

Absolute pressure switch Flameproof enclosure Ex d Models APA, APA10

WIKA data sheet PV 35.48



Process Performance Series

Applications

- Absolute 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 aluminium, IP66, NEMA 4X
- Setting ranges from 0 ... 25 mbar abs. to 0 ... 1.5 bar abs.
- Repeatability: $\leq 1\%$ of span
- 1 or 2 independent set points, SPDT or DPDT, high switching power up to AC 250 V, 20 A



Fig. left: For medium/high setting ranges, model APA
Fig. right: For low setting ranges, model APA10

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 absolute 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.

All wetted materials are from stainless steel as a standard.

By using a diaphragm measuring system, the model APA absolute pressure switch is extremely robust and guarantees optimal operating characteristics and the highest measuring performances, with repeatability lower than 1 % of span.

Standard version

Measuring system

Single diaphragm with transmission shaft, without sealing elements

Switch enclosure

Aluminium alloy, copper-free, coated with acrylic paint, tamper-proof. Laser-engraved product label from stainless steel.

Ingress protection

IP66 per EN/IEC 60529, NEMA 4X

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 0.5 % of the span.

Permissible temperature ranges

Ambient	T6/T85	T _a	-30 ... +60 °C
Ambient	T4/T135	T _a	-30 ... +85 °C
Medium		T _M	-30 ... +85 °C

Ex marking

- Ex db IIC T6/T4 ¹⁾ Ga/Gb
- Ex tb IIIC T85/T135 ¹⁾ Db IP66

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

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⁾ Maximum permissible ambient temperature range: -30 ... +70 °C

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

≤ 1 % 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.

Please specify:

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

Set point 1: 100 mbar abs., falling,
set point 2: 150 mbar abs., 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 ... 1 bar abs. with one switch contact
 Repeatability: 1 % of 1 bar abs. = 0.01 bar abs.
 Dead band: (see table setting ranges)
 2 x repeatability + dead band =
 2 x 0.01 bar abs. + 0.04 bar abs. = 0.06 bar abs.
 Rising pressure: Adjust set point between 0.06 ... 1 bar abs.
 Falling pressure: Adjust set point between 0 ... 0.94 bar abs.

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

Wetted parts

Diaphragm: AISI 316
 Process connection: AISI 316L
 Sealing material: NBR

Mounting

■ Mounting fixture from stainless steel (AISI 304)
 ■ Option: Mounting bracket for 2" pipe mounting (AISI 304)

Electrical connection

- ½ NPT female (standard)
- ¾ NPT, M20 x 1.5, G ½, G ¾ female
- Cable gland non-armoured, Ex d, nickel-plated brass
- Cable gland non-armoured, Ex d, stainless steel (AISI 304)
- Cable gland armoured, Ex d, nickel-plated brass
- Cable gland armoured, Ex d, stainless steel (AISI 304)

For cable connections to the internal terminal block use wire cross-sections between 0.5 ... 2.5 mm².

For the grounding cable connection to the protective conductor use max. 2.5 mm² for the internal screw and max. 4 mm² for the external screw.

Dielectric strength

Safety class I (IEC 61298-2: 2008)

Weight

- Model APA: approx. 5.5 kg
- Model APA10: approx. 8.2 kg

Setting range, model APA

Measuring cell	Setting range	Working range	Proof pressure	Fixed dead band for contact version		Adjustable dead band for contact version
	in bar abs.			in bar abs.	in bar abs.	1 contact UN, US, UO, UG in mbar abs.
L	0 ... 0.16	0 ... 1.5	11	≤ 5	≤ 5	20 ... 60
	0 ... 0.25			≤ 8	≤ 8	30 ... 90
H	0 ... 0.4			≤ 20	≤ 20	30 ... 90
	0 ... 0.6			≤ 25	≤ 25	40 ... 125
	0 ... 1			≤ 30	≤ 30	100 ... 270
	0 ... 1.5			≤ 65	≤ 65	110 ... 320

Setting range, model APA10

Measuring cell	Setting range	Working range	Proof pressure	Fixed dead band for contact version		Adjustable dead band for contact version
	in mbar abs.			in bar abs.	in bar abs.	1 contact UN, US, UO, UG in mbar abs.
10	0 ... 25	0 ... 1	2	≤ 1.2	≤ 1.6	3 ... 8
	0 ... 40			≤ 1.6	≤ 2.2	4 ... 11
	0 ... 60			≤ 2.0	≤ 2.5	5 ... 14

Other versions








- Cleaned for oxygen service
- Drying of wetted parts
- Version for ammonia applications ¹⁾
- Tropical version (suitable for environments with increased air humidity) ¹⁾
- Geothermal version ¹⁾
- Offshore version ¹⁾

1) WIKA recommends argon gas-filled contact versions, use of adjustable dead band allowed.

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


Approvals

Logo	Description	Country
	EU declaration of conformity <ul style="list-style-type: none"> ■ Pressure equipment directive ■ Low voltage directive ■ RoHS directive ■ ATEX directive ²⁾ II 1/2 GD	European Community
	IECEx ²⁾ Ex db IIC T6/T4 ³⁾ Ga/Gb Ex tb IIIC T85/T135 ³⁾ Db IP66	International
	EAC (option) Hazardous areas ²⁾	Eurasian Economic Community
	Ex-Ukraine (option) Hazardous areas ²⁾	Ukraine
	CCC (option) Hazardous areas ²⁾	China
	KOSHA (option) Hazardous areas ²⁾	South Korea
	INMETRO (option) Hazardous areas ²⁾	Brazil

2) Double marking ATEX and IECEx on the same product label. Country-specific Ex marking according to selected option.

3) The temperature class is related to the ambient temperature range

Manufacturer's information and certifications

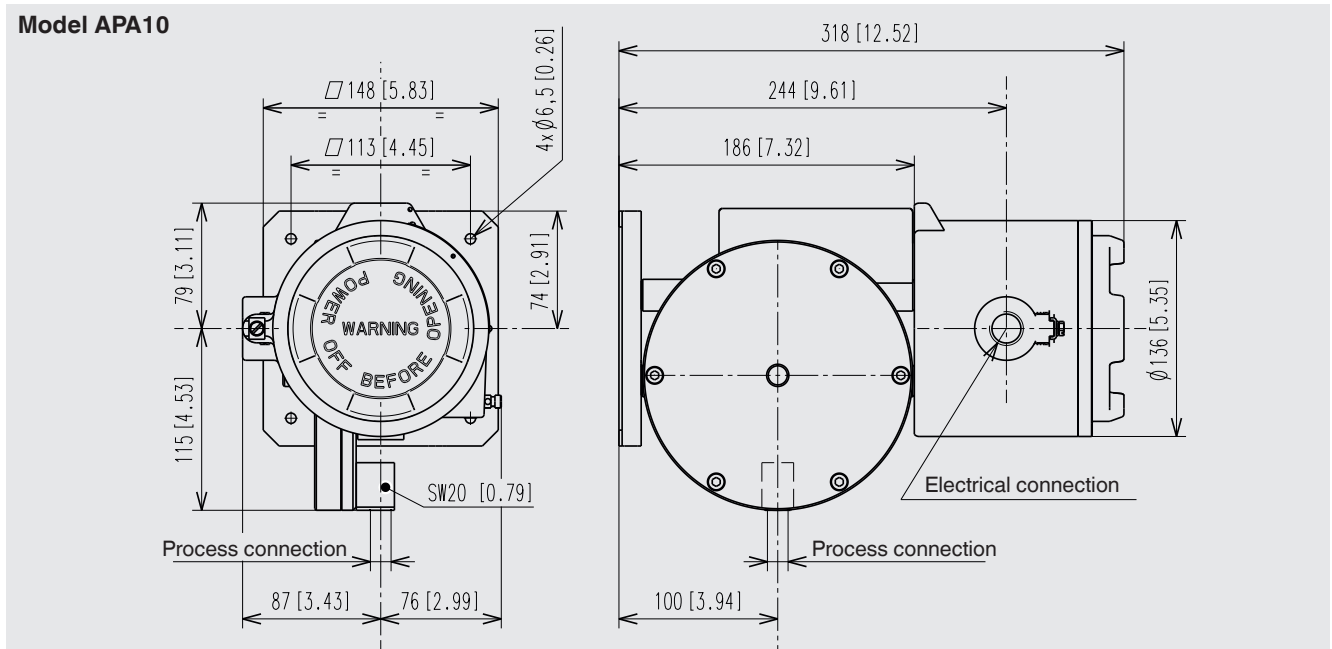
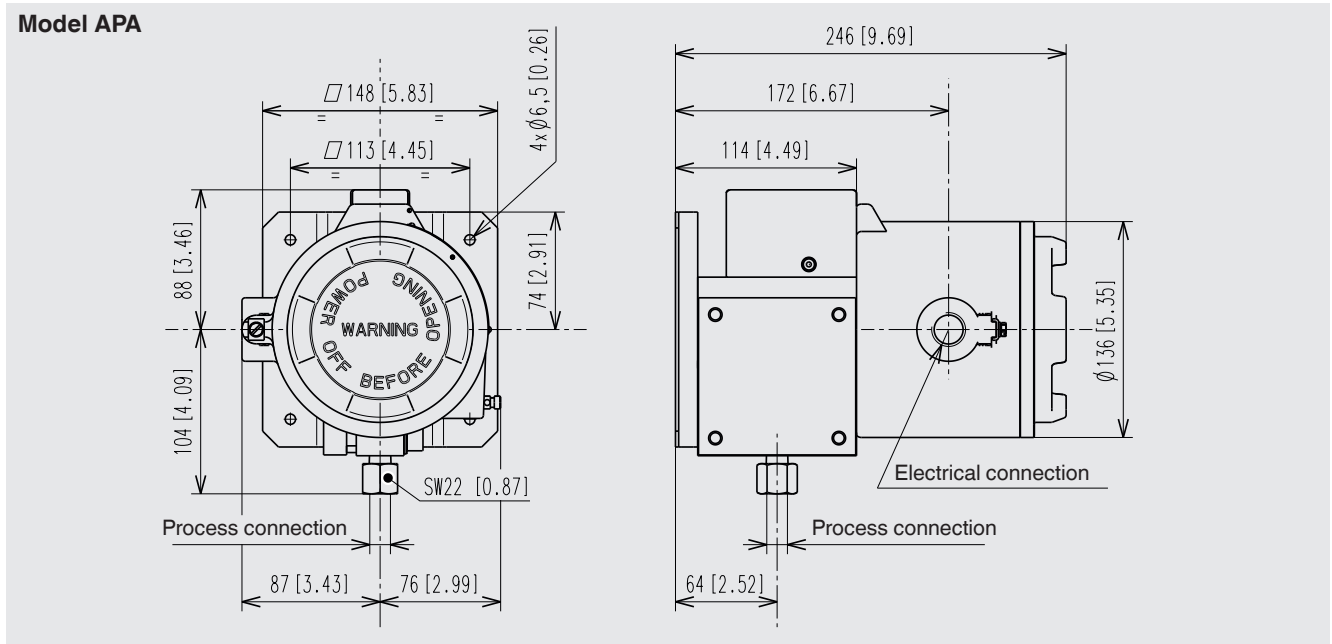
Logo	Description
	SIL 3-capable (option) Functional safety per IEC 61508 Includes performance level calculation according to ISO 13849-1

Certificates (option)

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

Approvals and certificates, see website

Dimensions in mm [in]



Ordering information

Model / Measuring cell / Contact version / Setting range / Process connection / Electrical connection / Options

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