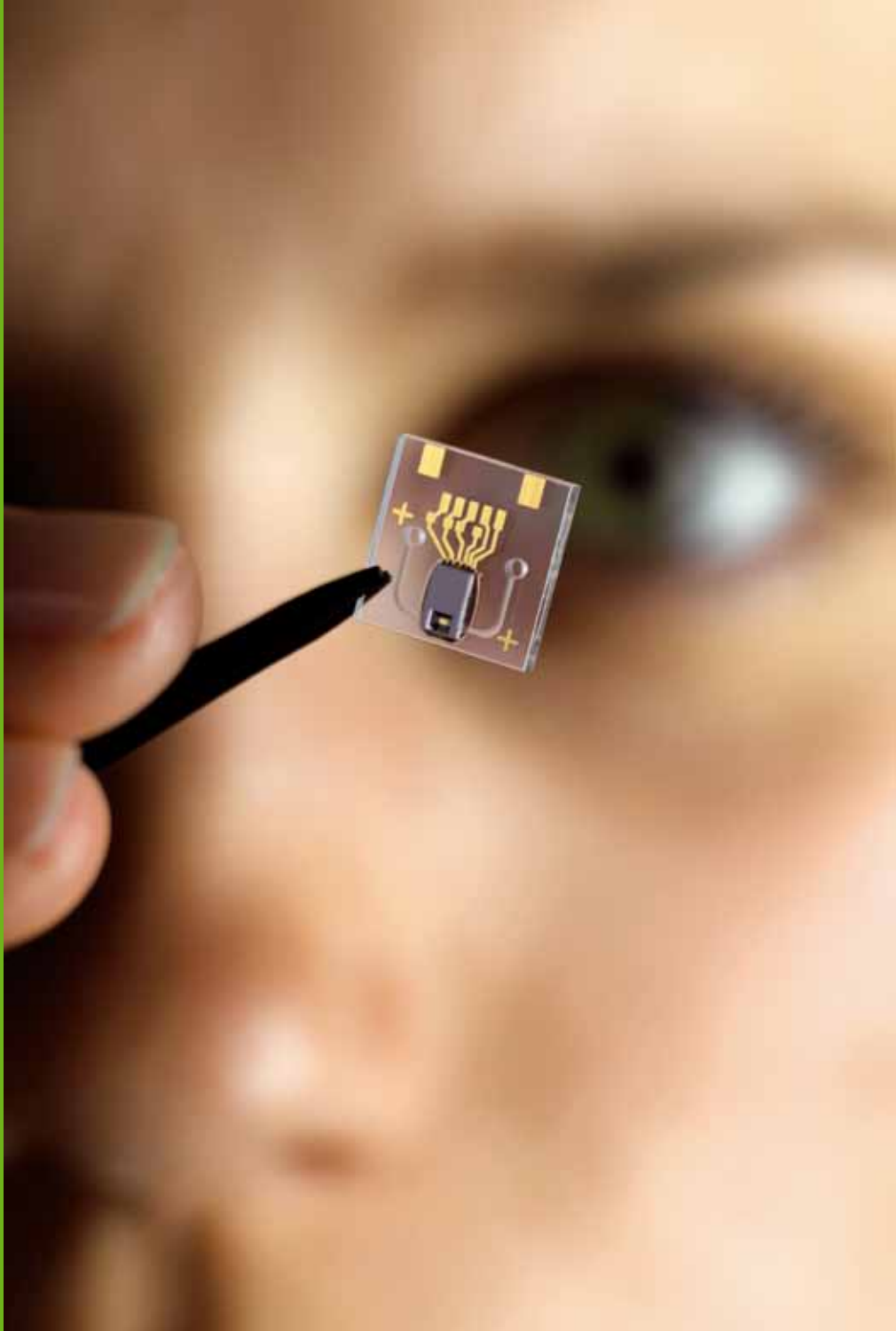


Sensirion Sensor Solutions

- Humidity and Temperature
- Liquid Flow
- Gas Flow
- Differential Pressure



Sensirion – The Sensor Company

A Leading Sensor Manufacturer

Sensirion AG is an international sensor company with headquarters in Staefa, Switzerland. As a producer of sensor components and systems for the high-performance measurement of humidity and temperature, differential pressure, gas and liquid flow, we are one of the world leaders for micro sensors in various growth markets. Thanks to our technical competence we are regarded as an innovative and reliable OEM partner for high-quality sensor products and tailor-made solutions.

The company was founded in 1998 as a spin-off of ETH Zurich and today has more than 250 highly qualified employees worldwide. Thanks to the profound technical expertise of our sales and development teams we have established ourselves on the international market and enjoy our customers' great trust in our products and services.

As Sensirion sells millions of sensors all over the world, we greatly value an effective and progressive quality management system. The innovative sensor solutions are all developed and produced at our headquarters in Switzerland and stand for top quality and reliability. Customers in various industries, including demanding mass markets such as the automotive and medical industry, rely on our products.




Actual size

Example of a fully integrated CMOSens® sensor chip

A significant basis of the company's success is Sensirion's unique and proven CMOSens® Technology with more than 60 patent groups. This technology integrates the sensor together with the signal processing circuitry in a single tiny standard semiconductor chip. This offers customers numerous benefits, in particular excellent precision and reliability, at attractive prices.

As a result of our innovations and technology leadership, we have received numerous awards in our company's history – most recently the «Entrepreneur of the Year® 2010» award from Ernst & Young.



Present in the Markets of the Future

Used in numerous applications for various industries, our innovative sensors provide many useful functions. For instance, in the medical industry they enable continuous and reliable patient monitoring and precise control of medical equipment, making it more effective and safer. In vehicles, our products help achieve precise and efficient climate and engine control and thus contribute to reduced fuel consumption. In addition, they can be used to prevent window fogging, which among other things enhances safety. Our sensors support efficient heating, ventilation and air conditioning in building automation and burner control systems and therefore help to reduce energy consumption. They are also used to enhance personal comfort by helping to create an ideal room climate. Similar goals apply to the use of our humidity and temperature sensors in consumer goods, such as mobile phones. In addition to applications for monitoring ambient conditions, they facilitate the creation of new forms of touch-free interaction with mobile devices.

In the automotive industry, HVAC systems, medical technology, process automation, consumer goods industry and household appliances, everything essentially revolves around supporting the same goals: reducing energy consumption, improving health, increasing comfort, enhancing safety, and reducing costs. This means that Sensirion and its products are at the forefront in overcoming emerging social and environmental challenges.

Highest Service Levels Worldwide

Sensirion places a great deal of importance on the best possible customer service. Our customers can always count on quick, efficient and competent support from our highly qualified sales and development teams. To ensure knowledgeable technical services on site, we rely on a continuously growing international sales network. In addition to our headquarters in Switzerland, we have sales offices in China, Japan, South Korea, Germany and the USA. We are also supported by a number of distribution partners and catalog distributors. This comprehensive sales network guarantees seamless customer service worldwide. To find your personal contact, please go to www.sensirion.com/contact.

Unique CMOSens® Technology

Sensirion's innovative and proven CMOSens® Technology unites the sensor element with analog and digital signal processing circuits on a single, tiny CMOS silicon chip. Thanks to this technology, our sensors feature high accuracy, reliability, functionality, and cost effectiveness.

Implementation is based on the most advanced semiconductor technology. We use specific microsystem processing steps to produce the microsensor structures in specially developed and patented semiconductor components. The resulting sensor chip enables very precise and reliable measurement of the desired physical parameters, such as humidity or mass flow.

Sensor integration eliminates the need for fault-prone solder joints. This yields extreme long-term stability, and the sensitive analog sensor signals are locally amplified and digitized in a fault-resistant and very precise manner. Thanks to the digital signal processing circuitry, the sensors also include intelligence for self-tests, low-power operation, linearization and digitization. Finally, the use of standardized and cost-optimized semiconductor technology also allows us to offer the sensors at a lower price than conventional sensors.

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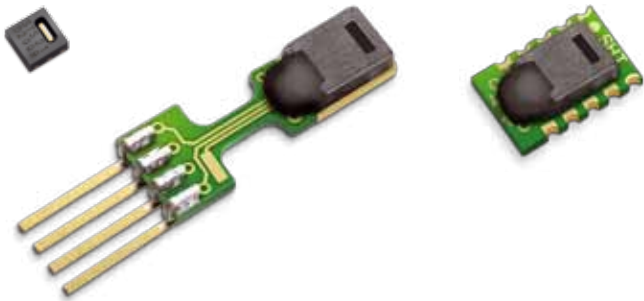
8-inch wafer

Your Partner for Innovative Sensor Products ...

Humidity and Temperature Sensors

Sensirion's relative humidity and temperature sensors are characterized by their high measurement precision, their reliability, and their low energy consumption. All sensors are fully calibrated and have a digital I²C (or analog) output signal. In addition, our customers benefit from the products' excellent long-term stability.

The sensors of the SHT family also feature extremely small size, achieved thanks to Sensirion's CMOSens[®] Technology and the associated high level of integration.



Actual sizes



Humidity and temperature sensors of the SHT family

The humidity and temperature sensors are available in several versions with different accuracy specifications and packages and can thus be adapted to the requirements of specific applications. Sensirion offers SMD and pin types to cover all customer needs. The pin-type sensors are especially suitable for applications that require fast replacement or a high degree of flexibility, while the SMD types are designed for processing on standard SMD lines and reflow soldering processes.

Sensirion's humidity and temperature sensors are considered the market standard today. They are used in the HVAC and medical fields as well as the automotive and consumer goods industries. Our customers benefit from the high quality at competitive prices that we are able to achieve with our CMOSens[®] based mass production.

Sensirion also offers evaluation kits and filter caps to go along with our humidity sensors. The filter caps give the sensors additional protection against ambient conditions, which makes them even more resistant to water, dust, soot, and chemical contaminants in challenging measurement environments. The different evaluation kits enable easy testing and evaluation of the humidity sensors.

For more information please ask for our «Humidity Sensors» product flyer or visit: www.sensirion.com/humidity.



Differential Pressure Sensors for Gases

Sensirion offers a large selection of differential pressure sensors for extremely reliable, fast and sensitive measurements. These analog or digital sensors are all individually calibrated and temperature compensated. Customers benefit from the highest performance and flexibility for measuring differential pressures with air or dry gases.



SDP610 and SDP1000 differential pressure sensors

Sensirion's differential pressure sensors are based on a dynamic measurement principle in which the differential pressure is determined from calorimetric mass flow measurement (see «Customer-specific sensor solutions») using our patented CMOSens® Technology. As a result, the sensors are distinguished by their high precision and resolution, especially for very small pressure differences (below 10 Pa/0.04 in. WC).

The small, cost-effective sensors of the SDP series are used in a wide variety of application areas. For instance, they are ideally suited for use in medical equipment or other industrial applications. Thanks to their outstanding long-term stability, there are no drift problems and sensor repeatability is excellent.

The various standard series of differential pressure sensors are manufactured in high-quality mass production. Sensirion also offers customized OEM solutions for high-volume applications, which are precisely adapted to the customer's needs and requirements.

For more information please ask for our «Differential Pressure Sensors» product flyer or visit:

www.sensirion.com/differentialpressure.

Quality and Sustainability

Sensirion always tries to meet the most stringent quality standards with their products and services. The varied uses of our sensors in demanding mass markets such as medical technology or the automotive industry make it a must that customers can rely on a consistent supply of perfect-quality products for their sometimes security-critical applications. In order to live up to these requirements we are continuously developing our quality management system.

Sensirion has been certified according to the automotive norm ISO/TS 16949 since 2008, which extends and supplements its quality certificate according to ISO 9001. These norms certify the structure, implementation, monitoring, and continuous improvement of standardized and reliable business processes. In addition, an extensive and efficient complaint management system ensures that we are able to support our OEM customers optimally as they create value.

In addition to our efforts in quality assurance, we recently have been certified according to environmental norm ISO 14001. This certification underscores our efforts to continually optimize our energy efficiency and to make an active company contribution to sustainability and environmental protection.



Certification labels

... and Tailor-Made Solutions

Liquid Flow Sensors

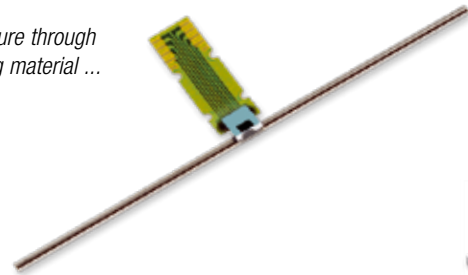
Sensirion's liquid flow sensors measure flow rates in the range of milliliters, microliters or even nanoliters per minute. Our innovative sensor technology allows high-precision measurements to be made through the wall of the flow channel. Our customers benefit from this non-invasive technology in a multitude of applications, such as medical equipment and diagnostics, process engineering and the semiconductor industry.

The small sensors are suitable for water, hydrocarbon liquids, and many other media. Thanks to the media-isolated measurement principle and the use of high-quality inert materials, these products offer excellent bio-compatibility and chemical resistance. The liquid flow sensors also feature extremely high sensitivity and speed, which allows monitoring of highly dynamic processes.

*SLQ-QT105 liquid flow meter
for the semiconductor industry*



*Measure through
tubing material ...*



*... or inside microfluidic
substrates*



In addition to standard liquid flow sensors, Sensirion offers customized solutions for high-volume applications. Based on our patented CMOSens® Technology, we develop and produce products together with our customers that are perfectly tailored to their specific requirements. We can also modify existing sensors to suit customer needs.

For more information please ask for our «Liquid Flow Sensors» product flyer or visit: www.sensirion.com/liquidflow.



Sensor Solutions for Gas Flow

Our sensor solutions for gases provide fast and reliable measurement and control of flows. A calorimetric micro sensor is integrated on a chip together with the signal processing circuitry, which makes mass flow meters and controllers especially fast and cost effective. In addition, customers benefit from the small physical size of the devices, which makes them suitable for use in respiration and anesthesia equipment as well as process automation and quality control.



*SFC4000 mass flow controller
and EM1 mass flow meter*

The mass flow meters measure air and non-aggressive gases with extremely high precision over a wide dynamic measurement range. They are drift-free and have excellent long-term stability. This makes the sensors especially attractive for products with high usage and correspondingly long service intervals. In addition, the multi-gas option of Sensirion's mass flow meters allows the sensor to be calibrated for individual gasses according to the customer's needs.

Sensirion's mass flow controllers combine high-precision sensor elements with a signal amplifier and an A/D converter, enabling fast and precise control of gas flows over a very wide flow range. The digitally calibrated and temperature compensated sensor signal is directly converted to a signal that is used in the digital control circuit to control a valve.

For more information please ask for our «Mass Flow Meter» and «Mass Flow Controller» product flyers or visit:

www.sensirion.com/gasflow.

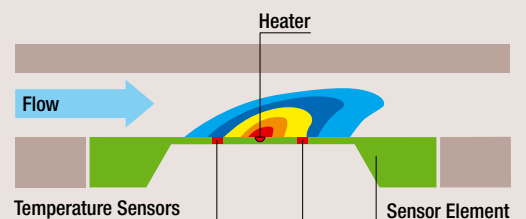
Customer-Specific Solutions

As mentioned in the various product descriptions, we offer customer-specific solutions for high-volume applications in addition to the standard sensors. This is achieved by modifying an existing product or developing a tailor-made sensor according to the customer's specific instructions and requirements.

The basis for such customer-specific sensor solutions is our patented CMOSens® Technology (see «Unique CMOSens® Technology»). Supported by our highly qualified engineers, you receive a reliable, intelligent, and above all cost-optimized product.

Developing a tailor-made, custom solution is an especially logical choice for sensor solutions for flow measurement and control. In order to produce the integrated sensor, a membrane closed at the front and passivated with glass is etched into the silicon chip. It is especially resistant to pressure and, with suitable venting, can be used even with severe pressure shocks. A controllable heating element is attached to the center of the membrane, and temperature sensors are mounted symmetrically upstream and downstream from this heater. Media flow causes thermal heat transport to the downstream temperature sensor, and the temperature difference produces a very fast and precisely measurable signal.

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TECHNOLOGY



Integrated flow measurement principle

About Sensirion

Sensirion AG, with headquarters in Staefa, Switzerland, is a leading manufacturer of CMOS sensor components and systems for a wide variety of OEM applications (e.g. in the medical, automotive, HVAC and consumer industries). Our four current product lines focus on the following categories of high-quality products:

- **Humidity and temperature sensors**
- **Liquid flow sensors**
- **Gas flow sensor solutions (mass flow meters and controllers)**
- **Differential pressure sensors**

With a growing, highly qualified staff of more than 250 employees, Sensirion stands for continuous product innovation and excellent technical support. To provide international service with guaranteed high quality, we rely on a global sales and support network consisting of subsidiaries in the USA, Germany, China, Japan and South Korea as well as a wide network of independent distributors.

Our products are distinguished by their use of patented CMOSens® Technology, which integrates the sensor element and signal processing on a single chip. In the highly competitive global market, this system integration offers unbeatable customer benefits – in particular high reliability and precision at low cost.

Sensirion's competence as a reliable OEM partner is underlined by a distinct quality approach and a professional quality management system, which is certified in accordance with the ISO 9001 and ISO/TS 16949 standards.

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