

Absolute pressure switch Stainless steel switch enclosure Models APW, APW10

WIKA data sheet PV 35.49



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 stainless steel 316L, IP66, NEMA 4X
- Setting ranges from 0 ... 25 mbar abs. to 0 ... 1.5 bar abs.
- Intrinsic safety Ex ia available
- 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 APW
Fig. right: For low setting ranges, model APW10**

Description

These high-quality absolute 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 as an option. All wetted materials are from stainless steel as a standard.

By using a diaphragm measuring system, the model APW 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

Stainless steel 316L, tamper-proof. Laser-engraved product label from stainless steel.

Ingress protection

IP66 per EN/IEC 60529, NEMA 4X

Permissible temperature

Ambient T_{amb} : -30 ... +85 °C
Medium T_M : -30 ... +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 0.5 % of the span.

| Contact version | | Electrical rating (resistive load) | | Suitable for Ex ia option |
|-----------------|--|------------------------------------|--|---------------------------|
| | | 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 | No |
| US | 1 x SPDT, silver, hermetically sealed, argon gas filling ²⁾ | 250 V, 15 A | 24 V, 2 A, 220 V, 0.5 A | Yes |
| UO | 1 x SPDT, gold-plated, hermetically sealed, argon gas filling ²⁾ | 125 V, 1 A | 24 V, 0.5 A | Yes |
| UG | 1 x SPDT, gold-plated | 125 V, 1 A | 24 V, 0.5 A | No |
| UR | 1 x SPDT, silver, adjustable dead band | 250 V, 20 A | 24 V, 2 A, 220 V, 0.5 A | Yes ³⁾ |
| 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 | No |
| 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 | Yes |
| 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 | Yes |
| DG | 2 x SPDT or 1 x DPDT, gold-plated | 125 V, 1 A | 24 V, 0.5 A | No |

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

≤ 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.

Ignition protection type (option)

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

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

Safety-related maximum values

(only for optional 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 |

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

Mounting

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

Weight

■ Model APW: approx. 5.5 kg
 ■ Model APW10: approx. 8.2 kg

Electrical connection

■ ½ NPT female (standard)
 ■ ¾ NPT, M20 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 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)

Wetted parts

Diaphragm: AISI 316
 Process connection: AISI 304
 Sealing material: NBR

Setting range, model APW

| 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 APW10

| 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 |

Assembly





■ Shut-off valve model 910.11, see data sheet AC 09.02
 ■ Barstock valve model 910.81, see data sheet AC 09.18

Options

■ Cleaned for oxygen service
 ■ Offshore version ¹⁾

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


Approvals

| Logo | Description | Country |
|--|--|-----------------------------|
|  | EU declaration of conformity <ul style="list-style-type: none"> ■ Low voltage directive, EN 60730-1 ■ ATEX ¹⁾ directive (option); annex III, IV I M 1 II 1 GD | European Community |
|  | IECEx ¹⁾ per IEC 60079-0, IEC 60079-11, IEC 60079-26 (option) <ul style="list-style-type: none"> Ex ia I Ma Ex ia IIC T6/T4 ²⁾ Ga Ex ia IIIC T85/T135 ²⁾ Da | IECEx member states |
|  | EAC (option) Hazardous areas (option) | Eurasian Economic Community |
|  | KOSHA (option) 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.

Manufacturer's information and certificates

| Logo | Description |
|--|---|
|  | SIL 2 rating (option) , per IEC 61508 Functional safety The electrical rating for DC applications is limited to 30 V / 100 mA. Only available with contact version US or UO |

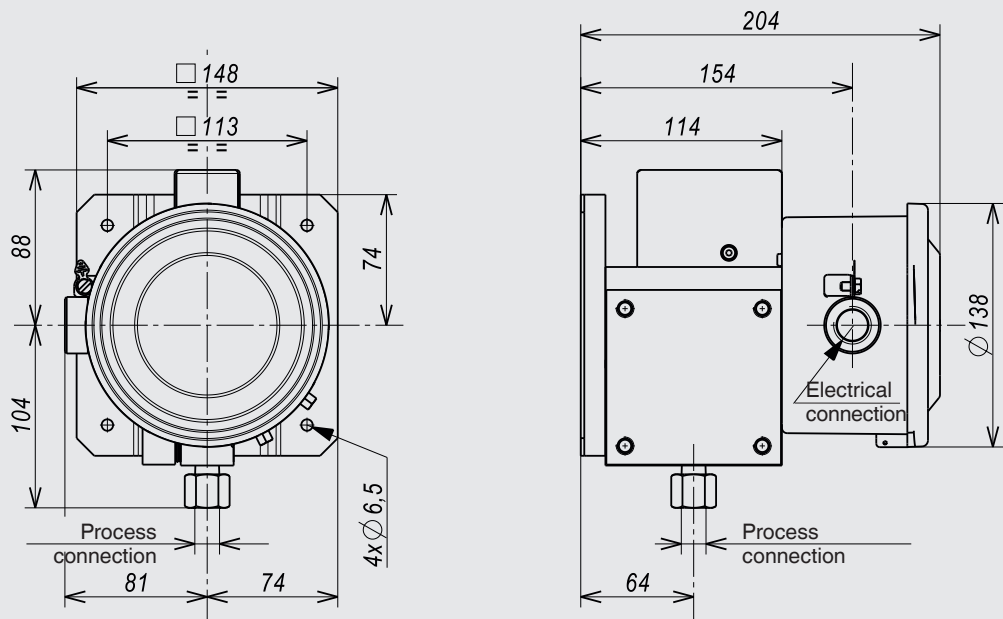
Certificates (option)

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

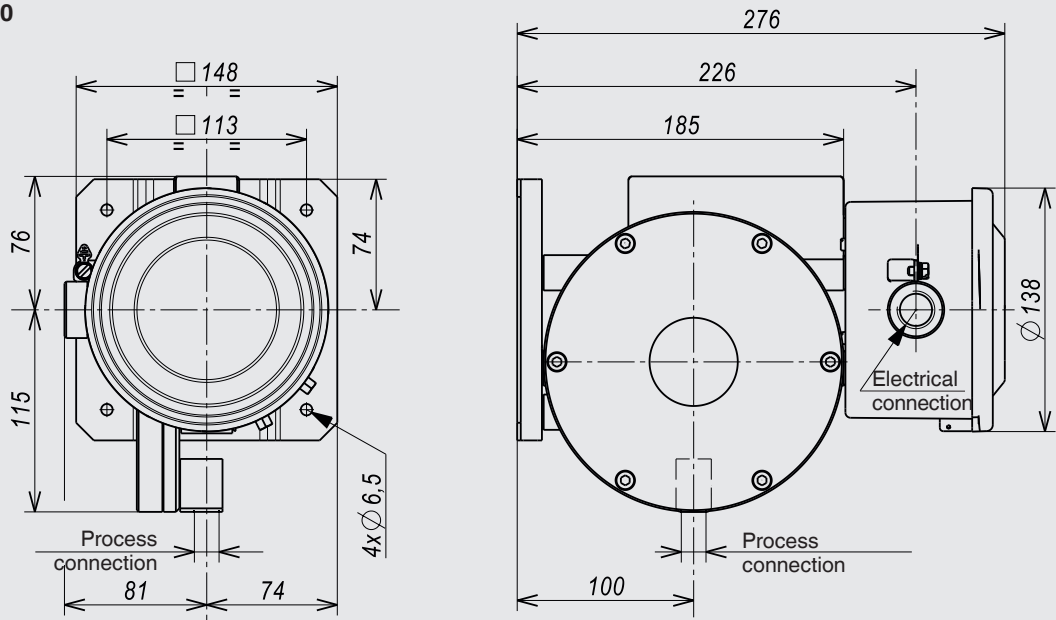
Approvals and certificates, see website

Dimensions in mm

Model APW



Model APW10



Ordering information

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

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