

Technical Data

RoHS

Panel connector



Cable connector



Coupler connector



Panel connector, cable connector and coupler connector

rectangular housing

Locking

screw connection

Protection

IP 50 to IP 54 with conxil in the housing, flat-gasket for panel connector and cable connector seal

Contacts

3 to 52 contacts \varnothing 2 mm – \varnothing 3 mm – \varnothing 4 mm non-removable solder contacts

Max. current

15 A \varnothing 2 mm – 35 A \varnothing 3 mm – 50 A \varnothing 4 mm

Contact resistance between pin and socket

< 0,0015 Ω \varnothing 2 mm – < 0,0010 Ω \varnothing 3 mm – < 0,0007 Ω \varnothing 4 mm

Breakdown voltage between adjacent contacts

> 2500 Volts (RMS)

Breakdown voltage between peripheral contacts and ground

> 1500 Volts (RMS), (> 2000 Volts (RMS) 4 contacts \varnothing 4 mm)

Insulation resistance

> 5000 M Ω

Operating temperature

-40 °C to +100 °C (500 hours at +125 °C)

Materials

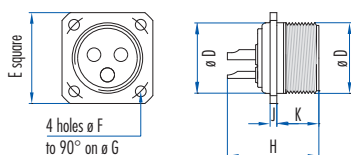
Nickel-plated light alloy, silver-plated brass contact, PBT insert except contacts diameter 4 mm which are gold-plated brass

Max. cross-section of soldered conductors

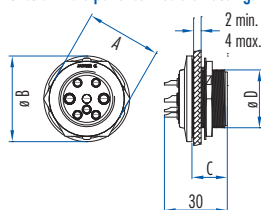
1,34 mm² \varnothing 2 mm – 3,18 mm² \varnothing 3 mm – 5,26 mm² \varnothing 4 mm

Dimensional Data

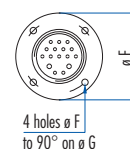
Panel connector



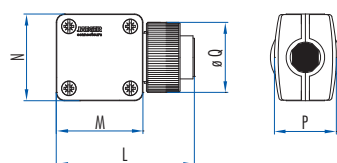
Circular male panel connectors housings 1 and 2



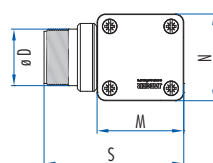
Circular male panel connectors housings 3 to 5



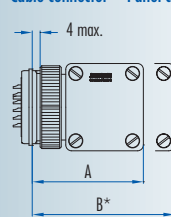
Cable connector



Coupler connector



Cable connector – Panel connector assembly



Housing	Number of Contacts	Circular male panel connector						
		A	\varnothing B	C	\varnothing D	\varnothing E	\varnothing F	\varnothing G
1	3-4-6	29	34	16,5	M21			
2	4-8-12	35	40	16,5	M27			
3	17					57	4,2	48
4	25					63	4,2	54
5	35-52					72	4,2	62

Housing	Number of Contacts	Assembly	Square and circular male panel connector										Female cable connector – Male coupler connector					Assembly	Square female panel connector							Male cable connector – Female coupler connector						
			A	B	\varnothing D	E	\varnothing F	\varnothing G	H	J	K	L	M	N	P	\varnothing Q	S		A	B	\varnothing D	E	\varnothing F	\varnothing G	H	J	K	L	M	N	P	\varnothing Q
1	3-4-6	52 64	21	27	3,2	28	25	2	12,7	51,2	32,2	32,2	23	26	51,8	56	66	21	27	3,2	28	28,7	2	16	51,5	32,2	32,2	23	26	52		
2	4	56 68	27	32	3,2	34	29	2	12,5	55,2	36,4	36,4	28,4	33	56,5	60	70	27	32	3,2	34	28,6	2,1	16	55	36,4	36,4	28,4	33	56,4		
2	8-12	56 68	27	32	3,2	34	21	2	12,5	55,2	36,4	36,4	28,4	33	56,5	60	70	27	32	3,2	34	28,6	2,1	16	55	36,4	36,4	28,4	33	56,4		
3	17	64 75	39	43	4,2	48	23	2	12	62,4	42,6	47,6	38,6	44	62	68	83	39	43	4,2	48	29,8	2	18,6	62,5	42,6	47,6	38,6	44	67,5		
4	25	68 81	45	47	4,2	54	23,8	2	12	67,6	47,8	53,8	44,8	51	69	73	87	45	47	4,2	54	29,8	2	18,6	67,2	47,8	53,8	44,8	50	72,5		
5	35	78 89	52	54	4,2	62	28,8	1,9	12,1	74,5	55	61,5	51,5	58	76	80,5	93	52	54	4,2	62	30,6	2	18,6	74,5	55	61,5	51,5	58			
5	52	78 89	52	54	4,2	62	28	1,9	12,1	74,5	55	61,5	51,5	58	76	80,5	93	52	54	4,2	62	30,6	2	18,6	74,5	55	61,5	51,5	58			

* B: minimum disconnection distance

Part Number

Housing	1	1	1	2	2	2	3	4	5	5
Number of Contacts	3	4	6	4	8	12	17	25	35	52
L ø 2 mm	1	4	6		6	12	15	23	33	52
L ø 3 mm	2				2		2	2	2	
L ø 4 mm				4						

Male panel connectors – Female cable connectors – Male coupler connectors

Circular male panel connector*	°536 753 006	°536 754 006	°536 756 006		°536 758 006	°536 762 006	°536 117 006	°536 125 006	°536 135 006	°533 706 006
Square male panel connector	°038 351 006	°043 082 006	°038 355 006	°533 763 006	°038 356 006	°038 359 006	°038 322 006	°042 986 006	°043 001 006	°533 703 006
Female cable connector	042 953 006	043 085 006	042 954 006	530 763 006	042 955 006	042 956 006	038 382 006	042 977 006	042 990 006	530 703 006
Male coupler connector	532 203 006	532 204 006	532 206 006	530 768 006	532 208 006	532 212 006	532 217 006	532 225 006	532 235 006	530 707 006
Type 3 cable clamp	630 135 006	630 135 006	630 135 006	630 138 006	630 138 006	630 138 006	630 155 006	630 155 006	630 175 006	630 175 006
Flat-Gasket for panel connector (pack of 10)	536 945 006	536 945 006	536 945 006	536 946 006	536 946 006	536 946 006	536 947 006	536 126 006	536 136 006	536 136 006
Protective cap for panel connector	536 910 006	536 910 006	536 910 006	536 911 006	536 911 006	536 911 006	536 912 006	536 913 006	536 914 006	536 914 006
Protective cap for female cable connector	532 260 006	532 260 006	532 260 006	532 278 006	532 278 006	532 278 006	532 262 006	532 263 006	532 264 006	532 264 006
Protective cap for coupler connector	536 910 606	536 910 606	536 910 606							

Female panel connectors – Male cable connectors – Female coupler connectors

Square female panel connector	°536 603 006	°536 604 006	°536 606 006	°533 760 006	°536 608 006	°536 612 006	°536 617 006	°536 625 006	°536 635 006	°533 700 006
Male cable connector	532 603 006	532 604 006	532 606 006	530 760 006	532 608 006	532 612 006	532 617 006	532 625 006	532 635 006	530 700 006
Female coupler connector	°530 153 006	°530 154 006	°530 156 006	°530 753 006	°530 158 006	°530 162 006	530 170 006	530 175 006		
Type 3 cable clamp	630 135 006	630 135 006	630 135 006	630 138 006	630 138 006	630 138 006	630 155 006	630 155 006	630 175 006	630 175 006
Flat-Gasket for panel connector (pack of 10)	536 945 006	536 945 006	536 945 006	536 946 006	536 946 006	536 946 006	536 947 006	536 126 006	536 136 006	536 136 006
Housing for panel connector	536 935 006	536 935 006	536 935 006	536 937 006	536 937 006	536 937 006	536 996 006	536 880 006	536 881 006	536 881 006
Protective cap for panel connector	536 910 006	536 910 006	536 910 006	536 911 006	536 911 006	536 911 006	536 912 006	536 913 006	536 914 006	536 914 006
Protective cap for male cable connector	532 265 006	532 265 006	532 265 006	532 279 006	532 279 006	532 279 006	532 267 006	532 268 006	532 269 006	532 269 006
Protective cap for coupler connector	536 910 606	536 910 606	536 910 606							

- For the version with 4 contacts ø 4 mm, contact No. 4 of the panel connector and the coupler connector, which makes the electrical connection before the other 3 contacts and disconnects it after separation, can be used as a ground contact.
- ° The panel connectors are also compatible with the Waterproof cable connectors page 22 and Waterproof PG cable connectors page 26.
- ° Square female panel connectors and female coupler connectors are also of the „Rapid“ type, page 16 with 3 to 12 contacts.
- Sealable tamper-evident connectors for housings 1 and 2. See: Accessories.
- For assembly, wiring, panel connector installation and contact arrangement instructions, see: Technical guides.
- Other accessories, see: Accessories.
- * The circular male panel connector with 3 to 12 contacts includes a body, a seal, a nut and its locknut.

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Cable connector

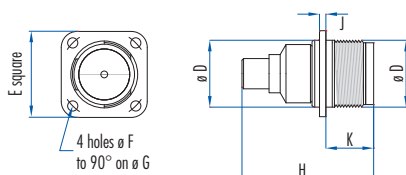


Panel connector and cable connector

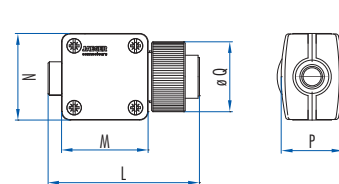
Locking	rectangular housing
Protection	screw connection
Contact	IP 50 to IP 54 with conexil in the housing, flat-gasket for panel connector and cable connector seal
Max. current	single contact \varnothing 2 mm non-removable solder contact
Contact resistance between pin and socket	15 A \varnothing 2 mm
Maximum voltage in steady state	$< 0,0015 \Omega$ \varnothing 2 mm
Test voltage	> 2500 Volts
Insulation resistance	6000 Volts (2U + 1000)
Operating temperature	$> 10^6 M\Omega$
Materials	-20 °C to +100 °C (100 hours at +100 °C)
Max. cross-section of soldered conductors	Nickel-plated light alloy, silver-plated brass contact, thermoplastic insert
	(shielded or unshielded high-voltage cable) 1,91 mm ² \varnothing 2 mm

Dimensional Data

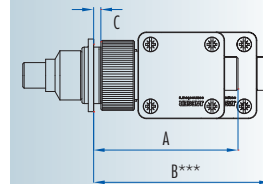
Panel connector



Cable connector



Cable connector – Panel connector assembly



Housing	Number of Contacts	Assembly		Square male panel connector								Female cable connector					
		A	B	C	\varnothing D	E	\varnothing F	\varnothing G	H	I	J	K	L	M	N	P	\varnothing Q
1	1	67	78	4	21	27	3,2	28	38,5	M21	2	12,7	58,5	32,2	32,2	23	26

*** B: minimum disconnection distance

Part Number

Housing	1
Number of Contacts ø 2 mm	1
Male panel connector – Female cable connector	
Square male panel connector	536 893 006
Female cable connector	532 893 006
Housing for panel connector	536 886 006
Flat-Gasket for panel connector (pack of 10)	536 945 006

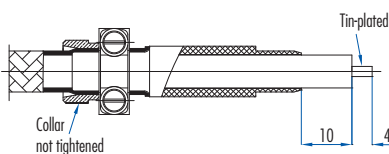
- Sealable tamper-evident connectors, see: Accessories.
- For wiring and panel connector installation instructions, see: Technical guides.

Preparing the cable

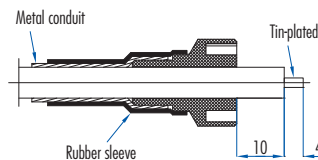
Warning: When the circuit is under load:

- Do not separate the two parts of the connector
- Do not fit or remove the protective caps on connectors
- Use shielded or unshielded high-voltage cables. Maximum cross-section of the conductor: 1,91 mm².
- To wire the panel connector, use a housing with cable clamp or the assembly shown below. A lug is delivered with the panel connector for the electrical continuity of the cable shielding, if necessary.
- To achieve the performances previously stated, the assembly instructions given on the diagram below must be strictly adhered to.
- The polyethylene insulating sleeves must be fully inserted into their seating.

Cable connector side



Panel connector side



Technical Data

RoHS

Panel connector



Cable connector



Coupler connector



Panel connector, cable connector
and coupler connector

rectangular housing

Locking

screw connection

Protection

IP 50 to IP 54 with conexil in the housing, flat-gasket for panel connector and cable connector seal

Contacts

3 contacts: 1 \varnothing 2 mm and 2 (the thermocouple) \varnothing 3 mm, non-removable solder contacts

Max. current

15 A \varnothing 2 mm – 35 A \varnothing 3 mm

Contact resistance between pin and socket

$< 0,0015 \Omega$ \varnothing 2 mm, Depending on thermocouple \varnothing 3 mm $< 0,0015 \Omega$ \longleftrightarrow $< 0,0045 \Omega$

Breakdown voltage between adjacent pins

> 1500 Volts (RMS)

Breakdown voltage between peripheral pins
contact and ground

> 1500 Volts efficace

Insulation resistance

> 5000 M Ω

Operating temperature

-40 °C to $+100$ °C (500 hours at $+125$ °C)

Materials

Nickel-plated light alloy, silver-plated brass contact,
thermocouple contacts see below, PBT insert

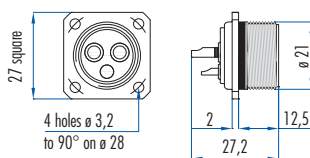
Max. cross-section of soldered conductors

1,34 mm² \varnothing 2 mm – 3,39 mm² \varnothing 3 mm

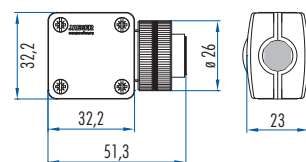
Thermocouple	Identification of contacts		Identification of connectors by a coloured ring
	Polarity	Number	
iron	+	1	Black type J
constantan	-	2	
chromel	+	1	Green type K
alumel	-	2	
copper	+	1	Brown type T
constantan	-	2	

Dimensional Data

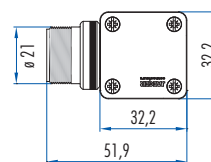
Panel connector



Cable connector



Coupler connector



Thermocouple Series – Standard with Thermocouple contacts

Part Number

Housing	1	1	1
Number of Contacts	3	3	3
Thermocouple (J: iron constantan, K: chromel alumel, T: copper constantan)	J	K	T

Male panel connectors – Female cable connectors – Male coupler connectors

Square male panel connector	536 161 006	536 162 006	536 163 006
Female cable connector	532 161 006	532 162 006	532 163 006
Male coupler connector	532 121 006	532 122 006	532 123 006
Type 3 cable clamp	630 135 006	630 135 006	630 135 006
End fitting for soldering	532 998 006	or 042 547 006	or 042 937 006
Pyrometer tube end fitting	530 126 026	530 126 026	530 126 026
Protective cap for panel connector	536 910 006	536 910 006	536 910 006
Protective cap for cable connector	532 260 006	532 260 006	532 260 006

- For assembly, wiring, panel connector installation and contact arrangement instructions, see: Technical guides.
- Other accessories, see: Accessories.
- For configurations requiring a larger number of contacts and with different technical characteristics, see page 128.

Thermocouple data

In 1821, Seebeck discovered that an electric current flows in a closed loop with two wires made of different metals if the temperature of one of the two junctions is higher than that of the other. This bimetallic combination was called a **Thermocouple**.

If one of the junctions is open whilst keeping its two ends at the same temperature, the electromotive force measured between the two ends depends on the difference in temperature between the two junctions more precisely, the electromotive force depends on the temperature of a single junction if the other is maintained at constant temperature.

Different combinations of metals and alloys were tested to form a Thermocouple or Thermoelectric couple. The main types of pairs selected are:

- **Type J:** an iron component and a constantan component
- **Type K:** a chromel component and an alumel component
- **Type T:** a copper component and a constantan component
- **Type S:** a platinum rhodium 10% Rh component and a platinum component
- **Type E:** a chromel component and a constantan component

There are other Thermocouples but they are less commonly used.

The thermoelectric properties thus discovered gave rise to temperature measurement in industry. Some examples of use: pyrometer tubes, freeze-driers, medical, engine bearing temperature control, etc.

The choice of Thermocouple is governed by:

- the temperature range to be measured
- its resistance to pollution and corrosion
- the resistance of the Thermocouple for a given gas atmosphere

Type	Colour Code standard: IEC 584.3	Conductor +	Conductor -	Temperature	Application recommended in atmospheres				
					vacuum	oxidizing	reducing	inert	gaseous
J	Black	Iron	Constantan	-210 °C +1200 °C	x	x	x	x	Air argon nitrogen
K	Green	Chromel	Alumel	-270 °C +1370 °C		x		x	Air argon
T	Brown	Copper	Constantan	-270 °C +400 °C		x	x		Air argon nitrogen
S	Yellow	platinum rhodium 10% Rh	Platinum	-50 °C +1760 °C		x			Air
E	Purple	Chromel	Constantan	-270 °C +1000 °C		x		x	Air argon