Instruction Manual

PUM04, PUM06

Pressure transmitter of stainless steel

PKP Prozessmesstechnik GmbH
Borsigstraße 24
D-65205 Wiesbaden-Nordenstadt
Tel.: ++49-(0)6122-7055-0
Fax: ++49-(0)6122-7055-50
Email: info@pkp.de

Safety Information

General Instructions
The device should only be operated according to the specifications in the instruction manual. The requisite Health & Safety regulations for a given application must also be observed. This also aplies to the use of accessories.

Proper Usage
The pressure transmitter PUM04 and PUM06 are designed to measure the relative and absolute pressure of gaseous and liquid media which do not attack the device materials. All other usage is regarded as being improper and outside the scope of the device.

The series PUM04 and PUM06 devices should not be deployed as the sole agents to prevent dangerous conditions occurring in plant or machinery. Machinery and plant need to be designed so that faulty conditions do not arise that could pose a safety risk for operators.

Dangerous substances

For dangerous media such as e.g. Oxygen, Acetylene, flammable or toxic substances as well as refrigeration systems, compressors, etc. must comply with the relevant regulations beyond the general rules.

Qualified Personnel

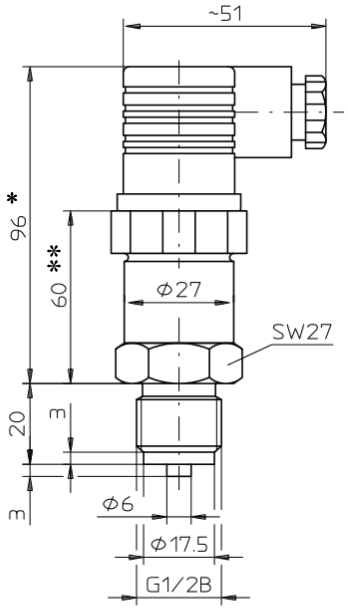
PUM04 and PUM06 devices may only be installed by trained, qualified personnel who are able to mount the devices correctly. Qualified personnel are persons, who are familiar with assembling, installation, placing in service and operating these devices and who are suitably trained and qualified.

Installation and Commissioning

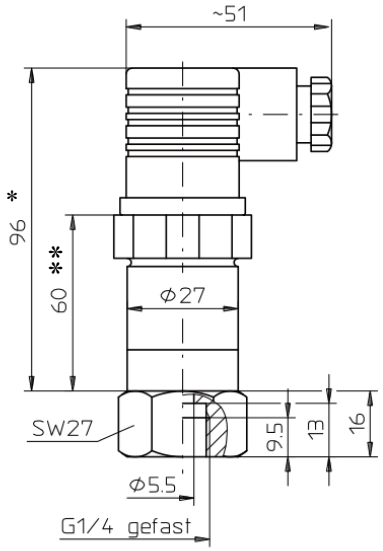
- The pressure tapping points should be prepared in accordance with the indications given for the sockets. For more details, see e.g. rule VDE/VDI 3512, sheet3.
- Suitable for sealing are sealing washers to DIN 16258.
- The correct tightening torque is depending on material and shape of the used seal. It should not exeed 80 Nm.
- The mounting position should not be subject to strong vibration and radiation heat.
- The mounting position which the transmitter is adjusted for, is indicated on the rating plate.
- If the device is installed in a different position, the zero point may be offset. In this case, the zero point should be readjusted as described here under.
- The transmitters are immediatly ready for service after the pressure and electrical connections have been made.

Pressure-connection variants

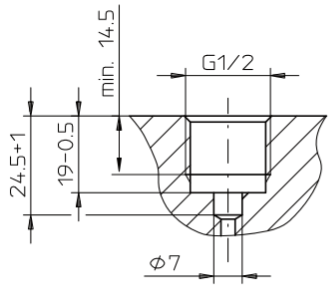
Connection G ½ B male



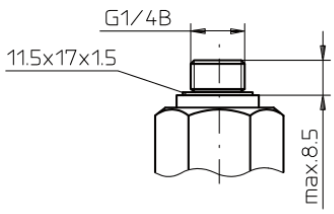
Connection G ¼ female



* 101 mm at thin-film technic (from range R79: 0...40 bar)
** 65 mm at thin-film technic (from range R79: 0...40 bar)

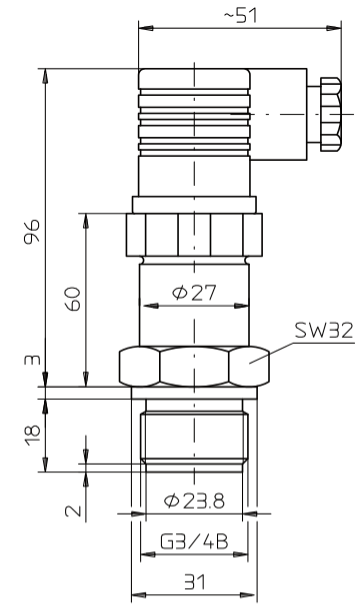


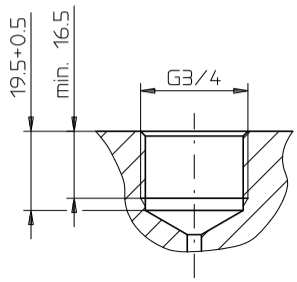
Socket DIN 16288



Connector

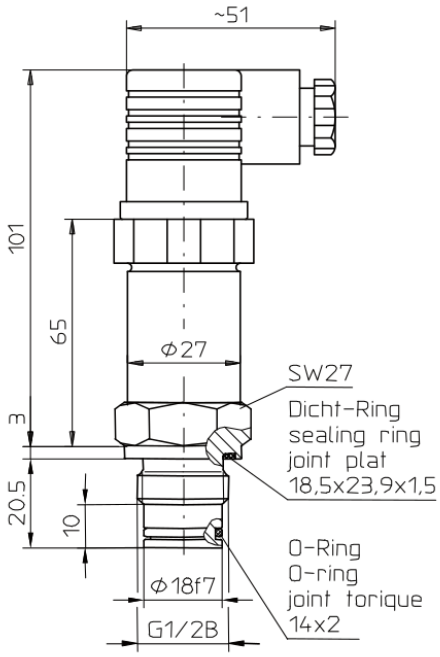
Connecton for front flush membrane up to measuring range R78, 0...25 bar and for all ranges of PUM04

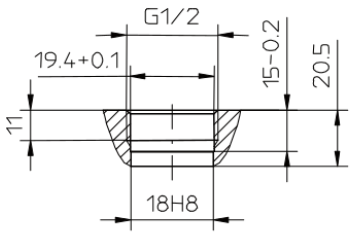




Socket

Connecton for front flush membrane from measuring range R79, 0...40 bar





Connector

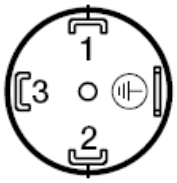
Electrical Connection

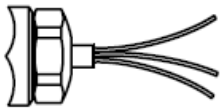
Attention: Prior to the electrical connection of the device, it must be ensured that the supply voltage matches that required and the supply voltage is switched off.

- Electrical connection is made by means of plug or shieldes cable with cappillary tube.
- Precise wiring schemes can be seen in the drawings.
- In addition, wiring details and required power supply are given on the rating plate.
- Significance of applied terminal designations: supply voltage: Ub+ / Ub-
  output signal: S+ / S-
  cable shield/case, earth: shield / PE

Current output		**Voltage output**	
Output signal:	4...20 mA/2 wire-system	Output signal:	0...10 V / 3 wire-system
Power supply:	Ub = 7,5...30 VDC	Power supply:	Ub = 12...30 VDC
Admissible load:	Ra = (Ub-7,5 V) / 20 mA	Admissible load:	Ra ≥ 10 kΩ

Wiring

L-plug EN 175301-803 Form A		2-wire	3-wire
	Ub+	1	1
	Ub-	2	2
	S+	-	3

Cable connection		2-wire	3-wire
	Ub+	white	white
	Ub-	green	green
	S+	-	green

Attention:

The connecting cable with capillary must not be pinched or bended to avoid interruption of pressure compensation to ambient pressure.

Minimum bending radius: fixed = 20mm / flexible application = 100mm

Service and Maintenance

The transmitter described here under is maintenance free. If incorporates no components which have to be repaired or replaced on the site. Repairs can only be carried out at the factory.
Depending on working conditions, the pressure transmitters should be checked about once a year to ensure that they are within their specifications and be adjusted if necessary.

!!! Attention !!! Opening the pressure transmitter will void the warranty

PUM04

Pressure Transmitter of Stainless Steel with Ceramic Membrane

- relative pressure measurement
- accuracy: standard: 1 (1,5) % FS
  precision: 0,3 % FS
- optional front flush ceramic membrane
- robust design
- current or voltage output
- max. temperature: 80 °C
- measuring range from -1 to +400 bar

Description:

The pressure transmitter PUM04 can be used for relative pressure measurement of gaseous and liquid media. The pressure is tapped via a thin-film sensor element. In this case, the change in resistance of a strain gauge is translated with a high response speed into an output signal which is proportional to the applied pressure.
The pressure sensor is a ceramic membrane.
The electrical signal present at the output can be used for remote transmission or for direct display.
We recommend the PKP plug-in display AZ01, which is simply placed between the transmitter and the plug and displays the measured value without additional supply voltage.

Typical applications:

The robust design of the PUM04 pressure transmitter offers the user the ability of pressure measurement of gases and liquids accurately in the process, even in harsh operating conditions. Even highly viscous and crystallizing media can be measured without hesitation.
If necessary, the pressure transmitters are equipped with a front-flushed ceramic membrane, which prevents such substances from getting lodged inside the housing.
In addition to the general use of the measuring instruments in almost all industrial processes, a typical application is the use in hydraulic systems.
A self-powered plug-in display is optionally available for displaying the measured value.

PKP PROZESSMESSTECHNIK

PKP Prozessmesstechnik GmbH
Borsigstr. 24 • D-65205 Wiesbaden

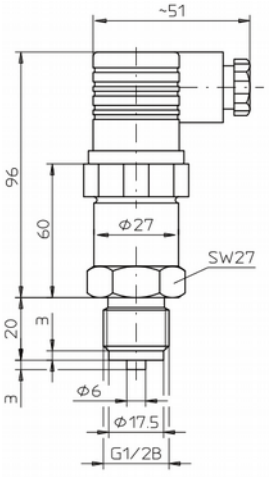
+49 (0) 6122-7055-0 • +49 (0) 6122 7055-50
info@pkp.de • www.pkp.de

Technical Data:

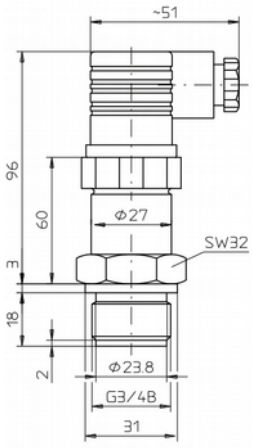
Process connection:	G ½ B male thread G ¾ B with front-flush membrane G ¼ female thread other designs on request
Material:	
Housing:	stainless steel 1.4301
Pressure connec.	stainless steel 1.4571
Pressure sensor:	ceramic membrane (thick-film) FKM gasket
Media temperature:	–25 ... +80 °C
Ambient temperature:	–20 ... +70 °C
Storage temperature:	–40 ... +100 °C
Accuracy:	according to IEC 61298-2, linearity + hysteresis+repeatability:
Standard:	+/- 1,0 % FS (for MR R70 a. R86 +/- 1,5 % FS)
Precision:	<0,3 % FS, <0,2 % FSL
Temperature error:	average TK zero point: <0,2 % FS / 10 K average TK range: <0,2 % FS / 10 K
Reaction time:	< 10 ms
Weight:	ca. 0,23 kg

Dimensions:

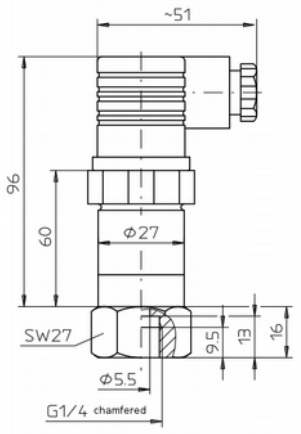
Connection
G 1/2 B A, male thread:



front-flush membrane:



Connection:
G ¼ female thread



Order Code:

Order number:	PUM04.	S.	2.	1.	2.	1.	R76.	0

Universal pressure transmitter

Accuracy:
S = standard 1 (1,5) % FS
P = precision 0,3 % FS

Output signal:
1 = 4...20 mA, 2-wire
2 = 0...10 V, 3-wire

Calibration:
1 = relative pressure

Electrical connection:
1 = angle plug, IP65, EN 175301-803 form A
2 = fixed connection cable IP68 (1 m standard length)

Process connection:
1 = G 1/2 B male thread, ac. to EN 837-1, inside membrane
2 = G 3/4 B male thread front flush membrane
3 = G 1/4 female thread, inside membrane
9= special connection (please specify in plain text)

Measuring range / Overrange limit:
R16 = –1...0 bar / 2,0 bar (not at PUM04.S...)
R69 = 0...1 bar / 2,0 bar (not at PUM04.S...)
R70 = 0...1,6 bar / 4 bar
R72 = 0...2,5 bar / 4 bar
R73 = 0...4 bar / 10 bar
R74 = 0...6 bar / 10 bar
R75 = 0...10 bar / 20 bar
R76 = 0...16 bar / 40 bar
R78 = 0...25 bar / 40 bar
R79 = 0...40 bar / 100 bar
R80 = 0...60 bar / 120 bar
R81 = 0...100 bar / 200 bar
R82 = 0...160 bar / 400 bar
R84 = 0...250 bar / 400 bar
R86 = 0...400 bar / 650 bar
further measuring ranges on request

Options:
0 = without
9 = please specify in plain text

Accessory:

Self powered plug-in display **AZ01**

Electrical Data:

Power supply:	7,5...30 VDC at current output 12...30 VDC at voltage output
Power consumption:	max. 0,75 W
Output:	current output 4...20 mA, 2-wire load = (U-7,5 V) / 0,025 A voltage output 0...10 V, 3-wire load > 10 kOhm special range are adjustable at factory
Transient emissions:	according to EN 61326
Immunity:	according to EN 61326
Protection class:	IP65 EN 60 529 / IEC 529 IP68 with cable connection

Druck

PKP Prozessmesstechnik GmbH
Borsigstr. 24 • D-65205 Wiesbaden
+49 (0) 6122-7055-0 • +49 (0) 6122 7055-50
info@pkp.de • www.pkp.de

PUM06

Universal Pressure Transmitter of Stainless Steel

- relative- or absolute pressure measurement
- accuracy: 0,3 % FS
- optional front flush stainless steel membrane
- robust design
- current or voltage output
- max. temperature: 80 °C
- measuring range from -1 to +2500 bar

Description:

The universal pressure transmitter PUM06 can be used for relative and absolute pressure measurement in almost all pressure ranges for gaseous and liquid media. The pressure is tapped either piezoresistively or via a thin-film sensor element. In the case of the low measuring ranges, the pressure change is registered by the electrical resistance of a piezocrystal which changes under mechanical load. In contrast, at higher measurement ranges, the thin-film technique is used, where the resistance change of an extremely thin strain gauge is translated into an output signal which is proportional to the applied pressure.
The combination of these two techniques covers all DIN measuring ranges from -1...0 bar to 0...2500 bar with constant accuracy.

Typical applications:

The robust design of the PUM06 pressure transmitter offers the user the ability of accurate pressure measurement of gases and liquids in the process, even in harsh operating conditions. A stainless steel membrane protects the measuring system against damage, so that a variety of media, even highly viscous and crystallizing media can be detected.
If necessary, the pressure transmitter are equipped with a front-flush membrane, which prevents such substances from getting lodged inside the housing. The electrical signal present at the output can be used for remote transmission or for direct display.
We recommend the PKP plug-in display AZ01, which is simply placed between the transmitter and the plug and displays the measured value without additional power supply.

PKP Prozessmesstechnik GmbH
Borsigstr. 24 • D-65205 Wiesbaden
+49 (0) 6122-7055-0 • +49 (0) 6122 7055-50
info@pkp.de • www.pkp.de

Models:

Meas. system piezoresistive: **MR: -0,1...0 to 0...25 bar**
Meas. system thin-film: **MR: 0...40 to 0...2500 bar**

Technical Data:

Process connection:
G ½ B male thread
G ¾ B with front flush membrane (to MR **R78** 0...25 bar)
G ½ B with front flush membrane (at MR **R79** 0...40 bar)
G ¼ female
other designs on request

Material:

Housing: stainless steel 1.4301

Pressure port: stainless steel 1.4571

Pressure sensor: 1.4435 (piezoresistive)
1.4545 (thin-film)

Media temperature: –25 ... +80 °C

Ambient temperature: –20 ... +70 °C

Storage temperature: –40 ... +100 °C

Accuracy: according to IEC 61298-2
linearity+hysteresis+repeatability:
<0,3 % FS, <0,2 % BFSL

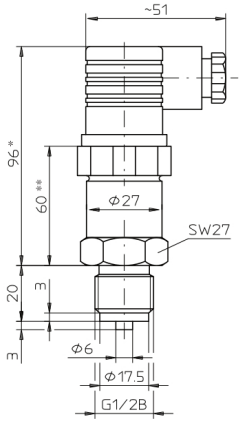
Temperature error: average TK zero point:
<0,2 % FS / 10 K
average TK range:
<0,2 % FS / 10 K

Reaction time: < 10 ms

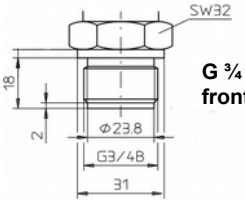
Weight: ca. 0,24 kg

Dimensions:

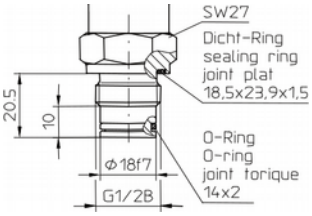
G ½ B, inside membrane



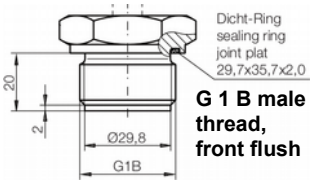
* 101 mm at thin-film technology (from MR R79: 0...40 bar)
** 65 mm at thin-film technology (from MR R79: 0...40 bar)



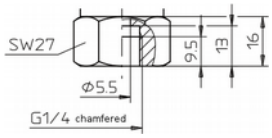
G ¾ B AG, front flush



G ½ B male thread, front flush



G 1 B male thread, front flush



G ¼ female thread

Order Code:

Order number: **PUM06. 2. 1. 2. 1. R76. 0**
Universal pressure transmitter

Output signal:
1 = 4 bis 20 mA, 2-wire
2 = 0 bis 10 V, 3-wire

Calibration:
1 = relative pressure
2 = absolute pressure

Electrical connection:
1 = angle plug, IP65, EN 175301-803 form A
2 = fixed connection cable IP68 (1 m standard length)

Process connection:
1 = G ½ B male, acc. to EN 837-1, inside membrane
2 = G ¾ B male front flush membrane (up to MR **R78**)
3 = G ½ B male front flush membrane (from MR **R79**)
4 = G 1 B male front flush membrane
5 = G ¼ female, inside membrane
9 = special connection (please specify in plain text)

Measuring range / Overrange limit:

R = relative	A = absolute
R11 = -0,10...0 bar / 0,6 bar	
R12 = -0,16...0 bar / 0,6 bar	
R13 = –0,25...0 bar / 0,6 bar	
R14 = –0,4...0 bar / 2,0 bar	
R15 = –0,6...0 bar / 2,0 bar	
R16 = –1...0 bar / 2,0 bar	
R43 = –1...1,5 bar / 4 bar	
R44 = –1...3 bar / 13 bar	
R45 = –1...5 bar / 13 bar	
R63 = 0...0,1 bar / 0,6 bar	
R64 = 0...0,16 bar / 0,6 bar	
R65 = 0...0,25 bar / 0,6 bar	A65 = 0...0,25 bar / 0,6 bar
R66 = 0...0,4 bar / 2,0 bar	A66 = 0...0,4 bar / 2,0 bar
R67 = 0...0,6 bar / 2,0 bar	A67 = 0...0,6 bar / 2,0 bar
R69 = 0...1 bar / 2,0 bar	A69 = 0...1 bar / 2,0 bar
R70 = 0...1,6 bar / 4 bar	A70 = 0...1,6 bar / 4 bar
R72 = 0...2,5 bar / 6 bar	A72 = 0...2,5 bar / 6 bar
R73 = 0...4 bar / 13 bar	A73 = 0...4 bar / 13 bar
R74 = 0...6 bar / 13 bar	A74 = 0...6 bar / 13 bar
R75 = 0...10 bar / 32 bar	A75 = 0...10 bar / 32 bar
R76 = 0...16 bar / 32 bar	A76 = 0...16 bar / 32 bar
R78 = 0...25 bar / 32 bar	
R79 = 0...40 bar / 80 bar	
R80 = 0...60 bar / 108 bar	
R81 = 0...100 bar / 170 bar	
R82 = 0...160 bar / 256 bar	
R84 = 0...250 bar / 400 bar	
R86 = 0...400 bar / 600 bar	
R87 = 0...600 bar / 840 bar	
R88 = 0...1000 bar / 1400 bar	
R89 = 0...1600 bar / 2080 bar	further measuring ranges
R90 = 0...2500 bar / 3000 bar	on request

Options:
0 = without
9 = please specify in plain text

Accessory: Self powered plug-in display **AZ01**

Electrical Data:

Power supply: 7,5...30 VDC at current output
12...30 VDC at voltage output

Power consumption: max. 0,75 W

Output: current output 4...20 mA, 2-wire.
load = (U-7,5 V) / 0,025 A
voltage output 0...10 V, 3-wire.
load > 10 kOhm
special range factory adjustable

Transient emissions: according to EN 61326

Immunity: according to EN 61326

Protection class: IP65 EN 60 529 / IEC 529
IP68 with cable connection

PKP Prozessmesstechnik GmbH
Borsigstr. 24 • D-65205 Wiesbaden
+49 (0) 6122-7055-0 • +49 (0) 6122 7055-50
info@pkp.de • www.pkp.de