
PRESSURE
2025
PROFI MESS GMBH
PRESSURE SENSORS

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.

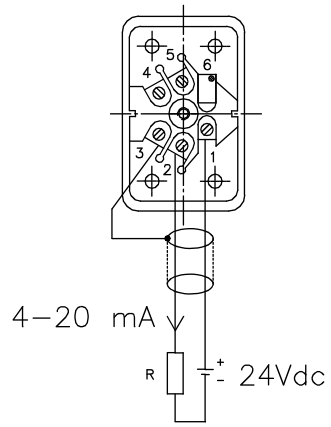
Technical Specifications:

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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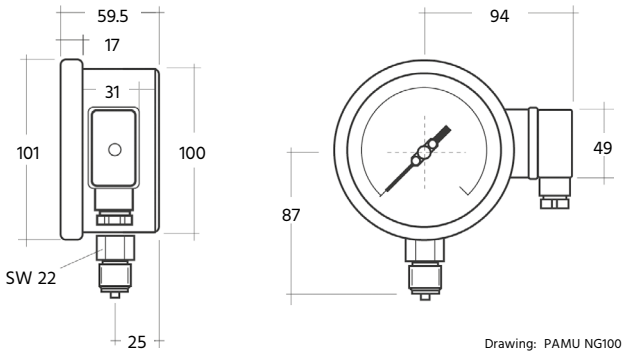
Dimensions in mm:



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:

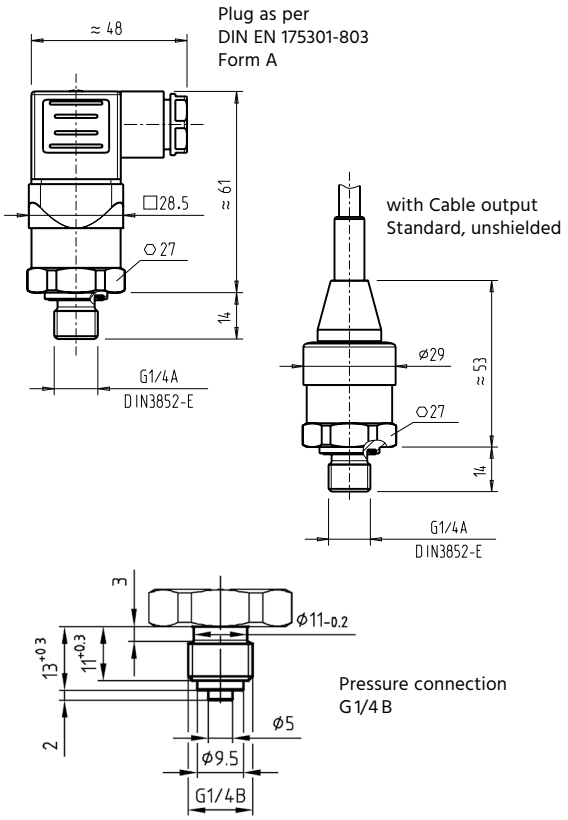
The PU-01N series of pressure measuring transmitters is always used for measuring pressure in fluid or gaseous media, if the process does not demand absolute accuracy but a fair repeatability is sufficient for it. All wetted parts are made of stainless steel in order to cover a wide range of media. In 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:

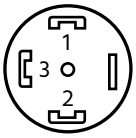


Electrical Specifications:

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

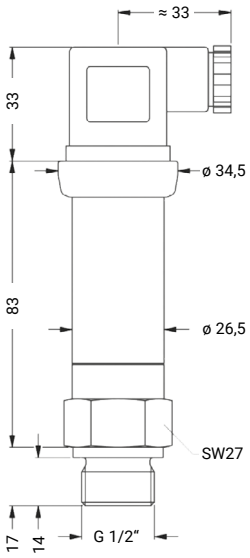
Output signal: Possible output signals are: 4. . .20 mA in 2-wire method (optional as SIL 2- or/ and intrinsically safe version) or 0. . .20 mA respectively 0. . .10 VDC in 3-wire method (other output signals on request).

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

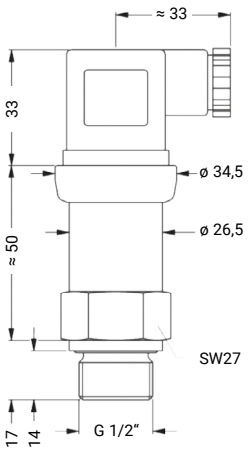
Process connection: On request, the devices can be supplied for operating ranges „B“ up to „O“ with a front flush sensor, that can even be welded to the pressure port. In this case wetted parts are fully stainless steel, because no gasket is necessary. This is recommended for viscous or sticky media.

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

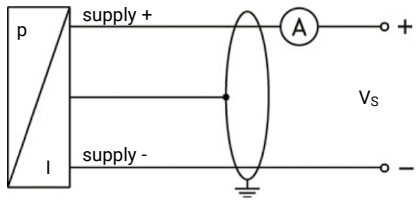
Operating ranges and permissible overpressure:

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

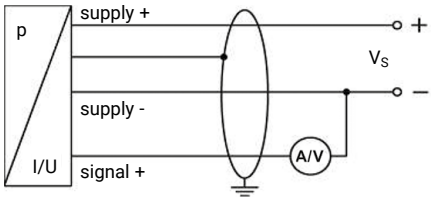
Nominal pressure gauge	Nominal pressure absolute	Permissible overpressure	Burst pressure ≥
-1. . .0 bar		5 bar	7.5 bar
0. . .0.10 bar		0.5 bar	1.5 bar
0. . .0.16 bar		1 bar	1.5 bar
0. . .0.25 bar		1 bar	1.5 bar
0. . .0.40 bar	0. . .0.40 bar	2 bar	3 bar
0. . .0.60 bar	0. . .0.60 bar	5 bar	7.5 bar
0. . .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)

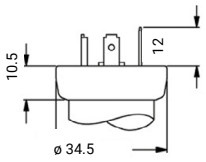


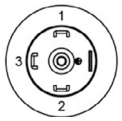
3-wire-system (current / voltage)



Electrical Connections:

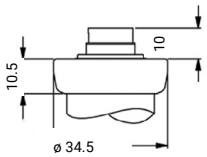
Standard /

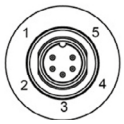




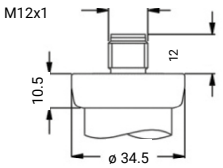
ISO 4400 (IP65)

Optional /

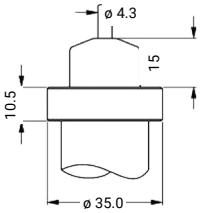


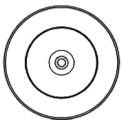


Binder series 723 5-wire (IP 67)



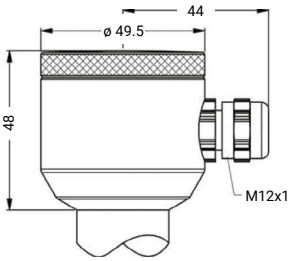
M12x1 4-wire (IP 67)



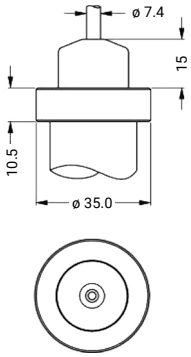


Cable outlet with PVC cable [4] (IP 67)

[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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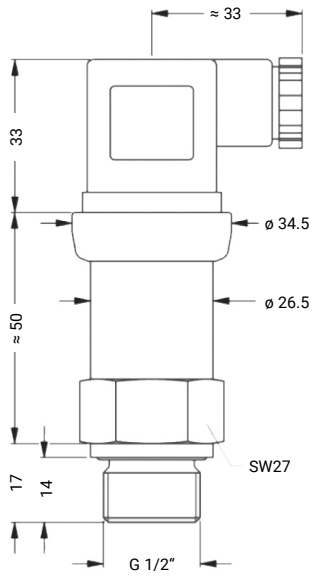
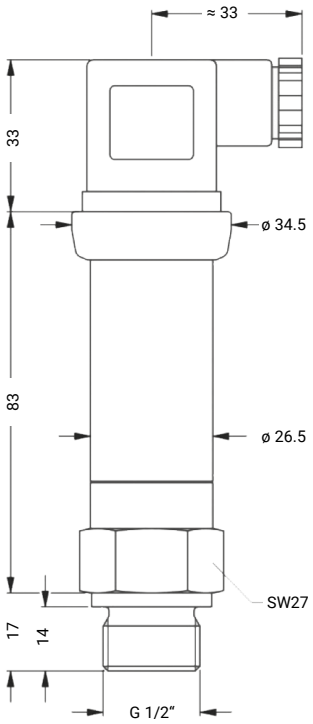
Mechanical connection:

Standard for accuracy 0.35 % / 0.25 % /



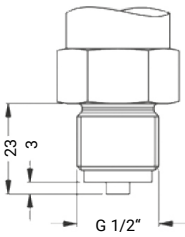
G 1/2" DIN 3852 with ISO 4400

Standard for SIL- and Ex-Version /

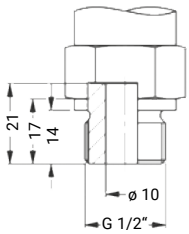


G 1/2" DIN 3852 with ISO 4400

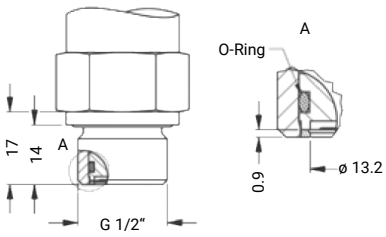
Optional /



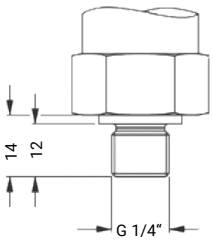
G 1/2" EN 837



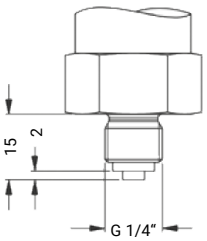
G 1/2" open port



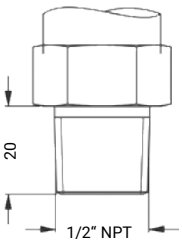
G 1/2" DIN 3852 with flush sensor



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

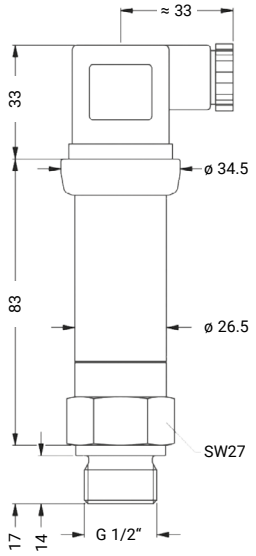
Output signal: Possible output signals are:
4. . .20 mA in 2-wire method (optional as SIL 2- or/ and intrinsically safe version)
or 0. . .20 mA respectively 0. . .10 VDC in 3-wire method (other output signals on request).

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

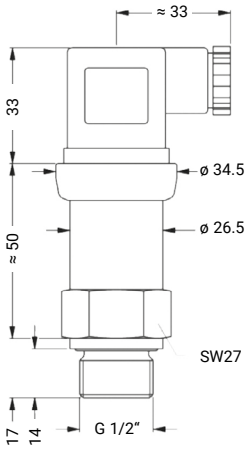
Pro**cess connection:** On request, the devices can be supplied for operating ranges „A“ up to „K“ with a semi-flush sensor. This is recommended for viscous or sticky media.

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.:

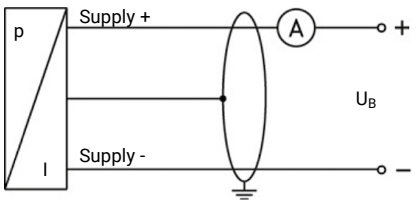
Vacuum resistance: $P_N \geq 1$ bar: unlimited resistance; $P_N < 1$ bar: on request

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

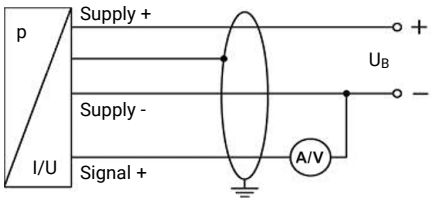
[7] nominal pressure 600 bar without UL certification

Wiring diagram:

2-Wire-System (current)

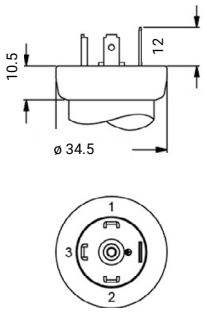


3-Wire-System (current / voltage)

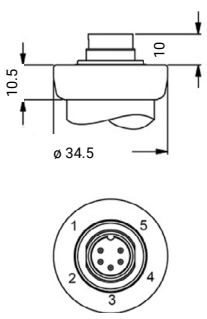


Electrical Connections:

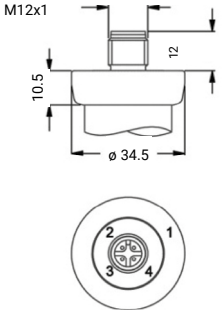
Standard / **Optional /**



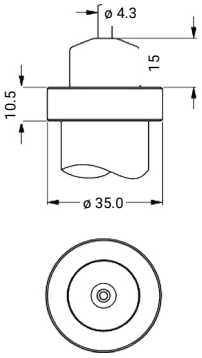
ISO 4400 (IP65)



Binder Series 723 5-wire (IP 67)

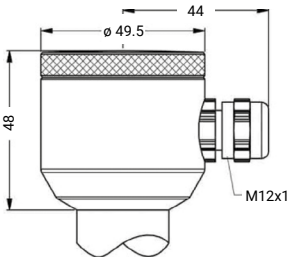


M12x1 4-wire (IP 67)

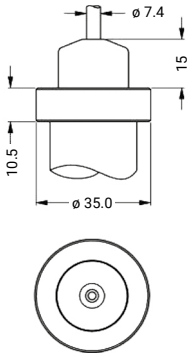


Cable output with PVC-cable [9] (IP 67)

[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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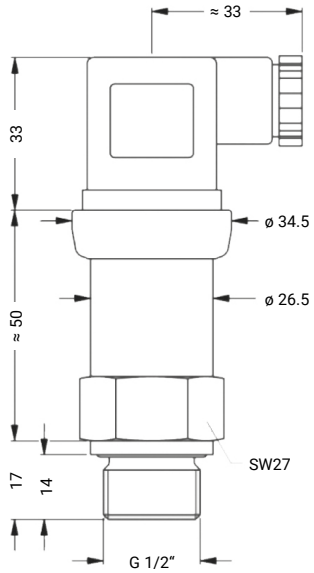
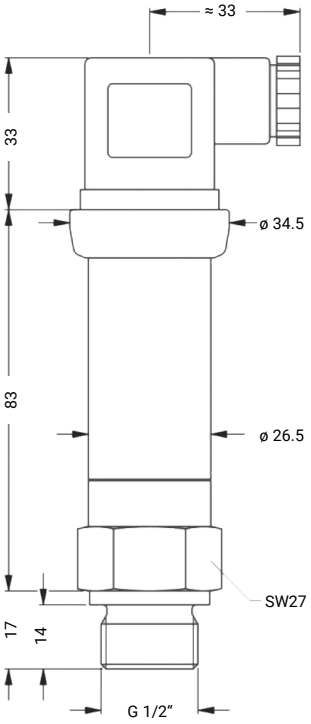
Mechanical Connections:

Standard for Accuracy 0.35 % / 0.25 %



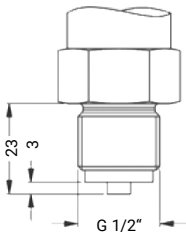
G 1/2" DIN 3852 with ISO 4400

Standard for SIL- and Ex-Version

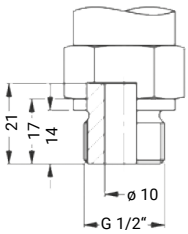


G 1/2" DIN 3852 with ISO 4400

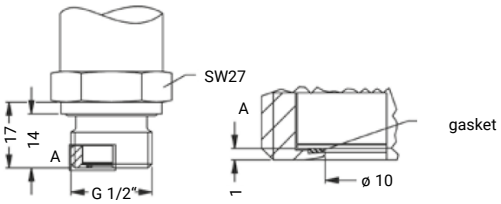
Optional



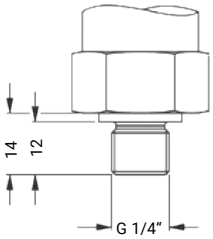
G 1/2" EN 837



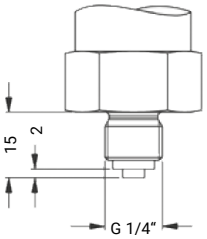
G 1/2" open port



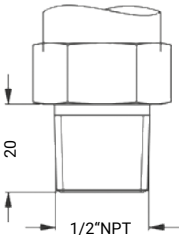
G 1/2"quasi-flush DIN 3852; M20x1,5[11]



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

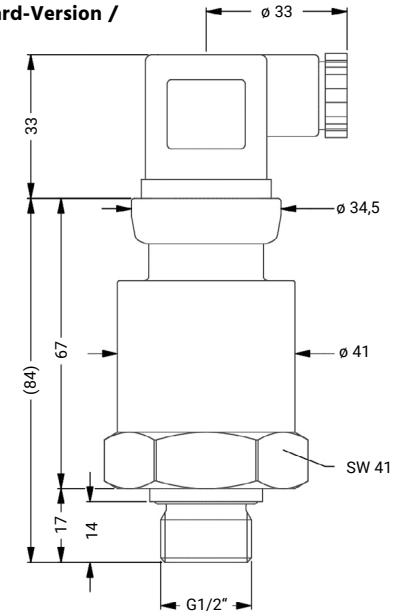
Output signal:
Possible output signals are: 4. . .20 mA in 2-wire method (optional as intrinsically safe version) or 0. . .10 VDC in 3-wire method (other output signals on request).

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

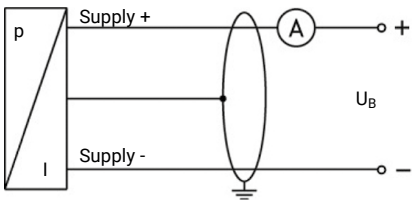
Op. Ranges & Overpressure:

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

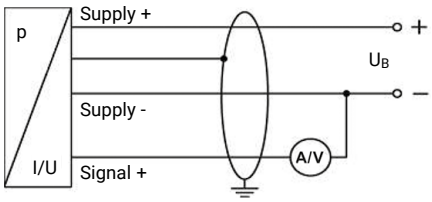
[7] on request

Wiring diagrams:

2-Wire-System (Current)

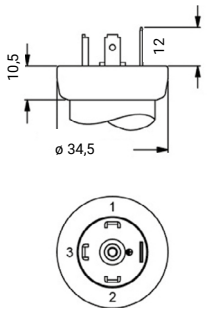


3-Wire-System (Current / Voltage)

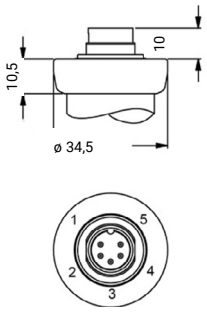


Electrical Connection:

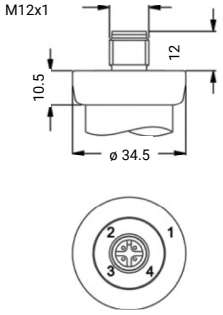
Standard / **Optional /**



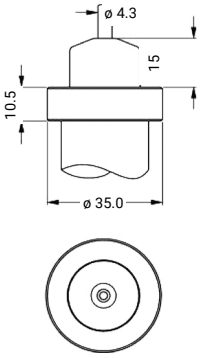
ISO 4400 (IP65)



Binder Series 723 5-wire (IP 67)

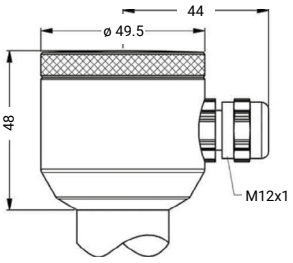


M12 x 1 4-wire (IP 67)

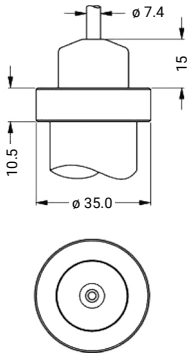


Cable output with PVC-cable [8] (IP 67)

[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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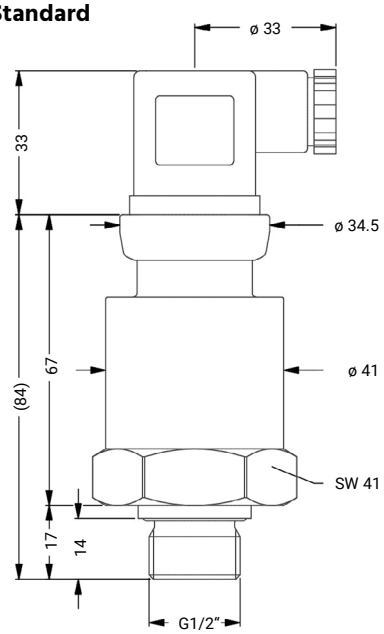
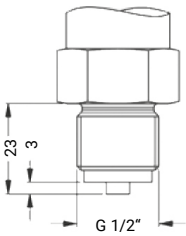
Mechanical Connection:

Standard

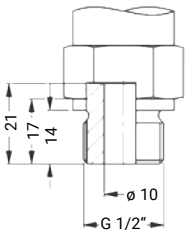


G 1/2"DIN 3852 with ISO 4400

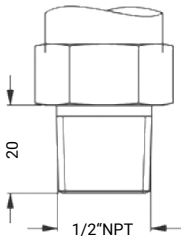
Optional



G 1/2" EN 837



G 1/2" open port



1/2" NPT

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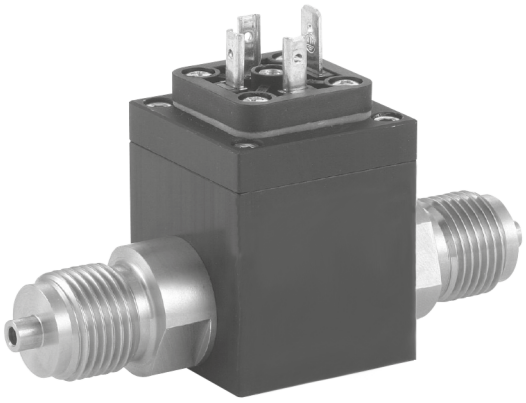
PD-02

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

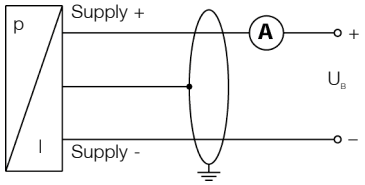
Electrical connections / cubic plug ISO 4400, others on request

Protection class / IP65

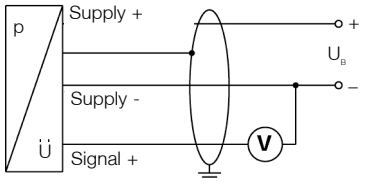
PIN-layout:

	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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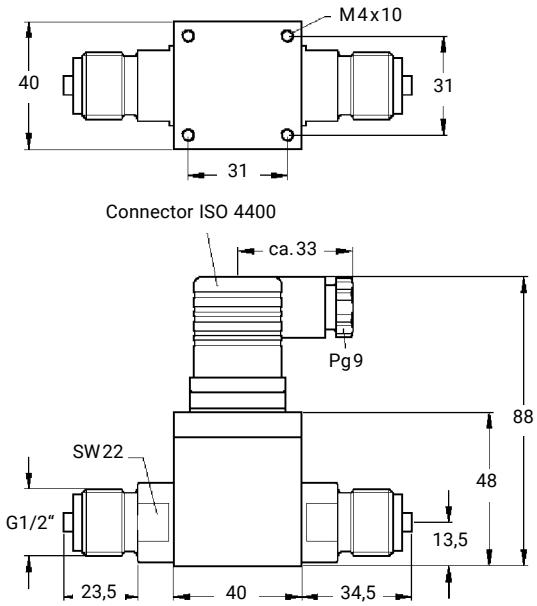
Dimensions in mm:

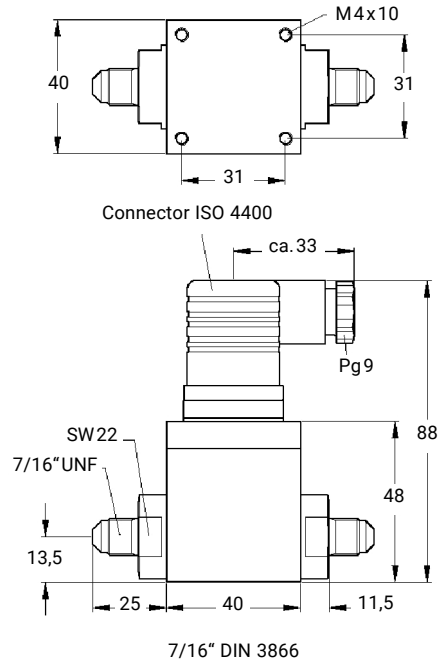
Mechanical connections:

2 x G 1/2“-male thread



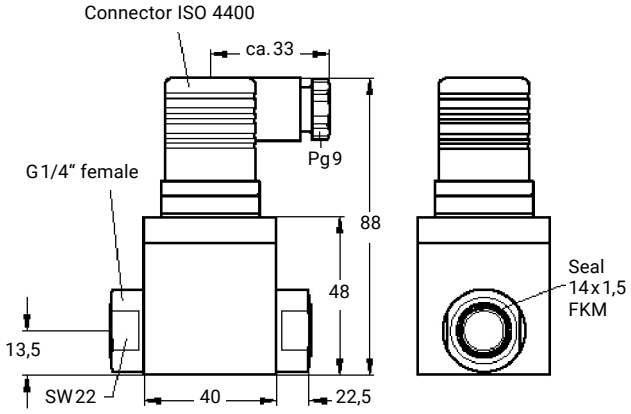
G 1/2“ EN 837 · M20 x 1,5

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:

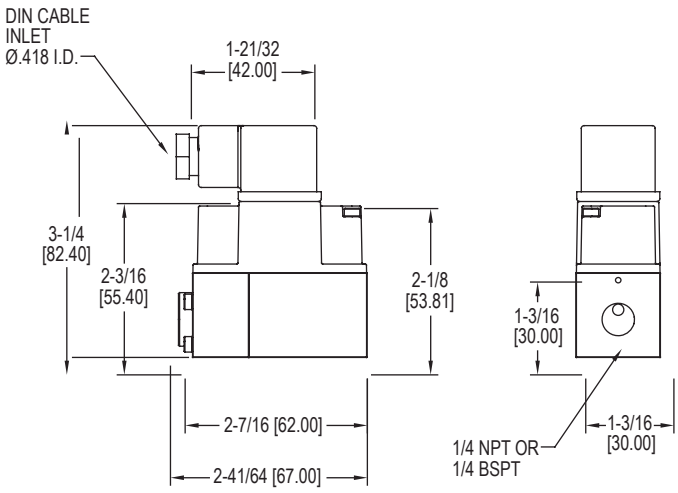
Druck

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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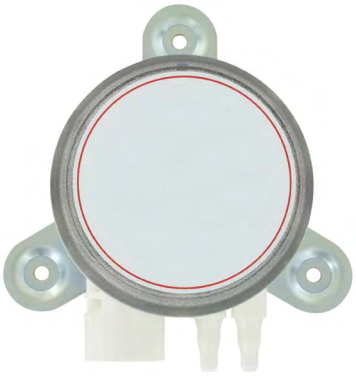

PMMS

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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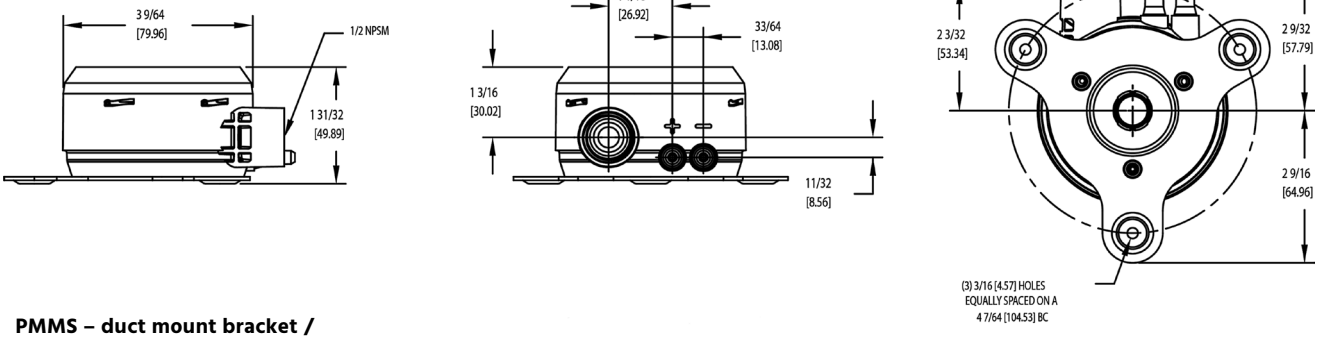
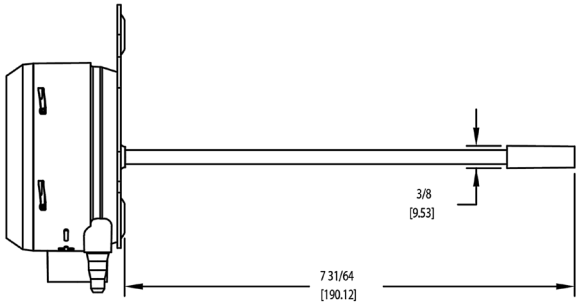
Dimensions in Inch (mm):

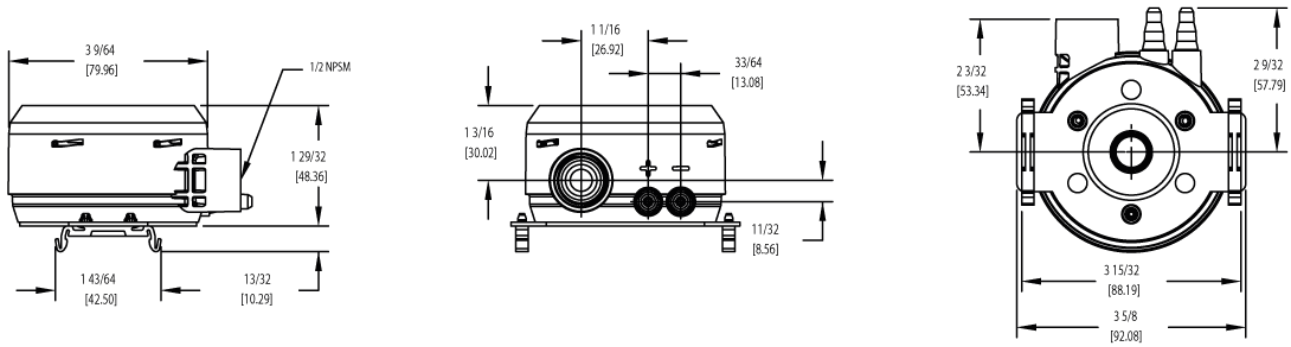
PMMS - Wall mount bracket /



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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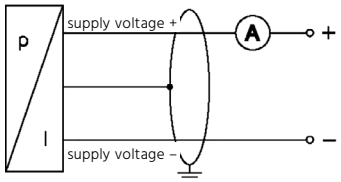
Connection Layout:

Connection layout table /

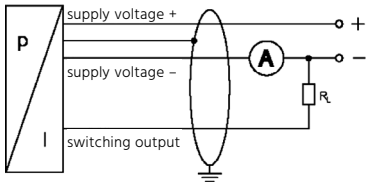
Electrical connections		ISO 4400	M12x1 (5-polig)	Binder 723 (5-polig)
2-wire-system	Supply +	1	1	3
	Supply -	2	2	4
	Switching output 1	3	5	2
	Switching output 2	not used	3	1
	Shield	Ground contact	4	Ground contact
3-wire-system	Supply +	1	1	3
	Supply -	2	2	4
	Signal +	3	3	5
	Switching output 1	not used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

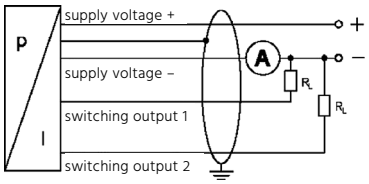
without Switching output



1 Switching output

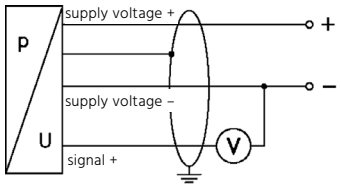


2 Switching outputs

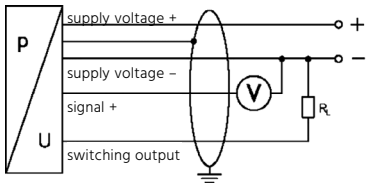


3-Wire-System (Voltage)

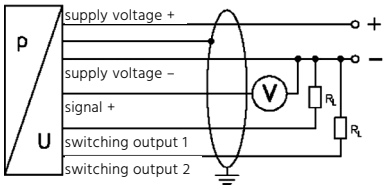
without Schaltausgang



1 Switching output

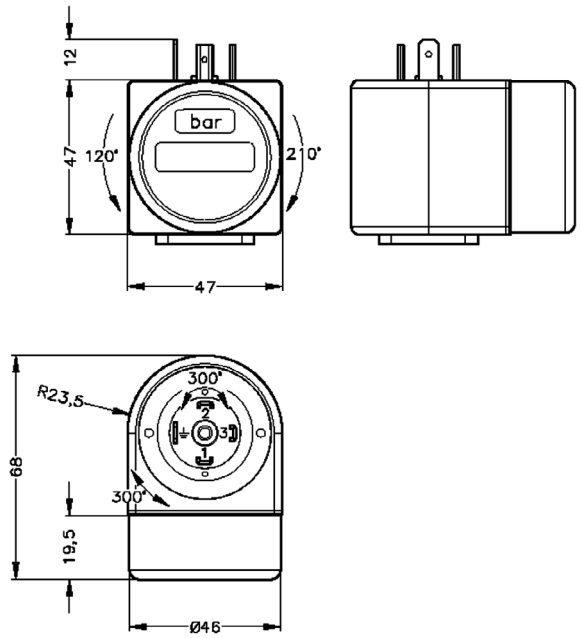


2 Switching outputs

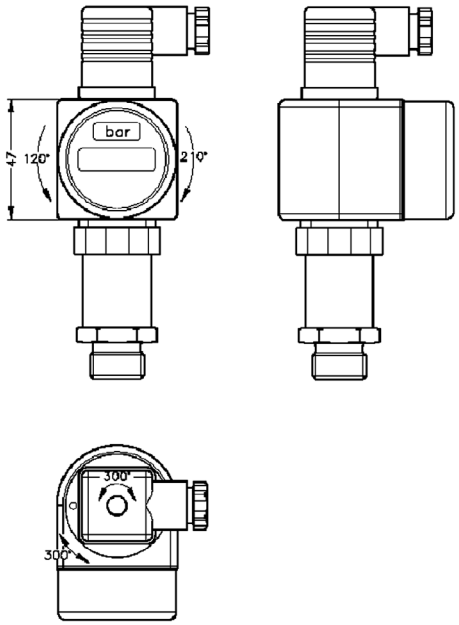


Dimensions in mm:

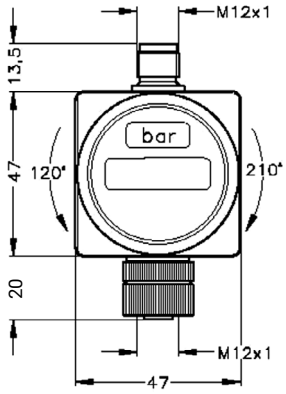
Standard



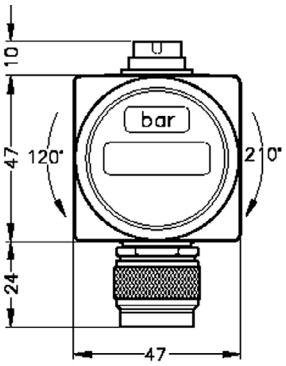
Example: AZ-01N on Profimess pressure measuring transmitter



Options

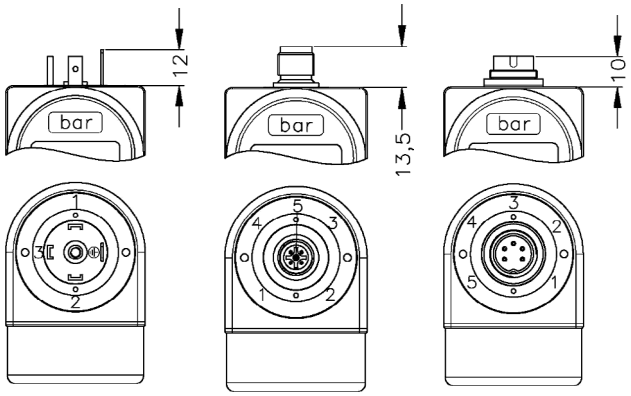


M12 x 1, 5-wire



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

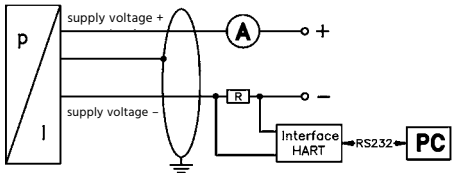
Operating range /
K02 = 0. . .+0.16 bar (overload up to 4 bar, perm. vacuum up to -0.3 bar)
K03 = 0. . .+0.40 bar (overload up to 6 bar, perm. vacuum up to -0.5 bar)
K04 = 0. . .+1 bar (overload up to 8 bar, perm. vacuum up to -0.5 bar)
K05 = 0. . .+2 bar (overload up to 15 bar, perm. vacuum up to -1.0 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]

[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

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

address Schleusenstraße 3 | D-27568 Bremerhaven | Germany | **tel** +49 (0)471 98 24 151
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Material /

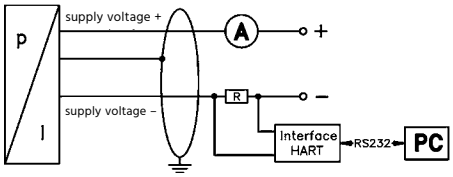
Housing:	aluminium pressure cast, powder coated or st. steel 1.4404
Cable gland:	brass, nickel plated
Window:	laminated safety glass
Pressure conn.:	st. steel 1.4435
Seals:	FKM (Standard); Option: FFKM (min. Temperature range from -15°C, possible for PN ≤ 100 bar)
Diaphragm:	st. steel 1.4435 (Standard); 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)**

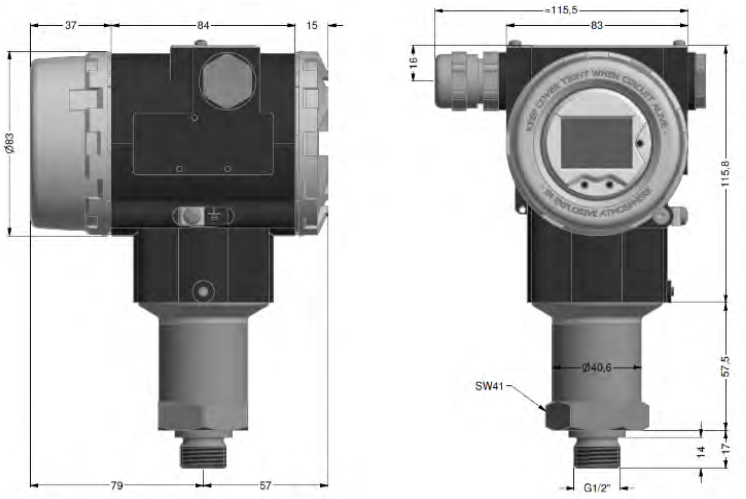
Calibration /
1 = absolute pressure (possible from 1 bar)
2 = gauge pressure

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)

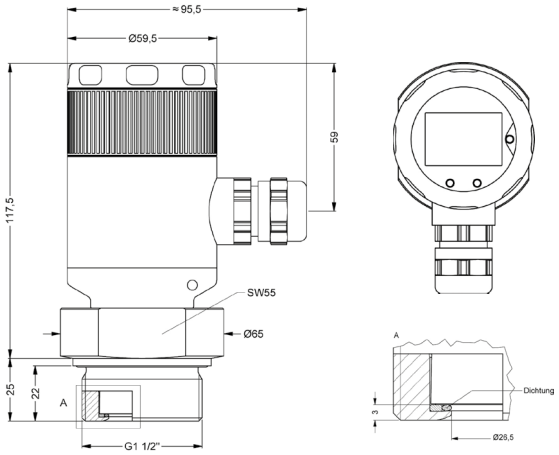
Special design /
0 = none
1 = sealing FFKM (standard FKM) **K)**
2a = filling fluid - food compatible oil (standard silicon oil) **F)**
2b = filling fluid - Halocarbon (standard silicon oil) **F)**
9 = please specify in detailed text

Dimensions PU-10K (mm):

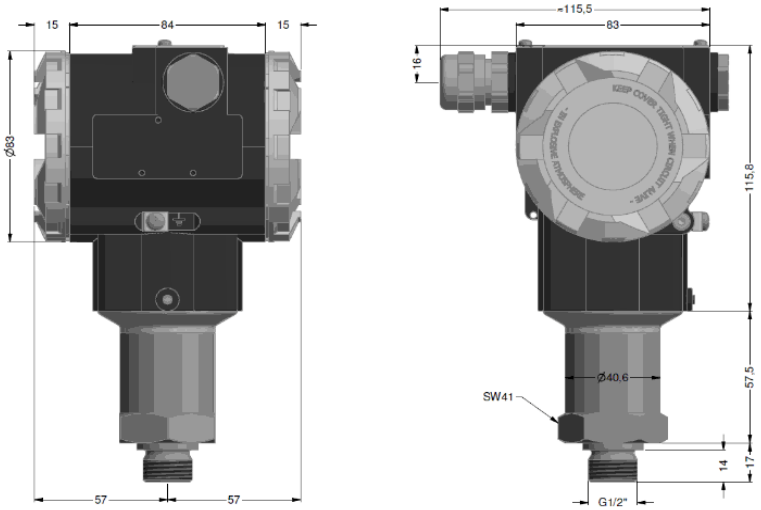


G 1/2"-male DIN 3852

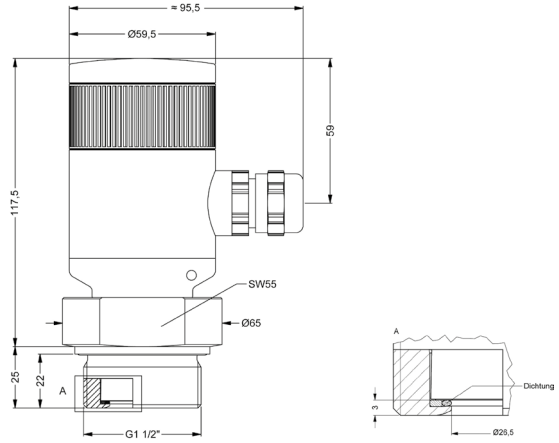
Stainless steel field housing with display



G1 1/2"-AG flush DIN 3852



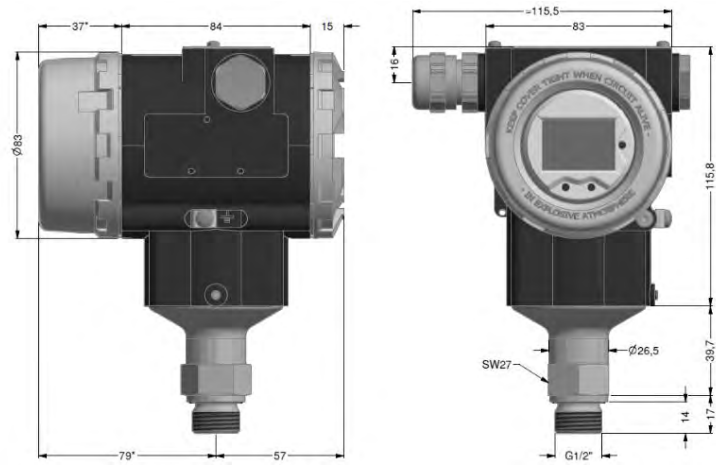
Stainless steel field housing without display



G1 1/2"-AG flush DIN 3852

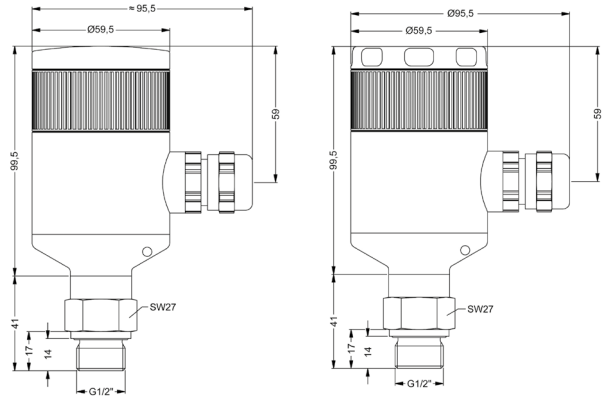
>> - aluminium pressure casting housing is horizontally rotatable as standard

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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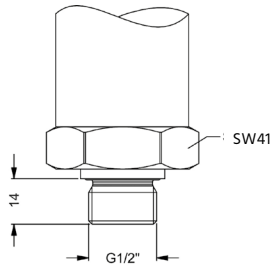
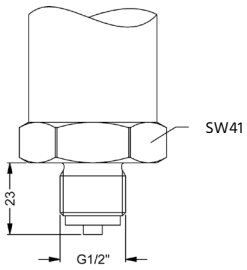
Mechanical Connections (mm):

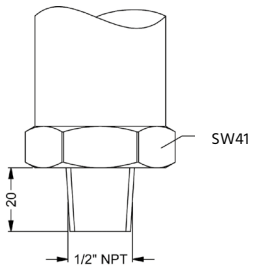
Inch-system thread



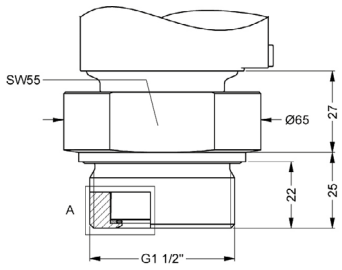
G1/2″ DIN 3852



G1/2″ EN 837

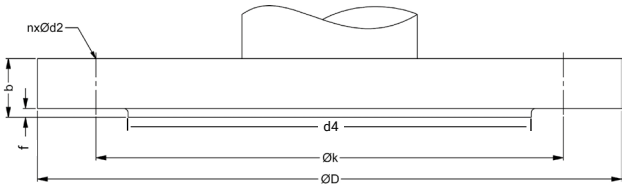


1/2″ NPT



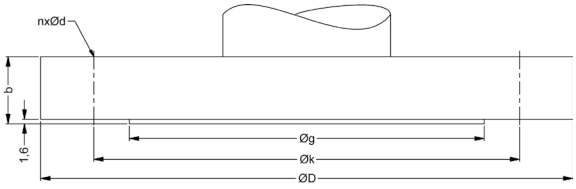
G11/2″ frontbündig DIN 3852

Flange (DIN 2501)



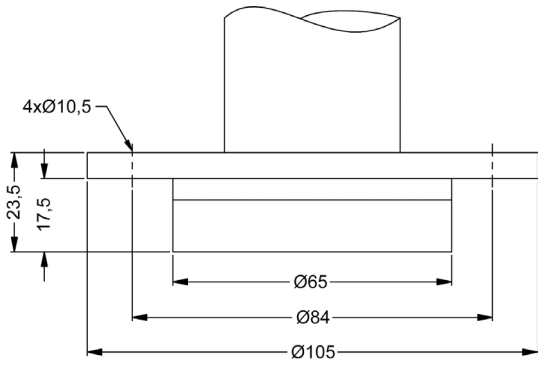
Size	DN25 / PN40	DN50 / PN40	DN80 / PN16
D	115	165	200
k	85	125	160
b	18	20	20
n	4	4	8
d2	14	18	18
f	2	3	3
d4	68	102	138
PN	≤ 40 bar	≤ 40 bar	≤ 16 bar

Flange (ANSI B16.5)

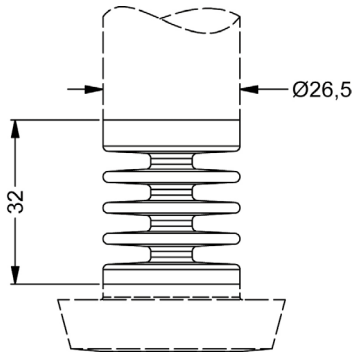


Size	2″ / 150 lbs	3″ / 150 lbs
D	152.4	190.5
g	91.9	127.0
k	120.7	152.4
b	19.1	23.9
n	4.0	4.0
d	19.1	19.1
PN	≤ 10 bar	≤ 10 bar
PN	≤ 40 bar	≤ 40 bar

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:

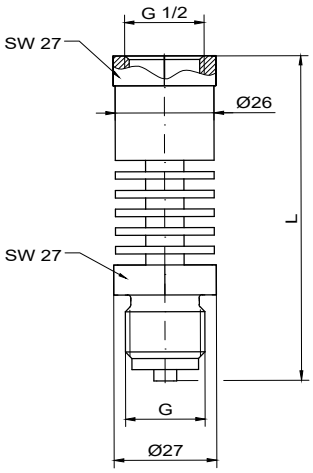
Order number	KE-01.	1.	2.

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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