

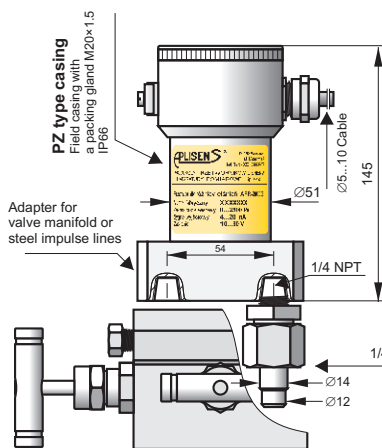
# SMART DIFFERENTIAL PRESSURE TRANSMITTER

## for low ranges APRE-2000G

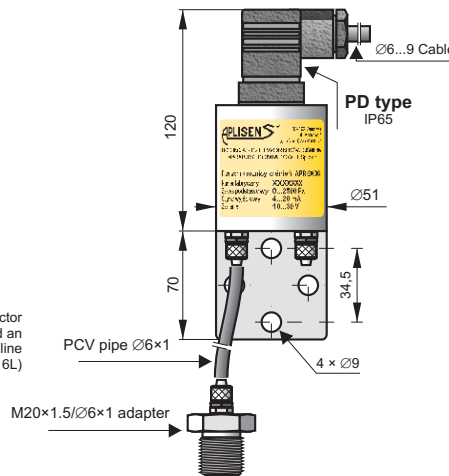


min. range  
0.2 mbar

- ✓ Programmable range, zero shift, damping ratio and characteristic
- ✓ 4...20 mA output signal + HART protocol
- ✓ Accuracy from 0.1%
- ✓ ATEX Intrinsic safety (only APRE-2000G/PD, APRE-2000G/PZ)



**APRE-2000G Industrial Version, C type** process connector to be mounted along with a valve manifold an example with **PZ type** Electrical Connection



**APRE-2000G Economic Version**, process connection with terminal connecting to Ø6 pipe (**PCV type**). An example with **PD type** Electrical Connection



**APRE-2000G/N wall-mounted version** with display and local keys allowing programming, process connection **PCV type**. Dimensions: width: 80, height: 110, depth: 67

### Application

The APRE-2000G transmitter is applicable to gases, to the measurements of their pressure, underpressure and differential pressure. Typical applications include the measurement of blast pressure, chimney draughts or pressure / underpressure in furnace chambers. The ability to select the radical conversion characteristics enables the transmitter to be used in gas-flow measurement systems using reducing pipes or other impeding elements. The transmitter can withstand overpressure up to 1 bar. The housing of the electronic circuit has the degree of protection IP65, IP66, IP67.

### Configuration, calibration

The following metrological parameters can be configured:

- ◆ The units of pressure,
- ◆ Start and end-points of measuring range, damping time constant,
- ◆ Conversion characteristic (radical, inversion, user's non-linear characteristic).

Ability to calibrate the transmitter with reference to a standard pressure.

### Communication

Communication with the transmitter is carried out with a KAP-03 communicator, some other Hart communicators or a PC with an HART/USB converter and RAPORT 2 configuration software.

Additionally, the data interchange with the transmitter enables the users to identify the transmitter, read the currently measured pressure difference value, output current and percentage of measuring range.

### Installation

The economical version can be mounted on any stable construction using the assembly fixture with Ø9 opening. The transmitter's connection shanks have terminals to be connected to the elastic Ø6x1 impulse line. Where the pulse comes through a metal pipe, we suggest an M20x1.5 adapter for a Ø6x1 fitting using.

The transmitter with a C type connector should be mounted on a 3- or 5-valve manifold. We recommend to use our pre-assembled transmitters with VM type valves (page IV/ 2).

## Operating guidelines

The transmitter should be mounted in a vertical position. The impulse lines should be connected in such a way that any condensed liquids flew off away from the device.

Where there is a significant difference in height between the place where the transmitter is mounted and the place where the pulse is taken, the measurement may vary with the temperature of the impulse line. Connecting a compensating pipe close to the impulse line, from the transmitter's reference connection shank to the height at which the impulse is taken can minimise this effect.

To prevent dust from entering the measuring cells, the impulse lines should be attached with care, with particular attention to the tightness of the connections between the impulse lines and the transmitter.

## Measuring ranges

| Nominal measuring range (FSO)   | Minimum set range | Overpressure limit | Static pressure limit |
|---------------------------------|-------------------|--------------------|-----------------------|
| 0...25 mbar (0...2500 Pa)       | 1 mbar (100 Pa)   | 1 bar              | 350 mbar              |
| -2,5...2,5 mbar (-250...250 Pa) | 0,2 mbar (20 Pa)  | 350 mbar           | 350 mbar              |
| -7...7 mbar (-700...700 Pa)     | 1 mbar (100 Pa)   | 350 mbar           | 350 mbar              |
| -25...25 mbar (-2500...2500 Pa) | 5 mbar (500 Pa)   | 1 bar              | 1 bar                 |
| -100...100 mbar (-10...10 kPa)  | 20 mbar (2 kPa)   | 1 bar              | 1 bar                 |

## Meterological parameters

| Nominal range | 0...25 mbar | -2,5...2,5 mbar | -7...7 mbar | -25...25 mbar | -100...100 mbar |
|---------------|-------------|-----------------|-------------|---------------|-----------------|
| Accuracy      | ≤ ±0,075%   | ≤ ±0,25%        | ≤ ±0,1%     | ≤ ±0,1%       | ≤ ±0,075%       |

## Technical data

|  |  |
|--|--|
| <b>Thermal error</b>                       | < ±0,1% (FSO) / 10°C<br>max. ±0,4% (FSO) in the whole compensation range |
| <b>Thermal compensation range</b>          | -10...70°C   |
| <b>Additional electronic damping</b>       | 0...30 s   |
| <b>Error due to supply voltage changes</b> | 0,002% (FSO) / V   |

## Operating conditions

|  |                          |
|--|--------------------------|
| <b>Operating temperature range (ambient temp.)</b> | -30...85°C               |
|  | Exia version: -25...80°C |
|  | APRE-2000G/N: -25...80°C |


## Electrical parameters

|  |   |
|--|---|
| <b>Power supply</b>                          |   |
| APRE-2000G/PD and PZ                         | 7,5...55 VDC (Ex ia 7,5...30 VDC)                                   |
| APRE-2000G/N                                 | 12...36 VDC   |
|  | (Additional voltage drop when display illumination switched on: 3V) |
| <b>Output signal</b>                         | 4...20 mA + HART  |
| <b>Load resistance</b>                       | $R[\Omega] \leq \frac{U_{sup}[V] - U^*}{0,0225A}$                   |
| U* -   | APRE-2000G/PD and PZ: 7,5 VDC                                       |
|  | APRE-2000G/N: 12 VDC  |
| <b>Resistance required for communication</b> | min. 240 Ω  |

## Materials

|                                       |             |
|---------------------------------------|-------------|
| APRE-2000G/PD and PZ:                 |             |
| Casing                                | SS304       |
| adapter C type                        | SS304       |
| adapter PCV type (on Ø6 elastic pipe) | brass       |
| APRE-2000G/N:                         |             |
| Casing                                | plastic box |

## Ordering procedure

| Model                      | Code                      | Description  |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
|----------------------------|---------------------------|--|-------|----------------|-----------------------|----------------|---------------------------|------------------|------------------------|----------------|----------------------------|-----------------|---------------------------|----------------|
| APRE-2000G                 |                           | Smart differential pressure transmitter  |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
| Certificates               | /Exia.....                |  II 1/2G Ex ia IIC T4/T5/T6 Ga/Gb<br>II 1D Ex ia IIC T110°C Da<br>I M1 Ex ia I Ma   |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
| Casing, output signal      | /PD.....                  | Housing IP65 with DIN EN 175301-803 connector, without display, output 4-20mA + Hart   |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
|                            | /PZ.....                  | 304SS housing, IP66, without display, output 4-20mA + Hart   |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
|                            | /N.....                   | Housing IP65, electrical connector PG-7 (ATEX version not available)   |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
| Nominal measuring range    | /0+25 mbar.....           | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Range</th> <th style="text-align: center;">Min. set range</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0+25 mbar (0+2500 Pa)</td> <td style="text-align: center;">1mbar (100 Pa)</td> </tr> <tr> <td style="text-align: center;">-2.5+2.5mbar (250+250 Pa)</td> <td style="text-align: center;">0,2 mbar (20 Pa)</td> </tr> <tr> <td style="text-align: center;">-7+7 mbar (700+700 Pa)</td> <td style="text-align: center;">1mbar (100 Pa)</td> </tr> <tr> <td style="text-align: center;">-25+25 mbar (2500+2500 Pa)</td> <td style="text-align: center;">5mbar ( 500 Pa)</td> </tr> <tr> <td style="text-align: center;">-100+100 mbar (10+10 kPa)</td> <td style="text-align: center;">20mbar (2 kPa)</td> </tr> </tbody> </table> | Range | Min. set range | 0+25 mbar (0+2500 Pa) | 1mbar (100 Pa) | -2.5+2.5mbar (250+250 Pa) | 0,2 mbar (20 Pa) | -7+7 mbar (700+700 Pa) | 1mbar (100 Pa) | -25+25 mbar (2500+2500 Pa) | 5mbar ( 500 Pa) | -100+100 mbar (10+10 kPa) | 20mbar (2 kPa) |
|                            | Range                     | Min. set range   |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
|                            | 0+25 mbar (0+2500 Pa)     | 1mbar (100 Pa)   |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
|                            | -2.5+2.5mbar (250+250 Pa) | 0,2 mbar (20 Pa)   |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
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| -25+25 mbar (2500+2500 Pa) | 5mbar ( 500 Pa)           |  |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
| -100+100 mbar (10+10 kPa)  | 20mbar (2 kPa)            |  |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
| /-2,5+2,5 mbar.....        |                           |  |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
| /-7+7 mbar.....            |                           |  |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
| /-25+25 mbar.....          |                           |  |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
| /-100+100 mbar.....        |                           |  |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
| Measuring set range        | /..... [required units]   | Calibrated range in relation to 4mA and 20mA output  |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
| Process connections        | /PCV.....                 | Process connection with terminal connecting for Ø6mm elastic pipe. Mounting bracket for wall mounting is a standard.   |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
|                            | /C.....                   | Thread 1/4 NPT F on cover flange. Material of cover flange 304ss. Allows mounting with a valve manifold.   |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
| Accessories                | /M20x1,5/Ø6.....          | Adapter from Ø 6mm elastic pipe for M20x1,5 M thread (only version with PCV process connection)  |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
|                            | /RedSpaw C.....           | Connector to weld impulse pipes dia. 12 and 14 mm, material 15HM. (only version with process connection C type)  |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
|                            | /+VM-3/A.....             | Assembled with a 3-way valve manifold ( further specification of manifold - see data sheet) . Only version with C type process connection.   |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
|                            | /+VM-5/A.....             | Assembled with a 5-way valve manifold ( further specification of manifold - see data sheet) . Only version with C type process connection.   |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |
| Other specification        | /.....                    | Description of required parameters   |       |                |                       |                |                           |                  |                        |                |                            |                 |                           |                |

**Example 1:** Differential pressure transmitter , nominal measuring range -7...7mbar, stainless steel casing, calibrated 0,5..1mbar, process connection PCV to elastic pipe Ø6mm plus two adapters from elastic pipe Ø6mm for M20x1.5 M thread

**APRE-2000G/PZ/-7...7mabr/-0,5...1mbar/PCV/M20x1,5/Ø6mm (x2)**

**Example 2:** Differential pressure transmitter , nominal measuring range -7...7mbar, calibrated 0...7mbar process connection PCV to elastic pipe Ø6mm, wall mounted version

**APRE-2000G/N/-7...7mabr/0...7mbar/PCV**