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JUMO CEROS S15 B

OEM pressure measuring cell - analog

Description

The pressure measuring cell measures the absolute or relative pressure of liquid, steam, and gaseous media.

The pressure measuring cell is a subassembly for the production of pressure transmitters or for direct integration into the measuring point, for example in valves. The pressure measuring cell can be welded in or used in the application with an O-ring seal.

The analogue mV output signal is typically amplified, evaluated, and converted into an industry-standard output signal by downstream electronics. The electrical connection to the electronics is made via the pins of the glass opening.



Type 405115
(view of the housing interior)



Type 405115
(view of the medium)

Areas of application

- Food and pharmaceutical industry
- CIP and SIP plants
- Air conditioning and refrigeration applications
- Mechanical and plant engineering
- Hygienic applications

Special features

- Measuring ranges of 100 mbar (5 psi) up to 100 bar (1500 psi)
- Operating temperature from -40 to +125 °C
- Robust stainless steel housing
- Front-flush welded membrane with gap-free design
- Integrated Temperature sensor (PTC)
- Compact design
- Flexible in its application
- Simple, predefined temperature compensation
- With long life cycle and long-term stability

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Technical data

Electrical safety

Requirements	DIN EN 61010-1:2020 The device must be equipped with an electrical circuit that meets the requirements for "Limited-energy circuits".

Electrical data

Voltage supply	DC 5 to 12 V
Current consumption	< 3 mA
Electrical connection	
Connection elements	Short pin (3.5 mm), long pin (8 mm)

	Min.	Typ.	Max.
Bridge resistance			
Temperature coefficient	+ 0.25 % K	+ 0.28 % K	+ 0.31 % K
Resistance at 20 °C	2,9 kΩ	3.5 kΩ	4 kΩ
Resistance of the sensor at 20 °C	1.80 kΩ	2.15 kΩ	2.30 kΩ

Inputs

Measurands

Reference conditions

Basic principles	DIN EN 61298-1, DIN 16086, DIN EN 60770
Installation position	Any
Calibration position	Measuring cell vertically upright, membrane downward

Relative pressure

Measuring range	**Linearity**[a]	**TK offset uncompensated**			**Long-term stability-Long-term stability**	**Overload capability**[b]	**Burst pressure**
		Min.	Typ.	Max.			
	% MSP[c]	% MSP	% MSP	% MSP	% MSP per year	bar	bar
0 to 100 mbar	0.4	0	0.375	0.750	≤ 0.2	0.5	3
0 to 0.35 bar	0.4	0	0.125	0.250	≤ 0.2	1	10
0 to 1 bar	0.4	0	0.080	0.160	≤ 0.2	3	20
0 to 2.5 bar	0.4	0	0.045	0.090	≤ 0.2	8	40
0 to 5 bar	0.4	0	0.035	0.070	≤ 0.2	15	50
0 to 10 bar	0.4	0	0.0275	0.055	≤ 0.2	30	60
0 to 30 bar	0.4	0	0.015	0.030	≤ 0.2	90	200
0 to 100 bar	0.4	0	0.007	0.015	≤ 0.2	250	400

[a] According to limit point setting.
[b] All measuring cells are vacuum proof.
[c] MSP = measuring span.

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Absolute pressure

Measuring range	**Linearity**[a]	**TK offset uncompensated**			**Long-term stability-Long-term stability**	**Overload capability**[b]	**Burst pressure**
		Min.	Typ.	Max.			
bar	% MSP[c]	% MSP	% MSP	% MSP	% MSP per year	bar	bar
0 to 0.35	0.4	0	0.125	0.25	≤ 0.2	1	10
0 to 1	0.4	0	0.080	0.160	≤ 0.2	3	20
0 to 2.5	0.4	0	0.045	0.090	≤ 0.2	8	40
0 to 5	0.4	0	0.035	0.070	≤ 0.2	15	50
0 to 10	0.4	0	0.0275	0.055	≤ 0.2	30	60
0 to 30	0.4	0	0.015	0.030	≤ 0.2	90	200
0 to 100	0.4	0	0.007	0.015	≤ 0.2	250	400

[a] According to limit point setting.

[b] All measuring cells are vacuum proof.

[c] MSP = measuring span.

Outputs

Analog outputs

Values with a power supply of 5 V

	Min.	Typ.	Max.
Offset	-25 mV	0 mV	+25 mV
at 100 mbar	-35 mV	0 mV	+35 mV
Measuring span	50 mV	100 mV	150 mV
at 100 mbar	20 mV	60 mV	130 mV
at 350 mbar	30 mV	100 mV	170 mV
at 100 bar	190 mV	250 mV	310 mV

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Environmental influences

Admissible operating temperature[a]	-40 to +125 °C
at 100 mbar	-10 to +100 °C
Admissible humidity during storage	< 90% relative humidity, without condensation formation
Vibration resistance	DIN EN 60068-2-6 20 g at 5 to 2000 Hz
Shock resistance	DIN EN 60068-2-27 75 g for 11 ms, 100 g for 1 ms
Insulation voltage	DC 500 V
Insulation resistance	>200 MΩ at DC 50 V

[a] Process temperature, ambient temperature, storage temperature.

Mechanical features

Sensor

Measuring principle	Piezoresistive (absolute pressure sensor, relative pressure sensor)
Admissible load changes	> 10 million

Materials

Parts in contact with the medium[a]	
Membranes	AISI 316 L
Welding ring	AISI 316 L
Process connection (optional)	AISI 316 Ti
Filling oil	Silicon oil (FDA compliant)

[a] Observe the resistance of the parts in contact with the medium.

Placing onto market

The component does not meet the requirements of "equipment with safety function" according to Pressure Equipment Directive 2014/68/EU.

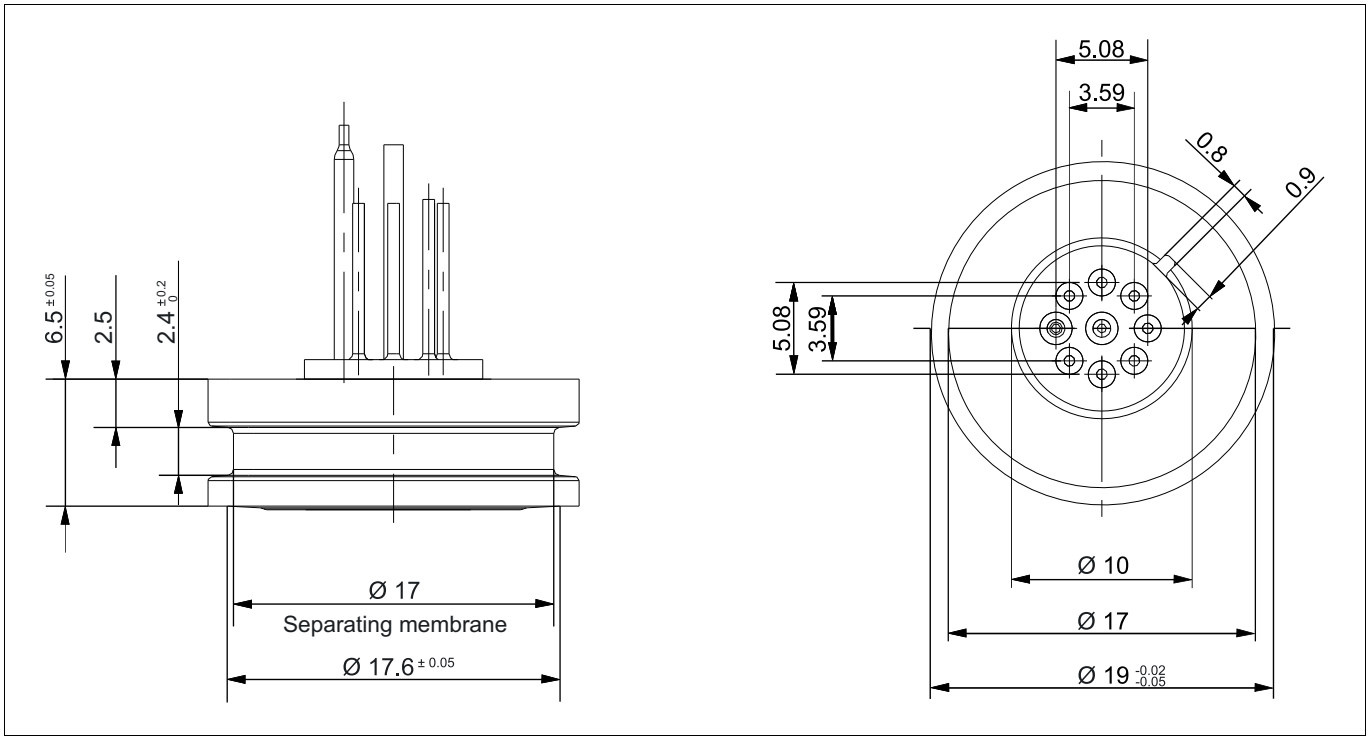
The pressure measuring cell is a component and not an end device and is therefore not subject to application-specific EMC requirements.

When placing the resulting end product on the market in the European Economic Area (EEA), testing in accordance with the relevant standards, issuing a declaration of conformity, and affixing the CE marking must be carried out under the company's own responsibility.

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Dimensions

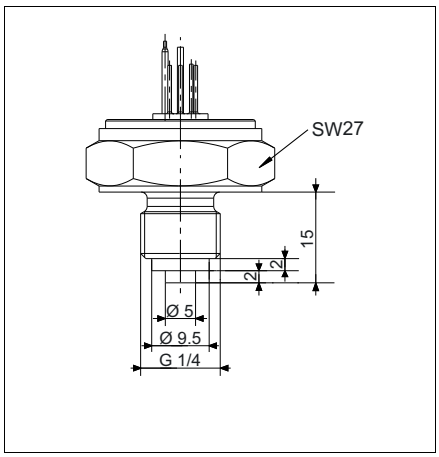
Pressure measuring cell



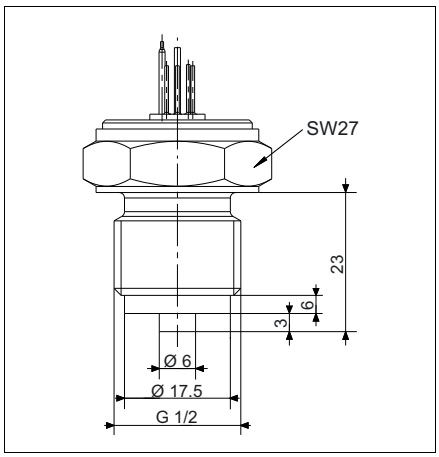
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Process connections

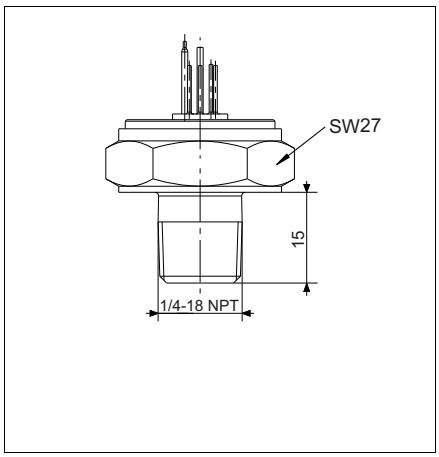
G 1/4 according to DIN EN 837



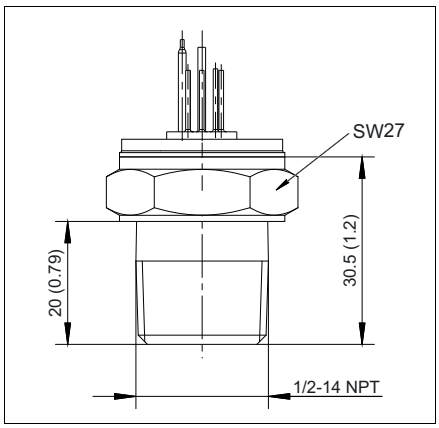
G 1/2 according to DIN EN 837



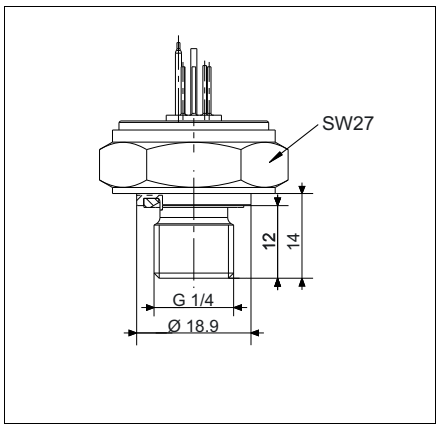
1/4-18 NPT DIN EN 837



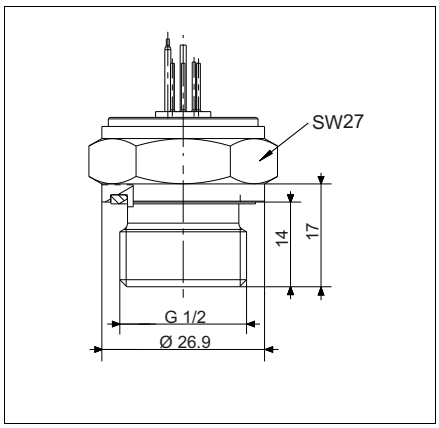
1/2-14 NPT DIN EN 837



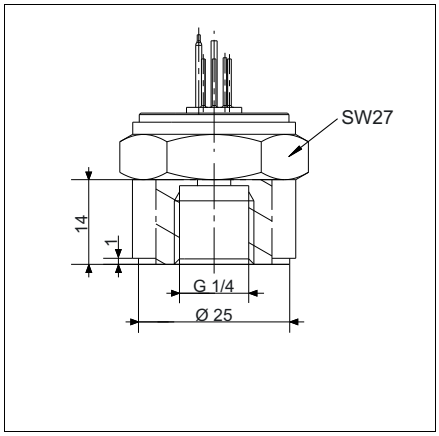
G 1/4 according to DIN EN 3852-11



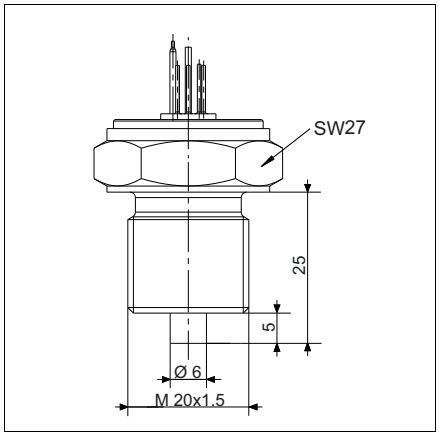
G 1/2 according to DIN EN 3852-11



G 1/4 internal according to DIN EN ISO 228



M20 x 1.5 with pin

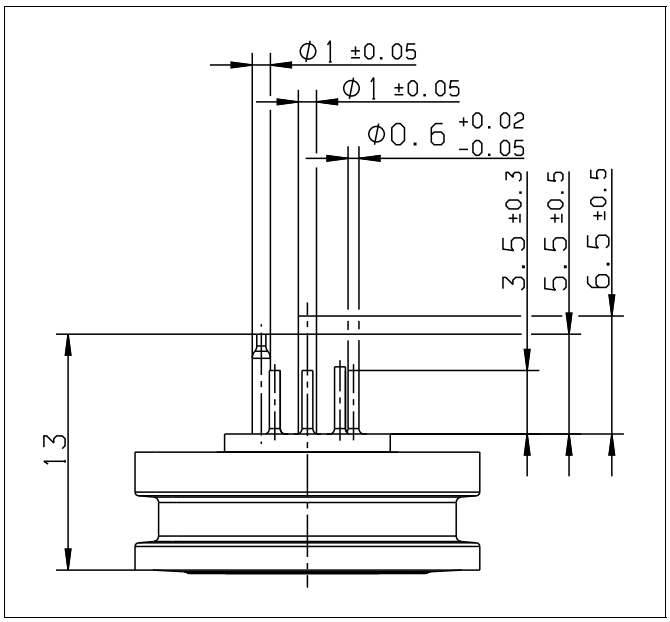


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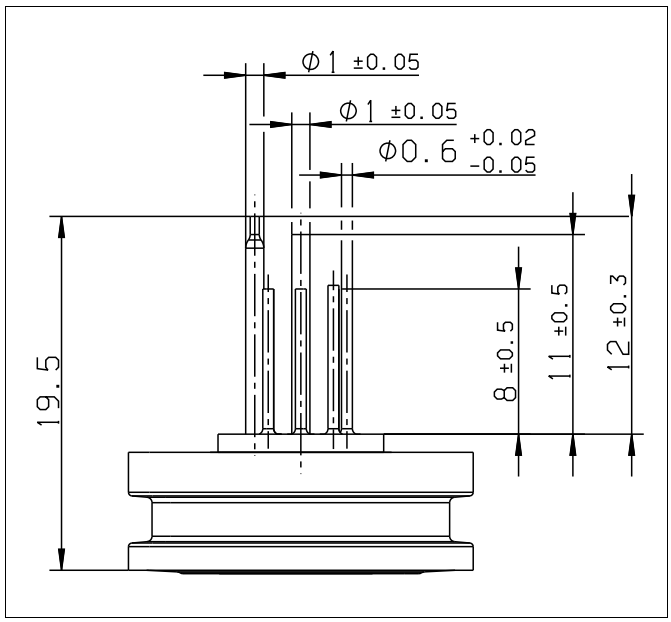
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Connection elements

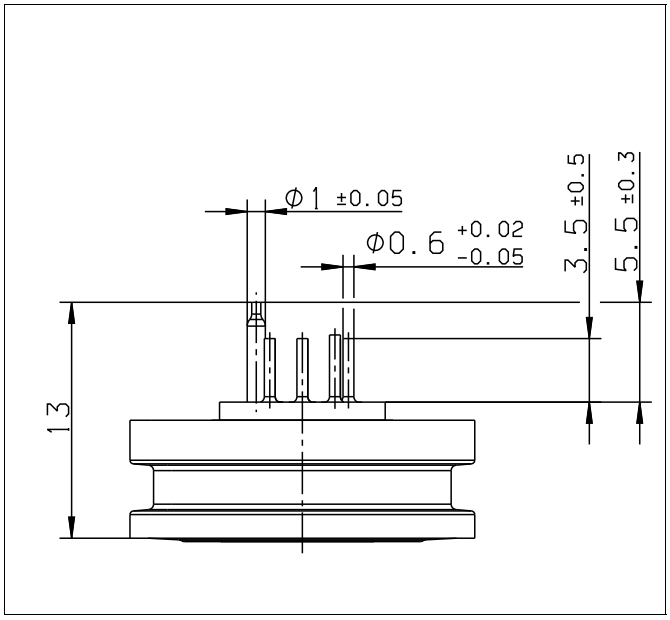
Relative pressure – short pin



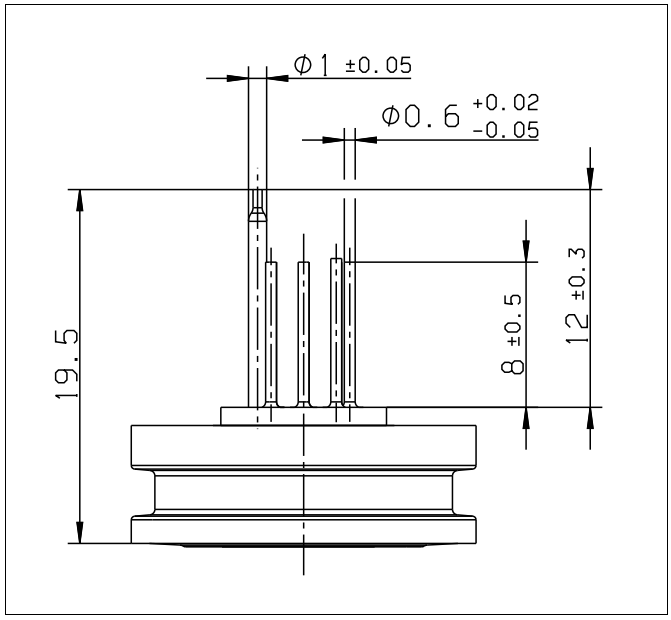
Relative pressure – long pin



Absolute pressure – short pin



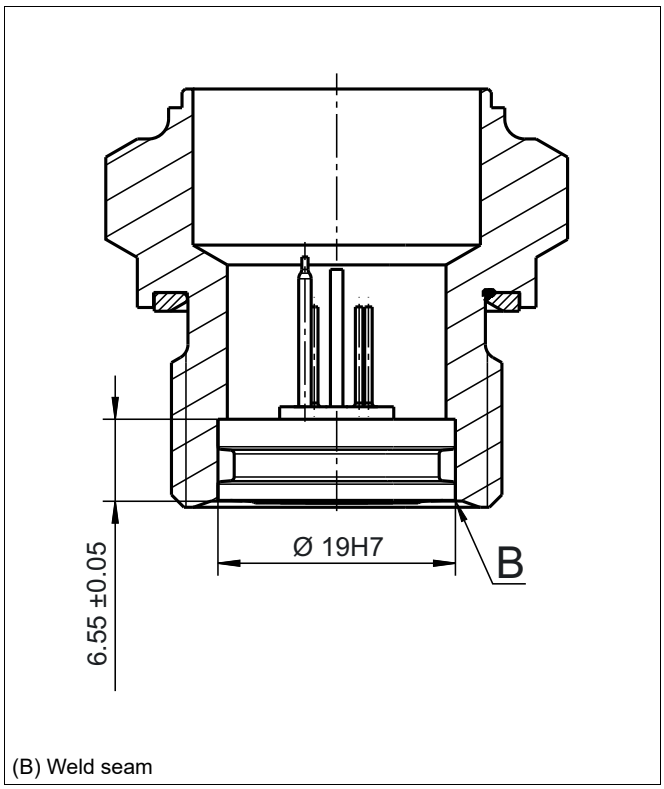
Absolute pressure – long pin



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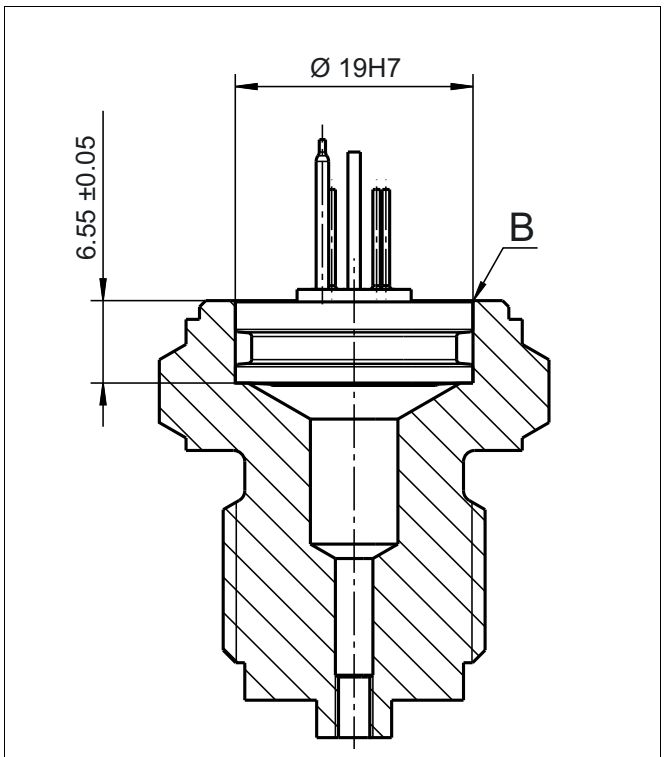
Installation examples

Front-flush



(B) Weld seam

Not front-flush



(B) Weld seam

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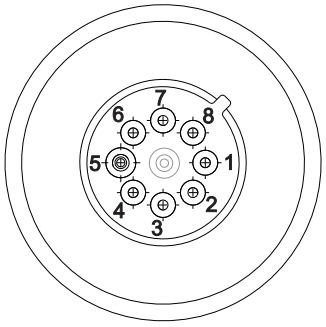
Connection elements

The connection elements in the data sheet provide information on product selection.

Terminal assignment

Pin

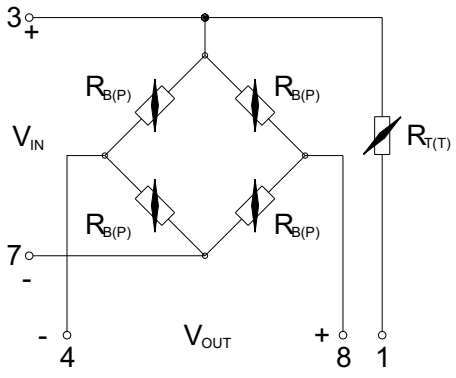
Designation	Description	Assignment
Analog output	-PTC	1
	nc	2
	+PTC/+V	3
	-S	4
	Filling tube	5
	nc	6
	-V	7
	+S	8



Pressure measuring cell (top view)

Connection examples

Connection diagram



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Order details

	(1)	**Basic type**
405115		JUMO CEROS S15 B – Analog pressure measuring cell
	(2)	**Basic type extension**
000		None
999		Special version
	(3)	**Input**
414		0 to 100 mbar relative pressure
433		0 bar to 0.35 bar relative pressure
454		0 bar to 1 bar relative pressure
456		0 bar to 2.5 bar relative pressure
431		0 bar to 5 bar relative pressure
459		0 bar to 10 bar relative pressure
432		0 bar to 30 bar relative pressure
464		0 bar to 100 bar relative pressure
502		0 to 0.35 bar absolute pressure
488		0 to 1 bar absolute pressure
490		0 to 2.5 bar absolute pressure
500		0 to 5 bar absolute pressure
493		0 to 10 bar absolute pressure
503		0 to 30 bar absolute pressure
507		0 to 100 bar absolute pressure
	(4)	**Measuring cell**
210		Measuring cell for welding in
211		Measuring cell with O-ring, EPDM
212		Measuring cell with O-ring, FPM
213		Measuring cell with O-ring, VMQ
	(5)	**Process connection**
000		No process connection
502		G 1/4 according to DIN EN 837
504		G 1/2 according to DIN EN 837
511		1/4-18 NPT DIN EN 837
512		1/2-14 NPT DIN EN 837
521		G 1/4 according to DIN EN 3852-11
523		G 1/2 according to DIN EN 3852-11
567		G 1/4 internal according to DIN EN ISO 228
583		M20 x 1.5 with pin
	(6)	**Electrical connection**
48		Short pin (3.5 mm)
49		Long pin (8 mm)

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	(7)	Extra codes
000		Without extra code
374		Inspection certificate 3.1 DIN EN 10204 material
624		Oil and grease free
870		Inspection certificate 3.1 DIN EN 10204 surface roughness

	(1)		(2)		(3)		(4)		(5)		(6)		(7)
Order code		/		-		-		-		-		/	
Order example	405115	/	000	-	454	-	210	-	502	-	49	/	000

Further information and downloads

qr-405115-en.jumo.info