HUMMEL

smart & reliable connections

M12 POWER



THE COMPACT AND POWERFUL M12 CONNECTOR









HUMMEL – smart & reliable

HUMMEL AG is a renowned manufacturer of connection technology and components for electric and heating areas. The medium sized family business stands for quality, precision, reliability and pronounced service consciousness. A wide vertical range of manufacture with in-house development, construction, toolmaking, manufacturing, electroplating and assembling from a single source, offers best conditions for implementing individual solutions.







connections

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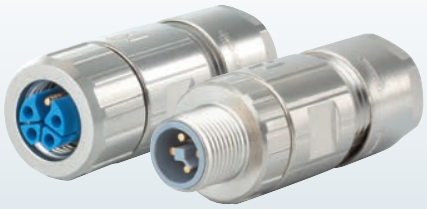

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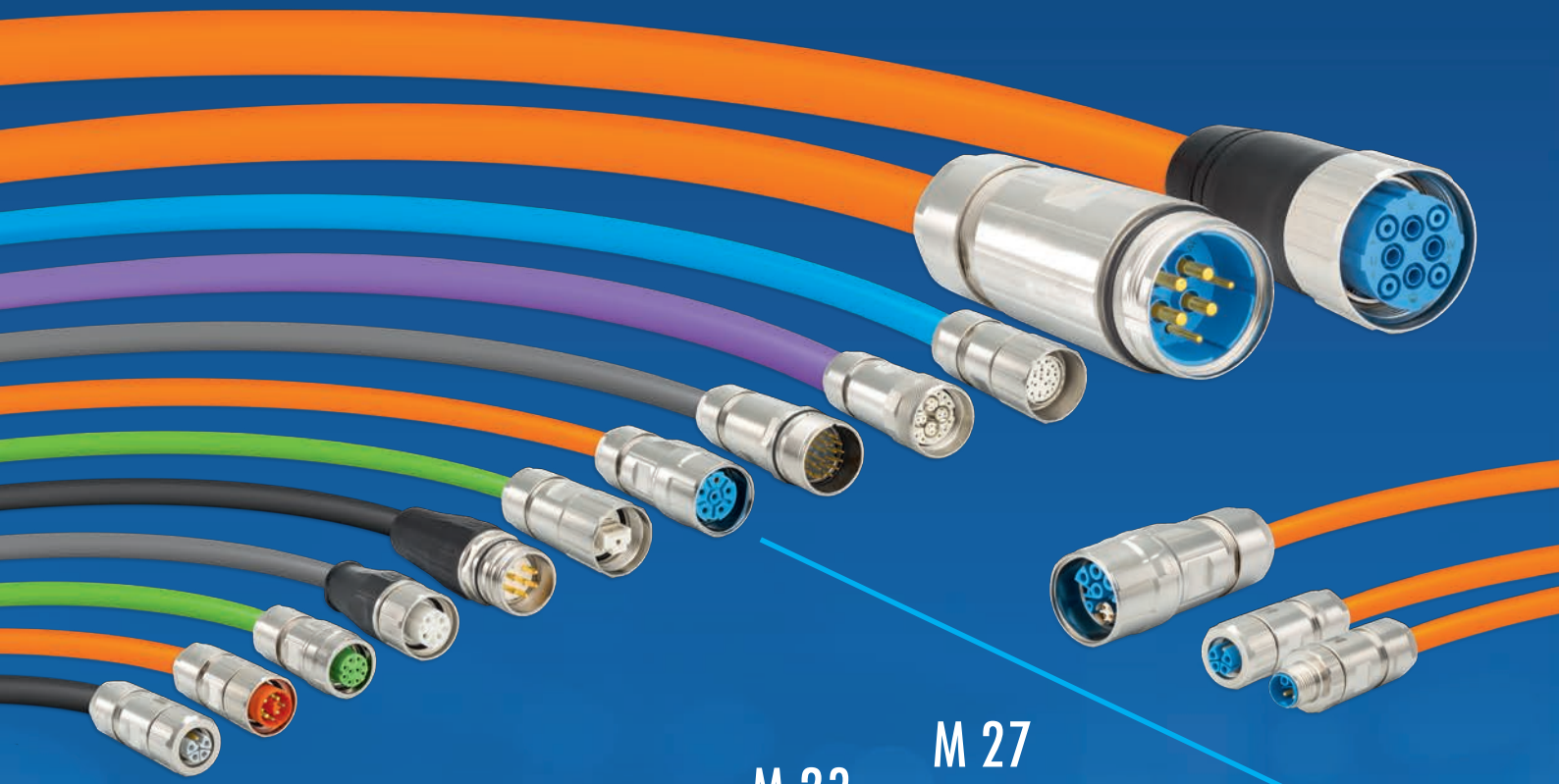
// Coding
// Certificates & approvals
// Derating curves

https://www.hummel.com/en/circular-connectors/technical-center

HUGE RANGE: M 12 – M 40



M 12 Power

M 23
Power Connectors

M 27
Signal Connectors

CIRCULAR CONNECTORS

Industrial Ethernet

M 16
TWILOCK

PROFINET

M 23 RJ 45

M 40
Moulded Cordsets

Customized Solutions

M 23 Hybrid

File-No. E 213337

Germanischer Lloyd

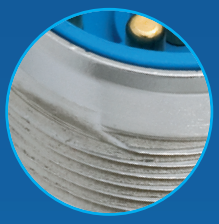
RoHS

TWILOCK / TWILOCK-S

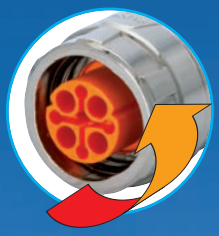
- // Quick Connect with Polygon Lock
- // Multi functional: Ideal with TWILOCK and screw connection
- // Easy handling, exceptional functionality
- // Resistant to vibration



Clearly defined:
OPEN – CLOSE



Multi functional: Special thread allows use of TWILOCK and screw connection



Locking with a slight rotation or release of the connection



TWILOCK-S-Version intermateable with Speedtec



TWILOCK



TWILOCK-S

TECHNICAL INFORMATION

Rated current
The **rated current** is the current that each contact of a connection can simultaneously transfer continuously.

Rated voltage
The **rated voltage** is the voltage for which a connector is designed. In operation, the rated voltage is the maximum continuously applied voltage.

Functional earth (FE)
Functional earth is an electrical conductor to ensure the functions and thus normal operation of installations and devices.
Functional earthing conductor: Earthing conductor provided for functional earthing.
Functional earthing: Earthing a point or points in a system or in an installation or in equipment, for purposes other than electrical safety.

Protective earth (PE)
Protective earth is an electrical conductor provided for the purposes of safety, for protection against electric shock. It is also called an earth conductor, earthing or "earth" for short. Its task in electric systems is to protect living beings in case of a fault.
PE conductor: Protective earth for the purposes of protective earthing
Protective earthing: Earthing a point or points in a system or in an installation or in equipment for purposes of electrical safety.

Contact overlapping
The **contact overlapping** or wipe length of connectors generally denotes the possible overlap area of the pin and receptacle. The greater this area, the more reliable the connection is due to higher possible tolerance allowance (tolerance compensation).
To ensure the IP degree of protection and the necessary contact overlapping, at HUMMEL the cable and coupling connectors must be fully engaged and locked.

Test voltage
The **test voltage** is the voltage that a connector must withstand under certain specifications without flashover or disruptive discharge via or through the insulation and at least corresponds to the r.m.s. withstand voltage in EN 61984.
The value of the test voltage is higher than the rated withstand voltage and serves to verify the dielectric strength of the connector.

Connectors
Connectors that are designed to be engaged or disengaged in normal use when live or under load. These are also called connectors with breaking capacity (CBC). A classic example in households in the SCHUKO plug (earthed 2-pin plug).
Connectors that are not deemed to be engaged or disengaged in normal use when under load or live are also named COC (connectors without breaking capacity).

HUMMEL connectors are usually classified as COC, i.e. they may not be engaged or disengaged when live!

Mating Cycles
One insertion and withdrawal (engaging and disengaging) of connectors is called a mating cycle (also called a cycle of mechanical operation or engaging cycle). The number of mating cycles is an important characteristic for connectors and plugs. It defines the life of a connector during which there is no loss in its transfer/transmission quality. The number of mating cycles is influenced above all by the quality of the contact surface. Use of high-quality and durable contact coatings reduces surface abrasion on mating.

Pollution degree
The **pollution degree** is a numerical value that indicates the level of pollution expected in the micro-environment and is a parameter used in the design of clearances and creepage distances of electrical equipment. It denotes the potential pollution of an open, unengaged connector in a specific environment. The EN 60664-1 standard differentiates between four categories:
- **Pollution degree 1**: No pollution or only dry, non-conductive pollution occurs. The pollution has no influence.
- **Pollution degree 2**: Only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation must be expected. (typical for households, business premises, laboratories or test areas.).
- **Pollution degree 3**: Conductive pollution occurs or dry non-conductive pollution occurs, which becomes conductive due to condensation which is to be expected. (typical for industrial firms or workshops.)
- **Pollution degree 4**: Continuous conductivity occurs due to conductive dust, rain or other wet conditions.

If connectors are used under a higher pollution degree, the voltage values must be reduced. Contact our technical specialists to find out more.

Safety note
In case of operating voltages greater than 50 volt, the connectors listed in this catalogue must be used with conducting housing parts in accordance with the safety provisions of DIN VDE 0100-410; IEC 60364-4-41. These safety provisions specify that relevant connectors may not be engaged or disengaged when live. Otherwise, no protection against electric shock is ensured.

✦

Further information is available on our website:
https://www.hummel.com/de/rundsteckverbinder/technik-center/allgemeine-technische-hinweise

HUMMEL connectors may not be engaged or disengaged when live. To ensure the IP degree of protection (IP rating) and the necessary contact overlapping, the cable and coupling connectors must be fully engaged and locked.

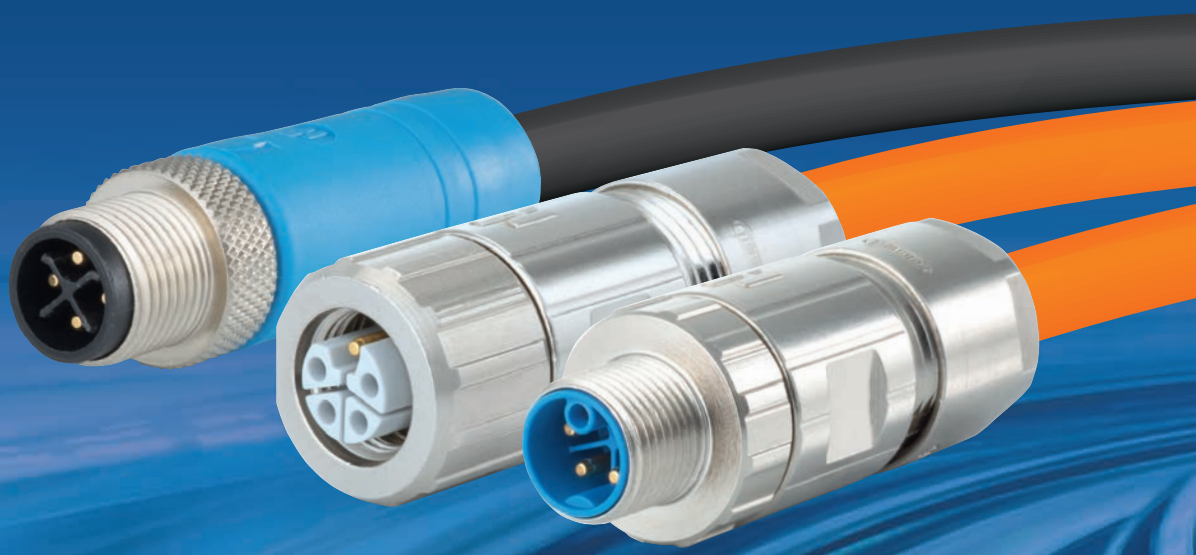
CONNECTORS M 12 POWER

The M 12 Power connector impresses with its compact design and high power transmission. This connector enables entirely new applications and capabilities. It is available in numerous versions.

// Straight Connector, male and female thread
// Right Angle Connector, male and female thread
// Panel Connectors
// Moulded Cordsets
// Field attachable connectors
// Accessories
// Cable Assembly

c UL us File-No. E 213337

VDE
REG.-Nr. F394



CONNECTORS M 12 POWER

Product overview

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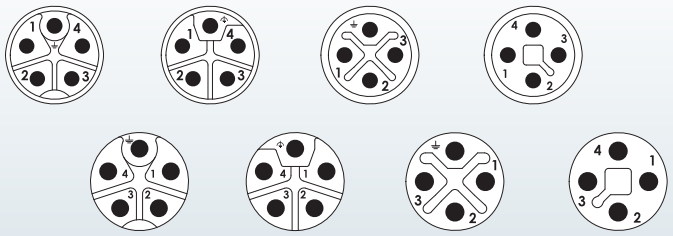


Accessories ▶ 30



Mechanical Data	Materials and Technical Data	
Housing	Brass / Die Cast INOX AISI 316 L TPU (moulded versions)	
Housing surface	Nickel plated Other surfaces upon request	
Inserts (for contacts)	PBT	Fire protection class V-0
Contacts	Copper alloy / Brass	
Contact Area	Gold plated	
Minimum mating cycles	> 100	
Sealings / O-rings	Viton® (FKM / FPM) / Buna-N / HNBR	
Temperature range	-40° C – 125° C (-40 °F – 257 °F) (K + L) -40 °C – 85 °C (-40 °F – 185 °F) (S + T)	
Type of contacts	Crimp (K + L) / Screw Terminal (S + T)	
Protection Class	IP 67 / IP 69K	
Cable diameter range	3 – 11 mm (.11 – .43")	

Electrical Data

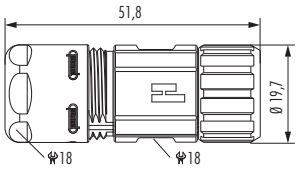
Coding	S	T	K	L
Colours	black	dark grey	blue	grey
Number of positions	4 (3 + PE)	4	5 (4 + PE)	5 (4 + FE)
Terminal Cross Section [mm²] AWG	0,5 – 1,5 AWG 20 – 16	0,5 – 1,5 AWG 20 – 16	0,75 – 2,5 AWG 18 – 14	0,75 – 2,5 AWG 18 – 14
Nominal current [1] [A]	12	12	16	16
Nominal voltage [2] [V~] degree of pollution 3 [4]	630	63	630	63
Test voltage (Breakdown voltage) [3] [V~]	3310	840	3310	840
Insulation resistance [MΩ]	> 10^2	> 10^2	> 10^2	> 10^2
Max. contact resistance [mΩ]	< 3	< 3	< 3	< 3

Housings

⚠ Pin inserts mountable with male thread housings only. Socket inserts mountable with female thread housings only.

Straight Connector, Female Thread





Cable-Ø	Coding	Part Number
3 – 6 mm (.11 – .23″)	K, L	A712-7.K10.300.000
5 – 9 mm (.20 – .35″)	K, L	A712-7.K10.400.000
8 – 11 mm (.31 – .43″)	K, L	A712-7.K10.500.000
3 – 6 mm (.11 – .23″)	S, T	A712-7.S10.300.000
5 – 9 mm (.20 – .35″)	S, T	A712-7.S10.400.000
8 – 11 mm (.31 – .43″)	S, T	A712-7.S10.500.000

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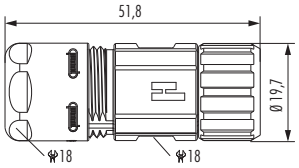
Straight Connector, Male Thread



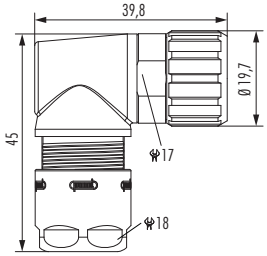


Cable-Ø	Coding	Part Number
3 – 6 mm (.11 – .23″)	K, L	A712-7.K20.300.000
5 – 9 mm (.20 – .35″)	K, L	A712-7.K20.400.000
8 – 11 mm (.31 – .43″)	K, L	A712-7.K20.500.000
3 – 6 mm (.11 – .23″)	S, T	A712-7.S20.300.000
5 – 9 mm (.20 – .35″)	S, T	A712-7.S20.400.000
8 – 11 mm (.31 – .43″)	S, T	A712-7.S20.500.000

▶ 15 ▶ 20

Right Angle Connector, Female Thread





Cable-Ø	Coding	Part Number
3 – 6 mm (.11 – .23″)	K, L	A712-7.K30.300.000
5 – 9 mm (.20 – .35″)	K, L	A712-7.K30.400.000
8 – 11 mm (.31 – .43″)	K, L	A712-7.K30.500.000
3 – 6 mm (.11 – .23″)	S, T	A712-7.S30.300.000
5 – 9 mm (.20 – .35″)	S, T	A712-7.S30.400.000
8 – 11 mm (.31 – .43″)	S, T	A712-7.S30.500.000

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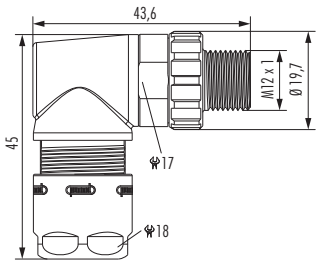
Right Angle Connector, Male Thread





Cable-Ø	Coding	Part Number
3 – 6 mm (.11 – .23″)	K, L	A712-7.K31.300.000
5 – 9 mm (.20 – .35″)	K, L	A712-7.K31.400.000
8 – 11 mm (.31 – .43″)	K, L	A712-7.K31.500.000
3 – 6 mm (.11 – .23″)	S, T	A712-7.S31.300.000
5 – 9 mm (.20 – .35″)	S, T	A712-7.S31.400.000
8 – 11 mm (.31 – .43″)	S, T	A712-7.S31.500.000

▶ 15 ▶ 20

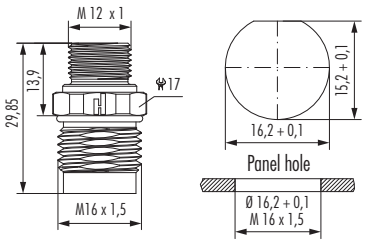
Housing without inserts and contacts

Housings

⚠ Pin inserts mountable with male thread housings only. Socket inserts mountable with female thread housings only.

Panel connector male thread, single hole front mounted



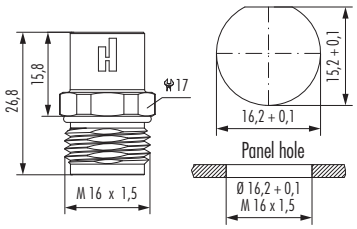


Cable-Ø	Coding	Part Number
Thread M 16	K, L	A712-7.K42.000.000
Thread M 16 INOX	K, L	A712-7.K42.000.004
with lock nut „rotation protection“		
Thread M 16	K, L	A712-7.K42.000.00G

▶ 15 ▶ 20

Panel connector female thread, single hole front mounted



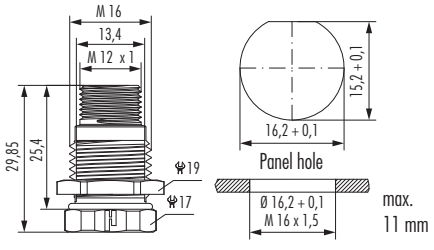


Cable-Ø	Coding	Part Number
Thread M 16	K, L	A712-7.K44.000.000
Thread M 16 INOX	K, L	A712-7.K44.000.004
with lock nut „rotation protection“		
Thread M 16	K, L	A712-7.K44.000.00G

▶ 15 ▶ 20

Panel connector male thread, single hole rear mounted



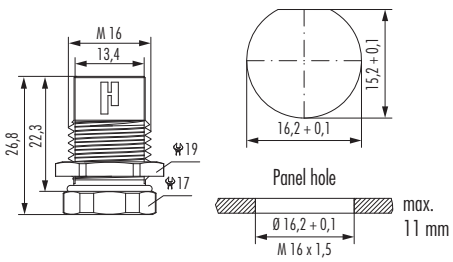


Cable-Ø	Coding	Part Number
Thread M 16	K, L	A712-7.K50.000.000
Thread M 20	S, T	A712-7.S50.000.000

▶ 15 ▶ 20

Panel connector female thread, single hole rear mounted





Cable-Ø	Coding	Part Number
Thread M 16	K, L	A712-7.K51.000.000

▶ 15 ▶ 20

Housing without inserts and contacts

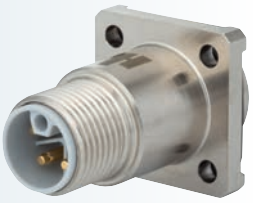
⚠ Drawings apply for coding K and L only. Find measures for coding S and T at www.hummel.com

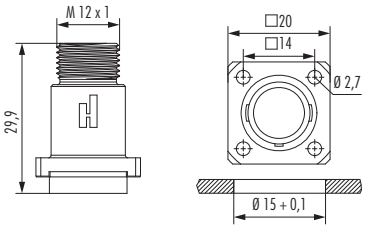
Housings

⚠ Pin inserts mountable with male thread housings only. Socket inserts mountable with female thread housings only.

Panel connector male thread, front mounting

Cable-Ø	Coding	Part Number
flange 20 x 20 mm, 4 x 2,7 mm	K, L	A712-7.K40.000.000
4 x holes 3,2 mm [1]		





▶ 15 ▶ 20

Housing without inserts and contacts

⚠ Drawings apply for coding K and L only. Find measures for coding S and T at www.hummel.com

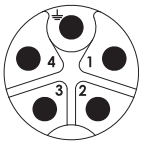
Inserts

⚠ Pin inserts mountable with male thread housings only. Socket inserts mountable with female thread housings only.

Inserts K-coding



Insert pin mating view



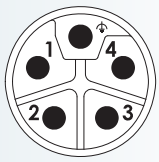
Insert socket mating view

Type	Part Number
Crimp insert, pins, 4 + PE without contacts Required contacts: 4 x pins, 1 x socket PE	A712-7.K03.941.101
Crimp insert, sockets, 4 + PE without contacts Required contacts: 4 x sockets, 1 x pin	A712-7.K03.941.102

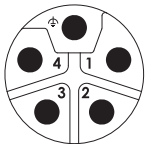
⚠ max. wire insulation Ø 2,9 mm

▶16

Inserts L-coding



Insert pin mating view



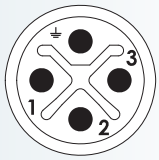
Insert socket mating view

Type	Part Number
Crimp insert, pins, 4 + FE without contacts Required contacts: 4 x pins, 1 x socket PE	A712-7.L03.941.101
Crimp insert, sockets, 4 + FE without contacts Required contacts: 4 x sockets, 1 x pin	A712-7.L03.941.102

⚠ max. wire insulation Ø 2,9 mm

▶16

Inserts S-coding



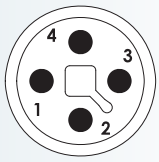
Insert pin mating view



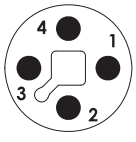
Insert socket mating view

Type	Part Number
Insert with pins 3 + PE contacts with screw termination	A712-7.S05.931.105
Insert with sockets 3 + PE contacts with screw termination	A712-7.S05.931.106

Inserts T-coding



Insert pin mating view



Insert socket mating view

Type	Part Number
Insert with pins 4-pole contacts with screw termination	A712-7.T05.904.105
Insert with sockets 4-pole contacts with screw termination	A712-7.T05.904.106

Contacts / Crimp Tool Setting for HUMMEL Crimp Contacts (Crimp Tool 7.000.900.908)

Contacts	Type	Crimp Range	Part Number
	Crimp pin 1,5 mm, machined	0,75 mm²	A712-7.010.901.521
	Crimp pin 1,5 mm, machined	1,5 mm²	A712-7.010.901.531
	Crimp pin 1,5 mm, machined	2,5 mm²	A712-7.010.901.541
	Crimp socket 1,5 mm PE, machined	0,75 mm²	A712-7.010.911.522
	Crimp socket 1,5 mm PE, machined	1,5 mm²	A712-7.010.911.532
	Crimp socket 1,5 mm PE, machined	2,5 mm²	A712-7.010.911.542
	Crimp socket 1,5 mm, machined	0,75 mm²	A712-7.010.901.522
	Crimp socket 1,5 mm, machined	1,5 mm²	A712-7.010.901.532
	Crimp socket 1,5 mm, machined	2,5 mm²	A712-7.010.901.542

Accessories	Type	Part Number
	**Plastic protective cap** for connectors with **male thread** with **female thread**	 A712-7.000.980.161 A712-7.000.980.162
	**Brass protective cap** for connectors with **female thread**	A712-7.010.900.163
	**Brass protective cap** for connectors with **male thread**	A712-7.010.900.162
	**Brass protective cap with chain** for connectors with **female thread** Length 70 mm	 A712-7.010.9S0.705
	**Brass protective cap with chain** for connectors with **male thread** Length 70 mm	 A712-7.010.9S0.704
	**Crimp tool** for manual crimping of machined crimp contacts for signal connectors M 12	 7.000.900.908
	**Tool Adapter** for tightening or loosening knurled nuts for M 12 Power/M 16	 7.010.900.191
	**Screw Tool**, adjustable 0.5 – 1.7 Nm	7.010.900.190



Accessories

Limited Liability

The images and information in this catalog are for the general information of business customers and are not binding. We reserve the right to make changes, particularly with regard to technical data, design, dimensions, and colors, as well as changes in technology and design. All information is subject to errors, typesetting, and printing errors.

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ELECTRIC COMPONENTS

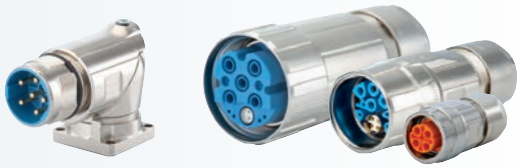
Cable Glands

Polyamide-, Brass- and Stainless steel,
EMC-connections, Protection Ex e, Ex d, Ex ta



Circular Connectors

M 12 Power to M 40, INOX, TWILOCK, Industrial Ethernet,
Power, Signal, Hybrid-Connector, Moulded Cordsets



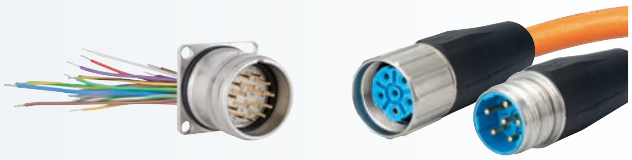
Conduit Systems

Corrugated Conduit Systems, Conduit Cable Glands,
combined Cable Glands, Accessories



Cable Assembly

Moulded Signal- and Power Circular Connectors,
Servo Cables, Cable Sets



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