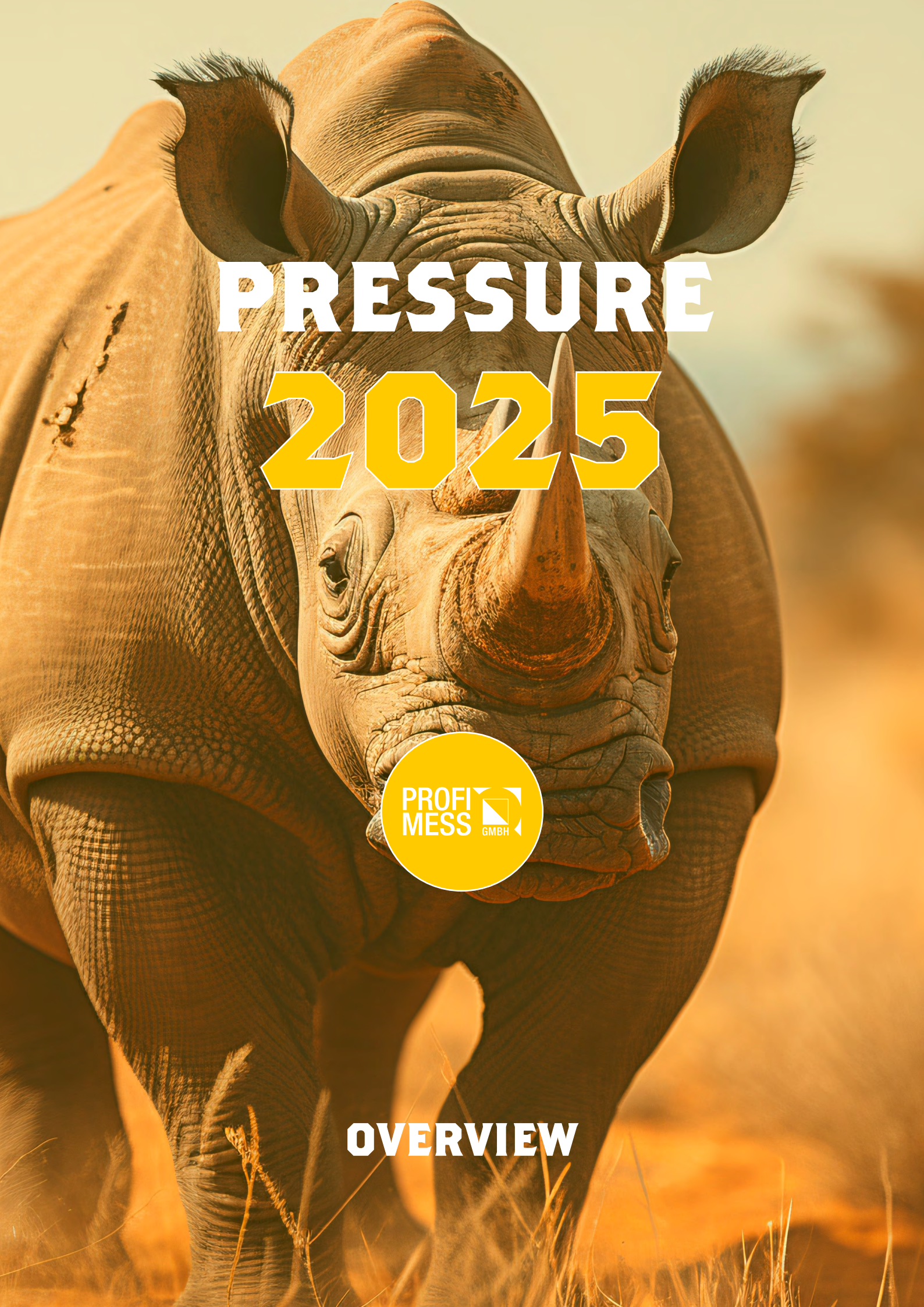


PRESSURE 2025

PROFI MESS GMBH

OVERVIEW

HP-30

Pneumatic Manual Testing Pump for Pressure Device Calibration

Features

/ Complete with box and accessories

/ Can be combined with different testing devices

/ Wide range of pressure

/ Smooth-running precision adjustment

Description:

Calibration manual testing pump is intended for generating pressure for the purpose of inspection, adjustments and calibration of mechanical and electronic pressure gauges by using reference measurements. At the top end of the pump, an analogous or digital reference pressure gauge is screw mounted and, at the same time, the test piece is connected on the side by means of a hose included in the delivery. On activating the pump, equal pressure is exerted on both the devices. Subsequently, the test piece can be compared with the reference device and, if necessary, settings or calibration adjustments can be made. First, considerable amount of pressure is built up by a pincer mechanism; the testing pressure is then set accurately by means of an easily adjustable precision regulating valve.

Application:

Despite its compact size, the calibration manual testing pump HP-30 facilitates testing pressure generation easily and accurately. It features also a reversing switch for generating vacuum. Therefore, pressure switches, pressure gauges (manometers) and pressure sensors can be tested or set within the range of -0.95. . .+40 bar where air is used as the testing medium. As against hydraulic testing pumps, this offers a simple and neat solution.

Technical Specifications:

Pressure generation /	0. . .40 bar
Vacuum generation /	0. . .-0,95 bar
Delivery connections /	G1/2"-female (free-wheel swivel nut with sealing) for reference device. G1/4-female at the end of the testing hose for the test piece
Material /	Anodized aluminium, brass (partly nickel-plated)
Testing pressure settings /	Fine regulating valve (large volume variator)
Dimensions /	approx. 220 x 105 x 63 mm
Weight /	approx. 510 g
Series range of supply /	• Calibration manual pump HP-30 with selected reference device • test piece connecting hose • user manual • robust plastic material box with contoured foam-rubber padding
Optional accessories /	Adapter and sealing sets for test piece NO-contact, maintenance set for HP-30 (O rings, sealings etc.)
Higher pressures /	Hydraulic testing pumps on request

Ordering Codes:

Order number	**HP-30.**	**1.**	**1**

HP-30 Manual Testing Pump

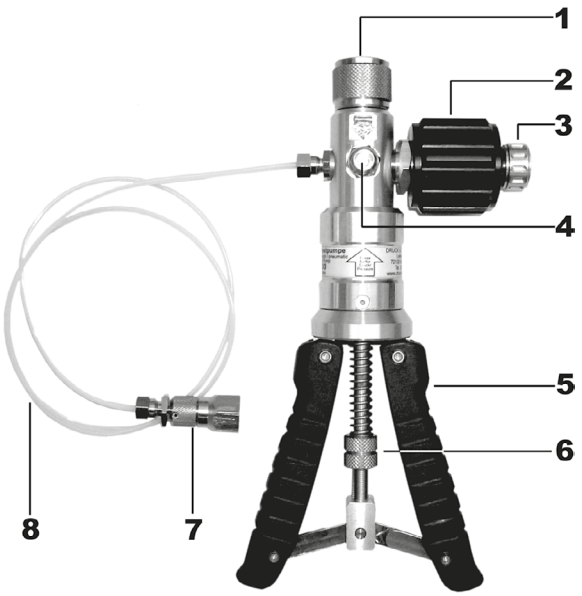
Reference Pressure Device /

0 = none
1 = p. gauge 63 mm Cl. 1.0 with fine grade from 0. . .+2 bar/ 0. . .+30 PSI
2 = p. gauge 63 mm Cl. 1.0 with fine grade from 0. . .+11 bar/ 0. . .+160 PSI
3 = p. gauge 63 mm Cl. 1.0 with fine grade from 0. . .+25 bar/ 0. . .+365 PSI
4 = p. gauge 63 mm Cl. 1.0 with fine grade from 0. . .+40 bar/ 0. . .+600 PSI
5 = p. gauge 63 mm Cl. 1.0 with fine grade from -1. . .0 bar/ -30. . .0 in HG
6 = p. gauge 63 mm Cl. 1.0 wfg from -1. . .+39 bar/ -30 in HG to +580 PSI
7a = digital precision pressure gauge from op. range of 0. . .+40 bar accuracy ± 0.25% FS (IEC 60770)
7b = digital precision pressure gauge from operating range of 0. . .+40 bar accuracy ± 0.5% FS (IEC 60770)
8a = digital precision pressure gauge from operating range of -1. . .+3 bar accuracy ± 0.25% FS (IEC 60770)
8b = digital precision pressure gauge from operating range of -1. . .+3 bar accuracy ± 0.5% FS (IEC 60770)
9a = digital precision pressure gauge from operating range of -1. . .+39 bar accuracy ± 0.25% FS (IEC 60770)
9b = digital precision pressure gauge from operating range of -1. . .+39 bar accuracy ± 0.5% FS (IEC 60770)

Accessories /

0 = none
1 = pipe thread adapter set for connecting the test piece
2 = NPT thread adapter set for connecting the test piece
3 = metric adapter and MINIMESS for connecting the test piece

Setup:



(1) Free-wheel reference device NO-contact G1/2"-female along with sealing
(2) Fine regulating valve
(3) Release valve
(4) Reversing switch for pressure/vacuum generation
(5) Pump handles
(6) Adjustable knurled nut for setting pump output
(7) Test piece NO-contact G1/4"-female, free-wheel with sealing
(8) Test piece connecting hose

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PM-63N

Bourdon Pressure Gauge

Features

/ Quality class 1.6

/ Brass or VA movement

/ Filled or unfilled

/ Protection class IP65 / IP54

Description:

Bourdon pressure gauges in the PM-63N series can be supplied in brass or stainless steel designs in filled or unfilled conditions. A drawn brass or stainless steel pipe shaped into a spiral is filled with the medium which deforms irrespective of the pressure. This movement is indicated by a measuring instrument which can be attenuated by the glycerin filling available optionally so that vibrations are heavily mellowed down. The natural lubricating action of glycerin reduces the wear and tear of moving parts and penetration of corrosive gases and prevents formation of water condensation. The stainless steel version allows measurement of pressure even in the most hostile fluids and gases. The pressure gauges are selectively equipped with a G1/4 B threaded connection at the bottom or centre respectively off-centre at the back.

Application:

Bourdon pressure gauges are used across all types of industrial applications. They are particularly suited for measuring points where no power supply is available. The PM-63N.1 series of pressure gauges is widely used in machine and equipment manufacturing, in pumps, compressors or block-type thermal power plants, since often the requirements on the consistency of media must necessarily be moderate. On the other hand, the PM-63N.2 series of chemical pressure gauges is capable of resisting more hostile media and, therefore, are used frequently in chemical and petrochemical industries, in the food-processing segment, in pharmaceutical production or in power stations where they a proven record of unfailing service for decades.

Technical Specifications:

Accuracy class / quality class 1.6

Protection class / PM-63N.x.1. . . - IP54 as per EN 60529 / IEC 529
PM-63N.x.2. . . - IP65 as per EN 60529 / IEC 529

Sealing + plug / EPDM and PUR

Damping / glycerine

Options / other attenuation fluids, special type scales with customer's logo, other process connections

Load /

Pressure	steady	dynamic	burst
PM-63N.1.1.x..	0.75 x FSV	0.70 x FSV	1.00 x FSV
PM-63N.1.2.x..	1.00 x FSV	0.90 x FSV	1.30 x FSV
PM-63N.2.1.x..	1.00 x FSV	0.90 x FSV	1.30 x FSV
PM-63N.2.2.x..	1.00 x FSV	0.90 x FSV	1.30 x FSV

Temperature /

Temperature	max. Media temperature	Ambient temperature
PM-63N.1.1..	+60°C	-25. . .+ 60°C
PM-63N.2.1..	+200°C	-40. . .+ 60°C
PM-63N.1.2..	+60°C (>100 bar +100°C)	-25. . .+ 60°C
PM-63N.2.2..	+ 100°C	-25. . .+ 60°C

Temperature error /

Temperature error, T_{Ref} 20°C
rising: + 0.3% FS / 10K
falling: - 0.3% FS / 10K

Materials /

Material	Housing	Window
PM-63N.1.1.x..	black carbon steel, plastic resp. st. steel	instrument acrylic glass
PM-63N.1.2.x..	st. steel	polycarbonate
PM-63N.2.1.x..	st. steel	laminated safety-glass
PM-63N.2.2.x..	st. steel	laminated safety-glass

Material	Sensor element	Dial
PM-63N.1.1.x..	up to 60 bar circular bourdon ab 60 bar helix bourdon	white aluminium / white plastic, black scale and lettering as per EN 837-1
PM-63N.1.2.x..	up to 100 bar, CuSn8, soft-soldered from 100 bar, st. steel - 1.4404, hard-soldered	white aluminium, black scale and lettering as per EN 837-1
PM-63N.2.x..	st. steel 1.4404	white aluminium, black scale and lettering as per EN 837-1

Material	Motion work	Pointer
PM-63N.1.x..	Bottom and cover-parts from brass, moving parts argentan	black aluminium / black plastic
PM-63N.2.x..	st. steel	black aluminium

Ordering Codes:

Order number	PM-63N.	2.	2.	1.	0.	Q

PM-63N Bourdon Pressure Gauge

Version /
1 = brass
2 = fully stainless steel for chemical applications

Damping /
1 = no glycerin filling
2 = with glycerin filling

Process connection /
1 = G1/4" B at the bottom
2 = G1/4" B back, centred (PM-63N.1.), back, off-centre (PM-63N.2)

Fastening rim (see table for possible combination) /
0 = none
1 = 3 hole front ring
2 = rear edge for wall-mounting
3 = 3 rimmed front ring with clamp

Operating range /
A = 0 . . . 0.6 bar (PM-63N.1.1 only)
B = 0 . . . 1 bar
C = 0 . . . 1.6 bar
D = 0 . . . 2.5 bar
E = 0 . . . 4 bar
F = 0 . . . 6 bar
G = 0 . . . 10 bar
H = 0 . . . 16 bar
I = 0 . . . 25 bar
J = 0 . . . 40 bar
K = 0 . . . 60 bar
L = 0 . . .100 bar
M = 0 . . . 160 bar
N = 0 . . . 250 bar
O = 0 . . . 400 bar
P = 0 . . . 600 bar
Q = 0 . . . 1000 bar (not for PM-63N.1.1)
S = -1 . . . 0 bar
T = -1 . . . +0.6 bar
U = -1 . . . +1.5 bar
V = -1 . . . +3 bar
W = -1 . . . +5 bar
X = -1 . . . +9 bar
Y = -1 . . . +15 bar

Front ring /

	3-hole Front ring	rear edge	3-rimmed-Front ring
PM-63N.1.1.1..	-	OK	-
PM-63N.1.1.2..	OK	-	OK
PM-63N.1.2.1..	OK	OK	-
PM-63N.1.2.2..	OK	-	OK
PM-63N.2.1.1..	OK	OK	-
PM-63N.2.1.2..	OK	OK	OK
PM-63N.2.2.1..	OK	OK	-
PM-63N.2.2.2..	OK	OK	OK

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PM-100N

Bourdon Pressure Gauge

Features

/ Quality class 1.0

/ Stainless steel housing

/ Brass or SS movement

/ Filled or unfilled

/ Protection class IP65 / IP54

Description:

Bourdon pressure gauges in the PM-100N series can be supplied in brass or stainless steel versions in filled or unfilled condition. A drawn brass or stainless steel pipe shaped into a spiral is filled with the medium which deforms irrespective of the pressure. This movement is indicated by a measuring instrument which can be attenuated by the glycerin filling available optionally so that vibrations are heavily mellowed down. The natural lubricating action of glycerin reduces the wear and tear of moving parts and penetration of corrosive gases and prevents formation of water condensation. The stainless steel design allows measurement of pressure even in the most hostile fluids and gases. The pressure gauges are selectively equipped with a G1/4 B threaded connection at the bottom or eccentrically at the back. On request, they can be fitted with up to two magnetic spring or inductive contacts. We supply also pressure gauges in larger nominal sized such as 6" (160 mm) or 10" (250 mm), or special designs of 4" (100 mm) and 2.5" (63 mm) devices. Please contact us in this regard.

Application:

Bourdon pressure gauges are used across all types of industrial applications. They are particularly suited for measuring points where no electrical power supply is available. The PM-100N.1 series of pressure gauges is widely used in machine and equipment manufacturing, in pumps, compressors or block-type thermal power plants, since often the requirements on the consistency of media must necessarily be moderate. On the other hand, the PM-100N.2 series of chemical pressure gauges is capable of resisting more hostile media and, therefore, are used frequently in chemical and petrochemical industries, in the food-processing segment, in pharmaceutical production or in power stations where they a proven record of unfailing service for decades. The PM-100N pressure gauges optionally equipped with switching contacts can also be used for electronic pressure monitoring.

Technical Specifications:

Accuracy class / Quality class 1.0

Protection class / PM-100N.x.1 - IP54 as per EN 60529
PM-100N.x.2 - IP65 as per EN 60529

Seal and Plug / PUR

Damping / glycerine

Options / other attenuation fluids, special type scales with customer's logo, other process connections

Load /

Pressure	steady	dynamic	burst
PM-100N.x.x..	1.00 x FSV	0.90 x FSV	1.30 x FSV

Temperature /

Temperature	max. Media temperature	Ambient temperature
PM-100N.1.1..	+80 (>100 bar +120°C)	-40. . . +60°C
PM-100N.2.1..	+200°C	-40. . .+60°C
PM-100N.1.2..	+60°C (>100 bar +100°C)	-25. . .+60°C
PM-100N.2.2..	+ 100°C	-25. . .+60°C

Temperature error /

Temperature error, T_{Ref} 20°C
rising: + 0.3% FS / 10K
falling: - 0.3% FS / 10K

Material /

Material	Housing	Window
PM-100N.1.1.x.	st. steel	instrument glass
PM-100N.1.2.x.	st. steel	laminated safety-glass
PM-100N.2.x.x.	st. steel	laminated safety-glass

Material	Sensor element	Dial
PM-100N.1.x..	up to 100 bar, CuSn8 - 2.1030, soft soldered from 100 bar, st. steel - 1.4404, hard soldered	white aluminium, black scale and lettering as per EN 837-1
PM-100N.2.x..	st. steel 1.4404	white aluminium, black scale and lettering as per EN 837-1

Material	Motion work	Pointer
PM-100N.1.x..	Bottom and cover-parts from brass, moving parts argentan	black aluminium (PM-100N.1.1 plastic)
PM-100N.2.x..	stainless steel	black aluminium

Ordering Codes:

Order number **PM-100N. 2. 2. 1. 0. Q**

PM-100N Bourdon Pressure Gauge

Version /
1 = brass measuring instrument
2 = full stainless steel version for chemical applications

Damping /
1 = no glycerin filling
2 = with glycerin filling

Process connection /
1 = G1/2 B at the bottom
2 = G1/2 B excentrically at the back

Fastening rim (see table for possible combination) /
0 = none
1 = 3 hole front ring
2 = rear edge for wall-mounting
3 = 3 rimmed front ring with clamp

Operating range /
A = 0. . .0.6 bar
B = 0. . .1 bar
C = 0. . .1.6 bar
D = 0. . .2.5 bar
E = 0. . .4 bar
F = 0. . .6 bar
G = 0. . .10 bar
H = 0. . .16 bar
I = 0. . .25 bar
J = 0. . .40 bar
K = 0. . .60 bar
L = 0. . .100 bar
M = 0. . .160 bar
N = 0. . .250 bar
O = 0. . .400 bar
P = 0. . .600 bar
Q = 0. . .1000 bar
R = 0. . .1600 bar*
R2 = 0. . .2500 bar*
S = -1. . .0 bar
T = -1. . .+0.6 bar
U = -1. . .+1.5 bar
V = -1. . .+3 bar
W = -1. . .+5 bar
X = -1. . .+9 bar
Y = -1. . .+15 bar

* only for chemical version (PM-100N.2.x.x.x)

Front ring /

	3-hole Front ring	rear edge	3-rimmed-Front ring
PM-100N.1.1.1..	OK	OK	-
PM-100N.1.1.2.	OK	OK	OK
PM-100N.1.2.1..	OK	OK	-
PM-100N.1.2.2..	OK	OK	OK
PM-100N.2.1.1..	OK	OK	-
PM-100N.2.1.2..	OK	OK	OK
PM-100N.2.2.1..	OK	OK	-
PM-100N.2.2.2..	OK	OK	OK

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PK-01

Capsule Element Pressure Gauge

Features

/ Quality class 1.6

/ Millibar range

/ Anti-corrosive

/ Zero point correction

Description:

The PK-01 capsule element pressure gauges are intended for measuring small, negative and positive overpressures in gaseous media. The measuring element in such a device comprises two diaphragm halves that are joined by welding. These actuate an indicator when pressure is exerted on them inside which is then display the system pressure on a scale made of aluminium. The standard versions of the devices supplied are made of brass; however, optionally they can be fitted with a stainless steel movement. Also another version with 10x overpressure safety can be delivered. The available housing sizes are 2.5" (63 mm), 4" (100 mm) or 6" (160 mm) with stainless steel housing provided with connections radially at the bottom or centrally at the back. On request, other versions can be supplied.

Application:

Capsule element pressure gauges are optimally suited for measuring very small pressures in gaseous media. Typical applications are found in medical engineering, air-conditioning, in production of gas or in laboratories. For example, the applications are for leak detection, filter status measuring, emission measuring or, using the stainless steel version, for monitoring hostile and corrosive media.

Technical Specifications:

Accuracy class / quality class 1.6

Zero point adjustment / adjusting screw in dial

Protection class / IP54 as per EN 60529 / ICE 529

max. Pressure / < 25 mbar, 6 x full scale value
≥ 25 mbar, 10 x full scale value
(the max. possible low pressure value for vacuum ranges is the specified value of the reading)

Sealing and plug / EPDM and PUR

Options /
- restrictor screw in connector
- vacuum safety
  < 25 mbar 3-times,
  > 25 mbar 10-times
- red mark on dial

Temperature /

Temperature	max. Media temp.	Ambient temp.
PK-01.x..	+100°C	-25. . .+ 60°C

Temperature error /

Temperature error, T_{Ref} 20°C
Rising temperature: + 0,3% FS / 10K
Falling temperature: - 0,3% FS / 10K

Materials /

Material	Housing	Window
PK-01.1.1-2..	round case, stainless steel	acrylic glass
PK-01.1.3-6..	round case, stainless steel	instrument glass
PK-01.2.1-2..	round case, stainless steel	acrylic glass
PK-01.2.3-6..	round case, stainless steel	laminated safety glass

Material	Measuring element	Instrument dial
PK-01.1.x..	capsule, copper alloy	white aluminium, black scale and lettering as per EN 837-1
PK-01.2.x..	laser welded capsule, st. steel 1.4571	white aluminium, black scale and lettering as per EN 837-1

Material	Motion work	Pointer
PK-01.1.x..	Bottom and cover-parts from brass, moving parts argentan	black aluminium
PK-01.2.x..	stainless steel	black aluminium

Ordering Codes:

Order number	PK-01.	2.	2.	0.	17

PK-01 Capsule Element Pressure Gauge

Version /
1 = brass
2 = chemical version completely st. steel

Nominal size /
1 = DN63, G 1/4" B radial, bottom
2 = DN63, G 1/4" B central, back
3 = DN100, G 1/2" B radial, bottom
4 = DN100, G 1/2" B central, back
5 = DN160, G 1/2" B radial, bottom
6 = DN160, G 1/2" B central, back

Fastening rim (see table for combinations) /
0 = none
1 = 3 hole front ring
2 = rear edge for wall-mounting
3 = 3 rimmed front ring with clamp

Operating ranges /
01 = -25. . .0. . .+15 mbar
02 = -20. . .0. . .+40 mbar
03 = -40. . .0. . .+20 mbar
04 = -6. . .0 mbar (only for nominal size 160)
05 = -10. . .0 mbar (only for nominal size 100 and 160)
06 = -16. . .0 mbar (only for nominal size 100 and 160)
07 = -25. . .0 mbar
08 = -40. . .0 mbar
09 = -60. . .0 mbar
10 = -100. . .0 mbar
11 = -160. . .0 mbar
12 = -250. . .0 mbar
13 = -400. . .0 mbar
14 = 0. . .6 mbar (only for nominal size 160)
15 = 0. . .10 mbar (only for nominal size 100 and 160)
16 = 0. . .16 mbar (only for nominal size 100 and 160)
17 = 0. . .25 mbar
18 = 0. . .40 mbar
19 = 0. . .60 mbar
20 = 0. . .100 mbar
21 = 0. . .160 mbar
22 = 0. . .250 mbar
23 = 0. . .400 mbar
24 = 0. . .600 mbar

Front ring /

	3-hole Front ring	rear edge	3-rimmed-Front ring
PK-01.x.1..	OK	OK	-
PK-01.x.2..	OK	OK	OK
PK-01.x.3..	OK	OK	-
PK-01.x.4..	OK	OK	OK
PK-01.x.5..	OK	OK	-
PK-01.x.6..	OK	OK	OK

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PF-01

Diaphragm Pressure Gauge

Features

/ Highly viscous media

/ Crystallizing media

/ Resistant to shocks and vibrations

/ Highly safe on overpressure

Description:

The diaphragm springs are thin, circular and wavy membranes that are fixed between two crimped rings and impacted by the media on one side. The membrane deflection due to pressure exerted by the media is utilized to display the pressure by means of an indicator element. Diaphragm pressure gauges are resistant to vibrations and, optionally, they are available with safeguards against high overpressure. As the diaphragms are suitably coated, the devices can be used even under very rough conditions and hostile materials.

Application:

Thanks to their design principle and product material, diaphragm pressure gauges meet any rigorous requirements that are encountered when deployed in industrial production plants. Open connecting flanges allow their use for highly viscous, crystallizing and polluted media since in this version there is no clearance volume which may cause build up of deposits. Diaphragm pressure gauges are widely used in food-processing and beverage industries as well as in the manufacturing of machines, installations and plants.

Technical Specifications:

Accuracy class / quality class 1.6

Protection class / IP54 as per EN 60529 / IEC 529

Plug / PUR

Connection / G1/2" B at the bottom per EN 837-3,
PF-01.A brass, PF-01.B-D of st. steel

Options /
- medium safe 200°C,
- glycerin filling,
- open flange,
- membrane coating,
- other connection threads,
- overload safe, 10 times, but maximum 40 bar

Pressure /

Pressure	steady	dynamic	burst
PF-01.x..	1.00 x ME	0.90 x ME	5.00 x ME max. 40 bar

Temperature /

Temperature	max. Media temp.	Ambient temp.
PF-01.x..	+100°C	-25. . .+ 60°C

Temperature error /

Temperature error, T_{Ref} 20°C
rising: + 0.5% FS / 10K

falling: - 0.5% FS / 10K

Material /

Material	Housing	Window
PF-01.A.x..	round case, st. steel	instrument glass
PF-01.B.x..	round case, st. steel with pressure relief	laminated safety glass
PF-01.C.x..	round case, st. steel with pressure relief	laminated safety glass
PF-01.D.x.. (safety version)	round case, st. steel, with solid baffle wall and blow-out back	laminated safety glass

Material	Sensor element	Dial
PF-01.A.x..	upper and lower flange: aluminium diaphragm: stainless steel 1.4571 diaphragm sealing ring: NBR	white aluminium, black scale and lettering as per EN 837-3
PF-01.B.x..	upper flange: aluminium lower flange: stainless steel 1.4571 diaphragm: stainless steel 1.4571 diaphragm sealing ring: FPM	white aluminium, black scale and lettering as per EN 837-3
PF-01.C.x..	upper and lower flange: 1.4571 diaphragm: stainless steel 1.4571 diaphragm sealing ring: FPM	white aluminium, black scale and lettering as per EN 837-3
PF-01.D.x.. (safety version)	upper and lower flange: 1.4571 diaphragm: stainless steel 1.4571 diaphragm sealing ring: FPM	white aluminium, black scale and lettering as per EN 837-3

Material	Motion work	Pointer
PF-01.A–B.x..	Bottom and cover-parts from brass, moving parts argentan	black aluminium
PF-01.C–D.x..	stainless steel	black aluminium

Ordering Codes:

Order number	**PF-01.**	**A.**	**1.**	**17**

PF-01 Diaphragm Pressure Gauge

Version /
A = Upper and lower flange made of aluminium
B = Upper flange in al., lower flange in st. steel 1.4571
C = Upper and lower flange made of st. steel 1.4571
D = Upper and lower flange made of st. steel 1.4571 Safety

Nominal size /
1 = DN100
2 = DN160

Operating range /

01a	=	-0.6. . .0 bar
02	=	-1. . . 0 bar
03	=	-0.6. . .0. . .+1.0 bar
04	=	-1. . .0. . .+0.6 bar
05	=	-1. . .0. . .+1.5 bar
06	=	-1. . .0. . .+3 bar
07	=	-1. . .0. . .+5 bar
08	=	-1. . .0. . .+9 bar
09	=	-1. . .0. . .+15 bar
10a	=	-1. . .0. . .+24 bar
11	=	0. . .0.6 bar
12	=	0. . .1 bar
13	=	0. . .1.6 bar
14	=	0. . .2.5 bar
15	=	0. . .4 bar
16	=	0. . .6 bar
17	=	0. . .10bar
18	=	0. . .16 bar
19	=	0. . .25 bar
20	=	0. . .40 bar
21	=	0. . .10 mbar
22	=	0. . .16 mbar
23	=	0. . .25 mbar
24	=	0. . .40 mbar
25	=	0. . .60 mbar
26	=	0. . .100mbar
27	=	0. . .160mbar
28	=	0. . .250mbar
29	=	0. . .400mbar

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PM-2000

Magnehelic® - Differential Pressure Gauge for Cases

Features

/ Proven and renowned technology

/ Resistant to shocks and vibrations

/ Accuracy class 2%

/ All common operating ranges and units

/ Ideally suited for filter monitoring

/ Panel mounting

Description:

The PM-2000 differential pressure gauge used in thousands operates according to the Magnehelic principle. In this, the rear side of a membrane is loaded with the positive while the front side of the membrane is loaded with the negative connection to a differential pressure which causes a mechanical deflection. The membrane is equipped with a U-shaped permanent magnet where its mechanical movement is transferred without touch to a similarly magnetic helix at the end of which directly the indicator of PM-2000 is located. The membrane deflection is, therefore, directly proportional to the indicator movement and the operating range only depends on the membrane's material properties. During such transfer of movement there are no losses due to friction; with the result even the smallest differences in pressure can be captured. The movement and the scale are located in an extremely robust aluminium housing that is suitable for mounting on a switch panel. The indicator made of aluminium has a red, clearly visible tip and is sapphire-mounted to withstand shocks. The housings are fitted with a overpressure plug made of silicon rubber for protection against overpressure in models capable up to 100 kPa. The indicator stoppers are made of rubber which prevent damage to the indicator in case of wide deflections. In every PM-2000, the user can readjust the zero point for the device by means of a setting screw that is mounted directly in the plastic cover.

Application:

The PM-2000 differential pressure gauges are used in large numbers for monitoring air filters and air speeds. Their unique construction allows measurement of even the smallest variations in pressures in fans and blowers, blood or respiratory pressures, overpressure in rows of chimneys, pressure drop in pressure plates and in many other situations. The extraordinarily robust construction with high degree of accuracy and variety of operating ranges and units are combined in an affordable product. Optionally, customer-specific scale types, adjustable marking indicators, limiting value display by means of LEDs and a wide choice of accessories are available. The delivery includes tube bushings for connecting to NPT-female of the housing and a complete set of accessories for mounting on a switch panel.

Operating Range Tables /

Model number	Range inch water column	Smallest setting
2000. . .00N[1, 2]	0.05. . .0. . .0.2	0.005
2000. . .00[1, 2]	0. . .0.25	0.005
2000. . .0[1, 3]	0. . .0.5	0.010
2001	0. . .1.0	0.020
2002	0. . .2.0	0.050
2003	0. . .3.0	0.100
2004	0. . .4.0	0.100
2005	0. . .5.0	0.100
2006	0. . .6.0	0.200
2008	0. . .8.0	0.200
2010	0. . .10	0.200
2012	0. . .12	
2015	0. . .15	0.500
2020	0. . .20	0.500
2025	0. . .25	0.500
2030	0. . .30	1.000
2040	0. . .40	1.000
2050	0. . .50	1.000
2060	0. . .60	2.000
2080	0. . .80	2.000
2100	0. . .100	2.000
2120	0. . .120	
2150	0. . .150	5.000
2160	0. . .160	
2180*	0. . .180	
2250*	0. . .250	

Model number	Range mm water column	Smallest setting
2000. . .6MM[1, 2]	0. . .6	0.200
2000. . .10MM[1, 3]	0. . .10	0.200
2000. . .15MM	0. . .15	
2000. . .25MM	0. . .25	0.500
2000. . .30MM	0. . .30	
2000. . .50MM	0. . .50	1.000
2000. . .80MM	0. . .80	2.000
2000. . .100MM	0. . .100	2.000
2000. . .125MM	0. . .125	
2000. . .150MM	0. . .150	
2000. . .200MM	0. . .200	
2000. . .250MM	0. . .250	
2000. . .300MM	0. . .300	

Model number	Range PSI	Smallest setting
2201	0. . .1	0.020
2202	0. . .2	0.050
2203	0. . .3	0.100
2204	0. . .4	0.100
2205	0. . .5	0.100
2210*	0. . .10	0.200
2215*	0. . .15	0.500
2220*	0. . .20	0.500
2230**	0. . .30	1.000

Model number	Range inch water column	Range Pa	Range kPa
2000. . .OOD[1, 2]	0. . .25	0. . .62 Pa	
2000. . .OD[1, 3]	0. . .0.5	0. . .125 Pa	
2001D	0. . .1.0	0. . .250 Pa	
2002D	0. . .2.0	0. . .500 Pa	
2003D	0. . .3.0	0. . .750 Pa	
2004D	0. . .4.0		0. . .1.0 kPa
2005D	0. . .5.0		0. . .1.25 kPa
2006D	0. . .6.0		0. . .1.5 kPa
2008D	0. . .8.0		0. . .2.0 kPa
2010D	0. . .10		0. . .2.5 kPa
2015D	0. . .15		0. . .3.7 kPa
2020D	0. . .20		0. . .5 kPa
2025D	0. . .25		0. . .6.2 kPa
2050D	0. . .50		0. . .12.4 kPa
2060D	0. . .60		0. . .15 kPa

Units with double scale for air speeds /

Model number	Range inch water column	Range air velocity F.P.M.
2000. . .00AV[1, 2]	0. . .0.25	300. . .2000
2000. . .0AV[1, 3]	0. . .0.50	500. . .2800
2001AV	0. . .1.0	500. . .4000
2002AV	0. . .2.0	1000. . .5600
2005AV	0. . .5.0	2000. . .8800
2010AV	0. . .10	2000. . .12500

Zero Center Ranges /

Model number	Range zero center mm water column	Smallest setting
2300. . . 6MM[1, 2]	3. . .0. . .3	
2300. . .10MM[1, 3]	5. . .0. . .5	
2300. . .20MM[1, 3]	10. . .0. . .10	

Model number	Range zero center inch water column	Smallest setting
2300. . .00[1, 2]	0.125. . .0. . .0.125	
2300. . .0[1, 3]	0.25. . .0. . .0.25	0.010
2301	0.5. . .0. . .0.5	0.020
2302	1. . .0. . .1	0.050
2304	2. . .0. . .2	0.100
2310	5. . .0. . .5	0.200
2320	10. . .0. . .10	0.500
2330	15. . .0. . .15	1.000

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Model number	Range cm water column	Smallest setting
2000. . .15CM	0. . .15	0.500
2000. . .20CM	0. . .20	0.500
2000. . .25CM	0. . .25	0.500
2000. . .50CM	0. . .50	1.000
2000. . .80CM	0. . .80	2.000
2000. . .100CM	0. . .100	2.000
2000. . .150CM	0. . .150	5.000
2000. . .200CM	0. . .200	5.000
2000. . .250CM	0. . .250	5.000
2000. . .300CM	0. . .300	10.000

Zero Center Ranges /

2300. . .4CM	2. . .0. . .2	0.100
2300. . .10CM	5. . .0. . .5	0.200
2300. . .30CM	15. . .0. . .15	1.000

Model number	Range kPascal	Smallest setting
2000. . .0.5KPA	0. . .0.5	
2000. . .1KPA	0. . .1	0.020
2000. . .1.5KPA	0. . .1.5	0.050
2000. . .2KPA	0. . .2	0.050
2000. . .2.5KPA	0. . .2.5	
2000. . .3KPA	0. . .3	0.100
2000. . .4KPA	0. . .4	0.100
2000. . .5KPA	0. . .5	0.100
2000. . .8KPA	0. . .8	0.200
2000. . .10KPA	0. . .10	0.200
2000. . .15KPA	0. . .15	0.500
2000. . .20KPA	0. . .20	0.500
2000. . .25KPA	0. . .25	0.500
2000. . .30KPA	0. . .30	1.000

Zero Center Ranges /

2300. . .1KPA	0.5. . .0. . .0.5	0.020
2300. . .2KPA	1. . .0. . .1	
2300. . .2.5KPA	1.25. . .0. . .1.25	
2300. . .3KPA	1.5. . .0. . .1.5	0.100

Model number	Range Pascal	Smallest setting
2000. . .60NPA[1, 2]	10. . .0. . .50	
2000. . .60PA[1, 2]	0. . .60	1.000
2000. . .100PA[1, 3]	0. . .100	2.000
2000. . .125PA[1, 3]	0. . .125	5.000
2000. . .250PA	0. . .250	5.000
2000. . .300PA	0. . .300	10.000
2000. . .500PA	0. . .500	10.000
2000. . .750PA	0. . .750	25.000
2000. . .1000PA	0. . .1000	

Zero Center Ranges /

2300. . .60PA[1, 2]	30. . .0. . .30	1.000
2300. . .100PA[1, 2]	50. . .0. . .50	2.000
2300. . .120PA	60. . .0. . .60	2.000
2300. . .200PA	100. . .0. . .100	
2300. . .250PA	125. . .0. . .125	5.000
2300. . .300PA	150. . .0. . .150	
2300. . .500PA	250. . .0. . .250	10.000
2300. . .1000PA	500. . .0. . .500	

1 Calibrated for vertical mounting

2 Accuracy ± 4%

3 Accuracy ± 3%

* Option MP

** Option HP

Versions:

Operating range /

A large number of operating ranges and physical units are available. All standard variants are listed in the table “Operating ranges”. Please enquire for special type operating ranges.

Options /

CB Chrome bezel option: A chrome plated aluminum bezel for an aesthetically pleasing finish when mounting on metal surfaces such as control panels

SB Stainless steel bezel option: 304 stainless steel electro polished Ra 16 finished bezel

SS Corrosion resistant brushed 304 stainless steel bezel

G Green Transparent Overlay
(to highlight and emphasize critical pressures)

R Red Transparent Overlay
(to highlight and emphasize critical pressures)

Y Yellow Transparent Overlay
(to highlight and emphasize critical pressures)

ASF Additional features for the indicator with an adjustable marking signal flag

HP Overpressure safety up to 80 psi (5.52 bar) ensured by a thicker housing. A 4 13/16” – board cutout is necessary for assembly as against the standard cutout (4 9/16”).

LT Media temperatures up to -28°C possible as against the standard up to -6.67°C.

MP Overpressure safety up to 35 psi (2.41 bar) ensured by a thicker housing. A 4 13/16” – board cutout is necessary for assembly as against the standard cutout (4 9/16”).

SP An LED on the scale alerts if the limiting value that can be set from the front exceeds. The unit requires a power supply of 12 to 24 VDC and an MP- or HP housing.

SSK A large number of special type scales are available on request.

HA High Accuracy Magnehelic© Gage. Accuracy within 1% and weatherproof. Also includes mirrored scale overlay and a six point calibration certificate.

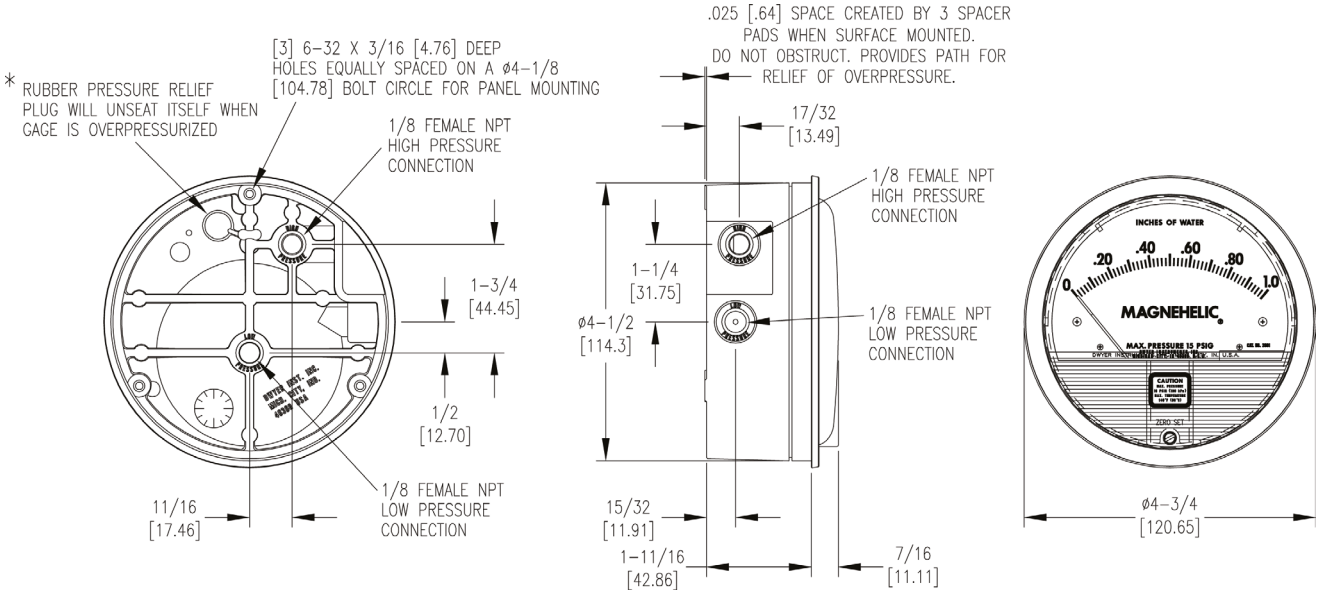
AHU1 Furnished with attached surface mounting plate.

AHU2 Furnished with attached surface mounting plate and including A-481 installer kit (2 plastic static pressure tips and 7' of PVC tubing).

M A mirrored scale overlay is also available to assist in reducing parallax error.

FC Factory calibration certificate.

NIST NIST traceable calibration certificate.



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Technical Specifications:

Media /	air and non-hostile and non-inflammable gases (optionally version for natural gases on request)
Housing /	aluminium casting, iridite-immersed external machining burnt-in dark gray forging
Accuracy /	± 2% F.S. in the entire range at 21°C (restrictions see operating range table)
Weight /	510 g (HP- and MP-models 963 g)
Pressure /	-0.677 bar to 1.034 bar maximum static pressure (2.41 bar in the MP option, 5.52 bar in the HP option)
Overpressure /	blow out plug opens at approx. 1.72 bar (only in standard devices)
Temperature /	-6.67. . .+60°C (-28°C for option LT)
Mounting posiiton /	vertical, scale towards the front
Process connection /	2 x 1/8"-NPT-female, one pair of connections on the side, one additionally at the back (closure plugs for one pair supplied)
Zero point /	can be set with the correction screw from the front

Ordering Codes:

Order number	**PM-2000.**	**2300-250PA.**	**ASF**

PM-2000 Magnehelic®

Operating range, refer to model number in the table for operating ranges:
□□□□-□□

Options /

CB	= Aluminium bezel, coated with chrome
SB	= st. steel bezel 304, electropolished
SS	= st. steel bezel 304, corrosion resistant, brushed
G	= green sight glass
R	= red sight glass
Y	= yellow sight glass
ASF	= marking indicator can be set
HP	= highly safe on overpressure
LT	= for lower temperatures down to -28°C
MP	= medium safe on overpressure
SP	= LED for setpoint display (no output)
SSK	= special type scale with coloured marking (ret, green, mirror) on request
HA	= high accuracy, weatherproof, mirrored scale 6 point calib. certificate
AHU1	= furnished with attached surface mounting plate
AHU2	= like AHU1, but additional 2 plastic static pressure tips and 7' of PVC tubing
M	= mirrored scale overlay
FC	= factory calibration certificate
NIST	= NIST traceable calibration certificate

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PS-00

Low-Cost Pressure Switch

Features

/ Settings can be made on location

/ Long mechanical life span

/ Small dimensions

/ Silver or gold contacts

/ Critical media version

(paint, grease etc.) on request

Description:

A spring-loaded membrane or (in higher ranges of pressure) a spring-loaded piston form the measurement technical basis for the Profimess' Low-Cost Pressure switch PS-00. Under the influence of pressure the operating element actuates an electrical micro-switch that is equipped with silver contacts and thus ensures a long life span. By means of a setting screw the pre-tension for the spring can be smoothly adjusted, with the result that the setpoint can be varied along entire range of setting.

Application:

Mechanical pressure switches are used in all areas where an electrical signal is required depending on the specified pressure parameters. These devices are predestined - thanks to small dimensions, high reliability and long life span – especially for applications in the construction of machines and installations. Due to excellent price to performance ratio, the PS-00 range of pressure switches are suited for OEM applications as well regardless of average to high numbers.

Technical Specifications:

Operating range / see ordering codes

Mode of setting / by setting screw, under pressure

Switch. hysteresis / 15. . .30% of set point value

Tolerance /
PS-00.1.: ± 0.2 bar
PS-00.2.: ± 0.5 bar
PS-00.3.: ± 3.0 bar
PS-00.4.: ± 5.0 bar
PS-00.5.: ± 100 mbar

max. Op. pressure / 1 x end of range

Bursting pressure /
PS-00.1.: 10 bar
PS-00.2.: 20 bar
PS-00.3.: 120 bar
PS-00.4.: 300 bar
PS-00.5.: 2 bar

Mech. Lifetime / 10^6 switching cycles

max. Media temp. / -25. . .+85°C

Housing / see Table 1

Process connection / G1/4"B for overpressure ranges, G1/8"B for neg. pressure ranges

Weight /
PS-00.1-2.: approx. 65 g
PS-00.3-4.: approx. 95 g
PS-00.5.: approx. 120 g

Electrical Specifications:

Reference voltage / max. 42 V

Reference frequenzy / not over 100 Hz

Switching load / max. 100 VA

Switching function / change-over (NO-contact or NC-contact on request)

Connection / flat plug 3 x 6.3 x 0.8

Protection class / IP65 on media side
IP00 on clamp side

Breaking capacity	AC		DC				
Voltage up to	125 V	250 V	30 V	50 V	75 V	125 V	250 V
Resistance load	4 A	4 A	2 A	2 A	1 A	0,5 A	0,25 A
Inductive load	1 A	1 A	1 A	1 A	0,5 A	0,2 A	0,2 A

Configuration Possibilities:

Auswahlmöglichkeit	PS-00.1	PS-00.2	PS-00.3	PS-00.4	PS-00.5
Contact silver	standard	standard	standard	standard	standard
Contact gold	option	option	option	option	option
Membrane material NBR	standard	standard	-	-	standard
Membrane materiall Viton	option	option	-	-	option
Membrane material EPDM	option	option	-	-	option
Seal material UR	-	-	standard	standard	-
Seal material Viton	-	-	option	option	-
Housing steel zinc plated	standard	standard	standard	standard	-
Housing st. steel 1.4305	option	option	option	option	-
Housing st. steel 1.4571	option	option	-	-	-
Housing material brass	option	option	-	-	standard

Ordering Codes:

Order number **PS-00. 2. 2. 1. 3. 1**

PS-00 Low-Cost Pressure Switch

Operating ranges /
1 = 0.5. . .2 bar
2 = 1. . .10 bar
3 = 10. . .70 bar
4 = 50. . .200 bar
5 = -800. . .-200 mbar

Contact /
1 = silver
2 = gold

Membrane material /
(ranges 1, 2 and 5 - refer to table 1)
1 = NBR
2 = Viton
3 = EPDM

Seal material /
(ranges 3 and 4 - refer to table 1)
4 = UR
6 = Viton

Housing /
(all ranges - refer to table 1)
1 = steel zinc plated
2 = stainless steel 1.4305
3 = stainless steel 1.4571
4 = brass

Protective cover /
0 = none
1 = NBR 55° Sh for Operating ranges 1-4
2 = NBR 55° Sh for Operating ranges 5

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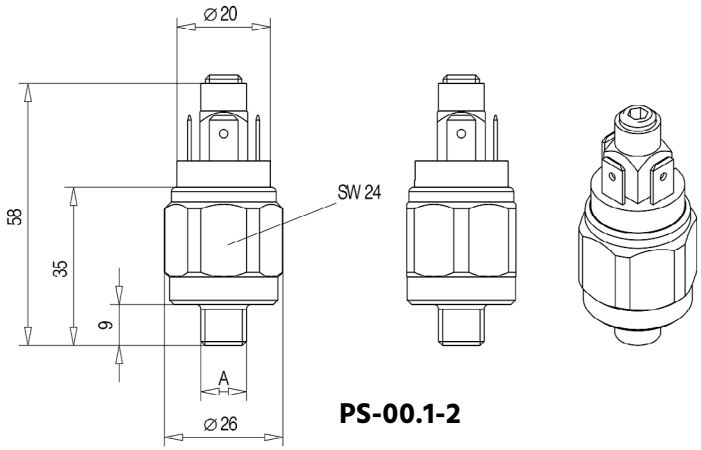
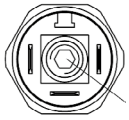
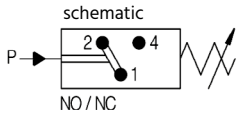
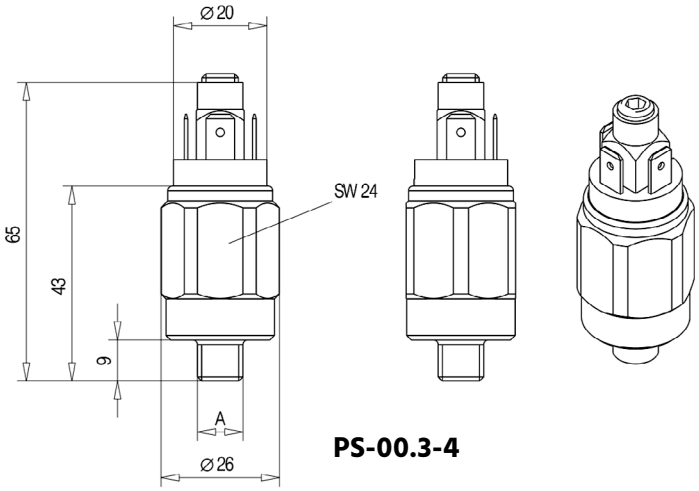
Dimensions in mm:



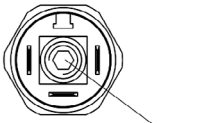
PS-00.1-2

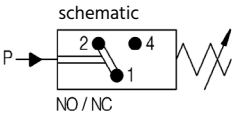


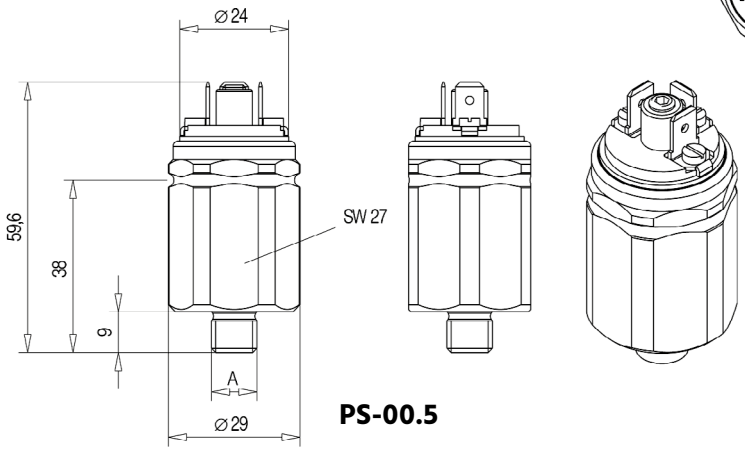




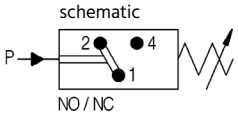
PS-00.3-4







PS-00.5



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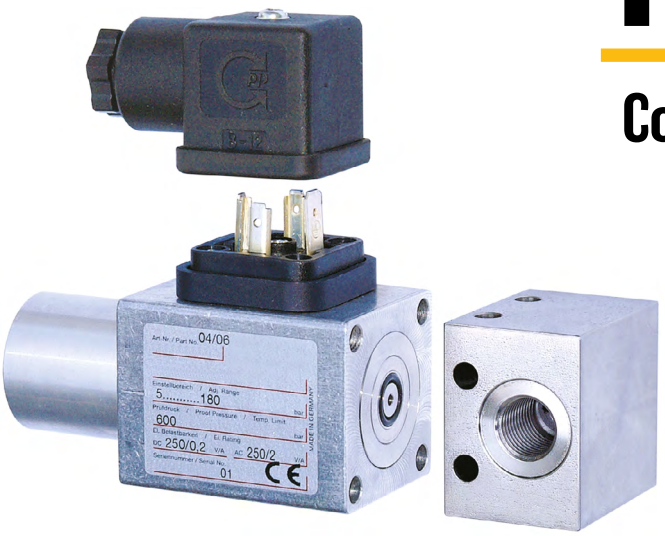
PS-02N

Compact Pressure Switch



Features

/ Compact

/ Robust

/ 6 Pressure ranges

/ Up to 600 bar

/ Plug connection

Description:

Mechanical pressure switches are intended for pressure-dependent switching on and off an electrical circuit. A pressure switch can be used as a control device as well as for visual or acoustical control for an operating point. The PS-02N series of compact pressure switches is designed as piston or diaphragm pressure switches depending on the pressure range. Both the versions are similar in construction where, in the case of the former, a spring-loaded piston actuates the micro-switch while, in the case of the latter, a spring-loaded elastomer membrane assumes this function. The setpoints can be set by means of a female hexagon SW5. Fine adjustments are optionally possible depending on customer requirements. The contacts for the micro-switch can be gold-plated on request so as to minimize the electrical transitional resistance, if necessary.

Application:

Thanks to the compact design of the PS-02N series and the broad spectrum of pressure range of 1 bar to 600 bar in 6 levels, these switches are well-suited for machine and vehicle manufacturing, packaging industry, pneumatic and hydraulic technologies and for equipment manufacturing.

Electrical Specifications:

Switching Element / changeover contact (SPDT)

Electrical connection / plug DIN EN 175301-803A or
plug M 12x1, 4-pole or plug M 12x1,
4-pole with 2 m tipped cable or
cable gland with 0,7 m cable

Protection class / IP65 for plug connections
IP68 for cable gland with 0,7 m cable

EX-Versions / intrinsically safe design on request
EEx ia (U_{max} = 28 V, I_{max} = 50 mA)

Options / approval for shipping as per GL
US-approval as per UL
Low hysteris LH

Electrical Connection /

	Plug DIN EN 175301-803A	Plug M12x1, 4-pole	Cable gland with two meters cable
COMMON	1	1	BN
normally closed	2	2	BK
normally open	3	4	GY
PE	-	3	GN / YE

Electrical load capacity /

Ag contacts	ind. load	res. load	Au contacts	ind. / res. load
30 VDC	2.0 A	5.0 A	≤ 300 mVDC	- / ≤ 400 mA
250 VDC	0.03 A	0.2 A	≤ 30 VDC	- / ≤ 4 mA
250 VAC	2.0 A	5.0 A	AC	U x I = max. 0.12 VA
125 VAC	2.0 A	5.0 A		
minimum load	10 mA at 12 VDC		0 mA / 0 VDC	

Operating range /

Type	Setting range dropping pressure	Setting range rising pressure	max. Hysteresis (end of range)	max. op. Pressure [bar] (*test press.)
Diaphragm switch				
PS-02N.1	0.4. . .5.7 bar	0.6. . .6.0 bar	≤ 15%	50 (*80)
PS-02N.2	2.0. . .17 bar	3.0. . .20 bar	≤ 15%	50 (*80)
PS-02N.3	3.0. . .41 bar	4.0. . .45 bar	≤ 15%	50 (*80)
Piston switch				
PS-02N.5	3.0. . .160 bar	5.0. . .180 bar	≤ 15%, at LH ≤ 7.5%	250 (*600)
PS-02N.6	30. . .300 bar	50. . .350 bar	≤ 15%, at LH ≤ 7.5%	450 (*600)
PS-02N.7	55. . .520 bar	80. . .600 bar	≤ 15%, at LH ≤ 7.5%	600 (*900)

Technical Specifications:

Media temp. / -40. . .+80°C for piston switch
-20. . .+80°C for diaphragm switch
-50°C on request

Switching frequency / max. 60/min for piston switch
max. 30/min for diaphragm switch

Repeatability / ±1% for piston switch
±2% for diaphragm switch

Housing / Aluminium, st. steel 1.4305 on request

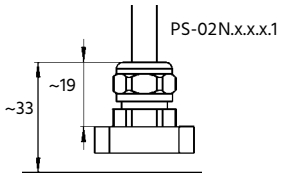
Wetted parts / NBR, PTFE with bronze and st. steel 1.4301;
for piston switch: steel FKM, EPDM, CR instead of NBR

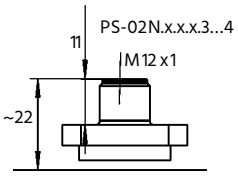
Setting Screw / st. steel 1.4305 (SW5)

Pressure connection / G1/4"-female, 1/4"-NPT-female straight or angular (others on request)

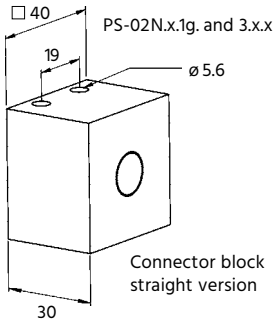
Total weight / approx. 350g

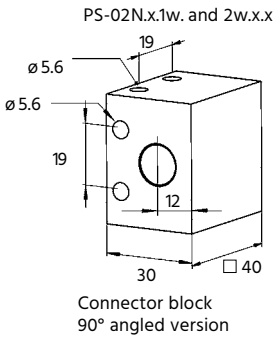
Electrical Connection /





Process connection /





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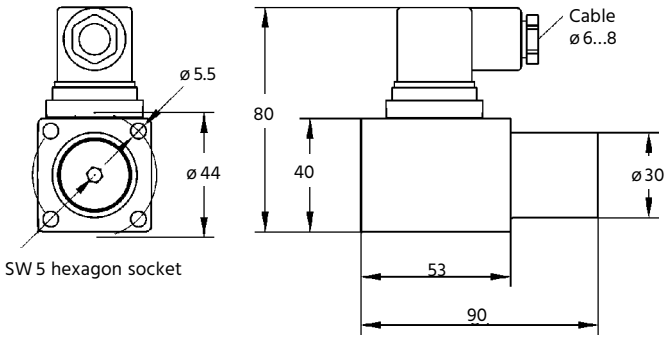
Dimensions in mm:



Ordering Codes:

Order number	PS-02N.	7.	1w.	1.	1

PS-02N Compact Pressure Switch

Operating range /

1 = 0.4. . .5.7 bar falling, 0.6. . .6.0 bar rising
2 = 2.0. . .17 bar falling, 3.0. . .20 bar rising
3 = 3.0. . .41 bar falling, 4.0. . .45 bar rising
5 = 3.0. . .160 bar falling, 5.0. . .180 bar rising
6 = 30. . .300 bar falling, 50. . .350 bar rising
7 = 55. . .520 bar falling, 80. . .600 bar rising

Process connection /

1g = G1/4"-female straight
1w = G1/4"-female angular
2g = 1/4"-NPT-female straight
2w = 1/4"-NPT-female angular

Contacts /

1 = silver
2 = gold

Electrical connection /

1 = Cable gland, 0,7 m cable, IP68
2 = Plug DIN EN175301-803A, IP65, with counterpart
3 = Plug M12, 4-pole, without counterpart, IP65
4 = Plug M12, 4-pole, with counterpart angular 90° with 2 m cable, IP65

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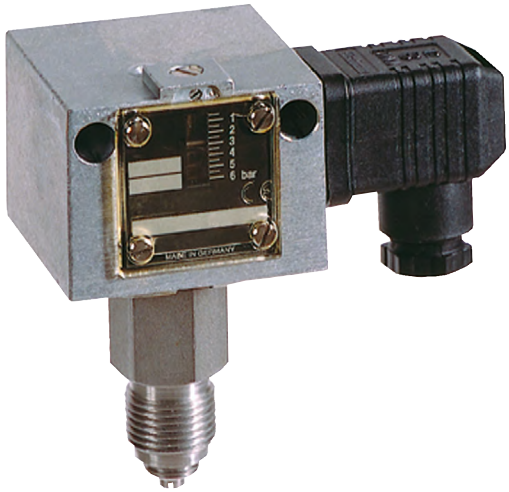
PDC-1

Pressure Switch for Non-Hostile Fluids and Gases



Features

/ Extremely resilient

/ Universal connection

/ Hysteresis can be set

/ Wide span of measuring

Description:

The PDC series of mechanical pressure switches is characterized by their extreme resilience. The PDC-1 has a robust housing made of sea-water resistant aluminium die casting. Depending on the pressure range, it has a connection fitting in copper and brass or stainless steel with a G1/2”-male and a G1/4”-female thread. Excrescent pressure changes at the connection act on an internal measuring diaphragm the movements of which are transferred to a high-performance micro-switch through a connecting bridge. The setpoint is set externally by rotating a spindle for nominal value that directly modifies the pre-tension of a spring. In addition, the construction has a counter-pressure spring that ensures a very stable connection even at low set-points. The PDC series of pressure switches can be provided with a terminal housing in IP65 and a blue cable gland, to allow the operation in hazardous areas (in connection with a suitable isolating switch amplifier) or even as an Ex-d version.

Application:

The PDC-1 series of pressure switches is used in applications where high requirements are placed on the switch’s life span and mechanical strength. Due to the fact that the pressure-sensing measuring diaphragms are only less loaded – considering their permissible values – the PDC-1 guarantees an excellent long-term stability at minimal setpoint drift. Consequent to its design, the upstroke of the pressure diaphragms is limited by means of a stopper so that high overpressure safety is ensured even in small operating ranges. A number of operating ranges are available of which also a version with adjustable hysteresis can be supplied. This enables the user to accurately control a span of pressures with only a single device. Thanks to its material quality, flexibility of connections and high switching load of the micro-switch, the PDC-1 is predestined for use across all sections of the industry.

Technical Specifications:

Operating range / refer to table

Mounting position / vertically upright and horizontal (operating range A and B only vertically upright)

max. Pressure / refer to table

max. Media temperature / -25°C to +70°C (-15°C. . .+60°C for ranges A, B and C) short spell up to +85°C. Cooling elements are recommended for higher temperatures

Setpoint / Can be set externally by means of screw-driver on the spindle

Repeatability / < 1% of working range (for pressure ranges > 1 bar)

Adjustment / The scales are calibrated for decreasing pressures. The reading corresponds therefore to lower setpoint, the upper setpoint is higher by the hysteresis

Lead sealing / On request, ex-factory; sealing can also be undertaken later

Vacuum / All PDC-1 besides the PDC-1.x.C can be impacted by vacuum; the device will not be damaged

Vibration / Up to 4g no significant deviations

Mechanical Life span / 10 x 10^6 for room temperature and sinusoidal pressure impact. Life span depends highly on the sort of pressue impact. This value is therefore just a guide value. For applications with pulsating pressure or pressure surges we recommend the use of a pressure surge reducer.

Electrical Life span / 100,000 switching cycles at nominal current 8 A, 250 VAC

Isolation / overvoltage category III, pollution degree 3, rated impulse voltage 4000V, fullfills DIN VDE 01 10

Hysteresis / In PDC-1.1.A to PDC-1.1.M the hysteresis cannot be set. In PDC-1.2.D to PDC-1.2.M the hysteresis can be set as specified in the following tables.

Process connection / G1/2"-male (pressure gauge connection acc. DIN 16288), G1/4"-female acc. ISO 228 part 1. Using the G1/2"-male the PDC-1 can be directly screwed on to the pressure pipe, alternatively fastening by means of 2 screws (4mm Ø) on a plane surface is also possible.

Housing material / Aluminium casting GD Al Si 12 (sea-water resistant)

Sensor material / refer to following tables

rel. Humidity / 15%. . .95%, non-condensing

Ordering Codes:

Order number	**PDC-1.**	**1.**	**B1.**	**4**

PDC-1 Pressure switch for non-hostile fluids and gases

Hysteresis /

1 = Hysteresis cannot be adjusted (A - M)
2 = Hysteresis can be adjusted (D - M)

Operating range /

A = 1. . .16 mbar
B = 4. . .25 mbar
B1 = 15. . .60 mbar
C = 10. . .100 mbar
D = 0.04. . .0.25 bar
E = 0.1. . .0.6 bar
F = 0.2. . .1.6 bar
G = 0.2. . .2.5 bar
H = 0.5. . .6 bar, overload up to16 bar
HD= 0.5. . .6 bar, overload up to25 bar
I = 1. . .10 bar
J = 3. . .16 bar
K = 4. . .25 bar
L = 8. . .40 bar
M = 16. . .63 bar
N = 40. . .75 bar

Options /

0 = without

Exi = gold-plated contacts, SPDT, fixed hysteresis, IP65, switching capacity: max. 24 VDC, 100 mA, min. 5 VDC, 2 mA; media temperature max. 60°C, ignition protection class II 1/2G Ex ia IIC T6 Ga/Gb, II 1/2D Ex ia IIIC T80 °C (1)

Exd = standard contacts, SPDT, fixed hysteresis, IP65, switching capacity: max. 250 VAC, 3 (2) A or 24 VDC, 3 A or 250 VDC, 0.1 A, min. 24 VDC, 2 mA, media temperature max. 60°C, ignition protection class II 2G Ex d e IIC T6 Gb, II 1/2D Ex ta/tb IIIC T80 °C Da/Db (1)

2 = gold-plated contacts, SPDT, switching capacity: max. 24 VDC, 100 mA, min. 5 VDC, 2 mA. And others not available with adjustable hysteresis.

3 = two microswitches, switching in parallel or in succession, fixed switching interval (with the exception of PDC-1.1.A/B/C) (1)

4 = two microswitches, 1 plug, switching in succession, adjustable switching interval (with the exception of PDC-1.1.A/B/C)

5 = terminal connection housing, IP65

6 = protection class IP65 and switching housing with surface protection (chemical version)

(1) incl. terminal connection housing, IP65

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Electrical Specifications:

Connection / plug connection

Protection class / IP54 in vertical position

Switching load / 250 VAC, 8 A (ohmic), 5A (inductive)
250 VDC, 0.3 A (ohmic),
24 VDC, 8 A (ohmic),
min. 10 mA, 12 VDC

Contacts / SPDT

Units with fixed hysteresis (PDC-1.1):

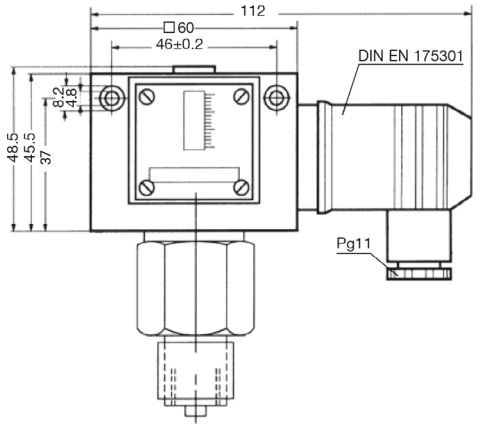
Type	Setpoint range	Hysteresis (average)	max. Pressure	Wetted materials	Sketch no.	Manufacturer number
PDC-1.1.A	1. . .16 mbar	2 mbar	1 bar	sensor housing 1.4301 + membrane perbunan	1 + 11	DCM4016
PDC-1.1.B	4. . .25 mbar	2 mbar	1 bar	sensor housing 1.4301 + membrane perbunan	1 + 11	DCM4025
PDC-1.1.C	10. . .100 mbar	12 mbar	10 bar	sensor housing brass + membrane perbunan	1 + 10	DCM1000
PDC-1.1.D	0.04. . .0.25 bar	0.03 bar	6 bar	sensor housing copper a. brass + bellow copper	1 + 14	DCM025
PDC-1.1.E	0.1. . .0.6 bar	0.04 bar	6 bar	sensor housing copper a. brass + bellow copper	1 + 14	DCM06
PDC-1.1.F	0.2. . .1.6 bar	0.04 bar	6 bar	sensor housing copper a. brass + bellow copper	1 + 14	DCM1
PDC-1.1.G	0.2. . .2.5 bar	0.1 bar	16 bar	sensor housing 1.4104 + bellow 1.4571	1 + 18	DCM3
PDC-1.1.H	0.5. . .6 bar	0.15 bar	16 bar	sensor housing 1.4104 + bellow 1.4571	1 + 18	DCM6
PDC-1.1.HD	0.5. . .6 bar	0.25 bar	25 bar	sensor housing 1.4104 + bellow 1.4571	1 + 17	DCM625
PDC-1.1.I	1. . .10 bar	0.3 bar	25 bar	sensor housing 1.4104 + bellow 1.4571	1 + 17	DCM10
PDC-1.1.J	3. . .16 bar	0.5 bar	25 bar	sensor housing 1.4104 + bellow 1.4571	1 + 17	DCM16
PDC-1.1.K	4. . .25 bar	1.0 bar	60 bar	sensor housing 1.4104 + bellow 1.4571	1 + 16	DCM25
PDC-1.1.L	8. . .40 bar	1.3 bar	60 bar	sensor housing 1.4104 + bellow 1.4571	1 + 16	DCM40
PDC-1.1.M	16. . .63 bar	2.0 bar	130 bar	sensor housing 1.4104 + bellow 1.4571	1 + 16	DCM63
PDC-1.1.N	40. . .75 bar	2,3 bar	130 bar	sensor housing 1.4104 + bellow 1.4571	1 + 16	DCM63-406

Units with adjustable hysteresis (PDC-1.2):

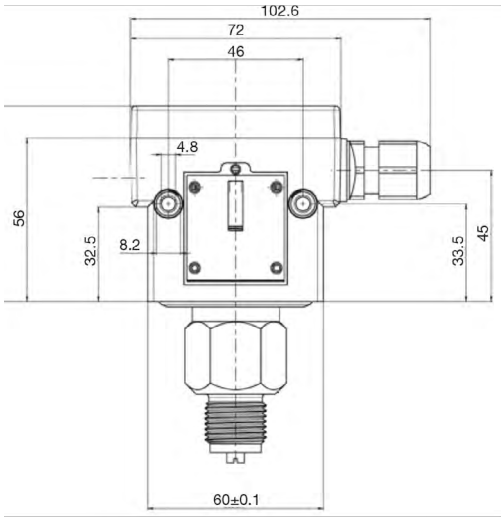
Type	Setpoint range	Hysteresis (average)	max. Pressure	Wetted materials	Sketch no.	Manufacturer number
PDC-1.2.D	0.04. . .0.25 bar	0.03 - 0.4 bar	6 bar	sensor housing copper a. brass + bellow copper	1 + 14	DCMV025
PDC-1.2.E	0.1. . .0.6 bar	0.04 - 0.5 bar	6 bar	sensor housing copper a. brass + bellow copper	1 + 14	DCMV06
PDC-1.2.F	0.2. . .1.6 bar	0.07 - 0.55 bar	6 bar	sensor housing copper a. brass + bellow copper	1 + 14	DCMV1
PDC-1.2.G	0.2. . .2.5 bar	0.15 - 1.5 bar	16 bar	sensor housing 1.4104 + bellow 1.4571	1 + 18	DCMV3
PDC-1.2.H	0.5. . .6 bar	0.25 - 2.0 bar	16 bar	sensor housing 1.4104 + bellow 1.4571	1 + 18	DCMV6
PDC-1.2.I	1. . .10 bar	0.5 - 2.8 bar	25 bar	sensor housing 1.4104 + bellow 1.4571	1 + 17	DCMV10
PDC-1.2.J	3. . .16 bar	0.7 - 3.5 bar	25 bar	sensor housing 1.4104 + bellow 1.4571	1 + 17	DCMV16
PDC-1.2.K	4. . .25 bar	1.3 - 6.0 bar	60 bar	sensor housing 1.4104 + bellow 1.4571	1 + 16	DCMV25
PDC-1.2.L	8. . .40 bar	2.6 - 6.6 bar	60 bar	sensor housing 1.4104 + bellow 1.4571	1 + 16	DCMV40
PDC-1.2.M	16. . .63 bar	3.0 - 10.0 bar	130 bar	sensor housing 1.4104 + bellow 1.4571	1 + 16	DCMV63

Housing dimensions:

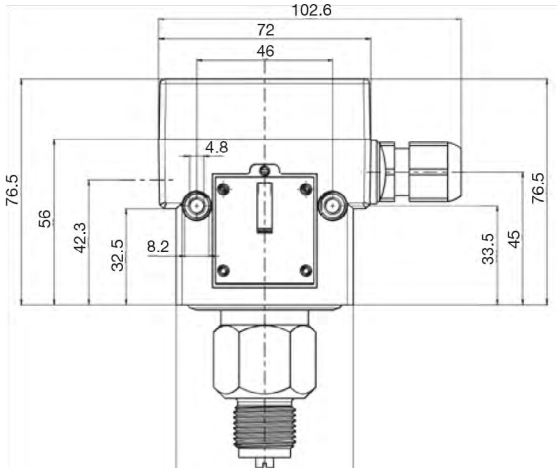
Standard housing with plug connection



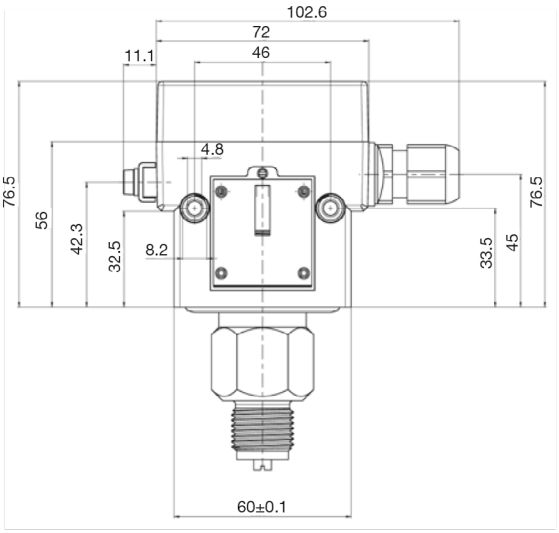
Standard housing with terminal connection (option 5)



③ Ex-i housing with blue cable gland

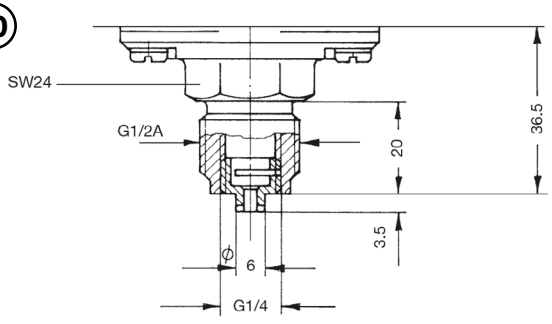


④ Ex-d housing with Ex-d cable gland



Pressure sensor dimensions:

⑩



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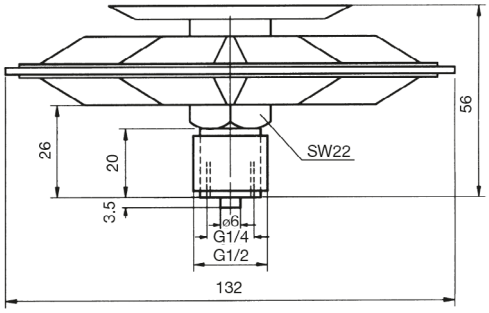

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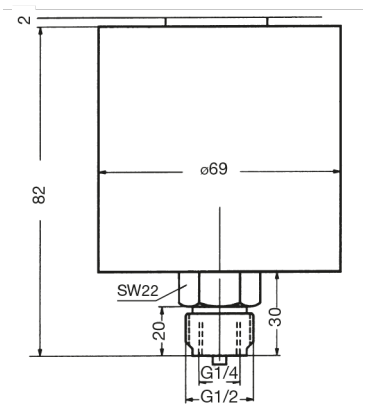

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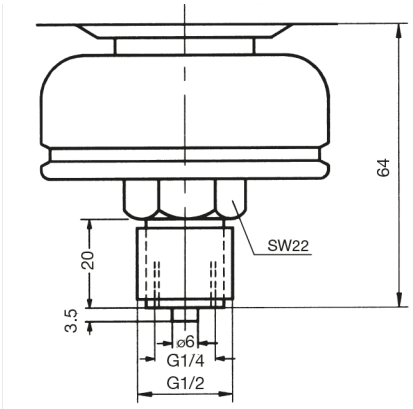

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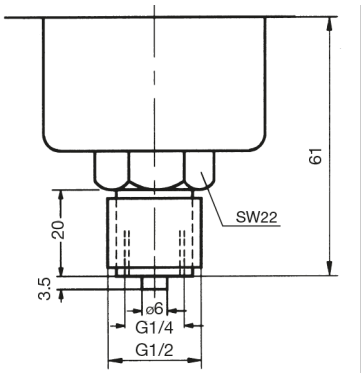

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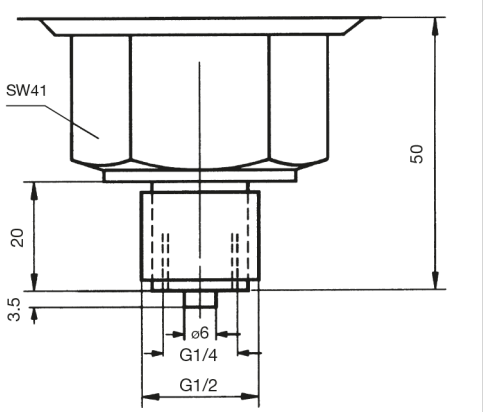
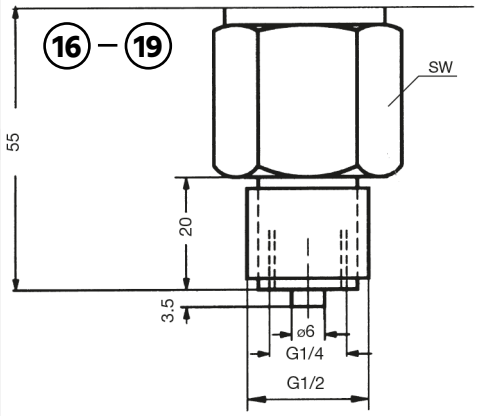
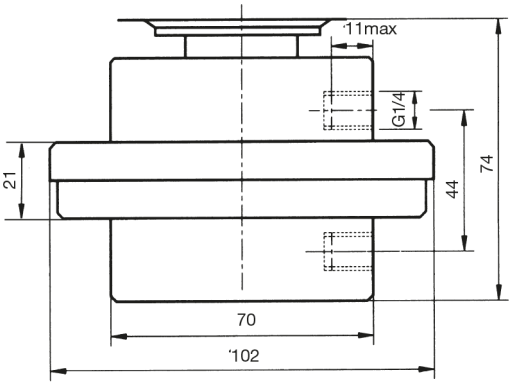


16 – 19



Housing no.	SW
16	22
17	24
18	30
19	32

20



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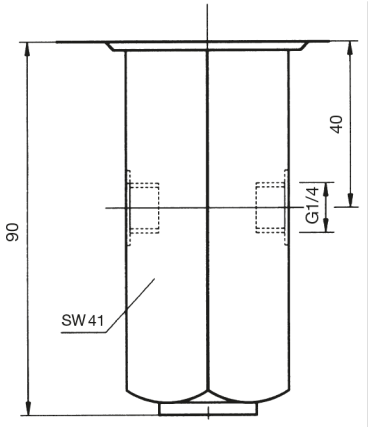

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PDC-2

Vacuum Switch

Features

/ Robust design

/ 6 operating ranges under vacuum

/ Zero point excess deviation

/ Adjustable hysteresis

Description:

The PDC series of mechanical pressure switches is characterized by their extreme resilience. The PDC-2 has a robust housing made of sea-water resistant aluminium pressure casting. Depending on the pressure range, it has a pressure port made of brass or stainless steel and a membrane or a bellow made of Perbunan, Cu Zn or stainless steel and a G1/2"-male and a G1/4"-female thread. Excrescent pressure changes at the connection act on an internal measuring diaphragm the movements of which are transferred to a high-performance micro-switch through a connecting bridge. The setpoint is set externally by rotating a spindle for nominal value that directly modifies the pre-tension of a spring. In addition, the construction has a counter-pressure spring that ensures a very stable connection even at low set-points. The PDC series of pressure switches can be provided with a terminal housing in IP65 and a blue cable gland, to allow the operation in hazardous areas (in connection with a suitable isolated switch amplifier), or even as an EEx-d version.

Application:

The PDC-2 series of pressure switches is used in applications where high requirements are placed on the switch's life span and mechanical strength. Due to the fact that the pressure-sensing measuring diaphragms are only less loaded – considering their permissible values – the PDC-2 guarantees an excellent long-term stability at minimal setpoint drift. Consequent to its design, the upstroke of the pressure diaphragms is limited by means of a stopper so that high overpressure safety is ensured even in small operating ranges. A number of operating ranges are available of which also a version with adjustable hysteresis can be supplied. In the selection of a range, attention has been paid to cover smaller pressure spans close to the zero point as well as the entire range vacuum. Thanks to its material quality, flexibility of connections and high switching load of the micro-switch, the PDC-2 is predestined for use across all sections of the industry.

Technical Specifications:

Operating range / see table

Mounting position / vertically upright and horizontal (operating range A only vertically upright)

max. Pressure / see table

max. Media temperature / -25. . .+70°C (-15. . .+60°C for range A) short spell up to +85°C. Cooling elements are recommended for higher temperatures

Setpoint / can be set externally by means of screw-driver on the spindle

Repeatability / < 1% of working range (at pressure ranges > 1 bar)

Adjustment / The scales are calibrated for decreasing pressures. The reading corresponds therefore to lower setpoint, the upper setpoint is higher by the hysteresis

Lead sealing / On request, ex-factory; sealing can also be undertaken later

Vibration / Up to 4g no significant deviations

Mechanical Life span / 10 x 10^6 for room temperature and sinusoidal pressure impact. Life span depends highly on the sort of pressue impact. This value is therefore just a guide value. For applications with pulsating pressure or pressure surges we recommend the use of a pressure surge reducer.

Electrical Life span / 100,000 switching cycles at nominal current 8 A, 250 VAC

Isolation / overvoltage category III, pollution degree 3, rated impulse voltage 4000V, fullfills DIN VDE 01 10

Hysteresis / In PDC-2.1.A to PDC-2.1.F the hysteresis cannot be set. In PDC-2.2.B to PDC-2.2.F the hysteresis can be set as specified in the following tables.

Process connection / G1/2"-male (pressure gauge connection acc. DIN 16288), G1/4"-female acc. ISO 228 part 1. Using the G1/2"-male the PDC-2 can be directly screwed on to the pressure pipe, alternatively fastening by means of 2 screws (4mm Ø) on a plane surface is also possible.

Housing material / Aluminium pressure casting GD Al Si 12 (sea-water resistant)

Material of pressure sensor / refer to following tables

rel. Humidity / 15%. . .95%, non-condensing

Ordering Codes:

Order number	**PDC-2.**	**1.**	**D.**	**0**

PDC-2 Vacuum Switch

Hysteresis /

1 = hysteresis cannot be set (A - F)
2 = hysteresis can be set (B - F)

Operating range /

A = -15. . .+6 mbar
B = -250. . .+100 mbar
C = -1*. . .+0,1 bar
D = -0.9. . .+0,5 bar
E = -250. . .+100 mbar (3 bar max.)
F = -1* to +0.1* bar (6 bar max.)

* In case of high vacuum conditions, close to the theoretically possible low-pressure of -1 bar, use of the switch is subject to restrictions due to extraordinary conditions of vacuum technology. However, the vacuum switch itself will not be damaged at maximum low-pressure.

Options /

0 = without

Exi = gold-plated contacts, SPDT, fixed hysteresis, IP65, switching capacity: max. 24 VDC, 100 mA, min. 5 VDC, 2 mA; media temperature max. 60°C, ignition protection class II 1/2G Ex ia IIC T6 Ga/Gb, II 1/2D Ex ia IIIC T80 °C (1)

Exd = standard contacts, SPDT, fixed hysteresis, IP65, switching capacity: max. 250 VAC, 3 (2) A or 24 VDC, 3 A or 250 VDC, 0.1 A, min. 24 VDC, 2 mA, media temperature max. 60°C, ignition protection class II 2G Ex d e IIC T6 Gb, II 1/2D Ex ta/tb IIIC T80 °C Da/Db (1)

2 = gold-plated contacts, switching capacity: max. 24 VDC, 100 mA, min. 5 VDC, 2 mA. And others not available with adjustable switching difference.

3 = two microswitches, switching in parallel or in succession, fixed switching interval (1) (with the exception of PDC-2.A)

4 = two microswitches, 1 plug, switching in succession, adjustable switching interval (with the exception of PDC-2.A)

5 = terminal connection housing, IP65

6 = protection class IP65 and switching housing with surface protection (chemical version)

(1) incl. terminal connection housing, IP65

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Electrical Specifications:

Connection / plug connection

Protection class / IP54 in vertical mounting

Switching load / 250 VAC, 8A (Ohmic), 5A (inductive)
250 VDC, 0,3A (Ohmic)
24 VDC, 8A (Ohmic)
min. 10 mA, 12 VDC

Contacts / SPDT

Units with fixed hysteresis (PDC-2.1):

Type	Setpoint range	Hysteresis (average)	max. Pressure	Wetted parts	Sketch Nr.	Manufacturer number
PDC-2.1.A	-15. . .+6 mbar	2 mbar	1 bar	Sensor housing 1.4301 + diaphragm Perbunan	1 + 11	VCM4156
PDC-2.1.B	-250. . .+100 mbar	25 mbar	1.5 bar	Sensor housing 1.4104 + diaphragm CuZn	1 + 13	VCM301
PDC-2.1.C	-1. . .+0.1 mbar *	45 mbar	3 bar	Sensor housing 1.4104 + diaphragm CuZn	1 + 14	VCM101
PDC-2.1.D	-0,9. . .+0.5 bar	50 mbar	3 bar	Sensor housing 1.4104 + diaphragm CuZn	1 + 14	VCM095
PDC-2.1.E	-250. . .+100 mbar	45 mbar	3 bar	Sensor housing 1.4104 + bellow 1.4571	1 + 15	VNM301
PDC-2.1.F	-1. . .+0.1 bar *	50 mbar	6 bar	Sensor housing 1.4104 + bellow 1.4571	1 + 15	VNM111

* In case of high vacuum conditions, close to the theoretically possible low-pressure of -1 bar, use of the switch is subject to restrictions due to extraordinary conditions of vacuum technology. However, the vacuum switch itself will not be damaged at maximum low-pressure.

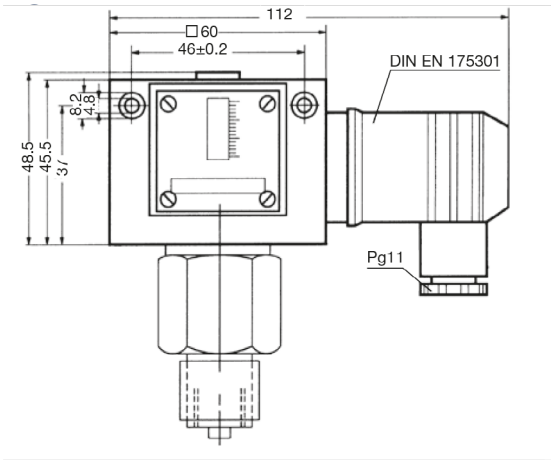
Units with adjustable hysteresis (PDC-2.2):

Type	Setpoint range	Hysteresis (average)	max. Pressure	Wetted parts	Sketch Nr.	Manufacturer number
PDC-2.2.B	-250. . .+100 mbar	30. . .200 mbar	1.5 bar	Sensor housing 1.4104 + diaphragm CuZn	1 + 13	VCMV301
PDC-2.2.C	-1. . .+0.1 mbar	80. . .350 mbar	3 bar	Sensor housing 1.4104 + diaphragm CuZn	1 + 14	VCMV101
PDC-2.2.D	-0.9. . .+0.5 bar	90. . .400 mbar	3 bar	Sensor housing 1.4104 + diaphragm CuZn	1 + 14	VCMV095

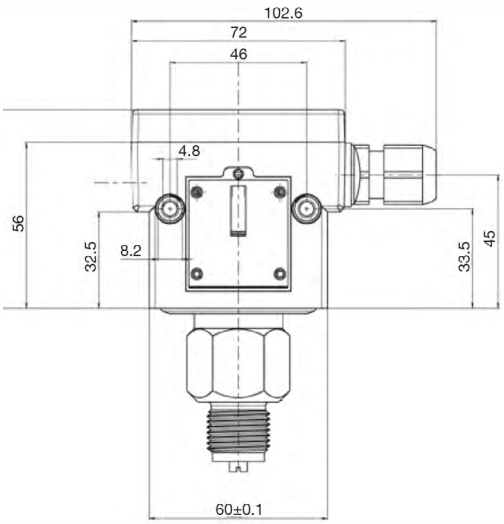
* In case of high vacuum conditions, close to the theoretically possible low-pressure of -1 bar, use of the switch is subject to restrictions due to extraordinary conditions of vacuum technology. However, the vacuum switch itself will not be damaged at maximum low-pressure.

Housing Dimensions:

(1) Standard housing with plug connection

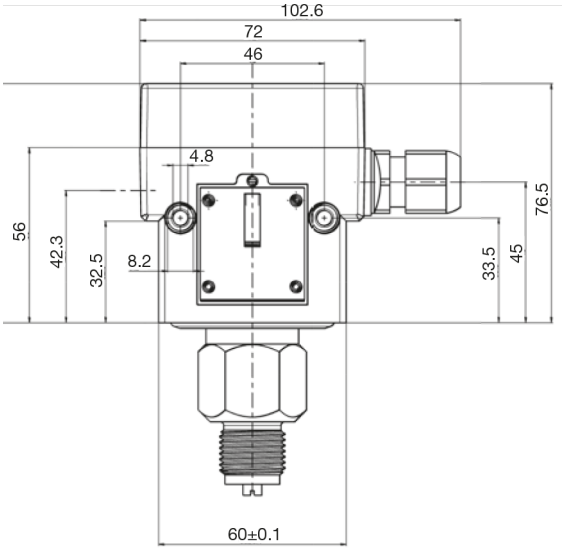


(2) Standard housing with terminal conn. (Option 5)

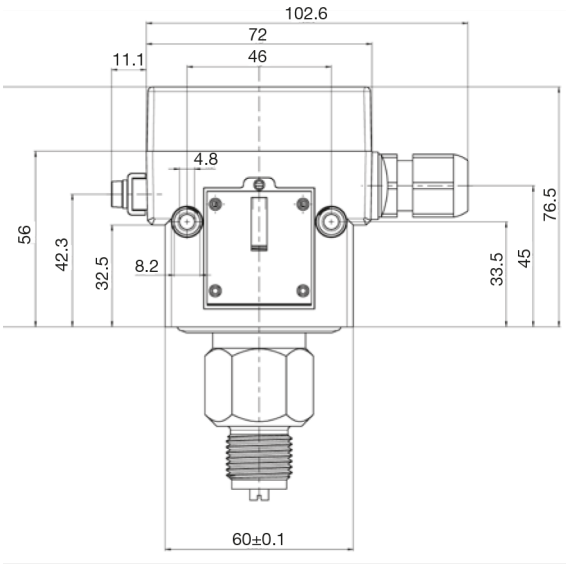


Housing Dimensions:

3 Ex-i housing with blue cable gland

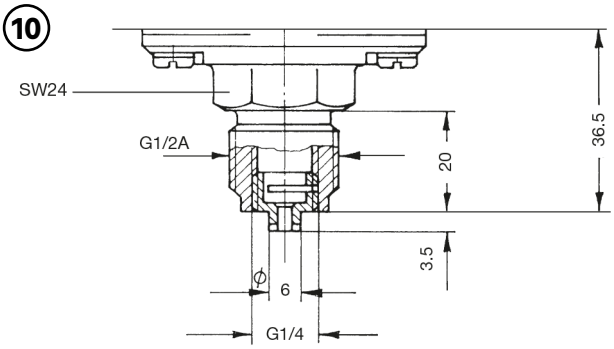


4 Ex-d housing with blue cable gland



Pressure Port Dimensions:

10



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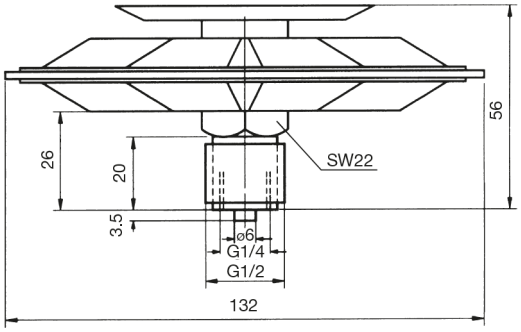

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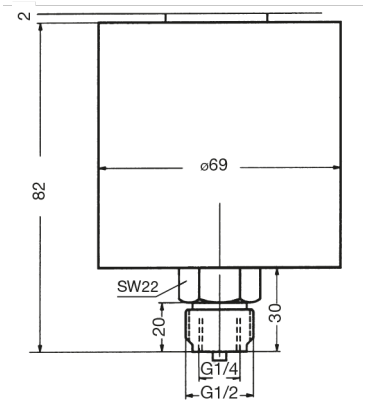

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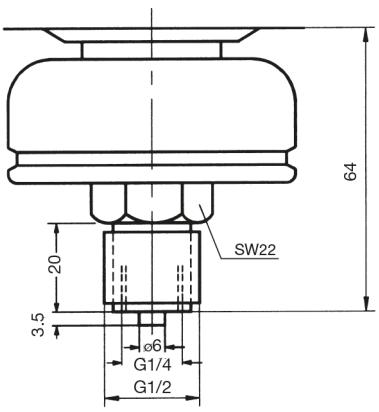

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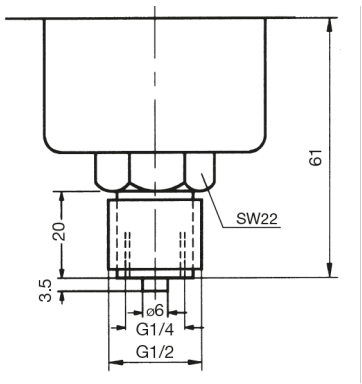

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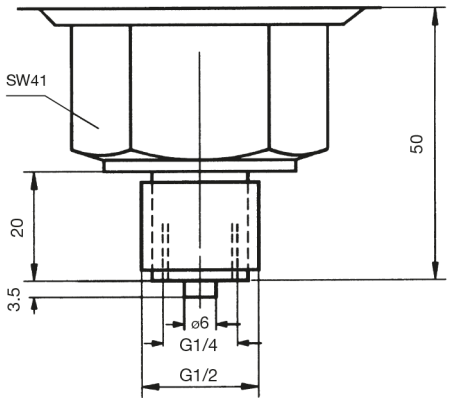
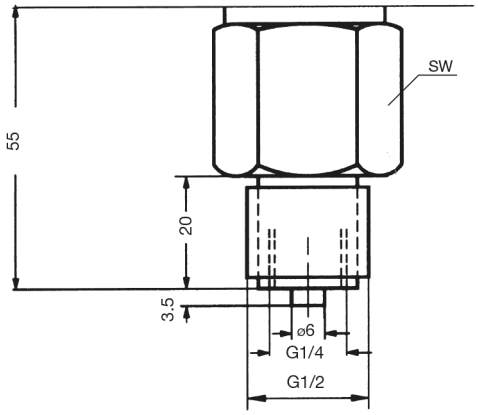
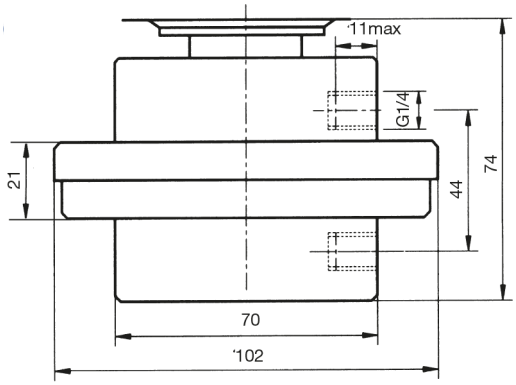


16 – 19



Housing No.	SW
16	22
17	24
18	30
19	32

20



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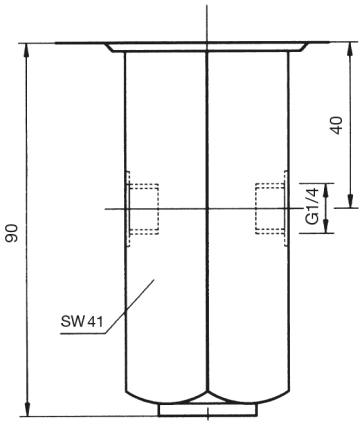

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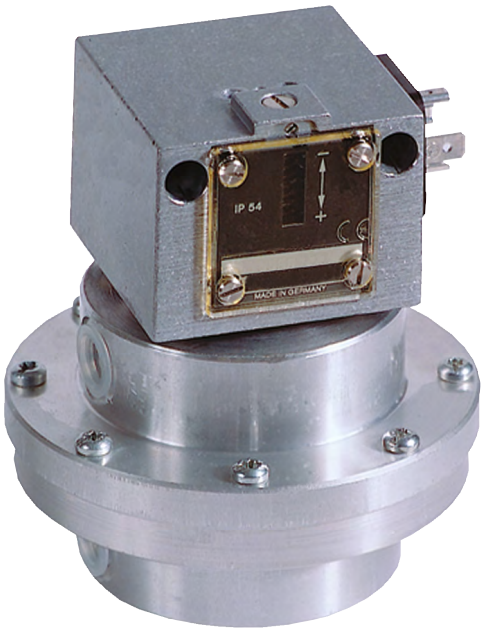
PDC-3

Differential Pressure Switch



Features

/ Compact

/ Robust design

/ 9 different pressure ranges

/ Various materials

/ Plug connection

Description:

Mechanical pressure switches of the PDC series are characterized by their male mechanical resilience. The PDC-3 has a robust housing made of sea-water resistant aluminium pressure casting and, depending on the pressure range, it has an aluminium or stainless steel 1.4305 connection fitting. Both types of connections are provided with G1/4"-female thread. Excrescent pressure changes at the connections act on a double chamber system with stainless steel diaphragm or Perbunan membrane, the movements of which are transferred to a high-performance microswitch through a connecting bridge. The setpoint is set externally by rotating a spindle for nominal value that directly modifies the pre-tension of a spring. In addition, the construction has a counter-pressure spring that ensures a very stable connection even at low set-points. The PDC series of pressure switches can be provided with a terminal housing in IP65 and a blue cable gland, to allow the operation in hazardous areas (in connection with a suitable isolated switch amplifier) or even as an EEx-d version.

Application:

The PDC-3 series of pressure switches is suited for regulating and monitoring differential pressure from millibar range to 2-digit bar range. Due to the fact that the pressure-sensing measuring diaphragms are only less loaded – considering their permissible values – the PDC-3 guarantees an excellent long-term stability at minimal setpoint drift. Consequent to its design, the upstroke of the pressure diaphragms is limited by means of a stopper so that high overpressure safety is ensured even in small operating ranges. The PDC-3 can be mainly used for monitoring filters or gas and fluid flow across all sections of the industry.

Technical Specifications:

Operating range / see table

Mounting position / vertical to the top

max. Pressure / see table

max. Media temperature / -25. . .+70°C short spell up to +85°C, use cooling elements for higher temperatures

Setpoint / can be set externally by means of screwdriver on the spindle

Repeatability / < 1 % of working range (for pressure ranges > 1 bar)

Adjustment / The scales are calibrated for decreasing pressures. The reading corresponds therefore to lower setpoint, the upper setpoint is higher by the hysteresis

Lead sealing / On request, ex-factory; sealing can also be undertaken later

Vibration / Up to 4g no significant deviations

mechanical Life span / 10 x 10^6 for room temperature and sinusoidal pressure impact. Life span depends highly on the sort of pressue impact. This value is therefore just a guide value. For applications with pulsating pressure or pressure surges we recommend the use of a pressure surge reducer.

electrical Life span / 100.000 switching cycles at nominal current 8 A, 250 VAC

Isolation / overvoltage category III, pollution degree 3, rated impulse voltage 4000V, fullfills DIN VDE 01 10

Hysteresis / The hysteresis cannot be set

Process connection / 2 x G1/4"-female Using G1/4"-female connections the PDC-3 can be directly screwed to the pressure pipe; alternatively fastening by means of 2 screws (4 mm Ø) on a place surface is also possible. In pressurized tubes note always that
P (+) high pressure
S (-) low pressure

Housing material / Aluminium pressure casting GD Al Si 12 (sea-water resistant)

Material of pressure sensor / refer to switching ranges in table

Scale / The PDC-3.A. . .D and PDC-3.G have only a plus-minus scale; setting is performed using a pressure gauge or at factory.

rel. Humidity / 15%. . .95%, non-condensing

Ordering Codes:

Order number	**PDC-3.**	**B.**	**0**

PDC-3 Differential Pressure Switch

Operating range /

adjustable range
A* = 4. . .25 mbar
B* = 10. . .60 mbar
C* = 20. . .160 mbar
D* = 100. . .600 mbar
E* = -0.1. . .+0.4 bar
F = 0.2. . .1.6 bar
G* = 1. . .4 bar
H = 0.5. . .6 bar
I = 3. . .16 bar
* no scale divisions (only +/- scale)

Options /

0 = without

Exi = gold-plated contacts, SPDT, fixed hysteresis, IP65, switching capacity: max. 24 VDC, 100 mA, min. 5 VDC, 2 mA; media temperature max. 60°C, ignition protection class II 1/2G Ex ia IIC T6 Ga/Gb, II 1/2D Ex ia IIIC T80 °C (1)

Exd = standard contacts, SPDT, fixed hysteresis, IP65, switching capacity: max. 250 VAC, 3 (2) A or 24 VDC, 3 A or 250 VDC, 0.1 A, min. 24 VDC, 2 mA, media temperature max. 60°C, ignition protection class II 2G Ex d e IIC T6 Gb, II 1/2D Ex ta/tb IIIC T80 °C Da/Db (1)

2 = gold-plated contacts, switching capacity: max. 24 VDC, 100 mA, min. 5 VDC, 2 mA. not available with adjustable switching difference.

3 = two microswitches, switching in parallel or in succession, fixed switching interval (1) (with the exception of PDC-3.A/B/C/D)

4 = two microswitches, 1 plug, switching in succession, adjustable switching interval (with the exception of PDC-3.A/B/C/D)

5 = terminal connection housing, IP65

6 = protection class IP65 and switching housing with surface protection (chemical version)

(1) incl. Terminal Connection housing (IP65)

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Electrical Specifications:

Connection / plug connection

Prot. class / IP54 in vertical mounting

Switching load / 250 VAC, 8A (Ohmic), 5A (inductive)
250 VDC, 0,3A (Ohmic)
24 VDC, 8A (Ohmic)
min. 10 mA, 12 VDC

Contacts / SPDT

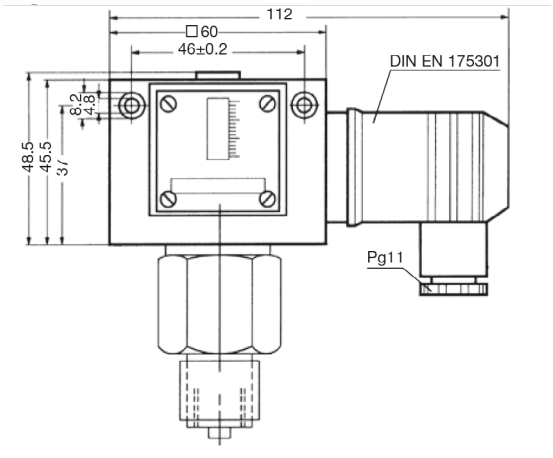
Operating Ranges and Hysteresis:

Type	Setpoint range	Hysteresis (average)	max. Pressure	Wetted parts	Sketch Nr.	Manufacturer number
PDC-3.A	4. . .25 mbar	2 mbar	0.5 bar	Sensor housing Aluminium + diaphragm Perbunan	1 + 20	DDCM252*
PDC-3.B	10. . .60 mbar	15 mbar	1.5 bar	Sensor housing Aluminium + diaphragm Perbunan	1 + 20	DDCM662*
PDC-3.C	20. . .160 mbar	20 mbar	3 bar	Sensor housing Aluminium + diaphragm Perbunan	1 + 20	DDCM1602*
PDC-3.D	100. . .600 mbar	35 mbar	3 bar	Sensor housing Aluminium + diaphragm Perbunan	1 + 20	DDCM6002*
PDC-3.E	-0.1. . .+0.4 bar	0.15 bar	15 bar	Sensor housing 1.4305 + bellow 1.4571	1 + 21	DDCM014
PDC-3.F	0.2. . .1.6 bar	0.13 bar	15 bar	Sensor housing 1.4305 + bellow 1.4571	1 + 21	DDCM1
PDC-3.G	1. . .4 bar	0.20 bar	25 bar	Sensor housing 1.4305 + bellow 1.4571	1 + 21	DDCM4*
PDC-3.H	0.5. . .6 bar	0.20 bar	15 bar	Sensor housing 1.4305 + bellow 1.4571	1 + 21	DDCM6
PDC-3.I	3. . .16 bar	0.60 bar	25 bar	Sensor housing 1.4305 + bellow 1.4571	1 + 21	DDCM16

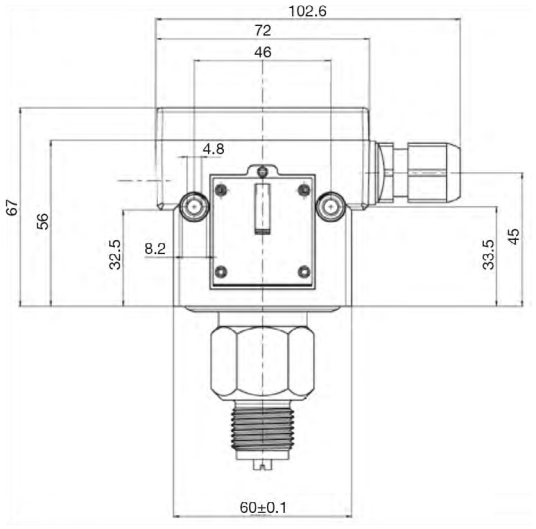
* no „mbar" or „bar" scale („±" scale only)
** could even be loaded only at one side

Housing Dimensions:

(1) Standard housing with plug connection

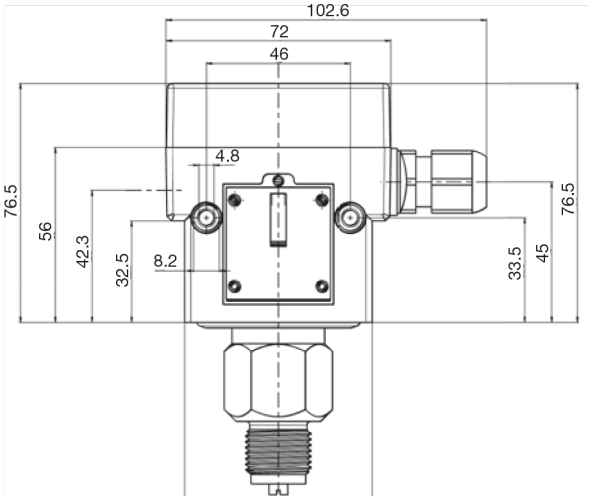


(2) Standard housing with terminal plug (Option 5)

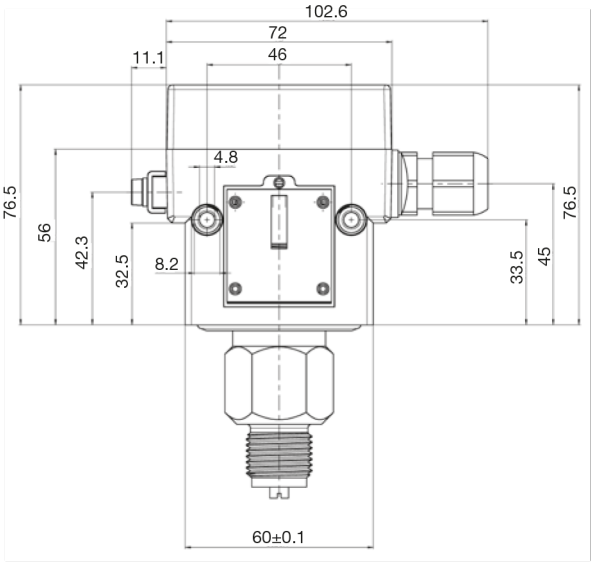


Housing Dimensions:

3 Ex-i housing with blue cable gland

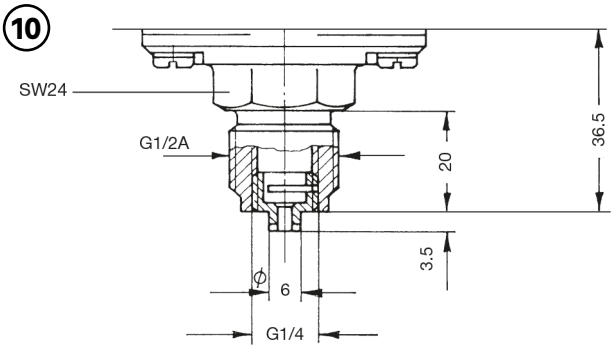


4 Ex-d housing with blue cable gland



Pressure Port Dimensions:

10



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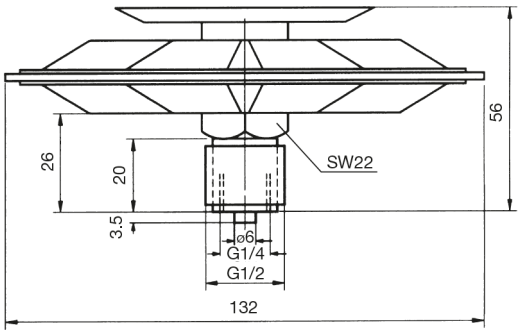

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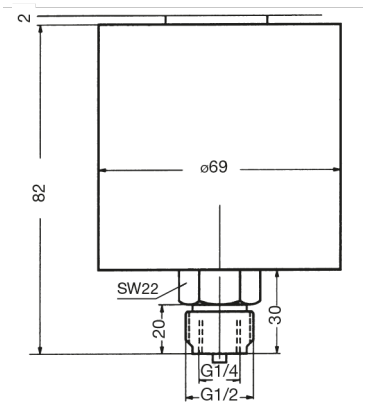

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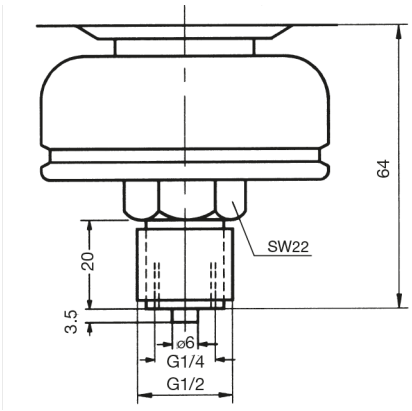

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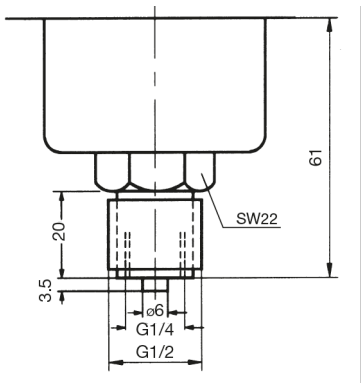

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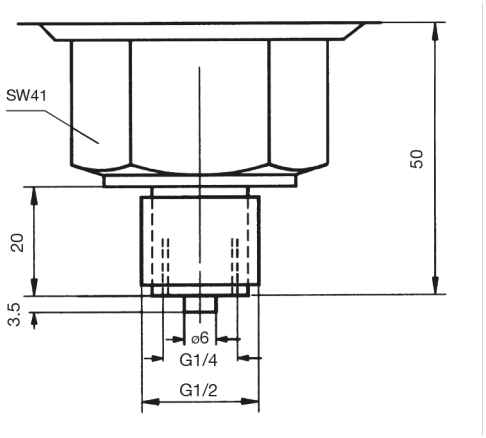
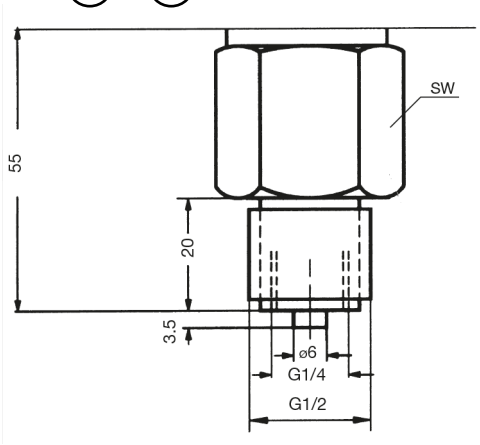
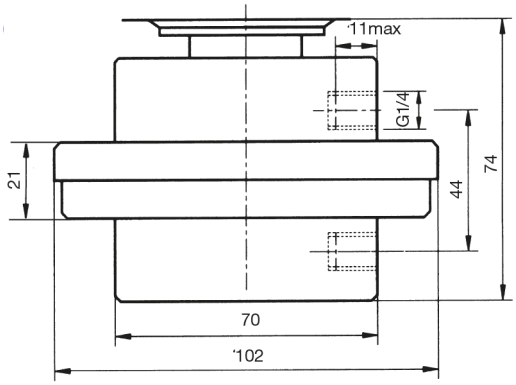


16 – 19



Housing Nr.	SW
16	22
17	24
18	30
19	32

20



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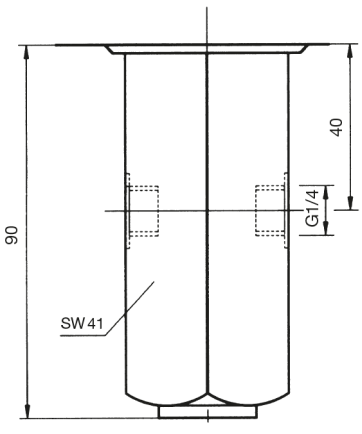

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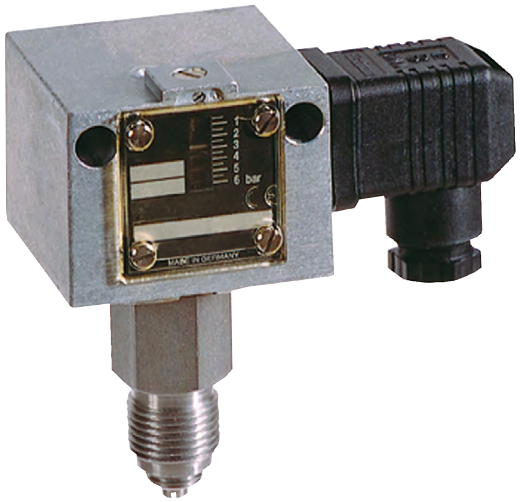
PDC-4

Pressure Switch with Stainless Steel Sensor System



Features

/ Fully stainless steel 1.4571

/ Resistant to hostile media

/ Plug connection

/ Adjustable hysteresis

Description:

The PDC series mechanical pressure switches is characterized by their excellent mechanical strength. The PDC-4 has a robust housing made of sew-water resistant aluminium pressure casting. It has a stainless steel 1.4571 connection fitting provided with a G1/2"-male and a G1/4" female thread. Excrescent pressure changes at the connection act on an internal measuring diaphragm the movements of which are transferred to a high-performance micro-switch through a connecting bridge. The set-point is set externally by rotating a spindle for nominal value that directly modifies the pre-tension of a spring. In addition, the construction has a counter-pressure spring that ensures a very stable connection even at low set-points. The PDC series of pressure switches can be provided with a terminal housing in IP65 and a blue cable gland, to allow the operation in hazardous areas (in connection with a suitable isolated switch amplifier) or even as an EEx-d version.

Application:

The PDC-4 series of pressure switches is used in applications where high requirements are placed on the switch's life span and mechanical strength and where the PDC-1 is ruled out due to its limited resistance to the particular medium. Due to the fact that the pressure-sensing measuring diaphragms are only less loaded – considering their permissible values – the PDC-4 guarantees an excellent long-term stability at minimal setpoint drift. Consequent to its design, the upstroke of the pressure diaphragms is limited by means of a stopper so that high overpressure safety is ensured even in small operating ranges. A number of operating ranges are available of which also a version with adjustable hysteresis can be supplied. This enables the user to accurately control a span of pressures with only a single device. Thanks to its material quality, flexibility of connections and high switching load of the micro-switch, the PDC-4 is predestined for use across all sections of the industry.

Technical Specifications:

Operating range / see table

Mounting position / vertical to the top

max. Pressure / see table

max. Media temperature / -25. . .+70°C short spell up to +85°C, use cooling elements for higher temperatures

Setpoint / can be set externally by means of screwdriver on the spindle

Repeatability / < 1 % of working range (for pressure ranges > 1 bar)

Adjustment / The scales are calibrated for decreasing pressures. The reading corresponds therefore to lower setpoint, the upper setpoint is higher by the hysteresis

Lead sealing / On request, ex-factory; sealing can also be undertaken later

Vacuum / All PDC-4 besides can be impacted by vacuum; the device will not be damaged

Vibration / Up to 4g no significant deviations

mechanical Life span / 10 x 10^6 for room temperature and sinusoidal pressure impact. Life span depends highly on the sort of pressue impact. This value is therefore just a guide value. For applications with pulsating pressure or pressure surges we recommend the use of a pressure surge reducer.

electrical Life span / 100.000 switching cycles at nominal current 8 A, 250 VAC

Isolation / overvoltage category III,
pollution degree 3,
rated impulse voltage 4000V,
fullfills DIN VDE 01 10

Hysteresis / In PDC-4.1x..A to PDC-4.1.x.I the hysteresis cannot be set.
In PDC-4.2.x.B to PDC-4.2.x.D and in PDC-4.2.x.F to PDC-4.2.x.I the hysteresis can be set as specified in the following tables

Process connection / G1/2"-male (pressure gauge connection acc. DIN 16288),
G1/4"-female acc. ISO 228 part 1.
Using the G1/2"-male the PDC-4 can be directly screwed on to the pressure pipe, alternatively fastening by means of 2 screws (4mm Ø) on a plane surface is also possible.

Housing material / Aluminium pressure casting
GD Al Si 12 (sea-water resistant)

Material of pressure sensor / refer to switching ranges in table

rel. Humidity / 15%. . .95%, non-condensing

Ordering Codes:

Order number	**PDC-4.**	**1.**	**1.**	**F.**	**0**

PDC-4 Pressure Switch with Sensor System

Hysteresis /
1 = hysteresis cannot be set
2 = hysteresis can be set

Housing /
1 = normal housing
2 = housing with plastic coating (chemical version) (PDC 4.1. only)

Operating ranges /
A = -250. . .+100 mbar
B = -1. . .+0.1 bar
C = 0.04. . .0.25 bar
D = 0.1. . .0.6 bar
E = 0.2. . .1.6 bar (only available with option 6)
F = 0.2. . .2.5 bar
G = 0.5. . .6 bar
H = 1. . .10 bar
I = 3. . .16 ba

Options /
0 = without
Exi = gold-plated contacts, SPDT, fixed hysteresis, IP65, switching capacity: max. 24 VDC, 100 mA, min. 5 VDC, 2 mA; media temperature max. 60°C, ignition protection class II 1/2G Ex ia IIC T6 Ga/Gb, II 1/2D Ex ia IIIC T80 °C [1]

Exd = standard contacts, SPDT, fixed hysteresis, IP65, switching capacity: max. 250 VAC, 3 (2) A or 24 VDC, 3 A or 250 VDC, 0.1 A, min. 24 VDC, 2 mA, media temperature max. 60°C, ignition protection class II 2G Ex d e IIC T6 Gb, II 1/2D Ex ta/tb IIIC T80 °C Da/Db [1]

2 = gold-plated contacts, SPDT, switching capacity: max. 24 VDC, 100 mA, min. 5 VDC, 2 mA. And others not available with adjustable hysteresis

3 = two microswitches, switching in parallel or in succession, fixed switching interval [1] (not for all operating ranges)

4 = two microswitches, 1 plug, switching in succession, adjustable switching interval (not for all operating ranges)

5 = terminal connection housing, IP65

6 = protection class IP65 and switching housing with surface protection (chemical version)

[1] inkl. Klemmenanschluss-Gehäuse (IP65)

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Electrical Specifications:

Connection / plug connection

Prot. class / IP54 in vertical mounting

Switching load / 250 VAC, 8A (Ohmic), 5A (inductive)
250 VDC, 0,3A (Ohmic)
24 VDC, 8A (Ohmic)
min. 10 mA, 12 VDC

Contacts / SPDT

Units with fixed hysteresis (PDC-4.1):

Type	Setpoint range	Hysteresis (average)	max. Pressure	Wetted parts	Sketch Nr.	Manufacturer number
PDC-4.1.1.A	-250. . .+100 mbar	45 mbar	3 bar	1.4571	1 + 15	VNS301-201
PDC-4.1.1.B	-1*. . .+0.1 bar	50 mbar	6 bar	1.4571	1 + 15	VNS111-201
PDC-4.1.1.C	0.04. . .0.25 bar	30 mbar	6 bar	1.4571	1 + 15	DNS025-201
PDC-4.1.1.D	0.1. . .0.6 bar	40 mbar	6 bar	1.4571	1 + 15	DNS06-201
PDC-4.1.1.E	0.2. . .1.6 bar	60 mbar	6 bar	1.4571	2 + 15	DNS1-201
PDC-4.1.1.F	0.2. . .2.5 bar	0.1 bar	16 bar	1.4571	1 + 18	DNS3-201
PDC-4.1.1.G	0.5. . .6 bar	0.15 bar	16 bar	1.4571	1 + 18	DNS6-201
PDC-4.1.1.H	1. . .10 bar	0.3 bar	16 bar	1.4571	1 + 16	DNS10-201
PDC-4.1.1.I	3. . .16 bar	0.5 bar	25 bar	1.4571	1 + 16	DNS16-201

* In case of high vacuum conditions, close to the theoretically possible low-pressure of -1 bar, use of the switch is subject to restrictions due to extraordinary conditions of vacuum technology. However, the vacuum switch itself will not be damaged at maximum low-pressure.

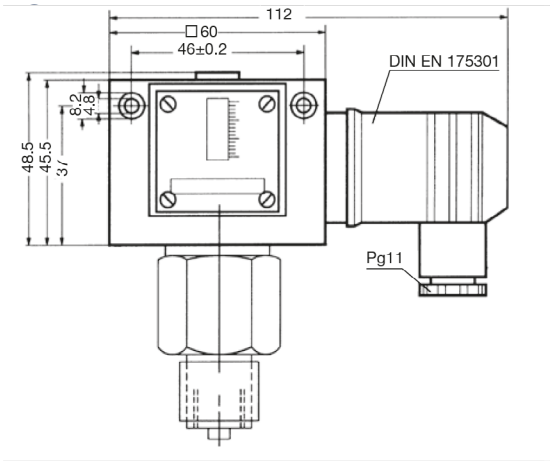
Units with adjustable hysteresis (PDC-4.2):

Type	Setpoint range	Hysteresis (average)	max. Pressure	Wetted parts	Sketch Nr.	Manufacturer number
PDC-4.2.2.G	0.5. . .6 bar	0.25. . .2 bar	16 bar	1.4571	1 + 18	DNS6-203
PDC-4.2.2.H	1. . .10 bar	0.45. . .2.5 bar	16 bar	1.4571	1 + 16	DNS10-203
PDC-4.2.2.I	3. . .16 bar	0.8. . .3.5 bar	25 bar	1.4571	1 + 16	DNS16-203

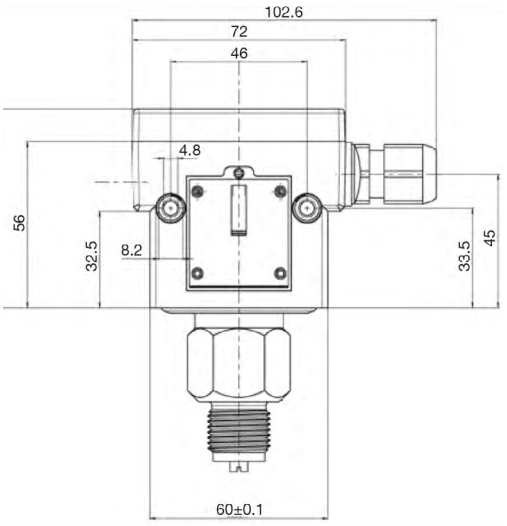
* In case of high vacuum conditions, close to the theoretically possible low-pressure of -1 bar, use of the switch is subject to restrictions due to extraordinary conditions of vacuum technology. However, the vacuum switch itself will not be damaged at maximum low-pressure.

Housing Dimensions:

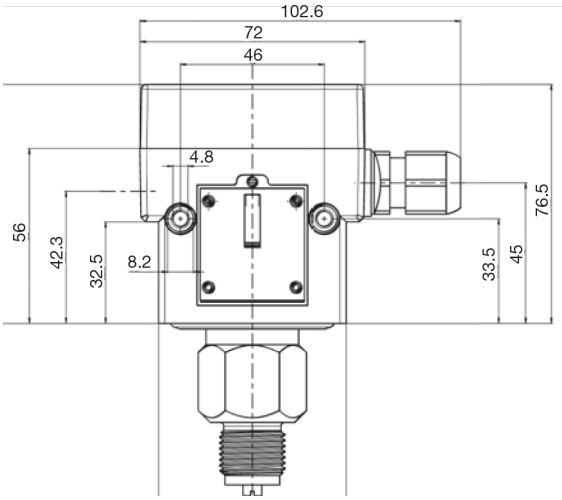
1 Standard housing with plug connection



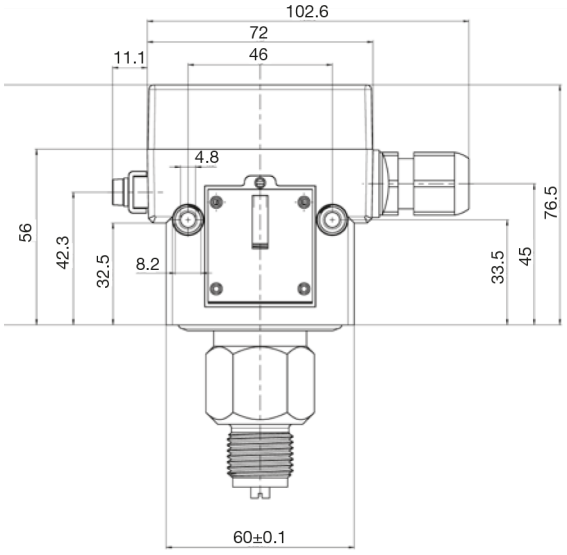
2 Standard housing with terminal conn. (Option 5)



3 Ex-i housing with blue cable gland

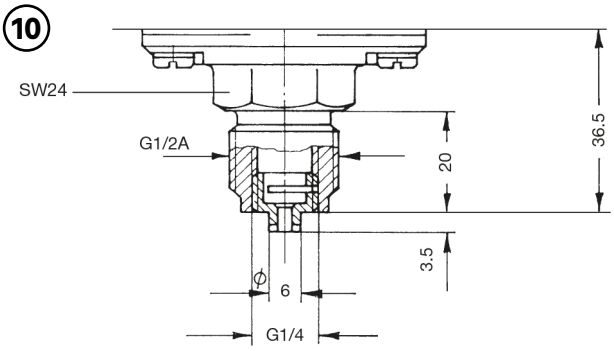


4 Ex-d housing with blue cable gland



Pressure Port Dimensions:

10



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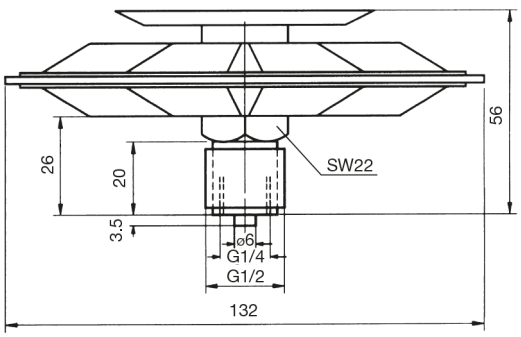

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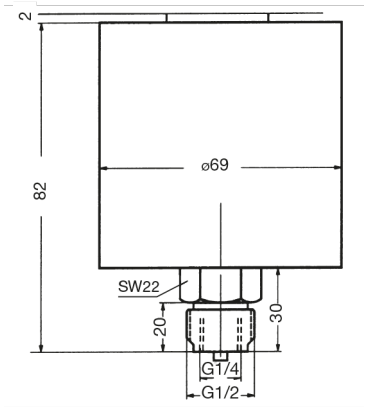

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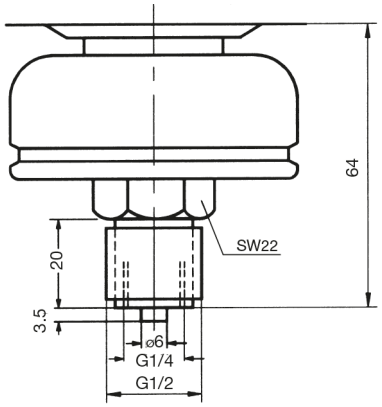

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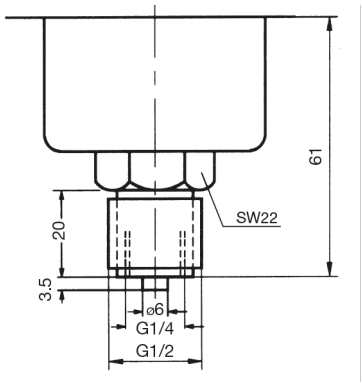

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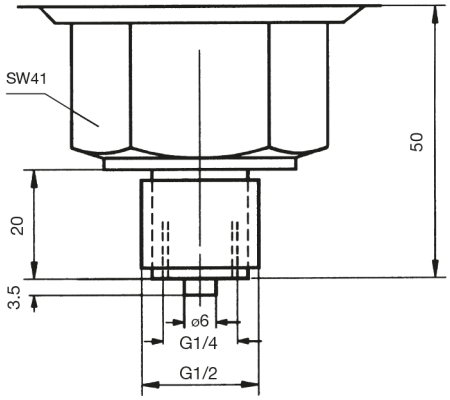
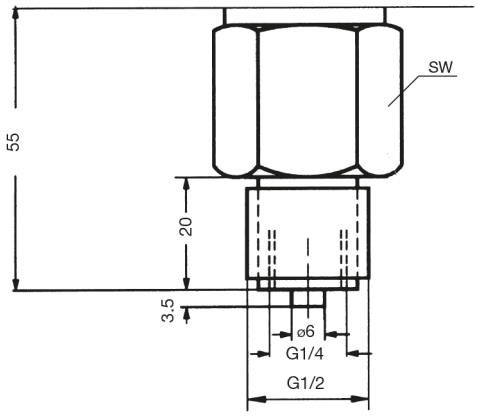
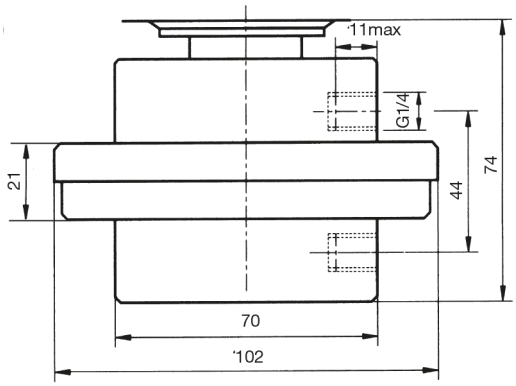


16 – 19



Housing Nr.	SW
16	22
17	24
18	30
19	32

20



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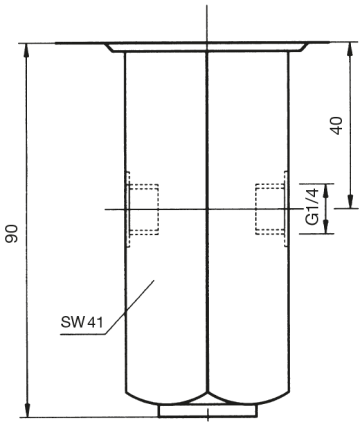

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PS-04N

Dual Pressure Switch

Features

/ Stainless steel connection

/ Self-monitoring

/ Two setpoints

/ Analogue output

/ 4-digit 14-segment LED-display

/ Adjustable keypad lock

Description:

The PS-04N dual pressure switch consists of a pressure sensor with downstream electronic component. Built in a compact stainless steel housing, conceived for rough industrial conditions to make it stable against interference and shock and vibration-proof, it offers to the user everything that today's state-of-the-art pressure measurement and monitoring technology demands. The pressure is sensed by a ceramic or a piezoresistive sensor. Its accuracy rating is 0.5% of full scale value and the repeatability better than 0.1% full scale. This meets any requirement. The PS-04N is controlled by a microprocessor and capable of self-monitoring with error output. Its maximum configuration offers 2 transistor limiting contacts with adjustable setpoint, adjustable hysteresis and adjustable time lag. The measured value is legibly displayed on a digital connection display and, additionally, put out through a 4. . .20 mA or 0. . .10 VDC socket. All parameters can be easily programmed by means of a diaphragm keypad.

Application:

With its pressure range of 0 bar up to 600 bar, the PS-04N dual pressure switch covers a wide spectrum of applications and, therefore, is used across all types of industries. Typical applications are the accumulator charge connection, the locking pressure monitoring and the lubricant control, to name a few. For example, the additional analogous signal can be used for regulating pressure or for reporting functions. Using only one device, the user has simultaneously two setpoints, an onsite display an analogous output for remote transmission, thus replacing a pressure gauge, a mechanical pressure switch and a pressure sensor.

Technical Specifications:

max. Ambient temp. /	-10. . .+70°C
max. Storage temp. /	-30. . .+80°C
max. Media temp. /	-25. . .+100°C
Compensated range /	-10. . .+70°C
Temperature influence for zero-point /	< ± 0.2% of full scale / 10 K
Temperature influence on Measuring range /	< ± 0.3% of full scale / 10 K
Linearity error /	<± 0.5% of full scale at 25°C
Repeatability /	± 0.1% of full scale
Resolution /	12 Bit (4096 steps per meas. span)
Scan rate /	1000/s
Weight /	ca. 200 g
Dimensions /	110 x 41 mm without counter plug
Operating elements /	3 press keys with perceptible pressure point
Sensor element /	ceramics or piezoresistive
Process connection /	G- or NPT-1/4“-male thread or 1/2“-male thread front flush
Wetted parts /	st. steel 1.4301, brass MS58, FKM or EPDM

Electrical Specifications:

Display /	4-digit 14-segment LED-display, height of digits 9 mm, red
Connection /	plug connector M12 x 1, 4- or 5-wire
Protection class /	IP65, Class III (IP67 on request)
Supply voltage /	15 VDC up to 32 VDC, reverse polarity protected (SELV, PELV)
Power consumption /	ca. 50mA without load
Shock resistance /	50 g (11 ms) as per DIN EN 60028-2-27
Vibration /	20 g (10. . .2000 Hz) as per DIN EN 60028-2-26
Analogue outputs /	
Power output:	4. . .20 mA
Voltage output:	0. . .10 VDC
Load:	max. 10 mA
Adjusting range:	25. . .100% of full scale
Refreshing rate:	2 ms
PNP-Transistor-Switching-outputs /	
Switching function:	NO / NC, window and diagnostic modes adjustable
Load:	max. 500 mA, short-circuit safe
Adjustability of setpoint and resetpoint:	0. . .125% of full scale
Delay:	0. . .50s adjustable
Switching Frequency:	max. 100 Hz
Display:	LED(s) red

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Versions:

PS-04N Dual Pressure Switch

Electronic housing:
The electronic housing is made from the materials stainless steel V2A, FKM and PA/PC. The pressure connection is 320° turnable against the housing.

Sealing:
Depending on the media, choice is possible from among: FKM, e.g. for hydraulic oil and EPDM, e.g. for brake fluid.

Operating range:
The ranges from 0. . .0.2 bar up to 0. . .600 bar are standard ranges. Special operating ranges are available on request.

Outputs:
The full version of PS-04N provide two PNP transistor outputs and an additional analogue output at standard. Other versions are downgraded in several steps.

Process connection:
The user may choose between G1/4"-male thread, 1/4"-NPT-male thread, G1/2"-front flush diaphragm with male thread connection and 1/2"-NPT-frontflush diaphragm with male thread connection. Front flush versions are always equipped with a piezoresistive sensor element. UNF- and CETOP-connections are available on request.

Sensor:
The PS-04N is equipped with a piezoresistive sensor element at standard. Operating ranges from 0. . .10 bar rel. up to 0. . .400 bar rel. can also be equipped with a sensor element from ceramics.

Ordering Codes:

Order no.	PS-04N.	3.	1.	R100.	5.	1.	P

PS-04N Dual Pressure Switch

Electronic housing /
3 = st. steel

Sealing /
1 = FKM
3 = EPDM

Operating range /

A01	= 0. . .1 bar absolut	(piezoresistive Sensor)
A05	= 0. . .5 bar absolut	(piezoresistive Sensor)
A10	= 0. . .10 bar absolut	(piezoresistive Sensor)
RP02	= 0. . .0.2 bar rel.	(piezoresistive Sensor)
RP05	= 0. . .0.5 bar rel.	(piezoresistive Sensor)
R001	= 0. . .1 bar rel.	(piezoresistive Sensor)
R002	= 0. . .2 bar rel.	(piezoresistive Sensor)
R005	= 0. . .5 bar rel.	(piezoresistive Sensor)
R010	= 0. . .10 bar rel.	
R050	= 0. . .50 bar rel.	
R100	= 0. . .100 bar rel.	
R200	= 0. . .200 bar rel.	
R400	= 0. . .400 bar rel.	
R600	= 0. . .600 bar rel.	(piezoresistive Sensor)

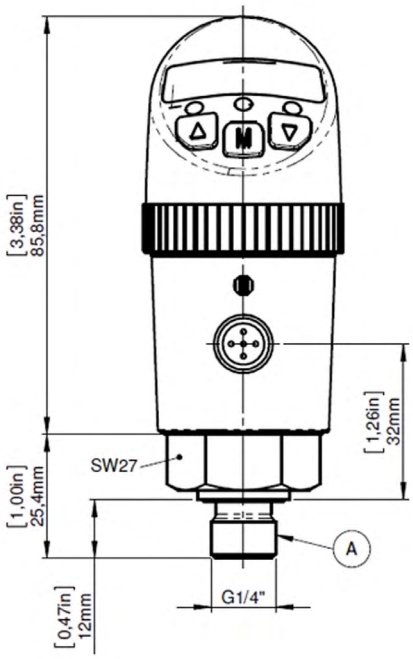
Outputs /
1 = 2 transistor outputs (PNP)
2 = 1 transistor output (PNP) and 1 analogue output 4. . .20 mA
3 = 1 transistor output (PNP) and 1 analogue output 0. . .10 VDC
4 = 2 transistor outputs (PNP) and 1 analogue output 4. . .20 mA
5 = 2 transistor outputs (PNP) and 1 analogue output 0. . .10 VDC

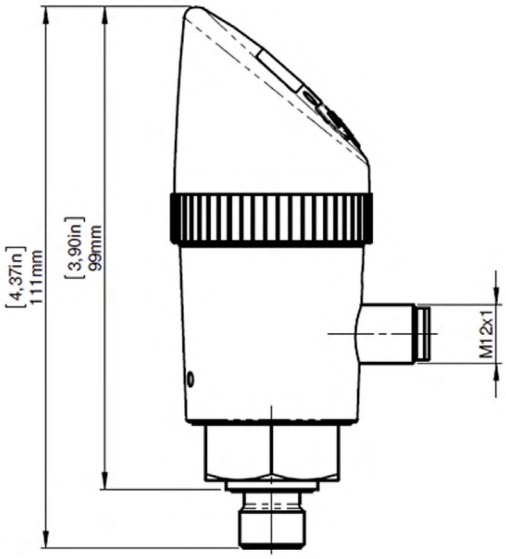
Process connection /
1 = G1/4"-male thread
2 = G1/2"-front flush diaphragm male thread (piezoresistive sensor)**
3 = 1/4"-NPT-male thread
4 = 1/2"-NPT-front flush diaphragm male thread (piezoresistive sensor)**

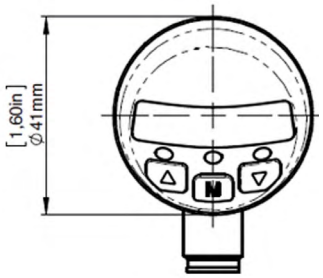
Sensor /
P = piezoresistive sensor element
K = sensor element from ceramics

** 10. . .600 bar only

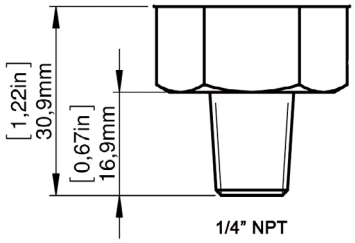
Dimensions in mm:

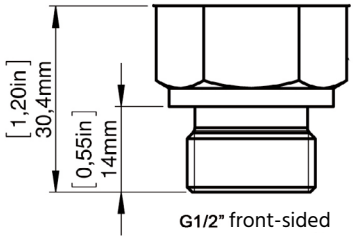






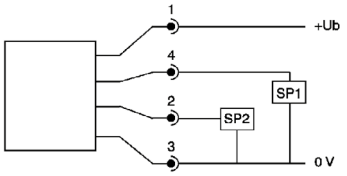
Process connection /



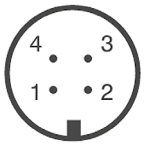


Electrical connection and plug connection /

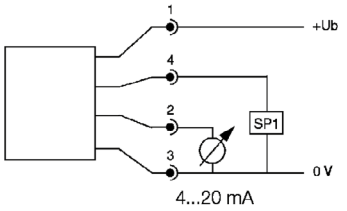
Version: 2 switching outputs



plug 4-pole

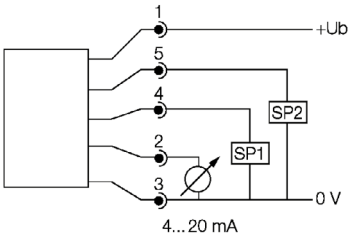


Version: 1 switching output + 1 Analogue



Version: 2 switching outputs + 1 Analogue

plug 5-pole



Plug connector M12x1, 4/5-wire	Version with 1 switching output	Version with 2 switching outputs	Version with 1 switching and 1 analogue output	Version with 2 switching and 1 analogue output
Pin 1 (brown)	+Ub 15. . .32 VDC	+Ub 15. . .32 VDC	+Ub 15. . .32 VDC	+Ub 15. . .32 VDC
Pin 2 (white)	not connected	SP2 (0,5A max.)	analogue 4. . . 20 mA or 0. . .10 VDC	analogue 4. . .20 mA or 0. . .10 VDC
Pin 3 (blue)	0V	0V	0V	0V
Pin 4 (black)	SP1 (0.5A max.)	SP1 (0.5A max.)	SP1 (0.5A max.)	SP1 (0.5A max.)
Pin 5 (grey)	not connected	not connected	not connected	SP2 (0.5A max.)

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PS-05

Electronic Pressure Switch with Stainless Steel Sensor

Features

/ Display and housing turnable

/ Accuracy up to 0,25%

/ Up to 4 switching outputs

/ Many different process connections

/ 2- or 3-wire

/ 4 digit LED-display

Description:

The PS-05 pressure switch and sensor combines a display with a pressure sensor. Four PNP switching outputs can be used, as well as a current and a voltage output. The switching points can be adjusted easily and completely boundless within the menu, because the display can be rotated in two directions, so virtually any orientation of the display is possible. Further adding to its versatility, a whole lot of different dimensions can be chosen for the PS-05, such as bar, mbar, mWC and so on. While being used in a difficult application, the PS-05 will be protected from the medium by a front-flush-diaphragm. This way, a clogging of the measuring unit will be avoided.

Application:

The PS-05 pressure switch can be used for liquids and gases alike. The pressure connection made from stainless steel makes it compatible with a variety of media. Should the media be very aggressive, thick or have a very high temperature and therefore require different configurations, the transmitters can be outfitted with isolating diaphragms. Especially the flexible display makes the PS-05 useful and versatile device for many areas e.g. for pneumatic, process engineering, environment technology and in general measurement technology.

Technical Specifications:

Switching output / 1 x PNP-output

Optional outputs / 2 x independend PNP-outputs
4 x independend PNP-outputs

Accuracy / Standard: P_N < 0,4 bar: ≤ ± 0,5 %,
or rather P_N ≥ 0,4 bar: ≤ ± 0,35 %
option for P_N ≥ 0,4 bar: ≤ ± 0,25 %

Repeatability / ≤ ± 0.1% FSO

Switch frequency / max. 10 Hz

Switching cycles / > 100 x 10^6 cycles

Delay / 0. . .100 s

Media temp. / -40. . .125°C

Ambient temp. / -40. . .85°C

Storage temp. / -40. . .100°C

Material /

- Pressure connection: SS 1.4404
- Housing: SS 1.4404
- Display housing: PA 6.6, Polycarbon
- Seals: FKM, weld-on version optional
- Membrane: SS 1.4435

Installation position / any

Weight / at least 160g

Mechanical strength /

- Vibration: 10g RMS (25. . .2000 Hz) from DIN EN 60068-2-6
- Shock: 500g / 1 ms from DIN EN 60068-2-27

Temperature errors /

Nominal pressure PN [bar]	-1. . .0	< 0.40	≥ 0.40
Error string [% FSO]	≤ ± 0.75	≤ ± 1	≤ ± 0.75
in compensated areas [°C]	-20. . .85	0. . .70	-20. . .85

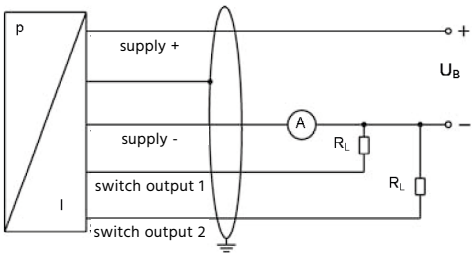
Vacuum protection / P_N ≥ 1 bar: infinite
P_N < 1 bar: on request

Inlet sizes:

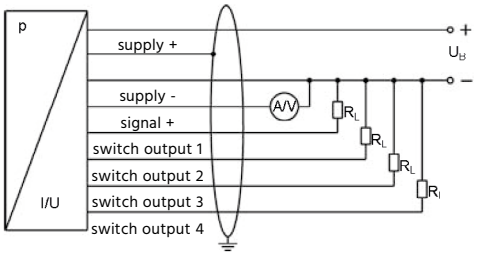
PN gauge	PN abs.	Overload	Burst pressure ≥
-1. . .0	-	5	7.5
0.10	-	0.5	1.5
0.16	-	1	1.5
0.25	-	1	1.5
0.40	0.40	2	3
0.60	0.60	5	7.5
1	1	5	7.5
1.6	1.6	10	15
2.5	2.5	10	15
4	4	20	25
6	6	40	50
10	10	40	50
16	16	80	120
25	25	80	120
40	40	105	210
60	60	210	420
100	100	210	420
160	160	600	1000
250	250	1000	1250
400	400	1000	1250
600	600	1000	1250

Connections:

2-wire-system (current)



3-wire-system (current / voltage)



Electrical connection	M12x1 plastic (5-pin)	M12x1 metal (5-pin)	M12x1 plastic (8-pin)	ISO 4400	Binder Series 723 (5-pin)	Kabelfarben (IEC 60757)
Supply +	1	1	1	1	1	wh (white)
Supply -	3	3	3	2	3	bn (brown)
Signal + (only for 3-wire)	2	2	2	3	2	gn (green)
Switch output 1	4	4	4	3	4	gy (grey)
Switch output 2	5	5	5	-	5	pk (pink)
Switch output 3	-	-	6	-	-	-
Switch output 4	-	-	7	-	-	-
Shield	over pressure connection	plug housing / pressure connection	over pressure connection	mass contact	plug housing / pressure connection	gnye (green-yellow)

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Electrical Specifications:

Analogue output /

2-wire current signal	4. . .20 mA / U_B = 13. . .36 V_{DC} max. load: R_{max} = [(U_B - $U_{B\ min}$) / 0.02A] Ω setting time: < 10 ms
3-wire current signal	4. . .20 mA / U_B = 19. . .30 V_{DC} adjustable (Turn-Down of range to 1:5) max. load: R_{max} = 500 Ω setting time: < 3 s
3-wire voltage signal	0. . .10 V / U_B = 15. . .36 V_{DC} max. load: R_{min} = 10 kΩ setting time: < 3 ms
without output	U_B = 15. . .36 V_{DC}

max. Current /

4. . .20 mA / 2- and 3-wire:	125 mA loadable, short circuit proof; U_{Switch} = U_B - 2V
0. . .10 V / 3-wire:	125 mA loadable, short circuit proof

max. Current (unloaded outputs) /

2-wire current:	max. 25 mA
3-wire current:	ca. 45 mA + signal stream
3-wire voltage:	ca. 45 mA

Display / 4-digit, red 7-segment-LED-display, digit height 7mm, display range -1999. . .+9999; Accuracy 0.1% ± 1 Digit; digital damping 0.3. . .30 s (adjustable); refreshrate 0.0. . .10 s (adjustable)

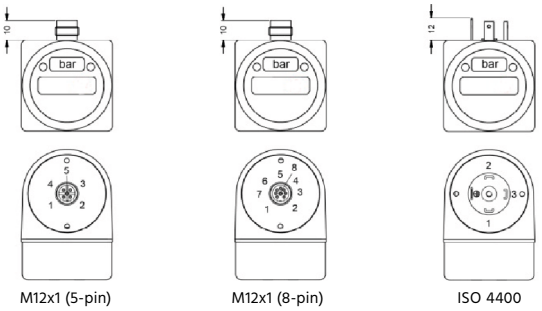
CE-Conformity / EMV-guideline: 2014/30/EU
Pressure Equipment directive: 2014/68/EU (module A) for devices with max. over-pressure > 200 bar

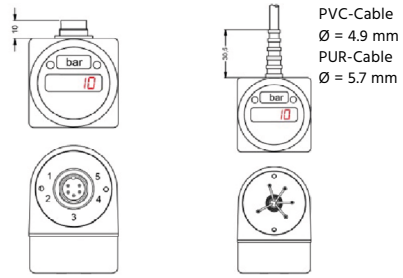
Protection /

Short circuit proof:	permanent
Pole reversion:	no damage, but also no functionality while reversing poles
Electromagnetic compatibility:	emitted interference and interference immunity according to EN 61326

Protection class / IP 65

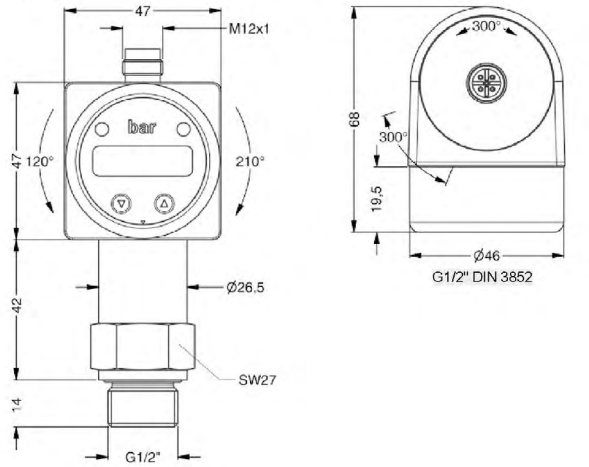
Electr. Connections:



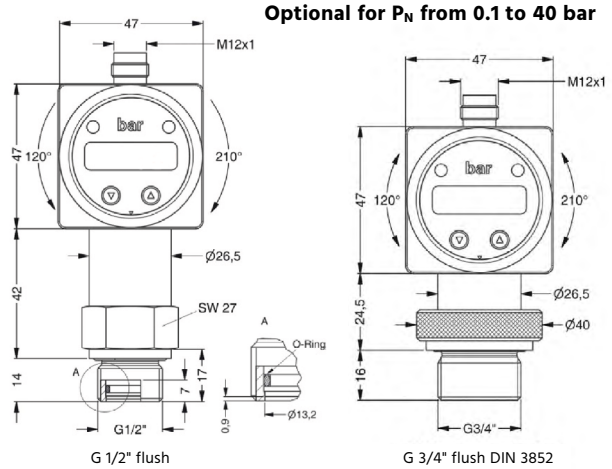


Mech. Connections:

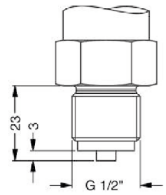
Standard (in mm)



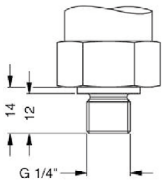
Optional for P_N from 0.1 to 40 bar



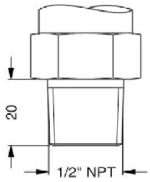
Mech. Connections:



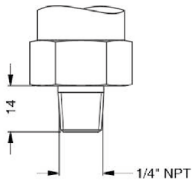
G1/2" EN 837



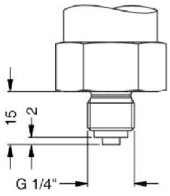
G1/4" DIN 3852



1/2" NPT



1/4" NPT



G1/4" EN 837

Ordering Codes:

Order number	PS-05.	1.	12.	1.	B.	1.	5.	3.	0

Electronic Pressure Switch with Stainless Steel Sensor

Measuring unit /
1 = gauge in bar
2 = absolute in bar

Measuring range /
1 = 0. . .0.10 bar
2 = 0. . .0.16 bar
3 = 0. . .0.25 bar
4 = 0. . .0.40 bar
5 = 0. . .0.60 bar
6 = 0. . .1.0 bar
7 = 0. . .1.6 bar
8 = 0. . .2.5 bar
9 = 0. . .4.0 bar
10 = 0. . .6.0 bar
11 = 0. . .10 bar
12 = 0. . .16 bar
13 = 0. . .25 bar
14 = 0. . .40 bar
15 = 0. . .60 bar
16 = 0. . .100 bar
17 = 0. . .160 bar
18 = 0. . .250 bar
19 = 0. . .400 bar
20 = 0. . .600 bar
21 = -1. . .0 bar

Analogue output /
1 = none
2 = 4. . .20 mA / 2-wire
3 = 0. . .10 V / 3-wire
4 = 4. . .20 mA / 3-wire, adjustable

Switching output / [1]
A = 1 switching output
B = 2 switching outputs
C = 4 switching outputs

Accuracy /
1 = standard: P_N < 0,4 bar: ≤ ± 0,5% or rather P_N ≥ 0,4 bar: ≤ ± 0,35%
9 = option for P_N ≥ 0,4 bar: ≤ ± 0,25% instead of ≤ ± 0,35%

Electrical connection /
1 = plug M12x1 (5-pin) - plastic
2 = plug M12x1 (8-pin) - plastic
3 = plug M12x1 (5-pin) - metal
4 = plug and cablebox ISO 4400
5 = plug Binder Series 723 (5-pin)
6 = cable output with PVC-Cable

Mechanical connection /
1 = G ½" DIN 3852
2 = G ½" EN 837 [2]
3 = G ¼" DIN 3852
4 = G ¼" EN 837 [2]
5 = G ½" DIN 3852 with front flush measuring cell
6 = G ¾" DIN 3852 with front flush measuring cell
7 = ½" NPT
8 = ¼" NPT

Sealing /
0 = standard FKM
9 = none (weld version)

[1] max. 1 switching output for 2-wire current signal and ISO-4400-plug as well as for 2-wire current signal with Ex-protection. No switching output possible for 3-wire with ISO 4400-plug

[2] Welded version only with pressure ports according to EN 837; possible for nominal pressure ranges PN ≤ 40 bar

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PAMU

Chemical Pressure Gauge with Integrated Pressure Measuring Transmitter

Features

/ Mechanical and electronic system

/ Independent

/ Display visible from distance

/ Fully stainless steel

/ Optionally Ex-version

Description:

In the PAMU type of devices two parallel systems measure the excrescent pressure at the process connection independent of each other. The first one is a Bourdon pressure gauge of proven stainless steel technology that is intended for clearly legible display of the measurement onsite. In case of high frequent pressure changes, we recommend optionally available silicon oil filling for the device, as this would counteract the quivering of the indicator. At the same time, a pressure measuring transmitter integrated into the housing of the pressure gauge functions as a remote encoder with its 4. . .20 mA 2-wire output and thus enables processing of the measurement in control or other display units.

Application:

Well-tested and long-standing pressure measuring technology in robust design combined with modern electronics, so as to unify the benefits of both the systems into a single device. Right under the roughest conditions of the equipment, the user obtains a measurement directly at the measuring point despite sensitive hi-tech devices and thus will be able to read into the operations in the system even if there is an outage of electrical power. Chemical pressure gauges with an integrated pressure measuring transmitter are used often in the chemical industry as well as in the manufacturing of machines and equipment.

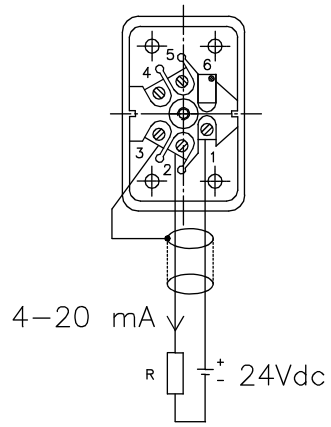
Technical Specifications:

Nominal size /	NG100 (NG160 on request)
Process connection /	Standard G 1/2" B male, CrNi-Steel 1.4571, facing downwards; optional G 1/4" B, 1/2" NPT and 1/4" NPT connections
Damping /	Manometer available with non-conductive insulating oil
Accuracy /	
Manometer:	< 1.0% of full scale value (Class 1.0 as per EN 837-1)
max. Temperature /	
Media temp.:	-40. . .+100°C
Ambient temp.:	-40. . .+60°C
Wetted parts /	AISI, 316 Ti / 1.4571
Dial /	white aluminium, black scale
Pointer /	black aluminium
Housing /	CrNi-steel with blow-out back
Window /	mineral glass
Ring /	bayonet ring, 1.4301
Prot. Class Housing /	IP 65
CE-marking /	pressure equipment directive 2014/68/EU, PS > 200 bar, module A, pressure accessory

Electrical Specs Transmitter:

Supply voltage /	12. . .30 VDC
Nominal voltage /	250 VDC
max. Curent /	16 A
Accuracy /	< 0.5%
Ranges /	-1. . .+0.6 bar to 0. . .600 bar
Output /	4. . .20 mA, 2-Leiter
max. Switch resistance /	≤ (Ub - 9.5 V) / 0.02 A
Connection /	Universal cable connection box Type B, 6-pole, adjustable at 180°
Contacts:	brass, gold plated
Connector type:	**Clamps:** M20 x 1.5 to 1.5 mm², wire protected **Device:** soldered conn. up to 2.0 mm²
Ambient temp. /	-40. . .+85°C
Material /	Polyamide 6
Ex-Version /	on request
EMV /	EN 50 081-1:1992
Protection class /	IP65 as per EN 60529 / IEC 529

Pin-Assignment Transmitter:



PIN 1 = + 24 VDC
PIN 2 = -
PIN 3 = cable shield
6 = zero point adjustment

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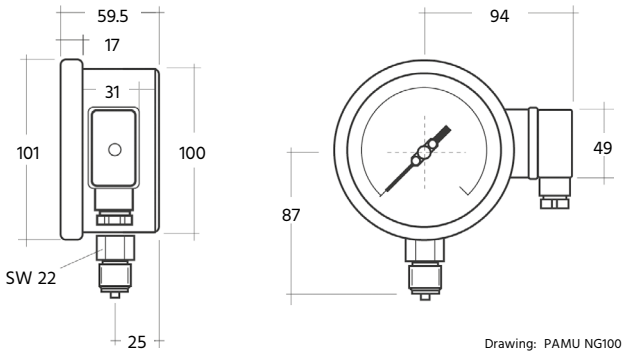
Dimensions in mm:



Drawing: PAMU NG100

Ordering Codes:

Order number	PAMU.	1.	0.	0.	L

PAMU Chemical Pressure Gauge

Process connection /
1 = G 1/2" B male downwards (standard)
2 = NPT 1/2" male downwards
3 = NPT 1/4" male downwards
4 = G 1/4" B male downwards

Damping /
0 = none
1 = Glycerine filling

Option /
0 = none, standard
1 = oil- and fat-free for oxygen usage
2 = Ex-Version

Operating range /
A = -1...0 bar
B = 0...1 bar
C = 0...1.6 bar
D = 0...2.5 bar
E = 0...4 bar
F = 0...6 bar
G = 0...10 bar
H = 0...16 bar
I = 0...25 bar
J = 0...40 bar
K = 0...60 bar
L = 0...100 bar
M = 0...160 bar
N = 0...250 bar
O = 0...400 bar
P = 0...600 bar
Q = -1...0.6 bar
R = -1...1.5 bar
S = -1...3 bar
T = -1...5 bar
U = -1...9 bar
V = -1...15 bar
W = -1...24 bar

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PU-01N

Pressure Transmitter for OEM Applications

Features

/ Compact design

/ Integrated amplifier

/ Affordable price to performance ratio

/ Broad-based media compatibility

Description:

The PU-01N series of pressure measuring transmitters belongs to the top-class products among pressure sensors which are ideally suited for OEM applications considering their attractive price levels. In PU-01N, the close-lying pressure is measured, depending on the pressure range, by means of a piezo-resistive or a thin-film sensor element. The pressure-dependent resistance signal output by this sensor element is converted into a power or voltage signal through an amplifier. Alternatively, a power signal of 4. . .20 mA in 2-wire method or a voltage signal of 0. . .10 VDC in 3-wire method can be delivered from the transmitter. Other types of output signals are available on request.

Application:

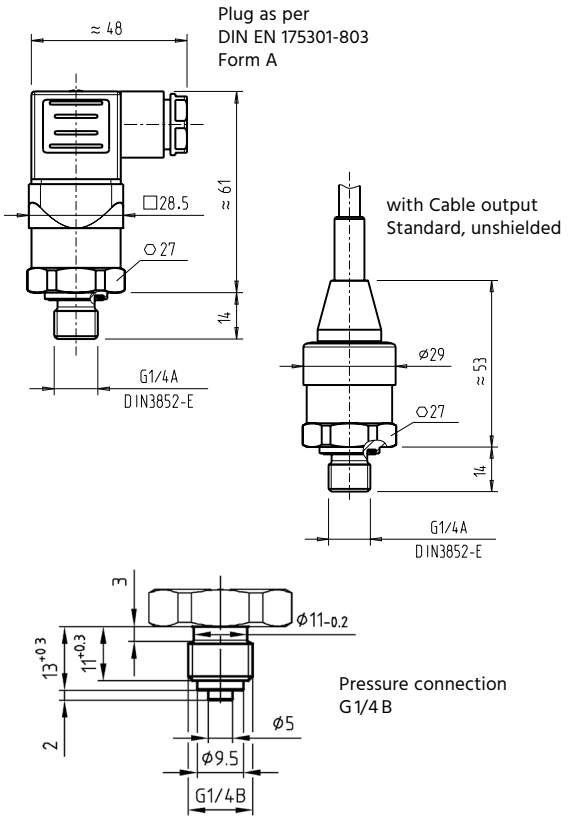
The PU-01N series of pressure measuring transmitters is always used for measuring pressure in fluid or gaseous media, if the process does not demand absolute accuracy but a fair repeatability is sufficient for it. All wetted parts are made of stainless steel in order to cover a wide range of media. In case of particularly difficult media, we recommend mounting the PU-01N along side a diaphragm seal (most used types on request). The high overload capacity of the devices, their resistance from corrosion, mechanical vibrations, mechanical shocks and temperature and their durable stability are highly valued for use in the entire industry.

Technical Specifications:

Process connection /	G1/4"B male
Wetted Parts /	stainless steel 316L (from 10 bar rel. st. steel 316 and 13-8PH)
max. Pressure /	overrange limit [bar]: 2-times operating range end value
max. Media temp. /	-30. . .+100°C with seal at process connection NBR[1] (standard)
max. Ambient temp. /	-30. . .+100°C
max. Storage temp. /	-40. . .+100°C
Compensated range /	0. . .80°C
Housing /	stainless steel 316L
Weight /	approx. 0.08 kg
Non linearity /	≤ 0.5% of span according to IEC 61298-2
Non repeatability /	≤ 0.2% of span
Set time /	≤ 4 ms within 10. . .90% of span
Temperature factor /	≤ ±1% typ., ≤ ±2.5% max. in range 0. . .+80°C

[1] Other seals on request
(FPM/FKM, EPDM, copper, stainless steele)

Dimensions in mm:

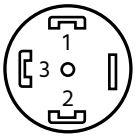


Electrical Specifications:

Output /	**4. . .20 mA (2-wire)** current output, load ≤ (U_B-8V) / 0,02A **DC 0. . .10V (3-wire)** voltage output, load, max. Output signal / 1 mA
Power supply /	8. . .30 VDC for (2-wire) 14. . .30 VDC for (3-wire)
max. Current consumption /	current: 25 mA, voltage: 8 mA
CE-Conformity /	2004/108/EWG interference emission and interference resistance to EN 61326 interference emission limit class B 97/23/EG pressure gauge code
Protection class /	IP65 EN 60529/IEC 529
Electrical protection /	protection against polarity reversal, excess voltage and short-circuiting. No polarity reversal protection for ratio-metric output.

Wiring Diagram:

Angled plug DIN 175301-803 A /



	2-wire	3-wire
U_B (Supply +)	1	1
0V (Supply -)	2	2
S+ Analogue output	-	3

Cable output, unshielded /

	2-wire	3-wire
U_B (Supply +)	brown	brown
0V (Supply -)	blue	blue
S+ Analogue output	-	black

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Ordering Codes:

Order number	PU-01N.	2.	2.	1.	G

PU-01N Pressure Transmitter

Output signal /
1 = 4. . .20 mA, 2-wire
2 = 0. . .10 VDC, 3-wire

Calibration /
1 = relative pressure
2 = absolute pressure (only up to operating range H)

Electrical Connection /
1 = plug connection
2 = with permanent fixed connecting cable (2m)

Operating range /
A = 0. . .1 bar
B = 0. . .1.6 bar
C = 0. . .2.5 bar
D = 0. . .4 bar
E = 0. . .6 bar
F = 0. . .10 bar
G = 0. . .16 bar
H = 0. . .25 bar
I = 0. . .40 bar
J = 0. . .60 bar
K = 0. . .100 bar
L = 0. . .160 bar
M= 0. . .250 bar
N = 0. . .400 bar
O = 0. . .600 bar

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PU-06

Pressure Measuring Transmitter for General Industrial Applications Class 0.25 or 0.35

Features

/ Accuracy class up to 0.25
/ Stainless steel sensor
/ Robust design
/ High precision and linearity
/ Excellent media compatibility
/ Excellent long-term stability
/ Variety of electrical and mechanical connections
/ Optional Ex- and SIL 2-version

Description:

The high quality pressure sensors of PU-06 series are accurate and reliable transmitters that measure the applied pressure by a piezo-resistive sensor element (not wetted). The pressure-dependent resistance signal output by this sensor element is converted into a current or voltage signal. Selectively, a current signal of 4 to 20 mA in 2-wire method or a current signal of 0 to 20 mA respectively a voltage signal of 0 to 10 VDC in 3-wire method can be supplied. Other types of output signals are available on request. The PU-06 with the front flush sensor element is particularly suited for sticky or tenacious media as the media cannot creep into the device and destroy or clog it.

Application:

The PU-06 pressure transmitters are used for measuring pressure in fluid or gaseous materials. The sensor element is made of stainless steel and therefore compatible with a variety number of media. If the measured media require other conditions due to hostile nature, viscosity or temperature of the media, the transmitters can be equipped with diaphragm seals to allow flange connections, milk tube joints or tri-clamp joints (other types on request). Due to its compact design, accuracy and material combination the PU-06 is perfectly suited for a wide range of industrial applications.

Version:

PU-06 Pressure Measuring Transmitter Class 0.35 or 0.25

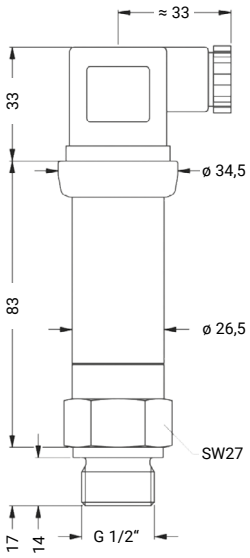
Output signal: Possible output signals are: 4. . .20 mA in 2-wire method (optional as SIL 2- or/ and intrinsically safe version) or 0. . .20 mA respectively 0. . .10 VDC in 3-wire method (other output signals on request).

Calibration: On request, the devices can be calibrated for operating ranges „E“ up to „U“ at absolute pressure.

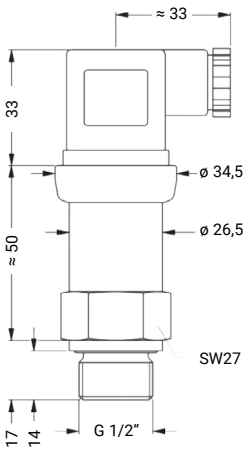
Process connection: On request, the devices can be supplied for operating ranges „B“ up to „O“ with a front flush sensor, that can even be welded to the pressure port. In this case wetted parts are fully stainless steel, because no gasket is necessary. This is recommended for viscous or sticky media.

Dimensions in mm:

SIL- and Ex-Version /



Standard- and Ex-Version /



Ordering Codes:

Order no.	PU-06.	1.	1.	1.	1.	1.	1.	L.	0

PU-06 Pressure Measuring Transmitter

Output signal /
1 = 4. . .20 mA, 2-wire
2 = 0. . .20 mA, 3-wire
3 = 0. . .10 VDC, 3-wire
4 = Intrinsically safe 4. . .20 mA, 2-wire
5 = SIL2 4. . .20 mA, 2-wire
6 = SIL2 intrinsically safe 4. . .20 mA, 2-wire

Calibration /
1 = gauge pressure[1]
2 = absolute pressure[2]

Accuracy /
1 = 0.35 % (0.5 % for PN < 0.4 bar)
2 = 0.25 % (PN ≥ 0.4 bar)

Electrical connection /
1 = male and female plug ISO 4400
2 = male plug Binder Series 723 (5-pole)
3 = cable outlet with 2m PVC cable
4 = male plug M12x1 (4-pole) / metal
5 = compact field housing stainless steel 1.4305

Process connection /
1 = G 1/2“ DIN 3852
2 = G 1/2“ EN 837
3 = G 1/4“ DIN 3852
4 = G 1/4“ EN 837
5 = G 1/2“ DIN 3852 with front flush sensor[3]
6 = G 1/2“ DIN 3852 open pressure port[3]
7 = 1/2“ NPT

Gasket /
1 = FKM
2 = EPDM (only for PN ≤ 160 bar)
3 = without (welded version)[4]

Operating range /
A = -1. . .0 bar
B = 0. . .0.10 bar
C = 0. . .0.16 bar
D = 0. . .0.25 bar
E = 0. . .0.40 bar
F = 0. . .0.60 bar
G = 0. . .1.0 bar
H = 0. . .1.6 bar
I = 0. . .2.5 bar
J = 0. . .4.0 bar
K = 0. . .6.0 bar
L = 0. . .10 bar
M = 0. . .16 bar
N = 0. . .25 bar
O = 0. . .40 bar
P = 0. . .60 bar[5]
Q = 0. . .100 bar[5]
R = 0. . .160 bar[5]
S = 0. . .250 bar[5]
T = 0. . .400 bar[5]
U = 0. . .600 bar[5]
9 = customized operating range (on request)

Options /
0 = none
1 = transmitter power supply for Zone 0 (on request)
9 = special (please specify in detailed text)

1 measurement starts with ambient pressure
2 absolute pressure possible from 0.4 bar
3 for operating range „A“ to „O“ only
4 welded version only with pressure ports according to EN 837
5 The ranges P to U are not available as welded version (gasket option 4)

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Technical Specifications:

Accuracy /	nach IEC 60770
Standard:	P_N ≥ 0.4 bar: ≤ ± 0.35 % FSO P_N < 0.4 bar: ≤ ± 0.50 % FSO
Option:	P_N ≥ 0.4 bar: ≤ ± 0.25 % FSO (≤ ± 0.10 % FSO on request)
Mechanical stability /	
Vibration:	10 g RMS (25. . .2000 Hz) as per DIN EN 60068-2-6
Shock:	500 g / 1 ms as per DIN EN 60068-2-27 (100 g / 11 ms operat. range Q-U)
max. Temperature /	
Medium:	-40. . .+125°C
Ambient / electronics:	-40. . .+85°C
Storage:	-40. . .+100°C
Ambient Ex-version:	in Zone 0: -20. . .+60°C (with p_{atm} 0.8 bar. . .1.1 bar) in Zone 1 or higher: -20. . .+70°C
Process connection /	G 1/2" DIN 3852 (standard), G 1/4" DIN 3852, G 1/2" EN 837, G 1/4" EN 837, 1/2" NPT and G 1/2" DIN 3852 with flush sensor or with open pressure port
Materials /	
Process connection:	stainless steel 1.4404
Housing:	stainless steel 1.4404
Compact field housing	stainless steel 1.4305, cable gland brass, nickel plated
Gaskets:	FKM (standard), EPDM (only for PN ≤ 160 bar)
Diaphragm:	stainless steel 1.4435
Wetted parts /	pressure connection, gaskets and diaphragm
Weight /	depending on the version approx. 140 g (without cable) or approx. 200 g (without cable)

Electrical Specifications:

Supply voltage /	
2-wire, 4. . .20 mA:	V_S = 8. . .32 VDC
2-wire, 4. . .20 mA, Ex:	V_S = 10. . .28 VDC
3-wire, 0. . .20 mA:	V_S = 14. . .30 VDC
3-wire, 0. . .10 V:	V_S = 14. . .30 VDC
Permissible load /	
2-wire, current:	R_{max} = [(V_S - V_{Smin}) / 0.02 A] Ω
3-wire, current:	R_{max} = 240 Ω
3-wire, voltage:	R_{max} = 10 kΩ
Current consumption /	
Signal output current:	max. 25 mA
Signal output voltage:	max. 7 mA
Influence effects /	
Supply:	0.05 % FSO / 10 V
Load:	0.05 % FSO / kΩ
Long term stability /	≤ ± 0.1 % FSO / year ar reference cond.
Response time /	
2-wire:	≤ 10 ms
3-wire:	≤ 3 ms
Electrical protection /	
Short-circuit prot.:	permanent
Reverse polarity prot.:	no damage, but also no function
Electromagnetic compatibility:	emission and immunity according to EN 61326
Option Ex-protection:	Zone 0: II 1G Ex ia IIC T4 Ga Zone 20: II 1D Ex ia IIIC T 85°C Da Safety technical max. values: U_i = 28 VDC, I_i = 93 mA, P_i = 660 mW, C_i ≈ 0 nF, L_i ≈ 0 µH, the supply connections have an inner capacity of max. 27 nF
Protection class /	
IP 65:	ISO 4400
IP 67:	Binder S. 723, 5-pole;Stecker M12x1, 4-pole; Compact field housing, Cable outlet PVC
IP 68:	Cable outlet with ventilation tube
ATEX Directive /	2014/34/EU
CE-conformity /	
EMC-Directive:	2014/30/EU
Equipment Directive:	2014/68/EU (module A) (this directive is only valid for devices with max. permissible overpressure > 200 bar)

Thermal effects:

Thermal effects (offset and span)				
Nominal pressure PN [bar]	-1. . .0	< 0,40	≥ 0,40	≥ 60
Tolerance band [% FSO]	≤ ± 0,75	≤ ± 1,00	≤ ± 0,75	≤ ± 0,75
in compens. range [°C]	-20. . .85	0. . .70	-20. . .85	0. . .70°C

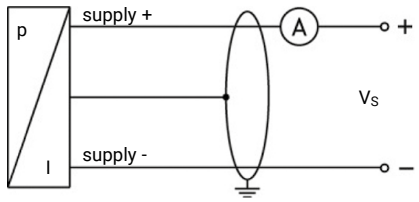
Operating ranges and permissible overpressure:

Vacuum resistance: $P_N \geq 1$ bar: unlimited resistance; $P_N < 1$ bar: on request

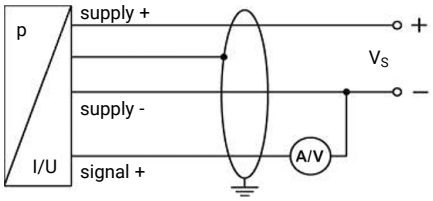
Nominal pressure gauge	Nominal pressure absolute	Permissible overpressure	Burst pressure ≥
-1. . .0 bar		5 bar	7.5 bar
0. . .0.10 bar		0.5 bar	1.5 bar
0. . .0.16 bar		1 bar	1.5 bar
0. . .0.25 bar		1 bar	1.5 bar
0. . .0.40 bar	0. . .0.40 bar	2 bar	3 bar
0. . .0.60 bar	0. . .0.60 bar	5 bar	7.5 bar
0. . .1.0 bar	0. . .1.0 bar	5 bar	7.5 bar
0. . .1.6 bar	0. . .1.6 bar	10 bar	15 bar
0. . .2.5 bar	0. . .2.5 bar	10 bar	15 bar
0. . .4.0 bar	0. . .4.0 bar	20 bar	25 bar
0. . .6.0 bar	0. . .6.0 bar	40 bar	50 bar
0. . .10 bar	0. . .10 bar	40 bar	50 bar
0. . .16 bar	0. . .16 bar	80 bar	120 bar
0. . .25 bar	0. . .25 bar	80 bar	120 bar
0. . .40 bar	0. . .40 bar	105 bar	210 bar
0. . .60 bar	0. . .60 bar	105 bar	210 bar
0. . .100 bar	0. . .100 bar	210 bar	1000 bar
0. . .160 bar	0. . .160 bar	600 bar	1000 bar
0. . .250 bar	0. . .250 bar	1000 bar	1250 bar
0. . .400 bar	0. . .400 bar	1000 bar	1250 bar
0. . .600 bar	0. . .600 bar	1000 bar	1800 bar

Wiring diagrams:

2-wire-system (current)

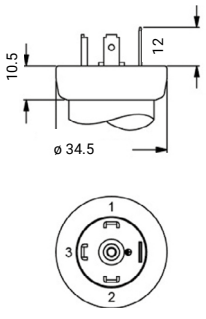


3-wire-system (current / voltage)

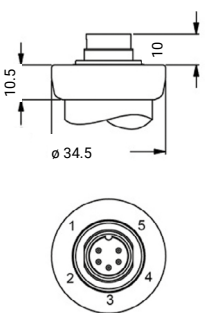


Electrical Connections:

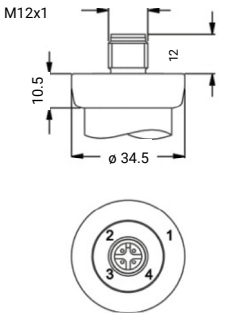
Standard / **Optional /**



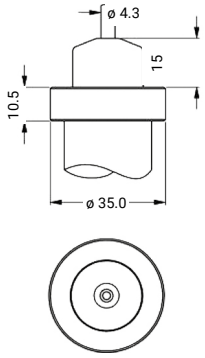
ISO 4400 (IP65)



Binder series 723 5-wire (IP 67)

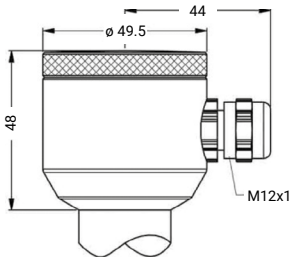


M12x1 4-wire (IP 67)

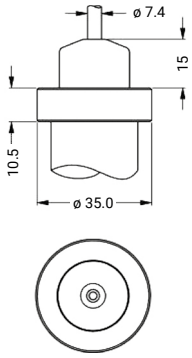


Cable outlet with PVC cable [4] (IP 67)

[4] standard: 2 m PVC cable without ventilation tube; Permissible temperature: -5. . .+70°C-



Compact field housing (IP 67)



Cable outlet, cable with ventilation tube [5] (IP 68)

[5] different cable types and lengths available, permissible temperature depends on kind of cable

Electrical connections /

Electrical connections		ISO 4400	Binder 723 (5-wire)	M12x1 (4-wrire)	Field housing	Cable colours (DIN 47100)
2-wire	supply +	1	3	1	IN +	white
	supply -	2	4	2	IN -	brown
	load	load	5	4	load	yellow/green (shade)
3-wire	supply +	1	3	1	IN +	white
	supply -	2	4	2	IN -	brown
	signal +	3	1	3	out +	green
	load	load	5	4	load	yellow/green (shade)

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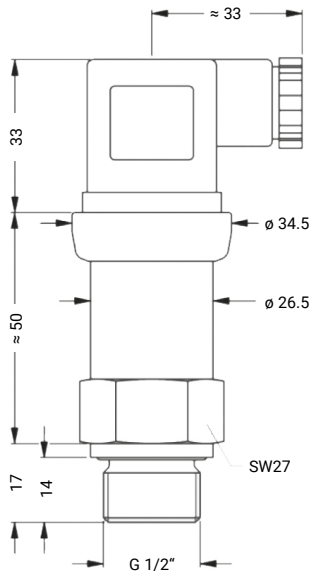
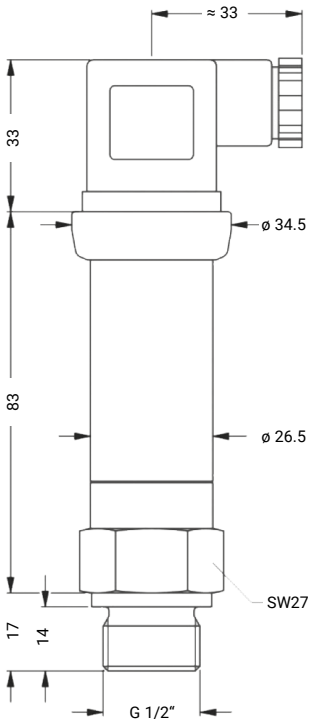
Mechanical connection:

Standard for accuracy 0.35 % / 0.25 % /



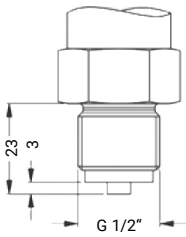
G 1/2" DIN 3852 with ISO 4400

Standard for SIL- and Ex-Version /

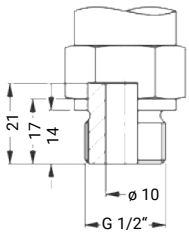


G 1/2" DIN 3852 with ISO 4400

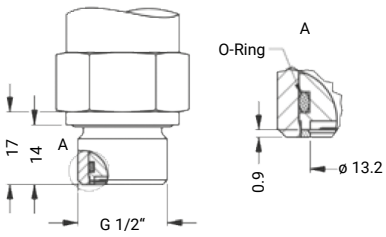
Optional /



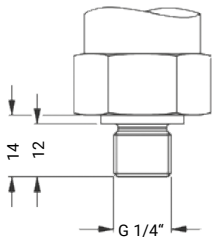
G 1/2" EN 837



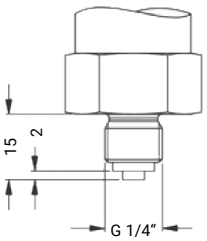
G 1/2" open port



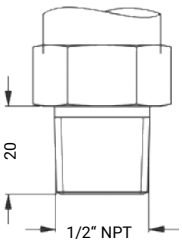
G 1/2" DIN 3852 with flush sensor



G 1/2" DIN 3852



G 1/4" EN 837



1/2" NPT

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PU-07

Pressure Measuring Transmitter with Ceramic Sensor Class 0.5

Features

/ High chemical resistance
/ Measuring cell from ceramics
/ Up to 600 bar
/ 4. . .20 mA or 0. . .10 VDC
/ Protection class IP 65 / IP 67
/ Variety of electrical and mechanical connections
/ Optional Ex- and SIL 2-version
/ Optional pressure port made from PVDF
/ Suitable for oxygen (on request)

Description:

Series PU-07 pressure transmitters are equipped with a chemical resistant thick-film ceramic measuring cell and are especially well suited for viscous, pasty, contaminated and aggressive media as well as for low-pressure oxygen applications. In this measurement method, depending on the measuring range, the applied physical pressure on the sensor is converted into a pressure-proportional electronic signal which is either available as 4 . . .20 mA in 2-wire technology or as 0. . .20 mA respectively as 0. . .10 VDC in 3-wire technology. Other options are Ex-, Sil2- and Ex-SIL2- as well as customized designs.

Application:

The PU-07 pressure transmitters are used for measuring pressure in fluid or gaseous materials. By the option with front flush diaphragm the devices are particularly suited for sticky or tenacious media as the media cannot creep into and destroy or clog them. Versions with the optional pressure port made from PVDF find their use in many aggressive media, to which stainless steel is not resistant. Due to compact design, accuracy and material combination, this series is recommended for a wide range of industrial applications.

Versions:

PU-07 Pressure Meas. Transmitter Class 0.5

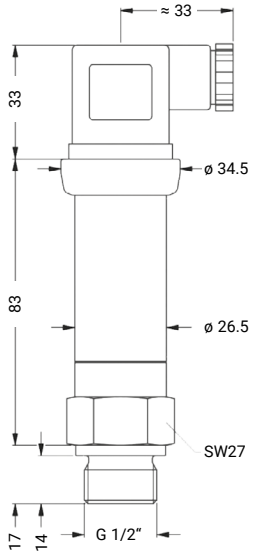
Output signal: Possible output signals are:
4. . .20 mA in 2-wire method (optional as SIL 2- or/ and intrinsically safe version)
or 0. . .20 mA respectively 0. . .10 VDC in 3-wire method (other output signals on request).

Calibration: On request, the devices can be calibrated for operating ranges „C“ up to „R“ at absolute pressure.

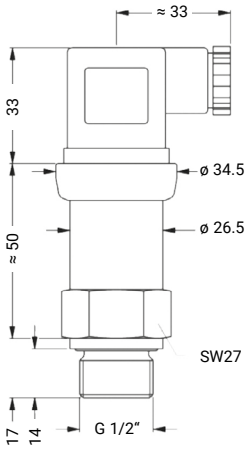
Pro**cess connection:** On request, the devices can be supplied for operating ranges „A“ up to „K“ with a semi-flush sensor. This is recommended for viscous or sticky media.

Dimensions in mm:

SIL- and Ex-Version /



Standard- and Ex-Version /



Ordering Codes:

Order no.	PU-07.	1.	1.	1.	1.	1.	1.	L.	0

PU-07 Pressure transmitter

Output signal /
1 = 4. . .20 mA, 2-wire
2 = 0. . .20 mA, 3-wire
3 = 0. . .10 VDC, 3-wire
4 = 4. . .20 mA, 2-wire, Ex-protection
5 = 4. . .20 mA, 2-wire, SIL2
6 = 4. . .20 mA, 2-wire, SIL2, Ex-protection
9 = other (on request)

Calibration /
1 = relative pressure
2 = absolute pressure[1]

Electrical Connection /
1 = male and female plug ISO 4400
2 = male plug Binder Series 723 (5-pole)
3 = cable outlet with 2 m PVC cable
4 = male plug M12x1 (4-pole) / metal
5 = compact field housing stainless steel 1.4305
9 = others (on request)

Process connection /
1 = G 1/2“ DIN 3852
2 = G 1/2“ EN 837
3 = G 1/4“ DIN 3852
4 = G 1/4“ EN 837
5 = G 1/2“ DIN 3852 with semi-flush sensor[2]
6 = G 1/2“ DIN 3852 open pressure port
7 = 1/2“ NPT
9 = other (on request)

Seal /
1 = FKM
2 = EPDM (for PN ≤ 160 bar only)
9 = other (on request)

Pressure connection /
1 = st. steel 1.4404 (316L)
2 = PVDF [3]
9 = other (on request)

Operating range /
A = -1. . .0 bar
B = 0. . .0.4 bar
C = 0. . .0.6 bar
D = 0. . .1.0 bar
E = 0. . .1.6 bar
F = 0. . .2.5 bar
G = 0. . .4.0 bar
H = 0. . .6.0 bar
I = 0. . .10 bar
J = 0. . .16 bar
K = 0. . .25 bar
L = 0. . .40 bar
M = 0. . .60 bar
N = 0. . .100 bar
O = 0. . .160 bar
P = 0. . .250 bar
Q = 0. . .400 bar
R = 0. . .600 bar
9 = other (on request)

Option /
0 = without
1 = transmitter power supply for Zone 0 (on request)
2 = oxygen application [4] (on request)
9 = special (please specify in detailed text)

[1] absolute pressure possible from 0.6 bar (operating range „C“)
[2] possible for nominal pressure ranges PN ≤ 25 bar, absolute pressure ranges on request
[3] PVDF only with G 1/2“ DIN 3852 open pressure port (up to 60 bar), min. permissible temp. is -30°C
[4] oxygen application with FKM-gasket up to 25 bar and with EPDM-gasket up to 15 bar possible

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Electrical Specifications:

Supply voltage /

2-wire, 4. . .20 mA:	U_B = 8. . .32 VDC
2-wire, 4. . .20 mA, Ex:	U_B = 10. . .28 VDC
3-wire, 0. . .20 mA:	U_B = 14. . .30 VDC
3-wire, 0. . .10 V:	U_B = 14. . .30 VDC

Load /

2-wire, current:	R_{max} = [(U_B - U_{Bmin}) / 0.02 A] Ω
3-wire, current:	R_{max} = 240 Ω
3-wire, voltage:	R_{max} = 10 kΩ

Current consumption /

Signal output current:	max. 25 mA
Signal output voltage:	max. 7 mA

Influence effects /

Supply:	005 % FSO / 10 V
Load:	0.05 % FSO / kΩ

Long term stability / ≤ ± 0.3 % FSO / year at ref. conditions

Response time /

2-wire:	≤ 10 ms
3-wire:	≤ 3 ms

Thermal error / ≤ ± 0.2% of full scale value / 10 K
or zero and span in compensated range
-25. . .+85°C

Short-circuit prot. / permanent

Reverse polarity prot. / no damage, but also no function

EMC / emission and immunity as per EN 61326

Protection class / acc. to diagrams of electrical contacts

Option Ex-Protection /

St. steel pres. port:	Zone 0: II 1G Ex ia IIC T4 Ga Zone 20: II 1D Ex ia IIIC T 85°C Da
Plastic pressure port:	Zone 1: II 2G Ex ia IIC T4 Gb Zone 21: II 2D Ex ia IIIC T 85°C Db Safety technical max. values: Ui = 28 VDC, Ii = 93 mA, Pi = 660 mW, Ci ≈ 0 nF, Li ≈ 0 µH, the supply connections have an inner capacity of max. 27 nF

Option SIL 2 / as per IEC 61508 / IEC 61511

Option oxygen application / for PN ≤ 25 bar: O-ring in FKM Vi 567 (with BAM-approval); permissible max. values are 25 bar / 150°C

ATEX-Directive / 2014/34/EU

CE-conformity / EMV-Directive: 2004/108/EG; Pressure Equip. Directive: 2014/68/EU (module A)[8]

Technical Specifications:

Accuracy / ≤ ± 0.5 % FSO[5]

Mechanical stability /

Vibration:	10 g RMS (25. . .2000 Hz) as per DIN EN 60068-2-6
Shock:	500 g / 1 ms as per DIN EN 60068-2-27

max. Temperature /

Medium:	-40. . .+125°C
Ambient / electronics	-40. . .+85°C
Storage:	-40. . .+100°C
Ambient Ex-version:	in Zone 0: -20. . .+60°C (for p_{atm} 0.8 bar. . .1.1 bar) from Zone 1: -20. . .+70°C

Process connection / G 1/2" DIN 3852 (standard), G 1/4" DIN 3852, G 1/2" EN 837, G 1/4" EN 837, 1/2" NPT and G 1/2" DIN 3852 with semi-flush sensor or with open pressure port

Materials /

Process connection:	st. steel 1.4404 (standard), optional for G 1/2" open port with nominal pressure range up to 60 bar: PVDF[6]
Housing:	Edelstahl 1.4404
Compact field housing:	st. steel 1.4305, cable gland brass, nickel plated
Gaskets:	FKM (standard) and EPDM (only for PN ≤ 160 bar)
Diaphragm:	ceramics Al_2O_3 96 %

Wetted parts / pressure connection, gaskets and diaphragm

Weight / approx. 140 g (without cable)

[5] accuracy according to IEC 60770 - limit point adjustment (non-linearity, hysteresis, repeatability)
[6] for pressure port of PVDF the medium temperature range is -30°C. . .+60°C

Op. Ranges and Overpress.:

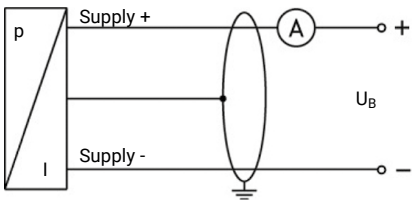
Vacuum resistance: $P_N \geq 1$ bar: unlimited resistance; $P_N < 1$ bar: on request

Nom. pressure relative	Nom. pressure absolute	Overpressure	Burst pressure ≥
-1. . .0 bar		4 bar	7 bar
0. . .0.40 bar		1 bar	2 bar
0. . .0.60 bar	0. . .0.60 bar	2 bar	4 bar
0. . .1.0 bar	0. . .1.0 bar	2 bar	4 bar
0. . .1.6 bar	0. . .1.6 bar	4 bar	5 bar
0. . .2.5 bar	0. . .2.5 bar	4 bar	7.5 bar
0. . .4.0 bar	0. . .4.0 bar	10 bar	12 bar
0. . .6.0 bar	0. . .6.0 bar	10 bar	18 bar
0. . .10 bar	0. . .10 bar	20 bar	30 bar
0. . .16 bar	0. . .16 bar	40 bar	50 bar
0. . .25 bar	0. . .25 bar	40 bar	75 bar
0. . .40 bar	0. . .40 bar	100 bar	120 bar
0. . .60 bar	0. . .60 bar	100 bar	180 bar
0. . .100 bar	0. . .100 bar	200 bar	300 bar
0. . .160 bar	0. . .160 bar	400 bar	500 bar
0. . .250 bar	0. . .250 bar	400 bar	750 bar
0. . .400 bar	0. . .400 bar	600 bar	1000 bar
0. . .600 bar[7]	0. . .600 bar[7]	800 bar	1100 bar

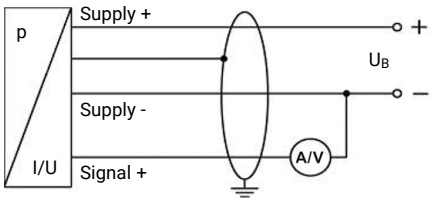
[7] nominal pressure 600 bar without UL certification

Wiring diagram:

2-Wire-System (current)

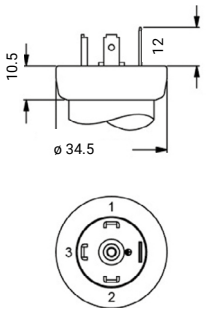


3-Wire-System (current / voltage)

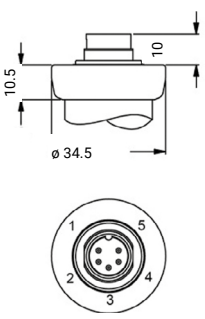


Electrical Connections:

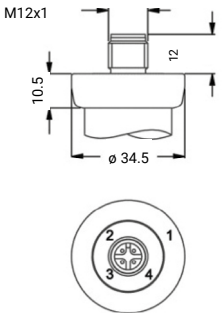
Standard / **Optional /**



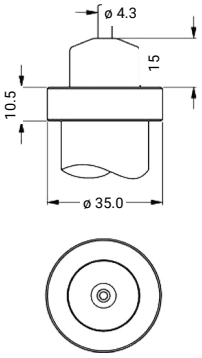
ISO 4400 (IP65)



Binder Series 723 5-wire (IP 67)

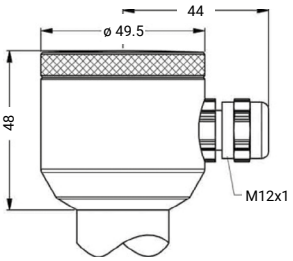


M12x1 4-wire (IP 67)

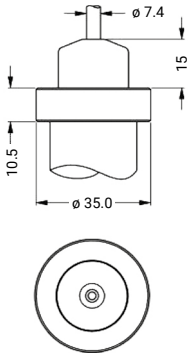


Cable output with PVC-cable [9] (IP 67)

9 standard: 2 m PVC cable without ventilation tube; permissible temperature: -5. . .+70°C



Compact Field housing (IP 67)



Cable output, cable with vent [10] (IP 68)

10 different cable types and lengths available, permissible temperature depends on kind of cable

Electrical connections /

Electrical connections		ISO 4400	Binder 723 (5-wire)	M12x1 (4-wire)	Field housing	Cable colours (DIN 47100)
2-wire-system	supply +	1	3	1	IN +	white
	supply -	2	4	2	IN -	brown
	shield	ground	5	4	ground	yellow/green
3-wire-system	supply +	1	3	1	IN +	white
	supply -	2	4	2	IN -	brown
	signal +	3	1	3	Out +	green
	shield	ground	5	4	ground	yellow/green

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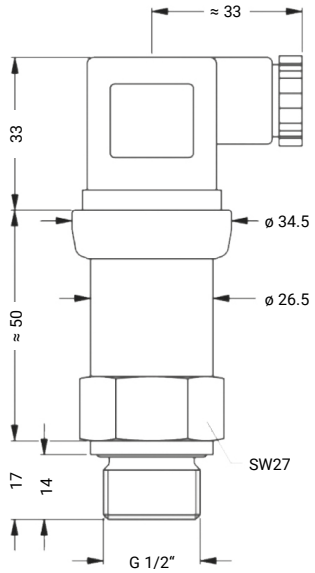
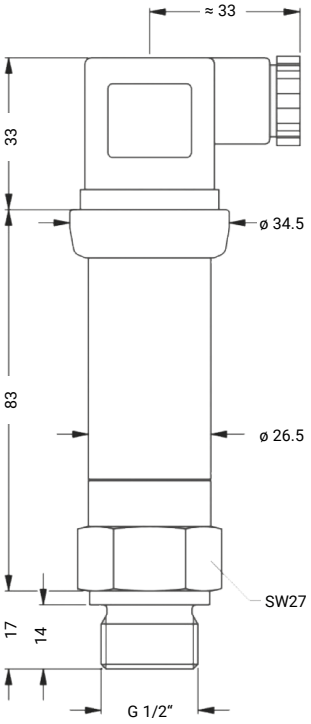
Mechanical Connections:

Standard for Accuracy 0.35 % / 0.25 %



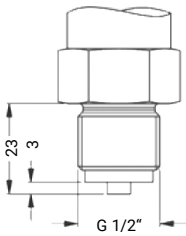
G 1/2" DIN 3852 with ISO 4400

Standard for SIL- and Ex-Version

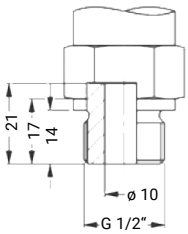


G 1/2" DIN 3852 with ISO 4400

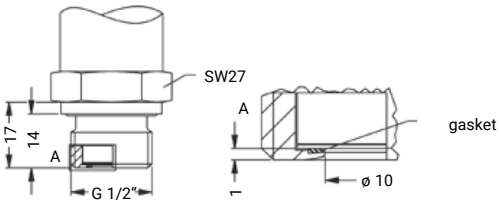
Optional



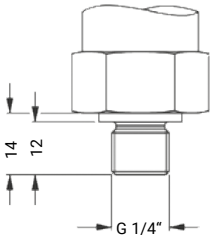
G 1/2" EN 837



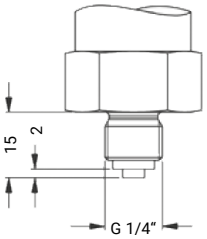
G 1/2" open port



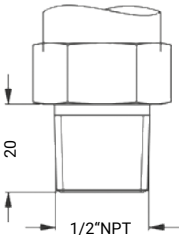
G 1/2"quasi-flush DIN 3852; M20x1,5[11]



G 1/4" DIN 3852



G 1/4" EN 837



1/2" NPT

[11] possible for nominal pressure ranges PN ≤ 25 bar; absolute pressure ranges on request

This data sheet contains product specifications, properties are not guaranted. Subject to change without notice.

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PU-08

Low Pressure Measuring Transmitter with Ceramic Sensor Class 0.25 or 0.35

Features

/ High chemical resistance
/ Ceramic measuring cell
/ Up to 20 bar
/ 4. . .20 mA or 0. . .10 VDC
/ Protection class up to IP 68
/ Variety of process connections
/ Optional pressure port made of PVDF
/ Optional intrinsically safe ver.

Description:

Series PU-08 pressure transmitters are equipped with a chemical resistant, capacitive ceramic measuring cell for detection of low system pressures. Optional configurations such as versions with a 99,9% Al_2O_3 ceramic diaphragm or a thermoplastic connection made of PVDF expand the wet-side area of applications. Depending on the selected operating range, physical pressure is converted into a proportional electrical signal, which is either available as 4. . .20 mA in 2-wire technology or as 0 . . .10 VDC in 3-wire technology. For applications in explosive areas, intrinsically safe versions are available.

Application:

Series PU-08 pressure transmitters are used in the measurement of low system pressure of liquid or gaseous media. Due to compact design, accuracy and high media resistance, PU-08 are ideal for a wide range of applications, for example in environmental technology, process technology, laboratory technology as well as in industrial technology. Preferred media are water, fuels, oils and gases.

Versions:

PU-08 Pressure Measuring Transm. Class 0.35 or 0.25

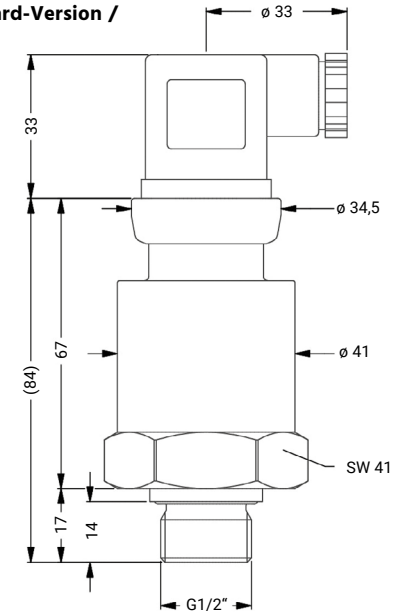
Output signal:
Possible output signals are: 4. . .20 mA in 2-wire method (optional as intrinsically safe version) or 0. . .10 VDC in 3-wire method (other output signals on request).

Calibration: On request, the devices can be calibrated for operating ranges „H" up to „O" at absolute pressure (other on request).

Process connection: Optional, the devices can be supplied with a G 1/2" DIN 3852 open pressure port made of PVDF. This is recommended for aggressive media, due to the hight chemical resistance.

Dimensions in mm:

Standard-Version /



Ordering Codes:

Order no.	PU-08.	1.	1.	1.	1.	1.	1.	1.	1.	H.	0

PU-08 Pressure Transmitter

Output signal /
1 = 4. . .20 mA, 2-wire
2 = 0. . .10 VDC, 3-wire
3 = 4. . .20 mA, 2-L, Ex-protection T4
4 = 4. . .20 mA, 2-L, Ex-protection T6
9 = Other (on request)

Calibration /
1 = relative pressure
2 = absolute pressure [1]

Accuracy /
1 = 0.35 %
2 = 0.25 % (Option for PN ≥ 0.6 bar)

Electrical connection /
1 = male and female plug ISO 4400
2 = male plug Binder Series 723 (5-pole)
3 = cable outlet with 2 m PVC cable [2]
4 = cable outlet, cable with ventilation tube [3]
5 = male plug M12 x 1 (4-pole) / metal
6 = compact field housing stainless steel 1.4305
9 = Others (on request)

Process connection /
1 = G 1/2" DIN 3852
2 = G 1/2" EN 837
3 = G 1/2" DIN 3852 open pressure port
4 = 1/2" NPT
9 = Other (on request)

Gasket /
1 = FKM
2 = EPDM
9 = Other (on request)

Pressure connection /
1 = stainless steel 1.4404 (316L)
2 = PVDF [4]
9 = Other (on request)

Diaphragm /
1 = ceramics Al_2O_3 96 %
2 = ceramics Al_2O_3 99,9 %
9 = Other (on request)

Operating range /
A = 0. . .0.04 bar
B = 0. . .0.06 bar
C = 0. . .0.10 bar
D = 0. . .0.16 bar
E = 0. . .0.25 bar
F = 0. . .0.40 bar
G = 0. . .0.60 bar
H = 0. . .1.0 bar
I = 0. . .1.6 bar
J = 0. . .2.5 bar
K = 0. . .4.0 bar
L = 0. . .6.0 bar
M = 0. . .10 bar
N = 0. . .16 bar
O = 0. . .20 bar
9 = Other (on request)

Options /
0 = none
1 = transmitter power supply for Zone 0 (on request)
9 = special (please specify in detailed text)

[1] absolute pressure possible from operating range „H" (less than operating range „H" on request)
[2] standard: 2 m PVC cable (permissible temperature: -5°C. . .+70°C), other cable lengths on request
[3] different cable types and lengths available, permissible temperature depends on kind of cable
[4] PVDF only with G 1/2" DIN 3852 open pressure port, minimum permissible temperature is -30°C

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Electrical Specifications:

Supply voltage /

2-wire, 4. . .20 mA:	U_B = 9. . .32 VDC
2-wire, 4. . .20 mA, Ex:	U_B = 14. . .28 VDC
3-wire, 0. . .10 V:	U_B = 12.5. . .32 VDC

Load /

current 2-wire:	R_{max} = [(U_B - U_{Bmin}) / 0.02 A] Ω
voltage 3-wire:	R_{min} = 10 kΩ

Current consumption /

signal output current:	max. 21 mA
signal output voltage:	max. 5 mA

Influence effects /

Supply:	0.05 % FSO / 10 V
Load:	0.05 % FSO / kΩ

Long term stability /	≤ ± 0.1 % FSO / year at reference cond.
Start-up time /	700 ms
Mean measuring time /	5 / s
Response time /	mean response time: < 200 ms max. response time: 380 ms
Thermal error /	≤ ± 0.1% of full scale value / 10 K for zero and span in compensated range -20. . .+80°C
Short-circuit prot. /	permanent
Rev. polarity protection /	no damage, but also no function
Emission and Immunity /	as per EN 61326

Protection class /

ISO 4400:	IP 65
Binder S. 723, 5-wire:	IP 67
Plug M12 x 1, 4-wire:	IP 67
Compact field housing:	IP 67
Cable outlet PVC:	IP 67
Cable outlet with ventilation tube:	IP 68

Option Ex-Protection /

St. Steel-connection:	Zone 0: II 1G Ex ia IIC T4 Ga (option: II 1G Ex ia IIC T6 Ga) Zone 20: II 1D Ex ia IIIC T85°C Da Safety technical max. values U_i = 28 VDC, I_i = 93 mA, P_i = 660 mW, C_i ≤ 14 nF, L_i ≤ 0 µH, C_{GND} = 27 nF
Connecting cables: (by factory)	capacity: signal line / shield also signal line / signal line: 220 pF / m inductance: signal line / shield also signal line / signal line: 1,5 µH / m

ATEX-Directive /	2014/34/EU
CE-Conformity /	EMC-Directive: 2014/30/EU

Technical Specifications:

Accuracy /

Standard:	≤ ± 0.35 % FSO[5]
Option:	≤ ± 0.25 % FSO[5] (for PN ≥ 0,6 bar)

Mechanical stability /

Vibration:	10 g RMS (20. . .2000 Hz) as per DIN EN 60068-2-6
Shock:	100 g / 1 ms as per DIN EN 60068-2-27

max. Temperature /

Media:	-40. . .+125°C
Ambient / Electronics:	-40. . .+85°C
Storage:	-40. . .+100°C
Ambient Ex-Version:	in Zone 0: -20. . .+60°C (at p_{atm} 0.8 bar. . .1.1 bar) from Zone 1: -25. . .+70°C for T6: -25. . .+60°C

Process connection /	G 1/2" DIN 3852 (standard), G 1/2" DIN 3852 open port, G 1/2" EN 837 and 1/2" NPT

Materials /

Process connection:	st. steel 1.4404 (standard), opt. for G 1/2" open port in PVDF [6]
Housing:	st. steel 1.4404
Compact field housing:	stainless steel 1.4301, cable gland brass, nickel plated
Gaskets:	FKM (standard) or EPDM
Diaphragm:	ceramics Al_2O_3 96% (standard) and ceramics Al_2O_3 99,9%

Wetted parts /	pressure connection, gaskets and diaphragm
Lifespan /	> 100 x 10^6 load cycles
Weight /	approx. 200 g (without cable)

[5] accuracy according to IEC 60770 - limit point adjustment (non-linearity, hysteresis, repeatability)

[6] for pressure port of PVDF the medium temperature range is -30°C. . .+60°C

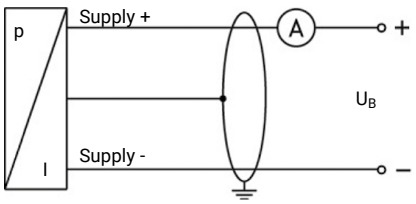
Op. Ranges & Overpressure:

Nominal press. relative	Nominal press. absolute	Permissible overpressure	Underpressure
0. . .0.04 bar		2 bar	- 0.2 bar
0. . .0.06 bar		2 bar	- 0.2 bar
0. . .0.10 bar		4 bar	- 0.3 bar
0. . .0.16 bar		4 bar	- 0.3 bar
0. . .0.25 bar		6 bar	- 0.5 bar
0. . .0.40 bar	(0. . .0.4 bar)[7]	6 bar	- 0.5 bar
0. . .0.60 bar	(0. . .0.6 bar)[7]	8 bar	- 0.5 bar
0. . .1.0 bar	0. . .1.0 bar	8 bar	- 0.5 bar
0. . .1.6 bar	0. . .1.6 bar	15 bar	- 1.0 bar
0. . .2.5 bar	0. . .2.5 bar	25 bar	- 1.0 bar
0. . .4.0 bar	0. . .4.0 bar	25 bar	- 1.0 bar
0. . .6.0 bar	0. . .6.0 bar	35 bar	- 1.0 bar
0. . .10 bar	0. . .10 bar	35 bar	- 1.0 bar
0. . .16 bar	0. . .16 bar	45 bar	- 1.0 bar
0. . .20 bar	0. . .20 bar	45 bar	- 1.0 bar

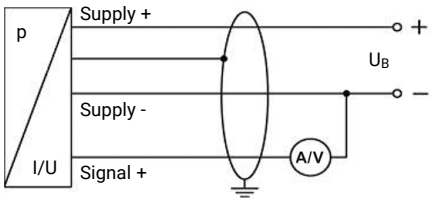
[7] on request

Wiring diagrams:

2-Wire-System (Current)

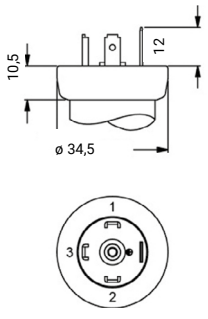


3-Wire-System (Current / Voltage)

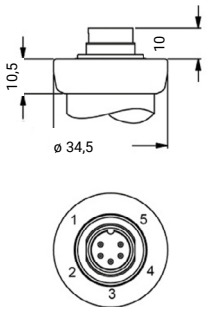


Electrical Connection:

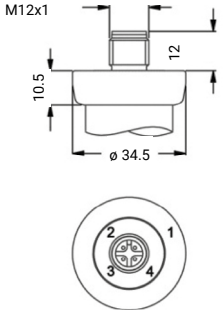
Standard / **Optional /**



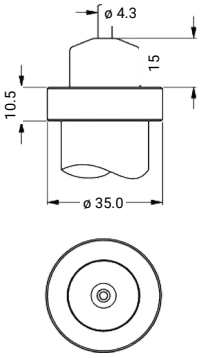
ISO 4400 (IP65)



Binder Series 723 5-wire (IP 67)

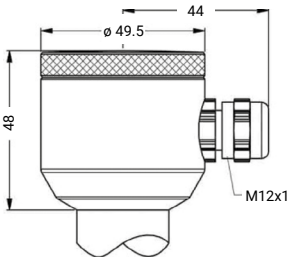


M12 x 1 4-wire (IP 67)

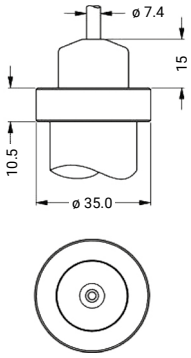


Cable output with PVC-cable [8] (IP 67)

[8] standard: 2 m PVC cable without ventilation tube; permissible temperature: -5. . .+70°C



Compact-Field housing (IP 67)



Cable output, cable with vent [9] (IP 68)

[9] different cable types and lengths available, permissible temp. depends on kind of cable

Electrical connections /

Electrical connections		ISO 4400	Binder 723 (5-wire)	M12x1 (4-wire)	Field housing	Cable colours (DIN 47100)
2-wire-system	Supply +	1	3	1	IN +	white
	Supply -	2	4	2	IN -	brown
	Shield	ground	5	4	ground	yellow/green
3-wire-system	Supply +	1	3	1	IN +	white
	Supply -	2	4	2	IN -	brown
	Signal +	3	1	3	Out +	green
	Shield	ground	5	4	ground	yellow/green

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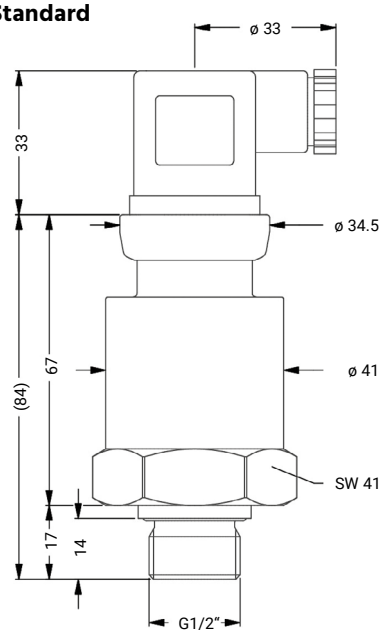
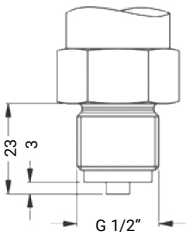
Mechanical Connection:

Standard

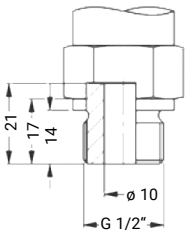


G 1/2"DIN 3852 with ISO 4400

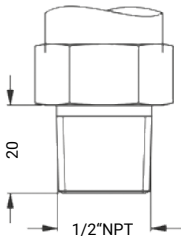
Optional



G 1/2" EN 837



G 1/2" open port



1/2" NPT

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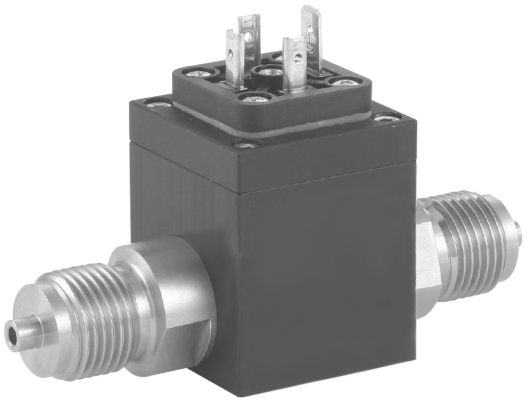
PD-02

Differential Pressure Transmitter for Fluids and Gases



Features

/ Accuracy class 0.5%

/ 2 piezo-resistive st. steel sensors

/ Separation through diaphragms

/ Stainless steel 1.4535 diaphragms

/ Diff. pressure from 20 mbar to 16 bar

/ High static overpressure

/ Shock and vibration protection

Description:

The PD-02 differential pressure transmitter detects the pressure levels present at its two process connections by means of two piezo-resistive sensor elements and records the difference between their measuring signals. The generated signal proportional to the differential pressure is internally amplified and output to the pins of PD-02 either as a 4 to 20 mA 2-wire signal or as a 0 to 10 V DC 3-wire signal for further processing. For the wetted parts, only stainless steels 1.4404 and 1.4435 and FKM sealing material (others on request) are used in this design, whereby PD-02 can cater to a wide range of fluids or gasses when selecting the media.

Application:

The compact design of the PD-02 differential pressure transmitter allows integration of devices even in installations or machines with restricted conditions of space. The transmitters are stable for long periods, robust against shocks and vibrations and are secure against static pressure that can reach up to 30-times the differential pressure range. There are 12 standard operating ranges from 0. . .20 mbar to 0. . .16 bar differential pressure available to the user. As process connections, male as well as female thread systems can be used. If necessary, also the UNF thread system can be supplied which is mostly in demand in the refrigeration technology. The PD-02 differential pressure transmitters are used in areas such as:

/ Machine construction

/ Plant manufacturing

/ Filter monitoring

/ Hydraulics

/ Flow measurement with orifices or dynamic pressure sensors

Measuring ranges:

Nominal pressure [bar]	0.2	0.4	1	2.5	6	16
Differential pressure range [bar]	0. . .0.02 up to 0. . .0.2	0. . .0.04 up to 0. . .0.4	0. . .0.1 up to 0. . .1	0. . .0.25 up to 0. . .2.5	0. . .0.6 up to 0. . .6	0. . .1.6 up to 0. . .16
Permissible static pressure, one-sided [bar]	0.5	1	3	6	20	60

Technical Specifications:

Accuracy /

- ≤ ± 0.5 % FSO: Diff. pressure range with TD from 1:1 up to 1:5
- ≤ ± 1.0 % FSO: Differential pressure range with TD > 1:5 up to 1:10 (Characteristic line deviation as per IEC 60770 limiting point setting (non-linearity, hysteresis, repeatability)

Permissible load / Power output 2-wire:
Rmax = [(U_B-U_B min) / 0.02A] Ω
Voltage 3-wire: Rmin = 10 kΩ

Influencing factors / Voltage supply: 0.05% FSO / 10V
Load: 0.05% FSO / kΩ

Long period stability / ≤ ± 0.2 % FSO / year

Response time / < 5 ms

Temperature error / **(nominal pressure)**

- Tolerance band: 0.2 bar: ≤ ± 2.5 % FSO
  0.4 bar: ≤ ± 2.0 % FSO
  ≥ 1.0 bar: ≤ ± 1.5 % FSO
- TC average: 0.2 bar: ± 0.4 % FSO/10K
  0.4 bar: ± 0.3 % FSO/10K
  ≥ 1.0 bar: ± 0.2 % FSO/10K
- In compensated range: 0.2 bar: 0. . .50°C
  0.4 bar: 0. . .50°C
  ≥ 1.0 bar: 0. . .70°C

Mechanical stability / Vibration: 10 g RMS (20. . .2000 Hz)
Shock: 100 g / 11 ms

Storage temperature / -40. . .+100°C

Ambient temp. / -25. . .+85°C

Media temp. / -25. . .+125°C

Materials /

- Housing: aluminium, black anodized
- Pressure connection: stainless steel 1.4404
- Sealing (wetted): FKM (Viton®), other sealing materials on request
- Sep. membranes: stainless steel 1.4435
- Wetted parts: pressure connection, sealing, separation membranes

Weight / max. 250 g

Life span / > 100 x 10^6 load cycles

Electrical Specifications:

Output signal / 4. . .20 mA, 2-wire or
0. . .10 VDC, 3-wire

Supply voltage / 12. . .36 VDC at current output,
14. . .36 VDC at voltage output

Power consumption / max. 25 mA at current output,
max. 7 mA at voltage output

Electrical protection /

- Short-circuit stability: permanent
- Pole-reversal protection: no function if interchanged connections, but also no damage
- Electromagnetic compatibility: error signal and stability as per EN 61326

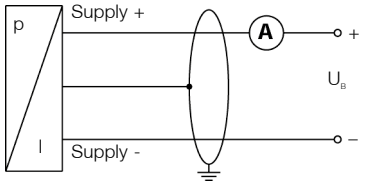
Electrical connections / cubic plug ISO 4400, others on request

Protection class / IP65

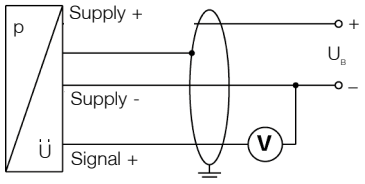
PIN-layout:

	2-wire-current output	3-wire-voltage output
Supply +	1	1
Supply -	2	2
Signal +	not used	3
Ground	Ground contact	Ground contact

2-wire-system (current)



3-wire-system (voltage)



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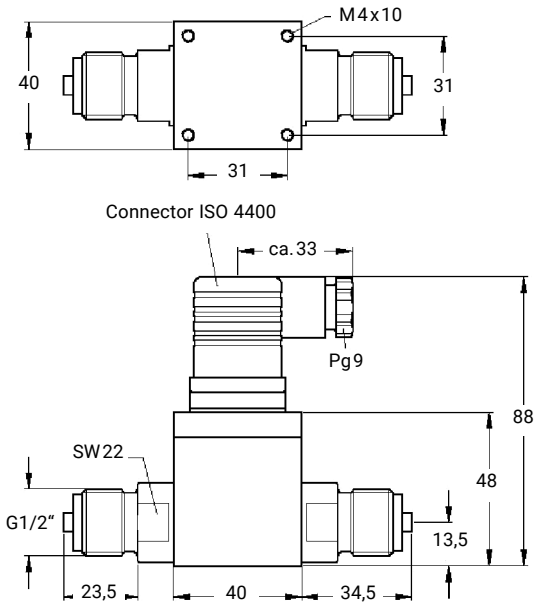
Dimensions in mm:

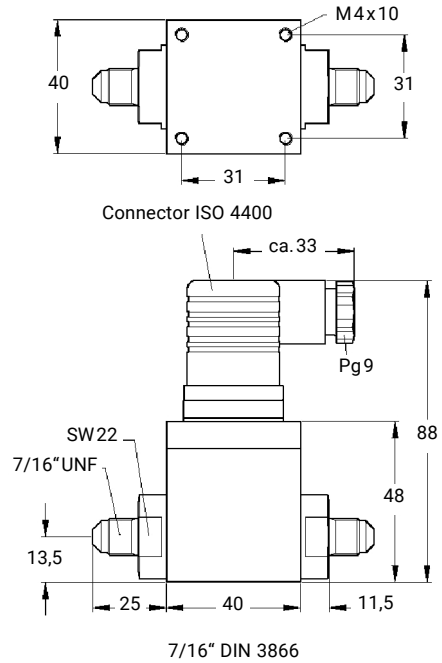
Mechanical connections:

2 x G 1/2“-male thread



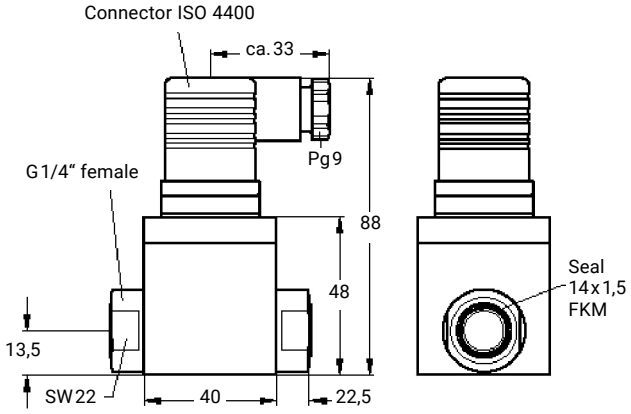
G 1/2“ EN 837 · M20 x 1,5

2 x 7/16-UNF“-male



7/16“ DIN 3866

2 x G 1/4“-IG



G 1/4“ female

Ordering Codes:

Order number	PD-02.	1.	2.	4.	B.	1

PD-02 Differential Pressure Transmitter for Fluids and Gases

Output /
1 = 4. . .20 mA, 2-wire
2 = 0. . .10 VDC, 3-wire

Process connection /
1 = G1/2“-male as per EN 837
2 = 7/16-UNF as per DIN 3866
3 = G1/4“-female

Nominal pressure range /
1 = 0.2 bar, max. one-sided static pressure 0.5 bar, Operating ranges A, B, C
2 = 0.4 bar, max. one-sided static pressure 1 bar, Operating ranges B, C, D, E
3 = 1 bar, max. one-sided static pressure 3 bar, Operating ranges C, D, E, F, G
4 = 2.5 bar, max. one-sided static pressure 6 bar, Operating ranges D, E, F, G, H
5 = 6 bar, max. one-sided static pressure 20 bar, Operating ranges F, G, H, I, J
6 = 16 bar, max. one-sided static pressure 60 bar, Operating ranges H, I, J, K, L

Operating range /
A = 0. . .0.02 bar Differential pressure
B = 0. . .0.04 bar Differential pressure
C = 0. . .0.1 bar Differential pressure
D = 0. . .0.25 bar Differential pressure
E = 0. . .0.40 bar Differential pressure
F = 0. . .0.60 bar Differential pressure
G = 0. . .1 bar Differential pressure
H = 0. . .2.5 bar Differential pressure
I = 0. . .4.0 bar Differential pressure
J = 0. . .6.0 bar Differential pressure
K = 0. . .10 bar Differential pressure
L = 0. . .16 bar Differential pressure

Special design /
0 = none
1 = please specify in detailed text

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PD-04

Differential Pressure Transmitter for Fluids and Gases

Description:

The Series PD-04 Differential Pressure Transmitters are suitable for measuring over-pressure, under-pressure, and differential pressure in compatible gases and liquids with 1% accuracy. The PD-04 is suitable for all measuring tasks in commercial, industrial or sanitary applications. Dual pressure sensors convert pressure changes into a standard 4 to 20 mA or 0 to 10 VDC output signal.

Features

/ Accuracy 1%

/ Compact and lightweight

/ Fast reaction

/ High reliability

/ Ranges from 1 bar to 6 bar

/ Easy installation

Application:

The compact design of the PD-04 differential pressure transmitter allows integration of devices even in installations or machines with restricted conditions of space. The transmitters are stable for long periods, robust The PD-02 differential pressure transmitters are used in areas such as:

/ Heat exchangers

/ Fan coils/air handlers

/ Core testing applications

/ Hydraulic systems

/ High line pressures/low DP

/ Pumps

/ Commercial/industrial processes

/ Sanitary process

Technical Specifications:

Accuracy /	± 1% from -5. . .+60° C
Stability /	± 1% FS / Year
Process connections /	1/4 female NPT 1/4 female BSPT
Relative humidity /	10% to 90% non condensig
Ambient temperature /	-10. . .+60°C
Process temperature /	-10. . .+80°C
Material /	
Housing:	ABS
Wetted:	304 SS
Installation position:	not position sensitive
Weight /	567 g
Approvals /	CE, RCM

Electrical Specifications:

Output signal /	4. . .20 mA 0. . .10 VDC
Rated supply voltage /	
4. . .20mA Output	8. . .36 VDC
0. . .10 VDC Output	12. . .36 VDC or 12. . .32 VAC (@ Max load of 2k Ω)
Power consumption /	V_{out} = 13 mA max. I_{out} = 24 mA max.
Max loop resistance (Supply voltage - 8 V)	0,02 für 4. . .20mA Output
Response time /	50 ms
Electrical connections /	Form A DIN 43650
Enclosure rating /	IP65

Pressure Range Limits:

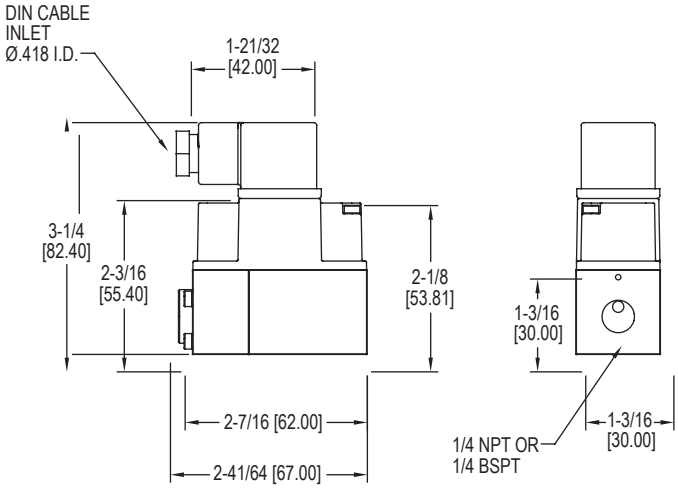
Druck

Pressure Range	Maximum Static Pressure	* Maximum Differential Over Pressure	** Burst Differential Pressure
0. . .1 bar	25 bar	5 bar	8 bar
0. . .2,5 bar	25 bar	5 bar	8 bar
0. . .4 bar	25 bar	12 bar	18 bar
0. . .6 bar	25 bar	12 bar	18 bar

Note: *The differential pressure limit, between high and low ports, that the transmitter can withstand without affecting transmitter performance

****Differential pressures between high and low ports that exceed overpressure limits will result in permanent diaphragm deformation, and any pressure higher than the burst pressure limits will rupture the diaphragm.**

Dimensions in Inch (mm):



Ordering Codes:

Order number **PD-04. 1. 2. B. 1. 1**

PD-04 Differential Pressure Transmitter for Fluids and Gases

Output /
1 = 4. . .20 mA
2 = 0. . .10 VDC

Process connection /
1 = 1/4" female NPT
2 = 1/4" female BPST

Operating range /
A = 0. . .1 bar Differential pressure
B = 0. . .2,5 bar Differential pressure
C = 0. . .4 bar Differential pressure
D = 0. . .6 bar Differential pressure

Options /
0 = without
1 = Factory calibration
2 = NIST certificate

Special design /
0 = without
1 = Mounting bracket kit
2 = 3-Valve Block Manifold

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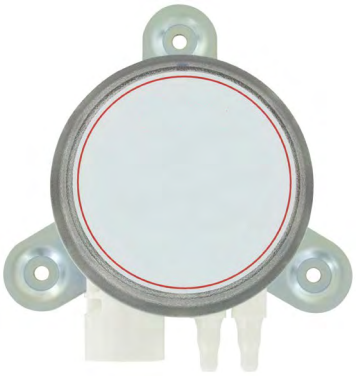

PMMS

Differential Pressure Transmitter for non-combustible Gases

Description:

PMMS series of differential pressure transmitter is a versatile transmitter for monitoring differential pressure and air velocity. The plus- and minus inputs of the PMMS are connected to a differential pressure of a non-combustable gas. The electronic of the unit converts this pressure either into a 0. . .10 VDC- or a 4. . .20 mA-analogue output signal. This compact package is loaded with features such as field selectable english or metric ranges, a field upgradeable LCD display, adjustable damping of the output signal (with optional display) and the ability to select a square root output for use with Pitot tubes and other similar flow sensors (e.g. orifice plates) to measure air velocities.

Features

/ Low-Cost

/ Accuracy class 1%

/ Selectables ranges from 0. . .7 kPa

/ Analogue output for current or voltage

/ Perfect for monitoring filter pressure and air velocity

/ Optionally with field upgradeable LCD-display

/ Optionally with Pitot tube

/ Display 180° rotatable

Application:

The patented magnetic sensing technology of the series PMMS provides an exceptional long term performance and enables the transmitter to be the single solution for a huge amount of pressure- and airflow applications. Available are four models with different operating ranges from 0. . .60 Pa up to 0. . .7 kPa. All of the units provide four different selectable full scale values. Differential pressure transmitters of the series PMMS are the perfect solution to be used in cleanroom applications, monitoring of sluices or the detection of the grade of pollution of air filters. All models can be ordered with a duct mount static pressure probe, which can be mounted directly to the duct either with a split flange or with a mounting gland. Other typical applications for the PMMS are e.g. the monitoring of ventilators and blowers, air-filters, overpressure in rows of chimneys, the measuring of low respiratory and blood pressures and the recording of air velocity in building automation processes.

Technical Specifications:

Accuracy /	± 1% FSO
Stability /	± 1% FSO / year
max. Op. pressure /	ranges 0 and 1: 3.6 psi ranges 2 and 3: 6 psi
max. Burst pressure /	all ranges 6 psi
Media temperature /	-20. . .+70°C
Process connections /	1/8", 3/16“, 1/4", 5 mm and 6 mm ID tubing
Mounting orientation /	any
Response time /	0 or 3 s (selectable)
Zero and span /	adjustable with digital push button
Accessories /	Pitot tube PMMS160 in different lengths with installation kits on request
Weight /	approx. 230 g

Electrical Specifications:

Supply voltage /	
Current output:	10. . .35 VDC
Voltage output:	17. . .36 VDC and 21.6. . .33 VAC
Output signals /	
Current output:	4. . .20 mA, 2-wire
Voltage output:	0. . .5 VDC; 0. . .10 VDC, 3-wire
Load /	
Current output:	0. . .1250 Ω max.
Voltage output:	min. 1 kΩ
max. Power consumpt. /	21 mA max.
Display /	optionally available with 4-digit LCD-display, field upgradeable
Cable entry /	1/2“-NPS-female
Electrical connection /	european style terminal block
Protection class /	IP66 (NEMA 4X)

Measuring range table :

Range	in w.c.	Pa low	Pa high	mm w.c.
0	0.1	25	60	2.5
	0.15	30	75	5
	0.25	40	100	10
	0.5*	50	125*	12.5*
1	0.1	25	100	2.5
	0.25	40	150	5
	0.5	50	160	10
	1*	60	250*	25*
2	1	250	600	25
	2	300	750	50
	3	400	1000	100
	5*	500	1250*	125*
3	10	1000	1000	250
	15	1500	4000	350
	25	2000	5000	600
	28*	2500	7000*	700*

*Indicated values are the positive full scale output values per range.
Note: Ranges indicated in the table are the high end of the set range.
All ranges have a low end pressure value of 0.

Ordering Codes:

Order number | **PMMS.** | **W.** | **2.** | **0.** | **IN.** | **2**

PMMS Differential Pressure Transmitter for non-combustible Gases

Mounting /
W = wall mount
U = universal (wall or duct) mount
N = DIN rail mount

Operating range /
0 = max. 0,5 in w.c./ 125 Pa high/ 12.5 mm w.c.
1 = max. 1 in w.c./ 250 Pa high/ 25 mm w.c.
2 = max. 5 in w.c./ 1250 Pa high/ 125 mm w.c.
3 = max. 28 in w.c./ 7000 Pa high/ 700 mm w.c.

LCD-Display /
0 = none
1 = with LCD-Display

Units /
IN = inches water column
Pa = pascal
MM = millimeters water column

Option /
1 = installer kit, includes 2 plastic static pressure tips and 7 ft (2.1m) of PVC tubing
2 = factory calibration certificate
3 = filtered pickup with barb
4 = liquid tight cable gland fitting
5 = NIST traceable calibration certificate
6 = two (2) plastic static pressure tips
7 = toolless terminal block
8 = LCD cover without LCD display

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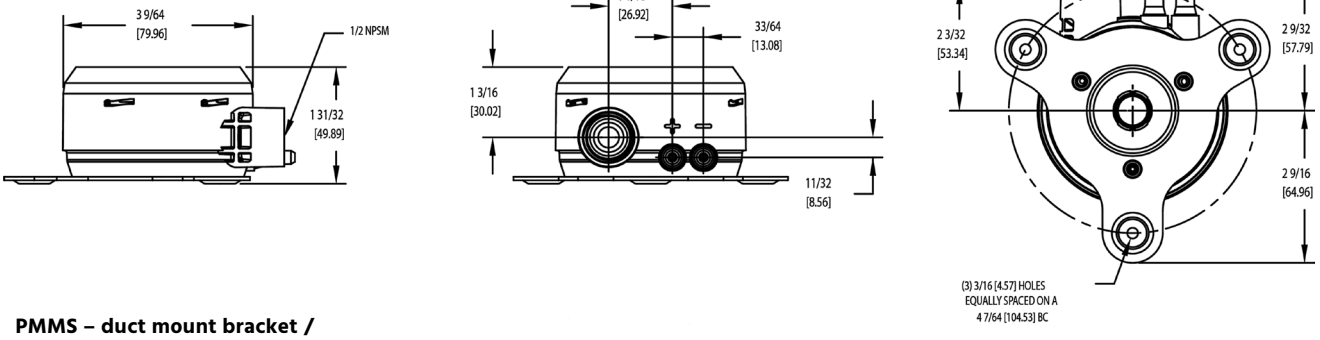
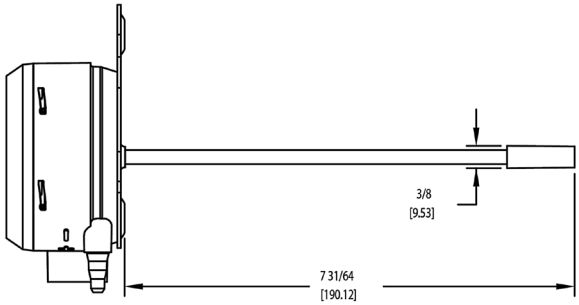
Dimensions in Inch (mm):

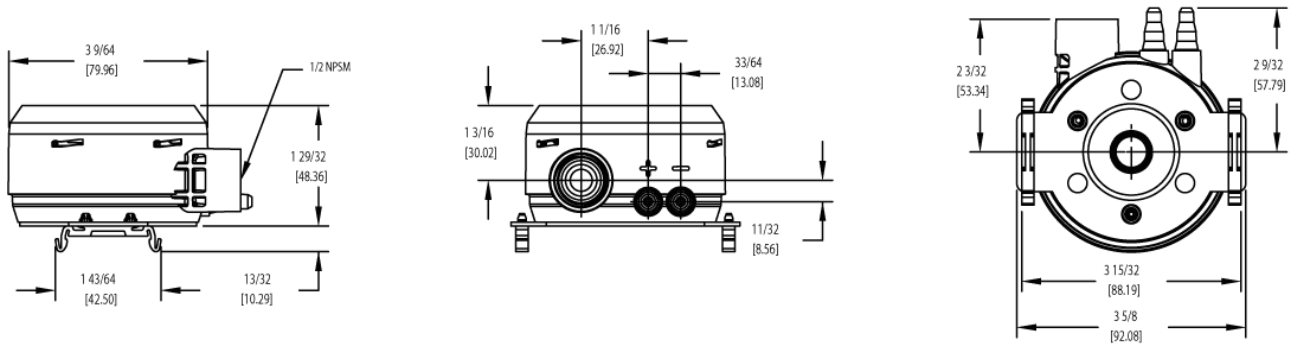
PMMS - Wall mount bracket /



PMMS – duct mount bracket /



PMMS – DIN mount bracket /



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AZ-01N

Attachable Display for Pressure and Temperature Transmitters

Features

/ Independent from auxiliary power

/ Freely scalable in seconds

/ Optionally with switching output

/ For 2- or 3-wire transmitters

/ 4-digit LED

/ Turnable display and housing

/ Available for hazardous areas

Description:

The AZ-01N attachable display unit is suited for all measuring transmitters with a 4. . .20 mA output in 2-wire or a 0. . .10 V output in 3-wire technology. The display is mounted only between the plug and the cable box and is instantaneously ready to operate. By default, the AZ-01N has a plug connector as per ISO4400. Optionally, other versions with plug connector M12x1, 5-pole and BINDER 723, 5-pole can also be supplied. Further versions are possible on request. The display unit is freely programmable. The parameters such as scaling, decimal point, attenuation, setpoint adjustment etc. can be set easily over the keypad on the front. The parameters are stored in an EEPROM and continue to be present even when there is an outage. Exceeding the range limits in both directions can be displayed as error messages. The integrated diagnostic system continuously monitors all functions of the display. The unit of measurement specified at the time of ordering will be imprinted below the display film ex factory to ensure protection against deletion. As a practical alternative, the customer can fix a label with another unit on the display film. A set of sticker labels is included in the delivery.

Electrical Specifications:

Analogue signal / 4. . .20 mA, 2-wire or 0. . .10 VDC, 3-wire

Auxiliary power / **2-wire system:** supply from the current loop (voltage drop <6 VDC) Ex-version max. 28 VDC for combination of transmitter and AZ-01N
3-wire system: unit is supplied parallel to the transmitter
U_{Bmin} = 8 VDC. . .U_{MUmin}
U_{Bmax} = U_{MUmax}. . .36 VDC
(U_{MU} = supply voltage of used transmitter)

Switching output / 0, 1, or 2 independent open collector PNP-outputs

Switching load / standard max. 125 mA load, protected against short-circuiting,
U_{switch} = U_B - 2 VDC
optionally ATEX-approval max. contact power at a setpoint of 70 mA, for two setpoints 70 mA as sum of both outputs

Repeatability: < ± 0.1% FSO

Switching frequency: max. 10 Hz

Switching cycles: > 100 x 10^6

Time delay: 0. . .100 s

Electric protection /

Short-circuit prot.: permanent

Polarity reversal: no function in case of interchanged connections but no damage

Electromagnetic compatibility: Interference signal and Interference-proof as per EN61326

Option Ex-approval: Zone 1: II 2G Ex ia IIC T4 Gb (only in combination with 4. . .20 mA, 2-wire)

Safety-related maximum values: U_i = 28 VDC, I_i = 93 mA, P_i = 660 mW, C ≈ 0 nF, L_i ≈ 0 µH, plus cable inductivites 1 µH/m and capacities 100 pF/m

Display /

Type: 4-digit, red LED-display,

Digits height: 7 mm

Digits width: 4.85 mm (angle 10°)

Range: -1999. . .+9999

Accuracy: 0.1% ± 1 Digit

Refreshing: new value every 0. . .10 s, adjustable

Digital damping: 0.3. . .30 s, adjustable

Technical Specifications:

Mechanical strength / Vibration 5 g RMS (20. . .2000 Hz) shock 100 g / 11 ms

Storage temperature / -40. . .+85°C

Ambient temperature / -25. . .+85°C (Ex-Schutz +70°C)

Material / housing out of PA 6.6, polycarbonate

Weight / approx. 150 g

Data-security / non-volatile EEPROM

Protection class / IP65

Programmable features /
- dezimal point
- zero and span
- damping
- updating time for displayed measuring value
- actuating and deactuating values of setpoints
- switching delay
- hysteresis or window mode
- password protection

Ordering Codes:

Order no.	AZ-01N.	2.	1.	2.	5.	0

Attachable Display for Pressure and Temperature Measuring

Analogue output of transmitter /
1 = 4. . .20 mA, 2-wire
2 = 0. . .10 VDC, 3-wire
3 = ATEX-approval zone 1 for 4-20 mA, 2-wire
4 = others

Switching output (not in EX-version or 3-wire with plug ISO 4400) /
0 = no switching output
1 = 1 switching output (not with plug ISO 4400 combined with 3-wire transmitter)
2 = 2 switching outputs (not with 3-wire transmitter, not with plug connector ISO 4400)

Electrical connection /
1 = plug DIN 43650
2 = plug BINDER series 723, 5-pole
3 = M12x1, 5-pole, metallic version

Unit /
1 = none
2 = bar
3 = mbar
4 = mWs
5 = %
6 = mA

Special version /
0 = none
1 = please specify in detailed text

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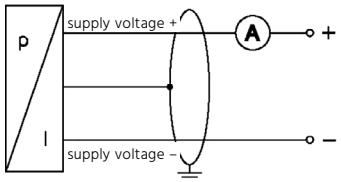
Connection Layout:

Connection layout table /

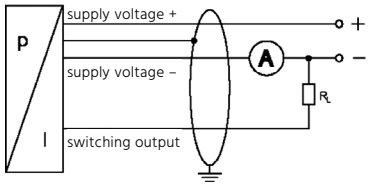
Electrical connections		ISO 4400	M12x1 (5-polig)	Binder 723 (5-polig)
2-wire-system	Supply +	1	1	3
	Supply -	2	2	4
	Switching output 1	3	5	2
	Switching output 2	not used	3	1
	Shield	Ground contact	4	Ground contact
3-wire-system	Supply +	1	1	3
	Supply -	2	2	4
	Signal +	3	3	5
	Switching output 1	not used	5	2
	Switching output 2	not used	not used	not used
	Shield	Ground contact	4	Ground contact

2-Wire-System (Current) (for Ex-Protection the supply is U = 20. . .28 VDC)

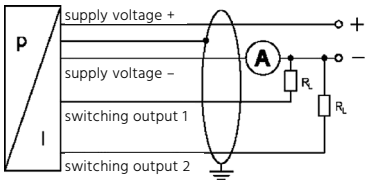
without Switching output



1 Switching output

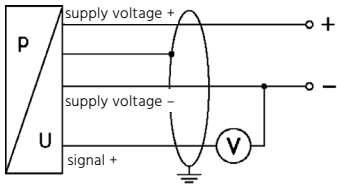


2 Switching outputs

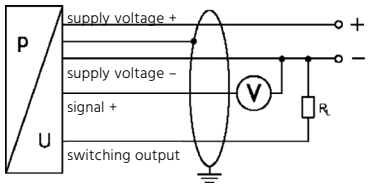


3-Wire-System (Voltage)

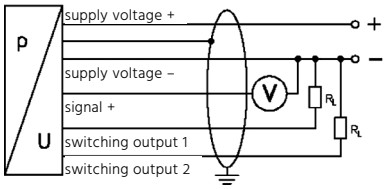
without Schaltausgang



1 Switching output

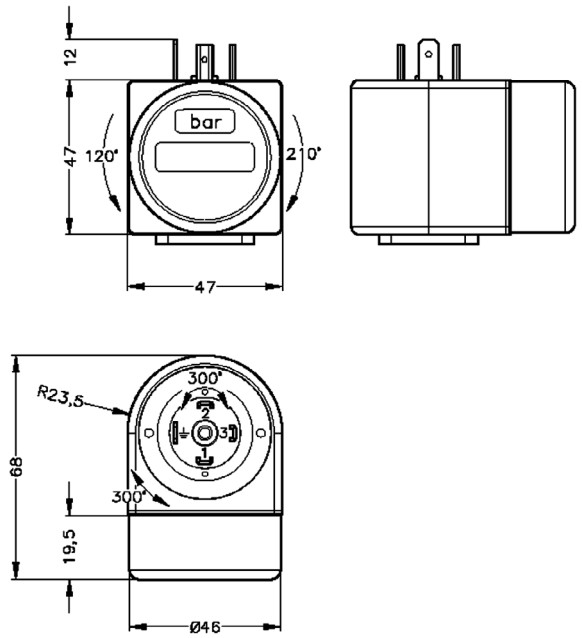


2 Switching outputs

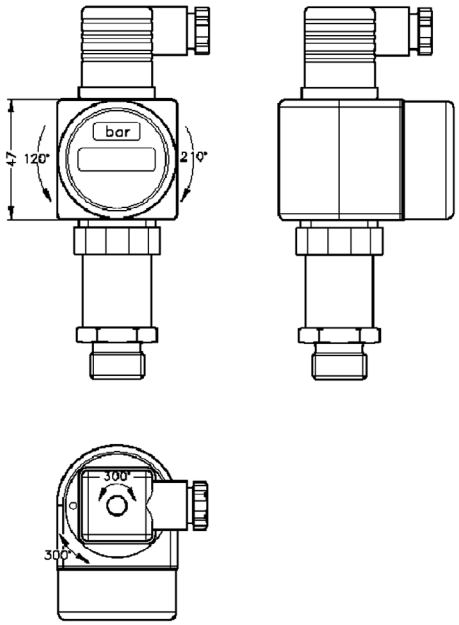


Dimensions in mm:

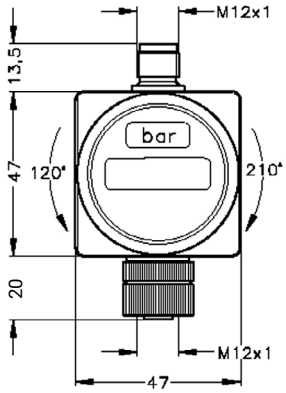
Standard



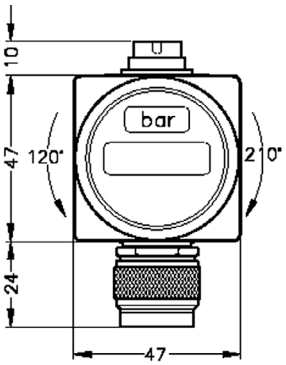
Example: AZ-01N on Profimess pressure measuring transmitter



Options

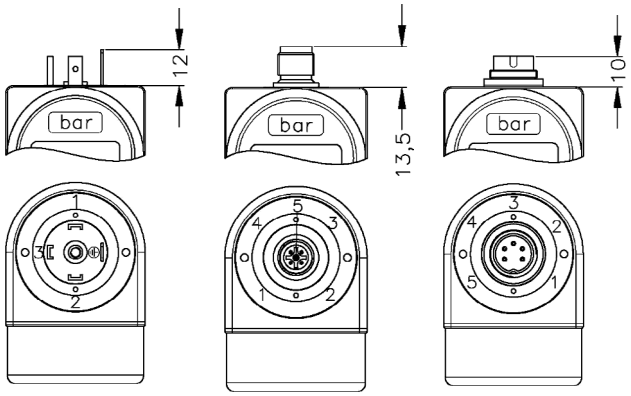


M12 x 1, 5-wire



Binder 723, 5-wire

Electrical Connection



ISO 4400

M12 x 1, 5-wire

Binder 723, 5-wire

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PU-10K/E

Process Pressure Transmitter

Features

/ Acc. up to 0.1% FSO IEC 60770
/ HART®- communication
/ ATEX-approval
/ Up to 300°C media temperature
/ All common flange and thread connections
/ St. steel or ceramic sensor
/ LCD display
/ Adjustable offset, span, attenuation etc.

Description:

The PU-10 K/E process pressure transmitter has been developed to meet the highest demands in the processing industry. A piezo-resistive pressure sensor of high signal stability is used as a base element. The downstream amplifier electronic component linearizes the sensor signal and compensates the temperature errors. A 4 to 20 mA output signal is present in 2-wire method with a HART® frequency signal to make the PU-10 K/E into an intelligent device. In the version with display, parameters like offset, span and attenuation are programmable over a keypad. By means of the HART® component this information can be transmitted via a PC or hand-held programming device. A good readable visible LCD display (optional) shows the measuring value and displays it visually by means of an additional bar graph indicator. The PU-10 E (with stainless steel sensor) has an accuracy of 0.1% of the end value of the operating range. It can be equipped with two different variants of housing. By means of a temperature decoupler mounted between the process connection and the electronic component, measurements up to 300°C media temperature can be obtained.

Application:

Today's pressure measurement technology places high demands on measurement device manufacturers regarding the sealing materials used, material contacting components besides temperature and overload safety. In addition to this, accuracy and, not the least, the price to performance ratio, too, play a decisive role in the selection of a suitable measuring device. The PU-10 K/E signifies the development of a new series of pressure measuring transmitters which meets these requirements to justify their highest standards. Sensor elements are available from stainless steel or ceramic and are therefore compatible with nearly any type of medium, especially because the standard sealing material Viton is supplemented by a number of special designs. Optionally, connections from Hastelloy can also be supplied. Besides the normal inch-system thread, also flange and DRD connections are used as an interface with the processing, offering thus a wide range possibilities to meet any type of requirement. Intelligent electronics are embedded in one of the two robust connection housings that were especially conceived for use in harsh industrial environment. The PU-10 K/E is compatible with nearly any task of pressure measurement in the industry. Ask us for special customized versions in regard to process connections, sealing material and so on.

Electrical Specs. PU-10K:

Output signal /	4. . .20 mA, 2-wire with Hart®-communication; intrinsically safe version (option)
Auxillary power /	U_B = 12. . .28 VDC
Power consumption /	max. 25 mA
Accuracy [1] /	for nominal pressure: 0.16. . .0.4 bar ≤ ± (0.2 + (TD-1) x 0.02) % FSO for nominal pressure: 1. . .20 bar ≤ ± (0.1 + (TD-1) x 0.01) % FSO with turn-down = nominal pressure range / adjusted range
Permissible load /	$R_{max} \leq [(U_B-U_{Bmin}) / 0.02\ A]\ \Omega$, HART®: R_{min} = 250 Ω
Influencing factors /	
Auxillary power:	0.05 % FSO / 10 V
Load:	0.05 % FSO / kΩ
Long-time stability /	≤ ± 0.1% FSO / year at reference cond.
Response time /	200 ms - without consideration of electronic damping
Operating rate /	5/s
Settings /	
Attenuation:	0. . .100 s
Offset:	0. . .80 % FSO
Span:	turn-down of span: max. 1:5 (span min. 0.02 bar)
Electrical protection /	
Short-circuit protection:	permanent
Reverse polarity protection:	no damage, but also no function
Electromagnetic compatibility:	emission and immunity according to EN 61326
ATEX-Protection /	
St. steel Field-housing:	Zone 0/1[2]: II 1/2G Ex ia IIC T4 Ga/Gb Zone 20: II 1D Ex ia IIIC T85°C Da
Aluminium pressure-cast housing:	Zone 1: II 2G Ex ia IIB T4 Gb Zone 20: II 1D Ex ia IIIC T85°C Da
Pressure-resistant:	Aluminium pressure-cast housing Zone 1: II 2G Ex d IIC T5 Gb
Safety-related maximum values:	U_i = 28 V, I_i = 98 mA, P_i = 680 mW, C_i = 0 nF, L_i = 0 µH, C_{GND} = 27 nF
max. Ambient temp.:	- Zone 0: -20. . .+60°C at p_{atm} 0.8. . .1.1 bar - from Zone 1: -40. . .+70°C intr. safe - pressure-resistant encl. -20. . .+70°C
Display (Option) /	
Type:	LCD-display, visible range 32.5 x 22.5 mm
Operating display:	5-digit, 7-segment, digit height 8 mm, range ±9999
Additional display:	8-digit, 14-segment, digit height 5 mm
Bar graph:	52-segments
Accuracy:	0.1% ± 1 Digit
Protection class /	IP67
CE-Approval /	EMC-directive: 2014/30/EU

[1] Accuracy according to IEC 60770 - limit point adjustment (non-linearity, hysteresis, repeatability)
[2] The designation depends on the nominal pressure range. Nominal pressure ranges ≤ 60 mbar are marked with „2G". For nominal pressure ranges > 60 mbar and < 10 bar see the notes under the EC type-examination certificate.

Technical Specs. PU-10K:

Accuracy /	Nom. Press. < 1 bar ≤ ± 0.2 % FSV Nom. Press. ≥ 1 bar ≤ ± 0.1 % FSV
Operating ranges /	from 0. . .160 mbar to 0. . .20 bar
Mechanical strength /	
Vibration:	5 g RMS (20. . .2000Hz)
Shock:	100 g / 11 ms
Temperature range without Display /	
Storage:	-40. . .+80°C
Ambient:	-40. . .+70°C
Media:	-25. . .+125°C
Temperature range with Display /	
Storage:	-30. . .+80°C
Ambient:	-20. . .+70°C
Media:	-25. . .+125°C
Temperature error /	≤ ± (0.02 x Turn-Down) % FSO/10 K in comp. range -20. . .+80°C
Material /	
Housing:	aluminium pressure cast, powder coated or st. steel 1.4404
Cable gland:	brass, nickel plated
Window:	laminated safety glass
Pressure connection:	Standard: st. steel 1.4404; Option for G 1½" flush (DIN 3852): PVDF
Seals:	FKM (-25. . .+125°C), EPDM (-40. . .+125°C), others on request

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Diaphragm:	Al_2O_3 99,9 %
Wetted parts:	pressure connection, sealings, diaphragm
Weight /	min. 400 g (depending on process connection)
Mounting position /	any (standard calibration in a vertical position with the pressure port connection down; differing installation position have to be specified in the order)
Life span /	> 100 x 10^6 load cycles

Connection table /

Electrical layout	Aluminium pressure cast housing terminal clamps (clamp section 2,5 mm²)	Stainless steel field housing terminal clamps (clamp section 1,5 mm²)
Supply +	IN +	IN +
Supply -	IN -	IN -
Load	ground contact	ground contact
Test	Test	-

Ordering Codes PU-10K:

Order no.	PU-10K.	2.	1.	1.	0.	K01.	2.	K04.	1

Process Pressure Transmitter with Ceramic Sensor

Housing /
1 = st. steel field housing
1d = st. steel field housing with display
2 = aluminium pressure cast housing
2d = aluminium pressure cast housing with display

Communication /
0 = 4. . .20 mA, 2-wire, with Hart®-comm.
1 = 4. . .20 mA, 2-wire, ATEX-intrinsically safe version with Hart®-communication [A)]

Diaphragm /
1 = ceramics Al_2O_3 99,9 %

Temperature range /
0 = Media temperature up to 125°C

Process connection /
K01 = G 1/2"-male (DIN 3852)
K03 = G 1/2"-male (EN 837)
K04 = 1/2" NPT -male
K06 = G1 1/2"-male flush (DIN 3852)
K07 = DIN flange DN25 PN40 (DIN 2501)
K08 = DIN flange DN50 PN40 (DIN 2501)
K09 = DIN flange DN80 PN16 (DIN 2501)
K10 = ANSI flange DN 2" / 150 lbs (ANSI B16.5) [B)]
K11 = ANSI flange DN 3" / 150 lbs (ANSI B16.5) [B)]
K12 = DRD Ø 65 mm [C)]

Calibration /
2 = relative pressure

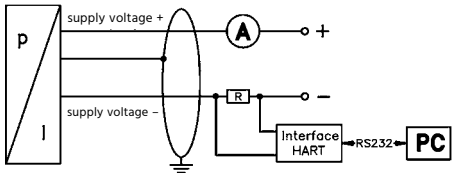
Operating range /
K02 = 0. . .+0.16 bar (overload up to 4 bar, perm. vacuum up to -0.3 bar)
K03 = 0. . .+0.40 bar (overload up to 6 bar, perm. vacuum up to -0.5 bar)
K04 = 0. . .+1 bar (overload up to 8 bar, perm. vacuum up to -0.5 bar)
K05 = 0. . .+2 bar (overload up to 15 bar, perm. vacuum up to -1.0 bar)
K06 = 0. . .+5 bar (overload up to 25 bar, perm. vacuum up to -1.0 bar)
K07 = 0. . .+10 bar (overload up to 35 bar, perm. vacuum up to -1.0 bar)
K08 = 0. . .+20 bar (overload up to 45 bar, perm. vacuum up to -1.0 bar)

Special design /
0 = none
1 = sealing EPDM (standard FKM)
9 = please specify in detailed text

[A)] only possible in combination with aluminium pressure case
[B)] DN 2"/150 and DN 3"/150 lbs only possible for nominal pressure ranges PN ≤ 10 bar
[C)] mounting flange is included in the delivery (already pre-assembled)

Wiring Diagram:

2-Wire-System (Current) HART®



Electrical Specs. PU-10E:

Output signal / 4. . .20 mA, 2-wire with Hart®-communication; Ex-intrinsically safe version (option)

Auxillary power / U_B = 12. . .28 VDC

Power consumption / max. 25 mA

Accuracy [9] / ≤ ± 0.1 % FSO
Turn-Down ≤ 1:5
no changes
Turn-Down > 1:5
≤ 0.1 + 0.015 x (TD-5) % FSO

Permissible load / $R_{max} \leq [(U_B-U_{Bmin}) / 0.02\ A]\ \Omega$, HART®: R_{min} = 250 Ω

Influencing factors /

- Auxillary power: 0.05 % FSO / 10 V
- Load: 0.05 % FSO / kΩ

Long-time stability / ≤ ± 0.1% FSO / year at ref. conditions

Response time / 100 ms - without consideration of electronic damping

Operating rate / 10/s

Settings /

- Attenuation: 0. . .100 s
- Offset: 0. . .90 % FSO
- Span: Turn-Down der Spanne bis 1:10

Electrical protection /

- Short-circuit protection: permanent
- Reverse polarity protection: no damage, but also no function
- Electromagnetic compatibility: emission and immunity according to EN 61326

ATEX-Protection /

- St. steel Field-housing: Zone 0: II 1G Ex ia IIC T4 Ga / II 1D Ex ia IIIC T85°C Da
- Aluminium pressure-cast housing: Zone 1: II 2G Ex ia IIB T4 Gb / II 1D Ex ia IIIC T85°C Da
- Pressure-resistant: aluminium pressure cast housing: Zone 1: II 2G Ex d IIC T5 Gb
- Safety-related maximum values: U_i = 28 V, I_i = 98 mA, P_i = 680 mW, C_i = 0 nF, L_i = 0 µH, C_{GND} = 27 nF
- max. Ambient temp.: - Zone 0: -20. . .+60°C bei p_{atm} 0.8. . .1.1 bar - from Zone 1: -40. . .+70°C intrins. safe - pressure resistant -20. . .+70°C

Connecting cables (from factory) / capacitance: signal line/shield also signal line/signal line: 160 pF/m
inductance: signal line/shield also signal line/signal line: 1 µH/m

Display (Option) /

- Type: LCD-display, visible range 32.5 x 22.5 mm
- Operating display: 5-digit, 7-segment, digit height 8 mm, range ±9999
- Additional display: 8-digit, 14-segment, digit height 5 mm
- Bar graph: 52-segments
- Accuracy: 0.1% ± 1 Digit

Protection class / IP67

CE-Approval / EMC-Directive: 2014/30/EU
Pressure equipment directive: 2014/68/EU (Modul A) [10]

Technical Specs. PU-10E:

Accuracy / 0.1 % FSO as per IEC 60770

Operating ranges / from 0.4. . .0.4 bar up to -1. . .10 bar
from 0. . .400 mbar up to 0. . .600 bar

Temperature range media [6] /

- Silicon oil: -40. . .+125°C
- Food compatible oil: -10. . .+125°C

Temp. range for media with temperature decoupler /

- Silicon oil: -40. . .+300°C - overpressure -40. . .+150°C - low pressure
- Food compatible oil: -10. . .+250°C - overpressure -10. . .+150°C - low pressure

Temperature range without Display [6] /

- Storage: -40. . .+80°C
- Ambient: -40. . .+80°C

Temperature range with Display [6] /

- Storage: -30. . .+80°C
- Ambient: -20. . .+70°C

Temperature error [7 + 8] / ≤ 0.2 FSO x Turn-Down in comp. range -20. . .+85°C

[9] Accuracy according to IEC 60770 - limit point adjustment (non-linearity, hysteresis, repeatability)
[10] This directive is only valid for devices with max. permissible overpressure > 200 bar

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Material /

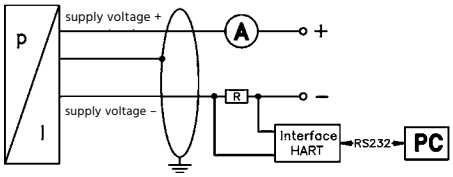
Housing:	aluminium pressure cast, powder coated or st. steel 1.4404
Cable gland:	brass, nickel plated
Window:	laminated safety glass
Pressure conn.:	st. steel 1.4435
Seals:	FKM (Standard); Option: FFKM (min. Temperature range from -15°C, possible for PN ≤ 100 bar)
Diaphragm:	st. steel 1.4435 (Standard); Option: Hastelloy® C-276, Tantal (possible from 1 bar)
Wetted parts:	pressure connection, sealings, diaphragm
Filling /	silicon oil (standard); option: food compatible oil, Halocarbon and others on request
Weight /	min. 400 g (depending on process connection)
Mounting position /	any (standard calibration in a vertical position with the pressure port connection down; differing installation position have to be specified in the order)
Lifetime /	> 100 x 10^6 load cycles

X) only possible in combination with aluminium pressure case
F) only possible with process connections
G) tantal diaphragm possible with nominal pressure ranges from 1 bar
H) not possible for vacuum ranges and pressure ranges > 40 bar
I) DN 2"/150 and DN 3"/150 lbs only possible for ranges PN ≤ 6 bar
J) mounting flange is included in the delivery (already pre-assembled)
K) min. permissible temperature from -15°C, possible for ranges PN ≤ 100 bar
6) max. temperature of the medium for PN gauge > 0 bar: 150°C for 60 min. with a max. environmental temp. of 50°C (without temp. decoupler)
7) an opt. temp. decoupler can influence thermal effects for offset and span depending on installation position and filling conditions
8) for flange- and DRD-version: tolerance band offset ≤ ± 1.6 % FSO / tolerance band span ≤ ± 0.6 % FSO

Connection table /

Electrical layout	Aluminium pressure cast housing terminal clamps (clamp section 2,5 mm²)	Stainless steel field housing terminal clamps (clamp section 1,5 mm²)
Supply +	IN +	IN +
Supply -	IN -	IN -
Load	ground contact	ground contact
Test	Test	-

2-Wire-System (current) HART®



Ordering Codes PU-10E:

Order no.	PU-10E.	2.	1.	2.	0.	E01.	2.	E04.	0

Process Pressure Transmit. with St. Steel Sensor

Housing /
1 = stainless steel field housing
1d = stainless steel field housing, display
2 = alum. pressure cast housing
2d = alum. pressure cast housing, display

Communication /
0 = 4. . .20 mA, 2-wire, with Hart®-communication
1 = 4. . .20 mA, 2-wire, intrinsically safe version with Hart®-communication X)

Diaphragm /
2 = stainless steel 1.4435 (316L)
3 = Hastelloy® F)
4 = Tantal F) G)

Temperature range /
0 = without temperature decoupler up to 125°C
1 = with temperature decoupler up to 300°C F)

Process connection /
E01 = G 1/2"-male (DIN 3852)
E02 = G 1/2"-male (DIN 3852) with flush sensor H)
E03 = G 1/2"-male (EN 837)
E04 = 1/2" NPT-male
E05 = G 1"-male with flush welded diaphragm (DIN 3852)
E07 = DIN-flange DN25 PN40 (DIN 2501)
E08 = DIN-flange DN50 PN40 (DIN 2501)
E09 = DIN-flange DN80 PN16 (DIN 2501)
E10 = ANSI-flange DN 2" / 150 lbs (ANSI B16.5) I)
E11 = ANSI-flange DN 3" / 150 lbs (ANSI B16.5) I)
E12 = DRD Ø 65 mm J)

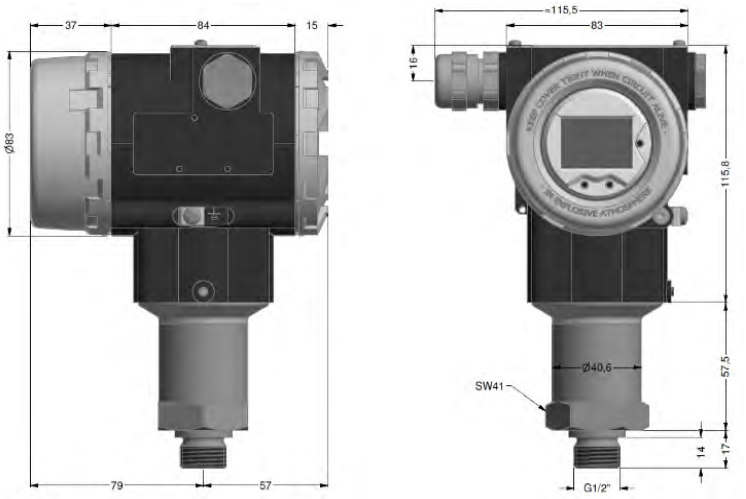
Calibration /
1 = absolute pressure (possible from 1 bar)
2 = gauge pressure

Operating range /

E01 =	-0,4. . .+0,4 bar	(overload up to	2,0 bar,	burst pressure 3,0 bar)
E02 =	-1. . .+1 bar	(overload up to	5,0 bar,	burst pressure 7,5 bar)
E03 =	-1. . .+2 bar	(overload up to	10,0 bar,	burst pressure 15,0 bar)
E04 =	-1. . .+4 bar	(overload up to	20,0 bar,	burst pressure 25,0 bar)
E05 =	-1. . .+10 bar	(overload up to	40,0 bar,	burst pressure 50,0 bar)
E06 =	0. . .+0,4 bar	(overload up to	2 bar,	burst pressure 3 bar)
E07 =	0. . .+1 bar	(overload up to	5 bar,	burst pressure 7,5 bar)
E08 =	0. . .+2 bar	(overload up to	10 bar,	burst pressure 15 bar)
E09 =	0. . .+4 bar	(overload up to	20 bar,	burst pressure 25 bar)
E10 =	0. . .+10 bar	(overload up to	40 bar,	burst pressure 50 bar)
E11 =	0. . .+20 bar	(overload up to	80 bar,	burst pressure 120 bar)
E12 =	0. . .+40 bar	(overload up to	105 bar,	burst pressure 210 bar)
E13 =	0. . .+100 bar	(overload up to	210 bar,	burst pressure 420 bar)
E14 =	0. . .+200 bar	(overload up to	600 bar,	burst pressure 1000 bar)
E15 =	0. . .+400 bar	(overload up to	1000 bar,	burst pressure 1250 bar)
E16 =	0. . .+600 bar	(overload up to	1000 bar,	burst pressure 1250 bar)

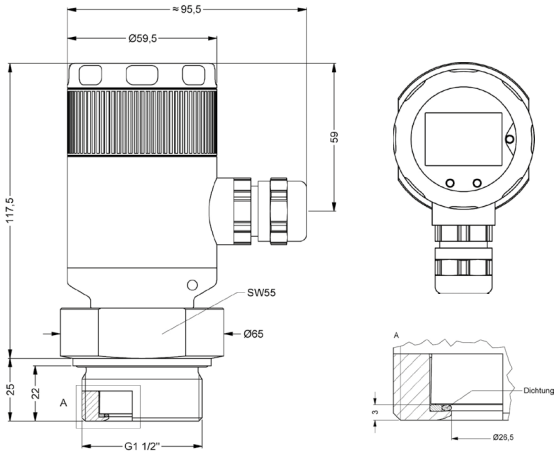
Special design /
0 = none
1 = sealing FFKM (standard FKM) K)
2a = filling fluid - food compatible oil (standard silicon oil) F)
2b = filling fluid - Halocarbon (standard silicon oil) F)
9 = please specify in detailed text

Dimensions PU-10K (mm):

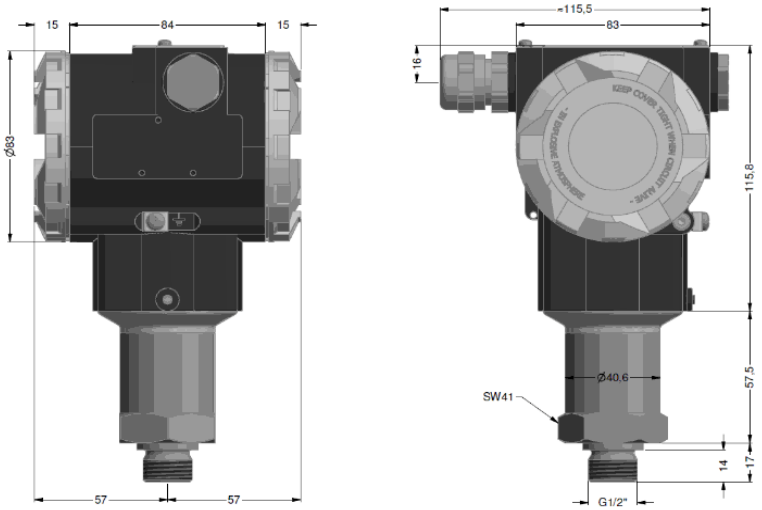


G 1/2"-male DIN 3852

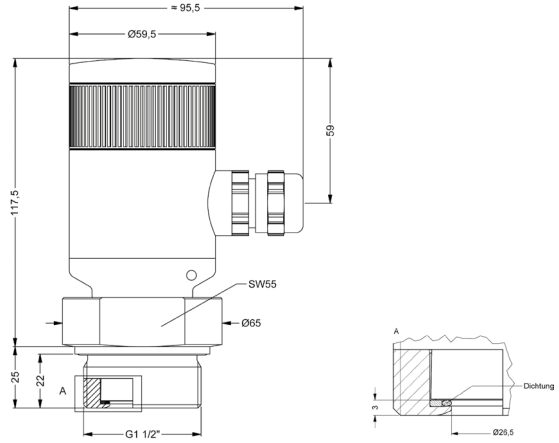
Stainless steel field housing with display



G1 1/2"-AG flush DIN 3852



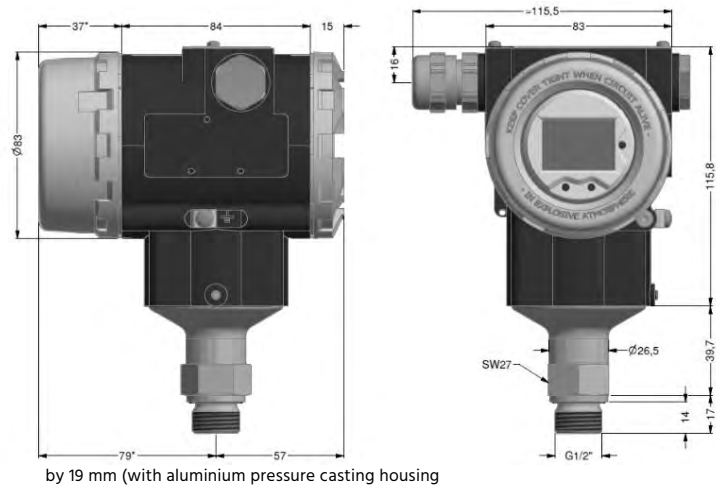
Stainless steel field housing without display



G1 1/2"-AG flush DIN 3852

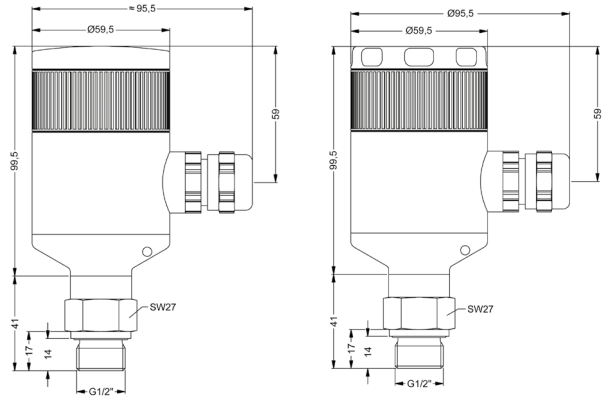
>> - aluminium pressure casting housing is horizontally rotatable as standard

Dimensions PU-10E (mm):



by 19 mm (with aluminium pressure casting housing

Stainless steel field housing



>> - for nominal pressure PN > 400 bar increases the length of devices by 39 mm

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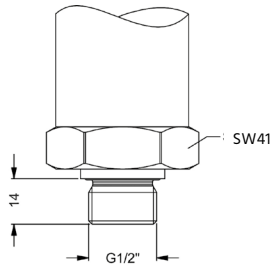
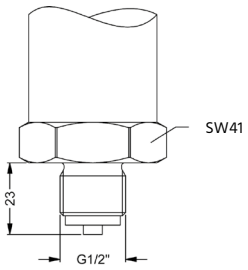
Mechanical Connections (mm):

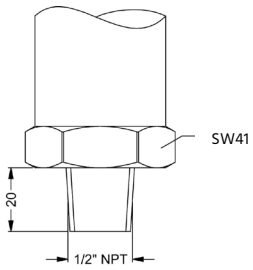
Inch-system thread



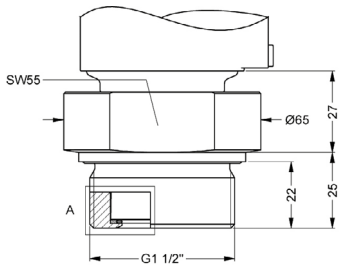
G1/2″ DIN 3852



G1/2″ EN 837

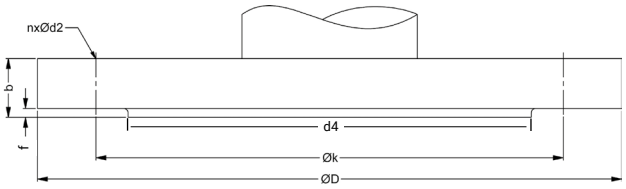


1/2″ NPT



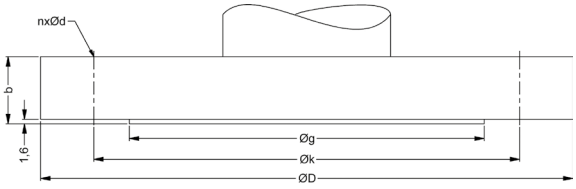
G11/2″ frontbündig DIN 3852

Flange (DIN 2501)



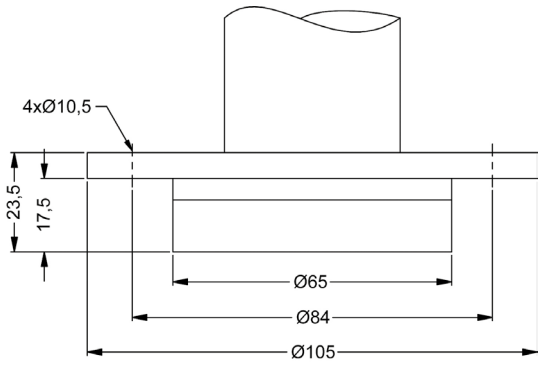
Size	DN25 / PN40	DN50 / PN40	DN80 / PN16
D	115	165	200
k	85	125	160
b	18	20	20
n	4	4	8
d2	14	18	18
f	2	3	3
d4	68	102	138
PN	≤ 40 bar	≤ 40 bar	≤ 16 bar

Flange (ANSI B16.5)

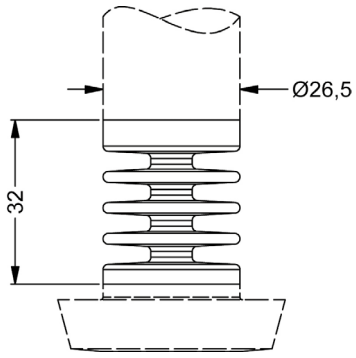


Size	2″ / 150 lbs	3″ / 150 lbs
D	152.4	190.5
g	91.9	127.0
k	120.7	152.4
b	19.1	23.9
n	4.0	4.0
d	19.1	19.1
PN	≤ 10 bar	≤ 10 bar
PN	≤ 40 bar	≤ 40 bar

DRD-connection



Temperature decoupler



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KE-01

Cooling Line for Pressure Metering Points up to 200°C

Features

/ Available in brass, steel or stainless steel
/ Pressure up to 600 bar
/ Temperature up to 200°C
/ Female thread for instrument
/ Gauge connection to measuring point

Description:

The full stainless steel cooling tower KE-01 connects a pressure measuring point, which is due to high media temperatures too hot for a direct connection, to a pressure instrument like a pressure gauge, a pressure switch or a pressure sensor. The cooling tower reduces the temperature of the pressure medium significantly by air circulation and thermal radiation, in order to avoid wrong measuring values or damages of the pressure instrument. It is recommended to use the cooling tower KE-01 at process temperatures in excess of 100°C.

Application:

Too high media temperatures at pressure metering points are frequently restricting the facility to display, measure and evaluate the process pressure accurately, thus pressure instruments are usually calibrated to a specified temperature range or the inaccuracy caused by higher or lower temperatures is compensated. Temperatures out of this range lead to disproportionate imprecision or damage of the internal electronic components. In this case the cooling tower KE-01 offers a priceworth and practical solution, which increases the measuring accuracy and the lifespan of such instruments.

Technical Specifications:

Materials / brass, steel or stainless steel 316Ti

max. Pressure /
brass: 250 bar
steel: 400 bar
st. steel: 600 bar

Temperature /
brass: 100°C
steel: 155°C
st. steel: 200°C

Connecting thread /
Instrument: G 1/2"-female
Process: G 1/2"B-male or G 1/4"B-male

Weight / G1/4"B: 100g
G1/2"B: 120g

Ordering Codes:

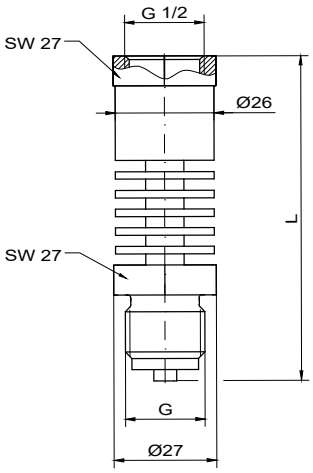
Order number	KE-01.	1.	2.

KE-01 Cooling Line

Material /
1 = brass
2 = steel
3 = stainless steel 361Ti

Process connection /
1 = G 1/2"B-male
2 = G 1/4"B-male

Dimensions in mm:



Version	Thread	mm
KE-01	G	L
KE-01.x.1	G 1/2B	87
KE-01.x.2	G 1/4B	79

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DM-250

Digital Pressure Gauge with Ceramic Sensor

Features

/ Accuracy ≤ ± 0.25 % FSO BFSL

/ Operating ranges up to 600 bar

/ Rotatable display housing

/ Min/Max function

/ Offset- and endpoint calibration

/ Switch-off automatic configuration

/ NPT or G thread

/ Selectable pressure units (bar, mbar, psi, InHg, cmHg, mmHG, hPa, kPa, MPa, mH2O, InH2O)

Description:

The battery-powered digital pressure gauge series DM-250 has been designed for pressure measurements in hydraulic and pneumatic systems. Characteristics such as accuracy, reliability and a good overload resistance forms the base for the use of this series in the entire industry. All models are equipped with a stable, rotatable plastic display housing with a 2-line LC display, which guarantees a good readability even under unfavorable mounting conditions. The handling and configuration is menu-driven via three miniature push buttons.

Besides showing information about the nominal pressure range (e.g. limit exceeding), several pressure units and the position of decimal point can be set as well as minimal and maximal pressure of the process can be read. Furthermore, the instruments zero and end point can be calibrated and the configuration of the power off function is possible. Factory defaults can be loaded via menu.

Application:

Today, in the industry, conventional Bourdon tube pressure gauges are increasingly replaced by digital manometers, since these devices are more accurate, long lasting and stable and possess additional characteristics that are impossible for mechanical manometers due to their design. Especially users from the areas listed below will profit from these facts:

- Environmental technology
- Laboratory technology
- Machine construction
- Plant manufacturing
- Pneumatic & Hydraulic
- Research & Development
- etc.

Technical Specifications:

Operating ranges /	see table 1
Measuring rate /	5 per sec.
Accuracy /	≤ ± 0.25 % FSO BFSL (accuracy according to IEC 60770 - minimum value setting (non-linearity, hysteresis, repeatability)
Thermal error /	≤ ±0.2 % FSO / 10 K for zero and span in compensated range -25. . .+85°C
max. Temperature /	
Medium:	-20. . .+85°C
Ambient:	-20. . .+70°C
Storage:	-30. . .+80°C
mech. Stability	
Vibration:	5 g RMS (25. . .2000 Hz) as per DIN EN 60068-2-6
Shock:	100 g / 1 ms as per DIN EN 60068-2-27
Process connection /	
Standard:	G 1/4" EN 837
Optional:	G 1/2" EN 837, 1/4" NPT, 1/2" NPT
Materials /	
Pressure port / housing:	st. steel 1.4404
Display housing:	PA 6.6, polycarbonate
Gaskets:	FKM
Diaphragm:	ceramics Al_2O_3 96%
Wetted parts /	pressure port, gaskets and diaphragm
Mounting pos. /	any
Weight /	approx. 300 g

Electrical Specifications:

Display /	LCD, visible range 40 x 30 mm; 4.5-digit 7-segment main display, digit height 11 mm, range of indication ±19999; 6-digit 14-segment additional display, digit height 7.5 mm
Power supply /	3.6 V Lithium-Battery; 2 Units (1/2 AA)
Operational life /	
Mechanical:	> 100 x 10^6 pressure cycles
Battery:	Standby mode: approx. 5 years
AD-converter /	14 Bit resolution
Data storage /	EEPROM (non volatile)
Protection class /	IP65
Emission /	as per EN 61326
Immunity /	as per EN 61326
CE-conformity /	
EMV-directive:	2004/108/EG
Pressure directive:	2014/68/EU (Module A) (this directive is only for devices with max. permissible overpressure > 200 bar)

Ranges & Burst Pressure:

Nominal pressure	Nom. pressure abs.	overpressure	burst press. ≥
-1. . .0 bar		4 bar	7 bar
0. . .0.4 bar		1 bar	2 bar
0. . .0.6 bar	0. . .0.6 bar	2 bar	4 bar
0. . .1.0 bar	0. . .1.0 bar	2 bar	4 bar
0. . .1.6 bar	0. . .1.6 bar	4 bar	5 bar
0. . .2.5 bar	0. . .2.5 bar	4 bar	5 bar
0. . .4.0 bar	0. . .4.0 bar	10 bar	12 bar
0. . .6.0 bar	0. . .6.0 bar	10 bar	12 bar
0. . .10 bar	0. . .10 bar	20 bar	25 bar
0. . .16 bar	0. . .16 bar	40 bar	50 bar
0. . .25 bar	0. . .25 bar	40 bar	50 bar
0. . .40 bar	0. . .40 bar	100 bar	120 bar
0. . .60 bar	0. . .60 bar	100 bar	120 bar
0. . .100 bar	0. . .100 bar	200 bar	250 bar
0. . .160 bar	0. . .160 bar	400 bar	500 bar
0. . .250 bar	0. . .250 bar	400 bar	500 bar
0. . .400 bar	0. . .400 bar	600 bar	650 bar
0. . .600 bar	0. . .600 bar	800 bar	880 bar

Vacuum resistance: PN ≥ 1 bar: unlimited vacuum resistance; PN < 1 bar: on request

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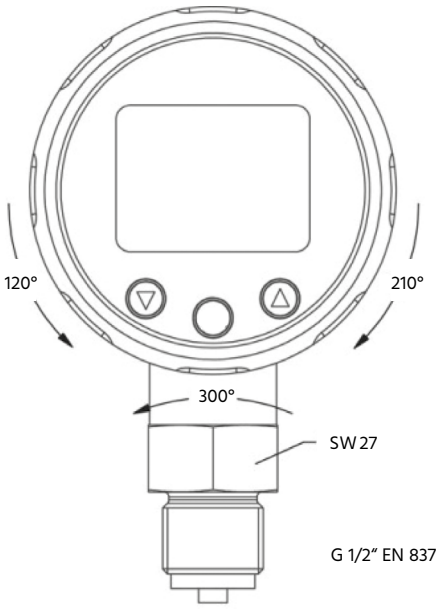
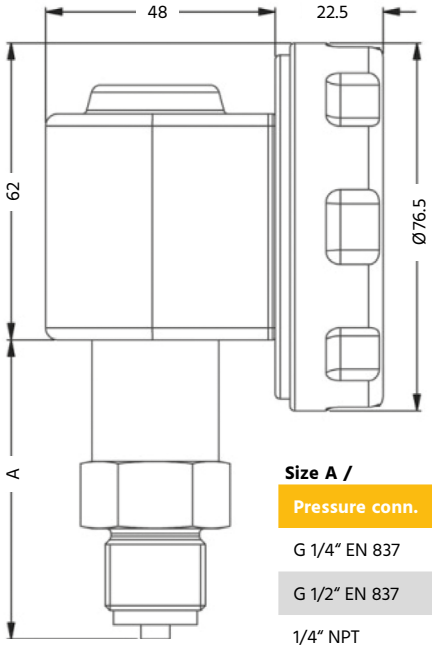
Dimensions in mm:





Size A /

Pressure conn.	mm
G 1/4" EN 837	54.5
G 1/2" EN 837	62.5
1/4" NPT	54.5
1/2" NPT	60.5

Ordering Codes:

Order number	DM-250.	2.	2.	A.	0

DM-250 Digital Pressure Gauge

Process connection /
1 = G 1/4" EN 837
2 = G 1/2" EN 837
3 = 1/4" NPT
4 = 1/2" NPT

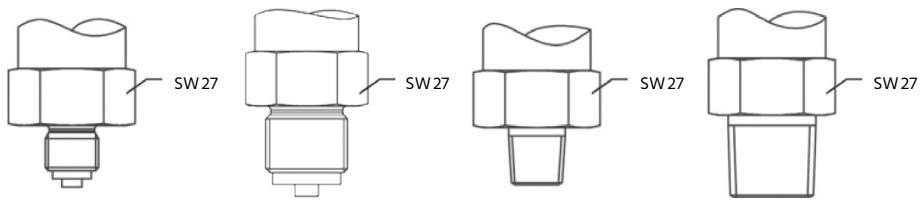
Calibration /
1 = relative pressure
2 = absolute pressure [1]

Operating range /
A = -1. . .0 bar [1]
B = 0. . .0.4 bar [1]
C = 0. . .0.6 bar
D = 0. . .1 bar
E = 0. . .1.6 bar
F = 0. . .2.5 bar
G = 0. . .4 bar
H = 0. . .6 bar
I = 0. . .10 bar
J = 0. . .16 bar
K = 0. . .25 bar
L = 0. . .40 bar
M= 0. . .60 bar
N = 0. . .100 bar
O = 0. . .160 bar
P = 0. . .250 bar
Q = 0. . .400 bar
R = 0. . .600 bar
9 = other

Option /
0 = none
9 = special (please specify in detailed text)

[1] absolute pressure possible from 0.6 bar (operating range „C")

Process connection /



G 1/4"EN 837 | G 1/2"EN 837 | 1/4"NPT | 1/2"NPT

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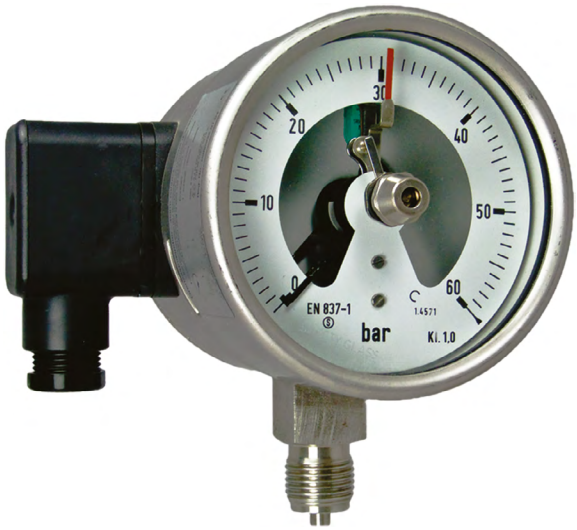
KM-100N

Contact Pressure Gauge



Features

/ Brass and chemical versions

/ Nominal size 4” (100 mm)

/ Optional vibration attenuation

/ Up to 4 inductive or snap action contacts

/ All levels of pressure -1. . .2500 bar as per DIN

/ Negative pressure ranges

Description:

Contact pressure gauges are suited for controlling and regulating processes by means of excrescent processing pressure. In this, the switching contacts open or close depending on the indicator position in the pressure gauge. If the medium to be monitored does not tend to crystallize or harden, pressures from -1 bar up to 2500 bar can be displayed and monitored easily. In critical situations, optionally the pressure gauge is equipped with a diaphragm seal for the pressure. In KM-100N with oil filling, possible excrescent pressure pulsations or mechanical vibrations are subdued. This extends the life span and the quality of legibility in the devices significantly. Snap-action contacts are used under rough industrial conditions while switching high currents. In case of excess or below par electrical switching load at the contacts, we recommend using a protective relay for the contacts such as Profimess MSRx. On the other hand, touch less engaging of inductive contacts facilitates precise setting for the switching point and has no effect on the pressure measurement system. By using these contacts even applications in the hazardous areas can be covered. For controlling the inductive switching contacts, always a separate control device is necessary which normally has a control power circuit as per NAMUR.

Application:

The KM-100N series contact Bourdon pressure gauges is used in the whole industry. As against a simple pressure switch, they possess the major advantage of enabling visual inspection of the excrescent process pressure even if the power supply is interrupted due to power outage or cable failure. Snap-action contacts are engaged without potential, thus allowing the user maximum freedom to select the evaluator unit. The KM-100N is supplied with a standard G1/2”-male, however, optionally many other special type connections are feasible, assuring compatibility to a variety of processes.

Versions:

Movement: The process connection, the pressure gauge's tubular spring and the indicator element are available as brass or also fully stainless steel versions where the latter is recommended for applications with hostile media.

Oil filling: In case of pulsations or vibrations in the plants the KM-100N with polybutene oil filling can be ordered by which indicator trembling can be attenuated and thus extend the life span of the movement.

Process connection: The KM-100N has a standard G1/2"-male connection. Optionally, many other thread types can be manufactured as special versions. Position of the connection is either in the vertical to bottom direction or excentrically towards back.

Contact type: The choice can be a snap-action contact or an inductive contact.

Snap-action contacts are electromechanical alarm contacts that make or break electric circuits. A magnetic snap-action contact is a mechanical contact with a make/break capacity up to 30 W / 50 VA (without oil filling).

The signal output will be retarded or advanced and analog to the movement of the instrument pointer. Instruments with magnetic snap-action contacts can be used for all operating conditions, also with liquid-filled instruments.

Inductive alarm sensor contacts are inductive contacts to DIN 19234 resp. NAMUR. They are certified for use in hazardous areas of zone 1 and zone 2. The signal output is instantaneous and analog to the movement of the instrument pointer. Liquid filling in the instrument is possible.

Optionally, for the inductive contacts an integrated amplifier is available that is mounted directly into the housing of slit initiators.

This has a PNP- transistor output and can connect directly to small outputs, for example, in SP controls.

No. of contacts: Up to four contacts can be used. The use of a change-over-contact is considered as a double contact.

Contact function: It must be specified if the power circuit is expected to be contacted at increasing pressure (1 = NO-contact) or broken at increasing pressure (2 = NC-contact). In the case of snap-action contact the power circuit is broken or contacted mechanically, where as in inductive contacts the electrical resistance in the coils changes. Thereby, in the case of a NO-contact the current in the control circuit is set on "HIGH" state while it shifts to "LOW" as a NC-contact.

Operating range: Various DIN op. ranges from -1. . .+2500 bar are available. Please contact us for special operating ranges.

El. Specs magnet-spring Cont.:

Nominal voltage /	U_{eff} min: 24 V U_{eff} max: 250 V
Current rating /	inrush current: 1.0 A breaking current: 1.0 A continuous: 0.6 A
Load capacity /	P_{min}: 0.4 W / 0.4 VA
without oil filling:	P_{max}: 30 W / 50 VA
with polybutene filling:	P_{max}: 20 W / 20 VA
Set-point accuracy /	max. 4 contacts
Accuracy of switching /	2-5% FS
Creep and air distances /	acc. to DIN VDE 0110 Part 1 and 2 (degree of contamination 3)
Voltage testing /	
Circuit/ earth connection:	2000 VAC 1 min (DIN VDE 0660 part 200)
Circuit/Circuit:	2000 VAC 1 min (DIN VDE 0660 part 200)
Circuit /	In snap-action contacts, a single wire is used for all contacts as the common return line. In case of 3 contacts, consequently 4 pins and shielding are connected. Optionally, contact sets can be supplied with circuits separate according to contacts.
Contact arm bearing /	ruby bearing jewel
Contact material /	silver-nickel (Ag80 Ni20) 10 µm gold plated
No. of contacts /	max. 4 contacts, change-over-contacts will be counted as a double contact.
Contact function /	NO-contact and/or NC-contact and/or change-over-contact
Electrical connection /	Cable box, on the right side provided with 6 screw clamps +ground, cable gland M20x1.5 going downwards. Optionally, the cable box can be supplied with rear mounting instead of on the side.

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Loads for magnet-spring contact /

Voltage		ohmic load			
		dry gauges		filled gauges	
V DC	V AC	mA DC	mA AC	mA DC	mA AC
220	230	100	120	65	90
110	110	200	240	130	180
48	48	300	450	190	330
24	24	400	600	250	450

Voltage	inductive load	
	dry gauges	filled gauges
V AC	cos phi > 0,7mA AC	cos phi > 0,7mA AC
230	65	40
110	130	85
48	200	130
24	250	150

*Preferred contact rating with ohmic load; but at least 24 VDC / 20 mA

El. Specs Inductive contact:

Operating voltage / 5. . .25 VDC

Nominal voltage / 8 VDC (Ri ≈ 1k)

Current consumption: / active surface free: ≥ 3 mA
active surface damped: ≤ 1 mA

Accuracy / < 0.5% FS

Contact arm bearing / ruby bearing jewel

No. of contacts / max. 4 contacts

Contact function / NO-contact and/or NC-contact

Electrical connection / Cable box, on the right side provided with 6 screw clamps +ground, cable gland M20x1.5 going downwards. Optionally, the cable box can be supplied with rear mounting instead of on the side.

Front ring:

	3-hole Front ring	rear edge	3-rimmed-Front ring
KM-100N.1.1.1..	OK	OK	-
KM-100N.1.1.2..	OK	OK	OK
KM-100N.1.2.1..	OK	OK	-
KM-100N.1.2.2..	OK	OK	OK
KM-100N.2.1.1..	OK	OK	-
KM-100N.2.1.2..	OK	OK	OK
KM-100N.2.2.1..	OK	OK	-
KM-100N.2.2.2..	OK	OK	OK

Technical Specifications:

Accuracy / pressure gauge quality class 1.0 [2)]

Protection class / KM-100N.x.1. . . - IP54 as per EN 60529
KM-100N.x.2. . . - IP65 as per EN 60529

Plug / PUR

Damping / polybutene fillling

Options / separate circuits (for snap-action contact, standard for inductive contact), special type scales with customer's logo, other process connections

Pressure /

	steady	dynamic	burst
KM-100N.x.x..	1.00 x ME	0.90 x ME	1.30 x ME

Temperature /

Manometer	max. Media temp.
KM-100N.1.1..	+ 80°C
KM-100N.2.1..	+ 100°C (temporary 120°C)
KM-100N.1.2..	+ 80°C
KM-100N.2.2..	+ 100°C

Contacts /

Contant	max. Ambient temp.
magnet spring	- 20. . . + 140°C
inductive	- 25. . . + 100°C

Temperature error, T_{Ref} 20°C /

rising: + 0.3% FS / 10K
falling: - 0.3% FS / 10K

Material /

Material	Housing	Window
KM-100N.1.1.x.	st. steel	instrument glass
KM-100N.1.2.x.	st. steel	laminated safety glass
KM-100N.2.x.x.	st. steel	laminated safety glass

Material	Sensor element	Dial
KM-100N.1.x..	up to 100 bar, CuSn8 - 2.1030, soft-soldered from 100 bar, st. steel - 1.4404, hard-soldered	white aluminium, black scale and lettering as per EN 837-1
KM-100N.1.2.x.	st. steel 1.4404	white aluminium, black scale and lettering as per EN 837-1

Material	Motion work	Pointer
KM-100N.1.1.x.	Bottom and cover-parts from brass, moving parts argentan	black aluminium (KM-100N.1.1 plastic)
KM-100N.2.x..	st. steel	black aluminium

[2)] The addition of mechanical electric contacts affects the accuracy of instruments and corresponds to the DIN 16085, thus amounts to a max. of 50% of the pressure gauge accuracy quality class.

Ordering Codes:

Order no.	KM-100N.	2.	1.	1.	1.	1.	2.	[0][0][2][1]	D

Contact Pressure Gauge

Version /
1 = brass movement
2 = fully stainless steel chemical version

Oil filling /
1 = no oil filling
2 = with polybutene filling for cutailing vibrations

Process connection /
1 = G1/2 B at the bottom
2 = G1/2 B excentrically at the back

Fastening rim (see table) /
0 = none
1 = 3 hole front ring
2 = rear edge for wall-mounting
3 = 3 rimmed front ring with clamp

Contact type /
1 = snap-action contact
2 = inductive contact

No. of contacts /
1 = one contact
2 = two contacts
3 = three contacts
4 = four contacts

Contact function (1 = NO-contact, 2 = NC-Contact, 3 = change-over-contact (only for snap-action contact)) /
[ ][ ][ ][ ] = contact sequence for incrementing pressure, e.g. [0][1][1][2]

Operating range /
A = 0. . .0.6 bar
B = 0. . .1 bar
C = 0. . .1.6 bar
D = 0. . .2.5 bar
E = 0. . .4 bar
F = 0. . .6 bar
G = 0. . .10 bar
H = 0. . .16 bar
I = 0. . .25 bar
J = 0. . .40 bar
K = 0. . .60 bar
L = 0. . .100 bar
M = 0. . .160 bar
N = 0. . .250 bar
O = 0. . .400 bar
P = 0. . .600 bar
Q = 0. . .1000 bar
R = 0. . .1600 bar [1)]
R2 = 0. . .2500 bar [1)]
S = -1. . .0 bar
T = -1. . .+0.6 bar
U = -1. . .+1.5 bar
V = -1. . .+3 bar
W = -1. . .+5 bar
X = -1. . .+9 bar
Y = -1. . .+15 bar

[1] only possible for chemical version (KM-100N.2.x.x.x)

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GH-PM

Mounting Enclosure for Magnehelic PM-2000

Features

/ Robust enclosure made of ABS

/ Nonvolatile screws

/ Two bulkhead connectors

/ Protection class IP66

Description:

Enclosures of GH-PM series are particularly designed for differential pressure indicators and switches of Magnehelic PM-2000 series. They allow a simple and safe wall mounting, professionell wiring and offer two tight connections for both high and low pressure.

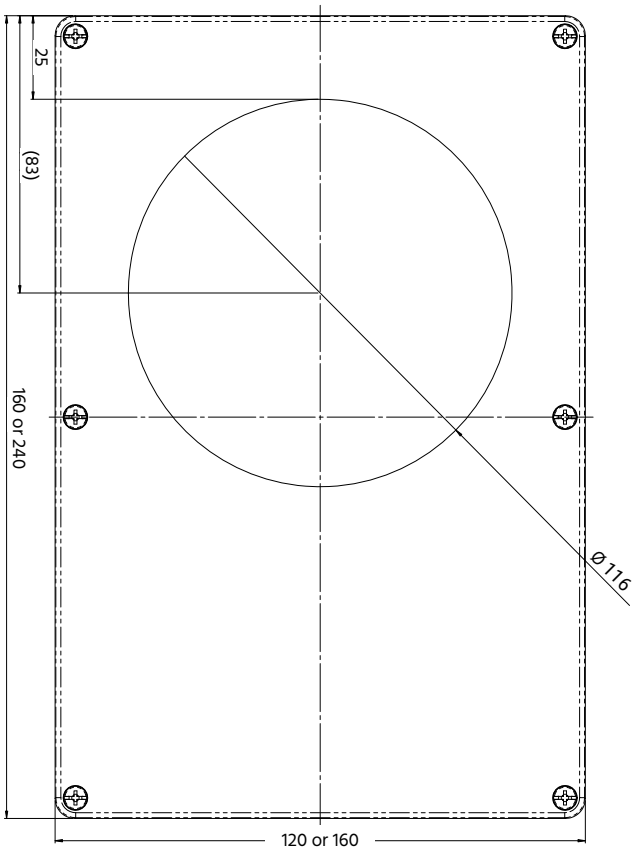
Application:

Differential pressure indicators for low differential pressure ranges are used in many, many industrial applications and in health technology worldwide. Wherever no panel with the particular cutout for Magnehelics is present, or where the Magnehelic offers an additional analog or relay output, Profimess supplies the indicators pre-mounted in the enclosure GH-PM. The pressure and electronic connections will therefore stay clean, dry and protected against incorrect operation.

Technical Specifications:

Dimensions (H x W x D)	
small /	160 x 120 x 90 mm (hole circle in the middle)
large /	240 x 160 x 120 mm
Material /	ABS
Colour /	RAL 7035, squirrel grey
Protection class /	IP 66 acc. to EN 60529 (09.08 23 09: IP 65)
Surface resistance /	4 x 10^{14} Ohm, IEC 60093
Disruptive strength /	24 KV/mm, IEC 60243-1
Impact resistance /	7 Joule acc. to EN 60079-0
Insulation /	fully insulated acc. to VDE 0100
Flammability /	UL 94 HB
Toxicity /	halogen-free
Temperature /	-40. . .+60°C
Seal /	CR-(Chloropren)
Bulkhead connections /	brass nickel-plated 6 x 4 mm
Cable glands /	M16 x 1.5 for cable diameters 5-10 mm or M20 x 1.5 for cable diameters 8-13 mm

Dimensions in mm:



Ordering Codes:

Order number	**GH-PM.**	**G**
GH-PM Mounting Enclosure		
Size / K = small G = large		

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