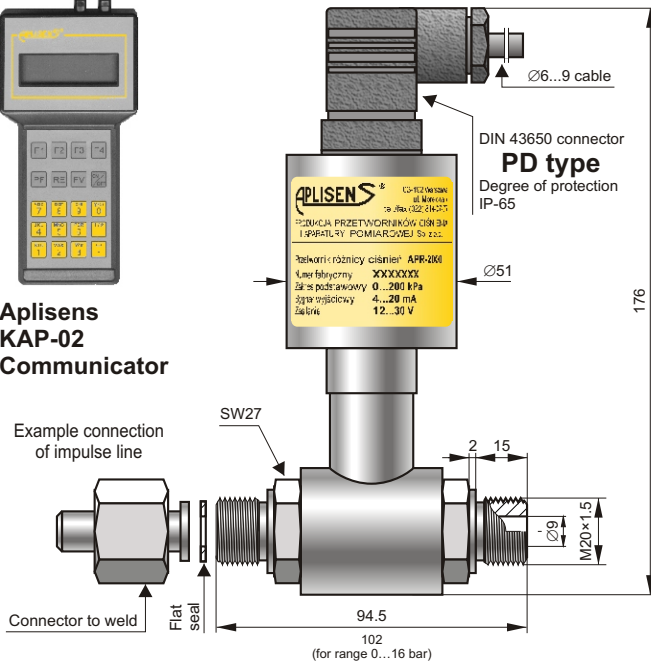


SMART DIFFERENTIAL PRESSURE TRANSMITTER APRE-2000

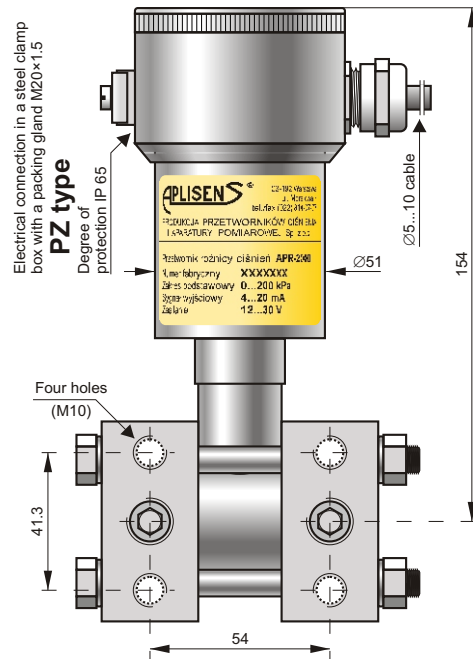
- ✓ 4...20 mA output signal + HART protocol
- ✓ ATEX Intrinsic safety
- ✓ PED Conformity (97/23/EC)
- ✓ Selectable linear or radical conversion characteristic
- ✓ Overloads up to 320 bar total static pressure
- ✓ Accuracy 0.1%



Aplisens KAP-02 Communicator



Transmitter APRE-2000PD
Version with **P type** process connection.
Static pressure limit **40 bar**



Transmitter APRE-2000PZ – version with **type C** process connection to mount together with a valve manifold
Static pressure limit **250 or 320 bar**

Application and construction

The APRE-2000 transmitter is applicable to the measurement of differential pressure of gases, vapours and liquids. The active element is a piezoresistant silicon sensor separated from the medium by separating diaphragms and a specially selected type of manometric fluid. The special design of the active sensing element ensures that it is able to withstand pressure surges and overloads of up to 25 or 32 MPa. Electronics in the casing with a degree of protection IP65.

Communication and configuration

The communication standard for data interchange with the transmitter is the HART protocol.

Communication with the transmitter is carried out with:

- ◆ a KAP-02 communicator,
- ◆ some other HART type communicators,
- ◆ a PC with the RS-HART converter and Aplisens RAPORT-01 configuration software. Along with the RAPORT-01, the SECTIONAL LINEARIZATION software is supplied. The software enables leading of the 21-point, non-linear user's characteristic into the transmitter.

The data interchange with the transmitter enables the user to:

- ◆ identify the transmitter;
- ◆ configure the output parameters:
 - measurement units and values of the start and end-points of the measuring range;

- damping time-constant;
- conversion characteristic (inversion, user's non-linear characteristic);
- ◆ read the currently measured pressure value of the output current and the percentage output control level;
- ◆ force an output current with a set value;
- ◆ calibrate the transmitter in relation to model pressure.

Installation

The transmitter with **P type** process connection is not heavy, so it can be fitted directly onto impulse lines. For fitting in any desired position on a Ø25 pipe an Aplisens mounting bracket (Ø25 **mounting bracket**, see page 55) is recommended.

The version with **C type** process connections can be fitted directly to a 3- or 5-valve manifold. We recommend factory-mounted transmitters with VM type valve manifold (see page 52). A transmitter without a valve manifold can be fitted in any position on a 2" pipe or on a wall using the **C-2" mounting bracket** (see page 55).

When the special process connections are required for the level measurement of media in closed tanks (e.g. in the sugar and chemical industries) the transmitter is fitted with an Aplisens diaphragm seal. Sets of differential pressure transmitters with diaphragm seals are described in detail presented in the further part of the catalogue.

Measuring ranges

| No. | Nominal measuring range (FSO) | Minimum set range | Rangeability | Overpressure limit / Static Pressure Limit |
|-----|-------------------------------|-------------------|--------------|---|
| 1 | 0...16 bar (0...1.6MPa) | 1.6 bar (160 kPa) | 10:1 | 250 bar / (320 bar option) (40 bar for P type process connection) (250 bar for PED version) |
| 2 | 0...2 bar (0...200kPa) | 0.2 bar (20kPa) | 10:1 | |
| 3 | 0...1 bar (0...100kPa) | 70 mbar (7kPa) | 14:1 | |
| 4 | 0...0.25 bar (0...25kPa) | 10 mbar (1kPa) | 25:1 | |
| 5 | -5...70 mbar (-0.5...7kPa) | 4 mbar (0.4kPa) | 18:1 | |
| 6 | -0.5...0.5 bar* (-50...50kPa) | 0.1 bar (10kPa) | 10:1 | |

* – recommended for measurement of levels with a direct mount diaphragm seal and a filled (or empty) impulse line.

Technical data

Metrological parameters

Accuracy $\leq \pm 0.1\%$ of calibrated range
Long term stability \leq accuracy for 3 years (for the nominal measuring range)
Thermal error $< \pm 0.08\%$ (FSO) / 10°C
 max. $\pm 0.3\%$ (FSO) in the whole compensation temperature range
Thermal compensation range $-25...80^\circ\text{C}$
Zero shift error for static pressure
 0.02% (FSO) / 10 bar for range 4
 0.05% (FSO) / 10 bar for range 5
 0.08% (FSO) / 10 bar for ranges 1, 2, 3 and 6
 Zeroing the transmitter in conditions of static pressure can eliminate this error.

Time Constant 500 ms
Additional electronic damping 0...30 s
Error due to supply voltage changes 0.002% (FSO) / V

Electrical parameters

Power supply 10.5...36 V DC (EEx 12...28 V)
Output signal 4...20 mA, two wire transmission
Load resistance $R[\Omega] = \frac{U_{\text{supl}}[\text{V}] - 10.5\text{V}}{0.02\text{A}} \cdot 0.85$
Resistance required for communication 250...1100 Ω

Materials

Wetted parts 00H17N14M2 (316Lss)
Diaphragms Hastelloy (C276)
Casing 0H18N9 (304ss)

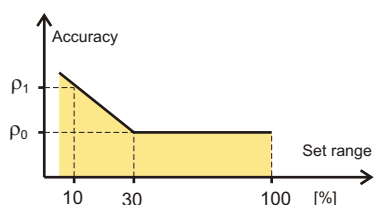
Operating conditions

Operating temperature range (ambient temp.) $-25...85^\circ\text{C}$
Medium temperature range $-25...120^\circ\text{C}$
 over 120°C – measurement with the use of impulse line or diaphragm seals up to 100°C PED version
CAUTION: the medium must not be allowed to freeze in the impulse line or close to the process connection of the transmitter

Special versions, certificates

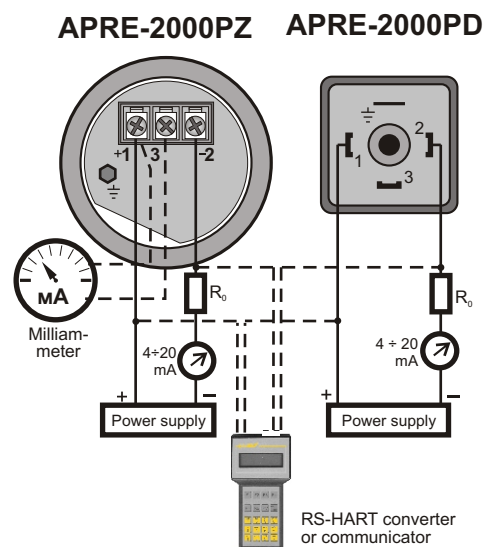
- ◇ **EEx** – Atex Intrinsic safety
- ◇ **PED** – European Pressure Equipment Directive N° 97/23/EC
- ◇ **-7...7 mbar** – basic range -7...7 mbar (overpressure limit and static pressure limit – 10 bar)
- ◇ **320 bar** – static pressure limit: 320 bar (not for PED version)
- ◇ **Tlen** – transmitter designed for oxygen (only type P process connection; ranges: 3, 4)
- ◇ **Others**

Accuracy depending on the set range



ρ_0 – error for nominal measuring range (0...100% FSO)
 ρ_1 – error for range 0...10% FSO
 $\rho_1 = 2 \times \rho_0$
 Numerical error values are given in the technical data under metrological parameters

Electrical diagrams



Ordering procedure

APRE-2000PD /
 APRE-2000PZ /

Special versions: **EEx**, **PED**, **-7...7mbar**, **320 bar**, **Tlen**, **others** – description

Nominal measuring range

Start of set range – in relation to 4 mA output

End of set range – in relation to 20 mA output

Process connection: type **P**, type **C**
 or type of diaphragm seal according to the diaphragm seals sheets

Example: APRE-2000PZ differential pressure transmitter / standard version / nominal measuring range 0÷1 bar / cal. range 0÷0.5 bar with inverted output / type P process connection

APRE-2000PZ / 0 ÷ 1 bar / 0.5 ÷ 0 bar / P