Technical Datasheet

D-Series
SMART Differential Pressure Transmitter for Low Ranges
Models: DPR-2000G

Key Features
- High accuracy ±0.1%
- 4-20mA analogue with digital communications
- Fully HART ® compatible
- Static pressure limit up to 420 bar
- ATEX certified (Intrinsic Safety)
- Fully welded sensor guarantees tightness of oil systems for long term usage
- Ability to locally configure measuring range

Series Overview
The D-Series pressure, differential pressure and temperature transmitters offer customers cost-effective and accurate solutions to their individual process requirements. Available with a wide range of process connections and easily configurable via the D-Soft software, the D-Series can be used for a variety of applications where pressure, differential pressure, temperature, level or flow measurements are needed. Other models in this series include:
- DPR-2200 SMART Differential Pressure Transmitter with two diaphragm seals
- DPC-2000 SMART Pressure Transmitter
- DPT-2000 SMART Temperature Transmitter
- DPR-2000 SMART Differential Pressure transmitter

Product Applications
The DPR-2200 is suitable for a wide range of applications for measuring:
- Differential Pressure
- Level
- Flow

The choice of models available ensures that the DPR-2200 is:
- Suitable for use in corrosive atmospheres
- Resistant to chemical attack

How can we help you?
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+44 (0) 1252 729 140

www.delta-controls.com
The DPR-2000G is applicable to the measurement of differential pressure of gases. 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 IP66/67.

**Comms & Configuration**

Communication with the transmitter is carried out with a KAP-03 communicator, some other HART communicators, or a PC with a HART/USB/Bluetooth converter and Delta’s D-Soft 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.

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.

**Installation**

The economical version can be mounted on any stable construction using the mounting bracket. The transmitter’s connection shanks have terminals needing to be connected to the elastic Ø6x1 impulse line. We suggest using an M20x1.5 adapter for a Ø6x1 fitting where the pulse comes through the metal pipe.

The transmitter with a C type connector should be mounted on a 3- or 5-valve manifold. We recommend using VM type valves.

**Operating Principals**

The transmitter should be mounted in a vertical position. The impulse lines should be connected in such a way that any condensed liquids keep 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 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 paid to the tightness of the connections between the impulse lines and the transmitter.

### Measuring Ranges

<table>
<thead>
<tr>
<th>Nominal measuring range (FSO)</th>
<th>Minimum set range</th>
<th>Overpressure limit</th>
<th>Static pressure limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>0…25 mbar (0…2500 Pa)</td>
<td>1 mbar (100 Pa)</td>
<td>1 bar</td>
<td>350 mbar</td>
</tr>
<tr>
<td>-2.5…2.5 mbar (-250…250 Pa)</td>
<td>0.2 mbar (20 Pa)</td>
<td>350 mbar</td>
<td>350 mbar</td>
</tr>
<tr>
<td>-7…7 mbar (-700…700 Pa)</td>
<td>1 mbar (100 Pa)</td>
<td>350 mbar</td>
<td>350 mbar</td>
</tr>
<tr>
<td>-25…25 mbar (-2500…2500 Pa)</td>
<td>5 mbar (500 Pa)</td>
<td>1 bar</td>
<td>1 bar</td>
</tr>
<tr>
<td>-100…100 mbar (-10…10 kPa)</td>
<td>20 mbar (2 kPa)</td>
<td>1 bar</td>
<td>1 bar</td>
</tr>
</tbody>
</table>
D-Series

Model: DPR-2200ALW

<table>
<thead>
<tr>
<th>Nominal range</th>
<th>0...25 mbar</th>
<th>-2.5...2.5 mbar</th>
<th>-7...7 mbar</th>
<th>-25...25 mbar</th>
<th>-100...100 mbar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>L ±0.075%</td>
<td>L ±0.16%</td>
<td>L ±0.1%</td>
<td>L ±0.1%</td>
<td>L ±0.075%</td>
</tr>
</tbody>
</table>

Thermal error

±0.1% (FSO) / 10°C
max. ±0.4% (FSO) in the whole compensation temperature range

Thermal compensation range

-10...70°C

Additional electronic damping

0...60 s

Error due to supply voltage changes

0.002% (FSO) / V

Electrical parameters

Power supply

12...55 V DC (EEx 13.5...28 V)

Additional voltage drop when display illumination switched on

3V

Output signal

4...20 mA, two wire transmission

Load resistance

R_{L} \leq \frac{U_{in}(V)}{I_{out}(A)} \leq \frac{12 V}{0.02A} \leq 600 \Omega

Resistance required for communication

250...1100 Ω

Operating conditions

Operating temperature range (ambient temp.) –25...85°C

Materials

Materials:

casing: Aluminium

option: 316ss

adapter C type, GP type, P type: 316ss

adapter PCV type (on ≤6 elastic pipe): brass

Metrological Parameters

DPR-2000GALW Industrial Version, C type process connector to be mounted along with a valve manifold

DPR-2000GALW, process connection type GP or P. with G1/2” or M20 thread. (Designed to measure relative pressure)

DPR-2000GALW Economic Version, process connection with terminal connecting toØ 6 pipe (PCV type)

Version: DPR-2000GALW
How to Order

<table>
<thead>
<tr>
<th>Model</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPR-2000G</td>
<td></td>
<td>Smart differential pressure transmitter.</td>
</tr>
</tbody>
</table>

**Casing, output signal**

- ALW………………………………………….. Aluminium housing, IP66, with display, output 4–20mA + Hart
- ALWSS………………………………………316ss stainless steel housing, IP66, with display, output 4 - 20mA + Hart

**Certificate**

- /EEExia……………………………………Ex II 1/2G Ex ia IIC T4/T5 Ga/Gb
- /EEExia……………………………………Ex II 1/2G Ex ia IIB T4/T5 Ga/Gb (version with Teflon shielded cable)
- /EEExia……………………………………Ex II 1/2D Ex ia IIC T105°C Da
- /EEExia……………………………………Ex II 1/2E Ex ia IIC T105°C Da

**Nominal measuring range**

<table>
<thead>
<tr>
<th>Range</th>
<th>Min set range</th>
</tr>
</thead>
<tbody>
<tr>
<td>/0+25mbar………………</td>
<td>0+25mbar</td>
</tr>
<tr>
<td>/2.5+2.5mbar…………..</td>
<td>2.5+2.5mbar</td>
</tr>
<tr>
<td>/7+7mbar………………..</td>
<td>7+7mbar</td>
</tr>
<tr>
<td>/25+25mbar……………..</td>
<td>25+25mbar</td>
</tr>
<tr>
<td>/100+100mbar………….</td>
<td>100+100mbar</td>
</tr>
</tbody>
</table>

**Measuring set range**

i/…/… [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. Thread 1/4 NPT F on cover flange. Material of cover flange SS316L. Allows mounting with a valve manifold.
- /C……………………………………….. Adapter with G1/2” or P. process connection.

**Electrical connection**

- /US…………………………………….. Packing gland M20x1.5
- /US…………………………………….. Thread 1/2NPT Female

**Accessories**

<table>
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<tr>
<th>Accessories**</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>/AL…………………...</td>
<td>Mounting bracket type AL for 2” pipe, material zinced steel</td>
</tr>
<tr>
<td>/AL(3S)……………</td>
<td>Mounting bracket type AL for 2” pipe, material stainless steel</td>
</tr>
<tr>
<td>/M20x1.5/Ø6…………</td>
<td>Adapters from Ø6mm elastic pipe for M20x1,5 M thread (only version with PCV process connection)</td>
</tr>
<tr>
<td>/RedSpaw C………….</td>
<td>Connector to weld impulse pipes dia. 12 and 14 mm, material 15HM. Only process connection C type.</td>
</tr>
<tr>
<td>/+VM-3/A…………..</td>
<td>Assembled with a 3- way valve manifold ( further specification of manifold - see data sheet ) . Only version with C type process connection.</td>
</tr>
<tr>
<td>/+VM-5/A…………..</td>
<td>Assembled with a 5- way valve manifold ( further specification of manifold - see data sheet ) . Only version with C type process connection.</td>
</tr>
<tr>
<td>/ST…………………..</td>
<td>Stainless Steel plate riveted to the housing</td>
</tr>
<tr>
<td>/MT…………………..</td>
<td>Stainless Steel Tag  plate mounted on wire</td>
</tr>
</tbody>
</table>

**Other specification**

<table>
<thead>
<tr>
<th>Other specification</th>
<th>Description of required parameters</th>
</tr>
</thead>
</table>

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

**Example 1:** Differential pressure transmitter with display, nominal range -7÷7mbar, set range -0,5÷1mbar, PCV type process connection, two additional M20x1,5/Ø6x1 adapters.

DPR-2000GALW/ -7+7mbar/-0,5÷1mbar/PCV/ 2x M20x1,5/Ø6x1

**Example 2:** Differential pressure transmitter with display, nominal range 0÷25mbar, set range 0÷4 mbar, C type process connection, mounted with a 3- ways valve manifold.

DPR-2000GALW/ 0÷25mbar/0÷4mbar/C/VM-3/A

**Example 3:** Differential pressure transmitter with display, nominal range -7÷7mbar, set range -0,5÷1mbar, GP process connection.

DPR-2000GALW/ -7+7mbar/-0,5÷1mbar/GP

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