Differential Pressure Transmitter

Differential Pressure Transmitter TM-PRE-28

- Overloads up to 420 bar total static pressure
- Accuracy 0.25%
- Any range from 0…16 mbar up to 0…25 bar

- Intrinsic safety certificate (ATEX, IECEx)
- Marine certificate – DNV, BV

**Application**
The PRE-28 transmitter is applicable to the measurement of differential pressure of gases, vapours and liquids.

**Construction**
The active element is a piezoresistance silicon sensor separated from the medium by separating diaphragm and a specially selected type of manometric fluid. The special edging of the active sensing element ensures withstanding the pressure surges and overloads of up to 320 bar. The electronics is placed in a casing with a degree of protection IP56, 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 with P type process connection is not heavy, so it can be installed directly onto impulse lines. For fitting in any desired position on a 1 1/2" pipe the Aplisens mounting bracket (F125 mounting bracket, page IV/5) is recommended.

The version with C type process connection can be fitted directly to a 3- or 5-valve manifold. The factory-mounted transmitters with VM type valve manifold (page IV/2) are recommended. 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 (page IV/5).

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. The differential pressure transmitters with diaphragm seals are described in detail in the further part of the catalogue.

**Technical data**

- **Materials:**
  - Wetted parts: type P process conn. SS316L
  - type P(H) process conn. SS316L or Hastelloy C276
  - Diaphragm: SS316L, Hastelloy C276, Au
  - Casing: SS304

- **Hysteresis, repeatability:** 0.05%
- **Thermal compensation range:** 0÷+70°C
- **Operating temperature range:** -25÷+80°C
- **Medium temperature range:** -25÷+120°C (direct measurement) Over 120°C – measurement with use an impulse line or diaphragm seals

**CAUTION:** the medium must not be allowed to freeze in the impulse line or close to the process connection of the transmitter.
**Technical data**

**Any measuring range** 0...16 mbar + 0...25 bar

<table>
<thead>
<tr>
<th>Measuring Range</th>
<th>25 mbar</th>
<th>100 mbar</th>
<th>1 bar</th>
<th>2 bar</th>
<th>25 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overpressure Limit</td>
<td>250 mbar (option 420 bar)</td>
<td>25 mbar</td>
<td>100 mbar</td>
<td>1 bar</td>
<td>2 bar</td>
</tr>
<tr>
<td>Static Pressure Limit (repeated, without hysteresis)</td>
<td>(40 bar for P type process connection)</td>
<td>(40 bar for P type process connection)</td>
<td>(40 bar for P type process connection)</td>
<td>(40 bar for P type process connection)</td>
<td>(40 bar for P type process connection)</td>
</tr>
<tr>
<td>Accuracy</td>
<td>0,4%</td>
<td>0,4%</td>
<td>0,2%</td>
<td>0,2%</td>
<td>0,25%</td>
</tr>
<tr>
<td>Long term stability</td>
<td>0,6% / year</td>
<td>0,2% / year</td>
<td>0,1% / year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermal error</td>
<td>Typically 0,6% / 10°C max 1% / 10°C</td>
<td>Typically 0,3% / 10°C max 0,4% / 10°C</td>
<td>Typically 0,2% / 10°C max 0,3% / 10°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zero shift error for static pressure*</td>
<td>0,1% / 10 bar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Zeroing the transmitter in conditions of static pressure can eliminate this error.

**Output signal**

- 4...20 mA, two wire transmission
- 0...10 V, three wire transmission

**Power supply**

- **output 4...20 mA:** 8...36 VDC (Ex 9...28 VDC) version TR: 10,5...36 VDC (Ex 12...28 VDC)
- **output 0...10 V:** 13...30 VDC

**Error due to supply voltage changes**

- 0,005% (FSO) / V

**Load resistance**

- for current output: \( R_{\text{Load(V)}} \) \( \frac{U_{\text{Load(V)}}-1.4V}{0.02A} \)

**Measuring range**

- 4...20 mA output signal
- 0...10 V output signal

**Ordering procedure**

<table>
<thead>
<tr>
<th>Model</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE-28</td>
<td>Exia (IECEx).</td>
<td>Differential pressure transmitter</td>
</tr>
<tr>
<td>Versions, certificates</td>
<td>Ex ia I Ma</td>
<td>I 1/2G Ex ia IIC T4/T5/T6 Ga/Gb</td>
</tr>
<tr>
<td></td>
<td>I 1/2G Ex ia IIC T110°C Da</td>
<td>Ex ia I Ma</td>
</tr>
<tr>
<td></td>
<td>Ex ia IIC T4/T5/T6 Ga/Gb</td>
<td>IECEx</td>
</tr>
<tr>
<td></td>
<td>Ex ia IIC T110°C Da</td>
<td>Marine certificate – DNV, BV</td>
</tr>
<tr>
<td></td>
<td>THen</td>
<td>For oxygen service (sensor filled with Fluorotube fluid), only M and G1/2 connection</td>
</tr>
<tr>
<td></td>
<td>TR</td>
<td>Response time &lt;30ms; only 4...20mA output</td>
</tr>
</tbody>
</table>

**Measuring range**

- [-, -] (required units) | Measuring range in relation to 4mA and 20mA (or 0 and 10V) output |
- [4÷20 mA output signal] | 4÷20 mA output signal |
- [0÷10 V output signal] | 0÷10 V output signal |

**Power supply**

- 4÷20 mA / power supply 10,5÷36VDC (Ex 12÷28VDC)
- 0÷10VDC / power supply 13÷30VDC

**Electrical diagrams**

- Electrical diagrams

**Casing, electrical connection**

- [PD] | Housing IP65 with DIN43650 connector |
- [PZ] | 304SS housing, IP66, packing gland M20x1,5 |
- [PZ316] | 316SS housing, IP66, packing gland M20x1,5 |
- [PMM12] | Housing IP67 with thread M12x1 and connector |
- [PK12] | 304SS housing, IP67, cable electrical connection (3 m of cable in standard) |

**Process connections**

- [C] | Thread 1/4NPT F on the cover flanges cover flanges material SS316. Allows mounting with a valve manifold. Process connection of cover flange: M10 (option C/7/16) - 7/16 UNF acc. to IEC 61518 |
- [CR] | C-type process connection rotated 90° |
- [J] | Thread M20x1,5 (male) |
- [PN] | Thread 1/4NPT (female) |
- [D] | Diaphragm seal (see chapter of diaphragm seals) mounted on Hi side of transmitter, Lo side 1/4NPT Female |
- [F] | Gold plated diaphragms |
- [M] | Diaphragms material SS316L |
- [G] | Diaphragms material Hastelloy C276 |
- [H] | (IP and PN – all wetted parts in Hastelloy C276 on request) |
- [I] | Gold plated diaphragms |
- [K] | Material of diaphragms (refers only to C, CR, P, PN process connection) |
- [L] | Diaphragms material SS316L |
- [N] | Diaphragms material Hastelloy C276 |
- [O] | (IP and PN – all wetted parts in Hastelloy C276 on request) |
- [P] | Gold plated diaphragms |

**Material of diaphragms (refers only to C, CR, P, PN process connection)**

- [FPM Viton] | For oxygen service |
- [NBR] | (without marking) |

**Gasket (refers only to C, CR process connection)**

- [PTFE] | (without marking) |
- [NBR] | (without marking) |
- [PTFE] | (without marking) |

**Other specification**

- [C] | Description of required parameters |
- [S] | Description of required parameters |
- [M] | Description of required parameters |
- [T] | Description of required parameters |