJ45 gender changers						
2 x USB (A), D-SUB15						
RJ45						
RJ45, RJ11						
RJ45, socket insert USA						
RJ45, socket insert USA 3A						
USB (A)						



Programming interfaces

Technical data

Aluminum, die-cast
IP54
-35 °C ... 65 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
SI-PP-2R1A	**1404520**	1
SI-PP-2U1A-D2A	**1404519**	1
SI-PP-R1A	**1404517**	1
SI-PP-R1A-R3A	**1404521**	1
SI-PP-R1A-S0A	**1404516**	1
SI-PP-R1A-S0B	**1404518**	1
SI-PP-U1A	**1404522**	1

Front plate and socket inserts (Freenet system)



Front plate
with two Freenet slots

Ethernet

PROFINET



RJ45 socket inserts,
Freenet system

Technical data

	VS-SI-FP-2F
Electrical data	
Rated voltage	-
Rated current	-
Transmission speed	-
Transmission characteristics (category)	-
Material data	
Housing material	PBT
Contact material	-
Contact surface material	-
Contact carrier material	-
Ferrule material	-
Inflammability class according to UL 94	V0
Mechanical data	
No. of pos.	-
Pollution degree	-
Degree of protection	IP20
Connection method	-
Conductor cross section	-
Connection cross section AWG	-
Fiber type	-
Insertion/withdrawal cycles	-
Temperature data	
Ambient temperature (operation)	-10 °C ... 60 °C

Technical data

	VS-08-BU/BU-RJ45-F	VS-08-BU-RJ45-6-F/PK
Electrical data		
Rated voltage	50 V	50 V
Rated current	1 A	1 A
Transmission speed	1 Gbps	-
Transmission characteristics (category)	CAT5 (IEC 11801:2002), CAT5e (TIA 568B:2001)	CAT6
Material data		
Housing material	-	-
Contact material	Copper alloy	Copper alloy
Contact surface material	Gold over nickel	Gold over nickel
Contact carrier material	PC	PC
Ferrule material	-	-
Inflammability class according to UL 94	V0	V0
Mechanical data		
No. of pos.	8	8
Pollution degree	1	1
Degree of protection	IP20	IP20
Connection method	IDC	IDC
Conductor cross section	0.2 mm² ... 0.32 mm² (solid)	0.14 mm² ... 0.35 mm²
Connection cross section AWG	24 ... 22 (solid)	26 ... 22 (7-wire)
Fiber type	-	-
Insertion/withdrawal cycles	≥ 750	≥ 750
Temperature data		
Ambient temperature (operation)	-20 °C ... 70 °C	-20 °C ... 70 °C

Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Front plate	**VS-SI-FP-2F**	**1658532**	1
RJ45 Freenet socket insert, 8-pos., shielded, socket to socket 1 Gbps, CAT5			
RJ45 Freenet socket insert, 8-pos., shielded, with cable connection 1 Gbps, CAT5			
SCRJ coupling, for VS-TO-... terminal outlets and VS-PP-19-1HE-16-F 19" patch panels and VS-SI-FP-2F front plate			
USB socket insert, 4-pos., USB socket type A to USB socket type B, can be plugged in both directions			
USB socket insert, 4-pos., socket to flat-ribbon cable terminal strip, 2.54 pitch Socket, type A Socket, type B			

Ordering data

Type	Order No.	Pcs. / Pkt.
VS-08-BU/BU-RJ45-F	**1405617**	1
VS-08-BU-RJ45-5-F/PK	**1652936**	1

Accessories

	Type	Order No.	Pcs. / Pkt.
Marker labels, for identifying mounting frames and front plates, one sheet of 20 labels	**VS-SI-BZ**	**1656660**	1

Accessories

Type	Order No.	Pcs. / Pkt.

Ethernet



SCRJ coupling



USB socket insert,
Freenet system

Technical data	
VS-SCRJ-GOF-KU	
-	
-	
-	
-	
PBT	
-	
-	
-	
Zirconia ceramics	
V0	
2	
-	
IP20	
Coupling	
-	
-	
GOF, HCS, POF	
≥ 500	
-25 °C ... 70 °C	

Technical data	
VS-04-BUA-BUB-F/IP67	VS-04-BUA-FK-F/IP67
30 V	30 V
1 A	1 A
480 Mbps	480 Mbps
USB 2.0	USB 2.0
PC	PC
Copper alloy	Copper alloy
Gold over nickel	Gold over nickel
Thermoplastic	PET
-	-
V0	V0
4	4
-	-
IP20	IP20
Socket, type B	Flat-ribbon cable connection, pitch 2.54 mm
-	-
-	-
-	-
≥ 1000	≥ 1000
-15 °C ... 65 °C	-15 °C ... 65 °C

Ordering data

Type	Order No.	Pcs. / Pkt.
VS-SCRJ-GOF-KU	**1654358**	1

Ordering data

Type	Order No.	Pcs. / Pkt.
VS-04-BUA-BUB-F/IP67	**1653838**	1
VS-04-BUA-FK-F/IP67	**1653854**	1
VS-04-BUB-FK-F/IP67	**1653867**	1

Accessories

Accessories



Detailed information on marking systems, tools, and mounting material can be found in Catalog 5 or at www.phoenixcontact.net/products



Cable marking

The cables are supplied with marked marking collars. Suitable marking materials are available for each marking system.



Distributor box marking

High-quality marking materials for individual marking of distributor boxes are available for each marking system.



Plug-in connector marking

Marking materials ranging from adhesive labels to high-quality engraved labels are available for marking heavy-duty plug-in connectors.



Cable markers

Markers can be fitted using cable binders almost regardless of cable diameter. The large marking area provides enough space for comprehensive marking.



Cable marker labels

Cable marker labels consist of a marking field and a transparent film that protects the marking against abrasion and dirt.



Plastic cable markers

Plastic cable markers are suitable for bundling and marking cables. The marking is protected against dirt and can be replaced.



Protective hoses

Plastic hoses are resistant to oils, acids, and solvents, are free from silicone, halogen, and cadmium, and feature up to IP69K protection and inflammability class V0.



Highly flexible metal hoses

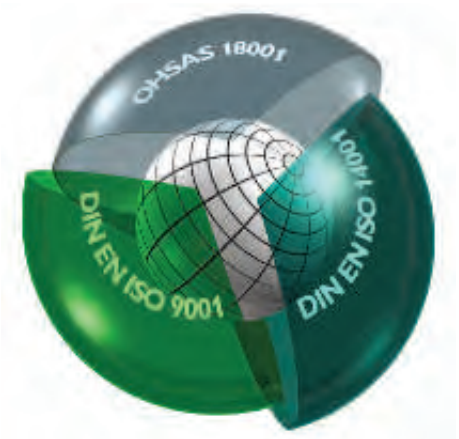
Highly flexible metal hoses can be used to protect cables against mechanical influences. Metal hoses with plastic coating are watertight and weatherproof.



Protective hose screw connections

Protective hose screw connections can be used to route any cables or single wires to a plug-in connector.

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 lifecycle.

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 Directive 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	Single-strand		Multi-strand		Fine-strand		American Wire Gauge [AWG]						
	Diameter Max. dimension	Number of wires	Diameter Max. dimension	Number of wires (minimum number)	Diameter Max. dimension	Number of wires (guide value)	Gauge No.						
[mm²]							AWG	[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

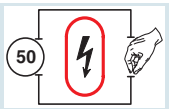
Thread	Torque	Recommended tightening torque	
		CuZn or CuSn screw	Steel screw
	[Nm]	[Nm]	[Nm]
M2.5 (M2.6)	0.4	0.6	0.8
M3	0.5	0.8	1.0
M3.5	0.8	1.2	–
M4	1.2	1.8	2.0
M5	2.0	3	4.5
M6	2.5	4	8

Degrees of protection according to DIN EN 60529

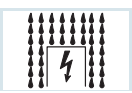
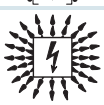
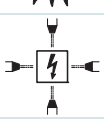
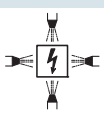
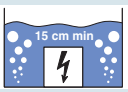
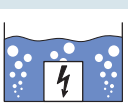
Definition:

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 Ø > 50 mm.
2	Protected against solid foreign objects with Ø 12.5 mm or more		Protected against touching dangerous parts with a finger. Protection against ingress of solid foreign objects with Ø > 12.5 mm.
3	Protected against solid foreign objects with Ø 2.5 mm or more		Protected against touching dangerous parts with a tool. Protection against ingress of solid foreign objects with Ø > 2.5 mm.
4	Protected against solid foreign objects with Ø 1 mm or more		Protected against touching dangerous parts with a wire. Protection against ingress of solid foreign objects with Ø > 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.

Shock protection	Foreign object protection	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)
		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)

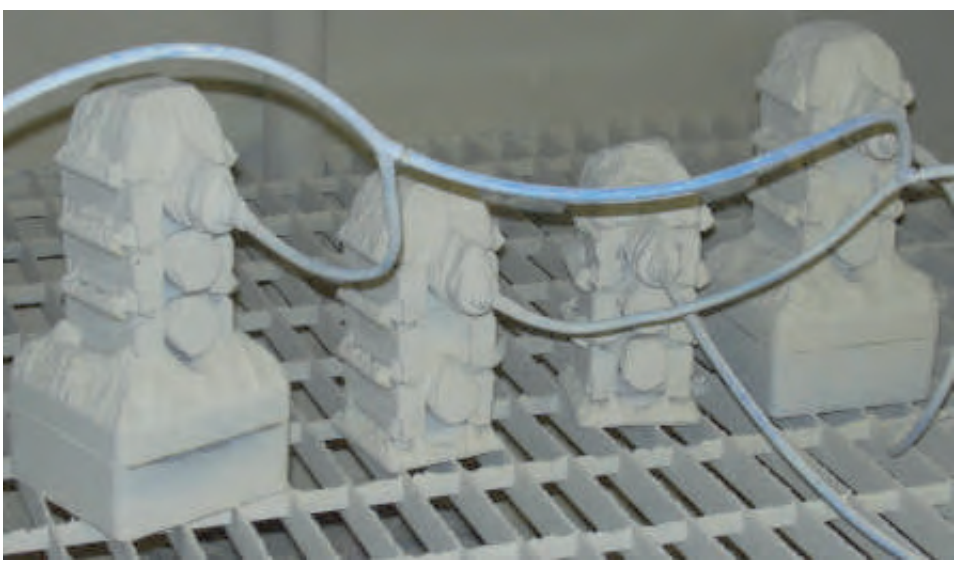


Photo shows DUPLICON test sample during the IP6x dust test

Protected against temporary submersion
(IPx7)



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 applications. 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			

Chemicals	Concentration in %	Temperature in °C	Plastics: 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	20	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	+	-
Salt water		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

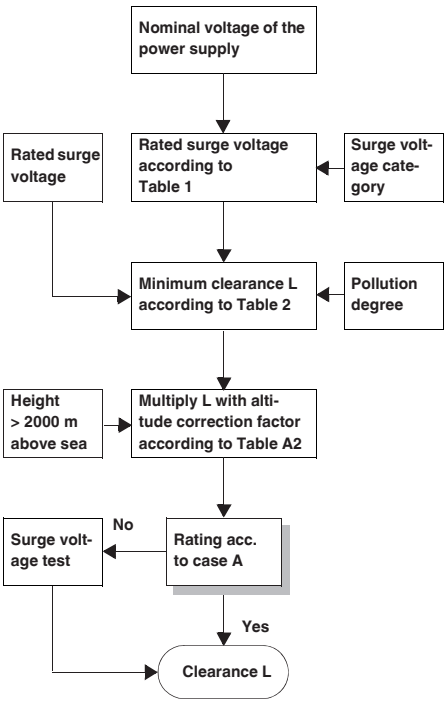
DIN EN 60664/VDE 0110-1 classifies insulation materials into four groups depending on their CTI values that were obtained using solution A in accordance with IEC 60112. These are:
Insulation material group I: 600 ≤ CTI
Insulation material group II: 400 ≤ CTI < 600
Insulation material group IIIa:
175 ≤ CTI < 400
Insulation material group IIIb:
100 ≤ 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	[V]	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) Pollution degree [6]			Condition B Homogeneous field (refer to 1.3.14) 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		0.2		
1.5 [2])	0.5	0.5		0.3	0.3	
2.0	1.0	1.0	1.0	0.45	0.45	
2.5 [2])	1.5	1.5	1.5	0.6	0.6	
3.0	2.0	2.0	2.0	0.8	0.8	
4.0 [2])	3	3	3	1.2	1.2	1.2
5.0	4	4	4	1.5	1.5	1.5
6.0 [2])	5.5	5.5	5.5	2	2	2
8.0 [2])	8	8	8	3	3	3
10	11	11	11	3.5	3.5	3.5
12.[2])	14	14	14	4.5	4.5	4.5
15	18	18	18	5.5	5.5	5.5
20	25	25	25	8	8	8
25	33	33	33	10	10	10
30	40	40	40	12.5	12.5	12.5
40	60	60	60	17	17	17
50	75	75	75	22	22	22
60	90	90	90	27	27	27
80	130	130	130	35	35	35
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

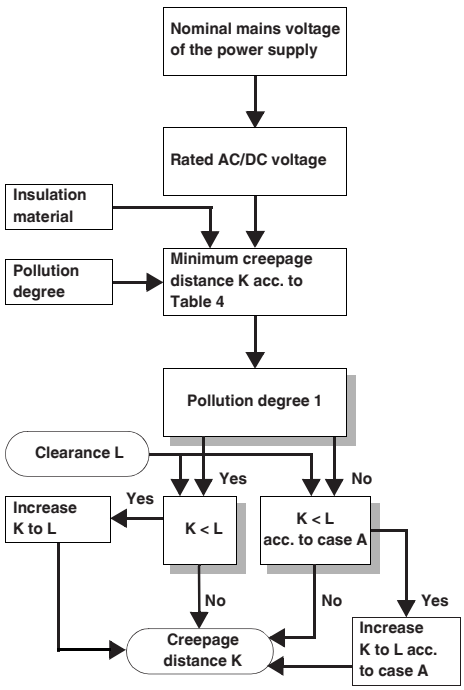
Standard IEC 60947-7-1/ EN 60947-7-1/DIN VDE 0611-1 specifies the test currents for the individual conductor cross sections listed in the adjacent table. The corresponding currents are listed with the connection data for the individual terminal blocks. The type tests for modular terminal blocks are based on this data.

Test currents according to IEC 60947-7-1/EN 60947-7-1, Table 5

Rated cross section	[mm²]	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	[mm²]	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] All systems	for conductor-ground insulation [1] 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	–
110 120	125	–
150 **)	160	–
220	250	–
110 - 220 220 - 240	250	125
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 All systems	Insulation for conductor-ground 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		
				I	II	III	I	II	III [2])
[V]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[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
CB scheme	IECEE CB Scheme (in combination with certifying body)	Interna-tional
CCA	CENELEC Certification Agreement (CCA inspection report) (in combination with certifying body)	EU
	Canadian Standards Association (CSA)	CA
	Underwriters Laboratories Inc. (UL)	US
	Underwriters Laboratories Inc. (UL) - UL approval for Canada -	CA
	Underwriters Laboratories Inc. (UL) Com-bined logo - UL approval for the USA and Canada -	US CA
	INSIEME PER LA QUALITA'E LA SICUREZZA	IT
	Gosudarstvenne Komitet Standartov (GOST)	RU
KEMA KEUR	DEKRA Certification B.V.	NL
ÖVE	Österreichischer Verband für Elektrotechnik	AT
SABS	South African Bureau of Standards	ZA
SEV	electrosuisse SEV Verband für Elektro-, Energie- und Informationstechnik	CH
D'E VDE	Verband Deutscher Elektrotechniker e.V.(VDE) – Approval of drawings – Reports with production monitoring	DE
	Berufsgenossenschaft (BG) GS - Geprüfte Sicherheit (tested safety)	DE
TÜV	TÜV Rheinland Industrie Service GmbH	DE

Explosion protection		Country code
FM APPROVED	FM Approvals	US
DEKRA	DEKRA Certification B.V.	NL
PTB	Physikalisch-Technische Bundesanstalt	DE
QS International	QS Schaffhausen	CH
VTT	VTT Expert Services Oy	FI
IBExU	IBExU Institut für Sicherheitstechnik GmbH	DE
	TÜV Rheinland do Brasil	BR
	Underwriters Laboratories Inc. (UL)	US
TÜV NORD	TÜV Nord	DE
DEKRA	DEKRA EXAM GmbH	DE

Ship classification societies		Country code
	Bureau Veritas	FR
GL	Germanischer Lloyd AG	DE
Lloyd's Register	Lloyd's Register EMEA	GB
ClassNK	Nippon Kaiji Kyokai	JP
DNV	Det Norske Veritas	NO
	Polski Rejestr Statków	PL
	Russian Maritime Register of Shipping	RU
KR	Korean Register of Shipping	KR
ABS	American Bureau of Shipping	US

EMC: Class A product:

In accordance with statutory regulations, our products are indicated with this footnote if they are intended for use in industrial environments. This means that the permissible limit values for residential applications may be exceeded in the event of conducted and emitted interference. In such cases, the operator may have to take additional safety measures in order to ensure electromagnetic compatibility in residential applications.

Color designations

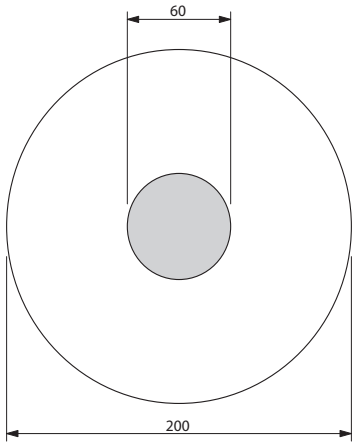
Color	Code
White	WH
Red	RD
Blue	BU
Green	GN
Yellow	YE
Gray	GY
Brown	BN
Orange	OG
Black	BK
Turquoise	TQ
Ivory	IV
Beige	BE
Olive	OL
Violet	VT
Pink	PK
Gold	GD
Silver	SR

Note:

Subject to changes that serve the purpose of technical progress.

Shock protection

Touch proof



Back of hand safety

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)

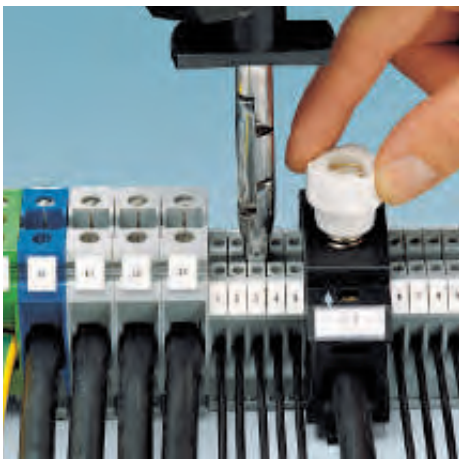
The term "occasional handling" has been introduced for the operation of elements such as pushbuttons, rocker arms or rotary buttons in the proximity of live parts.

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.

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ASI CC ADR	2741338	357
ASI CC ADR CAB CINCH	2741341	358
B		
BMKL 11,5 (108X16) WH	0821797	359
BMKL 64X16 WH	0821807	358
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CES-B10-HFFS-PLBK	0801663	606
CES-B10-SF-PLBK	0801655	607
CES-B10-SFC-M	0801645	607
CES-B10-SFFS-PLBK	0801660	607
CES-B10-WRG-BK	0801725	606
CES-B16-HFFS-PLBK	0801662	606
CES-B16-SF-PLBK	0801651	607
CES-B16-SFC-M	0801642	607
CES-B16-SFFS-PLBK	0801659	607
CES-B16-WRG-BK	0801726	606
CES-B24-HFFS-PLBK	0801661	606
CES-B24-SF-PLBK	0801647	607
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HC-B 10-SFQD-52/O1PG16	1673423	504
HC-B 10-SFQD-52/O2M20	1646492	504
HC-B 10-SFQD-52/O2M25	1604748	504
HC-B 10-SFQD-74/O1M25	1646502	504
HC-B 10-SFQD-74/O1M32	1646528	504
HC-B 10-SFQD-74/O2M25	1646515	504
HC-B 10-SFQD-74/O2M32	1646531	504
HC-B 10-SML-52/O1M20	1646269	496
HC-B 10-SML-52/O1M25	1604749	496
HC-B 10-SML-52/O1PG16	1673449	496
HC-B 10-SML-52/O2M20	1646272	496
HC-B 10-SML-52/O2PG16	1673452	496
HC-B 10-SML-74/O1M25	1646395	496
HC-B 10-SML-74/O1M32	1646418	496
HC-B 10-SML-74/O1PG21	1677636	496
HC-B 10-SML-74/O1PG29	1677649	496
HC-B 10-SML-74/O2M25	1646285	496
HC-B 10-SML-74/O2M32	1646421	496
HC-B 10-SML-74/O2PG21	1677652	496
HC-B 10-SMLD-52/O1M20	1646434	496
HC-B 10-SMLD-52/O1PG16	1673465	496
HC-B 10-SMLD-52/O2M20	1604750	496
HC-B 10-SMLD-52/O2M25	1604751	496
HC-B 10-SMLD-52/O2PG16	1673478	496
HC-B 10-SMLD-74/O1M25	1646447	496
HC-B 10-SMLD-74/O1M32	1646463	496
HC-B 10-SMLD-74/O1PG21	1677678	496
HC-B 10-SMLD-74/O1PG29	1677681	496
HC-B 10-SMLD-74/O2M25	1646450	496
HC-B 10-SMLD-74/O2M32	1646476	496
HC-B 10-SMLD-74/O2PG21	1677694	496
HC-B 10-SMLD-74/O2PG29	1677704	496
HC-B 10-SMQ-52/O1M20	1604752	500
HC-B 10-SMQ-52/O1PG16	1673481	500
HC-B 10-SMQ-52/O2M20	1604753	500
HC-B 10-SMQ-52/O2M25	1604754	500
HC-B 10-SMQ-52/O2PG16	1673494	500
HC-B 10-SMQ-74/O1M25	1604755	500
HC-B 10-SMQ-74/O1M32	1604756	500
HC-B 10-SMQ-74/O1PG21	1677717	500
HC-B 10-SMQ-74/O1PG29	1678415	500
HC-B 10-SMQ-74/O2M25	1604757	500
HC-B 10-SMQ-74/O2M32	1645820	500
HC-B 10-SMQ-74/O2PG21	1677720	500
HC-B 10-SMQ-74/O2PG29	1678444	500
HC-B 10-TFL-H-O1PG21G	1460048	494
HC-B 10-TFL-H-O1PG21S	1460049	494
HC-B 10-TFL-H-O1PG29G	1460050	494
HC-B 10-TFL-H-O1PG29S	1460051	494
HC-B 10-TFL-H-O1STM25G	1460054	494
HC-B 10-TFL-H-O1STM25S	1460055	494
HC-B 10-TFL-H-O1STM32G	1460056	494
HC-B 10-TFL-H-O1STM32S	1460057	494
HC-B 10-TFL-N-O1PG16G	1460036	494
HC-B 10-TFL-N-O1PG16S	1460041	494
HC-B 10-TFL-N-O1STM20G	1460034	494
HC-B 10-TFL-N-O1STM20S	1460035	494
HC-B 10-TFL-N-O1STM25G	1460039	494
HC-B 10-TFL-N-O1STM25S	1460040	494
HC-B 10-TFQ-H-O1PG21G	1460074	498
HC-B 10-TFQ-H-O1PG21S	1460075	498
HC-B 10-TFQ-H-O1PG29G	1460076	498
HC-B 10-TFQ-H-O1PG29S	1460077	498
HC-B 10-TFQ-H-O1STM25G	1460080	498
HC-B 10-TFQ-H-O1STM25S	1460081	498
HC-B 10-TFQ-H-O1STM32G	1460082	498
HC-B 10-TFQ-H-O1STM32S	1460083	498
HC-B 10-TFQ-N-O1PG16G	1460063	498
HC-B 10-TFQ-N-O1PG16S	1460068	498
HC-B 10-TFQ-N-O1STM20G	1460061	498
HC-B 10-TFQ-N-O1STM20S	1460062	498
HC-B 10-TFQ-N-O1STM25G	1460066	498
HC-B 10-TFQ-N-O1STM25S	1460067	498
HC-B 10-TMQ-H-O1STM20S	1460096	502
HC-B 10-TMQ-H-O1STM25G	1460097	502
HC-B 10-TMQ-H-O1STM25S	1460098	502
HC-B 10-TMQ-N-M1PG16G	1460086	502
HC-B 10-TMQ-N-M1PG16S	1460090	502
HC-B 10-TMQ-N-O1STM20G	1460088	502
HC-B 10-TMS-100/O1STM25G-EEE	1580486	491
HC-B 10-TMS-100/O1STM25G-EUA	1690037	492
HC-B 10-TMS-100/O1STM25G-STA	1690040	490
HC-B 10-TMS-100/O1STM25S-EEE	1587658	491
HC-B 10-TMS-100/O1STM25S-EUA	1690079	492
HC-B 10-TMS-100/O1STM25S-STA	1690082	490
HC-B 10-TMS-100/O1STM32G-EEE	1580483	491
HC-B 10-TMS-100/O1STM32G-EUA	1690118	492
HC-B 10-TMS-100/O1STM32G-STA	1690121	490
HC-B 10-TMS-100/O1STM32S-EEE	1460357	491
HC-B 10-TMS-100/O1STM32S-EUA	1690150	492
HC-B 10-TMS-100/O1STM32S-STA	1690163	490
HC-B 10-TMS-EEE-PR-DI	1409804	571
HC-B 10-TMS-SD-IP50	1690749	490
HC-B 10-TMS-SD-IP65	1690781	490
HC-B 16-A-DT-PEL-F	1648432	447
HC-B 16-A-DT-PEL-M	1648445	447
HC-B 16-A-DT-PER-F	1648458	447
HC-B 16-A-DT-PER-M	1648461	447
HC-B 16-A-UT-PEL-F	1648042	445
HC-B 16-A-UT-PEL-M	1648048	445
HC-B 16-A-UT-PER-F	1648090	445
HC-B 16-A-UT-PER-M	1648096	445
HC-B 16-ADP/1 DSUB 37	1775512	574
HC-B 16-ADP/1 DSUB 50	1775538	574
HC-B 16-ADP/2 DSUB 37	1775525	575
HC-B 16-ADP/2 DSUB 50	1775541	575
HC-B 16-AFQD	1771600	520
HC-B 16-AFZ	1584622	523
HC-B 16-AML	1771590	512
HC-B 16-AMLD	1771613	512
HC-B 16-AMLD-AL	1645480	512
HC-B 16-AMQ	1771587	516
HC-B 16-ANDOCK	1586138	576
HC-B 16-ANDOCK-MOD-A	1587467	577
HC-B 16-ANDOCK-MOD-T	1587454	577
HC-B 16-AP-GY	1660384	572
HC-B 16-APV-GY	1661121	572
HC-B 16-EBUQ-2,5	1605572	441
HC-B 16-EBUQ-2,5-32	1605598	441
HC-B 16-ESTQ-2,5	1605637	441
HC-B 16-ESTQ-2,5-32	1605653	441
HC-B 16-FL-DI	1661451	571
HC-B 16-I-CT-F	1648283	441
HC-B 16-I-CT-F-32	1584923	441
HC-B 16-I-CT-M	1648270	441
HC-B 16-I-CT-M-32	1584910	441
HC-B 16-I-PT-F	1407731	441
HC-B 16-I-PT-F-32	1407733	441
HC-B 16-I-PT-M	1407732	441
HC-B 16-I-PT-M-32	1407734	441
HC-B 16-I-UT-F	1648241	441
HC-B 16-I-UT-F-32	1584884	441
HC-B 16-I-UT-M	1648238	441
HC-B 16-I-UT-M-32	1584871	441
HC-B 16-KML-H-O1PG21	1460306	512
HC-B 16-KML-H-O1PG29	1460307	512
HC-B 16-KML-H-O1STM32	1460172	512
HC-B 16-KML-H-O1STM40	1460309	512
HC-B 16-KMQ-H-O1PG21	1460313	516
HC-B 16-KMQ-H-O1PG29	1460314	516
HC-B 16-KMQ-H-O1STM25	1460315	516
HC-B 16-KMQ-H-O1STM32	1460312	516
HC-B 16-LB	1584664	570
HC-B 16-PR-DI	1661079	571
HC-B 16-SD-FL/FS	1660151	578
HC-B 16-SD-FLU/FS-AL	1644588	578
HC-B 16-SD-FQ/FS	1772599	578
HC-B 16-SD-FQT/FS	1687273	578
HC-B 16-SD-FQT/FS-AL	1647763	578
HC-B 16-SD-FQU/FS-AL	1644591	578
HC-B 16-SD-ML/FS	1678318	578
HC-B 16-SD-MLT/FS-AL	1584525	578
HC-B 16-SD-MQ/FS	1678321	578
HC-B 16-SD-MQT/FS-AL	1584554	578
HC-B 16-SFQD-67/O1PG21	1673672	520
HC-B 16-SFQD-67/O2M25	1604783	520
HC-B 16-SFQD-67/O2PG21	1673685	520
HC-B 16-SFQD-68/O1M25	1646366	520
HC-B 16-SFQD-84/O1M32	1645655	520
HC-B 16-SFQD-84/O2M32	1645668	520
HC-B 16-SFZ-84/O1M32	1584619	523
HC-B 16-SML-67/O1M25	1604784	512
HC-B 16-SML-67/O1PG21	1673698	512
HC-B 16-SML-67/O2M25	1604785	512
HC-B 16-SML-67/O2PG21	1673708	512
HC-B 16-SML-84/O1M32	1646299	512
HC-B 16-SML-84/O1M40	1646311	512
HC-B 16-SML-84/O1PG21	1677869	512
HC-B 16-SML-84/O1PG29	1677843	512
HC-B 16-SML-84/O2M32	1646308	512
HC-B 16-SML-84/O2M40	1646324	512
HC-B 16-SML-84/O2PG21	1677872	512
HC-B 16-SML-84/O2PG29	1677856	512
HC-B 16-SMLD-67/O1M25	1604786	512
HC-B 16-SMLD-67/O1PG21	1673711	512
HC-B 16-SMLD-67/O2M25	1604787	512
HC-B 16-SMLD-67/O2PG21	1673724	512
HC-B 16-SMLD-84/O1M32	1645671	512
HC-B 16-SMLD-84/O1M40	1645697	512
HC-B 16-SMLD-84/O1PG21	1677908	512
HC-B 16-SMLD-84/O1PG29	1677885	512
HC-B 16-SMLD-84/O2M32	1645684	512
HC-B 16-SMLD-84/O2M40	1645707	512
HC-B 16-SMLD-84/O2PG21	1677911	512
HC-B 16-SMLD-84/O2PG29	1677898	512
HC-B 16-SMQ-67/O1M25	1604788	516
HC-B 16-SMQ-67/O1M32	1604789	516
HC-B 16-SMQ-67/O1PG21	1673740	516
HC-B 16-SMQ-67/O1PG29	1678428	516
HC-B 16-SMQ-67/O2M25	1604790	516
HC-B 16-SMQ-67/O2M32	1604791	516
HC-B 16-SMQ-67/O2PG21	1673753	516
HC-B 16-SMQ-67/O2PG29	1678457	516
HC-B 16-SMQ-84/O1M32	1604793	516
HC-B 16-SMQ-84/O1PG21	1677924	516
HC-B 16-SMQ-84/O2M32	1604794	516
HC-B 16-SMQ-84/O2PG21	1677937	516
HC-B 16-TFL-H-O1PG21G	1460118	510
HC-B 16-TFL-H-O1PG21S	1460119	510
HC-B 16-TFL-H-O1PG29G	1460120	510
HC-B 16-TFL-H-O1PG29S	1460121	510
HC-B 16-TFL-H-O1STM32G	1460124	510
HC-B 16-TFL-H-O1STM32S	1460125	510
HC-B 16-TFL-H-O1STM40G	1460126	510
HC-B 16-TFL-H-O1STM40S	1460127	510
HC-B 16-TFL-N-O1PG21G	1460101	510
HC-B 16-TFL-N-O1PG21S	1460103	510
HC-B 16-TFL-N-O1STM25G	1460100	510
HC-B 16-TFL-N-O1STM25S	1460102	510
HC-B 16-TFL-N-O1STM32G	1460095	510
HC-B 16-TFL-N-O1STM32S	1460109	510
HC-B 16-TFQ-H-O1PG21G	1460146	514
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HC-B 16-TFQ-N-O1PG21G	1460129	514
HC-B 16-TFQ-N-O1PG21S	1460131	514
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HC-B 16-TFQ-N-O1STM25S	1460130	514
HC-B 16-TFQ-N-O1STM32G	1460134	514
HC-B 16-TFQ-N-O1STM32S	1460160	514
HC-B 16-TMQ-H-M1PG21G	1460170	518
HC-B 16-TMQ-H-M1PG21S	1460171	518
HC-B 16-TMQ-H-M1PG29G	1460173	518
HC-B 16-TMQ-H-M1PG29S	1460175	518
HC-B 16-TMQ-H-O1STM25S	1460182	518
HC-B 16-TMQ-H-O1STM32S	1460184	518
HC-B 16-TMS-100/O1STM25G-STA	1644630	506
HC-B 16-TMS-100/O1STM25S-STA	1644643	506
HC-B 16-TMS-100/O1STM32G-EEE	1587661	507
HC-B 16-TMS-100/O1STM32G-EUA	1690192	508
HC-B 16-TMS-100/O1STM32G-STA	1690202	506
HC-B 16-TMS-100/O1STM32S-EEE	1587674	507
HC-B 16-TMS-100/O1STM32S-EUA	1690231	508
HC-B 16-TMS-100/O1STM32S-STA	1690244	506
HC-B 16-TMS-100/O1STM40G-EEE	1580507	507
HC-B 16-TMS-100/O1STM40G-EUA	1690273	508
HC-B 16-TMS-100/O1STM40G-STA	1690286	506
HC-B 16-TMS-100/O1STM40S-EEE	1460358	507
HC-B 16-TMS-100/O1STM40S-EUA	1690312	508
HC-B 16-TMS-100/O1STM40S-STA	1690325	506
HC-B 16-TMS-EEE-PR-DI	1409817	571
HC-B 16-TMS-SD-IP50	1690752	506
HC-B 16-TMS-SD-IP65	1690794	506
HC-B 16-TMZ-76/O1STM32G	1584635	522
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HC-B 24-A-DT-PEL-M	1648487	447
HC-B 24-A-DT-PER-F	1648490	447
HC-B 24-A-DT-PER-M	1648500	447
HC-B 24-A-UT-PEL-F	1648054	445
HC-B 24-A-UT-PEL-M	1648060	445
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HC-B 24-ADP-B 6-GY	1660407	573
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HC-B 24-ADP-B 16-GY	1660449	573
HC-B 24-AFQD	1771956	538
HC-B 24-AFZ	1584583	541
HC-B 24-AML	1771930	530
HC-B 24-AMLD	1771943	530
HC-B 24-AMLD-AL	1645493	530
HC-B 24-AMQ	1771927	534
HC-B 24-ANDOCK	1586141	576
HC-B 24-ANDOCK-MOD-A	1587483	577
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HC-B 24-AP-GY	1660397	572
HC-B 24-APV-GY	1661037	572
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HC-B 24-EBUQ-2,5-48	1605608	443
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HC-B 24-I-CT-F	1648348	443
HC-B 24-I-CT-F-48	1584981	443
HC-B 24-I-CT-M	1648335	443
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HC-B 24-I-PT-F	1407735	443
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HC-B 24-I-UT-M	1648296	443
HC-B 24-I-UT-M-48	1584936	443
HC-B 24-KML-H-O1PG29	1460250	530
HC-B 24-KML-H-O1STM32	1460325	530
HC-B 24-KML-H-O1STM40	1460326	530
HC-B 24-KMQ-H-O1PG21	1460329	534
HC-B 24-KMQ-H-O1PG29	1460330	534
HC-B 24-KMQ-H-O1STM32	1460335	534
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HC-B 24-LB	1584677	570
HC-B 24-PR-DI	1663048	571
HC-B 24-SD-FL/FS	1660148	578
HC-B 24-SD-FLU/FS-AL	1644601	578
HC-B 24-SD-FQ/FS	1772609	578
HC-B 24-SD-FQT/FS	1687286	578
HC-B 24-SD-FQT/FS-AL	1647776	578
HC-B 24-SD-FQU/FS-AL	1644614	578
HC-B 24-SD-ML/FS	1678334	578
HC-B 24-SD-MLT/FS-AL	1584538	578
HC-B 24-SD-MQ/FS	1678347	578
HC-B 24-SD-MQT/FS-AL	1584567	578
HC-B 24-SFQD-67/O1M25	1604830	538
HC-B 24-SFQD-67/O1PG21	1674118	538
HC-B 24-SFQD-67/O2M25	1604831	538
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HC-B 24-SML-67/O1PG21	1674134	530
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HC-B 24-SML-68/O2M25	1646340	530
HC-B 24-SML-84/O1M32	1645752	530
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HC-B 24-SML-84/O1PG21	1677966	530
HC-B 24-SML-84/O1PG29	1677979	530
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HC-B 24-SML-84/O2M40	1645778	530
HC-B 24-SML-84/O2PG21	1677982	530
HC-B 24-SML-84/O2PG29	1677995	530
HC-B 24-SMLD-67/O1M25	1604833	530
HC-B 24-SMLD-67/O1PG21	1674150	530
HC-B 24-SMLD-67/O2M25	1604834	530
HC-B 24-SMLD-67/O2PG21	1674163	530
HC-B 24-SMLD-84/O1M32	1645781	530
HC-B 24-SMLD-84/O1PG21	1678004	530
HC-B 24-SMLD-84/O1PG29	1678017	530
HC-B 24-SMLD-84/O2M32	1645794	530
HC-B 24-SMLD-84/O2M40	1645817	530
HC-B 24-SMLD-84/O2PG21	1678020	530
HC-B 24-SMLD-84/O2PG29	1678033	530
HC-B 24-SMQ-67/O1M25	1604835	534
HC-B 24-SMQ-67/O1PG21	1674176	534
HC-B 24-SMQ-67/O2PG21	1674189	534
HC-B 24-SMQ-68/O2M25	1646353	534
HC-B 24-SMQ-84/O1M32	1604836	534
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HC-B 24-SMQ-84/O2M32	1604837	534
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HC-B 24-TFL-H-O1PG21G	1460342	528
HC-B 24-TFL-H-O1PG21S	1460206	528
HC-B 24-TFL-H-O1PG29G	1460207	528
HC-B 24-TFL-H-O1PG29S	1460208	528
HC-B 24-TFL-H-O1STM32G	1460212	528
HC-B 24-TFL-H-O1STM32S	1460213	528
HC-B 24-TFL-H-O1STM40G	1460214	528
HC-B 24-TFL-H-O1STM40S	1460215	528
HC-B 24-TFL-N-O1PG21G	1460190	528
HC-B 24-TFL-N-O1PG21S	1460193	528
HC-B 24-TFL-N-O1PG29G	1460293	528
HC-B 24-TFL-N-O1PG29S	1460194	528
HC-B 24-TFL-N-O1STM25G	1460189	528
HC-B 24-TFL-N-O1STM25S	1460191	528
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HC-B 24-TFQ-H-O1PG21G	1460350	532
HC-B 24-TFQ-H-O1PG21S	1460238	532
HC-B 24-TFQ-H-O1PG29G	1460239	532
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HC-B 24-TFQ-H-O1STM32S	1409367	532
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HC-B 24-TFQ-N-O1PG29G	1460332	532
HC-B 24-TFQ-N-O1STM25G	1460218	532
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HC-B 24-TMS-100/O1STM32G-STA	1690367	524
HC-B 24-TMS-100/O1STM32S-EEE	1587687	525
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HC-B 24-TMS-100/O1STM32S-STA	1690406	524
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HC-B 24-TMS-100/O1STM40G-EUA	1690435	526
HC-B 24-TMS-100/O1STM40G-STA	1690448	524
HC-B 24-TMS-100/O1STM40S-EEE	1460360	525
HC-B 24-TMS-100/O1STM40S-EUA	1690477	526
HC-B 24-TMS-100/O1STM40S-STA	1690480	524
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HC-B 32-SFS-72-O1M50-EEE	1580530	542
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SAC-17P-10,0-PVC/FR SCO	1555415	65
SAC-17P-10,0-PVC/FS SCO	1555376	65
SAC-17P-100,0-PVC/0,14	1441545	168
SAC-17P-M23MS/0,5-35T/FS SHSCO	1437368	67
SAC-17P-M23MS/1,0-35T/FS SHSCO	1437371	67
SAC-17P-M23MS/2,0-35T/FS SHSCO	1437384	67
SAC-17P-M23MS/5,0-35T/FS SHSCO	1437397	67
SAC-17P-MR/ 1,5-35T SH SCO	1430242	67
SAC-17P-MR/ 1,5-PUR SCO	1430734	64
SAC-17P-MR/ 1,5-PVC SCO	1555305	65
SAC-17P-MR/ 3,0-35T SH SCO	1430255	67
SAC-17P-MR/ 3,0-PUR SCO	1430747	64
SAC-17P-MR/ 3,0-PVC SCO	1555318	65
SAC-17P-MR/ 5,0-35T SH SCO	1430268	67
SAC-17P-MR/ 5,0-PUR SCO	1430750	64
SAC-17P-MR/ 5,0-PVC SCO	1555321	65
SAC-17P-MR/10,0-35T SH SCO	1430271	67
SAC-17P-MR/10,0-PUR SCO	1430763	64
SAC-17P-MR/10,0-PVC SCO	1555334	65
SAC-17P-MS/ 1,5-35T SH SCO	1430200	67
SAC-17P-MS/ 1,5-PUR SCO	1430695	64
SAC-17P-MS/ 1,5-PVC SCO	1555266	65
SAC-17P-MS/ 3,0-35T SH SCO	1430213	67
SAC-17P-MS/ 3,0-PUR SCO	1430705	64
SAC-17P-MS/ 3,0-PVC SCO	1555279	65
SAC-17P-MS/ 5,0-35T SH SCO	1430226	67
SAC-17P-MS/ 5,0-PUR SCO	1430718	64
SAC-17P-MS/ 5,0-PVC SCO	1555282	65
SAC-17P-MS/0,5-35T/M23FS SHSCO	1437407	67
SAC-17P-MS/1,0-35T/M23FS SHSCO	1437410	67
SAC-17P-MS/10,0-35T SH SCO	1430239	67
SAC-17P-MS/10,0-35T/FS SH SCO	1402422	67
SAC-17P-MS/10,0-PUR SCO	1430721	64
SAC-17P-MS/10,0-PVC SCO	1555295	65
SAC-17P-MS/2,0-35T/M23FS SHSCO	1437423	67
SAC-17P-MS/5,0-35T/FS SH SCO	1402421	67
SAC-17P-MS/5,0-35T/M23FS SHSCO	1437436	67
SAC-2P- 2,0-910/FSB SCO	1518067	341
SAC-2P- 2,0-910/M12FSB	1507298	341
SAC-2P- 5,0-910/FSB SCO	1518070	341
SAC-2P- 5,0-910/M12FSB	1507308	341
SAC-2P-10,0-910/FSB SCO	1518083	341
SAC-2P-10,0-910/M12FSB	1507311	341
SAC-2P-15,0-910/FSB SCO	1518096	341
SAC-2P-15,0-910/M12FSB	1507324	341
SAC-2P-910/...	1511491	341
SAC-2P-960/...	1432389	350
SAC-2P-961/...	1434620	349
SAC-2P-FRB SCO/910/...	1433249	341
SAC-2P-FSB SCO/910/...	1538076	341
SAC-2P-M12FSB/910/...	1538063	341
SAC-2P-M12MSB-M12FSB/910/...	1538089	341
SAC-2P-M12MSB/ 0,3-910/M12FSB	1507340	341
SAC-2P-M12MSB/ 0,5-910/M12FSB	1507353	341
SAC-2P-M12MSB/ 1,0-910/M12FSB	1507366	341
SAC-2P-M12MSB/ 2,0-910	1507243	341
SAC-2P-M12MSB/ 2,0-910/M12FSB	1507379	341
SAC-2P-M12MSB/ 5,0-910	1507256	341
SAC-2P-M12MSB/ 5,0-910/M12FSB	1507382	341
SAC-2P-M12MSB/10,0-910	1507269	341
SAC-2P-M12MSB/10,0-910/M12FSB	1507395	341
SAC-2P-M12MSB/15,0-910	1507272	341
SAC-2P-M12MSB/15,0-910/M12FSB	1507405	341
SAC-2P-M12MSB/910/...	1538047	341
SAC-2P-MRB SCO/910/...	1433236	341
SAC-2P-MRB-FRB SCO/910/...	1433278	341
SAC-2P-MRB-FSB SCO/910/...	1433265	341
SAC-2P-MSB SCO/910/...	1538050	341
SAC-2P-MSB-FRB SCO/910/...	1433252	341
SAC-2P-MSB-FSB SCO/910/...	1538092	341
SAC-2P-MSB/ 0,3-910/FSB SCO	1518106	341
SAC-2P-MSB/ 0,5-910/FSB SCO	1518119	341
SAC-2P-MSB/ 1,0-910/FSB SCO	1518122	341
SAC-2P-MSB/ 2,0-910 SCO	1518025	341
SAC-2P-MSB/ 2,0-910/FSB SCO	1518135	341
SAC-2P-MSB/ 5,0-910 SCO	1518038	341
SAC-2P-MSB/ 5,0-910/FSB SCO	1518148	341
SAC-2P-MSB/10,0-910 SCO	1518041	341
SAC-2P-MSB/10,0-910/FSB SCO	1518151	341
SAC-2P-MSB/15,0-910 SCO	1518054	341
SAC-2P-MSB/15,0-910/FSB SCO	1518164	341
SAC-3P- 1,5-600/M 8FR FB	1406481	140
SAC-3P- 1,5-600/M 8FR-2L FB	1406486	140
SAC-3P- 1,5-600/M 8FS FB	1406477	140
SAC-3P- 1,5-800/M12FR	1454260	164
SAC-3P- 1,5-800/M12FR-2L	1454312	164
SAC-3P- 1,5-800/M12FS	1456679	164
SAC-3P- 1,5-PUR/A	1402983	87
SAC-3P- 1,5-PUR/A-1L-V	1443103	86
SAC-3P- 1,5-PUR/A-1L-V 230V	1402985	87
SAC-3P- 1,5-PUR/A-1L-Z	1434989	86
SAC-3P- 1,5-PUR/B-1L-V	1443145	90
SAC-3P- 1,5-PUR/B-1L-Z	1435386	90
SAC-3P- 1,5-PUR/BI-1L-V	1443187	92
SAC-3P- 1,5-PUR/BI-1L-Z	1435234	92
SAC-3P- 1,5-PUR/C-1L-V	1443226	96
SAC-3P- 1,5-PUR/C-1L-Z	1435535	96
SAC-3P- 1,5-PUR/CI-1L-V	1443268	98
SAC-3P- 1,5-PUR/CI-1L-Z	1435687	98
SAC-3P- 1,5-PUR/FR SCO	1536366	38
SAC-3P- 1,5-PUR/FR-2L SCO	1407774	38
SAC-3P- 1,5-PUR/FS SCO	1536243	38
SAC-3P- 1,5-PUR/M 8FR	1669738	38
SAC-3P- 1,5-PUR/M 8FR SH	1521766	43
SAC-3P- 1,5-PUR/M 8FR-2L	1671069	38
SAC-3P- 1,5-PUR/M 8FS	1669712	38
SAC-3P- 1,5-PUR/M 8FS SH	1521711	43
SAC-3P- 1,5-PUR/M12FR	1694509	40
SAC-3P- 1,5-PUR/M12FR B	1668195	40
SAC-3P- 1,5-PUR/M12FR SH	1682812	43
SAC-3P- 1,5-PUR/M12FR-2L	1694392	40
SAC-3P- 1,5-PUR/M12FR-2L B	1668250	40
SAC-3P- 1,5-PUR/M12FS	1694486	40
SAC-3P- 1,5-PUR/M12FS B	1668072	40
SAC-3P- 1,5-PUR/M12FS SH	1682786	43
SAC-3P- 1,5-PUR/M12FS-2L	1694185	40
SAC-3P- 1,5-PUR/M5FR	1530508	34
SAC-3P- 1,5-PUR/M5FS	1530427	34
SAC-3P- 2,0-28R/FR SCO RAIL	1407306	130
SAC-3P- 2,0-28R/FS SCO RAIL	1407303	130
SAC-3P- 2,0-961/M12FR VA	1419087	342
SAC-3P- 2,0-961/M12FS VA	1419082	342
SAC-3P- 3,0-600/M 8FR FB	1406482	140
SAC-3P- 3,0-600/M 8FR-2L FB	1406487	140
SAC-3P- 3,0-600/M 8FS FB	1406478	140
SAC-3P- 3,0-800/M12FR	1456718	164
SAC-3P- 3,0-800/M12FR-2L	1456721	164
SAC-3P- 3,0-800/M12FS	1456682	164
SAC-3P- 3,0-PUR/A	1439544	87
SAC-3P- 3,0-PUR/A-1L-V	1443116	86
SAC-3P- 3,0-PUR/A-1L-V 230V	1400694	87
SAC-3P- 3,0-PUR/A-1L-Z	1434992	86
SAC-3P- 3,0-PUR/B-1L-V	1443158	90
SAC-3P- 3,0-PUR/B-1L-Z	1435399	90
SAC-3P- 3,0-PUR/BI-1L-V	1443190	92
SAC-3P- 3,0-PUR/BI-1L-Z	1435247	92
SAC-3P- 3,0-PUR/C-1L-V	1443239	96
SAC-3P- 3,0-PUR/C-1L-Z	1435548	96
SAC-3P- 3,0-PUR/CI-1L-V	1443271	98
SAC-3P- 3,0-PUR/CI-1L-Z	1435690	98
SAC-3P- 3,0-PUR/FR SCO	1536379	38
SAC-3P- 3,0-PUR/FR-2L SCO	1407775	38
SAC-3P- 3,0-PUR/FS SCO	1536256	38
SAC-3P- 3,0-PUR/M 8FR	1669741	38
SAC-3P- 3,0-PUR/M 8FR SH	1521779	43
SAC-3P- 3,0-PUR/M 8FR-2L	1671072	38
SAC-3P- 3,0-PUR/M 8FS	1669725	38
SAC-3P- 3,0-PUR/M 8FS SH	1521724	43
SAC-3P- 3,0-PUR/M12FR	1694512	40
SAC-3P- 3,0-PUR/M12FR B	1668205	40
SAC-3P- 3,0-PUR/M12FR SH	1682825	43
SAC-3P- 3,0-PUR/M12FR-2L	1694402	40
SAC-3P- 3,0-PUR/M12FR-2L B	1668263	40
SAC-3P- 3,0-PUR/M12FS	1694499	40
SAC-3P- 3,0-PUR/M12FS B	1668085	40
SAC-3P- 3,0-PUR/M12FS SH	1682799	43
SAC-3P- 3,0-PUR/M12FS-2L	1694198	40
SAC-3P- 3,0-PUR/M5FR	1530511	34
SAC-3P- 3,0-PUR/M5FS	1530430	34
SAC-3P- 5,0-28R/FR SCO RAIL	1407307	130
SAC-3P- 5,0-28R/FS SCO RAIL	1407304	130
SAC-3P- 5,0-600/M 8FR FB	1406484	140
SAC-3P- 5,0-600/M 8FR-2L FB	1406488	140
SAC-3P- 5,0-600/M 8FS FB	1406479	140
SAC-3P- 5,0-800/M12FR	1454273	164
SAC-3P- 5,0-800/M12FR-2L	1454325	164
SAC-3P- 5,0-800/M12FS	1456695	164
SAC-3P- 5,0-961/M12FR VA	1419088	342
SAC-3P- 5,0-961/M12FS VA	1419083	342
SAC-3P- 5,0-PUR/A	1402984	87
SAC-3P- 5,0-PUR/A-1L-R	1400798	87
SAC-3P- 5,0-PUR/A-1L-V	1443129	86
SAC-3P- 5,0-PUR/A-1L-Z	1435001	86
SAC-3P- 5,0-PUR/B-1L-V	1443161	90
SAC-3P- 5,0-PUR/B-1L-Z	1435409	90
SAC-3P- 5,0-PUR/BI	1439065	93
SAC-3P- 5,0-PUR/BI-1L-V	1443200	92
SAC-3P- 5,0-PUR/BI-1L-Z	1435250	92
SAC-3P- 5,0-PUR/C-1L-V	1443242	96
SAC-3P- 5,0-PUR/C-1L-Z	1435551	96
SAC-3P- 5,0-PUR/CI-1L-V	1443284	98
SAC-3P- 5,0-PUR/CI-1L-Z	1435700	98
SAC-3P- 5,0-PUR/FR SCO	1536382	38
SAC-3P- 5,0-PUR/FR-2L SCO	1407776	38
SAC-3P- 5,0-PUR/FS SCO	1536269	38
SAC-3P- 5,0-PUR/M 8FR	1669631	38
SAC-3P- 5,0-PUR/M 8FR SH	1521782	43
SAC-3P- 5,0-PUR/M 8FR-2L	1671085	38
SAC-3P- 5,0-PUR/M 8FS	1669628	38
SAC-3P- 5,0-PUR/M 8FS SH	1521737	43
SAC-3P- 5,0-PUR/M 8SIFR	1519891	36
SAC-3P- 5,0-PUR/M 8SIFS	1519875	36
SAC-3P- 5,0-PUR/M12FR	1694525	40
SAC-3P- 5,0-PUR/M12FR B	1668218	40
SAC-3P- 5,0-PUR/M12FR SH	1682838	43
SAC-3P- 5,0-PUR/M12FR-2L	1694415	40
SAC-3P- 5,0-PUR/M12FR-2L B	1668276	40
SAC-3P- 5,0-PUR/M12FS	1683510	40
SAC-3P- 5,0-PUR/M12FS B	1668098	40
SAC-3P- 5,0-PUR/M12FS SH	1682809	43
SAC-3P- 5,0-PUR/M12FS-2L	1694787	40
SAC-3P- 5,0-PUR/M5FR	1530524	34
SAC-3P- 5,0-PUR/M5FS	1530443	34
SAC-3P-1,5-PUR/A-1L-R	1400589	87
SAC-3P-10,0-28R/FR SCO RAIL	1407308	130
SAC-3P-10,0-28R/FS SCO RAIL	1407305	130
SAC-3P-10,0-600/M 8FR FB	1406485	140
SAC-3P-10,0-600/M 8FR-2L FB	1406489	140
SAC-3P-10,0-600/M 8FS FB	1406480	140
SAC-3P-10,0-800/M12FR	1454299	164
SAC-3P-10,0-800/M12FR-2L	1454341	164
SAC-3P-10,0-800/M12FS	1456705	164
SAC-3P-10,0-961/M12FR VA	1419089	342
SAC-3P-10,0-961/M12FS VA	1419084	342
SAC-3P-10,0-PUR/A	1400732	87
SAC-3P-10,0-PUR/A-1L-R	1400799	87
SAC-3P-10,0-PUR/A-1L-V	1443132	86
SAC-3P-10,0-PUR/A-1L-V 230V	1402986	87
SAC-3P-10,0-PUR/A-1L-Z	1435014	86
SAC-3P-10,0-PUR/B-1L-V	1443174	90
SAC-3P-10,0-PUR/B-1L-Z	1435412	90
SAC-3P-10,0-PUR/BI	1438862	93
SAC-3P-10,0-PUR/BI-1L-V	1443213	92
SAC-3P-10,0-PUR/BI-1L-Z	1435263	92
SAC-3P-10,0-PUR/C	1400641	97
SAC-3P-10,0-PUR/C-1L-V	1443255	96
SAC-3P-10,0-PUR/C-1L-Z	1435564	96
SAC-3P-10,0-PUR/CI-1L-V	1443297	98
SAC-3P-10,0-PUR/CI-1L-Z	1435713	98
SAC-3P-10,0-PUR/FR SCO	1536395	38
SAC-3P-10,0-PUR/FR-2L SCO	1407777	38
SAC-3P-10,0-PUR/FS SCO	1536272	38
SAC-3P-10,0-PUR/M 8FR	1694169	38
SAC-3P-10,0-PUR/M 8FR SH	1521795	43
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SAC-3P-10,0-PUR/M 8FS	1694101	38
SAC-3P-10,0-PUR/M 8FS SH	1521740	43
SAC-3P-10,0-PUR/M12FR	1694538	40
SAC-3P-10,0-PUR/M12FR B	1681017	40
SAC-3P-10,0-PUR/M12FR SH	1500693	43
SAC-3P-10,0-PUR/M12FR-2L	1694428	40
SAC-3P-10,0-PUR/M12FR-2L B	1681059	40
SAC-3P-10,0-PUR/M12FS	1693034	40
SAC-3P-10,0-PUR/M12FS B	1694208	40
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SAC-3P-100,0-116/0,75	1457416	169
SAC-3P-100,0-534/0,75	1457432	169
SAC-3P-100,0-PUR/0,25	1501689	168
SAC-3P-100,0-PUR/0,34	1501650	168
SAC-3P-100,0-PUR/0,5	1457393	169
SAC-3P-100,0-PUR/SH-0,25	1526525	168
SAC-3P-100,0-PUR/SH-0,34	1501702	168
SAC-3P-100,0-PVC/0,25	1501854	168
SAC-3P-100,0-PVC/0,34	1501825	168
SAC-3P-100,0-PVC/SH-0,34	1550656	168
SAC-3P-15,0-961/M12FR VA	1419090	342
SAC-3P-15,0-961/M12FS VA	1419085	342
SAC-3P-20,0-961/M12FR VA	1419091	342
SAC-3P-20,0-961/M12FS VA	1419086	342
SAC-3P-3,0-PUR/A-1L-R	1400588	87
SAC-3P-5,0-PUR/A-1L-V 230V	1400648	87
SAC-3P-5,0-PUR/C	1400814	97
SAC-3P-A-1L-V/.../...	1400876	86
SAC-3P-A-1L-Z/.../...	1435027	86
SAC-3P-A/.../...	1400897	87
SAC-3P-B-1L-V/.../...	1400882	90
SAC-3P-B-1L-Z/.../...	1435425	90
SAC-3P-B/.../...	1400909	91
SAC-3P-BI-1L-V/.../...	1400879	92
SAC-3P-BI-1L-Z/.../...	1435276	92
SAC-3P-BI/.../...	1400902	93
SAC-3P-C-1L-V/.../...	1400894	96
SAC-3P-C-1L-Z/.../...	1435726	96
SAC-3P-C/.../...	1400921	97
SAC-3P-CI-1L-V/.../...	1400891	98
SAC-3P-CI-1L-Z/.../...	1435577	98
SAC-3P-CI/.../...	1400918	99
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SAC-3P-M 8MR/ 0,3-PUR/M 8FR	1682061	38
SAC-3P-M 8MR/ 0,3-PUR/M12FR-2L	1682469	40
SAC-3P-M 8MR/ 0,6-PUR/M 8FR	1682074	38
SAC-3P-M 8MR/ 0,6-PUR/M12FR-2L	1682472	40
SAC-3P-M 8MR/ 1,5-600 FB	1406473	140
SAC-3P-M 8MR/ 1,5-PUR SH	1521669	43
SAC-3P-M 8MR/ 1,5-PUR/M 8FR	1682087	38
SAC-3P-M 8MR/ 1,5-PUR/M12FR-2L	1682485	40
SAC-3P-M 8MR/ 3,0-600 FB	1406474	140
SAC-3P-M 8MR/ 3,0-PUR SH	1521672	43
SAC-3P-M 8MR/ 3,0-PUR/M 8FR	1682090	38
SAC-3P-M 8MR/ 3,0-PUR/M12FR-2L	1682498	40
SAC-3P-M 8MR/ 5,0-600 FB	1406475	140
SAC-3P-M 8MR/ 5,0-PUR SH	1521685	43
SAC-3P-M 8MR/.../...	1697551	38
SAC-3P-M 8MR/0,3-PUR/M 8FR-2L	1682100	38
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SAC-3P-M 8MR/0,6-PUR/M 8FS	1682430	40
SAC-3P-M 8MR/0,6-PUR/M12FR	1682391	40
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SAC-3P-M 8MR/3,0-PUR/M 8FR-2L	1682058	38
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SAC-3P-M 8MS/1,5-PUR/M12FR	1682320	40
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SAC-3P-M12MS/ 3,0-PUR/M12FS SH	1500839	43
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SAC-3P-M12MS/0,3-PUR/M 8FS	1668797	40
SAC-3P-M12MS/0,3-PUR/M12FR-2LB	1668438	40
SAC-3P-M12MS/0,3-PUR/M12FS	1681509	40
SAC-3P-M12MS/0,3-PUR/M12FS B	1668315	40
SAC-3P-M12MS/0,6-PUR/M 8FR	1668849	40
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SAC-3P-M12MS/0,6-PUR/M12FR-2LB	1668441	40
SAC-3P-M12MS/0,6-PUR/M12FS	1681512	40
SAC-3P-M12MS/0,6-PUR/M12FS B	1668328	40
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SAC-3P-M12MS/1,5-PUR/M12FS	1681525	40
SAC-3P-M12MS/1,5-PUR/M12FS B	1668331	40
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SAC-3P-M12MS/3,0-PUR/M 8FR-2L	1694910	40
SAC-3P-M12MS/3,0-PUR/M 8FS	1668823	40
SAC-3P-M12MS/3,0-PUR/M12FR-2LB	1668467	40
SAC-3P-M12MS/3,0-PUR/M12FS	1681538	40
SAC-3P-M12MS/3,0-PUR/M12FS B	1668344	40
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SAC-3P-M12Y/2X3,0-PUR/M 8FR	1671409	104
SAC-3P-M12Y/2X3,0-PUR/M 8FR-2L	1671441	104
SAC-3P-M12Y/2X3,0-PUR/M 8FS	1671360	104
SAC-3P-M12Y/2X3,0-PUR/M12FR B	1669026	104
SAC-3P-M12Y/2X3,0-PUR/M12FR2LB	1669068	104
SAC-3P-M12Y/2X3,0-PUR/M12FS B	1668988	104
SAC-3P-M12Y/2X5,0-PUR	1669754	104
SAC-3P-M12Y/2XM 8FS	1683471	106
SAC-3P-M12Y/2XM 8FS VP	1683549	107
SAC-3P-M12Y/2XM12FS 3L	1403627	106
SAC-3P-M12Y/2XM12FS B PE	1683413	106
SAC-3P-M12Y/2XM12FS B PE S21	1514016	106
SAC-3P-M12Y/2XM12FS PE	1683455	106
SAC-3P-M12Y/2XM12FS PE S21	1511789	106
SAC-3P-M5MR/ 1,5-PUR	1530346	34
SAC-3P-M5MR/ 3,0-PUR	1530359	34
SAC-3P-M5MR/ 5,0-PUR	1530362	34
SAC-3P-M5MR/10,0-PUR	1530375	34
SAC-3P-M5MS/ 1,5-PUR	1530265	34
SAC-3P-M5MS/ 3,0-PUR	1530278	34
SAC-3P-M5MS/ 5,0-PUR	1530281	34
SAC-3P-M5MS/10,0-PUR	1530294	34
SAC-3P-M8Y/2X 1,5-PUR	1458622	102
SAC-3P-M8Y/2X 3,0-PUR	1458635	102
SAC-3P-M8Y/2X 5,0-PUR	1458648	102
SAC-3P-M8Y/2X0,3-PUR/M 8FR	1458703	102
SAC-3P-M8Y/2X0,3-PUR/M 8FR-2L	1458745	102
SAC-3P-M8Y/2X0,3-PUR/M 8FS	1458664	102
SAC-3P-M8Y/2X0,6-PUR/M 8FR	1458716	102
SAC-3P-M8Y/2X0,6-PUR/M 8FR-2L	1458758	102
SAC-3P-M8Y/2X0,6-PUR/M 8FS	1458677	102
SAC-3P-M8Y/2X1,5-PUR/M 8FR	1458729	102
SAC-3P-M8Y/2X1,5-PUR/M 8FR-2L	1458761	102
SAC-3P-M8Y/2X1,5-PUR/M 8FS	1458680	102
SAC-3P-M8Y/2X10,0-PUR	1458651	102
SAC-3P-M8Y/2X3,0-PUR/M 8FR	1458732	102
SAC-3P-M8Y/2X3,0-PUR/M 8FR-2L	1458774	102
SAC-3P-M8Y/2X3,0-PUR/M 8FS	1458693	102
SAC-3P-MR SCO/.../...	1523531	38
SAC-3P-MR SH SCO/.../...	1523719	42
SAC-3P-MR-A SCO/.../...	1400896	87
SAC-3P-MR-A-1L-V SCO/.../...	1400875	86
SAC-3P-MR-A-1L-Z SCO/.../...	1434976	86
SAC-3P-MR-B SCO/.../...	1400905	91
SAC-3P-MR-B-1L-V SCO/.../...	1400881	90
SAC-3P-MR-B-1L-Z SCO/.../...	1435373	90
SAC-3P-MR-BI SCO/.../...	1400901	93
SAC-3P-MR-BI-1L-V SCO/.../...	1400878	92
SAC-3P-MR-BI-1L-Z SCO/.../...	1435221	92
SAC-3P-MR-C SCO/.../...	1400920	97
SAC-3P-MR-C-1L-V SCO/.../...	1400893	96
SAC-3P-MR-C-1L-Z SCO/.../...	1435674	96
SAC-3P-MR-CI SCO/.../...	1400917	99
SAC-3P-MR-CI-1L-V SCO/.../...	1400890	98
SAC-3P-MR-CI-1L-Z SCO/.../...	1435522	98
SAC-3P-MR-FR B SCO/.../...	1542143	38
SAC-3P-MR-FR SCO/.../...	1542020	38
SAC-3P-MR-FR SH SCO/.../...	1541814	42
SAC-3P-MR-FR-2L B SCO/.../...	1542156	38
SAC-3P-MR-FS B SCO/.../...	1542130	38
SAC-3P-MR-FS SCO/.../...	1523557	38
SAC-3P-MR-FS SH SCO/.../...	1541801	42
SAC-3P-MR-FS-2L SCO/.../...	1542033	38
SAC-3P-MR-M8FR SCO/.../...	1541869	38
SAC-3P-MR-M8FR-2L SCO/.../...	1541872	38
SAC-3P-MR-M8FS SCO/.../...	1541856	38
SAC-3P-MR/ 0,3-PUR/A-1L-Z SCO	1434934	86
SAC-3P-MR/ 0,3-PUR/B-1L-Z SCO	1435331	90
SAC-3P-MR/ 0,3-PUR/BI-1L-Z SCO	1435182	92
SAC-3P-MR/ 0,3-PUR/C-1L-Z SCO	1435483	96
SAC-3P-MR/ 0,3-PUR/CI-1L-Z SCO	1435632	98
SAC-3P-MR/ 0,3-PUR/FS SCO	1518766	38
SAC-3P-MR/ 0,6-PUR/A-1L-Z SCO	1434947	86
SAC-3P-MR/ 0,6-PUR/B-1L-Z SCO	1435344	90
SAC-3P-MR/ 0,6-PUR/BI-1L-Z SCO	1435195	92
SAC-3P-MR/ 0,6-PUR/C-1L-Z SCO	1435496	96
SAC-3P-MR/ 0,6-PUR/CI-1L-Z SCO	1435645	98
SAC-3P-MR/ 0,6-PUR/FS SCO	1518779	38
SAC-3P-MR/ 1,5-PUR SCO	1518685	38
SAC-3P-MR/ 1,5-PUR/A-1L-Z SCO	1434950	86
SAC-3P-MR/ 1,5-PUR/B-1L-Z SCO	1435357	90
SAC-3P-MR/ 1,5-PUR/BI-1L-Z SCO	1435205	92
SAC-3P-MR/ 1,5-PUR/C-1L-Z SCO	1435506	96
SAC-3P-MR/ 1,5-PUR/CI-1L-Z SCO	1435658	98
SAC-3P-MR/ 1,5-PUR/FS SCO	1518782	38
SAC-3P-MR/ 2,0-28R SCO RAIL	1407299	130
SAC-3P-MR/ 3,0-PUR SCO	1518698	38
SAC-3P-MR/ 3,0-PUR/A-1L-Z SCO	1434963	86
SAC-3P-MR/ 3,0-PUR/B-1L-Z SCO	1435360	90
SAC-3P-MR/ 3,0-PUR/BI-1L-Z SCO	1435218	92
SAC-3P-MR/ 3,0-PUR/C-1L-Z SCO	1435519	96
SAC-3P-MR/ 3,0-PUR/CI-1L-Z SCO	1435661	98
SAC-3P-MR/ 3,0-PUR/FS SCO	1518795	38
SAC-3P-MR/ 5,0-28R SCO RAIL	1407300	130
SAC-3P-MR/ 5,0-PUR SCO	1518708	38
SAC-3P-MR/10,0-28R SCO RAIL	1407302	130
SAC-3P-MR/10,0-PUR SCO	1518711	38
SAC-3P-MR/A-1L-Z SCO	1458538	110
SAC-3P-MR/B-1L-Z SCO	1458554	111
SAC-3P-MR/BI-1L-Z SCO	1458570	111
SAC-3P-MS SCO/.../...	1523515	38
SAC-3P-MS SH SCO/.../...	1523706	42
SAC-3P-MS-A SCO/.../...	1400895	87
SAC-3P-MS-A-1L-V SCO/.../...	1400874	86
SAC-3P-MS-A-1L-Z SCO/.../...	1434921	86
SAC-3P-MS-B SCO/.../...	1400903	91
SAC-3P-MS-B-1L-V SCO/.../...	1400880	90
SAC-3P-MS-B-1L-Z SCO/.../...	1435328	90
SAC-3P-MS-BI SCO/.../...	1400900	93
SAC-3P-MS-BI-1L-V SCO/.../...	1400877	92
SAC-3P-MS-BI-1L-Z SCO/.../...	1435179	92
SAC-3P-MS-C SCO/.../...	1400919	97
SAC-3P-MS-C-1L-V SCO/.../...	1400892	96
SAC-3P-MS-C-1L-Z SCO/.../...	1435629	96
SAC-3P-MS-CI SCO/.../...	1400916	99
SAC-3P-MS-CI-1L-V SCO/.../...	1400889	98
SAC-3P-MS-CI-1L-Z SCO/.../...	1435470	98
SAC-3P-MS-FR B SCO/.../...	1542114	38
SAC-3P-MS-FR SCO/.../...	1542101	38
SAC-3P-MS-FR SH SCO/.../...	1523751	42
SAC-3P-MS-FR-2L B SCO/.../...	1542127	38
SAC-3P-MS-FR-2L SCO/.../...	1538225	38
SAC-3P-MS-FS B SCO/.../...	1542091	38
SAC-3P-MS-FS SCO/.../...	1523544	38
SAC-3P-MS-FS SH SCO/.../...	1523748	42
SAC-3P-MS-FS-2L SCO/.../...	1542017	38
SAC-3P-MS-M8FR SCO/.../...	1540763	38
SAC-3P-MS-M8FR-2L SCO/.../...	1535710	38
SAC-3P-MS-M8FS SCO/.../...	1535736	38
SAC-3P-MS/ 0,3-600/M 8FR-2L FB	1406498	140
SAC-3P-MS/ 0,3-PUR/A-1L-Z SCO	1434882	86
SAC-3P-MS/ 0,3-PUR/B-1L-Z SCO	1435289	90
SAC-3P-MS/ 0,3-PUR/BI-1L-Z SCO	1435137	92
SAC-3P-MS/ 0,3-PUR/C-1L-Z SCO	1435438	96
SAC-3P-MS/ 0,3-PUR/CI-1L-Z SCO	1435580	98
SAC-3P-MS/ 0,3-PUR/FS SCO	1518724	38
SAC-3P-MS/ 0,6-600/M 8FR-2L FB	1406499	140
SAC-3P-MS/ 0,6-PUR/A-1L-Z SCO	1434895	86
SAC-3P-MS/ 0,6-PUR/B-1L-Z SCO	1435292	90
SAC-3P-MS/ 0,6-PUR/BI-1L-Z SCO	1435140	92
SAC-3P-MS/ 0,6-PUR/C-1L-Z SCO	1435441	96
SAC-3P-MS/ 0,6-PUR/CI-1L-Z SCO	1435593	98
SAC-3P-MS/ 0,6-PUR/FS SCO	1518737	38
SAC-3P-MS/ 1,5-600/M 8FR-2L FB	1406500	140
SAC-3P-MS/ 1,5-PUR SCO	1518643	38
SAC-3P-MS/ 1,5-PUR/A-1L-Z SCO	1434905	86
SAC-3P-MS/ 1,5-PUR/B-1L-Z SCO	1435302	90
SAC-3P-MS/ 1,5-PUR/BI-1L-Z SCO	1435153	92
SAC-3P-MS/ 1,5-PUR/C-1L-Z SCO	1435454	96
SAC-3P-MS/ 1,5-PUR/CI-1L-Z SCO	1435603	98
SAC-3P-MS/ 1,5-PUR/FS SCO	1518740	38
SAC-3P-MS/ 2,0-28R SCO RAIL	1407296	130
SAC-3P-MS/ 2,0-28R/FS SCO RAIL	1407309	130
SAC-3P-MS/ 3,0-600/M 8FR-2L FB	1406524	140
SAC-3P-MS/ 3,0-PUR SCO	1518656	38
SAC-3P-MS/ 3,0-PUR/A-1L-Z SCO	1434918	86
SAC-3P-MS/ 3,0-PUR/B-1L-Z SCO	1435315	90
SAC-3P-MS/ 3,0-PUR/BI-1L-Z SCO	1435166	92
SAC-3P-MS/ 3,0-PUR/C-1L-Z SCO	1435467	96
SAC-3P-MS/ 3,0-PUR/CI-1L-Z SCO	1435616	98
SAC-3P-MS/ 3,0-PUR/FS SCO	1518753	38
SAC-3P-MS/ 5,0-28R SCO RAIL	1407297	130
SAC-3P-MS/ 5,0-28R/FS SCO RAIL	1407310	130
SAC-3P-MS/ 5,0-PUR SCO	1518669	38
SAC-3P-MS/10,0-28R SCO RAIL	1407298	130
SAC-3P-MS/10,0-PUR SCO	1518672	38
SAC-3P-MS/A-1L-Z SCO	1458525	110
SAC-3P-MS/B-1L-Z SCO	1458541	111
SAC-3P-MS/BI-1L-Z SCO	1458567	111
SAC-3P-Y-2XFR B SCO/.../...	1542172	104
SAC-3P-Y-2XFR SCO/.../...	1542004	104
SAC-3P-Y-2XFR-2L B SCO/.../...	1542185	104
SAC-3P-Y-2XFS B SCO/.../...	1542169	104
SAC-3P-Y-2XFS SCO/.../...	1542198	104
SAC-3P-Y-2XM8FR SCO/.../...	1541898	104
SAC-3P-Y-2XM8FR-2L SCO/.../...	1541908	104
SAC-3P-Y-2XM8FS SCO/.../...	1541885	104
SAC-3P-Y-2XSCO/.../...	1524242	104
SAC-3P-Y/2X 1,5-PUR SCO	1524200	104
SAC-3P-Y/2X 3,0-PUR SCO	1524213	104
SAC-3P-Y/2X 5,0-PUR SCO	1524226	104
SAC-3P-Y/2X10,0-PUR SCO	1524239	104
SAC-3P-Y/2XFS B PE SCO	1523968	106
SAC-3P-Y/2XFS PE SCO	1523971	106
SAC-3P-Y/2XM 8FS SCO	1523984	106
SAC-4P- 1,0-PUR/FRS PE SCO	1408848	68
SAC-4P- 1,0-PUR/FRT SCO	1408827	70
SAC-4P- 1,0-PUR/FSS PE SCO	1408843	68
SAC-4P- 1,0-PUR/FST SCO	1408823	70
SAC-4P- 1,5-600/M 8FR FB	1406850	141
SAC-4P- 1,5-600/M 8FR-2L FB	1406854	141
SAC-4P- 1,5-600/M 8FS FB	1406846	141
SAC-4P- 1,5-800/M12FR	1456954	165
SAC-4P- 1,5-800/M12FR-3L	1456996	165
SAC-4P- 1,5-800/M12FS	1456938	165
SAC-4P- 1,5-PUR/FR SCO	1536405	44
SAC-4P- 1,5-PUR/FR SH SCO	1407796	48
SAC-4P- 1,5-PUR/FR-3L SCO	1407778	44
SAC-4P- 1,5-PUR/FS SCO	1536285	44
SAC-4P- 1,5-PUR/FS SH SCO	1407782	48
SAC-4P- 1,5-PUR/M 8FR	1681871	44
SAC-4P- 1,5-PUR/M 8FR SH	1521960	50
SAC-4P- 1,5-PUR/M 8FS	1681842	44
SAC-4P- 1,5-PUR/M 8FS SH	1521915	50
SAC-4P- 1,5-PUR/M12FR	1668221	46
SAC-4P- 1,5-PUR/M12FR SH	1682906	50
SAC-4P- 1,5-PUR/M12FR-3L	1668289	46
SAC-4P- 1,5-PUR/M12FS	1668108	46
SAC-4P- 1,5-PUR/M12FS SH	1682841	50
SAC-4P- 1,5-PUR/M12FS-2L	1694800	46
SAC-4P- 1,5-PUR/M5FR	1530540	34
SAC-4P- 1,5-PUR/M5FS	1530469	34
SAC-4P- 2,0-186/FS SCO	1555648	356
SAC-4P- 2,0-28R/FR SCO RAIL	1407320	131
SAC-4P- 2,0-28R/FS SCO RAIL	1407317	131
SAC-4P- 2,0-28X/M12FR OD	1407968	153
SAC-4P- 2,0-28X/M12FS OD	1454079	153
SAC-4P- 2,0-28X/M12FS SH OD	1454150	154
SAC-4P- 2,0-960/M12FS VA	1431212	350
SAC-4P- 2,0-960/MINFR VA	1429266	350
SAC-4P- 2,0-960/MINFS VAL	1429712	350
SAC-4P- 2,0-961/MINFR VA	1433870	349
SAC-4P- 2,0-961/MINFS VAL	1433786	349
SAC-4P- 2,0-PUR/FRS PE SCO	1408852	68
SAC-4P- 2,0-PUR/FRT SCO	1408828	70
SAC-4P- 2,0-PUR/FSS PE SCO	1408844	68
SAC-4P- 2,0-PUR/FST SCO	1408824	70
SAC-4P- 3,0-600/M 8FR FB	1406851	141
SAC-4P- 3,0-600/M 8FR-2L FB	1406855	141
SAC-4P- 3,0-600/M 8FS FB	1406847	141
SAC-4P- 3,0-800/M12FR	1456967	165
SAC-4P- 3,0-800/M12FR-3L	1457005	165
SAC-4P- 3,0-800/M12FS	1456941	165
SAC-4P- 3,0-PUR/FR SCO	1536418	44
SAC-4P- 3,0-PUR/FR SH SCO	1407797	48
SAC-4P- 3,0-PUR/FR-3L SCO	1407779	44
SAC-4P- 3,0-PUR/FS SCO	1536298	44
SAC-4P- 3,0-PUR/FS SH SCO	1407784	48
SAC-4P- 3,0-PUR/M 8FR	1681884	44
SAC-4P- 3,0-PUR/M 8FR SH	1521973	50
SAC-4P- 3,0-PUR/M 8FS	1681855	44
SAC-4P- 3,0-PUR/M 8FS SH	1521928	50
SAC-4P- 3,0-PUR/M12FR	1668234	46
SAC-4P- 3,0-PUR/M12FR SH	1682919	50
SAC-4P- 3,0-PUR/M12FR-3L	1668292	46
SAC-4P- 3,0-PUR/M12FS	1668111	46
SAC-4P- 3,0-PUR/M12FS SH	1682854	50
SAC-4P- 3,0-PUR/M12FS-2L	1694813	46
SAC-4P- 3,0-PUR/M5FR	1530553	34
SAC-4P- 3,0-PUR/M5FS	1530472	34
SAC-4P- 5,0-186/FS SCO	1555651	356
SAC-4P- 5,0-28R/FR SCO RAIL	1407321	131
SAC-4P- 5,0-28R/FS SCO RAIL	1407318	131
SAC-4P- 5,0-28X/M12FR OD	1407969	153
SAC-4P- 5,0-28X/M12FS OD	1454082	153
SAC-4P- 5,0-28X/M12FS SH OD	1454163	154
SAC-4P- 5,0-600/M 8FR FB	1406852	141
SAC-4P- 5,0-600/M 8FR-2L FB	1406856	141
SAC-4P- 5,0-600/M 8FS FB	1406848	141
SAC-4P- 5,0-800/M12FR	1456970	165
SAC-4P- 5,0-800/M12FR-3L	1567351	165
SAC-4P- 5,0-800/M12FS	1567322	165
SAC-4P- 5,0-960/M12FS VA	1431225	350
SAC-4P- 5,0-960/MINFR VA	1429279	350

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SAC-4P- 5,0-961/MINFR VA	1433883	349
SAC-4P- 5,0-961/MINFS VAL	1433799	349
SAC-4P- 5,0-PUR/FR SCO	1536421	44
SAC-4P- 5,0-PUR/FR SH SCO	1407798	48
SAC-4P- 5,0-PUR/FR-3L SCO	1407780	44
SAC-4P- 5,0-PUR/FRS PE SCO	1408853	68
SAC-4P- 5,0-PUR/FRT SCO	1408829	70
SAC-4P- 5,0-PUR/FS SCO	1536308	44
SAC-4P- 5,0-PUR/FS SH SCO	1407785	48
SAC-4P- 5,0-PUR/FSS PE SCO	1408845	68
SAC-4P- 5,0-PUR/FST SCO	1408825	70
SAC-4P- 5,0-PUR/M 8FR	1681897	44
SAC-4P- 5,0-PUR/M 8FR SH	1521986	50
SAC-4P- 5,0-PUR/M 8FS	1681868	44
SAC-4P- 5,0-PUR/M 8FS SH	1521931	50
SAC-4P- 5,0-PUR/M12FR	1668247	46
SAC-4P- 5,0-PUR/M12FR SH	1682922	50
SAC-4P- 5,0-PUR/M12FR-3L	1668302	46
SAC-4P- 5,0-PUR/M12FS	1668124	46
SAC-4P- 5,0-PUR/M12FS SH	1682867	50
SAC-4P- 5,0-PUR/M12FS-2L	1694826	46
SAC-4P- 5,0-PUR/M5FR	1530566	34
SAC-4P- 5,0-PUR/M5FS	1530485	34
SAC-4P-1,5-600/M12FR FB	1404014	144
SAC-4P-1,5-600/M12FR HD	1403960	142
SAC-4P-1,5-600/M12FR-3L FB	1404019	144
SAC-4P-1,5-600/M12FR-3L HD	1403964	142
SAC-4P-1,5-600/M12FS FB	1404010	144
SAC-4P-1,5-600/M12FS HD	1403956	142
SAC-4P-1,5-600/M12FS SH HD	1403985	142
SAC-4P-10,0-186/FS SCO	1555664	356
SAC-4P-10,0-28R/FR SCO RAIL	1407322	131
SAC-4P-10,0-28R/FS SCO RAIL	1407319	131
SAC-4P-10,0-28X/M12FR OD	1407970	153
SAC-4P-10,0-28X/M12FS OD	1454095	153
SAC-4P-10,0-28X/M12FS SH OD	1454176	154
SAC-4P-10,0-600/M 8FR FB	1406853	141
SAC-4P-10,0-600/M 8FR-2L FB	1406857	141
SAC-4P-10,0-600/M 8FS FB	1406849	141
SAC-4P-10,0-600/M12FR FB	1404018	144
SAC-4P-10,0-600/M12FR HD	1403963	142
SAC-4P-10,0-600/M12FR-3L FB	1404022	144
SAC-4P-10,0-600/M12FR-3L HD	1403967	142
SAC-4P-10,0-600/M12FS FB	1404013	144
SAC-4P-10,0-600/M12FS HD	1403959	142
SAC-4P-10,0-600/M12FS SH HD	1403989	142
SAC-4P-10,0-800/M12FR	1456983	165
SAC-4P-10,0-800/M12FR-3L	1567364	165
SAC-4P-10,0-800/M12FS	1567335	165
SAC-4P-10,0-960/M12FS VA	1431238	350
SAC-4P-10,0-960/MINFR VA	1429282	350
SAC-4P-10,0-960/MINFS VAL	1429198	350
SAC-4P-10,0-961/MINFR VA	1433896	349
SAC-4P-10,0-961/MINFS VAL	1433809	349
SAC-4P-10,0-PUR/FR SCO	1536434	44
SAC-4P-10,0-PUR/FR SH SCO	1407799	48
SAC-4P-10,0-PUR/FR-3L SCO	1407781	44
SAC-4P-10,0-PUR/FRS PE SCO	1408854	68
SAC-4P-10,0-PUR/FRT SCO	1408830	70
SAC-4P-10,0-PUR/FS SCO	1536311	44
SAC-4P-10,0-PUR/FS SH SCO	1407786	48
SAC-4P-10,0-PUR/FSS PE SCO	1408846	68
SAC-4P-10,0-PUR/FST SCO	1408826	70
SAC-4P-10,0-PUR/M 8FR	1694172	44
SAC-4P-10,0-PUR/M 8FR SH	1521999	50
SAC-4P-10,0-PUR/M 8FS	1683484	44
SAC-4P-10,0-PUR/M 8FS SH	1521944	50
SAC-4P-10,0-PUR/M12FR	1681389	46
SAC-4P-10,0-PUR/M12FR SH	1500729	50
SAC-4P-10,0-PUR/M12FR-3L	1681020	46
SAC-4P-10,0-PUR/M12FS	1683002	46
SAC-4P-10,0-PUR/M12FS SH	1500716	50
SAC-4P-10,0-PUR/M12FS-2L	1694839	46
SAC-4P-10,0-PUR/M5FR	1530579	34
SAC-4P-10,0-PUR/M5FS	1530498	34
SAC-4P-100,0-186/0,75	1457461	168
SAC-4P-100,0-PUR/0,25	1501692	168
SAC-4P-100,0-PUR/0,34	1501663	168
SAC-4P-100,0-PUR/SH-0,25	1535794	168
SAC-4P-100,0-PUR/SH-0,34	1501715	168
SAC-4P-100,0-PVC/0,25	1501867	168
SAC-4P-100,0-PVC/0,34	1501838	168
SAC-4P-100,0-PVC/SH-0,34	1550669	168
SAC-4P-15,0-186/FS SCO	1555677	356
SAC-4P-15,0-960/M12FS VA	1431241	350
SAC-4P-15,0-960/MINFR VA	1429295	350
SAC-4P-15,0-960/MINFS VAL	1429208	350
SAC-4P-20,0-960/MINFR VA	1429305	350
SAC-4P-20,0-960/MINFS VAL	1429211	350
SAC-4P-25,0-960/MINFR VA	1429318	350
SAC-4P-25,0-960/MINFS VAL	1429224	350
SAC-4P-3,0-600/M12FR FB	1404015	144
SAC-4P-3,0-600/M12FR HD	1403961	142
SAC-4P-3,0-600/M12FR-3L FB	1404020	144
SAC-4P-3,0-600/M12FR-3L HD	1403965	142
SAC-4P-3,0-600/M12FS FB	1404011	144
SAC-4P-3,0-600/M12FS HD	1403957	142
SAC-4P-3,0-600/M12FS SH HD	1403986	142
SAC-4P-3,0-PUR/AD	1438956	100
SAC-4P-30,0-960/MINFR VA	1429321	350
SAC-4P-30,0-960/MINFS VAL	1429237	350
SAC-4P-40,0-960/MINFR VA	1429334	350
SAC-4P-40,0-960/MINFS VAL	1429240	350
SAC-4P-5,0-600/M12FR FB	1404017	144
SAC-4P-5,0-600/M12FR HD	1403962	142
SAC-4P-5,0-600/M12FR-3L FB	1404021	144
SAC-4P-5,0-600/M12FR-3L HD	1403966	142
SAC-4P-5,0-600/M12FS FB	1404012	144
SAC-4P-5,0-600/M12FS HD	1403958	142
SAC-4P-5,0-600/M12FS SH HD	1403987	142
SAC-4P-50,0-960/MINFR VA	1429347	350
SAC-4P-50,0-960/MINFS VAL	1429253	350
SAC-4P-AD/.../...	1400899	100
SAC-4P-FR SCO/.../...	1537734	44
SAC-4P-FR SH SCO/.../...	1536560	48
SAC-4P-FR-3L SCO/.../...	1535765	44
SAC-4P-FRS/ 1,5-PUR PE SH SCO	1424100	69
SAC-4P-FRS/ 3,0-PUR PE SH SCO	1424101	69
SAC-4P-FRS/ 5,0-PUR PE SH SCO	1424102	69
SAC-4P-FRS/10,0-PUR PE SH SCO	1424103	69
SAC-4P-FRT/ 1,5-PUR SH SCO	1424116	71
SAC-4P-FRT/ 3,0-PUR SH SCO	1424117	71
SAC-4P-FRT/ 5,0-PUR SH SCO	1424118	71
SAC-4P-FRT/10,0-PUR SH SCO	1424128	71
SAC-4P-FS SCO/.../...	1535781	44
SAC-4P-FS SH SCO/.../...	1536531	48
SAC-4P-FS-2L SCO/.../...	1542321	44
SAC-4P-FSS/ 1,5-PUR PE SH SCO	1424096	69
SAC-4P-FSS/ 3,0-PUR PE SH SCO	1424097	69
SAC-4P-FSS/ 5,0-PUR PE SH SCO	1424098	69
SAC-4P-FSS/10,0-PUR PE SH SCO	1424099	69
SAC-4P-FST/ 1,5-PUR SH SCO	1424112	71
SAC-4P-FST/ 3,0-PUR SH SCO	1424113	71
SAC-4P-FST/ 5,0-PUR SH SCO	1424114	71
SAC-4P-FST/10,0-PUR SH SCO	1424115	71
SAC-4P-M 8FR SH/.../...	1522008	50
SAC-4P-M 8FR-2L/.../...	1517673	44
SAC-4P-M 8FR/.../...	1697784	44
SAC-4P-M 8FS SH/.../...	1521957	50
SAC-4P-M 8FS/.../...	1697771	44
SAC-4P-M 8MR SH/.../...	1521902	50
SAC-4P-M 8MR-FR SCO/.../...	1542282	44
SAC-4P-M 8MR-M 8FR SH/.../...	1552120	50
SAC-4P-M 8MR-M 8FR/.../...	1697823	44
SAC-4P-M 8MR-M 8FS/.../...	1697810	44
SAC-4P-M 8MR-M12FR/.../...	1697836	46
SAC-4P-M 8MR/ 1,5-600 FB	1406841	141
SAC-4P-M 8MR/ 1,5-PUR SH	1521863	50
SAC-4P-M 8MR/ 3,0-600 FB	1406843	141
SAC-4P-M 8MR/ 3,0-PUR SH	1521876	50
SAC-4P-M 8MR/ 5,0-600 FB	1406844	141
SAC-4P-M 8MR/ 5,0-PUR SH	1521889	50
SAC-4P-M 8MR/.../...	1697768	44
SAC-4P-M 8MR/0,3-PUR/M 8FR	1682265	44
SAC-4P-M 8MR/0,3-PUR/M 8FS	1682223	44
SAC-4P-M 8MR/0,6-PUR/M 8FR	1682278	44
SAC-4P-M 8MR/0,6-PUR/M 8FS	1682236	44
SAC-4P-M 8MR/1,5-PUR	1681813	44
SAC-4P-M 8MR/1,5-PUR/M 8FR	1682281	44
SAC-4P-M 8MR/1,5-PUR/M 8FS	1682249	44
SAC-4P-M 8MR/10,0-600 FB	1406845	141
SAC-4P-M 8MR/10,0-PUR	1694156	44
SAC-4P-M 8MR/10,0-PUR SH	1521892	50
SAC-4P-M 8MR/3,0-PUR	1681826	44
SAC-4P-M 8MR/3,0-PUR/M 8FR	1682294	44
SAC-4P-M 8MR/3,0-PUR/M 8FS	1682252	44
SAC-4P-M 8MR/5,0-PUR	1681839	44
SAC-4P-M 8MS SH/.../...	1521850	50
SAC-4P-M 8MS-FR SCO/.../...	1542266	44
SAC-4P-M 8MS-FS SCO/.../...	1542240	44
SAC-4P-M 8MS-M 8FR SH/.../...	1552104	50
SAC-4P-M 8MS-M 8FR/.../...	1697807	44
SAC-4P-M 8MS-M 8FS SH/.../...	1552094	50
SAC-4P-M 8MS-M 8FS/.../...	1697797	44
SAC-4P-M 8MS-M12FR/.../...	1511718	46
SAC-4P-M 8MS-M12FS	1519736	108
SAC-4P-M 8MS-M12FS/.../...	1506697	46
SAC-4P-M 8MS/ 0,3-600/M 8FR FB	1406862	141
SAC-4P-M 8MS/ 0,3-600/M 8FS FB	1406858	141
SAC-4P-M 8MS/ 0,3-PUR/M 8FSSH	1574580	50
SAC-4P-M 8MS/ 0,6-600/M 8FR FB	1406863	141
SAC-4P-M 8MS/ 0,6-600/M 8FS FB	1406859	141
SAC-4P-M 8MS/ 0,6-PUR/M 8FSSH	1455722	50
SAC-4P-M 8MS/ 1,5-600 FB	1406835	141
SAC-4P-M 8MS/ 1,5-600/M 8FR FB	1406864	141
SAC-4P-M 8MS/ 1,5-600/M 8FS FB	1406860	141
SAC-4P-M 8MS/ 1,5-PUR SH	1521818	50
SAC-4P-M 8MS/ 1,5-PUR/M 8FSSH	1455735	50
SAC-4P-M 8MS/ 3,0-600 FB	1406837	141
SAC-4P-M 8MS/ 3,0-600/M 8FR FB	1406865	141
SAC-4P-M 8MS/ 3,0-600/M 8FS FB	1406861	141
SAC-4P-M 8MS/ 3,0-PUR SH	1521821	50
SAC-4P-M 8MS/ 3,0-PUR/M 8FSSH	1574603	50
SAC-4P-M 8MS/ 5,0-600 FB	1406839	141
SAC-4P-M 8MS/ 5,0-PUR SH	1521834	50
SAC-4P-M 8MS/.../...	1697755	44
SAC-4P-M 8MS/0,3-PUR/M 8FR	1682184	44
SAC-4P-M 8MS/0,3-PUR/M 8FS	1682142	44
SAC-4P-M 8MS/0,6-PUR/M 8FR	1682197	44
SAC-4P-M 8MS/0,6-PUR/M 8FS	1682155	44
SAC-4P-M 8MS/1,5-PUR	1681787	44
SAC-4P-M 8MS/1,5-PUR/M 8FR	1682207	44
SAC-4P-M 8MS/1,5-PUR/M 8FS	1682168	44
SAC-4P-M 8MS/10,0-600 FB	1406840	141
SAC-4P-M 8MS/10,0-PUR	1694143	44
SAC-4P-M 8MS/10,0-PUR SH	1521847	50
SAC-4P-M 8MS/3,0-PUR	1681790	44
SAC-4P-M 8MS/3,0-PUR/M 8FR	1682210	44
SAC-4P-M 8MS/3,0-PUR/M 8FS	1682171	44
SAC-4P-M 8MS/5,0-PUR	1681800	44
SAC-4P-M 8SIFR-2L/.../...	1511954	36
SAC-4P-M 8SIFR/.../...	1513392	36
SAC-4P-M 8SIFS/.../...	1513389	36
SAC-4P-M12FR FF VA/.../...	1431351	350
SAC-4P-M12FR SH/.../...	1697496	50
SAC-4P-M12FR-3L/.../...	1696992	46
SAC-4P-M12FR/.../...	1696989	46
SAC-4P-M12FS FF VA/.../...	1431348	350
SAC-4P-M12FS SH/.../...	1697483	50
SAC-4P-M12FS-2L/.../...	1696976	46
SAC-4P-M12FS/.../...	1696963	46
SAC-4P-M12MR FF VA/.../...	1431335	350
SAC-4P-M12MR SH/.../...	1697470	50
SAC-4P-M12MR-M 8FS/.../...	1507874	46
SAC-4P-M12MR-M12FR FF VA/...	1431393	350
SAC-4P-M12MR-M12FR SH/.../...	1536117	50
SAC-4P-M12MR-M12FR-3L/.../...	1697056	46
SAC-4P-M12MR-M12FR/.../...	1697043	46
SAC-4P-M12MR-M12FS FF VA/...	1431377	350
SAC-4P-M12MR-M12FS SH/.../...	1536104	50
SAC-4P-M12MR-M12FS/.../...	1697030	46
SAC-4P-M12MR/ 1,5-800	1457128	165
SAC-4P-M12MR/ 1,5-PUR SH	1682870	50
SAC-4P-M12MR/ 2,0-28X OD	1407965	153
SAC-4P-M12MR/ 3,0-800	1457131	165
SAC-4P-M12MR/ 3,0-PUR SH	1682883	50
SAC-4P-M12MR/ 5,0-28X OD	1407966	153
SAC-4P-M12MR/ 5,0-800	1457144	165
SAC-4P-M12MR/ 5,0-PUR SH	1682896	50
SAC-4P-M12MR/.../...	1696950	46
SAC-4P-M12MR/0,3-PUR/M 8FR	1671551	46
SAC-4P-M12MR/0,3-PUR/M12FR	1668713	46
SAC-4P-M12MR/0,3-PUR/M12FR-3L	1668755	46
SAC-4P-M12MR/0,3-PUR/M12FS	1668593	46
SAC-4P-M12MR/0,6-PUR/M 8FR	1671564	46
SAC-4P-M12MR/0,6-PUR/M12FR	1668726	46
SAC-4P-M12MR/0,6-PUR/M12FR-3L	1668768	46
SAC-4P-M12MR/0,6-PUR/M12FS	1668603	46
SAC-4P-M12MR/1,5-600 FB	1404006	144
SAC-4P-M12MR/1,5-600 HD	1403952	142
SAC-4P-M12MR/1,5-PUR	1668166	46
SAC-4P-M12MR/1,5-PUR/M 8FR	1671577	46
SAC-4P-M12MR/1,5-PUR/M12FR	1668739	46
SAC-4P-M12MR/1,5-PUR/M12FR-3L	1668771	46
SAC-4P-M12MR/1,5-PUR/M12FS	1668616	46
SAC-4P-M12MR/10,0-28X OD	1407967	153
SAC-4P-M12MR/10,0-600 FB	1404009	144
SAC-4P-M12MR/10,0-600 HD	1403955	142
SAC-4P-M12MR/10,0-800	1457157	165
SAC-4P-M12MR/10,0-PUR	1694457	46
SAC-4P-M12MR/10,0-PUR SH	1500703	50
SAC-4P-M12MR/3,0-600 FB	1404007	144
SAC-4P-M12MR/3,0-600 HD	1403953	142
SAC-4P-M12MR/3,0-PUR	1668179	46
SAC-4P-M12MR/3,0-PUR/M 8FR	1671580	46
SAC-4P-M12MR/3,0-PUR/M12FR	1668742	46
SAC-4P-M12MR/3,0-PUR/M12FR-3L	1668784	46
SAC-4P-M12MR/3,0-PUR/M12FS	1668629	46
SAC-4P-M12MR/5,0-600 FB	1404008	144
SAC-4P-M12MR/5,0-600 HD	1403954	142
SAC-4P-M12MR/5,0-PUR	1668182	46
SAC-4P-M12MS CCL TR	1558470	353
SAC-4P-M12MS FF TR VA	1431403	353
SAC-4P-M12MS FF VA/.../...	1431322	350
SAC-4P-M12MS SH/.../...	1697467	50
SAC-4P-M12MS-M 8FR-2L/.../...	1515031	46
SAC-4P-M12MS-M 8FR/.../...	1697085	46
SAC-4P-M12MS-M 8FS	1519765	108
SAC-4P-M12MS-M 8FS/.../...	1697072	46
SAC-4P-M12MS-M 8SIFS	1519778	108
SAC-4P-M12MS-M12FR FF VA/...	1431380	350
SAC-4P-M12MS-M12FR SH/.../...	1536094	50
SAC-4P-M12MS-M12FR-3L/.../...	1697027	46
SAC-4P-M12MS-M12FR/.../...	1697014	46
SAC-4P-M12MS-M12FS FF VA/...	1431364	350
SAC-4P-M12MS-M12FS SH/.../...	1536081	50
SAC-4P-M12MS-M12FS/.../...	1697001	46
SAC-4P-M12MS/ 0,3-800/M12FR	1457089	165
SAC-4P-M12MS/ 0,3-800/M12FR-3L	1457102	165
SAC-4P-M12MS/ 0,3-800/M12FS	1457050	165
SAC-4P-M12MS/ 0,3-960/M12FS VA	1431254	350
SAC-4P-M12MS/ 0,3-PUR/M12FR	1668470	46
SAC-4P-M12MS/ 0,3-PUR/M12FR SH	1500965	50
SAC-4P-M12MS/ 0,3-PUR/M12FS	1668357	46
SAC-4P-M12MS/ 0,3-PUR/M12FS SH	1500842	50
SAC-4P-M12MS/ 0,5-960/M12FS VA	1431267	350
SAC-4P-M12MS/ 0,6-800/M12FR	1567225	165
SAC-4P-M12MS/ 0,6-800/M12FS	1457063	165
SAC-4P-M12MS/ 0,6-PUR/M12FR	1668483	46
SAC-4P-M12MS/ 0,6-PUR/M12FR SH	1500978	50
SAC-4P-M12MS/ 0,6-PUR/M12FS	1668360	46
SAC-4P-M12MS/ 0,6-PUR/M12FS SH	1500855	50
SAC-4P-M12MS/ 1,0-960/M12FS VA	1431270	350
SAC-4P-M12MS/ 1,5-800	1457018	165
SAC-4P-M12MS/ 1,5-800/M12FR	1567238	165
SAC-4P-M12MS/ 1,5-800/M12FS	1567270	165
SAC-4P-M12MS/ 1,5-PUR	1668043	46
SAC-4P-M12MS/ 1,5-PUR SH	1682715	50
SAC-4P-M12MS/ 1,5-PUR/M12FR SH	1500981	50
SAC-4P-M12MS/ 1,5-PUR/M12FR	1668373	46
SAC-4P-M12MS/ 1,5-PUR/M12FS SH	1500868	50
SAC-4P-M12MS/ 2,0-28X OD	1454040	153
SAC-4P-M12MS/ 2,0-28X SH OD	1454121	154
SAC-4P-M12MS/ 2,0-960 VA	1431173	350
SAC-4P-M12MS/ 2,0-960/M12FS VA	1431283	350
SAC-4P-M12MS/ 3,0-800	1457021	165
SAC-4P-M12MS/ 3,0-800/M12FR	1457092	165
SAC-4P-M12MS/ 3,0-800/M12FR-3L	1457115	165
SAC-4P-M12MS/ 3,0-800/M12FS	1457076	165

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SAC-4P-M12MS/ 3,0-PUR	1668056	46
SAC-4P-M12MS/ 3,0-PUR SH	1682618	50
SAC-4P-M12MS/ 3,0-PUR/M12FR SH	1500994	50
SAC-4P-M12MS/ 3,0-PUR/M12FS	1668386	46
SAC-4P-M12MS/ 3,0-PUR/M12FS SH	1500871	50
SAC-4P-M12MS/ 5,0-28X OD	1454053	153
SAC-4P-M12MS/ 5,0-28X SH OD	1454134	154
SAC-4P-M12MS/ 5,0-800	1457034	165
SAC-4P-M12MS/ 5,0-960 VA	1431186	350
SAC-4P-M12MS/ 5,0-960/M12FS VA	1431296	350
SAC-4P-M12MS/ 5,0-PUR	1668069	46
SAC-4P-M12MS/ 5,0-PUR SH	1682647	50
SAC-4P-M12MS/.../...	1696947	46
SAC-4P-M12MS/0,3-600/FS SH HD	1403990	142
SAC-4P-M12MS/0,3-600/M12FR FB	1404027	144
SAC-4P-M12MS/0,3-600/M12FR HD	1403972	142
SAC-4P-M12MS/0,3-600/M12FS FB	1404023	144
SAC-4P-M12MS/0,3-600/M12FS HD	1403968	142
SAC-4P-M12MS/0,3-PUR/M 8FS	1694923	46
SAC-4P-M12MS/0,3-PUR/M12FR-3L	1668519	46
SAC-4P-M12MS/0,6-600/FS SH HD	1403991	142
SAC-4P-M12MS/0,6-600/M12FR FB	1404028	144
SAC-4P-M12MS/0,6-600/M12FR HD	1403973	142
SAC-4P-M12MS/0,6-600/M12FS FB	1404024	144
SAC-4P-M12MS/0,6-600/M12FS HD	1403969	142
SAC-4P-M12MS/0,6-800/M12FR-3L	1567173	165
SAC-4P-M12MS/0,6-PUR/M 8FS	1693076	46
SAC-4P-M12MS/0,6-PUR/M12FR-3L	1668522	46
SAC-4P-M12MS/1,5-600 FB	1404002	144
SAC-4P-M12MS/1,5-600 HD	1403947	142
SAC-4P-M12MS/1,5-600 SH HD	1403981	142
SAC-4P-M12MS/1,5-600/FS SH HD	1403992	142
SAC-4P-M12MS/1,5-600/M12FR FB	1404030	144
SAC-4P-M12MS/1,5-600/M12FR HD	1403974	142
SAC-4P-M12MS/1,5-600/M12FS FB	1404025	144
SAC-4P-M12MS/1,5-600/M12FS HD	1403970	142
SAC-4P-M12MS/1,5-800/M12FR-3L	1567199	165
SAC-4P-M12MS/1,5-PUR/M 8FS	1693089	46
SAC-4P-M12MS/1,5-PUR/M12FR	1668496	46
SAC-4P-M12MS/1,5-PUR/M12FR-3L	1668535	46
SAC-4P-M12MS/10,0-28X OD	1454066	153
SAC-4P-M12MS/10,0-28X SH OD	1454147	154
SAC-4P-M12MS/10,0-600 FB	1404005	144
SAC-4P-M12MS/10,0-600 HD	1403951	142
SAC-4P-M12MS/10,0-600 SH HD	1403984	142
SAC-4P-M12MS/10,0-800	1457047	165
SAC-4P-M12MS/10,0-960 VA	1431199	350
SAC-4P-M12MS/10,0-960/M12FS VA	1431306	350
SAC-4P-M12MS/10,0-PUR	1682993	46
SAC-4P-M12MS/10,0-PUR SH	1694389	50
SAC-4P-M12MS/15,0-960 VA	1431209	350
SAC-4P-M12MS/15,0-960/M12FS VA	1431319	350
SAC-4P-M12MS/2,0-28X/M12FS OD	1454105	153
SAC-4P-M12MS/2,0-28X/M12FSSHOD	1454189	154
SAC-4P-M12MS/3,0-600 FB	1404003	144
SAC-4P-M12MS/3,0-600 HD	1403948	142
SAC-4P-M12MS/3,0-600 SH HD	1403982	142
SAC-4P-M12MS/3,0-600/FS SH HD	1403993	142
SAC-4P-M12MS/3,0-600/M12FR FB	1404031	144
SAC-4P-M12MS/3,0-600/M12FR HD	1403975	142
SAC-4P-M12MS/3,0-600/M12FS FB	1404026	144
SAC-4P-M12MS/3,0-600/M12FS HD	1403971	142
SAC-4P-M12MS/3,0-PUR/M 8FS	1694936	46
SAC-4P-M12MS/3,0-PUR/M12FR	1668506	46
SAC-4P-M12MS/3,0-PUR/M12FR-3L	1668548	46
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SAC-4P-M12MS/5,0-28X/M12FSSHOD	1454192	154
SAC-4P-M12MS/5,0-600 FB	1404004	144
SAC-4P-M12MS/5,0-600 HD	1403949	142
SAC-4P-M12MS/5,0-600 SH HD	1403983	142
SAC-4P-M12T/2XM12 CCL	1559783	352
SAC-4P-M12T/2XM12 FF VA	1431416	352
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SAC-4P-M5MR/ 5,0-PUR	1530401	34
SAC-4P-M5MR/10,0-PUR	1530414	34
SAC-4P-M5MS/ 1,5-PUR	1530304	34
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SAC-4P-M5MS/ 5,0-PUR	1530320	34
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SAC-4P-MINMR/ 0,3-960/MINFRVA	1429907	350
SAC-4P-MINMR/ 0,3-960/MINFSVAL	1429664	350
SAC-4P-MINMR/ 0,3-961/MINFRVA	1434507	349
SAC-4P-MINMR/ 0,3-961/MINFSVAL	1434264	349
SAC-4P-MINMR/ 0,5-960/MINFRVA	1429910	350
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SAC-4P-MINMR/ 5,0-960 VA	1429457	350
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SAC-4P-MINMR/ 5,0-961/MINFSVAL	1434303	349
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SAC-4P-MINMR/15,0-960/MINFSVAL	1429729	350
SAC-4P-MINMR/20,0-960 VA	1429486	350
SAC-4P-MINMR/20,0-960/MINFRVA	1429978	350
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SAC-4P-MINMR/30,0-960 VA	1429509	350
SAC-4P-MINMR/30,0-960/MINFRVA	1429994	350
SAC-4P-MINMR/30,0-960/MINFSVAL	1429758	350
SAC-4P-MINMR/40,0-960 VA	1429512	350
SAC-4P-MINMR/40,0-960/MINFRVA	1430006	350
SAC-4P-MINMR/40,0-960/MINFSVAL	1429761	350
SAC-4P-MINMR/50,0-960 VA	1429525	350
SAC-4P-MINMR/50,0-960/MINFRVA	1430019	350
SAC-4P-MINMR/50,0-960/MINFSVAL	1429774	350
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SAC-4P-MINMS/ 2,0-961 VAL	1433964	349
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SAC-4P-MINMS/ 5,0-960/MINFRVAL	1429826	350
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SAC-4P-MINMS/20,0-960/MINFRVAL	1429855	350
SAC-4P-MINMS/20,0-960/MINFSVAL	1429619	350
SAC-4P-MINMS/25,0-960 VAL	1429402	350
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SAC-4P-MINMS/25,0-960/MINFSVAL	1429622	350
SAC-4P-MINMS/30,0-960 VAL	1429415	350
SAC-4P-MINMS/30,0-960/MINFRVAL	1429871	350
SAC-4P-MINMS/30,0-960/MINFSVAL	1429635	350
SAC-4P-MINMS/40,0-960 VAL	1429428	350
SAC-4P-MINMS/40,0-960/MINFRVAL	1429884	350
SAC-4P-MINMS/40,0-960/MINFSVAL	1429648	350
SAC-4P-MINMS/50,0-960 VAL	1429431	350
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SAC-4P-MRS/10,0-PUR PE SH SCO	1424111	69
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SAC-4P-MRT/ 1,5-PUR SH SCO	1424124	71
SAC-4P-MRT/ 2,0-PUR SCO	1408819	70
SAC-4P-MRT/ 3,0-PUR SH SCO	1424125	71
SAC-4P-MRT/ 5,0-PUR SCO	1408820	70
SAC-4P-MRT/ 5,0-PUR SH SCO	1424126	71
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SAC-4P-MS/ 0,5-186/FS SCO	1555693	356
SAC-4P-MS/ 0,6-PUR/FS SCO	1518892	44
SAC-4P-MS/ 1,0-186/FS SCO	1555703	356
SAC-4P-MS/ 1,5-PUR SCO	1518805	44
SAC-4P-MS/ 1,5-PUR SH SCO	1407800	48
SAC-4P-MS/ 1,5-PUR/FS SCO	1518902	44
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SAC-4P-MS/ 3,0-PUR SH SCO	1407801	48
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SAC-4P-MS/0,3-600/M12FR-3L HD	1403976	142
SAC-4P-MS/0,6-600/M 8FR-2L FB	1406867	141
SAC-4P-MS/0,6-600/M12FR-3L FB	1404034	144
SAC-4P-MS/0,6-600/M12FR-3L HD	1403977	142
SAC-4P-MS/1,5-600/M 8FR-2L FB	1406868	141
SAC-4P-MS/1,5-600/M12FR-3L FB	1404035	144
SAC-4P-MS/1,5-600/M12FR-3L HD	1403978	142
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SAC-4P-MS/10,0-186/FS SCO	1555732	356
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SAC-4P-MS/10,0-PUR SCO	1518834	44
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SAC-4P-MS/3,0-600/M12FR-3L FB	1404036	144
SAC-4P-MS/3,0-600/M12FR-3L HD	1403979	142
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SAC-4P-MSS/ 2,0-PUR PE SCO	1408836	68
SAC-4P-MSS/ 3,0-PUR PE SH SCO	1424105	69
SAC-4P-MSS/ 5,0-PUR PE SCO	1408837	68
SAC-4P-MSS/ 5,0-PUR PE SH SCO	1424245	69
SAC-4P-MSS/10,0-PUR PE SCO	1408838	68
SAC-4P-MSS/10,0-PUR PE SH SCO	1424107	69
SAC-4P-MST/ 1,0-PUR SCO	1408812	70
SAC-4P-MST/ 1,0-PUR/FST SCO	1408808	70
SAC-4P-MST/ 1,5-PUR SH SCO	1424120	71
SAC-4P-MST/ 2,0-PUR SCO	1408813	70
SAC-4P-MST/ 2,0-PUR/FST SCO	1408809	70
SAC-4P-MST/ 3,0-PUR SH SCO	1424121	71
SAC-4P-MST/ 5,0-PUR SCO	1408814	70
SAC-4P-MST/ 5,0-PUR SH SCO	1424122	71
SAC-4P-MST/ 5,0-PUR/FST SCO	1408810	70
SAC-4P-MST/10,0-PUR SCO	1408815	70
SAC-4P-MST/10,0-PUR SH SCO	1424123	71
SAC-4P-MST/10,0-PUR/FST SCO	1408811	70
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SAC-4PY- 3,0-PUR/2XF	1436178	103
SAC-4PY- 5,0-PUR/2XF	1436181	103
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SAC-5P- 1,5-PUR/FR SH SCO	1407808	54
SAC-5P- 1,5-PUR/FS SCO	1536324	52
SAC-5P- 1,5-PUR/FS SH SCO	1407787	54
SAC-5P- 1,5-PUR/M12FR	1669851	53
SAC-5P- 1,5-PUR/M12FR SH	1682964	55
SAC-5P- 1,5-PUR/M12FR-3L	1669880	53
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SAC-5P- 1,5-PUR/M12FS SH	1682935	55
SAC-5P- 2,0-28R/FR SCO RAIL	1407334	132
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SAC-5P- 2,0-920/M 8FS	1575770	344
SAC-5P- 2,0-920/M12FS	1507476	345
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SAC-5P- 2,0-923/MINFS DN	1418426	346
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SAC-5P- 2,0-928/MINFS DN	1417456	347
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SAC-5P- 3,0-431/MINFS PWR	1443514	75
SAC-5P- 3,0-440/MINFR PWR	1443763	72
SAC-5P- 3,0-440/MINFS PWR	1443718	72
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SAC-5P- 3,0-441/MINFS PWR	1443912	73
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SAC-5P- 3,0-PUR/FR SH SCO	1407809	54
SAC-5P- 3,0-PUR/FS SCO	1536337	52
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SAC-5P- 3,0-PUR/M12FR SH	1682977	55
SAC-5P- 3,0-PUR/M12FR-3L	1669893	53
SAC-5P- 3,0-PUR/M12FS	1669835	53
SAC-5P- 3,0-PUR/M12FS SH	1682948	55
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SAC-5P- 5,0-441/MINFS PWR	1443925	73
SAC-5P- 5,0-802/M12FR	1457199	166
SAC-5P- 5,0-802/M12FR-3L	1454370	166
SAC-5P- 5,0-802/M12FS	1454422	166
SAC-5P- 5,0-900/FSB SCO	1517929	340
SAC-5P- 5,0-900/M12FSB	1507120	340
SAC-5P- 5,0-920/FS SCO	1518229	345
SAC-5P- 5,0-920/M 8FS	1575783	344
SAC-5P- 5,0-920/M12FS	1507489	345
SAC-5P- 5,0-923/FR CAN SCO	1419035	343
SAC-5P- 5,0-923/FS CAN SCO	1419030	343
SAC-5P- 5,0-923/MINFR DN	1418484	346
SAC-5P- 5,0-923/MINFS DN	1418439	346
SAC-5P- 5,0-928/MINFR DN	1417511	347
SAC-5P- 5,0-928/MINFS DN	1417469	347
SAC-5P- 5,0-PUR/AD-2L	1435108	100
SAC-5P- 5,0-PUR/FR SCO	1536463	52
SAC-5P- 5,0-PUR/FR SH SCO	1407810	54
SAC-5P- 5,0-PUR/FS SCO	1536340	52
SAC-5P- 5,0-PUR/FS SH SCO	1407789	54
SAC-5P- 5,0-PUR/M12FR	1669877	53
SAC-5P- 5,0-PUR/M12FR SH	1682980	55
SAC-5P- 5,0-PUR/M12FR-3L	1669903	53
SAC-5P- 5,0-PUR/M12FS	1669848	53
SAC-5P- 5,0-PUR/M12FS SH	1682951	55
SAC-5P- 7,5-430/MINFR PWR	1443381	74
SAC-5P- 7,5-430/MINFS PWR	1443336	74
SAC-5P- 7,5-431/MINFR PWR	1443585	75
SAC-5P- 7,5-431/MINFS PWR	1443530	75
SAC-5P- 7,5-440/MINFR PWR	1443789	72
SAC-5P- 7,5-440/MINFS PWR	1443734	72
SAC-5P- 7,5-441/MINFR PWR	1419807	73
SAC-5P- 7,5-441/MINFS PWR	1443938	73
SAC-5P-1,5-600/M12FR FB	1404088	145
SAC-5P-1,5-600/M12FR HD	1404053	143
SAC-5P-1,5-600/M12FR-3L FB	1404093	145
SAC-5P-1,5-600/M12FR-3L HD	1404057	143
SAC-5P-1,5-600/M12FS FB	1404083	145
SAC-5P-1,5-600/M12FS HD	1404049	143
SAC-5P-10,0-115/M 8FRB	1404478	51
SAC-5P-10,0-115/M 8FSB	1404474	51
SAC-5P-10,0-28R/FR SCO RAIL	1407336	132
SAC-5P-10,0-28R/FS SCO RAIL	1407333	132
SAC-5P-10,0-28X/M12FS OD	1407260	155
SAC-5P-10,0-28X/M12FS SH OD	1407268	156
SAC-5P-10,0-430/MINFR PWR	1443394	74
SAC-5P-10,0-430/MINFS PWR	1443349	74
SAC-5P-10,0-431/MINFR PWR	1443598	75
SAC-5P-10,0-431/MINFS PWR	1443543	75
SAC-5P-10,0-440/MINFR PWR	1443792	72
SAC-5P-10,0-440/MINFS PWR	1443747	72
SAC-5P-10,0-441/MINFR PWR	1419810	73
SAC-5P-10,0-441/MINFS PWR	1443941	73
SAC-5P-10,0-600/M12FR FB	1404092	145
SAC-5P-10,0-600/M12FR HD	1404056	143
SAC-5P-10,0-600/M12FR-3L FB	1404096	145
SAC-5P-10,0-600/M12FR-3L HD	1404062	143
SAC-5P-10,0-600/M12FS FB	1404086	145
SAC-5P-10,0-600/M12FS HD	1404052	143
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SAC-5P-10,0-920/FS SCO	1518232	345
SAC-5P-10,0-920/M 8FS	1575796	344
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SAC-5P-10,0-923/FS CAN SCO	1419031	343
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SAC-5P-10,0-928/MINFS DN	1417472	347
SAC-5P-10,0-PUR/AD-2L	1435111	100
SAC-5P-10,0-PUR/FR SCO	1536476	52
SAC-5P-10,0-PUR/FR SH SCO	1407811	54
SAC-5P-10,0-PUR/FS SCO	1536353	52
SAC-5P-10,0-PUR/FS SH SCO	1407790	54
SAC-5P-10,0-PUR/M12FR	1694541	53
SAC-5P-10,0-PUR/M12FR SH	1500761	55
SAC-5P-10,0-PUR/M12FR-3L	1694431	53
SAC-5P-10,0-PUR/M12FS	1683374	53
SAC-5P-10,0-PUR/M12FS SH	1500758	55
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SAC-5P-20,0-928/MINFR DN	1417540	347
SAC-5P-20,0-928/MINFS DN	1417498	347
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SAC-5P-3,0-600/M12FR-3L FB	1404094	145
SAC-5P-3,0-600/M12FR-3L HD	1404059	143
SAC-5P-3,0-600/M12FS FB	1404084	145
SAC-5P-3,0-600/M12FS HD	1404050	143
SAC-5P-5,0-600/M12FR FB	1404091	145
SAC-5P-5,0-600/M12FR HD	1404055	143
SAC-5P-5,0-600/M12FR-3L FB	1404095	145
SAC-5P-5,0-600/M12FR-3L HD	1404060	143
SAC-5P-5,0-600/M12FS FB	1404085	145
SAC-5P-5,0-600/M12FS HD	1404051	143
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SAC-5P-M12MR/ 3,0-PUR SH	1682760	55
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SAC-5P-M12MR/ 5,0-PUR SH	1682773	55
SAC-5P-M12MR/.../...	1697108	53
SAC-5P-M12MR/1,5-600 FB	1404079	145
SAC-5P-M12MR/1,5-600 HD	1404044	143
SAC-5P-M12MR/1,5-PUR	1669796	53
SAC-5P-M12MR/10,0-600 FB	1404082	145
SAC-5P-M12MR/10,0-600 HD	1404048	143
SAC-5P-M12MR/10,0-802	1457351	166
SAC-5P-M12MR/10,0-PUR	1694460	53
SAC-5P-M12MR/10,0-PUR SH	1500745	55
SAC-5P-M12MR/3,0-600 FB	1404080	145
SAC-5P-M12MR/3,0-600 HD	1404046	143
SAC-5P-M12MR/3,0-PUR	1669806	53
SAC-5P-M12MR/5,0-600 FB	1404081	145
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SAC-5P-M12MS/ 0,3-920/M12FS	1507528	345
SAC-5P-M12MS/ 0,3-PUR/M12FR SH	1501003	55
SAC-5P-M12MS/ 0,3-PUR/M12FS SH	1500884	55
SAC-5P-M12MS/ 0,5-920/M12FS	1507531	345
SAC-5P-M12MS/ 0,6-802/M12FR	1454516	166
SAC-5P-M12MS/ 0,6-802/M12FR-3L	1454464	166
SAC-5P-M12MS/ 0,6-802/M12FS	1454561	166
SAC-5P-M12MS/ 0,6-PUR/M12FR SH	1501029	55
SAC-5P-M12MS/ 0,6-PUR/M12FS SH	1500897	55
SAC-5P-M12MS/ 1,0-920/M12FS	1507544	345
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SAC-5P-M12MS/ 1,5-802/M12FS	1454587	166
SAC-5P-M12MS/ 1,5-PUR SH	1682728	55
SAC-5P-M12MS/ 1,5-PUR/M12FR SH	1501045	55
SAC-5P-M12MS/ 1,5-PUR/M12FS SH	1500907	55
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SAC-5P-M12MS/ 2,0-28X/M12FS OD	1407261	155
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SAC-5P-M12MS/ 5,0-920/M12FS	1507560	345
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SAC-5P-M12MS/0,3-600/M12FS FB	1404097	145
SAC-5P-M12MS/0,3-600/M12FS HD	1404063	143
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SAC-5P-M12MS/0,3-PUR/M12FS	1681583	53
SAC-5P-M12MS/0,6-600/M12FR FB	1404103	145
SAC-5P-M12MS/0,6-600/M12FR HD	1404068	143
SAC-5P-M12MS/0,6-600/M12FS FB	1404098	145
SAC-5P-M12MS/0,6-600/M12FS HD	1404064	143
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SAC-5P-M12MS/1,5-600/M12FS FB	1404099	145
SAC-5P-M12MS/1,5-600/M12FS HD	1404065	143
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SAC-5P-M12MS/1,5-PUR/M12FR-3L	1694651	53
SAC-5P-M12MS/1,5-PUR/M12FS	1681606	53
SAC-5P-M12MS/10,0-28X OD	1407257	155
SAC-5P-M12MS/10,0-28X SH OD	1407265	156
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SAC-5P-M12MS/15,0-920	1507450	345
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SAC-5P-M12MS/2,0-28X/M12FSSHOD	1407269	156
SAC-5P-M12MS/3,0-600 FB	1404076	145
SAC-5P-M12MS/3,0-600 HD	1404041	143
SAC-5P-M12MS/3,0-600/M12FR FB	1404105	145
SAC-5P-M12MS/3,0-600/M12FR HD	1404070	143
SAC-5P-M12MS/3,0-600/M12FS FB	1404101	145
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SAC-5P-M12MS/5,0-28X/M12FSSHOD	1407270	156
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SAC-5P-M12MS/5,0-600 HD	1404042	143
SAC-5P-M12MS/5,0-PUR	1669783	53
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SAC-5P-M12MSB/ 2,0-900	1507065	340
SAC-5P-M12MSB/ 2,0-900/M12FSB	1507191	340
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SAC-5P-M12MSB/ 5,0-900/M12FSB	1507201	340
SAC-5P-M12MSB/10,0-900	1507081	340
SAC-5P-M12MSB/10,0-900/M12FSB	1507214	340
SAC-5P-M12MSB/15,0-900	1507094	340
SAC-5P-M12MSB/15,0-900/M12FSB	1507227	340
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SAC-5P-M12T/2XM12 VP	1541186	107
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SAC-5P-MINMR/ 0,5-923/MINFR DN	1420058	346
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SAC-5P-MINMR/ 2,0-923/MINFR DN	1420074	346
SAC-5P-MINMR/ 2,0-923/MINFS DN	1418730	346
SAC-5P-MINMR/ 2,0-928 DN	1417605	347
SAC-5P-MINMR/ 2,0-928/MINFR DN	1417922	347
SAC-5P-MINMR/ 2,0-928/MINFS DN	1417760	347
SAC-5P-MINMR/ 5,0-923 DN	1418581	346
SAC-5P-MINMR/ 5,0-923/MINFR DN	1420087	346
SAC-5P-MINMR/ 5,0-923/MINFS DN	1418743	346
SAC-5P-MINMR/ 5,0-928 DN	1417618	347
SAC-5P-MINMR/ 5,0-928/MINFR DN	1417935	347
SAC-5P-MINMR/ 5,0-928/MINFS DN	1417773	347
SAC-5P-MINMR/0,3-430/MINFR PWR	1443459	74
SAC-5P-MINMR/0,3-431/MINFR PWR	1443653	75
SAC-5P-MINMR/0,3-440/MINFR PWR	1443857	72
SAC-5P-MINMR/0,3-441/MINFR PWR	1419878	73
SAC-5P-MINMR/0,6-430/MINFR PWR	1443462	74
SAC-5P-MINMR/0,6-431/MINFR PWR	1443666	75
SAC-5P-MINMR/0,6-440/MINFR PWR	1443860	72
SAC-5P-MINMR/0,6-441/MINFR PWR	1419881	73
SAC-5P-MINMR/1,0-430/MINFR PWR	1443475	74
SAC-5P-MINMR/1,0-431/MINFR PWR	1443679	75
SAC-5P-MINMR/1,0-440/MINFR PWR	1443873	72
SAC-5P-MINMR/1,0-441/MINFR PWR	1419894	73
SAC-5P-MINMR/1,5-430/MINFR PWR	1443488	74
SAC-5P-MINMR/1,5-431/MINFR PWR	1443682	75
SAC-5P-MINMR/1,5-440/MINFR PWR	1443886	72
SAC-5P-MINMR/1,5-441/MINFR PWR	1419904	73
SAC-5P-MINMR/10,0-923 DN	1418594	346
SAC-5P-MINMR/10,0-923/MINFR DN	1420090	346
SAC-5P-MINMR/10,0-923/MINFS DN	1418756	346
SAC-5P-MINMR/10,0-928 DN	1417621	347
SAC-5P-MINMR/10,0-928/MINFR DN	1417948	347
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SAC-5P-MINMR/15,0-928 DN	1417634	347
SAC-5P-MINMR/15,0-928/MINFR DN	1417951	347
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SAC-5P-MINMR/2,0-430/MINFR PWR	1443491	74
SAC-5P-MINMR/2,0-431/MINFR PWR	1443695	75
SAC-5P-MINMR/2,0-440/MINFR PWR	1443899	72
SAC-5P-MINMR/2,0-441/MINFR PWR	1419917	73
SAC-5P-MINMR/20,0-923 DN	1418617	346
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SAC-5P-MINMS/0,3-441/MINFS PWR	1419823	73
SAC-5P-MINMS/0,6-430/MINFS PWR	1443417	74
SAC-5P-MINMS/0,6-431/MINFS PWR	1443611	75
SAC-5P-MINMS/0,6-440/MINFS PWR	1443815	72
SAC-5P-MINMS/0,6-441/MINFS PWR	1419836	73
SAC-5P-MINMS/1,0-430/MINFS PWR	1443420	74
SAC-5P-MINMS/1,0-431/MINFS PWR	1443624	75
SAC-5P-MINMS/1,0-440/MINFS PWR	1443828	72
SAC-5P-MINMS/1,0-441/MINFS PWR	1419849	73
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SAC-5P-MINMS/15,0-928/MINFS DN	1417715	347
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SAC-8P- 1,5-PUR/M12FS SH	1522862	63
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SACB-4/ 8-L-10,0PUR SCO	1517110	120
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SACB-4/ 8-L-C GG SCO P	1452877	119
SACB-4/ 8-L-C NPN SCO	1537103	120
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SACB-6/ 6-C SCO	1516865	120
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WP-PA HF 42,5 BK	3241089	585
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WP-PA HF-HB 13,0 BK	3240839	585
WP-PA HF-HB 15,8 BK	3240840	585
WP-PA HF-HB 21,2 BK	3240841	585
WP-PA HF-HB 28,5 BK	3240842	585
WP-PA HF-HB 34,5 BK	3240843	585
WP-PA HF-HB 42,5 BK	3240844	585
WP-PA HF-SL 21,2 BK	3240845	584
WP-PA HF-SL 28,5 BK	3240846	584
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