

## 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.



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Housing



Inserts / Pinouts



Contacts



Accessories

Further information can be found in our Technical Centre at [www.hummel.com](http://www.hummel.com)

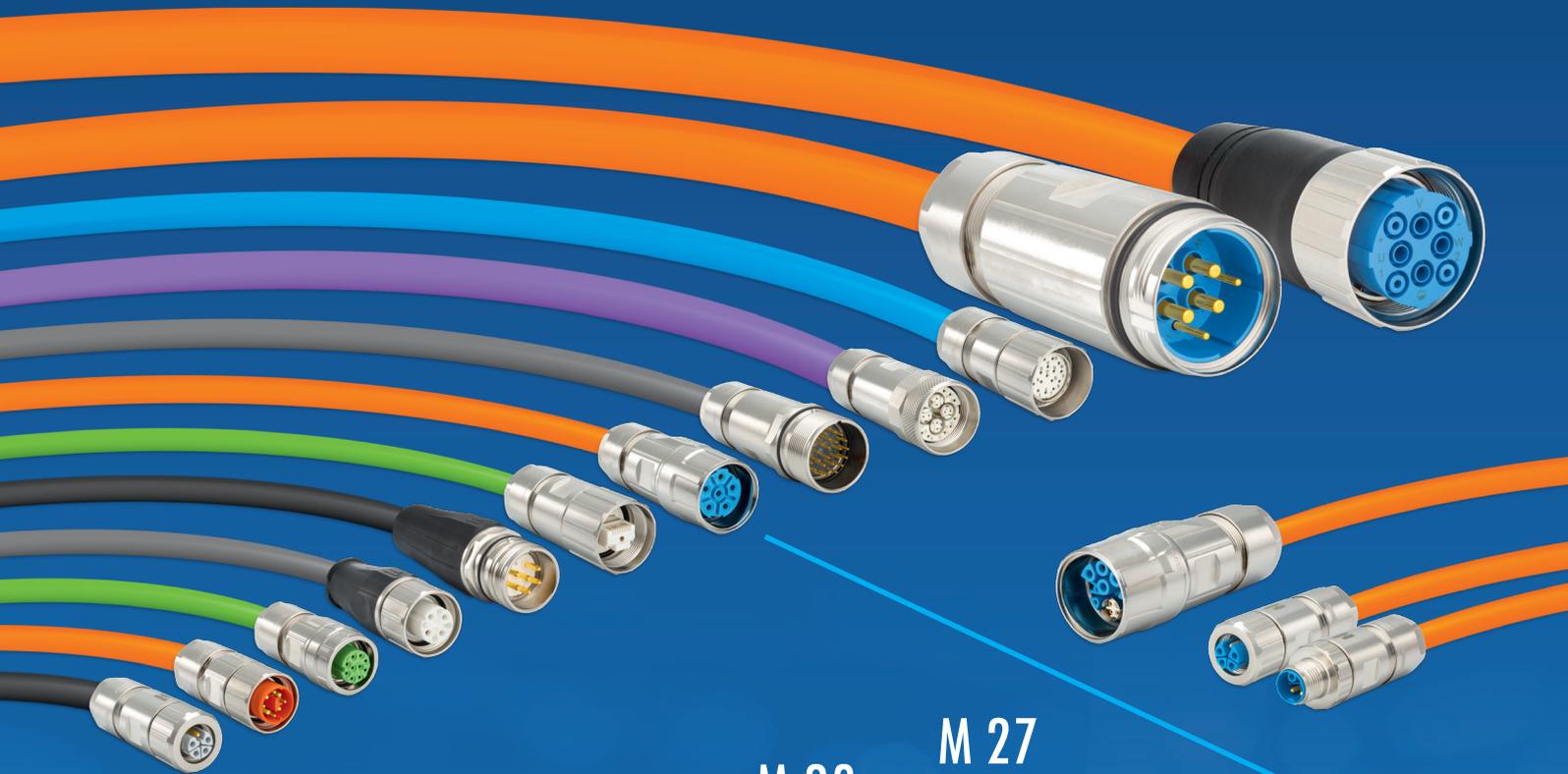


- // Assembly instructions
- // Crimping, assembly, disassembly
- // Crimping tool instructions for use
- // Crimp settings
- // Coding
- // Certificates & approvals
- // Derating curves

<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



Germanischer Lloyd



File-No. E 213337

# 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

## 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 is 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.

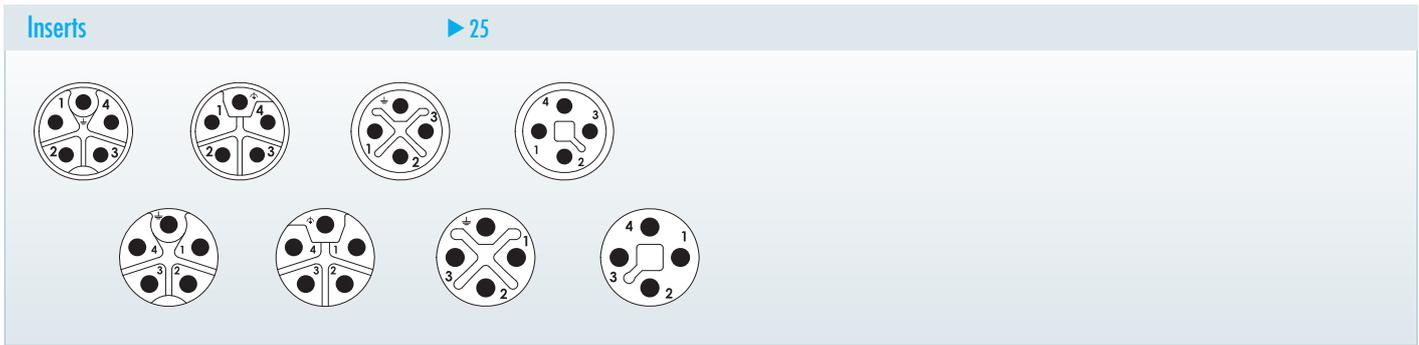
- // Straight Connector, male and female thread
- // Right Angle Connector, male and female thread
- // Panel Connectors
- // Moulded Cordsets
- // Field attachable connectors
- // Accessories
- // Cable Assembly

 File-No. E 213337

  
REG.-Nr. F394



## Product overview



| Mechanical Data        | Materials and Technical Data  |
|------------------------|---|
| Housing                | Brass / Die Cast<br>INOX AISI 316 L<br>TPU (moulded versions)                 |
| Housing surface        | Nickel plated<br>Other surfaces upon request                                  |
| Inserts (for contacts) | PBT <span style="float: right;">Fire protection class V-0</span>              |
| 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)<br>-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  | S                 | T                 | K                 | L                 |
|--|-------------------|-------------------|-------------------|-------------------|
| 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 [mm <sup>2</sup> ]                            | 0,5 – 1,5         | 0,5 – 1,5         | 0,75 – 2,5        | 0,75 – 2,5        |
| AWG  | AWG 20 – 16       | AWG 20 – 16       | AWG 18 – 14       | AWG 18 – 14       |
| Nominal current <sup>1</sup> [A]                                     | 12                | 12                | 16                | 16                |
| Nominal voltage <sup>2</sup> [V~] degree of pollution <sup>3 4</sup> | 630               | 63                | 630               | 63                |
| Test voltage (Breakdown voltage) <sup>3</sup> [V~]                   | 3310              | 840               | 3310              | 840               |
| Insulation resistance [MΩ]   | > 10 <sup>2</sup> | > 10 <sup>2</sup> | > 10 <sup>2</sup> | > 10 <sup>2</sup> |
| 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 |

▶ 15 | 
 ▶ 20

### 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 |

▶ 15 | 
 ▶ 20

### 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

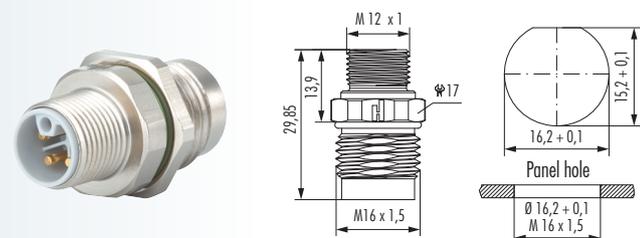
Pin inserts mountable with male thread housings only. Socket inserts mountable with female thread housings only.

### 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

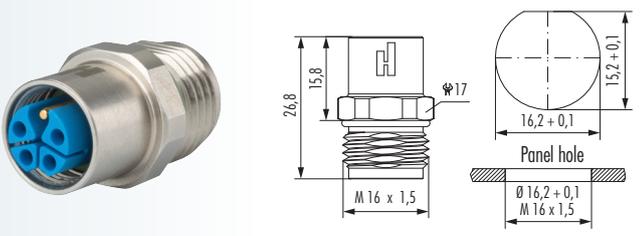


### Panel connector female thread, single hole front mounted

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

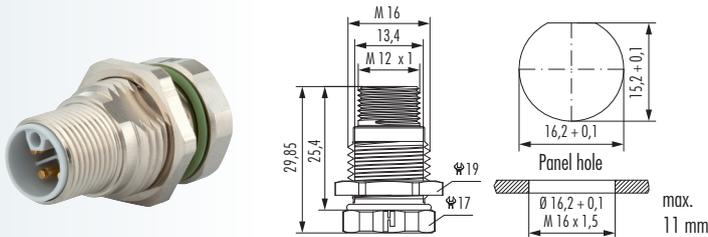
with lock nut „rotation protection“  
 Thread M 16 .....K, L .....A712-7.K44.000.00G



### Panel connector male thread, single hole rear mounted

Cable-Ø                      Coding                      Part Number

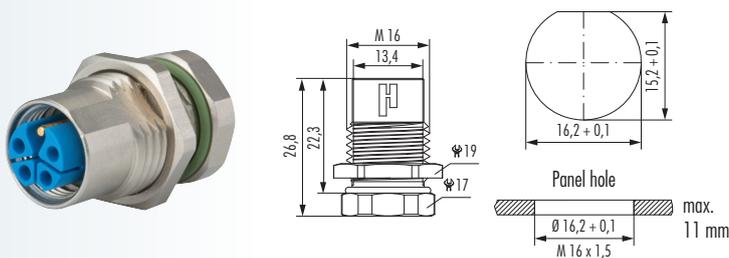
Thread M 16 .....K, L .....A712-7.K50.000.000  
 Thread M 20 .....S, T .....A712-7.S50.000.000



### Panel connector female thread, single hole rear mounted

Cable-Ø                      Coding                      Part Number

Thread M 16 .....K, L .....A712-7.K51.000.000



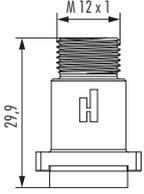
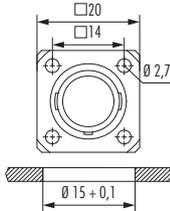
Housing without inserts and contacts

Drawings apply for coding K and L only. Find measures for coding S and T at [www.hummel.com](http://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,<br>4 x 2,7 mm .....K, L..... |        | A712-7.K40.000.000 |
|  | 4 x holes 3,2 mm <sup>1</sup>                   |        |                    |





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

| Inserts K-coding              |                                  | Type   | Part Number        |
|-------------------------------|----------------------------------|--|--------------------|
| <p>Insert pin mating view</p> | <p>Insert socket mating view</p> | Crimp insert, pins, 4 + PE<br>without contacts.....    | A712-7.K03.941.101 |
|                               |                                  | Required contacts: 4 x pins, 1 x socket PE             |                    |
|                               |                                  | Crimp insert, sockets, 4 + PE<br>without contacts..... | A712-7.K03.941.102 |
|                               |                                  | Required contacts: 4 x sockets, 1 x pin                |                    |
|                               |                                  | max. wire insulation Ø 2,9 mm                          |                    |
|                               |                                  | ▶ 16   |                    |

| Inserts L-coding              |                                  | Type   | Part Number        |
|-------------------------------|----------------------------------|--|--------------------|
| <p>Insert pin mating view</p> | <p>Insert socket mating view</p> | Crimp insert, pins, 4 + FE<br>without contacts.....    | A712-7.L03.941.101 |
|                               |                                  | Required contacts: 4 x pins, 1 x socket PE             |                    |
|                               |                                  | Crimp insert, sockets, 4 + FE<br>without contacts..... | A712-7.L03.941.102 |
|                               |                                  | Required contacts: 4 x sockets, 1 x pin                |                    |
|                               |                                  | max. wire insulation Ø 2,9 mm                          |                    |
|                               |                                  | ▶ 16   |                    |

| Inserts S-coding              |                                  | Type   | Part Number        |
|-------------------------------|----------------------------------|--|--------------------|
| <p>Insert pin mating view</p> | <p>Insert socket mating view</p> | Insert with pins 3 + PE<br>contacts with screw termination.....    | A712-7.S05.931.105 |
|                               |                                  | Insert with sockets 3 + PE<br>contacts with screw termination..... |                    |

| Inserts T-coding              |                                  | Type   | Part Number        |
|-------------------------------|----------------------------------|--|--------------------|
| <p>Insert pin mating view</p> | <p>Insert socket mating view</p> | Insert with pins 4-pole<br>contacts with screw termination.....    | A712-7.T05.904.105 |
|                               |                                  | Insert with sockets 4-pole<br>contacts with screw termination..... |                    |



## 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 mm <sup>2</sup> ..... | A712-7.010.901.521 |
|   | Crimp pin 1,5 mm, machined .....       | 1,5 mm <sup>2</sup> .....  | A712-7.010.901.531 |
|   | Crimp pin 1,5 mm, machined .....       | 2,5 mm <sup>2</sup> .....  | A712-7.010.901.541 |
|  | Crimp socket 1,5 mm PE, machined ..... | 0,75 mm <sup>2</sup> ..... | A712-7.010.911.522 |
|   | Crimp socket 1,5 mm PE, machined ..... | 1,5 mm <sup>2</sup> .....  | A712-7.010.911.532 |
|   | Crimp socket 1,5 mm PE, machined ..... | 2,5 mm <sup>2</sup> .....  | A712-7.010.911.542 |
|  | Crimp socket 1,5 mm, machined.....     | 0,75 mm <sup>2</sup> ..... | A712-7.010.901.522 |
|   | Crimp socket 1,5 mm, machined.....     | 1,5 mm <sup>2</sup> .....  | A712-7.010.901.532 |
|   | Crimp socket 1,5 mm, machined.....     | 2,5 mm <sup>2</sup> .....  | A712-7.010.901.542 |

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



# CONNECTORS M 12 POWER



## Accessories

### Limited Liability

Products, design, colors and dimensions are subject to change without prior notice. We reserve the right to make technical improvements on all our products, currently ordered or for future orders. It is the users responsibility to verify all dimensions and technical data. HUMMEL AG will assume no liability regarding information provided to the user by published literature or inside technical staff, its distributors and outside sales personnel. Errors in the catalog can occur and shall not create any liability whatsoever for HUMMEL AG. All information provided by HUMMEL AG is without guarantee and must be verified by the user.

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# ELECTRIC COMPONENTS

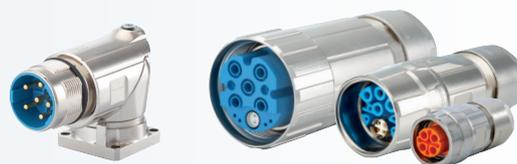
## Cable Glands

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



[www.hummel.com](http://www.hummel.com)

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