1. Intended Use

The PD100 is purposed for continuos measurement of liquid or gaseous medium pressure. The measured pressure is converted into standard 4 – 20 mA analog current signal.

Application area: industrial monitoring systems, industrial automatic control and accounting systems.

The PD100 is intended for use with the process medium as follows: gaseous medium and steam-water mixtures (including process water). The medium pressure may not exceed the PD100 measurement full scale (FS) upper limit .

PD100 can be ordered in various designs depending on specifications required. Ordering key:

PD100 -	X	-	X	X	X	X	-	X	-	X
Input [bar]										
0...0.35	G,A		4	0	0	M				
0...0.7	G		7	0	0	M				
0...1	G,A		1	P	0	B				
0...2.5	G,A		2	P	5	B				
0...6	G,A		6	P	0	B				
0...10	G,A		0	1	0	B				
0...16	G,A,S		0	1	6	B				
0...25	S		0	2	5	B				
0...60	S		0	6	6	B				
0...100	S		1	0	0	B				
Accuracy										
0.50 %								5		
0.25 %								2		
Process connection										
G1/2"										7
G1/4"										8

G: Gauge pressure
A: Absolute pressure
S: Sealed gauge pressure

For detailed information please refer to the PD100 User Guide available on the homepage *www.akytec.de*.

2. Specifications

Table 1 Specifications

Parameter	Value
Power supply	
Type of the supply circuit	Loop powered, 2−wire current loop 4...20 mA
Power supply voltage	12...30 V DC
Maximum power consumption	0.8 W
Pressure measurement channel	
FS upper limit *	see appropriate input ranges (refer to PD100 ordering key)
Maximum overload pressure	200 % FS upper limit
Output channel	
Output signal	4...20 mA, DC
Load resistance	refer to the *Section 4*
Mechanical	
Process connection	G1/2; G1/4 M20x1,5; M14×1.5 NPT1/4, Z1/4 NPT1/2
Type of electrical connector	EN175301-803 Form A (DIN 43650A)
IP Code (housing)	IP65
Dimensions	refer to the *Fig. 1*
Environmental conditions	
Process medium temperature	from −40 °C to +125 °C
Ambient air temperature	from −20 °C to +85 °C
Atmospheric pressure	from 84,0 kPa to 106,7 kPa

NOTE
* The lower FS limit depends on the measured pressure type (G, A or S)

3. Installation

WARNING
Switch the transmitter power supply off and make sure that there is no process medium input pressure applied to the transmitter before performing any montage and maintenance works with the transmitter!

CAUTION
Before starting the transmitter installation, make sure that the process medium pressure values lie within the transmitter pressure measurement range. DO NOT USE the transmitter in systems with the process medium pressure exceeding the transmitter maximum overload pressure!

NOTICE
DO NOT USE the transmitter in systems with no protection from pressure bursts (e. g. under system hydraulic pressure tests) provided for the transmitter. Systems must be equipped with appropriate shut-off valves to avoid applying input pressure to the transmitter.

The transmitter overall and connecting dimensions are given in the *Fig. 1*.

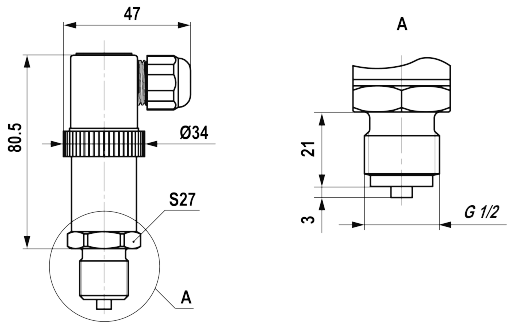


Fig. 1 – Overall and connecting dimensions

The transmitter is to be mounted onto straight-line outlet pipes or bosses.

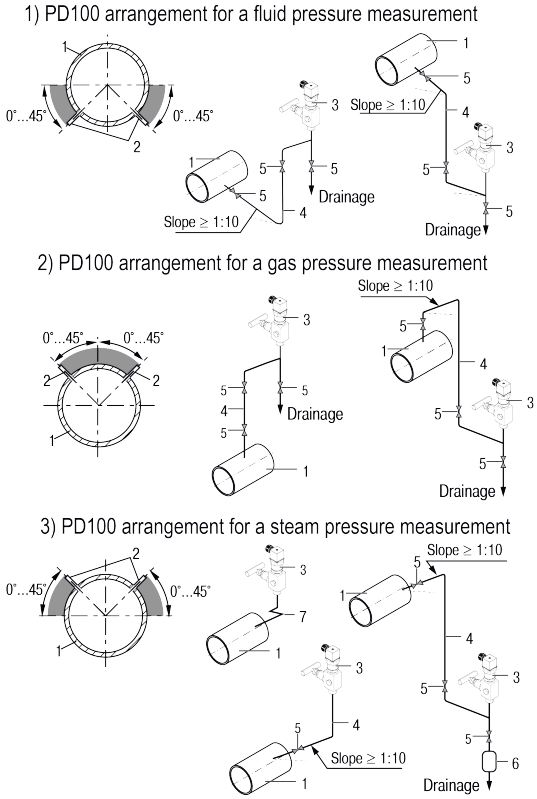
NOTICE
DO NOT install the transmitter onto a boss filled with water!

Use the sealing ring (delivered with the transmitter) between the transmitter process union and the mating part. A similar seal of the same size and material also may be used for sealing.

CAUTION
Purge the impulse piping before starting montage of the transmitter. Use specialised equipment for purging. Purging the impulse piping through the transmitter is PROHIBITED!

NOTICE
DO NOT exceed torque of 50 Nm when tightening the nut of the transmitter union.

The recommended PD100 arrangement schemes depending on the specific process medium as well as outlet pipes' position for the horizontal and angled pipelines are given in the *Fig. 2*.



1 - Pipline; 2 - Pipline outlet pipe; 3 - PD100 (with valve unit); 4 - Impulse piping; 5 - Shut-off valve; 6 - Condensate container; 7 - Single coil impulse pipe

Fig. 2 – Recommended arrangement schemes

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The point of the transmitter montage onto straight-line outlet pipes must be as far as possible from pumps, shut-off devices, pipe elbows, pressure compensators, and other hydraulic equipment.

A one-side slope (not less than 1:10) of the impulse piping should be provided as follows:

- upward slope from the pressure intake point to the transmitter if the process medium is a gas or a steam;
- downward slope from the pressure intake point to the transmitter if the process medium is a fluid.

Otherwise, install settling vessels at impulse pipeline lower points (when measuring gaseous medium pressure), or install gas collectors at impulse pipeline most upper points (when measuring liquid medium pressure).

4. Connection

The electrical connections between the transmitter, the power supply and the voltage signal receiver must be routed in a separate cable line. It must be routed separately from any other power cables as well as from the cables which are sources of RFI and impulse interferences.

A round cable must be used for the transmitter signal lines and power connection. The cable outside diameter must be from 3 mm to 7 mm, the cable wire cross-section must be from 0.2 mm² to 0.8 mm².

Prepare the cable before connection according to the steps below (see the *Fig. 3*):

1. Remove the cable jacket insulation over a length of 35 mm;
2. Strip off insulation of the cable wires over a length of 5 mm and clean the wire conductors;
3. Twist and tin the wire conductors or terminate them using cable ferrules.

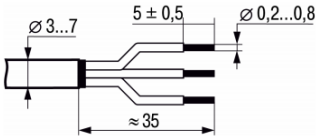

Fig. 3 – Preparing the cable

Connect the cable wires to the transmitter according to the steps below (see the *Fig. 4*):

1. Loosen the cable gland of the angular connector and then enter the prepared cable inside the housing of the angular connector through the cable gland;
2. Untighten screws of the terminals "**1**", "**2**"и "⏚" on the terminal block, then insert the wire conductors into the terminals and tighten screws till stop;
3. Insert the terminal block with the cable wires connected inside the housing of the angular connector and then press it until it clicks;
4. Insert the sealing gasket into the terminal block;
5. Tighten the cable gland
6. Insert the mounting screw (with the sealing ring) inside the mounting hole on the angular connector housing;
7. Connect the transmitter housing with the angular connector;
8. Tighten the mounting screw on the angular connector housing.

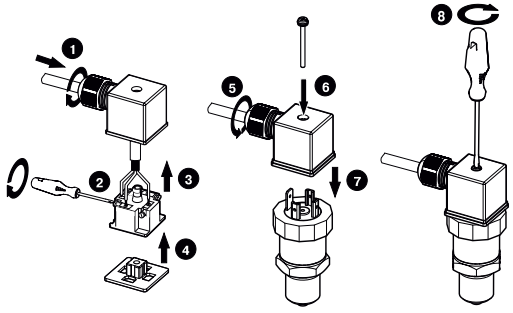

Fig. 4 – Connection of the cable wires

Proceed in the reverse order for disconnecting the cable from the transmitter.

NOTICE
Observe the polarity when connecting power supply to the transmitter!

CAUTION
Make sure that the cable gland is properly tightened after the cable connection is completed

Make the cable drain loop to avoid contacting the condensate with the connector or the cable gland of the transmitter. The lowest point of the drain loop must be positioned lower than the cable gland of the transmitter (see the *Fig. 5*).

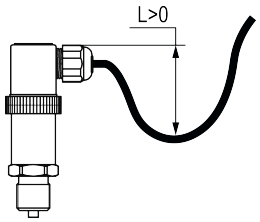

Fig. 5 – Drain loop

Connect the transmitter to the external equipment according to the wiring diagram given in the *Fig. 6*.

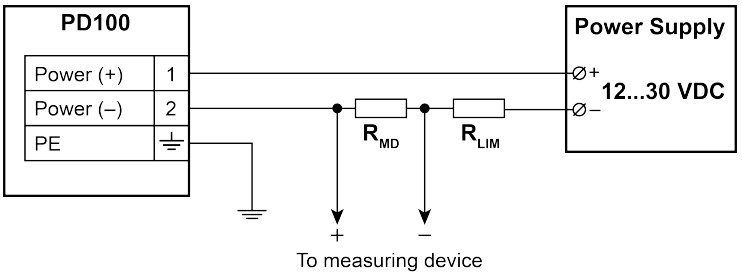

Fig. 6 – Wiring

The load resistance R_L limiting must meet the requirement as follows:

$$R_L = R_{MD} + R_{MD} \geq R_{L\,MAX};$$

$$R_{L\,MAX} = \frac{U_{SUP} - 7}{0.023},$$

where:
R_{MD} – measuring device input resistance, Ohm;
R_{LIM} – limiting resistance, Ohm;
$R_{L\,MAX}$ – maximum load resistance, Ohm;
U_{SUP} – power supply voltage, V.

5. Faults

Table 2 Possible faults and remedies

Fault	Possible cause	Remedy
No output signal	Power supply polarity reversal	Reverse power supply polarity
	Load or power supply circuit break	Find and repair the break
	Power supply short circuit	Find and repair the short circuit
Output signal is unstable or remains constant even if pressure is changing	Chamber of the transmitter process union is clogged	Clean the process union chamber
	Loss of integrity in the process connection	Find the leakage and fix it
	Poor electrical contact because of oxidation of screw terminals.	Turn power off, clean contacts of the screw terminals
	Applied pressure exceeds FS upper limit	Make sure that the process medium pressure value lies within the transmitter pressure measurement range. If necessary, replace the transmitter by another one with the FS upper limit required
Output signal does not reach the value of 20 mA at appropriate input pressure applied	Load resistance is out of the required range	Meet the requirement as to limiting the load resistance (see *Table 1* and *Section 4*)
	Power voltage applied to the transmitter is not sufficient	Check the power supply voltage applied to the transmitter
Output signal value is lower than 4 mA	Power voltage is out of the required range	Meet the power supply requirements (see *Table 1*)

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