# **Pressure Transmitters**

## With piezoresistive measuring cell

SIL 2 (Ex)

# PTMEx / PTMExFB PTMExFG/PTMExFBFG

# Ex-protection II 2G EEx ib IIC T6 according to ATEX

#### **Applications**

Pressure transmitters model PTMEx are suitable for liquid and gaseous media, that do not corrode 1.4404 (316 stainless steel). When connecting, the instruments feature an own intrinsically safe certificated circuitry, type of protection II 2G EEx ib IIC T6 according to ATEX.

Two basic models are available:

0-1 bar to 0-160 bar Overpressure Model PTMExFB 0-1 bar to 0-400 bar

> both versions also for vacuum- and compound-gauges (with ventilation to atmosphere)

Absolute pressure (a) 0-1 bar to 0-25 bar

(reference point zero absolute)

The pressure transmitters are temperature-compensated and supply a calibrated output signal. The robust construction makes an application under difficult conditions possible, e.g. in shipping.

#### **EMC-Examination**

The pressure transmitters fulfil the stability requirements for the industrial sector and residential areas according to the European Norm and therefore grant an electromagnetic compatibility.

#### Construction

The silicone oil filled piezoresistive sensor is installed in the pressure transmitter element and welded in the pressure connection piece. The elementary sensor is separated from the medium by a thin stainless steel diaphragm.

In pressure ranges 0-25 bar and above a thin film sensor is directly welded to the pressure connecting piece.

#### **Standard Version**

#### **Construction Type**

Installation length: standard

#### **Process Connection**

PTMEx : G 1/2 B (1/2" BSP), 1.4404 (316 stainless steel) PTMExFB: pressure connection with membrane flush welded G ½ B (½" BSP) according to DIN 3852

#### Measuring Cell / Sensor

Measuring cell: 1.4404 [316 stainless steel (piezo)]

1.4542 [630 stainless steel (thin film)]

Diaphragm (placed inside): 1.4404 [316 stainless steel (piezo)]

1.4542 [630 stainless steel (thin film)]

#### Sensor Sealing

(Measuring cell welded)

Stainless steel, case protection type IP 65

Internal space ventilation for pressure ranges < 16 bar by plug screw fitting

#### **Pressure Ranges / Overload**

Pressure range-dependent, typically at least 2-fold, details see pressure range table on reverse side

#### **Output Signal**

4...20 mA, 2-wire technique

#### Measuring Accuracy<sup>1)</sup>

 $\leq$  ± 0.2% of full scale value,

pressure ranges ≥ 60 bar ± 0.3% of full scale value

#### **Temperature Ranges**

Storage temperature: -40 ... + 90 °C (-40 ... +194 °F) -25 ... + 70 °C (-13 ... +158 °F) -10 ... + 80 °C ( 14 ... +176 °F) Rated temperature: Medium temperature: -10 ... +140 °C ( 14 ... +284 °F) with temperature decoupler:  $^{1)} \pm 0.3\%$  for pressure ranges > 60 bar



< 0.2 % / 10 K Zero point: Measuring span: < 0.2 % / 10 K

#### **Reference Temperature**

20 °C (68 °F)

### Long-term Stability of Zero Point and Span

Better than ± 0.25 % p.a.

#### **Reverse Voltage Protection**

Available

#### **Electrical Connection**

Angular plug connector according to DIN EN 175301-803, 3-pin + protective contact; for assuring the electromagnetic compatibility (EMC) please use a shielded cable (e.g. LP/LiMYCY), the shield has to be connected to the case.

#### **Electronics**

Silicone-cast

#### Sensor Filling

Silicone-free, synthetic oil

#### Power Supply

6 ... 30 VDC, max. acceptable operating voltage 30 VDC

#### Influence of the Power Supply

≤ 0.1% of full scale value / 10 V

#### **Load Impedance**

2-wire switching

 $R_{Bmax} = (U_B - 6V)/0.02 A$ 

#### Load Impedance Influence

For load impedance changing 500 Ohm < 0.1 % of full scale value

#### Position of Installation

Anx (standard vertical)

#### Ex-Approval

**CENELEC-Approval ATEX** 

Explosion control intrinsically safe TÜV 04 ATEX 2432 X

II 2G EEx ib IIC T6

 $U_{\text{max}} < 30 \text{ VDC}$  $I_{\text{max}} < 150 \text{ mA}$  $P_{max}$  < 1W Li < 33 µH Ci < 49 nF

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### Pressure Ranges / Overloads, Special Versions, Accessories and Ordering Information

Pressure Ranges / Overloads							
Overpressure (r)		Absolute pressure (a)	Overload limits**				
0- 1 bar	-1/0 bar	0- 1 bar abs	3 bar				
0- 1.6 bar	-1/+0.6 bar	0-1.6 bar abs	10 bar				
0- 2.5 bar	-1/+1.5 bar	0-2.5 bar abs	10 bai				
0- 4 bar	-1/+3 bar	0- 4 bar abs	20 bar				
0- 6 bar	-1/+5 bar	0- 6 bar abs					
0- 10 bar	-1/+9 bar	0- 10 bar abs	60 bar				
0- 16 bar	-1/+15 bar	0- 16 bar abs	60 bar				
0- 25 bar		0- 25 bar abs					
0- 40 bar		_	100 bar				
0- 60 bar*		_	250 bar				
0- 100 bar*		_	250 bai				
0- 160 bar*		_					
0- 250 bar*		_	750 bar				
0- 400 bar*		_					

<sup>\*</sup> accuracy ± 0.3% of full scale value

#### **Options**

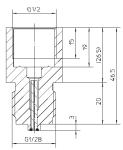
- Version with temperature decoupler for temperatures of -10 °C up to +140 °C, order code letters TE
- Cable connection IP 67, cable ventilation;
  circular plug connector with screw plug M 12, IP 65
- Field housing, order code: ....FG (e.g. PTMExFG, PTMExFBFG), massive version, srewable cover ring with O-ring sealing for externally accesible adjustable potentiometer, screwable cap for connection chamber with O-ring thread protector, connecting terminals 4 mm², screwed cable gland M 16 x 1.5 for cable Ø 4.5-10 mm.
- Other process connections:
- Model PTMEx: ½" NPT according to DIN EN 837-1 upon request
- Connection to Zone 0

using our screw adapter "Adapt-FS" (see top right), connection to Zone 0 by using an accordingly approved diaphragm seal upon request

#### Accessory

Deflagration volume protection "Adapt-FS ("flame penetration protection") Variant 1 according to data sheet I-11001, made of 1.4571 (316 stainless steel) / cannula 1.4301 (304 stainless steel), process connection G  $\frac{1}{2}$  B ( $\frac{1}{2}$  " BSP) according to EN 837-1, with CE-Type Examination Certificate PTB 99 ATEX 4023 X according to standard 94/9/EG, marking of this protection system:

® IIG IIC



#### **Ordering Information**

Basic model: diaphragm placed inside PTMEx

diaphragm flush welded PTMExFB

Case configuration: standard case: **no** additional

code letters;

field housing: FC

Medium-

temperature: standard version no additional (up to 80 °C) code letters;

with temperature decoupler

(up to 140 °C, see left side): **TE** 

Type of protection: ib

Marking with

temperature class: T4, T5 or T6

Pressure type: overpressure

absolute pressure: (a)

Pressure range: see table above, e.g. 0-4 bar

Output signal: standard: 4 ... 20 mA,

optional 0 ... 20 mA

Specifics: e.g. process connection ½" NPT,M 22x1.5

and others, **see left**; special position of installation, other special versions

upon request

#### **Examples:**

#### PTMEx ib T6 (r) -1/+3 bar, 4...20 mA

(that means: PTMEx pressure transmitter with Ex-protection, standard version for max. medium temperature. +80 °C, type of protection ib, temperature class T6, for relative pressure -1/+3 bar, output signal 4 ... 20 mA, pressure connection G ½ B)

#### PTMExFG TE ib T6 (a) 0-6 bar, 0...20 mA

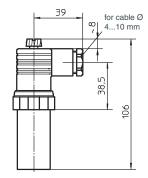
(that means: PTMExFG pressure transmitter with field housing with Ex-protection, with temperature decoupler for max. medium temperature +140 °C, type of protection ib, temperature class T6, for absolute pressure 0-6 bar, output signal 0 ... 20 mA (3-wire technique), pressure connection G 1/2 B)

### PTMExFB ib T5 (r) 0-400 mbar, 4...20 mA, G1B

(that means: PTMExFB pressure transmitter with Ex-protection standard version for max. medium temperature +80 °C, type of protection ib, marking with temperature class T5, for relative pressure 0-400 mbar, output signal 4 ... 20 mA , (2-wire technique), pressure connection G 1 B)

<sup>\*\*</sup> for intermediate pressure ranges upon request

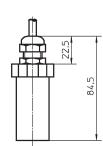
Plug connector DIN EN 175301-803 ventilation by plug screw fitting protection type IP 65



Weight for standard case:

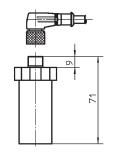
ventilation by cable protection type IP 67

Cable connection



approx. 0.200 kg with temperature decoupler + approx. 0.050 kg

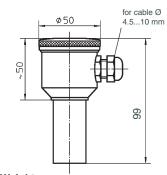
Circular plug connector with screw plug, ventilation by cable protection type IP 65



#### **Field Housing**

code letters FG

Screwed cable gland M 16x1.5 ventilation by sinter filter, IP 65 Option: ventilation by cable, IP 67



Weight

for field housing: approx. 0.460 kg with temperature decoupler + approx. 0.050 kg

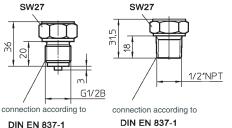
#### **Options**

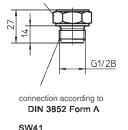


Temperature decoupler for process temperatures up to 140 °C

#### **Process Connections**

#### **PTMEx**



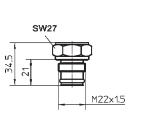


**PTMExFB** 

SW27



SW27 G1/2B with O-Ring NBR



## with O-Ring NBR

# **Connecting Diagram**

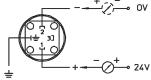
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# **Cable connection**

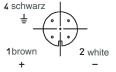
# Circular plug connector

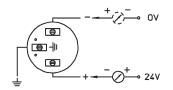
Field housing screwed cable gland M 16x1.5

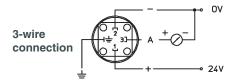




brown + supply white **≟** earth areen supply







brown + supply ≟ earth white green supply black A output

