

Flush-mounted pressure transmitters - ceramics-based - Type TCS... -



FEATURES

- HIGH OVERLOAD SAFETY FOR FLUSH MOUNTED APPLICATIONS WITH O-RING SEAL
- MEASURING RANGES FROM 0...2 BAR TO 0...400 BAR FOR RELATIVE AND ABSOLUTE PRESSURE IN STANDARD DESIGN
- HIGH-TEMPERATURE SAFE UP TO 200°C CONTINUOUS LOAD
- SHOCK- AND VIBRATION-RESISTANT
- DIFFERENT PROCESS CONNECTION ADAPTORS

DESCRIPTION

The ceramic-sensor-based, flush-mounted pressure transmitters with metal membrane – **Type TCS** – for relative and absolute pressure with various sensor elements are available with manometer connection or flush-mounted membrane. This connecting concept allows highly overload-resistant pressure measurements and provides high operating safety for industrial process pressure and level measurements.

The devices are cast into stainless steel standard housings and are available according to protection types from IP65 onwards. High-temperature versions for continuous operation at up to 200 °C are available. Vacuum-resistance guaranteed. Installation into pipes with small nominal diameters is easily possible, due to the compact design. Appropriate welding sockets and process adaptors can be ordered.

The two process connection variants are G ½ or M22x1.5 with a threaded connection. In addition to the standard housing, a field housing design can be selected (see separate data sheet TCF...).

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TECHNICAL DATA

General information								
Applications	Absolute and relative pressure measurement in gases, vapours and liquids							
Measuring principle	The process pressure acts on the metallic separation membrane of the sensor and is transmitted to the resistance bridge via the filling liquid. The change in output voltage proportion to the pressure is measured.							
Input								
Measuring ranges (depending on type of device)	Relative pressure				Absolute pressure			
	relative	ÜSI	relative	ÜSI	absolute	ÜSI	absolute	ÜSI
Nominal measuring ranges (bar)	2 bar	5	100 bar	250	2 bar	5	200 bar	500
ÜSI = Overload protection (bar)	2.5 bar	8	200 bar	500	5 bar	12	400 bar	600
	5 bar	12	400 bar	600	10 bar	25		
	10 bar	25			20 bar	50		
	20 bar	50			50 bar	120		
	50 bar	120			100 bar	250		
Adjustable ranges	Measuring span $\pm 20\%$ Zero point $\pm 20\%$							
Output								
Output signal	4...20 mA, 2-wire circuit							
Working resistance	$R_b (2\text{-wire}) \leq \frac{U_s - 13 \text{ V}}{0.02 \text{ A}}$				Us = supply voltage Rb = working resistance			
Breakdown signal	typical 34 mA, max. 40 mA							
Measuring accuracy								
Reference conditions	According to EN 60751, Ta = 20°C							
Linearity	$\leq \pm 0.4\%$ of the set measuring range, limit point method according to DIN IEC 770							
Warm-up time	1 s							
Rise time	$\leq 10 \text{ ms}$ (without attenuation)							
Long-term drift	$\leq 0.4\%$ relative to the initial measuring range							
Temperature coefficient	$\pm 0.4\%$ FS / 10 K for zero point, compensation range 0...70°C $\pm 0.2\%$ FS / 10 K for measuring range							
Effect of vibration	1.5 mm (10...55 Hz)							
Installation position	Vertical (above 4 bar no restrictions)							
Conditions for use								
Medium temperature	-40°C... + 125°C, 140°C max. for 1 h (type HT for temperatures up to 200°C)							
Environmental temperature	-40°C... + 85°C							
Storage temperature	-40°C... + 85°C							
Protective type acc. to EN 60529	- IP 65 (with plug connection acc. to EN 175301-803) - IP 67 (with permanently attached reference cable or M12x1 plug)							
Electromagnetic compatibility	EMC directives according to EN 50081-2 / 50082-2 are fulfilled, CE-sign							
Design configuration								
Type	VA rod housing and process connections, flush-mounted							
Material	- Standard housing made of 1.4301 - Process connections made of 1.4404							
Electrical connection	- Standard: Plug connection acc. to EN 175301-803 - optional: Permanently connected reference cable, length 1 m - optional: Round plug M12 x 1							
Process connections	See dimensional drawing and order information							
Filling liquid	Silicon oil (suitable for food products, FDA), white oil (FDA)							
Auxiliary energy								
Supply voltage	13...30 DC, max. permissible residual ripple 1 V _{ss}							
Supply voltage effect	$\leq \pm 0.03\%$							

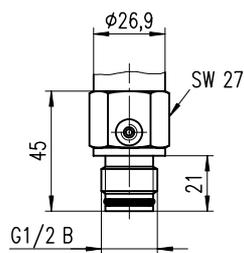
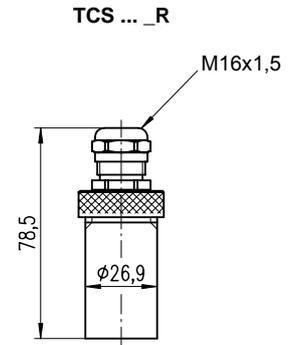
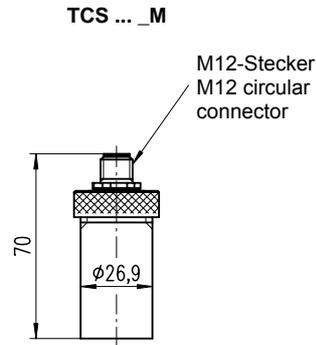
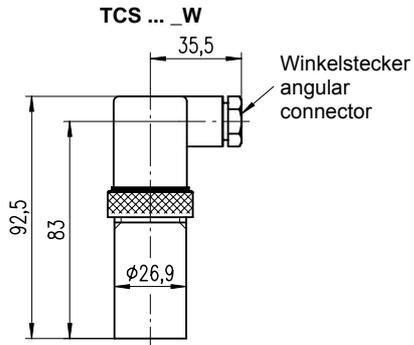
ELECTRICAL CONNECTION

Electrical Connection	Plug according EN 175301-803, 4... 20 mA (2-wire)	Reference cable, permanently connected	M12-round plug 4... 20 mA (2-wire)
GND	4	white	4
+ supply	1	red	1
- supply	2	black	3

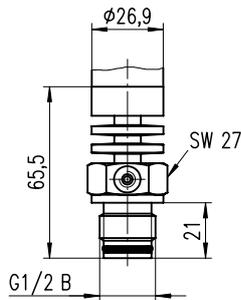
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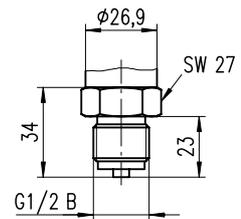
DIMENSIONAL DRAWINGS



G1/2B frontbündig (G6)
G1/2B flush mounted (G6)
M22x1,5 frontbündig (M8)
M22x1,5 flush mounted (M8)

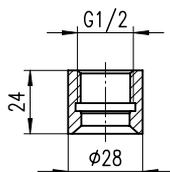


G1/2B frontbündig/HT (G7)
G1/2B flush mounted/HT (G7)
M22x1,5 frontbündig/HT (M9)
M22x1,5 flush mounted/HT (M9)

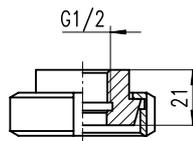


G1/2B EN 837 (G2)

Zubehör / accessories



Einschweißmuffe G1/2 (ZTE)
welding socket G1/2 (ZTE)



Kegelstutzen DIN 11851 DN25 (ZTM)
conical nozzle DIN 11851 DN25 (ZTM)

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ORDER INFORMATION

Electronics / output

2L 4-20 mA, 2-wire technology

Process connection

(material 1.4404, 316 L)

D1	Mounted on the diaphragm seal pressure transmitter MDM... (design type/specification see pressure transmitter product group)
D2	Mounted on the diaphragm seal pressure transmitter MDM... with KEL cooling element for the high-temperature version (design type/specification see pressure transmitter product group)
G2	Threaded connection EN 837, G½ B, internal sensor
G6	Threaded connection ISO 228 G1½ B, flush-mounted, with O-ring
G7	Male thread socket ISO 228 G½ B, flush-mounted, high-temperature version up to 200°C, with O-ring
M8	Threaded connection M 22 x 1.5, flush-mounted with O-ring
M9	Male thread socket M 22 x 1.5, flush-mounted, high-temperature version up to 200°C, with O-ring
R1	Mounted on pipe pressure transmitter RDM...
R2	Mounted on pipe pressure transmitter RDM... with KEL cooling element for the high-temperature version (for design type/specification, see pressure transmitter product group)
S9	Other process connection

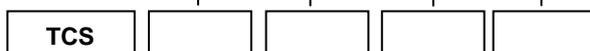
Pressure type/measuring range

(R = relative pressure resp. A = absolute pressure)
- all vacuum ranges also possible -

2	bar R	max. overload	5 bar
5	bar R	max. overload	12 bar
10	bar R	max. overload	25 bar
20	bar R	max. overload	50 bar
50	bar R	max. overload	120 bar
100	bar R	max. overload	250 bar
200	bar R	max. overload	500 bar
2	bar A	max. overload	5 bar
5	bar A	max. overload	12 bar
10	bar A	max. overload	25 bar
20	bar A	max. overload	50 bar
50	bar A	max. overload	120 bar
100	bar A	max. overload	250 bar
200	bar A	max. overload	500 bar
CC	Set measuring range (please specify in bar when it deviates from the nominal measuring range)		

Electrical connection

M	Round plug M 12 x 1
W	Right-angle plug connection acc.to EN 175301-803 (standard)
R	- reference cable, 1 m, fixed connection to M 16 x 1.5 - other lengths to be specified in plain text (max. 80 m)



Accessories / installation parts for TCS

(please order separately)

Welding socket for threaded connections ISO 228 G½ B, flush-mounted, 1.4404 (316 L)	ZTE
Connection adaptor DIN 11851, DN 25, 1,4404 (316 L), tapered connection with groove nut	ZTM
EPDM O-ring for threaded connection ISO 228 G½ B, flush-mounted	ZTO
Viton O-ring for threaded connection ISO 228 G½ B, flush-mounted	ZTV
EPDM O-ring for threaded connection M 22 x 1.5, flush-mounted	ZTX
Viton O-ring for threaded connection M 22 x 1.5, flush-mounted	ZTW

Our equipment is currently being developed, therefore we reserve the right to make amendments.

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