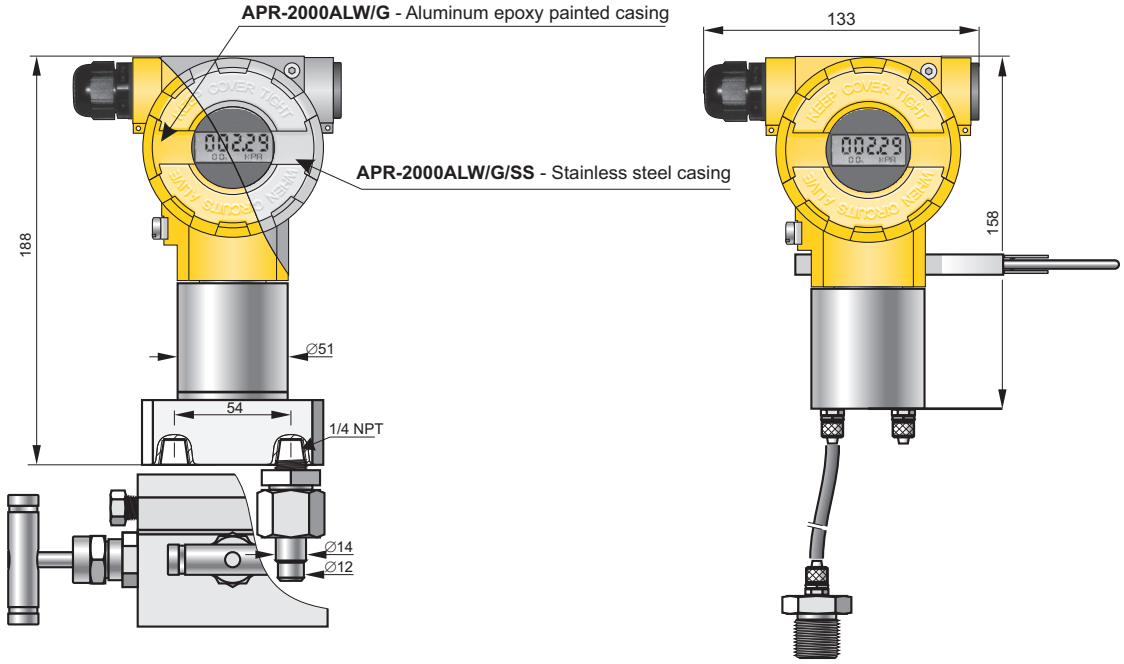
SMART DIFFERENTIAL PRESSURE TRANSMITTER
for low ranges APR-2000ALW/G

HART COMMUNICATION PROTOCOL

- ✓ **4...20 mA output signal + HART protocol**
- ✓ **Display with backlight**
- ✓ **Programmable range, zero shift, damping ratio and characteristic with local panel keys**
- ✓ **Selectable linear or radical conversion characteristic**
- ✓ **Accuracy from 0,1%**
- ✓ **Intrinsic safety certificate (ATEX, IECEx)**
- ✓ **Explosion proof certificate (ATEX, IECEx)**
- ✓ **Safety version SIL2/SIL3**

Explosion proof certificate



APR-2000ALW/G Industrial Version, **C type** process connector to be mounted along with a valve manifold

APR-2000ALW/G Economic Version, process connection with terminal connecting to ∅6 pipe (**PCV type**)

Application

The APR-2000ALW/G transmitter 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/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 mounting bracket. The transmitter's connection shanks have terminals to be connected to the elastic ∅6×1 impulse line. Where the pulse comes through a metal pipe, we suggest an M20×1.5 adapter for a ∅6×1 fitting using.

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

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

Electrical parameters

Power supply 10...55 VDC (Exia 10,5...30 V DC)
Safety: 11,5...36 VDC (Exia 11,5...30 V DC)

Output signal 4...20 mA + HART

Load resistance (for standard version) $R[\Omega] \leq \frac{U_{sup}[V] - 10V}{0{,}0225A}$

Resistance required for communication min. 240 Ω

Operating conditions

Operating temperature range (ambient temp.) -30...85°C

Materials

Casing Aluminium
option: 316ss
adapter C type, 304ss
adapter PCV type (on ∅6 elastic pipe) brass

Ordering procedure

Model	Code	Description
APR-2000		Smart differential pressure transmitter
Versions	/ALW/G /ALW/Safety/G	With display, output 4-20mA + Hart With display, output 4-20mA + Hart, Functional Safety certificate according to PN-EN 61508:2010 parts 1 ÷ 7, PN-EN 61511-1:2017 + PN-EN 61511-1:2017/A1:2018-03, PN-EN 62061:2008 + PN-EN 62061:2008/A1:2013-06 + PN-EN 62061:2008/A2:2016-01
Certificates, options	/SS /Exia /Exia (Da) /Exd (2G) /SA /IP67	Stainless steel housing II 1/2G Ex ia IIC T4/T5 Ga/Gb **IECEx** Ex ia IIC T4/T5 Ga/Gb II 1/2G Ex ia IIC T4/T5 Ga/Gb II 1D Ex ia IIIC T115°C Da I M1 Ex ia I Ma (version with SS housing) Ex ia IIC T4/T5 Ga/Gb **IECEx** Ex ia IIIC T115°C Da Ex ia I Ma (version with SS housing II 2G Ex db ia IIC T6/T5 Gb II 2D Ex ia tb IIIC T105°C Db **IECEx** Ex db ia IIC T6/T5 Gb Ex ia tb IIIC T105°C Db Packing gland available on request Surge arrester for Exia version Protection class IP67

Nominal measuring range	Range	Min. set range
/0÷25 mbar	0÷25 mbar (0÷2500 Pa)	1mbar (100 Pa)
/-2,5÷2,5 mbar	-2.5÷2.5mbar (250÷250 Pa)	0,2 mbar (20 Pa)
/-7÷7 mbar	-7÷7 mbar (700÷700 Pa)	1mbar (100 Pa)
/-25÷25 mbar	-25÷25 mbar (2500÷2500 Pa)	5mbar (500 Pa)
/-100÷100 mbar	-100÷100mbar (10÷10 kPa)	20mbar (2 kPa)

Measuring set range	/…÷… [required units]	Calibrated range in relation to 4mA and 20mA output
Process connections	/PCV /C	Process connection with terminal connecting for ∅6mm elastic pipe. Thread 1/4 NPT F on cover flange. Material of cover flange 304Lss. Allows mounting with a valve manifold.
Electrical connection	(without marking) /US	Packing gland M20x1,5 Thread 1/2"NPT Female
Accessories	/AL /AL(SS) /AL(SS316) /M20x1,5/∅6 /RedSpaw C /+VM-3/A /+VM-5/A /ST /MT	Mounting bracket type AL for 2" pipe, material zinced steel Mounting bracket type AL for 2" pipe, material ss304 Mounting bracket type AL for 2" pipe, material ss316 Adapters from ∅ 6mm elastic pipe for M20x1,5 M thread (only version with PCV process connection) Connector to weld impulse pipes dia. 12 and 14 mm, material 15HM. (only version with process connection C type) Assembled with a 3-way valve manifold (further specification of manifold - see data sheet) . Only version with C type process connection. Assembled with a 5-way valve manifold (further specification of manifold - see data sheet) . Only version with C type process connection. Stainless Steel plate fixed to the housing Stainless Steel Tag plate mounted on wire
Other specification	/	Description of required parameters

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.

APR-2000ALW/G/-7÷7mbar/-0,5÷1mbar/PCV/2xM20x1,5/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-way valve manifold.

APR-2000ALW/G/0÷25mbar/0÷4mbar/C/VM-3/A