

Datasheet SDP8xx-Digital

Digital Differential Pressure Sensor

- Excellent repeatability, no drift, no offset
- Extended feature set – smart averaging
- Calibrated and temperature compensated



Product Summary

The SDP800 sensor family is Sensirion's series of digital differential pressure sensors designed for high-volume applications. The sensors measure the pressure of air and non-aggressive gases with superb accuracy and no offset drift. The sensors cover a pressure range of up to ± 500 Pa (± 2 inch H₂O / ± 5 mbar) and deliver outstanding accuracy, also at the bottom end of the measuring range.

The SDP800 features a digital 2-wire interface, which makes it easy to connect directly to a microprocessor.

The outstanding performance of these sensors is based on Sensirion's patented CMOSens® sensor technology, which combines the sensor element, signal processing and digital calibration on a small CMOS chip. The differential pressure is measured by a thermal sensor element using flow-through technology. The well-proven CMOS technology is perfectly suited for high-quality mass production and is the ideal choice for demanding and cost-sensitive OEM applications.

Benefits of Sensirion's CMOSens® Technology

- High reliability and long-term stability
- Best signal-to-noise ratio
- Industry-proven technology with a track record of more than 15 years
- Designed for mass production
- High process capability

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1. Sensor Performance

1.1 Differential Pressure Specification¹

Parameter	SDP800/SDP810-500Pa	SDP800/SDP810-125Pa
Measurement range ²	-500 to 500 Pa (-2 to 2 inH ₂ O)	-125 to 125 Pa (-0.5 to 0.5 inH ₂ O)
Zero point accuracy ^{3,4}	0.1 Pa	0.08 Pa
Span accuracy ^{3,4}	3% of reading	3% of reading
Zero point repeatability ⁴	0.05 Pa	0.04 Pa
Span repeatability ⁴	0.5% of reading	0.5% of reading
Span shift due to temperature variation	< 0.5% of reading per 10°C	< 0.5% of reading per 10°C
Offset stability	< 0.05 Pa/year	< 0.05 Pa/year
Flow step response time (τ_{63})	< 3ms	
Resolution	16 bit	
Calibrated for	Air, N ₂	
Media compatibility	Air, N ₂ , O ₂ , non-condensing	
Calibrated temperature range	-20 °C to +85 °C	

1.2 Temperature Specification⁵

Parameter	Value
Measurement range	-40 °C to +85 °C
Resolution	16 bit
Accuracy	2 °C (-10 °C to +60 °C) 3 °C (-40 °C to +85 °C)
Repeatability	0.1°C

¹ Unless otherwise noted, all sensor specifications are valid at 25°C with VDD = 3.3 V and absolute pressure = 966 mbar.

² For other pressure ranges contact Sensirion

³ Includes repeatability

⁴ Total accuracy/repeatability is a sum of zero-point and span accuracy/repeatability.

⁵ The measured temperature is the temperature of the bulk silicon in the sensor. This temperature value is not only depending on the gas temperature, but also on the sensor's surroundings. Using the signal to measure solely the gas temperature will need special precautions, such as isolating the sensor from external temperature influences.