



HD 9408T BARO HD 9408TR BARO HD 9908T BARO



HD 9408T BARO, HD 9408TR BARO, HD 9908T BARO BAROMETRIC TRANSMITTERS

HD 9408T BARO, HD 9408TR BARO and HD 9908T BARO are analog output electronic barometers. They use a piezoresistive sensor element which gives extremely accurate and stable measurement of the atmospheric pressure and assures excellent repeatability, low hysteresis and very good temperature stability. The output signal of the sensor is conditioned to provide a voltage or a current output linearly proportional to the barometric pressure. The transmitters are ready as they have been calibrated at the factory. A zero adjustments potentiometer is available for offset to station elevation.

HD9408T BARO requires a continuous dc power supply, its low power consumption (< 4 mA) makes it ideal for portable and remote battery or solar powered applications. It is available in different kinds of analog output: 0-1 Vdc, 0-5 Vdc (1-5 Vdc, 1-6 Vdc on request) or 4-20 mA (two wires).

HD 9408TR BARO offers superior temperature performance: the internal circuitry allows the sensor to work at constant temperature so that it achieves accurate temperature compensation over the whole range from -40°C to +60°C.

HD 9408TR BARO requires a continuous dc power supply and a differential cabling connection to achieve best results. It is available in different output versions: 0÷1 Vdc, 0÷5 Vdc (1÷5 Vdc, 1÷6 Vdc on request).

HD 9908T BARO, unlike the other models, is equipped with a display showing the pressure measurements, an analog output 0÷20 mA, 4÷20 mA, 0÷1 V and 0÷5 V (0÷10 V on request) configurable by the customer and with an ON/OFF relay output with programmable alarm threshold.

HD 9908T BARO requires a 24 Vac (or 220 Vac on request) power supply.

HD 9408T BARO, HD 9408TR BARO and HD 9908T BARO are low cost and excellent performance solutions for meteorological applications, environmental monitoring systems, metrological and environmental data logging, altitude applications, barometric pressure compensation in the performance of internal combustion engine, cleanroom barometric pressure compensation, testing of vehicle emissions.

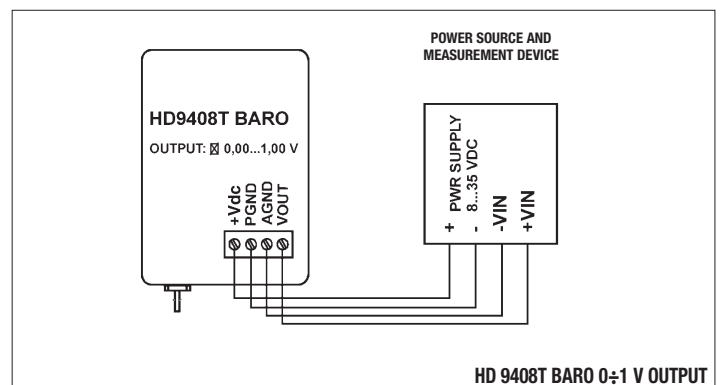
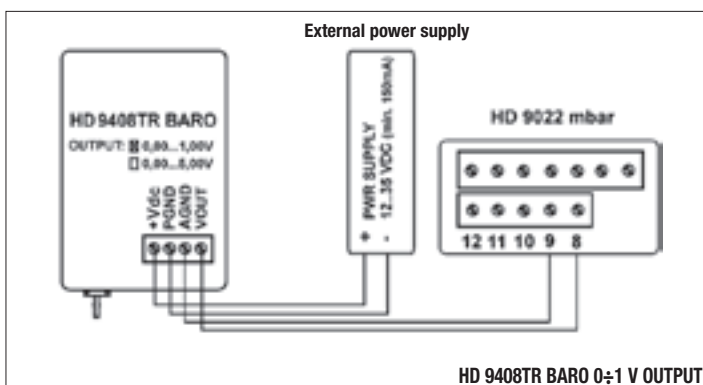
HOUSING AND INSTALLATION

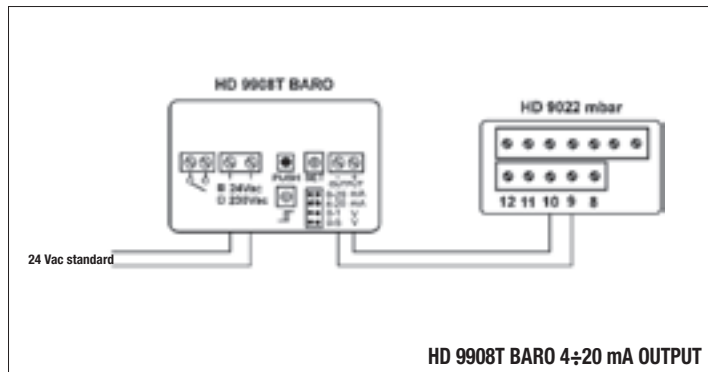
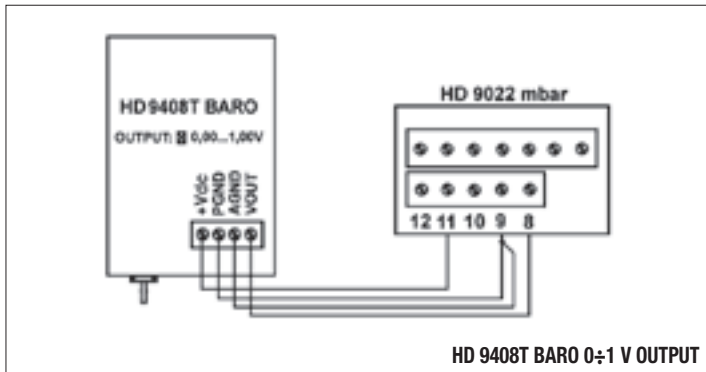
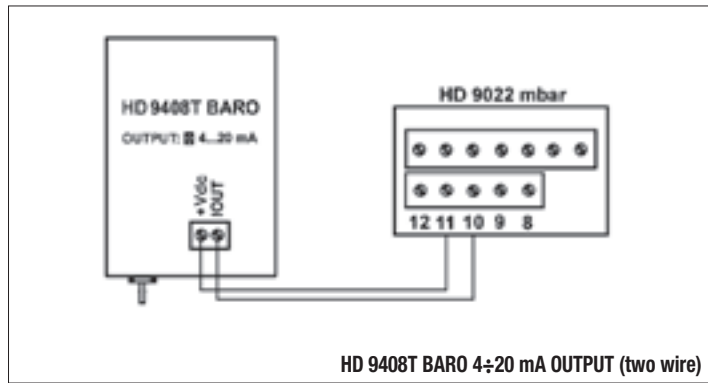
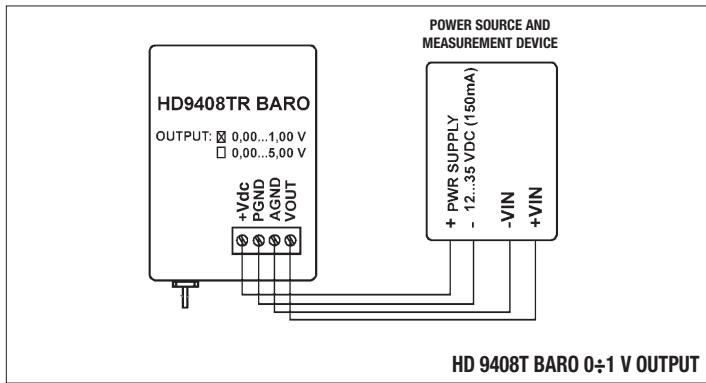
In all models the sensor electronics are housed in a sturdy MACROLON with IP67 protection. Opening the lid holes are available that allow you to secure the base of the transmitter directly to a panel or a wall. The measurement accuracy is independent of the position of the transmitter. However, it is advisable to mount the transmitter so that the sensor is facing down to reduce dust and dirt on the filter. If the installation is in an open environment is recommended to use a special static port to minimize errors caused by the wind flow on the input pressure.

CONNECTION DIAGRAM AND OPERATION

- Make the power connections for the HD 9908T BARO.
- Make the connections for the relay output, the relay contact is free.
- Select the analog output 0÷20 mA, 4÷20 mA, 0÷1 V, 0÷5 V by means of the jumper.
- Switch on the instrument, press the PUSH button and turn the SET trimmer to set the desired threshold value between 800 and 1100 mbar; the set value is shown on the LCD display.
- Using the trimmer $\square$, set the desired HYS (=hysteresis) value between 5 and 50 mbar.
- The instrument will now indicate the barometric pressure; HI led, LO led or ALARM led and ALARM relay will switch on if one the following cases occurs (see table 1).
NOTE: the ALARM led comes on to indicate that the relay is energized and the contact is closed.
- **Once installation is completed, check that the cover is tightly closed; the same applies to the grommets.**

TABLE 1	HI	LO	ALARM LED
MEASURE > SET, MEASURE < SET + HYS	ON	OFF	OFF
MEASURE > SET, MEASURE > SET + HYS	ON	OFF	ON
MEASURE < SET, MEASURE > SET - HYS	OFF	ON	OFF
MEASURE < SET, MEASURE < SET - HYS	OFF	ON	ON





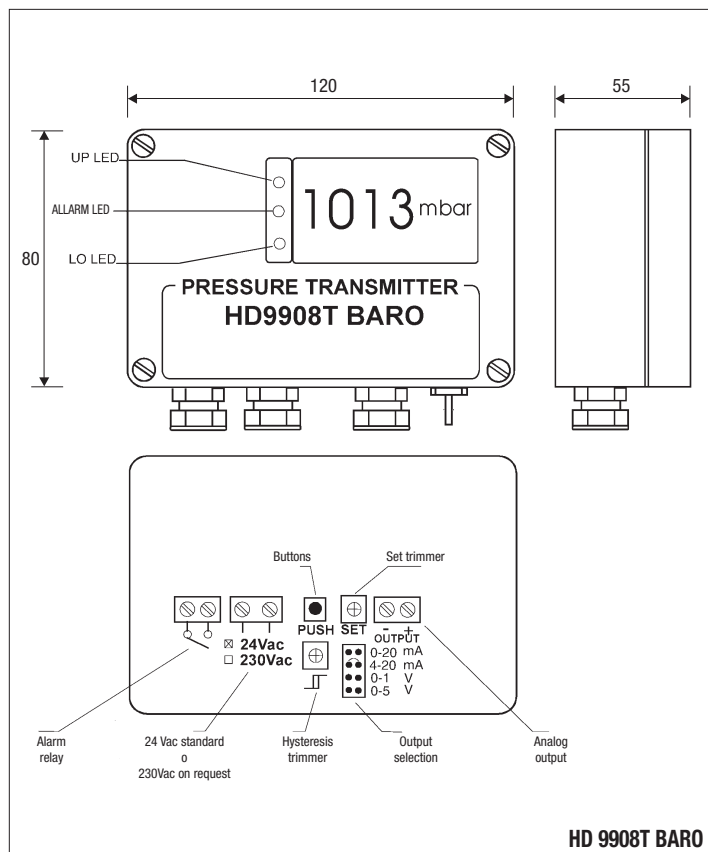
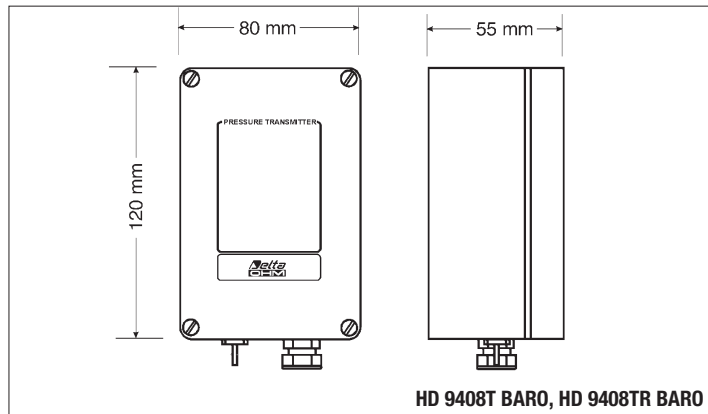
	HD9408T BARO	HD9408TR BARO	HD9908T BARO
Sensor type	Piezoresistive diaphragm		
Measuring range	800 ÷ 1100 mbar / 600 ÷ 1100 mbar on request		
Analog output	0 ÷ 1 Vdc standard; 0 ÷ 5 Vdc, 1 ÷ 6 Vdc and 4 ÷ 20 mA (two wires) on request	0 ÷ 1 Vdc standard; 0 ÷ 5 Vdc, 1 ÷ 5 Vdc and 1 ÷ 6 Vdc on request	0 ÷ 20 mA, 4 ÷ 20 mA, 0 ÷ 1 V and 0 ÷ 5 V (0 ÷ 10 V on request), configurable by means of a jumper.
Accuracy	± 0.5 mbar, @ 20°C	± 0.5 mbar, @ 20°C	Display: ± 1 mbar, @20°C Analog output: ± 0.8 mbar, @ 20°C
Resolution	Infinite	Infinite	Display: 1 mbar Analog output: Infinite
Thermal effects	< 1% F.S., zero; < 1% F.S., span over -20°C to +60°C (-4° to 140°F)	± 0.8 mbar over -40°C to +60°C (-40° to 40°F)	< 1% F.S. zero, < 1% F.S. span over -20°C to +60°C (-4° to 140°F)
Long term stability	< 0.25 % F.S. over 6 months at 20°C	< 0.2 % F.S. over 6 months at 20°C	< 0.25 % F.S. over 6 months at 20°C
Turn on time	1 sec. to 99% of full scale reading	5 min @ 24 Vdc supply to 99% of full scale reading	5 sec. to 99% of full scale reading
Response time	< 200 msec. after pressure stabilization		
Relay contact output	---	---	3A/230 Vac resistive load
Set point	---	---	Configurable from 800 to 1100 mbar
Supply Voltage	8 ÷ 35 Vdc	12 ÷ 35 Vdc	24 Vac ±10% (230 Vac on request)
Supply current	< 4 mA	25 mA @ 20°C, 24 Vdc (warm-up 120 mA)	1VA
Operating Temperature	-30 ÷ +60°C	-40 ÷ +60°C	-20 ÷ +60°C
Media ompatibility	Air and dry gases only		
Overload pressure	2bar -30 psi		

ORDERING CODE

HD9408T BARO 800÷1100mbar barometric transmitter output 0÷1Vdc. Upon request output: 0÷5Vdc, 1÷6Vdc, 4÷20mA. Working temperature range -30°C ÷ +60°C.

HD9408TR BARO 800÷1100mbar barometric transmitter output 0÷1Vdc. Upon request output 0÷5Vdc, 1÷5Vdc. Temperature working range -40°C ÷ +60°C, heated sensor

HD9908T BARO 800÷1100mbar digital barometric transmitter with LCD indication. Outputs: 0÷20mA, 4÷20mA, 0÷1Vdc, 0÷5Vdc. Working temperature range -20°C ÷ +60°C.





HD9408PS 50 STATIC PORT FOR BAROMETRIC MEASUREMENTS

The measurement of the barometric pressure in free field can give incorrect values of hundred pascal fluctuation and wind direction. With the static port for barometric measurements, HD9408PS 50 can minimize these errors because, in addition to act as a filter (brake) against the dynamic pressure of the wind, the barometer can operate correctly even in the presence of snow or ice and comply with the recommendations of the WMO (World Meteorological Organization). The materials used for the construction of the static are UV resistant and can operate in temperatures between -40°C and +80°C.

INSTALLATION AND CONNECTION

Installation is simple: it must be installed away from buildings, trees or any other source which can disrupt the flow of wind. To install the bracket is available HD9408PS 56 and three stainless steel screws M5x16 Acc. The connection of the static to the barometer, for example, HD9408T or HD9408TR, is made with a special tube HV55 (internal diameter of 3mm, 6mm outer diameter) and UV resistant to climate changes. Maintenance or cleaning is minimal. The plastic parts are manufactured by BASF LURAN S777K. Clean using non aggressive detergents compatible with the material.

TECHNICAL SPECIFICATIONS

According to recommendations of the WMO, the deviation allowed measurement of wind speed 20meters/second is equal to 0.3mbar, corresponding to 300 Pascal. The HD9408PS 50 static port for barometric measurements falls within that value. The following tables show the values obtained from the tests performed in the wind tunnel.

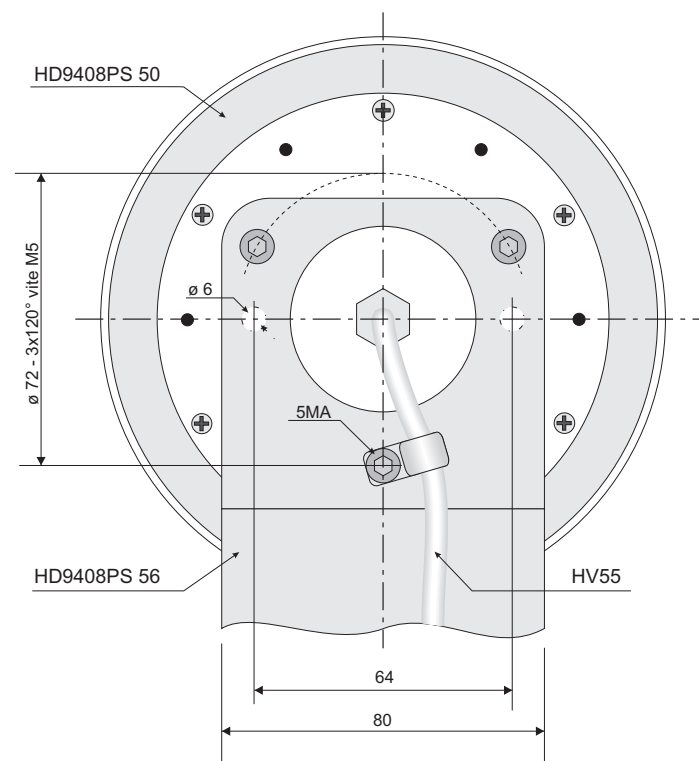
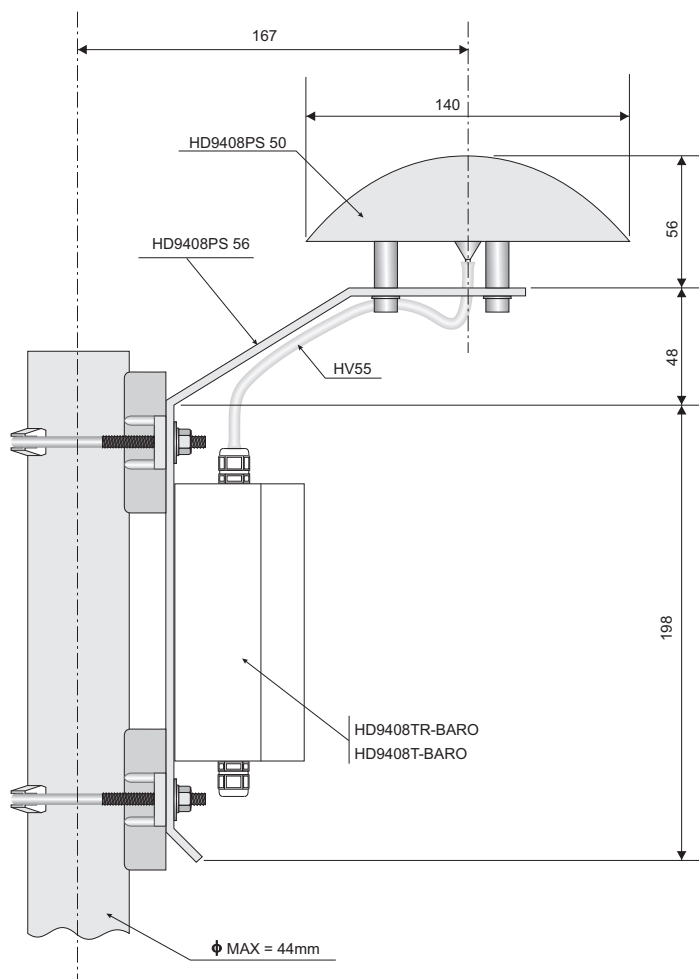
ORDERING CODE

HD9408PS 50K: Kit consists of by static port, pole mounting bracket and HV55 tube

HD9408PS 50: Static port for barometric measurements equipped with the HV55 tube

HD9408PS 56: Mounting bracket for static port, barometer fastening, pole anchor

HV55: UV- and temperature-resistant silicone tube, inside Ø : 3mm, outside Ø : 6mm, L=400mm

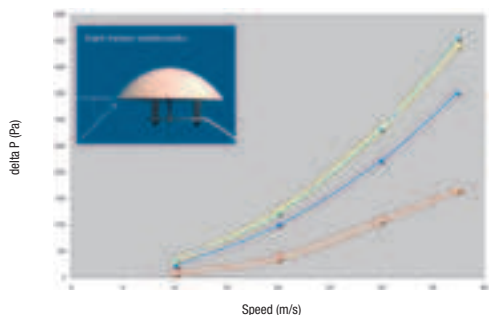


Error due to the dynamic pressure	Lower than 0.3mbar @20°C
Working temperature	-40°C... +80°C
Connection pipe (for a tube with inside Ø : 3mm, outside Ø : 6mm)	Ø 3.4 mm
Weight of the static port.	200 gr
Weight of the static port equipped with the bracket	570 gr

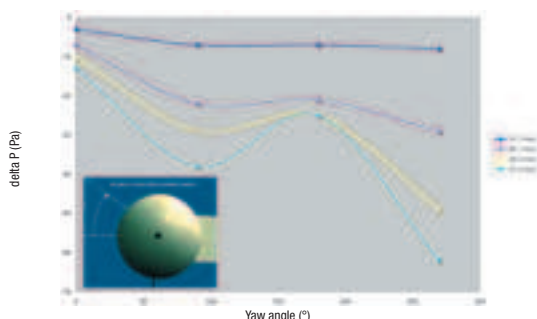
TESTS MADE IN THE WIND TUNNEL



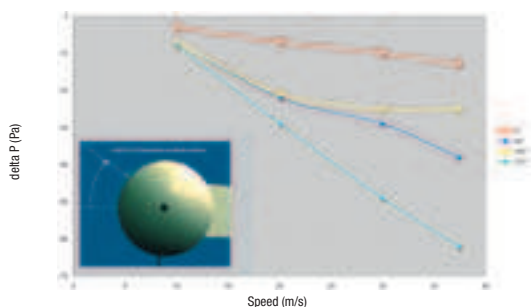
Static port put in front of the wind tunnel



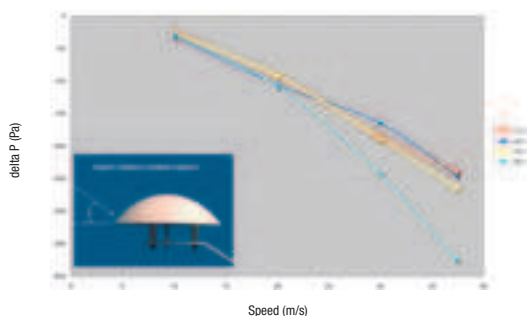
ΔP as a function of speed (yaw angle $\beta = 0^\circ$)



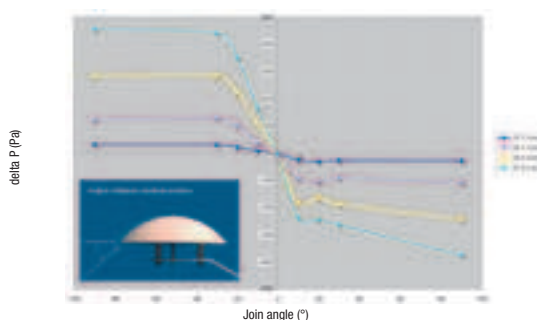
ΔP as a function of yaw angle (join angle $\alpha = 0^\circ$)



ΔP as a function of speed (join angle $\alpha = 0^\circ$)



ΔP as a function of speed (yaw angle $\beta = 0^\circ$)



ΔP as a function join angle (yaw angle $\beta = 0^\circ$)



HD 4V8T Baro



HD 4V8T Baro BAROMETRIC TRANSMITTER

Barometric transmitter to wall mount for indoor use, with 0...1 Vdc analog output. Measuring range 600...1100mbar. Power supply 10...40 Vdc. Working temperature -30°C... 60°C. Suitable for installation in the housings for weather stations HD32.35, HD32.35FP, HD32.36 and HD32.36FP.

Technical specifications

Type of sensor	Piezoresistive
Measuring range	600÷1100 mbar
Analog output	0÷1Vdc
Accuracy	±0.5 mbar, @ 20°C
Resolution	Infinite
Temperature drift	<1% F.S., zero; <1% F.S., span from -20°C to +60°C (-4°F to 140°F)
Long term stability	<0.25% F.S. at 6 months at 20°C
Settling Time	1 sec. At 99% of the measure
Response time	<200ms after pressure stabilization
Power Supply	10÷40 Vdc
Current Supply	< 4 mA
Working temperature	-30 ... +60°C
Compatibility	Dry air and gases, non-corrosive
Overpressure	2 bar – 30 psi
Dimensions	65mm x 58mm x 35mm

