ASF1430
Bidirectional Mass Flow Meter

- Total mass flow integrator
- Data rates up to 200 Hz
- Unique dynamic range: 0.01 sccm – 400 sccm
- Outstanding resolution and accuracy
- Calibrated & temperature compensated
- RS-232
- RoHS compliant

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ASF1430 Product Summary

The ASF1430 Mass Flow Meter enables extremely accurate bidirectional measurement of fast changing gas flow over four orders of magnitude. Its leading performance is based on SENSIRION's unsurpassed CMOSens® sensor technology which combines a high precision sensor element with the amplification and A/D converter circuit on one single CMOS chip. This results in superior resolution, fast response time and large dynamic range at lowest power consumption.
All measurement data is fully calibrated and temperature compensated by means of an internal microcontroller.

Mounted in rugged, chemically inert PBT housing the ASF1430 is suitable for a wide range of applications. Such include mass flow metering for process control, medical applications, heating ventilation and air conditioning (HVAC) solutions, as well as gas flow metrology.
The sensor housing provides two inlets for measuring the gas flow and withstands overpressures of 2 bar (29 psi).
The ASF1430 requires a supply voltage of 7…18Vdc and provides an RS-232.
ASF1430 is RoHS compliant.

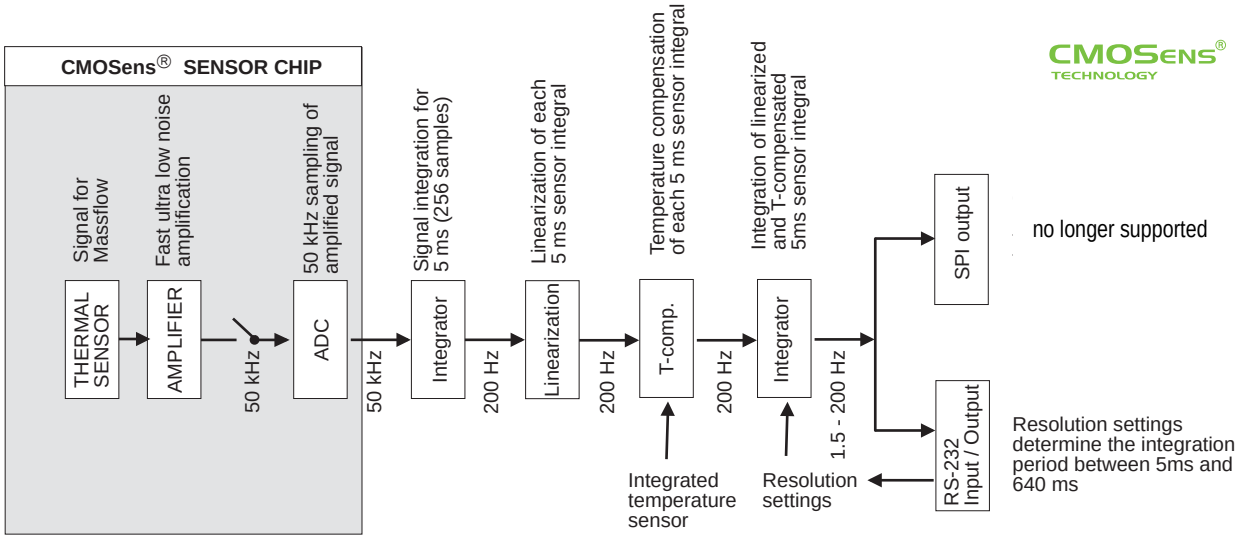

Figure 1: Block Diagram ASF1430 Mass Flow Sensor.

Introductory Description

The heart of the ASF1430 mass flow meter is powered by Sensirion's unsurpassed CMOSens® sensor technology. The ASF1430 mass flow meter therefore provides unbeatable performance at very attractive system cost. The lowest detectable gas flow rate is 0.0143 sccm, i.e. a minimum volume of 14.3 mm^3 gas per minute can be measured. Covering at the same time a flow range of more than 4 orders of magnitude, the ASF1430 sets a new standard wherever mass flow has to be measured or controlled.

The ASF1430 mass flow sensor runs with an internal flow integration time of 5ms. This allows correct measurement and display of fast changing signals. But very often a precise total flow over a longer period is of higher interest than a fast single measurements. For this purpose the ASF1430 can be set to slower read out times (see 0). The sensor internally still integrates in 5 ms slices and recognizes fast signal changes but for the read out the total flow over the whole period is calculated. The ASF1430 mass flow meter therefore is exceptionally well suited for difficult measurement conditions when fast changing gas flows must be monitored and summed up precisely.

The ASF1430 device measures true mass flow independent of the ambient temperature and pressure changes. You simply connect the gas to be measured to the ASF1430 device to get an instantaneous gas mass flow integral with a selectable integration time between 5 ms and 640 ms.

A flow range between ±400 sccm can directly be measured by connecting the ASF1430. To increase the range, a bypass can be used in conjunction with the ASF1430 device (see Section 1.5 of this data sheet).

In addition to mass flow, the ASF1430 device provides information about the temperature on the CMOSens® sensor element. Both mass flow and temperature data are accessed through an RS-232. The RS-232 interface allows you to directly connect the ASF1430 device to a PC or PDA using standard terminal software. If a special interface such as 4-20 mA current output or other is required contact Sensirion for a customer specific solution.

In general, all gas types can be measured using the ASF1430. However, the standard calibration gas is nitrogen. Please contact SENSIRION, if you would like to use the sensor for applications with other gases.

ASF1430 is RoHS compliant.

CMOSens® sensor technology

CMOSens® is the base technology for all Sensirion multi sensor modules and sensor systems. The union 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 a 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 excellent sensor precision, 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 ("Mount&Sense").