

Level pressure sensing transmitter type 681

Pressure range
0 ... 0.1 – 25 bar



The pressure transmitters of type 681 with piezoresistive measuring elements have compensated, calibrated and amplified sensor signals which are available as standard voltage or current outputs.

In the immersion-sensor version with a salt water and oil-resistant connection cable they are specially suited for level measurement, even in the presence of corrosive liquids.

The cable incorporates a tube for compensation of the ambient pressure.

Manufactured from stainless steel, its welded construction provides a watertight seal.

- Mechanically protected diaphragm due to special head design
- Supplementary weight (option) improves stabilization of sensor in turbulent media
- Effective overload protection due to chemically etched chip diaphragm and specially designed glass gland
- Compact construction using SMD technology, enhances operational reliability in the presence of shock and vibration
- Welded construction provides 100% sealing against media

Technical overview

Pressure ranges ¹⁾

Relative	0 ... 25 bar
Absolute	optional available

Overload

3x pressure range, min. 3 bar

Rupture pressure

> 200 bar

Medium

Permissible medium according order code selection table (other medium on request)

Material

Diaphragm, case	Stainless steel 1.4435 (316L)
Sealing material	Titanium
Cable	FPM (other at request) PUR, PE oder teflon

Temperature ²⁾

Medium temperature	-5 ... +80 °C
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Output and power supply ^{3) 4)}

	output	power supply	permissible load ⁵⁾
3 wire	0 ... 5 V	12 ... 30 VDC	> 10 kOhm
	0 ... 10 V	12 ... 30 VDC	> 10 kOhm
2 wire	4 ... 20 mA	9 ... 33 VDC	supply voltage - 9V 0.02 A [Ohm] max.
2 wire (Ex)	4 ... 20 mA	9 ... 28 VDC	supply voltage - 9V 0.02 A [Ohm] max.

Ex-version

Ex-Admission	gas	dust
Standards	II 1G Ex ia IIB/IIC T3 ... T6 EN 60079-0 / EN 60079-11	II 1D Ex iaD 20 IP6x T145 ... T70 °C EN 61241-0 / EN 61241-11

Temperature class Ex-version

Medium temperature	T6 -5 ... +50 °C	T4 -5 ... +80 °C
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Electrical connection

Cable	PUR, PE or teflon (In variable lengths)
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Tests / Admissions	norm	character	level
Mechanical load	EN 60068-2-6	vibration	10 g (4 ... 2000 Hz, oscillation ± 10 mmpp)
	EN 60068-2-27	shock	100 g (pulse duration 6 ms)
Interference emit	EN 55022	emitted interference, class B	< 30 dBµV/m (0.03 ... 1 GHz)
	EN 61000-4-2	discharge static electricity	8 kV contact-, 15 kV air discharge
	EN 61000-4-3	electromagnetic radiation	10 V/m, 0.08 ... 2.7 GHz, 80% AM 1 kHz, 3 s
	EN 61000-4-4	fast transients (burst)	4 kV
Interference resistance	EN 61000-4-5	impulse voltage (surge)	Line-Line 0.5 kV/42 Ohm, Line-Earth 1 kV/42 Ohm
	EN 61000-4-6	grid-bound electromagnetic blockage	10 V, 0.15 ... 80 MHz, 80% AM 1 kHz, 3 s

Packaging

Single packaging	carton padded cellular material
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Weight

Without supplementary weight (without cable)	~ 145 g
With supplementary weight (without cable)	~ 405 g
Cable	~ 50 g/m

Accuracy

	total error band ^(*) [±%fs] per pressure ranges [bar]		
	0.1 ... 0.5	> 0.5 ... 2	> 2 ... 25
Characteristic line deviation [±%fs] 0.25 oder 0.1 (typ. / max.) -5 ... +50 °C	1.0 / 1.5	0.7 / 1.0	0.7 / 1.0
(typ. / max.) -5 ... +80 °C	2.0 / 2.5	1.0 / 1.5	1.0 / 1.5
Characteristic line deviation [±%fs] 0.05 (typ. / max.) -5 ... +50 °C	–	0.3 / 0.5	0.3 / 0.5
(typ. / max.) -5 ... +80 °C	–	0.75 / 1.0	0.75 / 1.0

^(*) total error band incl. characteristics line deviation, temperature error zero point and operating range, hysteresis and repeatability at max. signal range.

¹⁾ See order code selection table. Other on request.

²⁾ Compensated temperature range see order code selection table

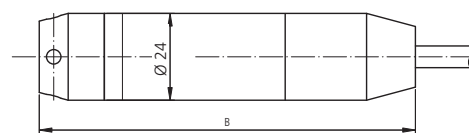
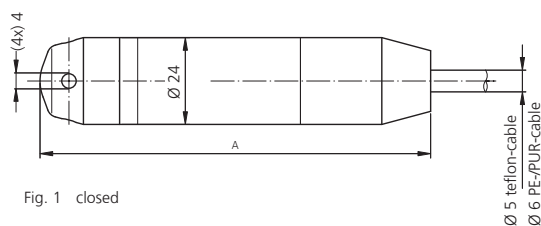
³⁾ Short circuit proof with polarity reversal protection

⁴⁾ Influence from the supply voltage types < 0.05% fs

⁵⁾ Influence permissible load < 0.05% fs

Order code selection table					1	2	3	4	5	6	7	8	9	10
					681.	X	X	X	X	X	X	X	X	X
Medium ¹⁾	Fig. 1, 2, 3, 4	Diesel oil / fuel oil / kerosene	Cable	Case	0									
	Fig. 1, 2	Salt water / brackish water	PUR	Titan	1									
	Fig. 1, 2, 3, 4	Drinking water, potable	PE	stainless steel	2									
	Fig. 1, 2, 3, 4	Lake water / river water	PUR	stainless steel	3									
	Fig. 1, 2, 3, 4	Benzene	teflon	stainless steel	4									
Pressure range ²⁾	Fig. 1, 2	Chlorinated water	PUR	Titan	5									
	0 ... 100 mbar					0	0							
	0 ... 160 mbar					0	1							
	0 ... 250 mbar					0	2							
	0 ... 400 mbar					0	3							
	0 ... 600 mbar					0	4							
	0 ... 1 bar					0	5							
	0 ... 1.6 bar					0	6							
	0 ... 2.5 bar					0	7							
	0 ... 4 bar					0	8							
	0 ... 6 bar					0	9							
	0 ... 10 bar					1	0							
	0 ... 16 bar					1	1							
	0 ... 25 bar					1	2							
Output / power supply	0 ... 5 V	12 ... 30 VDC						0						
	0 ... 10 V	12 ... 30 VDC						1						
	4 ... 20 mA	9 ... 33 VDC						3						
	4 ... 20 mA	9 ... 28 VDC	overvoltage protection ³⁾					4						
Characteristic line deviation	$\leq \pm 0.25\%$ fs								1					
	$\leq \pm 0.10\%$ fs								2					
	$\leq \pm 0.05\%$ fs (≥ 0.5 ... 25 bar)						3,4	3						
Temperature range ⁴⁾	-5 ... +50 °C compensated, medium temperature permissible: -5 ... +50 °C								0					
	-5 ... +80 °C compensated, medium temperature permissible: -5 ... +80 °C				0,2,4				1					
	Ex T6 (Ta: -5 ... +50 °C) -5 ... +50 °C compensated (medium temperature permissible: -5 ... +50 °C)								2					
	Ex T4 (Ta: -5 ... +80 °C) -5 ... +80 °C compensated (medium temperature permissible: -5 ... +80 °C)				0,2,4				3					
Cable length	Data in meters Example: [2 0]													
Construction	Fig. 1	closed, short case												0
	Fig. 1	closed, with supplementary weight ⁵⁾												1
	Fig. 2	open, short case												2
	Fig. 2	open, with supplementary weight ⁵⁾												3
Version														N

Dimensions in mm / Electrical connections



	A (mm)	B
(mm)		
without supplementary weight	88	84
with supplementary weight	175	171

colour	2-wire	3-wire
white	IN	IN
yellow	OUT	GND
brown		OUT

¹⁾ Other medium on request

²⁾ Other pressure ranges on request

³⁾ II 1G Ex ia IIB/IIC T3...T6 / II 1D Ex iaD 20 IP6x T145...T70 °C

⁴⁾ For medium temperatur > 50 °C, PE or Teflon cable must be used

⁵⁾ Not available with titan case

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