Bourdon tube pressure switch
Flameproof enclosure Ex d
Models BA, BAX

Process Performance 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,liquid and aggressive media, also in aggressive ambience

Special features

- No power supply needed for switching of electrical loads
- Robust switch enclosure from 316L, IP66, NEMA 4X
- Setting ranges from 0 ... 2.5 bar up to 0 ... 1,000 bar, vacuum ranges
- Repeatability of the set point ≤ 0.5% of span
- 1 or 2 independent set points, SPDT or DPDT, high switching power up to AC 250 V, 20 A



Bourdon tube pressure switch model BA

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. All wetted materials are from stainless steel as a standard.

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, 20 A directly.

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

For applications with special requirements on the wetted parts, a version with Monel® is available.

By using a Bourdon tube measuring system, the model BA and BAX pressure switch is extremely robust and guarantees optimal operating characteristics and the highest measuring performances, with repeatability lower than 0.5 % of span.

Data sheets showing similar products:
Bourdon tube pressure switch, flameproof enclosure Ex d; model BA and BAX; see data sheet PV 32.21

WIKA
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Standard version

Switch enclosure
Aluminium alloy, copper-free, epoxy resin coated, tamper-proof. Laser-engraved label from stainless steel.

Ingress protection
IP66 per IEC/EN 60529, NEMA 4X

Permissible temperature
Ambient T_{amb}: -40 ... +85 °C
Medium T_M: -40 ... +85 °C

Switch contact
Micro switches with fixed dead band
- 1 x or 2 x SPDT (single pole double throw)
- 1 x DPDT (double pole double throw)

Micro switches with adjustable dead band
- 1 x SPDT (single pole double throw)

The DPDT function is realised with 2 simultaneously triggering SPDT micro switches within 0.2 % of the span.

Contact version		Electrical rating (resistive load)	
		AC	DC
UN	1 x SPDT, silver	250 V, 15 A	24 V, 2 A, 125 V, 0.5 A, 220 V, 0.25 A
US	1 x SPDT, silver, hermetically sealed, argon gas filling [2]	250 V, 15 A	24 V, 2 A, 220 V, 0.5 A
UO	1 x SPDT, gold-plated, hermetically sealed, argon gas filling [2]	125 V, 1 A	24 V, 0.5 A
UG	1 x SPDT, gold-plated	125 V, 1 A	24 V, 0.5 A
UR	1 x SPDT, silver, adjustable dead band	250 V, 20 A	24 V, 2 A, 220 V, 0.5 A
DN	2 x SPDT or 1 x DPDT, silver	250 V, 15 A	24 V, 2 A, 125 V, 0.5 A, 220 V, 0.25 A
DS	2 x SPDT or 1 x DPDT, silver, hermetically sealed, argon gas filling [2]	250 V, 15 A	24 V, 2 A, 220 V, 0.5 A
DO	2 x SPDT, or 1 x DPDT gold-plated, hermetically sealed, argon gas filling [2]	125 V, 1 A	24 V, 0.5 A
DG	2 x SPDT or 1 x DPDT, gold-plated	125 V, 1 A	24 V, 0.5 A

2) Permissible ambient temperature range: -30 ... +70 °C
3) WIKA recommends argon gas-filled contact versions, use of adjustable dead band allowed

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 fastened to the switch and thus secured against loss.

Repeatability of the set point
≤ 0.5 % of span

Distance between set points
For versions with 2 x SPDT the distance between the set points must be > 5 % of the respective span.

Ignition protection type
Model BA: Cat. 2 GD
- Ex d IIC T6/T4 [1] Gb (gas)
- Ex tb IIIC T85/T135 [1] Db (dust)

Model BAX: Cat. 1/2 GD
- Ex d IIC T6/T4 [1] Ga/Gb (gas)
- Ex ta/tb IIIC T85/T135 [1] Da/Db (dust)

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

Please specify:
Set point, switching direction for each contact, e.g.:
Set point 1: 30 bar, falling, set point 2: 60 bar, rising.
With two micro switches, the set points can be set independently of each other.
For optimal performance we suggest to adjust the set point between 25 ... 75 % of the span.

Example:
Setting range: 0 ... 100 bar with one switch contact
Repeatability: 0.5 % of 100 bar = 0.5 bar
Dead band: 2.0 bar (see table setting ranges)
2 x repeatability + dead band = 2 x 0.5 bar + 2.0 bar = 3.0 bar
Rising pressure: Adjust set point between 3 ... 100 bar.
Falling pressure: Adjust set point between 0 ... 97 bar.

Process connection
Stainless steel, lower mount (LM)
- 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
- ½ NPT female (standard)
- ¾ NPT, M 20 x 1.5, G ½, G ¾ female
- Cable gland non-armoured, nickel-plated brass
- Cable gland non-armoured, stainless steel (AISI 304)
- Cable gland armoured, nickel-plated brass
- Cable gland armoured, stainless steel (AISI 304)
- MIL connector, 7-pin, DTL 5015

For cable connections to the internal terminal block use wire cross-sections between 0.5 ... 2.5 mm².
For the internal and external grounding cable connection to the protective conductor screws use wire cross-sections ≤ 4 mm².

Dielectric strength
Safety class I (IEC 61298-2: 2008)

Wetted parts

Version	Bourdon tube	Process connection
Standard	Stainless steel AISI 316L	
Setting range: 0 ... 1,000 bar	Stainless steel 17-4PH® (1.4542)	Stainless steel AISI 316L
NACE **Setting range: 0 ... 40 to 0 ... 400 bar**	Monel® 400	Stainless steel AISI 316L
Monel® **Setting range: 0 ... 40 to 0 ... 400 bar**	Monel® 400	

Setting range

Model	Setting range (=working range)	Proof pressure	Fixed dead band			Adjustable dead band
	in bar	in bar	1 contact, UN, US, UO, UG in bar	2 contacts, DN, DS, DO, DG in bar		1 contact, UR in bar
				Model BA	Model BAX	
BA	-1 ... +1.5	4.5	≤ 0.15	≤ 0.30	-	0.35 ... 1.10
	-1 ... +5	12	≤ 0.20	≤ 0.30	-	0.55 ... 1.70
	-1 ... +15	30	≤ 0.30	≤ 0.40	-	1.40 ... 3.10
	0 ... 2.5	4.5	≤ 0.15	≤ 0.30	-	0.35 ... 1.10
	0 ... 6	12	≤ 0.20	≤ 0.30	-	0.55 ... 1.70
	0 ... 16	30	≤ 0.30	≤ 0.40	-	1.40 ... 3.10
BA, BAX	0 ... 40	75	≤ 0.80	≤ 0.70	≤ 1.2	2.10 ... 6.00
	0 ... 100	160	≤ 2	≤ 2	≤ 5	6 ... 17
	0 ... 160	210	≤ 3	≤ 3	≤ 7	13 ... 35
	0 ... 250	330	≤ 5	≤ 5	≤ 10	21 ... 65
	0 ... 400	480	≤ 8	≤ 8	≤ 12	26 ... 93
	0 ... 600	720	≤ 12	≤ 12	≤ 20	40 ... 115
BAX	0 ... 1,000 [1]	1,200	≤ 20	-	≤ 50	75 ... 190

1) Wetted parts, bourdon tube: Stainless steel 17-4PH® (1.4542), process connection: Stainless steel AISI 316L

Mounting

- Model BA: direct mounting or wall mounting
- Model BAX: wall mounting, mounting fixture from stainless steel (AISI 304)
- Mounting bracket for 2" pipe mounting

For mounting positions see drawing on page 6.

Weight

Model BA: approx. 2.4 kg.
Model BAX: approx. 3.7 kg.

Other Versions

- Cleaned for oxygen service
- Drying of wetted parts
- Permissible ambient temperature -60 ... +85 °C [1)]
- Offshore version [2)]
- NACE compliant to MR 0175, ISO 15156 and MR 0103 [2)]
- Wetted parts from Monel®

1) Only available for contacts without hermetic sealing
2) WIKA recommends argon gas-filled contact versions

Assembly

- 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
CE Ex	**EU declaration of conformity** ■ Pressure equipment directive ■ Low voltage directive ■ RoHS directive ■ ATEX directive [1] Model BA II 2 GD Model BAX II 1/2 GD	European Community
IEC IECEx	**IECEx** [1] Model BA Ex d IIC T6/T4 [2] Gb Ex tb IIIC T85/T135 [2] Db Model BAX Ex d IIC T6/T4 [2] Ga/Gb Ex ta/tb IIIC T85/T135 [2] Da/Db	IECEx member states
EAC Ex	**EAC (option)** Hazardous areas	Eurasian Economic Community
	Ex-Ukraine (option) Hazardous areas	Ukraine
	CCC (option) Hazardous areas	China
	KOSHA (option) Hazardous areas	South Korea
INMETRO	**INMETRO (option)** (model BA only)	Brazil

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

Manufacturer‘s information and certifications

Logo	Description
SIL	**SIL 2 rating (option)**, per IEC 61508 Functional safety

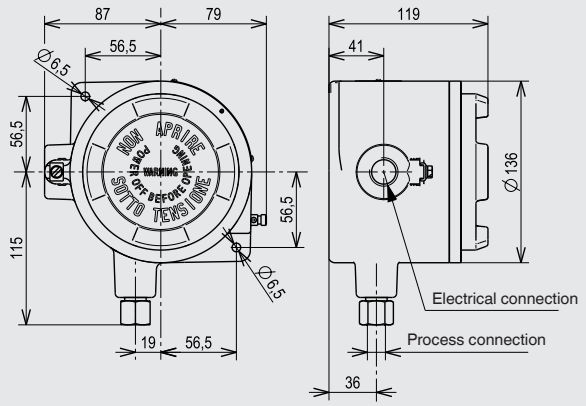
Certificates (option)

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

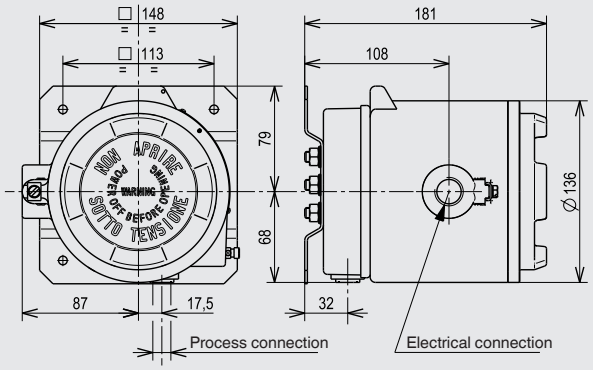
Approvals and certificates, see website

Dimensions in mm

Model BA

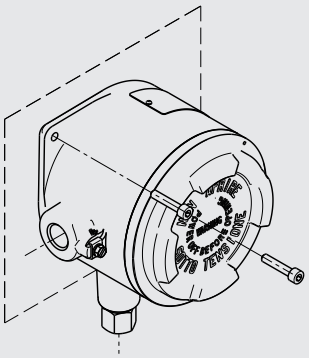


Model BAX

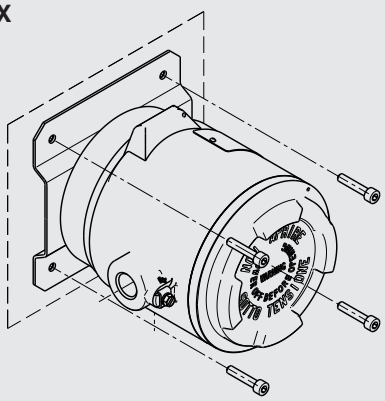


Permissible mounting position

Model BA



Model BAX



Ordering information

Model / Unit / Setting range / Number of switches / Contact type / Process connection / Electrical connection / Wetted parts / Options

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