

Introductory Description

Combining solid state sensor technology and commercial IC fabrication, the ASP1400 dynamic differential pressure sensor produced by SENSIRION provides unbeatable performance at very low cost. The lowest detectable differential pressure is 0.002 Pa, which corresponds to a force of only 0.00002g per cm² or a geographic height difference of only 0.16 mm. Covering at the same time a differential pressure range of more than 4 orders of magnitude, the ASP1400 sets a new standard wherever dynamic differential pressure has to be measured or controlled. The ASP1400 device measures the differential pressure with a dynamic principle⁽¹⁾. The differential pressure induces a small gas flow through a tube of 1mm diameter. SENSIRION's unique CMOSens[®] technology provides an extremely precise measurement of this gas flow even for very small differential pressures. In addition, the sensor signal is almost offset free and highly long term stable. You simply connect the gas differential pressure to be measured to the ASP1400 device to get an instantaneous differential pressure at a sampling rate of up to 7Hz (please contact us for sampling rates of up to 200Hz). The ASP1400 withstands overpressures up to 1 bar without any loss in precision.

Please note that absolute pressure (see section 1.4) and gas composition have to be well-known to achieve measurements of highest accuracy.

The ASP1400 differential pressure sensor allows an easy realization of high precision bypass solutions for true mass flow measurements. It has to be pointed out that the ASP1400 is based on the successful ASF1400 mass flow sensor. It measures differential pressure indirectly with the mass flow, which is generated through the applied differential pressure. Unlike with static differential pressure sensors, you therefore profit in bypass solutions directly from a true mass flow measurement.

In addition to differential pressure, the ASP1400 device also provides information about the temperature on the CMOSens[®] sensor chip. Both

differential pressure and temperature data are accessed through an RS-232 interface. The RS-232 interface allows you to connect the ASP1400 device directly to a PC or PDA using standard terminal software.

In general, differential pressures of all gas types can be measured using the ASP1400 product. Calibration is done for dry air. Please contact SENSIRION, if you would like to use the sensor for applications with other gases.

⁽¹⁾ Please note that a small gas flow through the sensor is inherent in the dynamic measurement principle. Thus, the ASP1400 is not suitable for applications where no gas flow is allowed.

CMOSens[®] sensor technology

CMOSens[®] is the base technology for all Sensirion multi sensor modules and sensor systems. The unification of semiconductor chip and sensor technology serves as a platform for highly integrated system solutions with excellent sensor precision and reliability. With CMOSens[®], the on-chip sensor element forms an integrated whole with the high-end amplification and A/D converter circuit. Due to the compact single-chip design, CMOSens[®] based sensors are very resistant to electromagnetic disturbances (EMC), another important technical advantage of this state of the art sensor technology. As a result, CMOSens[®] based multi sensor modules offer an excellent sensor precision, a fast response time and a very large dynamic measurement range. In addition, the digital intelligence of the CMOSens[®] sensor technology enables digital interfaces that permit an easy link with the system of the customer, a real advantage and benefit that results in ready-to-use problem solutions ("Mount&Sense").