

# Miniature pressure switch, stainless steel

## For the process industry

### Model PXS

WIKA data sheet PV 34.36



Process Mini Series

#### Applications

- Pressure monitoring and control of processes
- Safety-critical applications in general process instrumentation, especially in the chemical and petrochemical industries, oil and gas industries, power generation incl. nuclear power plants, water/wastewater industries, mining
- For gaseous and liquid, aggressive and highly viscous or contaminated media, also in aggressive ambience
- For measuring points with limited space, e.g. control panels

#### Special features

- No power supply needed for switching of electrical loads
- Robust switch enclosure from stainless steel 316, IP66, NEMA 4X
- Setting ranges from 1 ... 2.5 bar to 200 ... 1,000 bar
- Intrinsic safety Ex ia available
- 1 set point, SPDT or DPDT, high switching power up to AC 250 V, 5 A



Miniature pressure switch model PXS

#### Description

These high-quality pressure switches have been developed especially for safety-critical applications. The high quality of the products and manufacturing in accordance with ISO 9001 ensure reliable monitoring of your plant. In production, the switches are traced by quality assurance software at every step and subsequently are 100 % tested.

In order to ensure as flexible operation as possible, the pressure switches are fitted with micro switches, which enable the switching of an electrical load of up to AC 250 V, 5 A directly.

For lower switching power ratings, such as for PLC applications, argon gas-filled micro switches with gold-plated contacts can be selected as an option.

For two separate circuits the switches are also available in the version DPDT (double pole double throw). By using a Belleville spring the simultaneous triggering of the DPDT occurs at either rising or falling pressure. Moreover the snap-acting behaviour of the Belleville spring increases stability and vibration resistance.

All wetted materials are from stainless steel as a standard. For applications with special requirements on the wetted parts, versions with materials from Hastelloy are available.

## Standard version

### Switch enclosure

Stainless steel 316

Tamper-proof

Laser-engraved product label from stainless steel

### Ingress protection

IP66 per IEC/EN 60529, NEMA 4X

### Permissible temperature

Ambient  $T_{amb}$ : -40 ... +85 °C for non-Ex versions

For Ex versions see the type examination certificate

Medium  $T_M$ : See table on next page.

Depending on sensor element.

### Switch contact

Hermetically sealed micro switches with fixed dead band.

- 1 x SPDT (single pole double throw)
- 1 x DPDT (double pole double throw)

The DPDT function is realised with a Belleville spring triggering 2 SPDT micro switches simultaneously.

Contact version		Electrical rating (resistive load)		Suitable for Ex ia option
		AC	DC	
E	1 x SPDT, silver, hermetically sealed	250 V, 5 A	24 V, 5 A	Yes
J	1 x SPDT, gold-plated, hermetically sealed	250 V, 0.5 A	24 V, 1 A	Yes
L	1 x DPDT, silver, hermetically sealed	250 V, 5 A	24 V, 5 A	Yes
M	1 x DPDT, gold-plated, hermetically sealed	250 V, 0.5 A	24 V, 1 A	Yes

### Set point adjustment

The set point can be specified by the customer or factory-set within the setting range. Subsequent adjustment of the set point on site is made using the adjustment screw, which is covered by the access cover plate with lead seal option.

### Repeatability of the set point

≤ 1 % of end of setting range

### Please specify:

Set point, switching direction for the contact, e.g.:

Set point: 5 bar, rising

After removing the access cover plate, set point adjustment can be made using the adjustment screw.

The set point is selectable within the entire setting range.

For optimal performance we suggest to adjust the set point between 25 ... 75 % of the setting range.

### Example

Setting range: 1 ... 2.5 bar with one switch contact

Dead band: 0.3 bar (see table setting ranges)

Rising pressure: Adjust set point between 1.3 ... 2.5 bar.

Falling pressure: Adjust set point between 1 ... 2.2 bar.

### Ignition protection type (option)

- Ex ia I Ma (mines)
- Ex ia IIC T6/T4 <sup>1)</sup> Ga (gas)
- Ex ia IIIC T85/T135 <sup>1)</sup> Da IP66 (dust)

<sup>1)</sup> The temperature class is related to the ambient temperature range. See the type examination certificate for further details.

### Safety-related maximum values

(only for Ex ia versions)

Maximum values	
Voltage $U_i$	DC 30 V
Current $I_i$	100 mA
Power $P_i$	0.75 W
Internal capacitance $C_i$	0 µF
Internal inductance $L_i$	0 mH

### Process connection (A)

Stainless steel 316L

- ¼ NPT female (standard)
- ½ NPT, G ½ A, G ¼ A male via adapter
- ½ NPT, G ¼ female via adapter
- M20 x 1.5 male via adapter

### Electrical connection

- Connection cable
- Length: 1.5 m
- Wire cross-section: 0.5 mm<sup>2</sup> (20 AWG)
- Insulation material: Silicone

### Threaded connection (B)

- Material: AISI 316
- ½ NPT male (standard)
- M20 x 1.5 male (adapter)
- M20 x 1.5 female (adapter)
- ½ NPT female (adapter)
- ¾ NPT female (adapter)
- Terminal box

### Dielectric strength

Safety class I (IEC 61298-2: 2008)

### Mounting option

- Direct
- Wall bracket from stainless steel
- Option: Mounting bracket for 2" pipe mounting

### Weight

- 0.6 kg (standard)
- 1.1 kg, with terminal box

## Sensor element

Sensor element		Wetted parts	Permissible medium temperature <sup>1)</sup>
M	Welded diaphragm with antagonist spring	Hastelloy® C276	-40 ... +200 °C
G	Piston with antagonist spring and welded diaphragm	Hastelloy® C276	-40 ... +140 °C
P	Piston with antagonist spring <sup>2)</sup>	Stainless steel 316L, O-ring FPM <sup>1)</sup>	0 ... 200 °C

1) Permissible medium temperature range in the main process line. Depending on the measuring arrangement, this may differ from the permissible temperature at the process connection. See operating instructions for details.

2) Particularly suited for liquid media.

## Setting range

Setting range in bar	Sensor element	Setting range depending on the switching direction in bar		Working range in bar	Proof pressure in bar	Max. dead band	
		rising	falling			Start of setting range <sup>3)</sup> in bar	End of setting range <sup>3)</sup> in bar
1 ... 2.5 <sup>4)</sup>	M	1.3 ... 2.5	1 ... 2.2	0 ... 10	16	0.3	0.3
1.6 ... 6	M	2.1 ... 6	1.6 ... 5.8	0 ... 10	16	0.5	0.2
3 ... 10	M	4.5 ... 10	3 ... 9.2	0 ... 10	16	1.5	0.8
6 ... 25 <sup>4)</sup>	M	8 ... 25	6 ... 24.2	0 ... 25	40	2	0.8
14 ... 60	P, G	23 ... 60	14 ... 49	0 ... 500	750	9	11
25 ... 100	P, G	40 ... 100	25 ... 82	0 ... 500	750	15	18
50 ... 160	P, G	65 ... 160	50 ... 142	0 ... 500	750	15	18
70 ... 400	P, G	95 ... 400	70 ... 365	0 ... 500	750	25	35
150 ... 700 <sup>5)</sup>	P	230 ... 700	150 ... 600	0 ... 1,000	1,500	80	100
200 ... 1,000 <sup>5)</sup>	P	300 ... 1,000	200 ... 850	0 ... 1,000	1,500	100	150

3) The dead band depends on the set point adjustment. The indicated values are valid for start and end of the setting range. The dead band of other set points is proportional.

4) With DPDT contact the simultaneous triggering occurs within 1% of the end of setting range

5) Setting range is recommended for hydraulic systems

## Options

- Cleaned for oxygen service
- Drying of wetted parts
- Sensor element piston with O-ring NBR (permissible medium temperature: -10 ... +110 °C)
- Sensor element piston with O-ring EPDM (permissible medium temperature: -40 ... +110 °C)
- NACE compliant to MR 0175, ISO 15156 and MR 0103
- Terminal box, aluminium alloy, copper-free epoxy resin, coated with 3 connections ½ NPT female, ingress protection IP65
- Grounding cable cross-section: max. 4 mm<sup>2</sup>
- Other cable length: 3 m, 5 m
- Offshore version

## Assembly (Option)

- Shut-off valve model 910.11, see data sheet AC 09.02
- Needle valve and multiport valve models IV10, IV11, see data sheet AC 09.22
- Block-and-bleed valve models IV20, IV21, see data sheet AC 09.19
- Diaphragm seals, see website

## Approvals

Logo	Description	Country
	<b>EU declaration of conformity</b> <ul style="list-style-type: none"> <li>■ Pressure equipment directive</li> <li>■ Low voltage directive</li> <li>■ ATEX <sup>1)</sup> directive (option)               <ul style="list-style-type: none"> <li>I M 1</li> <li>II 1 GD</li> </ul> </li> </ul>	European Community
	<b>IECEX <sup>1)</sup> (option)</b> <ul style="list-style-type: none"> <li>Ex ia I Ma</li> <li>Ex ia IIC T6/T4 <sup>2)</sup> Ga</li> <li>Ex ia IIIC T85/T135 <sup>2)</sup> Da IP66</li> </ul>	International
	<b>EAC (option)</b> Hazardous areas	Eurasian Economic Community
	<b>KOSHA (option)</b> Hazardous areas	South Korea

- 1) Double marking ATEX and IECEx on the same product label.  
 2) The temperature class is related to the ambient temperature range.

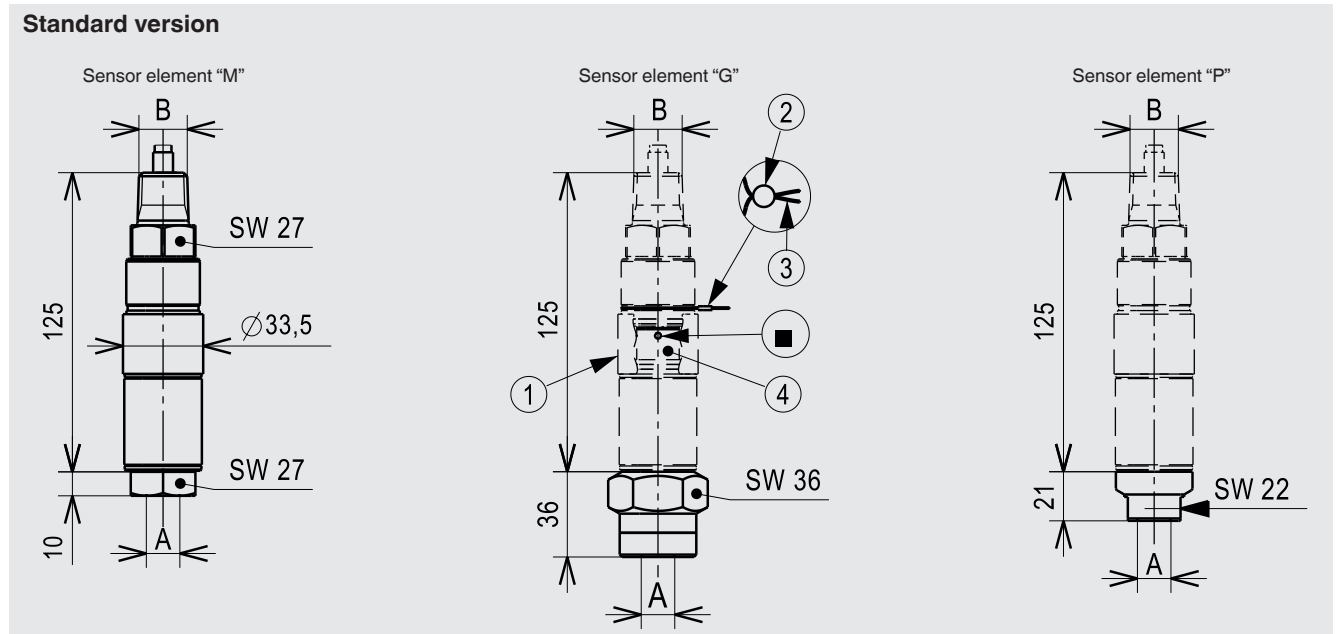
## Certificates (option)

- 2.2 test report per EN 10204
- 3.1 inspection certificate per EN 10204

Approvals and certificates, see website

## Dimensions in mm

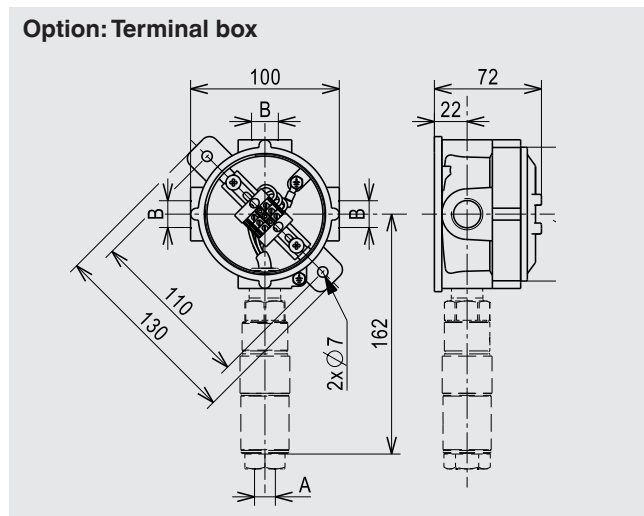
### Standard version



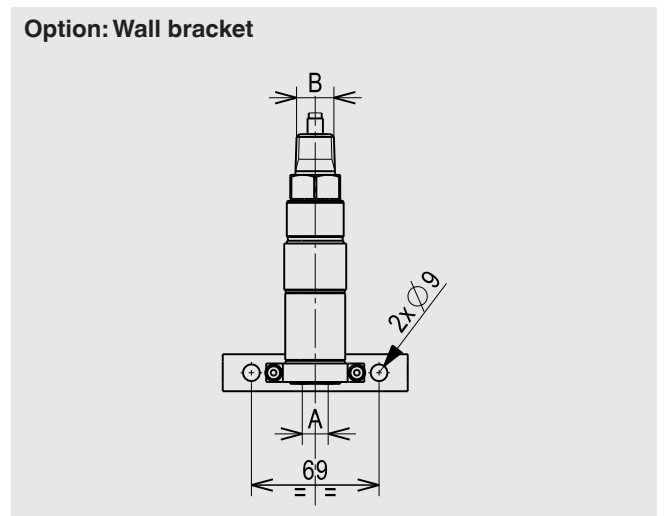
### Legend

- |   |                        |                         |
|---|------------------------|-------------------------|
| ① Access cover plate                          | ③ Stainless steel wire | A Process connection    |
| ② Lead seal                                   | ④ Adjustment screw     | B Electrical connection |
| ■ Set point adjustment rod $\varnothing$ 3 mm |                        |                         |

### Option: Terminal box



### Option: Wall bracket



### Ordering information

Model / Sensor element / Contact version / Setting range / Process connection / Electrical connection / Options

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