Diaphragm Pressure Switches
Stainless Steel Series, IP 65, for Low Pressure Ranges
Model MWB

Applications

- Pressure monitoring and direct switching of electrical loads
- For very low pressure ranges
- For gaseous and liquid, aggressive and highly viscous or contaminated media, also in aggressive ambience
- Process industry: chemical/petro-chemical, on- and offshore, technical gases, environmental technology, machine building and general plant construction, water treatment, pharmaceutical industry

Special Features

- Case made of stainless steel, electropolished
- Ingress protection IP 65, NEMA 4
- Ambient temperature -40 ... +85 °C
- 1 or 2 independent switch points, high contact rating up to 15 A / AC 220 V
- Setting ranges from 16 mbar, max. test pressure up to 10 bar

Diaphragm Pressure Switch Model MWB

Description

These high-quality pressure switches have been specifically developed for safety-critical applications. The high quality, and product manufacturing to ISO 9001:2000, ensures reliable monitoring of your plants. In production, the switches are traced by quality assurance software at every step and subsequently are 100% tested.
All wetted parts materials are from stainless steel as standard. Each switch family is available in IP 65, Ex-ia or Ex-d versions (Ex-d see model MAB, data sheet PV 31.13). In order to ensure as flexible operation as possible, the pressure switches are equipped with micro switches, which make it possible to switch an electrical load of up to 15 A / AC 220 V directly. For smaller contact ratings, such as for PLC applications, argon gas filled micro switches with gold-plated contacts can be selected as an option.

By using a diaphragm measuring system, the model MWB pressure switch is extremely robust and guarantees optimal operating characteristics. For applications requiring particularly high corrosion protection, variants with PTFE or Monel wetted parts are available.

Data sheets showing similar products:
Pressure switches, ignition protection type EEx-d; Model MAB; see data sheet PV 31.13

Standard version

Case
Stainless steel,
case cover with bayonet lock, due to anti-twist device secured against unauthorised intervention

Ingress protection
IP 65 per EN 60 529 / IEC 529

Operating temperature
Ambient: -40 ... +85 °C
Medium: -30 ... +85 °C

Process connection
Stainless steel, lower mount (LM)
¼ NPT (female)

Measuring system
Diaphragm, stainless steel

Sealing towards the pressure chamber
PTFE

Wetted parts
5 variants selectable:

Code	Diaphragm	Process connection
X X	Stainless steel 316	Stainless steel 316
T X	Stainless steel 316 + PTFE 1)	Stainless steel 316
T T	Stainless steel 316 + PTFE 1)	Stainless steel 316 + PTFE 1) 2)
K K	Monel	Monel
K X	Monel	Stainless steel 316

1) Only setting range 0 ... 60 mbar and 0 ... 100 mbar
2) Process connection: G ½ B (male)

Switch contacts
one or two SPDT (change-over) micro switches selectable, functionality of DPDT through two SPDT micro switches with simultaneous tripping within 0.2 % of the pressure range limit value, in the following variants:

Code	Switch
U	1 x SPDT
D	2 x SPDT

Code	Version	Electrical rating (resistive load) 4) AC	DC
	Fixed switch hysteresis		
1	**Silver contacts**	15 A, 220 V	2 A, 24 V 0.5 A, 125 V 0.25 A, 220 V
2	**Gold-plated contacts**	1 A, 125 V	0.5 A, 24 V
3	**Silver contacts** inert gas filled Tamb: -30 ... +70 °C	15 A, 220 V	2 A, 24 V 0.5 A, 220 V
4	**Gold-plated contacts** inert gas filled Tamb: -30 ... +70 °C	1 A, 125 V	0.5 A, 24 V
	Adjustable switch hysteresis		
5	**Silver contacts** 3)	20 A, 220 V	2 A, 24 V 0.5 A, 220 V

3) Max. 1 switch contact, but not for measuring range -16 ... 0 mbar or 0 ... 16 mbar
4) Only the underlined data are shown on the product label

Repeatability
≤ 1 % of span

Setting ranges, max. test pressure, max. switch hysteresis

Setting range in mbar	Max. test pressure		Max. switch hysteresis		
			1 switch contacts	2 switch contacts	1 switch contacts with settable hysteresis
	Standard	Option			
-100 ... 0	-150 mbar	-1 bar	3.6 mbar	5 mbar	8 ... 23 mbar
-60 ... 0	-90 mbar	-1 bar	3 mbar	4.2 mbar	8 ... 21 mbar
-40 ... 0	-55 mbar	-1 bar	2.6 mbar	3.4 mbar	8 ... 20 mbar
-25 ... 0	-35 mbar	-1 bar	2 mbar	3 mbar	6 ... 20 mbar
-16 ... 0	-21 mbar	-1 bar	2 mbar	2.8 mbar	-
0 ... 100	400 mbar	10 bar	3.6 mbar	5 mbar	8 ... 23 mbar
0 ... 60	300 mbar	10 bar	3 mbar	4.2 mbar	8 ... 21 mbar
0 ... 40	300 mbar	10 bar	2.6 mbar	3.4 mbar	8 ... 20 mbar
0 ... 25	250 mbar	10 bar	2 mbar	3 mbar	6 ... 20 mbar
0 ... 16	250 mbar	10 bar	2 mbar	2.8 mbar	-
-12.5 ...+12.5	-25/250 mbar	-	2 mbar	3 mbar	6 ... 20 mbar
-30 ... +30	-60/250 mbar	-	3 mbar	4.2 mbar	8 ... 21 mbar
-50 ... +50	-100/250 mbar	-	3.6 mbar	5 mbar	8 ... 23 mbar

Switch points
The switch points can be set to your requirements, free-of-charge.
Please supply:
Switch point, switching direction for each contact (e.g. switch point 1: 0.5 bar, falling, switch point 2: 3 bar, rising)
With two micro switches, the switch points can be set independently of each other.

After unscrewing the case cover, **switch point adjustment** can be made using the adjustment screw. The switch point is settable within the entire measuring range with the **following general rule**:

- Define the value A = 2x repeatability + switch hysteresis
- With rising pressure, the switch point should be set between (min. + value A) and the setting range max..
- With falling pressure, the switch point should be set between the min. and the (max. - value A) of the setting range.

Example:
Setting range: 0 ... 1 bar with one switch contact
Repeatability: 1 % of 1 bar = 10 mbar
Switch hysteresis = 15 mbar (see table setting ranges)
Value A = 2 x 10 mbar + 15 mbar = 35 mbar
For rising pressure, the switch point should be set between 35 mbar and 1 bar.
For falling pressure, the switch point should be set between 0 and 965 mbar.
For optimal performance we suggest the switch point lies between 25 % and 75 % of the setting range.

Electrical connection
½ NPT female, cable connector using internal terminal block, ground connection using internal and external terminal, max. ground cable cross-section 4 mm²

Pressure switch certified per:

- Pressure Equipment Directive 97/23/EC (PED, Annex 1, Category IV, Safety Accessories, Module B + D)
- Low voltage directive 73/23 EEC and 93/68 EEC

Dielectric strength
Safety class I (EN 61 298-2: 1997-06)

Installation
Direct or wall mounting
The preferred mounting location of the process connection is below. Alternatively the switch can be installed so that access to the inside of the switch is from the front of the enclosure and the electrical connection is located on the side.

Weight
approx. 2.1 kg

Options

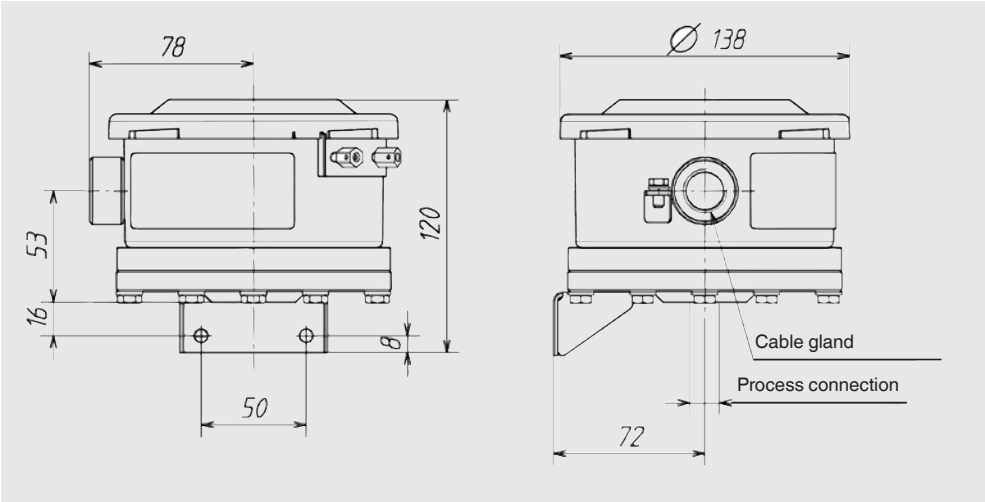
- Other process connection, also with adapter
- Wiring 3/4 NPT, G 1/2 or M20 x 1.5 (female)
- Cable gland on request
- 2" pipe-mounting kit (with clamping element)
- Lead sealing of the case
- Version for off-shore or tropicalised application [5]
- Version for applications to NACE [5]
- Version for ammonia applications [5]
- Version for geothermal applications [5]
- Oil and grease free versions for oxygen applications
- Version to
  GAS Ex-ia DUST Ex-iaD Gr. II Cat. 1 GD [6]
  Electrical characteristics: U_i = 30 V
  I_i = 100 mA
  P_i = 0.75 W
  C_i = 0 µF
  L_i = 0 mH
- Vacuum safe to -1 bar for negative setting ranges
- Overpressure safe to +10 bar for positive setting ranges
- Accessories:
  - Pressure gauge valves model 910.11, see data sheet AC 09.02
  - Barstock valves model 910.81, see data sheet AC 09.18

5) Inert gas filled contacts required
6) Gold-plated and inert gas filled contacts required

Approvals and certificates

- SIL 2 version
- GOST-R certificate
- Test certificate *CA* (confirmation of the switching accuracy)
- Test report *CP* (3-time listing of the switch point, requires switch point specification)
- Material certificate 3.1 per EN 10 204

Dimensions in mm



Ordering information

Model / Wetted parts / Switch contacts with version / Setting range / Process connection / Electrical connection / Switch point(s) / Switching direction(s) / Options

Example: MWB - TX - U1 - 0/16 mbar - 1/4"NPT-F - 1/2"NPT-F

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