SENSIRION
THE SENSOR COMPANY

Sensor Maintenance and Recalibration

Application Note for Liquid Flow Sensors

1 Sensirion Factory Calibration

Sensirion liquid flow sensors are calibrated according to Sensirion's internal methods to meet the specifications as defined in the corresponding Sensirion datasheet. The calibration information is stored in the sensor's non-volatile memory and cannot be modified after it is written. Each Sensirion liquid flow sensor is individually tested following its calibration.

2 Sensor Maintenance

The Sensirion liquid flow sensors have no moving parts or wear parts and therefore no wear and tear is expected. Owing to the sensors' design, no preventative maintenance is needed. However, during the course of a sensor's lifetime, the sensor performance might degrade for various reasons.

The principal cause for degradation of the sensor performance (drift of the sensor signal and loss of accuracy) is exposure to abrasive or depositing liquids. In the case of abrasive liquids, the sensor's reading will increase over time (the sensor output will be higher than the actual flow rate). In the case of depositing liquids, the sensor reading will decrease over time (the sensor output will be lower than the actual flow rate).

When the sensor is used with abrasive or depositing liquids, the sensor's calibration accuracy will degrade over time. In order to detect such deviations, it is recommended to validate the sensor against a suitable reference (e.g. a scale) at regular intervals. The length of this interval depends strongly on the degree of abrasion or deposit produced by the fluid.

If the fluid in use is neither abrasive nor depositing, depending on the requirements of the customer, the sensor should be verified at periodic intervals established and maintained to assure acceptable accuracy and reliability. It is the responsibility of the customer's technical experts to define a suitable verification interval based on the customer's application and requirements. Typical intervals range from once every 3 months to once every year, special applications may require shorter or allow for longer intervals.

3 Sensor Recalibration

In general use, the term "calibration" often refers to comparing the sensor to a reference and adjusting the sensor's output to match the reference output. As stated above, the sensor's calibration information cannot be modified and therefore the sensor cannot be readjusted (or "recalibrated"). It can only be checked for correct function and accuracy. In cases, where an accuracy deviation is found during such a verification, the sensor would have to be exchanged against a new one.

Note that Sensirion as an OEM sensor manufacturer cannot offer recalibration or verification as a service to customers.

However, there are qualified and verified metrological laboratories which offer the verification of Sensirion sensors.
Such as **TrigasFI GmbH** (TrigasFI Flow Measurement & Calibration) in Neufahrn, Germany which offers this service and is certified to measure flow rates down to 50ul/min, or the **Eidgenössisches Institut für Metrologie (METAS)** in Bern-Wabern (Microflow (metas.ch)), Switzerland which is offering this service down to 5nl/min.

4 Revision History

Date	Version	Page(s)	Changes
09.07.2019	1	All	Initial version
24.10.2022	2	1	Adding external verification vendors

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