Inspiring Flow Sensor Technology

Process monitoring and feedback control are becoming increasingly important in all industries. As a result, flow sensors are now used in modern fluidic systems to ensure safe and reliable pumping and dispensing of liquids.

For more information please visit: www.sensirion.com/liquidflow

PATENTED TECHNOLOGY

Sensirion’s CMOSens® flow sensor technology, based on a thermal microsensor with no moving parts, is most effective at very low flow rates. Our liquid flow sensors offer completely media-isolated flow sensing down to the nanoliter range. We offer our customers the world’s smallest, most precise liquid flow sensors at the best value for money and inspire new approaches to design.

The key element in our products is an integrated digital CMOSens® microchip bonded to the outside of the sensor’s flow channel, which measures precisely through the wall of the flow channel (US patent 6,813,944). High reliability and perfect media compatibility make our sensors ideal for use in life sciences, factory automation and energy management applications.

FAST, SMALL, RELIABLE

Sensirion’s standard liquid flow sensors provide exceptional value for money and eliminate the need for investment in application-specific OEM sensor development. The inert, bio-compatible flow channel of the non-invasive sensors ensures excellent process compatibility by having neither moving parts nor obstacles. Digital or analog outputs are available for seamless integration. Straight fittings provide a quick assembly into the fluidic line, downmount fittings allow for easy installation in manifold systems. For more complex tasks, Sensirion is able to develop customized solutions.

Using capillaries with different diameters, Sensirion’s flow sensors cover flow rate requirements over six orders of magnitude from 70 nl/min to 120 ml/min. In addition to the sensor element, the chip houses the complete digital intelligence and the memory necessary for signal linearization, temperature compensation and self-test algorithms.

Sensirion is able to measure flows from 70 nl/min up to 120 ml/min

CUSTOMIZED MICROFLUIDIC PLANAR PACKAGE DESIGN

Sensirion is able to measure flows from 70 nl/min up to 120 ml/min

LOW FLOW RATES

Sensirion is able to measure flows from 70 nl/min up to 120 ml/min

SENSIRION – THE SENSOR COMPANY

Sensirion is the leading manufacturer of high-quality sensors and sensor solutions for the measurement and control of humidity, and gas and liquid flows. Founded in 1998 as a spin-off from the Swiss Federal Institute of Technology (ETH), the company is based near Zurich, Switzerland, and has offices in North America, South Korea, Japan, China and Taiwan. The head office in Switzerland is responsible for research, development and production.

Millions of Sensirion’s sensor components and solutions are used all over the world. Customers in various industries, including demanding mass markets such as the automotive and medical industries, rely on our products. Sensirion’s success is based on the innovative CMOSens® Technology, which combines sensor and analysis electronics on a single semiconductor chip. This enables the low-cost production of a large number of high-quality units, making Sensirion a preferred supplier of microsensors and sensor solutions. With locations around the world and a seamless distribution network, we can provide the highest level of customer support at every stage of a project. The many awards we have won demonstrate that we are prepared to go the extra mile for our customers. We received the Ernst & Young Entrepreneur of the Year® 2010 award, which is presented to companies that have made a contribution to the competitiveness of the Swiss economy by means of personal commitment and a willingness to take risks.
Selection of Sensirion Flow Meters

**SLQ-QT500**
With a calibrated flow rate range of 3 to 120 ml/min and with only high-purity wetted materials such as quartz glass and PFA, this sensor is ideal for dispense applications in demanding semiconductor industry. With its short response time, the dispense can be monitored with unsurpassed time resolution.

**SLI SERIES**
With the Sensirion flow sensor technology in a protective housing, the SLI Series is ideal for laboratory work and for use in automation industry. The SLI sensors are also available as FlowMeterKits with Windows PC Viewer and Logger software, and various fluidic connection material.

**LS32-1500**
This chemically resistant liquid flow sensor comes in a compact housing with high mechanical robustness. The wetted materials (high-performance stainless steel, PEEK, and PTFE) provide excellent bio-compatibility and exceptional chemical resistance. While being ideal for the biomedical market, it offers a cost-effective, compact and reliable solution for many applications with flow rates from 0 to 40 ml/min.

**LG16/LG01 OEM SERIES**
The small footprint of the LG16 series makes it the ideal choice for the integration of a flow sensor into OEM devices. It is available in a digital version with PC communication and a 0-5 V analog output version. The LG01 is the perfect sensor for detection of flow, bubbles and leakage.

**LPG10 OEM SERIES**
The LPG10 series offers our smallest liquid flow sensors available today, enabling outstanding performance and speed in an incredibly small space. The innovative design features our highly sensitive microchip, measuring the flow in a planar microfluidic substrate from the outside of the flow channel. Fluidic ports on the bottom allow easy integration into manifold systems.

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<table>
<thead>
<tr>
<th>Model</th>
<th>Minimum Order Quantity</th>
<th>Full Scale Flow Rates</th>
<th>Accuracy of Reading</th>
<th>Bidirectional Operation</th>
<th>Media</th>
<th>Output Analog</th>
<th>Maximum Cable Length</th>
<th>Tubeing</th>
<th>Maximum Pressure</th>
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</thead>
<tbody>
<tr>
<td>SLI-LQ0503</td>
<td>1 piece</td>
<td>800 ml/min H₂O</td>
<td>5%</td>
<td>yes</td>
<td>All media, calibration valid for H₂O &amp; IPA</td>
<td>0-10V</td>
<td>&gt; 100 cm for RS485, 30 cm for PC</td>
<td>Outer Ø 1/16”</td>
<td>1000 bar</td>
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<tr>
<td>SLI-LQ1000</td>
<td>1 piece</td>
<td>1000 ml/min H₂O</td>
<td>5%</td>
<td>yes</td>
<td>All media, calibration valid for H₂O &amp; IPA</td>
<td>0-10V</td>
<td>&gt; 100 cm for RS485, 30 cm for PC</td>
<td>Outer Ø 1/16”, 1/16” or 1/8”</td>
<td>50 bar</td>
</tr>
<tr>
<td>SLG-QT500</td>
<td>1 piece</td>
<td>1200 ml/min H₂O</td>
<td>10%</td>
<td>yes</td>
<td>All media, calibration valid for H₂O &amp; IPA</td>
<td>0-10V</td>
<td>&gt; 100 cm for RS485, 30 cm for PC</td>
<td>Outer Ø 3/16”</td>
<td>12 bar</td>
</tr>
<tr>
<td>SLG-QT530</td>
<td>1 piece</td>
<td>1500 ml/min H₂O</td>
<td>10%</td>
<td>yes</td>
<td>Hydrocarbon-based liquids only, Calibration valid for IPA</td>
<td>0-10V</td>
<td>&gt; 100 cm for RS485, 30 cm for PC</td>
<td>Outer Ø 1/4”</td>
<td>12 bar</td>
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<tr>
<td>SLG-QT600</td>
<td>1 piece</td>
<td>120 ml/min HC</td>
<td>10%</td>
<td>yes</td>
<td>All media, calibration valid for H₂O &amp; IPA</td>
<td>0-10V</td>
<td>2 m</td>
<td>Outer Ø 1/16”</td>
<td>5 bar</td>
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<tr>
<td>LS32-1500</td>
<td>20 pcs (OEM only)</td>
<td>40 ml/min H₂O</td>
<td>10%</td>
<td>yes</td>
<td>All media, calibration valid for H₂O</td>
<td>0-10V</td>
<td>20 cm for PC</td>
<td>Outer Ø 1/8”</td>
<td>12 bar</td>
</tr>
<tr>
<td>LG01-0025</td>
<td>1.5 ml/min H₂O</td>
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<td>10%</td>
<td>yes</td>
<td>All media, calibration valid for H₂O</td>
<td>0-5V</td>
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<td>Outer Ø 1/16”</td>
<td>200 bar</td>
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<td>0-5V</td>
<td>30 cm for PC</td>
<td>Outer Ø 1/16”</td>
<td>200 bar</td>
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<tr>
<td>LG01-0430</td>
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<td>5%</td>
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<td>All media, calibration valid for H₂O &amp; IPA</td>
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<td>Outer Ø 1/16”</td>
<td>200 bar</td>
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<td>100 pcs (OEM only)</td>
<td>10%</td>
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<td>All media, calibration valid for H₂O &amp; IPA</td>
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<td>100 bar</td>
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<tr>
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<td>100 pcs (OEM only)</td>
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<td>All media, calibration valid for H₂O &amp; IPA</td>
<td>0-5V</td>
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<td>Outer Ø 1/16”</td>
<td>200 bar</td>
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<td>LG01-0100</td>
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<td>100 pcs (OEM only)</td>
<td>10%</td>
<td>no</td>
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<td>Outer Ø 1/16”</td>
<td>3 bar</td>
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<tr>
<td>LG01-0430</td>
<td>100 ml/min H₂O</td>
<td>100 pcs (OEM only)</td>
<td>5%</td>
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<td>All media, calibration valid for H₂O</td>
<td>0-5V</td>
<td>30 cm for PC</td>
<td>Downstream</td>
<td>10 bar</td>
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<td>200 ml/min H₂O</td>
<td>100 pcs (OEM only)</td>
<td>10%</td>
<td>no</td>
<td>All media, calibration valid for H₂O</td>
<td>0 V or flow or bubble 3 m</td>
<td>Outer Ø 1/16”</td>
<td>3 bar</td>
<td></td>
</tr>
</tbody>
</table>

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Range of best accuracy [µl/min or µl/s] | Hydrocarbon (HC)

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