

# Technical Datasheet



## D-Series SMART Differential Pressure Transmitter for Low Ranges

Models: DPR-2000G

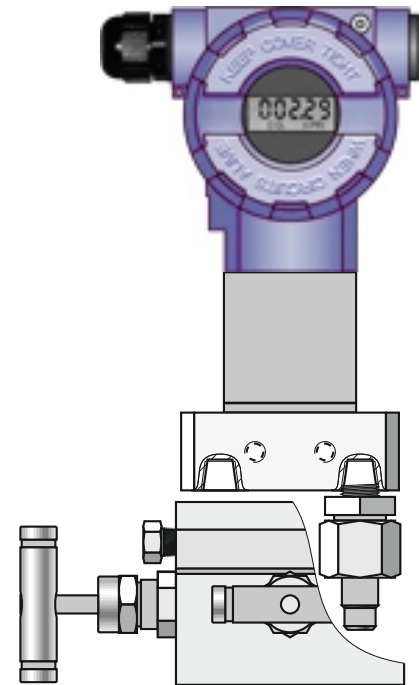
### Key Features

- High accuracy  $\pm 0.1\%$
- 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?

Delta Controls offers fast, efficient and knowledgeable support when and where you need it. Please visit our website at [www.delta-controls.com](http://www.delta-controls.com) to find your local support centre or call us on:

**+44 (0) 1252 729 140**

## Application

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  $\text{Ø}6 \times 1$  impulse line. We suggest using an M20x1.5 adapter for a  $\text{Ø}6 \times 1$  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

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

## Metrological Parameters

Nominal range	0...25 mbar	-2.5...2.5 mbar	-7...7 mbar	-25...25 mbar	-100...100 mbar
Accuracy	L ±0.075%	L ±0.16%	L ±0.1%	L ±0.1%	L ±0.075%

**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

$$\text{Load resistance } R_{L \leq 1} \leq \frac{U_{\text{sup}} [V] \leq 12 V \leq 0.85}{0.02 A}$$

≤ -15 when display illumination switched on

**Resistance required for communication** 250...1100 Ω

### Operating conditions

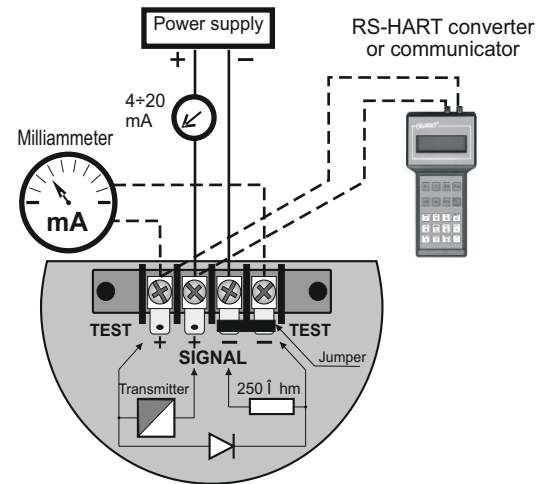
Operating temperature range (ambient temp.) -25...85°C

### Materials

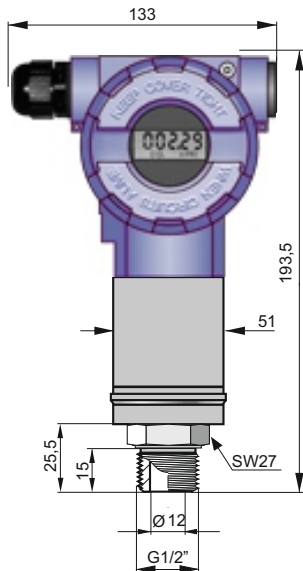
Materials:

casing	Aluminium
option:	316ss
adapter C type, GP type, P. type	316ss
adapter PCV type (on ≤6 elastic pipe)	brass

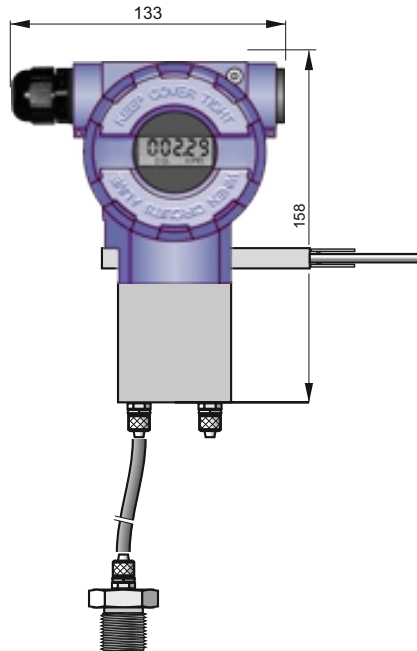
Version: **DPR-2000GALW**



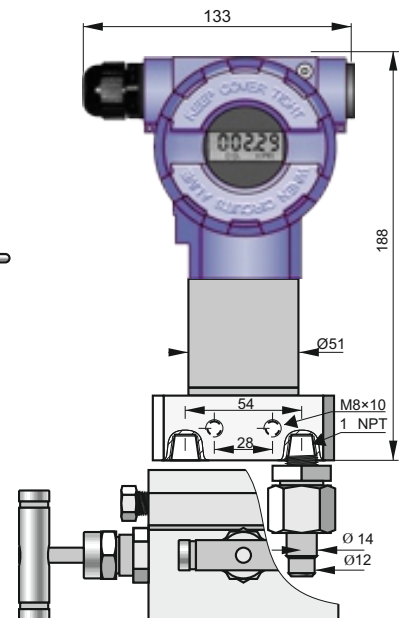
## Dimensions



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 to Ø 6 pipe (PCV type)



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

## How to Order

Model	Code	Description
DPR-2000G		Smart differential pressure transmitter.
Casing, output signal,	≤ ALW..... ALW/SS.....	Aluminium housing, IP66, with display, output 4 –20mA + Hart 316ss stainless steel housing, IP66, with display, output 4 - 20mA + Hart
Certificate	/EEExia.....	Ex II 1/2G Ex ia IIC T4/T5 Ga/Gb Ex II 1/2G Ex ia IIB T4/T5 Ga/Gb (version with Teflon-shielded cable) Ex II 1D Ex ia IIC T105°C Da I M1 Ex ia I Ma (version with enclosure ss316)
Nominal measuring range		Range
	/0÷25mbar.....	0÷25mbar (0÷2500Pa)      1mbar (100Pa)
	/-2.5÷2.5mbar.....	-2.5÷2.5mbar (-250÷250Pa)      0,2 mbar (20Pa)
	/-7÷7mbar.....	-7÷7mbar (-700÷700Pa)      1mbar (100Pa)
	/-25÷25mbar.....	-25÷25mbar (-2500÷2500Pa)      5mbar (500Pa)
	/-100÷100mbar.....	-100÷100mbar (-10÷10kPa)      20mbar (2kPa)
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 SS316L. Allows mounting with a valve manifold.
	/GP or P.....	Adapter with G1/2" or P. process connection.
Electrical connection	≤ (without marking)..... /US.....	Packing gland M20x1,5 Thread 1/2NPT Female
Accessories**	≤ /AL.....	Mounting bracket type AL for 2" pipe, material zinc steel
	/AL..(SS).....	Mounting bracket type AL for 2" pipe, material stainless steel
	/M20x1,5/Ø6....	Adapters from Ø6mm 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 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.
	/ST.....	Stainless Steel plate riveted to the housing
	/MT.....	Stainless Steel Tag plate mounted on wire
Other specification	/.....	Description of required parameters

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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