

# 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 <sup>1)</sup>

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 <sup>2)</sup>

Medium temperature -5 ... +80 °C

### Output and power supply <sup>3) 4)</sup>

	output	power supply	permissible load <sup>5)</sup>
3 wire	0 ... 5 V	12 ... 30 VDC	> 10 kOhm
2 wire	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

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

### Temperature class Ex-version

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

### Electrical connection

Cable PUR, PE or teflon (In variable lengths)

### Tests / Admissions

	norm	character	level
Mechanical load	EN 60068-2-6	vibration	10 g (4 ... 2000 Hz, oscillation ± 10 mmpp)
Interference emit	EN 60068-2-27	shock	100 g (pulse duration 6 ms)
Interference resitance	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
	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

### Weight

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

## Accuracy

	total error band <sup>(*)</sup> [±%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

<sup>(\*)</sup> total error band incl. characteristic line deviation, temperature error zero point and operating range, hysteresis and repeatability at max. signal range.

<sup>1)</sup> See order code selection table. Other on request.

<sup>2)</sup> Compensated temperature range see order code selection table

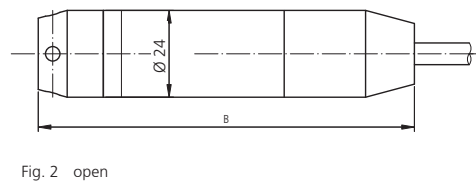
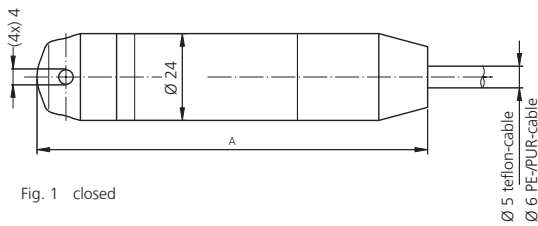
<sup>3)</sup> Short circuit proof with polarity reversal protection

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

<sup>5)</sup> 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 <sup>1)</sup>	Fig. 1, 2, 3, 4	Diesel oil / fuel oil / kerosene	Cable	Case	0									
	Fig. 1, 2	Salt water / brackish water	teflon	stainless steel	1									
	Fig. 1, 2, 3, 4	Drinking water, potable	PUR	Titan	2									
	Fig. 1, 2, 3, 4	Lake water / river water	PE	stainless steel	3									
	Fig. 1, 2, 3, 4	Benzene	PUR	stainless steel	4									
Pressure range <sup>2)</sup>	Fig. 1, 2	Chlorinated water	teflon	stainless steel	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 <sup>3)</sup>				4						
Characteristic line deviation	≤ ±0.25% fs								1					
	≤ ±0.10% fs								2					
	≤ ±0.05% fs (≥ 0.5 ... 25 bar)							3,4	3					
Temperature range <sup>4)</sup>	-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   10 ]												
Construction	Fig. 1	closed, short case												0
	Fig. 1	closed, with supplementary weight <sup>5)</sup>												1
	Fig. 2	open, short case												2
	Fig. 2	open, with supplementary weight <sup>5)</sup>												3
Version														N

## Dimensions in mm / Electrical connections



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

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

<sup>1)</sup> Other medium on request

<sup>2)</sup> Other pressure ranges on request

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

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

<sup>5)</sup> Not available with titan case

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