

# Datasheet SDP8xx-Analog

## Differential Pressure Sensor with Analog Output

- Configurable analog output
- Calibrated and temperature compensated
- Excellent repeatability, no drift



### Product Summary

The SDP800 sensor family is Sensirion's series of 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  $\pm 500$  Pa ( $\pm 2$  inch H<sub>2</sub>O /  $\pm 5$  mbar) and deliver outstanding accuracy, also at the lower end of the measuring range.

The SDP800 features an analog ratiometric voltage output, which is configurable to linear or square root by a separate pin. The outstanding performance of these sensors is based on Sensirion's patented CMOSens® sensor technology, which combines the sensor element, signal processing, digital calibration and analog output 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

### Content

|                                     |   |
|-------------------------------------|---|
| 1. Sensor Performance .....         | 2 |
| 2. Specifications.....              | 3 |
| 3. Pin Assignment.....              | 4 |
| 4. Package Outline.....             | 5 |
| 5. Soldering.....                   | 6 |
| 6. Shipping Package.....            | 7 |
| 7. Ordering Information.....        | 7 |
| Revision History.....               | 7 |
| Important Notices .....             | 8 |
| Headquarters and Subsidiaries ..... | 8 |

# 1. Sensor Performance

## 1.1 Differential Pressure Specification<sup>1</sup>

| Parameter                               | Configuration | SDP806/SDP816-500Pa                                      | SDP806/SDP816-125Pa                                   |
|-----------------------------------------|---------------|----------------------------------------------------------|-------------------------------------------------------|
| Measurement range <sup>2</sup>          | Linear        | - 50 to 500 Pa<br>(-0.2 to 2 inH <sub>2</sub> O)         | - 12.5 to 125 Pa<br>(-0.05 to 0.5 inH <sub>2</sub> O) |
|                                         | Square Root   | - 500 to 500 Pa<br>(-2 to 2 inH <sub>2</sub> O)          | - 125 to 125 Pa<br>(-0.5 to 0.5 inH <sub>2</sub> O)   |
| Zero point accuracy <sup>3,4,5</sup>    |               | 0.1 Pa <sup>5</sup>                                      | 0.08 Pa <sup>5</sup>                                  |
| Span accuracy <sup>3,4,5</sup>          |               | 3% of reading <sup>5</sup>                               | 3% of reading <sup>5</sup>                            |
| Zero point repeatability <sup>4,5</sup> |               | 0.05 Pa <sup>5</sup>                                     | 0.04 Pa <sup>5</sup>                                  |
| Span repeatability <sup>4,5</sup>       |               | 0.5% of reading <sup>5</sup>                             | 0.5% of reading <sup>5</sup>                          |
| 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                                        |
| Temperature and pressure compensation   |               | Mass flow compensated differential pressure <sup>6</sup> |                                                       |
| Response time (T <sub>63</sub> )        |               | < 5 ms                                                   |                                                       |
| Internal digital resolution             |               | 16 bit                                                   |                                                       |
| Calibrated for                          |               | Air, N <sub>2</sub>                                      |                                                       |
| Media compatibility                     |               | Air, N <sub>2</sub> , O <sub>2</sub> , non-condensing    |                                                       |
| Calibrated temperature range            |               | -20 °C to +85 °C                                         |                                                       |

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

<sup>2</sup> For other pressure ranges contact Sensirion

<sup>3</sup> Includes repeatability

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

<sup>5</sup> Output voltage integral non linearity and output voltage noise are not included. Note that the effect of output voltage integral non linearity and output voltage noise on accuracy is highly dependent on the output configuration (linear or square root).

<sup>6</sup> For more information about temperature and pressure compensation consult the selection guide in the differential pressure download center on our website.