

Front-flush pressure transmitter TST-CIT-F

Installation manual



The pressure transmitters of the front-flush TST-CIT-F family are designed to sense pressure in facilities with gaseous or liquid media.

Conditions governing the use of the product

General directions – to be complied with at all times – for correct and safe use of the electronic pressure transmitter:

- Please keep within the limit values given in the specification for such items as pressure, force, torque and temperature.
- Give due consideration to the prevailing ambient conditions (temperature, atmospheric humidity, atmospheric pressure, etc.)
- Observe the applicable safety regulations laid down by the regulatory bodies in the country of use.
- Use the product only in its original conditions. Do not carry out any unauthorized modifications.
- Remove all items providing protection in transit such as foils, caps or cartons

Operating conditions

- Type testing does not apply to all ambient conditions without limitations. The user is responsible for verifying that the plug-and-socket connection complies with the specified rules and regulations, or whether it may be used for specialized purposes other than those intended by use.
- The values given in the technical data for overpressure safety relate to the hydraulic or pneumatic part of the pressure transmitter.

Mounting

Mechanical / pneumatic / hydraulic

- Screw the electronic pressure transmitter into the pressure connection provided using an open-jaw spanner of 27 AF size (as per DIN 894 or similar), with a tightening torque of approx. 25 Nm.
- To seal the system, use a standard copper seal with the appropriate dimensions.



The Flush diaphragm is very sensitive and must be protected against damage. Therefore the transport and protective cap must be removed just prior to installation!

Electrical

- All wiring should conform to local codes and must be carried out by authorised personal only. Keep high and low voltage wiring separated. For applications in critical industrial environment use special cables.
- Observe without fail the connecting information – labeled on the transmitter or laid down in the operating instructions – while connecting the pressure transmitter.
- Ensure that the cables routed without crushing.

Technische Änderungen vorbehalten / subject to change without prior notice

Commissioning



To obtain optimum measurement results, after the proper installation of the TST-CIT-F pressure transmitter, a zero-adjustment must be performed. The zero-adjustment compensates measurement errors, which are caused by the specific installation position.

Zero-point adjustment is carried out in unpressurized state. A permanent magnet (e.g. a pin board magnet) is necessary for the adjustment. First the TST-CIT-F sensor has to be electrically connected.

After a warm-up time of at least 10 minutes the TST-CIT-F will be briefly separated from supply voltage.

In a period of 1/2 up to 2 1/2 minutes, after restoring the supply voltage, hold a permanent magnet at the position marked on the pressure transmitter by the TIVAL logo on the type plate.

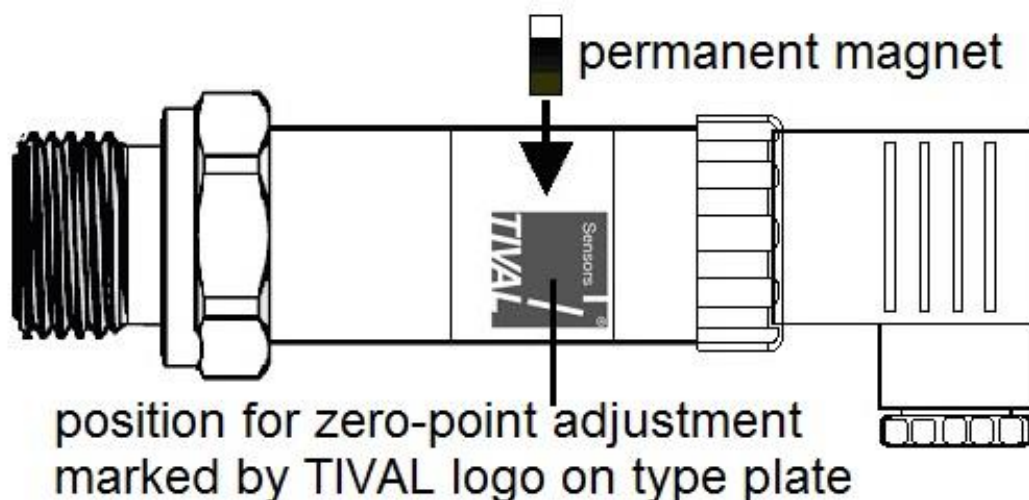
Now the optimum zero-point for the specific installation position is set and stored in the sensor.

This setting will remain even after separation from the operating voltage. A magnetic field applied outside of this time period has no effect on the setting. The power must be switched off and on before the zero point can be set again.

Easy zero-point adjustment with a magnet within $\pm 10\%$ of the nominal range

To correct the zero point: In a period of 1/2 up to 2 1/2 minutes after the power has been switched on hold a permanent magnet (e.g. a pin board magnet) at the position marked on the pressure transmitter by the TIVAL logo on the type plate.

The pressure applied to the transmitter during the zero-point adjustment should be lower than 12% of measuring range (FS). The applied pressure at this moment is set and stored as new zero-point.



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Standard pressure ranges								
Measuring range	P (bar)	0,1	0,25	0,4	0,6	1,0	1,6	2,5
Overpressure	P (bar)	0,2	0,50	0,8	1,2	1,5	1,9	3,0
Bursting pressure	P (bar)	0,3	0,75	1,2	1,6	2,0	2,4	4,5
Measuring range	P (bar)	4,0	6,0	10	16	25	40	60
Overpressure	P (bar)	5,0	7,5	12	19	30	48	70
Bursting pressure	P (bar)	7,0	9,0	15	24	40	60	80

Technical data		Type: TST-CIT-F	
Electrical parameters			
		TST-CIT-F 10...	TST-CIT-F 20...
Output signal*		4 ... 20 mA (2-wire)	0 ... 10 V DC (3-wire)
Operating voltage U_B		10 ... 32 V DC	12 ... 32 V DC
Permitted max. load R_A		$R_A \leq (U_B - 10 \text{ V}) / 20 \text{ mA}$	
Recommended max. load resistor R_L			> 10 k Ω
Response time (10 ... 90 %)		$\leq 10 \text{ ms}$	$\leq 10 \text{ ms}$
Accuracy specifications			
BFSL (Best Fit Straight Line)		$\leq \pm 0,2 \%$ of range	
Total error at RT		$\leq \pm 0,50 \%$ of range – including nonlinearity, hysteresis, zero point and full scale error (according to IEC 61298-2). Optional total error $\leq \pm 0,25 \%$ of range available.	
Stability/ year		$\leq \pm 0,2 \%$ of range	
Temperature ranges			
Media temperature		-30 ... +100 °C	
Ambient temperature		-25 ... +100 °C	
Storage temperature		-30 ... +100 °C	
Temperature coefficient zero point		$\leq \pm 0,20 / 10\text{K} \%$ of range	
Temperature coefficient range		$\leq \pm 0,20 / 10\text{K} \%$ of range	
Total error		$\leq 0,5 \%$ FS	
Mechanical parameters			
Material of parts with contact to measuring medium		Stainless steel 1.4404 (316L), Gasket ring FKM	
Housing		Stainless steel 1.4301 (304)	
Internal transmission fluid		Synthetic oil, FDA panel on request	
Process connection		G 1/2" B front flush, stainless steel 1.4404 (316L), upon request G 3/4" B front flush, stainless steel 1.4404 (316L)	
Gasket ring		FKM	
Electrical connection		MVS/A connector DIN EN 175301-803A IP 65 ,Connector M12x1 (S 763-4) IP 67, Cable outlet	
Weight		~ 240 g according to layout	
CE conformity		EG- directive 2004/108/EG	
IP protection class		Corresponding to the used and connected mating connector	

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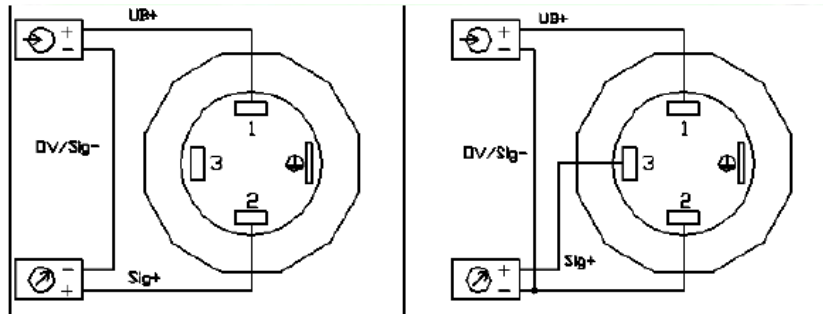
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Connector variants:

TST-CIT-F 10.0 (4...20 mA)

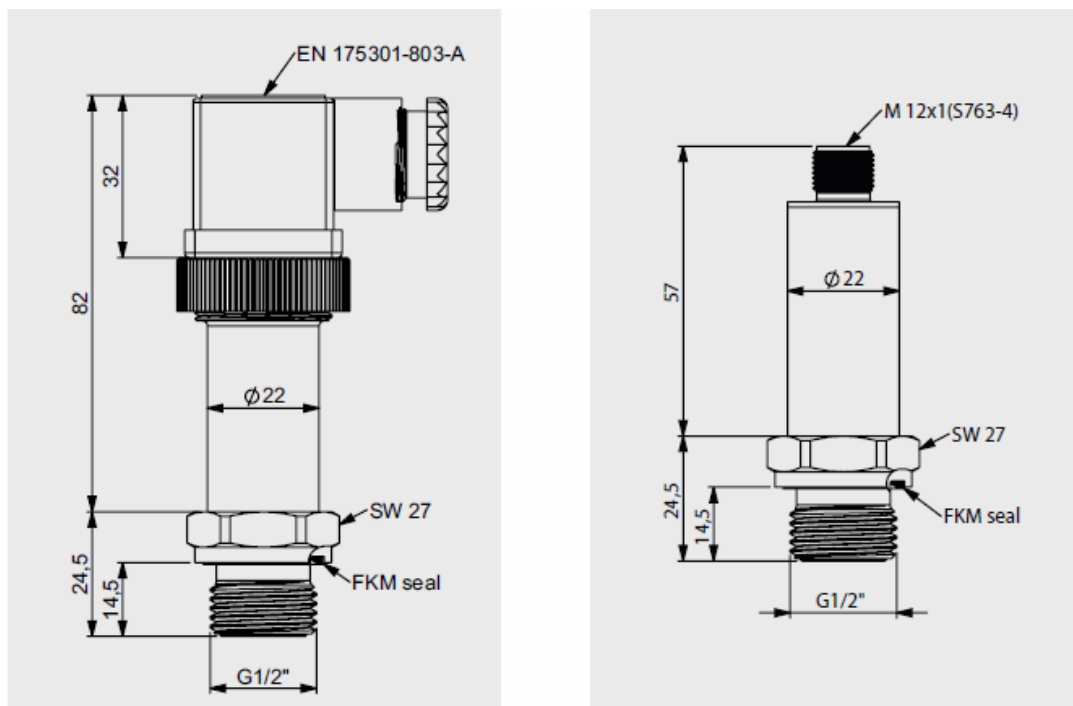
TST-CIT-F 20.0 (0...10 V)



Other PIN assignments, e. g. 1+, 2- also possible - please always see type plate!

Cable outlet : 2 wire: red +, black -, 3 wire: red +, black -, white out,

Dimensional drawing



Service

The TST-CIT-F pressure sensors are maintenance-free. A zero adjustment or parameter setting is always possible and might be required.

Notes

This installation manual was compiled with great care. However, it was not possible to account for all possible applications. So if you miss regarding a specific task, so please contact us.

Safety notice

Please note necessarily that all appropriate national safety regulations (for example DIN VDE 0100 part 410) must be observed when installing, commissioning and operating these pressure sensors.

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