

Differential pressure switch For very low setting ranges Model DW03UN

WIKA data sheet PV 35.50



Process Performance Series

Applications

- Differential pressure monitoring and control of processes
- Safety-critical applications in general process instrumentation, especially in HVAC and power generation incl. nuclear power plants
- For gaseous and dry media

Special features

- No power supply needed for switching of electrical loads
- Robust switch enclosure from stainless steel 316L, IP66, NEMA 4X
- Setting ranges from 0.3 ... 2.5 mbar to 0.7 ... 16 mbar with high working pressure and high static pressure up to 300 mbar
- Intrinsic safety Ex ia available
- 1 set point, SPDT, high switching power up to AC 250 V, 10 A



Differential pressure switch, model DW03UN

Description

These high-quality differential 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 differential pressure switches are fitted with micro switches, which enable the switching of an electrical load of up to AC 250 V, 10 A directly.

By using a diaphragm measuring system, the model DW03UN differential pressure switch is extremely robust and guarantees optimal operating characteristics and the highest measuring performances, with repeatability lower than 1 % of span.

The process connection with a centre distance of 54 mm lower mount allows an easy and comfortable mounting of a standard valve manifold.

Standard version

Measuring system

Single diaphragm

For clean gas or non-condensing vapour only

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} : -10 ... +60 °C

Medium T_M : -10 ... +60 °C

Switch contact

Micro switches with fixed dead band

1 x SPDT (single pole double throw)

| Contact version | Electrical rating (resistive load) | | Suitable for Ex ia option |
|---------------------|------------------------------------|--------------|---------------------------|
| | AC | DC | |
| UN 1 x SPDT, silver | 250 V, 10 A | 125 V, 0.1 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 fastened to the switch and thus secured against loss.

Repeatability of the set point

≤ 1 % of span

Please specify:

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

Set point: 5 mbar, falling

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

Example

Setting range: 0.4 ... 10 mbar with one switch contact

Repeatability: 1 % of 9.6 mbar = 0.096 mbar

Dead band: (see table setting ranges)

2 x repeatability + dead band = 2 x 0.096 mbar + 0.3 mbar = 0.492 mbar.

Rising pressure: Adjust set point between 0.892 ... 10 mbar.

Falling pressure: Adjust set point between 0.4 ... 9.508 mbar.

Process connection

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

Ignition protection type (option)

- 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 |

Wetted parts

Diaphragm: Glass-fibre reinforced NBR

Process connection: Aluminium casting alloy,
Anticorodal® UNI 3571

Other parts: Stainless steel, epoxy resin coated

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. 4 mm² for the internal and external screw.

Dielectric strength

Safety class I (IEC 61298-2: 2008)

Mounting

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

Weight

- approx. 2.2 kg

Setting range





| Setting range in mbar | Working range in mbar | One-sided pressure in mbar | Static pressure in mbar | Fixed dead band for contact version UN |
|-----------------------|-----------------------|----------------------------|-------------------------|--|
| 0.3 ... 2.5 | 0 ... 2.5 | ≤ 6 | ≤ 300 | ≤ 0.2 |
| 0.4 ... 4 | 0 ... 4 | ≤ 10 | | ≤ 0.3 |
| 0.4 ... 6 | 0 ... 6 | ≤ 25 | | ≤ 0.3 |
| 0.4 ... 10 | 0 ... 10 | ≤ 25 | | ≤ 0.3 |
| 0.7 ... 16 | 0 ... 16 | ≤ 40 | | ≤ 0.5 |

For clean gas or non-condensing vapour only

Assembly

- Shut-off valve model 910.11, see data sheet AC 09.02
- Barstock valve model 910.81, see data sheet AC 09.18
- Diaphragm seals, see website
- Differential pressure gauge

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) 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.

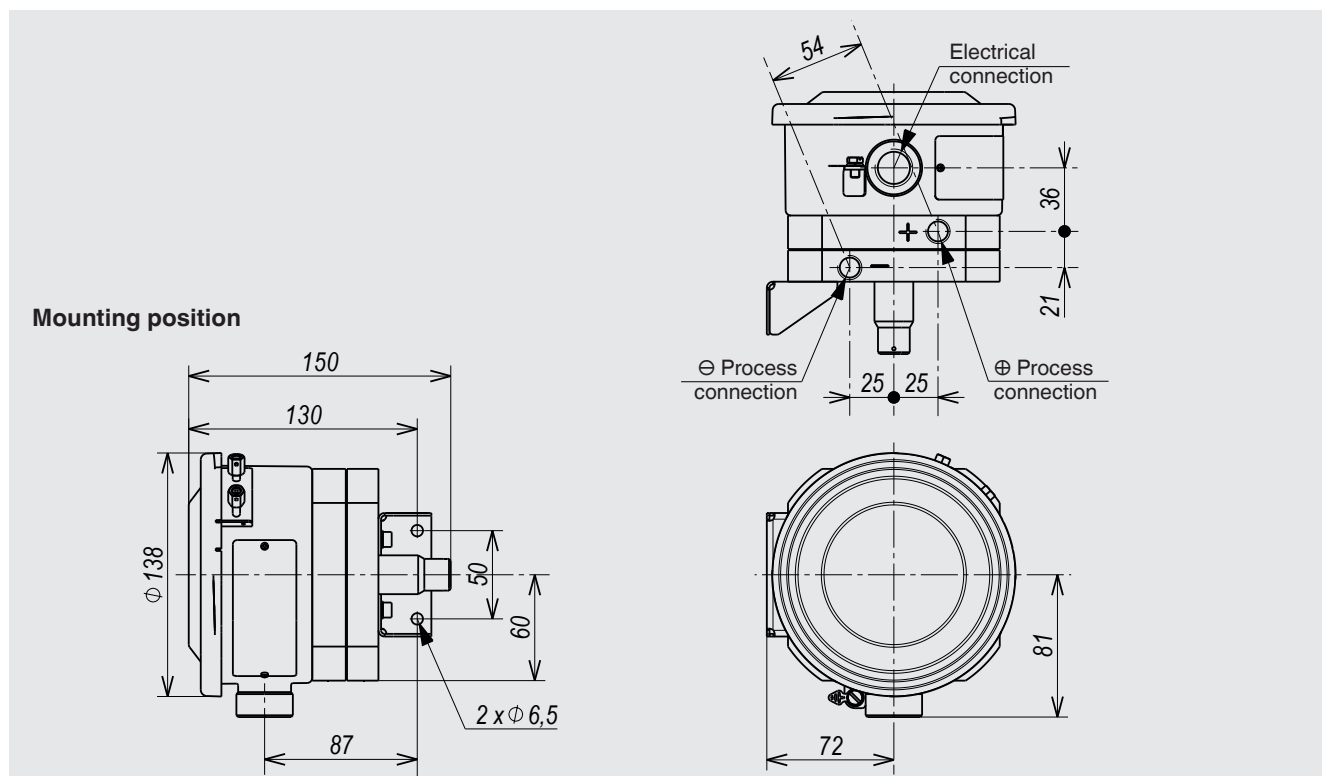
2) The temperature class is related to the ambient temperature range.

Certificates (option)

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

Approvals and certificates, see website

Dimensions in mm



Ordering information

Model / Static - One-sided pressure / Setting range / Process connection / Electrical connection / Options

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