

M12 POWER



THE COMPACT AND POWERFUL M12 CONNECTOR



HUMMEL — smart & reliable





TABLE OF CONTENT

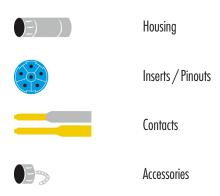












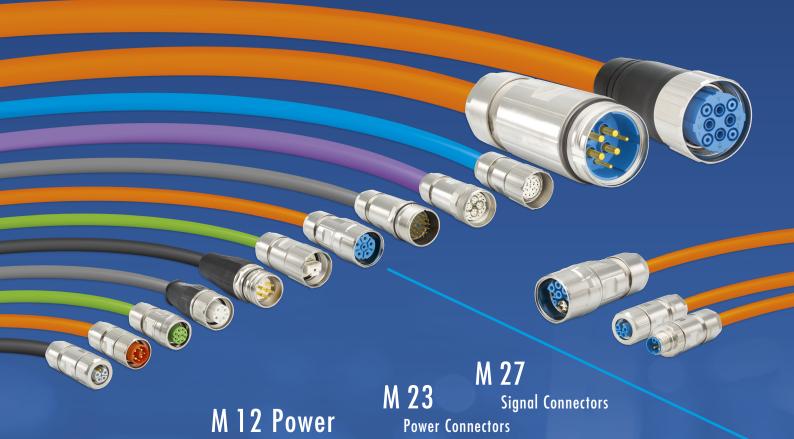
Further information can be found in our Technical Centre at www.hummel.com



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



HUGE RANGE: M 12 - M 40



CIRCULAR CONNECTORS

PROFINET Customized Solutions

Industrial Ethernet M 16 M 23 RJ 45 M 40

M 23 Hybrid

TWILOCK Moulded Cordsets









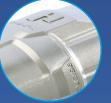




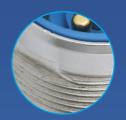
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TWILOCK / TWILOCK-S

- // 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







TECHNICAL INFORMATION

Rated curren

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 sofety, 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 greas.).
- 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.

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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.



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.

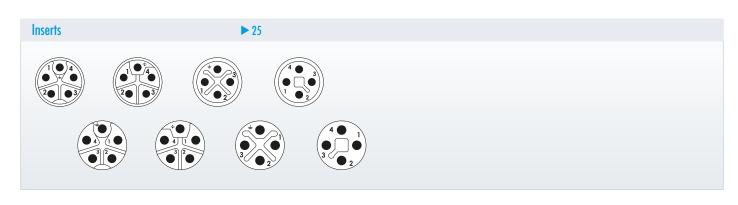
- // Straight Connector, male and female thread
- // Right Angle Connector, male and female thread
- // Panel Connectors
- // Moulded Cordsets
- // Field attachable connectors
- // Accessories
- // Cable Assembly

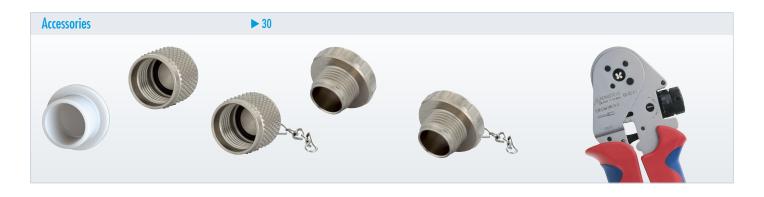




Product overview









Technical Data

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-O
Contacts	Copper alloy / Brass
Contact Area	Gold plated
Minimum mating cycles	>100
Sealings / 0-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 (.1143")

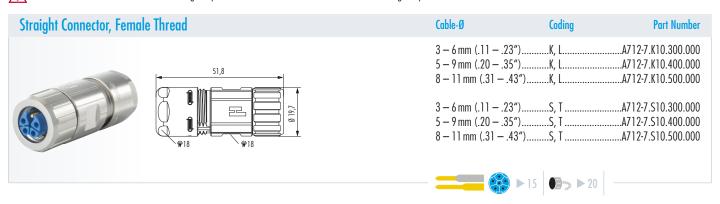
Coding	S	T	K	L
Colours	black	dark grey	blue	grey
Number of positions	4 (3 + PE)	4	5 (4 + PE)	5 (4 + FE)
Terminal Cross Section [mm²]	0,5 - 1,5	0.5 - 1.5	0,75 - 2,5	0,75 - 2,5
AWG	AWG 20 - 16	AWG 20 - 16	AWG 18 - 14	AWG 18 - 14
Nominal current ¹ [A]	12	12	16	16
Nominal voltage ² [V~] degree of pollution 3 ⁴	630	63	630	63
Test voltage (Breakdown voltage) ³ [V~]	3310	840	3310	840
nsulation resistance [M Ω]	>102	> 10 ²	> 10 ²	>102
Max. contact resistance $[m\Omega]$	<3	< 3	<3	< 3

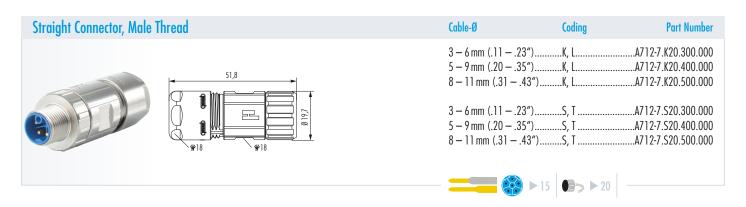


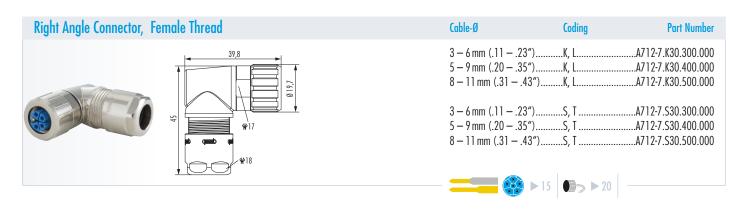


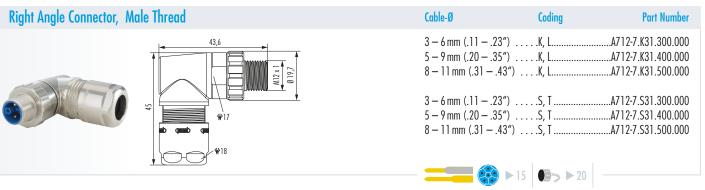
Housings

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









Housing without inserts and contacts

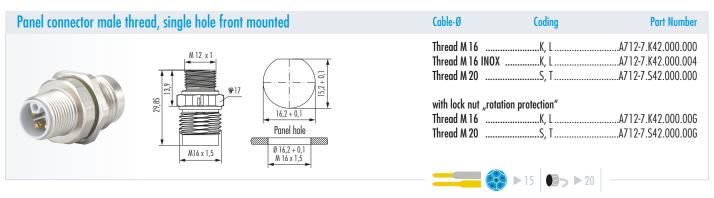


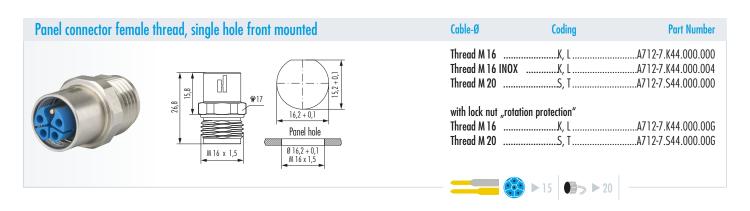
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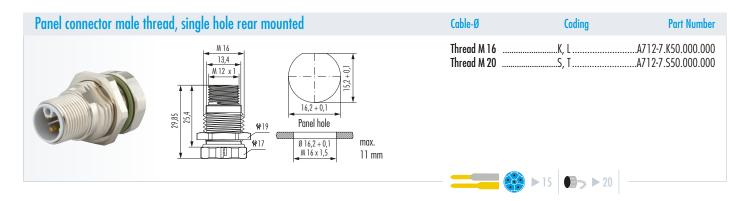
CONNECTORS M 12 POWER

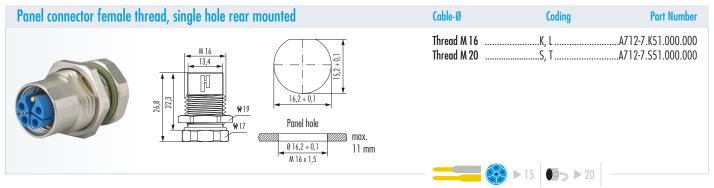
Housings

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









Housing without inserts and contacts

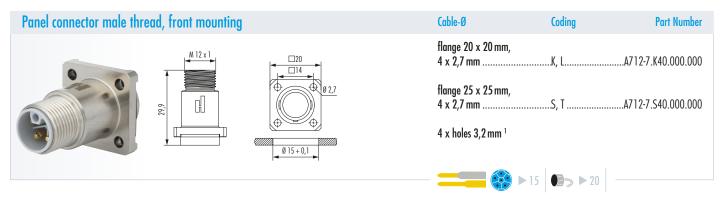
Drawings apply for coding K and L only. Find measures for coding S and T at www.hummel.com

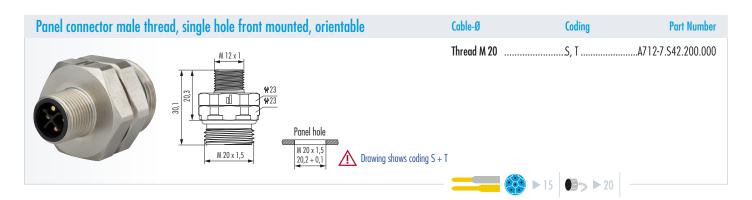


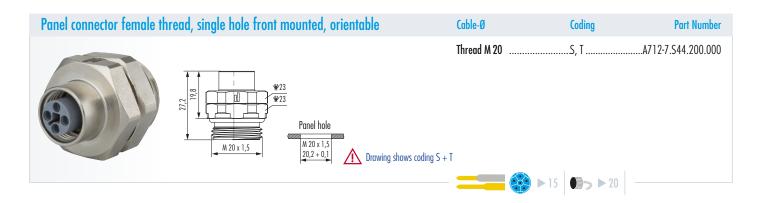


Housings

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





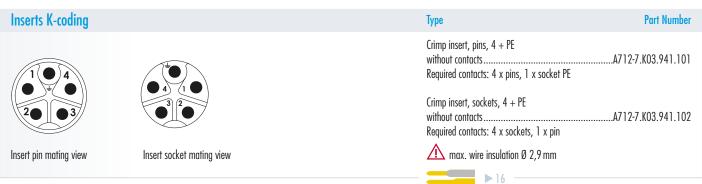






Inserts

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



Inserts L-coding		Туре	Part Number
104	*	Crimp insert, pins, 4 + FE without contacts Required contacts: 4 x pins, 1 x socket PE	A712-7.L03.941.101
2003	3 2	Crimp insert, sockets, 4 + FE without contacts Required contacts: 4 x sockets, 1 x pin	A712-7.L03.941.102
Insert pin mating view	Insert socket mating view		
		► 16 -	

Inserts S-coding		Туре	Part Number
3		Insert with pins 3 + PE contacts with screw termination Insert with sockets 3 + PE contacts with screw termination	
Insert pin mating view	Insert socket mating view		

Inserts T-coding		Туре	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
Insert pin mating view	Insert socket mating view		





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

Contacts	Туре	Crimp Range	Part Number
	Crimp pin 1,5 mm, machined	0,75 mm ²	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 mm ²	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 mm ²	A712-7.010.911.542
	Crimp socket 1,5 mm, machined	0,75 mm ²	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





M 12 Power Moulded Cordsets, Open cable end

		M 12 Coding K	M 12 Coding L	M12 Coding S	M 12 Coding T
	C GC				
Cable (1,5 mm²) PUR					
unshielded	female male	A712-KFS413UPxxx A712-KMS413UPxxx	A712-LFS413UPxxx A712-LMS413UPxxx	A712-SFS313UPxxx A712-SMS313UPxxx	A712-TFS043UPxxx A712-TMS043UPxxx
shielded	female male	A712-KFS413SPxxx A712-KMS413SPxxx	A712-LFS413SPxxx A712-LMS413SPxxx	A712-SFS313SPxxx A712-SMS313SPxxx	A712-TFS043SPxxx A712-TMS043SPxxx
Cable (2,5 mm²) PUR					
unshielded	female male	A712-KFS414UPxxx A712-KMS414UPxxx	A712-LFS414UPxxx A712-LMS414UPxxx		
shielded	female male	A712-KFS414SPxxx A712-KMS414SPxxx	A712-LFS414SPxxx A712-LMS414SPxxx		

Right Angle Connecto	or / Open cable end				
		M 12 Coding K	M 12 Coding L	M 12 Coding S	M 12 Coding T
Cable (1,5 mm²) PUR					
unshielded	female male	A712-KFA413UPxxx A712-KMA413UPxxx	A712-LFA413UPxxx A712-LMA413UPxxx	A712-SFA313UPxxx A712-SMA313UPxxx	A712-TFA043UPxxx A712-TMA043UPxxx

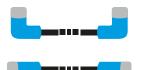
Please add required cable length to part number:		
1,5 m	xxx replaced by: 015	
2 m	xxx replaced by: 020	
5 m	xxx replaced by: 050	
10 m	xxx replaced by: 100	
15 m	xxx replaced by: 150	

The length can be chosen in decimetre (0,1 m) steps. INOX upon request.

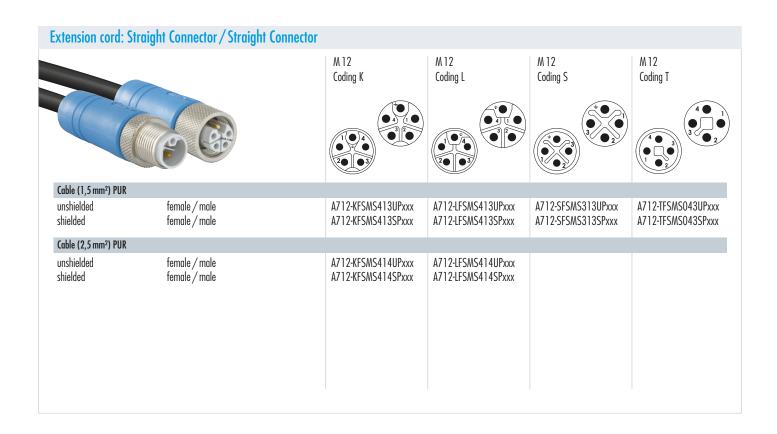
Straight Connector overmoulded / Open cable end

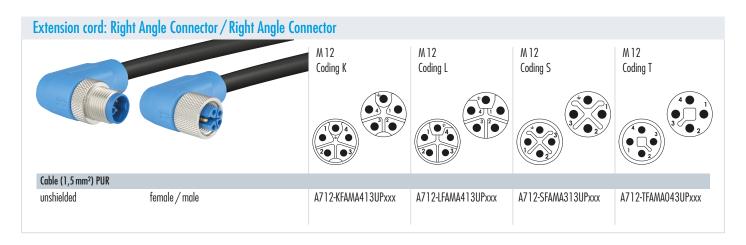






M 12 Power Moulded Cordsets, Extension Cord





Please add required cable length to part number:		
1,5 m	xxx replaced by: 015	
2 m	xxx replaced by: 020	
5 m	xxx replaced by: 050	
10 m	xxx replaced by: 100	
15 m	xxx replaced by: 150	

The length can be chosen in decimetre (0,1 m) steps. INOX upon request.



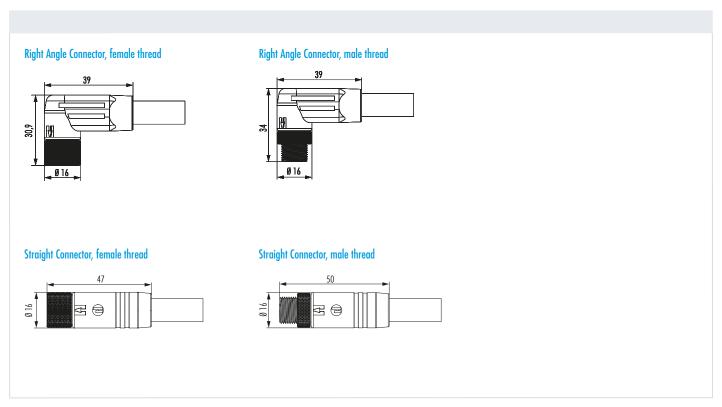
Extension cord with overmoulded Right Angle Connectors





M 12 Power Moulded Cordsets, Extension Cord









Accessories

Accessories	Туре	Part Number
	Plastic protective cap for connectors with male thread with female thread	
	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
M121	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

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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





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