

Pressure Transmitter PCE-28

- ✓ Any range from 0...10 mbar up to 0...1000 bar
- ✓ 4 ÷ 20 mA two-wire or 0 ÷ 10 V output
- ✓ ATEX Intrinsic safety (Gas, Dust) and IECEx certificate
- ✓ Low-voltage version with ATEX certificate (model PC-29A, PC-29B) NEW
- ✓ Marine certificate DNV
- ✓ Communication protocol Modbus RTU
- ✓ Gold plated diaphragm NEW

Application

The PCE-28 pressure transmitter is applicable to the measurement of the pressure, underpressure and absolute pressure of gases, vapours and liquids.

Construction

The active sensing element is a piezoresistant silicon sensor separated from the medium by a diaphragm and by specially selected type of manometric liquid.

The electronics is placed in a casing with a degree of protection IP 65 or IP 67, depending on the type of electrical connection applied.

Calibration

Potentiometers can be used to shift the zero position and the range by up to ±10%, without altering the settings.

Installation

The transmitter is not heavy, so it can be installed directly on the installation. When the pressure of steam or other hot media is measured, a siphon or impulse line should be used. The needle valve placed upstream the transmitter simplifies installation process and enables the zero point adjustment or the transmitter replacement.

When the special process connections are required for the measurement of levels and pressures (e.g. at food and chemical industries), the transmitter is provided with an Aplisens diaphragm seal. Installing accessories and a full scope of diaphragm seals are described in detail in the further part of the catalogue.

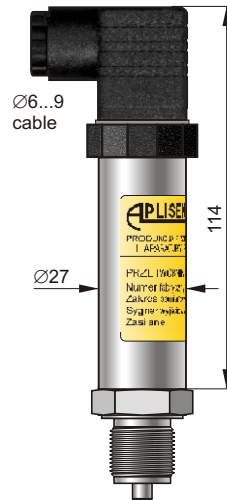
Measurements under explosion hazard

ATEX Intrinsic safety version is available for taking measurements in zones under explosion hazard.

II 1/2G Ga/Gb Ex ia IIC T4/T5/T6
I M1 Ex ia I
II 1DEx ia D20 T105C

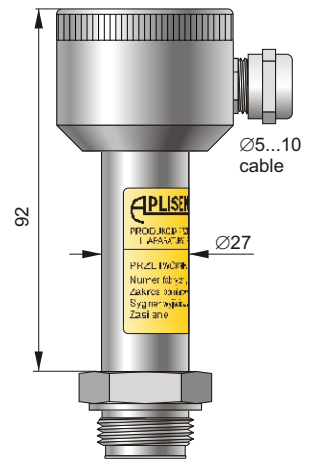
IECEx Ex ia IIC T4...T6, Ga/Gb
Ex ia ima

The installation of the transmitter in a zone under explosion hazard requires the use of a EEx power supply. We recommend the use of the Aplisens ZS-30EEx1, ZS-31EEx1 power supply and separator.



PCE-28 transmitter with PD type electrical connection

Degree of protection IP-65
Angle electrical connector DIN 43650
When the connector is removed both zero point adjustment and range setting potentiometers are accessible.



PCE-28 transmitter with PZ type electrical connection

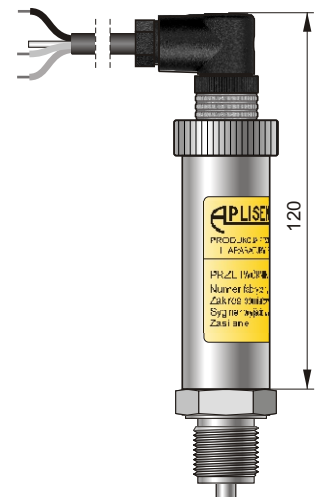
Degree of protection IP-66
Electrical connection in a steel field casing with a packing gland M20×1.5. When the box is opened both zero point adjustment and range setting potentiometers are accessible.



PCE-28 transmitter with PK type electrical connection

Degree of protection IP-67
The cable electrical connection, contact with the atmosphere through the capillary inside the cable. The cable length 3 m (other cable lengths available, if required)

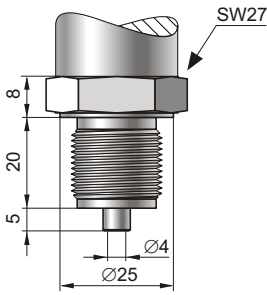
Black (-)
Red (+)
Blue □



PCE-28 transmitter with PM12 type electrical connection

Degree of protection IP-67
Electrical connection with thread M12×1, contact with the atmosphere through the capillary inside the cable. The cable length 3 m (other cable lengths available, if required)

Process connections



G1/2 type

G1/2", Ø4 hole

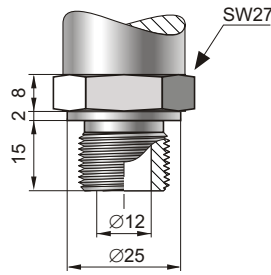
M type

M20×1.5, Ø4 hole

Wetted parts material: **316Lss**
Special version: **Au - gold plated diaphragm [range>70bar]**

Application

Applicable to measurement the pressure of uncontaminated gases, vapours and liquids at any measurement ranges



GP type

G1/2", Ø12 hole

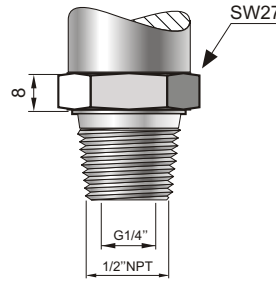
P type

M20×1.5, Ø12 hole

Wetted parts materials:
316Lss – standard
Hastelloy C-276

Application

Applicable to measurement the pressure of viscous and contaminated media.



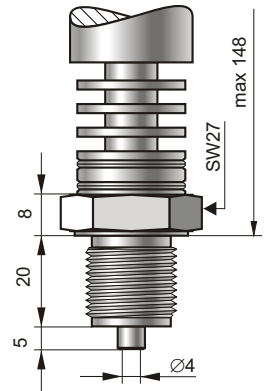
1/2''NPT type

1/2''NPT, internal thread G1/4''

Wetted parts materials:
316Lss – standard

Application

Applicable to measurement the pressure of uncontaminated gases, vapours and liquids.
Max. range 1000bar

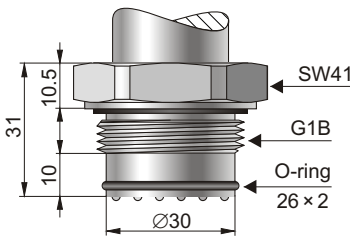


RG type G1/2" with radiator
RM type M20×1.5 with radiator

Wetted parts materials: **316Lss**

Application

Applicable to measurement the pressure of uncontaminated gases, vapours and liquids at the temperature up to 170°C, with no impulse line.
Min. range 160 mbar
Max. range 40 bar



CG1 type

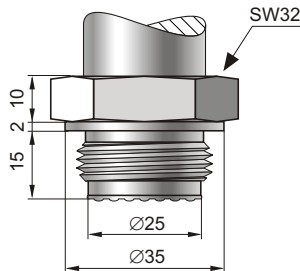
G1" with flush diaphragm

Wetted parts material:

316Lss

Min. range 100mbar

Max. range 70bar



CM30×2 type

M30×2 with flush diaphragm

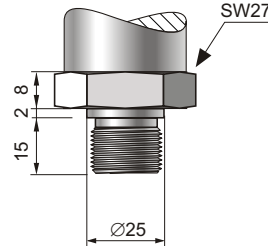
Wetted parts material:

316Lss – standard

Hastelloy C-276

Min. range 250 mbar

Max. range 70 bar

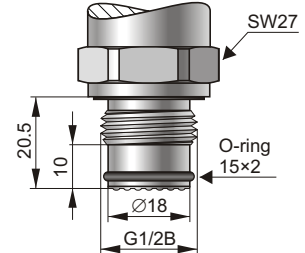


G1/4''

Wetted parts materials: **316Lss**

Min range: 10mbar

Max range: 1000bar



CG1/2 type

G1/2" with flush diaphragm

Wetted parts materials: **316Lss**

Min. range 2.5 bar

Max. range 600 bar

Application

Applicable to measurement the pressure of dusty gases, and viscous or solidifying liquids.

The transmitters with flush diaphragm are applied in food industry and pharmaceutical industry in aseptic systems. Using of Aplisens fitting sockets with a seal upstream the stub thread (see page 64) is recommended.

Technical data

Any measuring range

0... 10 mbar ÷ 0...1000 bar (over pressure, under pressure);
400 mbar ÷ 80 bar (absolute pressure)

| | 100 mbar | Measuring Range 400 mbar | 0...1 bar ÷ 1000 bar |
|--|--|----------------------------------|--|
| Overpressure Limit (repeated, without hysteresis) | 1 bar | 2.5 bar | 4 x range max 1200 bar |
| Damaging Overpressure | 2 bar | 5 bar | 8 x range,max 2000 bar |
| Accuracy | 0.3% | 0.2% (0,16%– special version) | |
| Long term stability | 0.2% / year | 0.1% / year | |
| Thermal error | Typically 0.3% / 10°C max 0.4% / 10°C | | Typically 0.2% / 10°C max 0.3% / 10°C |

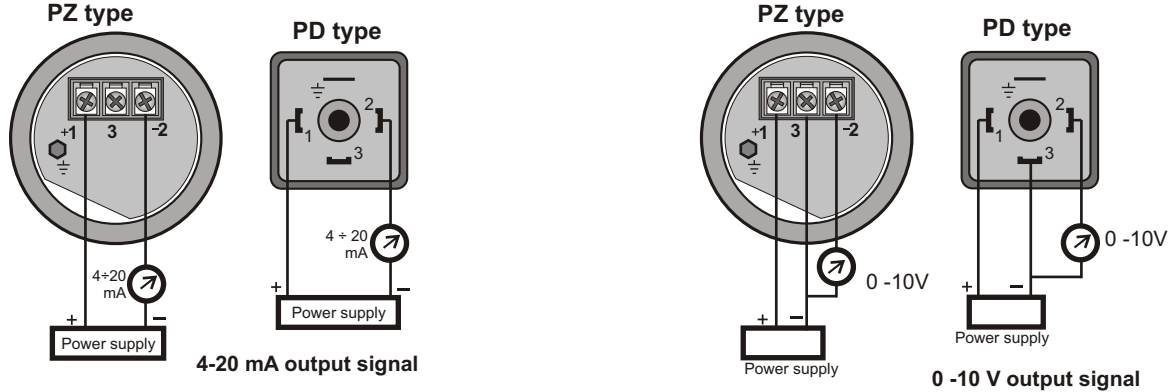
Hysteresis, repeatability 0.05%
Thermal compensation range -10 + 80°C
Operating temperature range (ambient temp.) -40 + 80°C
Medium temperature range -40 + 120°C - direct measurement
 over 120°C - measurement with the use of impulse line, radiator or diaphragm seal.

CAUTION: the medium must not be allowed to freeze in the impulse line or close to the pipe stub of the transmitter.

Output signal 4 + 20 mA, two wire transmission **Power supply** 10.5 + 36VDC (EEx 12...28V)
 0+10V 15...30VDC (output 0...10V)
Material of the wetted parts (316Lss), Hastelloy C276, Au **Error due to supply voltage changes** 0.005%/ V
Material of the casing 0H18N9 (304ss)

$$\text{Load resistance } R [\Omega] \leq \frac{U_{\text{sup}} [\text{V}] - 10.5\text{V}}{0.02\text{A}}$$

Electrical diagrams



Pressure transmitter PCE-28/Modbus

Communication

Pressure transmitter with communication protocol Modbus RTU. The communication standard for data interchange with the transmitter is the Modbus RTU. Communication with the transmitter is carried out with PC using RS converter and Aplisens software.

Technical data*

Metrological parameters

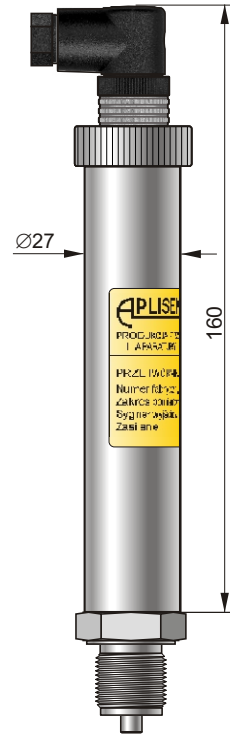
Accuracy $\leq \pm 0,1\%$
Long-term stability \leq accuracy for 3 years
 (for nominal range)
Thermal error $< \pm 0,1\%$ (FSO) / 10°C
 max $\pm 0,4\%$ (FSO) in the whole compensation range
Thermal compensation range. -25...80°C (other range on request)
Additional electronic damping 0...30 s

Electrical parameters

Power supply 6...28 V DC
Transmission range 1200 m
Transmission protocol MODBUS RTU
Address space 1...247 devices address
Transmission speed 600...115200 bps
Parity transmission no parity, odd, even
frame transmission 10...11 bitów (1, 2 bit-stop)
 * more information about electrical parameters available in user's manual.

Please note:

- Version PCE-28/Modbus is not available with ATEX certificate.



Electrical connection

| | Function | PM12 connector |
|---------|----------|----------------|
| Power | GND | 3 |
| | +Vcc | 4 |
| Digital | RS-485A | 2 |
| | RS-485B | 1 |

Ordering Procedure

| Model | Code | Description |
|--------------------------------------|---|--|
| PCE-28 | | Pressure transmitter. |
| Versions, certificates* | /Exia..... | Ex II 1/2G Ga/Gb Ex ia IIC T4/T5/T6, I M1 Ex ia I, II 1D Ex ia D20 T105C (only for transmitters with 4..20mA out). Transmitter with output signal (0...5V /0,5...4,5V) and ATEX certificate is supplied as a model: PC-29A/Exia : II 1/2G Ex ia IIB T5 I M1 Ex ia I |
| | /MR..... | Transmitter with output signal (0...5V /0,5...4,5V) and ATEX certificate is supplied as a model: PC-29B/Exia : II 1/2G Ex ia IIC T5 I M1 Ex ia I |
| *) more than one option is available | /MR..... | Marine certificate - DNV |
| | /Tlen..... | for oxygen service(sensor filled with Fluorolube fluid, only M,G1/2 pr. conn.) |
| | /H..... | version with high overload capacity and integrated circuit offering excess voltage protection |
| | /D..... | version with hydraulic gland for high-pressure hydraulic systems |
| | /PED..... | European Pressure Equipment Directive N° 97/23/EC, category IV (device is supplied as a PC-28) |
| | /0,16%..... | accuracy <0,16% (available for ranges ≥400mbar) |
| | /Modbus..... | Modbus communication protocol (version with ATEX not available) |
| Measuring range | /.....÷..... [required units] | Measuring range in relation to 4mA and 20mA (or 0 and 10V) output. Units: bar, MPa, kPa, etc. |
| Analog output signal | ⇒ (without marking)..... /0...10V..... /0-2,5V..... /0-3,3V..... /0-5V..... /0,5-4,5V..... | 4...20mA (power supply 10,5÷36VDC) 0...10V DC (power supply 15÷36VDC) 0...2,5V DC (power supply: 3,3VDC) 0...3,3V DC (power supply: 4,5 VDC) 0...5V DC (power supply: 8-14,1VDC) 0,5...4,5V (power supply: 8-14,1VDC) |
| Casing, Electrical connection, | ⇒ /PD..... PZ..... PZ/316..... PM12..... PK..... (if other length of cable is required, please specify it /K=...[m]) | Housing Ip65 with DIN43650 connector. 304SS housing, IP66, packing gland M20x1,5. 316SS housing, IP66, packing gland M20x1,5. Housing IP67 with thread M12x1 and connector 304SS housing, IP67, cable electrical connection, 3m of cable |
| Process connections | ⇒ /M..... /M.(Au)..... /G1/2"..... /G1/2"(Au)..... /G1/4"..... /P..... /1/2"NPT..... /P (Hastelloy)..... /GP..... /GP (Hastelloy)..... /CM30x2..... /CM30x2 (Hastelloy)..... /CG1"..... /CG1/2"..... /code of diaphragm seal..... | Thread M20x1,5 (male) with Ø4hole, wetted parts SS316L Thread M20x1,5 (male) with Ø4hole, gold plated diaphragm [range>70bar] Thread G1/2" (male) with Ø4hole , wetted parts SS316L Thread G1/2" (male) with Ø4hole , gold plated diaphragm [range>70bar] Thread G1/4" (male), wetted parts SS316L Thread M20x1,5 (male) with Ø12hole, wetted parts SS316L Thread 1/2"NPT (male) with internal G1/4"(f) thread, wetted parts SS316L Thread M20x1,5 (male) with Ø12hole, wetted parts Hastelloy C 276 Thread G1/2" (male) with Ø12hole , wetted parts SS316L Thread G1/2" (male) with Ø12hole , wetted parts Hastelloy C 276 Thread M30x2 with flush diaphragm, wetted parts SS316L Thread M30x2 with flush diaphragm, wetted parts Hastelloy C 276 Thread G1" with flush diaphragm, wetted parts SS316L Thread G1/2" with flush diaphragm, wetted parts SS316L Diaphragm seal (see chapter of diaphragm seals) |
| Other specification | /..... | Description of required parameters (e.g. non-standard process connection G3/4" or M22x1.5) |

The most typical specification is marked by "⇒" mark.

Example1: Pressure transmitter , range 0 ÷ 1 bar absolute pressure, inverted output (20..4mA), housing PK with cable L=10m, process connection G1/2"

PCE-28/1÷0 bar ABS/PK/K=10m/G1/2

Example2: Pressure transmitter PCE-28, range -1 ÷ 5 bar, communication protocol Modbus, housing PK with cable L=10m, process connection G1/2"

PCE-28/Modbus/-1 ÷ 5bar/PK/K=10m/G1/2"