

Table 2: Additional sensor specifications.

Parameter			
Media Calibration ¹	Air, N ₂ – for other gases contact Sensirion AG.		
Media Compatibility	Air, N ₂ , O ₂		
Operating Conditions ² : - Temperature - Humidity	-10 °C ... +60 °C / 14°F ... 140 °F non-condensing		
Ambient storage conditions ³	-40 °C ... +80 °C / -40°F ... 176 °F		
Orientation sensitivity	below zero point accuracy		
Admissible overpressure (short term)	1 bar (14.5 PSI)		
Burst Pressure Capability	2 bar (29 PSI)		
Weight	14 g		
Protection Class	IP 20		
Wetted materials	Glass (silicon nitride, silicon oxide), Silicon, PPS (Polyphenylene Sulfide), PEEK (Polyetheretherketone), FR4, Silicone as static sealing, Epoxy, Gold		
Electromagnetic compatibility	EN 61000-4-2	Air discharge (ESD)	± 2 kV
Lead free	Reach and RoHS compliant.		

¹ Sensors are calibrated for a specific gas, please contact Sensirion when you employ different gases than the specified.

² Condensation of liquids or dust on the sensor membrane might lead to sensor offset.

³ For maximum 2 weeks

2.1 Temperature Compensation

The SDP1108-R differential pressure sensor features a sophisticated built-in temperature compensation circuit. The temperature is measured on the CMOSens[®] chip by means of a PTAT bandgap reference temperature sensor. Its data is fed into a compensation circuit which is also integrated on the CMOSens[®] sensor chip. No external temperature compensation is therefore required.

2.2 Altitude Correction

The SDP1108-R differential pressure sensor achieves its unsurpassed performance by using a dynamic measurement principle: An applied differential pressure forces a small air flow through the SDP1108-R, which measures this air flow.

The sensor signal is dependent on the ambient air density. The temperature effect on density is compensated by internal intelligence (see Paragraph 2.1). Effects on density due to a change of ambient pressure, typically a change of altitude above sea level, can be compensated using a correction factor according to the following equation:

$$Dp_{eff} = Dp_{sensor} * P_{cal} / P_{amb}$$

Where Dp_{eff} is the effective differential pressure, Dp_{sensor} the differential pressure indicated by the SDP1108-R, P_{cal} the absolute pressure during calibration (966 mbar) and P_{amb} the actual ambient absolute pressure.

This leads to the following correction factors:

Table 3: Altitude correction factors.

Altitude [meter]	Ambient Pressure (P_{amb}) [mbar]	Correction Factor P_{cal} / P_{amb}
0	1013	0.95
250	984	0.98
425	966	1.00
500	958	1.01
750	925	1.04
1500	842	1.15
2250	766	1.26
3000	697	1.38

Example:

The SDP1108-R is used at 750 m above sea level. The output of the SDP1108-R shows 0.5 V, which corresponds to $Dp_{sensor} = 33.3$ Pa. Taking into account the correction factor $P_{cal} / P_{amb} = 1.04$ the effective differential pressure Dp_{eff} is 33.3 Pa * $1.04 = 34.6$ Pa.

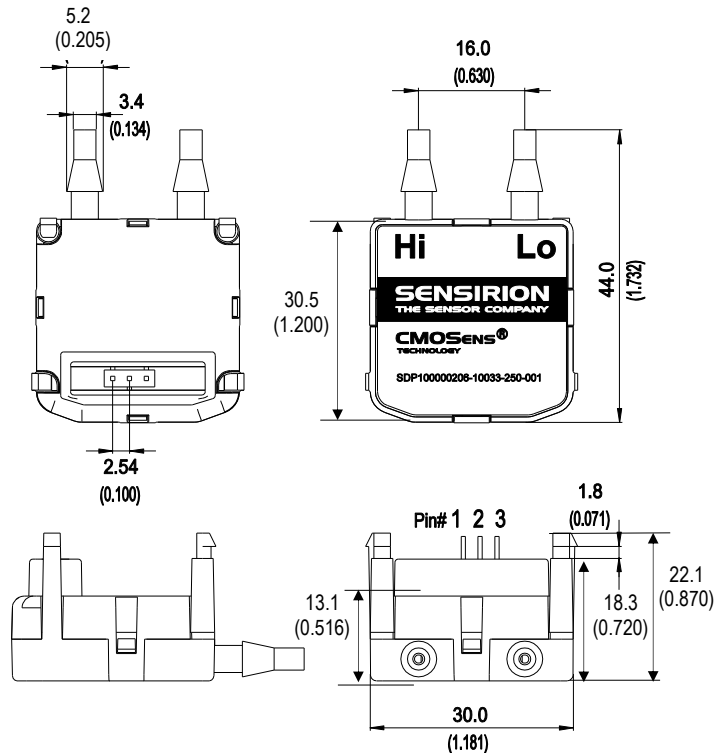
Note:

In many medical and HVAC applications such as filter monitoring, fan/ventilator control or air flow measurement the described effect is actually welcome since at the end the mass flow and not volume flow is the effective value to control.

3 Physical Dimensions and Mounting Information

3.1 Housing

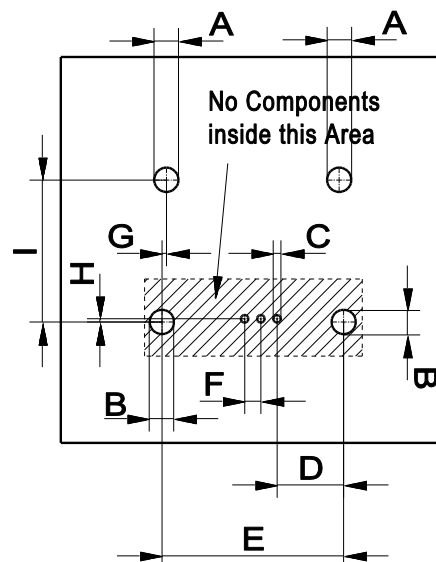
The SDP1108-R differential pressure sensor is mounted in chemically inert PPS housing. The rugged package has been designed to withstand continuous overpressures of at least 1 bar (14.5 PSI). Burst pressure is > 2 bar (29 PSI)



Pin#	Function
1	VDD (5 Vdc)
2	Ground
3	OUT (0.25...4 Vdc)

Figure 1: Pin out and physical dimensions in mm (inch). The drawing is not to scale.

The physical dimensions and mounting information is given in Figure 1 and 2.



Dim.	[mm]	[inch]	[mil]
A	3.00	0.118	118
B	3.30	0.130	130
C	1.20	0.047	47
D	10.20	0.402	402
E	28.20	1.110	1110
F	2.54	0.100	100
G	0.60	0.024	24
H	0.50	0.020	20
I	22.70	0.894	894

Figure 2: SDP1108-R PCB footprint. The drawing is not to scale.

3.2 Soldering Instructions

The SDP1108-R differential pressure sensor can be wave soldered. Direct reflow soldering is not recommended since it may affect the accuracy.

If reflow soldering is required Sensirion recommends to use an SMD connector (e.g. type Samtec SSM-103-L-SV) and to mount the SDP1108-R after soldering.