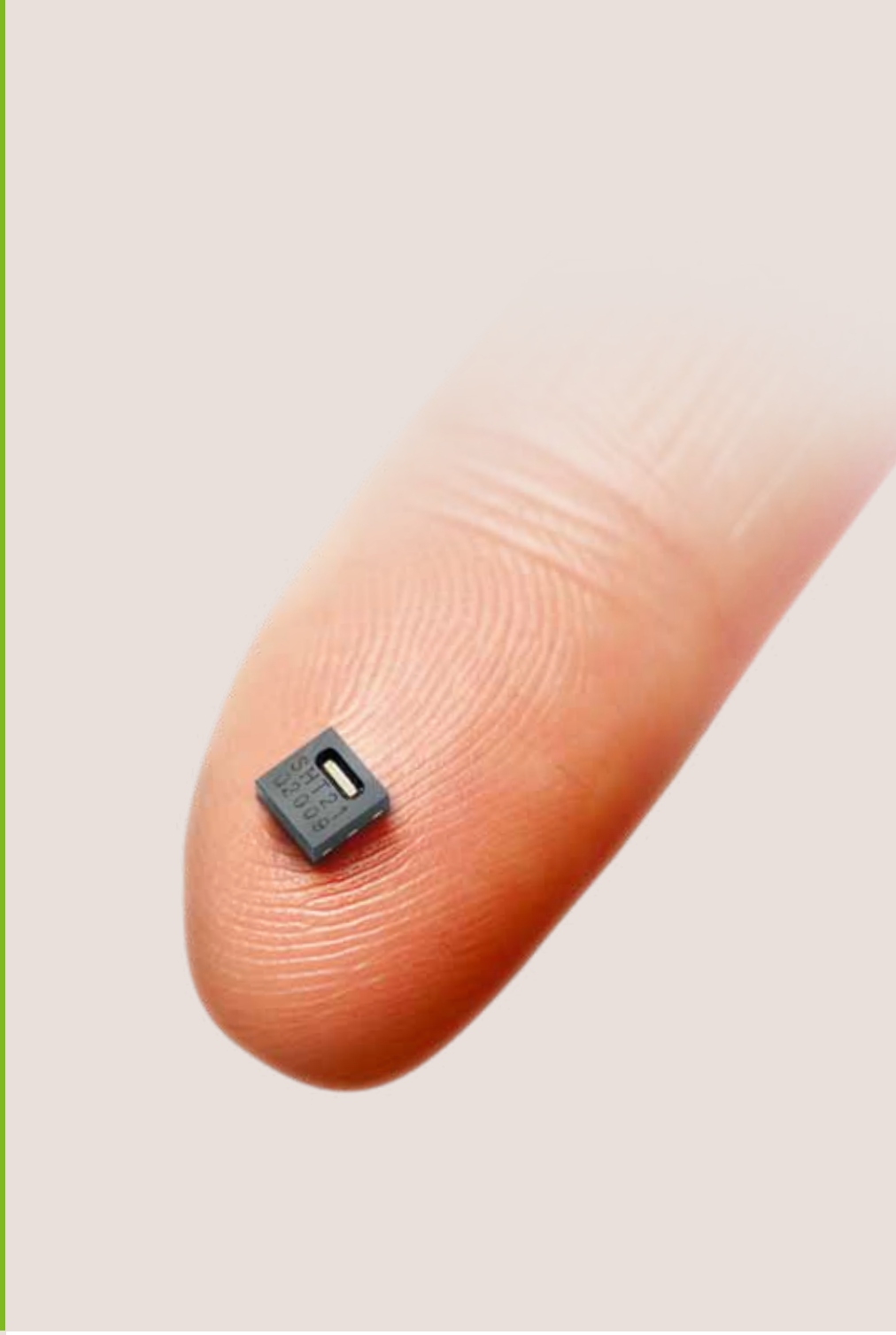
Humidity & Temperature Sensors

- Calibrated, digital output
- Excellent performance
- Proven reliability
- Low power consumption
- Smallest size
- Easy to use



CMOSens® TECHNOLOGY

SENSIRION THE SENSOR COMPANY

Digital Humidity and Temperature Sensors

Market leader through innovation

Sensirion's humidity and temperature sensors have become established as the market standard – mainly due to their high performance, functionality and miniaturized form factor. These unique features are based on Sensirion's innovative CMOSens® technology, which integrates a humidity sensor, a temperature sensor, signal processing and calibration memory on a single chip. The high level of integration, small size and simple handling of the sensors enable easy integration even in the tightest spaces.

The RoHS-compliant sensors are fully calibrated and provide a digital interface. All sensors feature outstanding reliability, precision and low power consumption.

Tested and proven worldwide

Our in-house sensor calibration and testing infrastructure allows effective procedures compliant with established quality standards. Each sensor is individually tested for quality and accuracy. The high reliability of the sensors is proven by millions of sensors in the field and is further underlined by successful qualification based on the AEC-Q100 automotive standard. A proven and tested quality management system ensures low PPM values.

Easy evaluation

Sensirion's evaluation kits allow designers to evaluate and test the sensors without any hardware or software design effort. These evaluation kits support various resolutions, display values in °C or °F, and allow the user to select absolute or relative timing. They can be used to record and display humidity and temperature values or calculated values of dew point and power consumption. They also include data-logging capability, and data can be exported to Excel.

Reliably protected

Sophisticated packaging protects the sensors against aging and ambient conditions, such as condensation and harsh environments, to ensure excellent long-term stability. Our optional filter cap is an easily fitted solution to protect Sensirion's humidity and temperature sensors against water, dust, soot and other pollutants, even in the most demanding environments.

Sensing Anywhere

Humidity and temperature affect all of us

Sensirion's humidity and temperature sensors provide an important contribution to many different applications and help make our customers more successful and their devices more intelligent. Accurate, reliable measurements improve energy efficient cars, building control, appliances, medical devices, and a multitude of other little helpers in our daily life.

Contact us to learn what Sensirion sensors can do for you and your business.

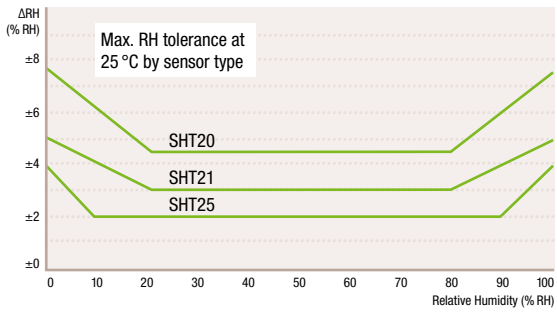
- Automotive
- Appliances
- Building automation
- Consumer electronics
- Environmental technology
- HVAC
- Industrial measurement
- Laboratory
- Medical
- Pharmaceutical
- Process control

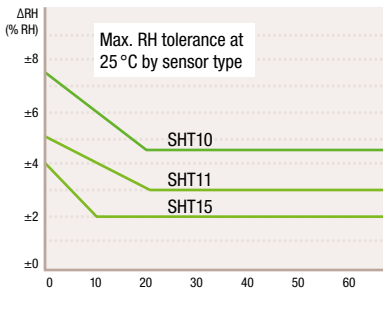
Humidity & temperature sensors at a glance

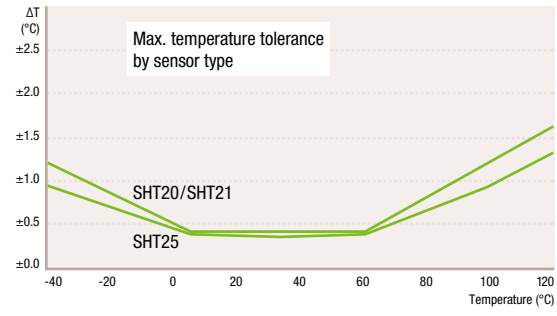
- I²C, PWM or SDM interface
- Designed for mass production
- Low power consumption
- Size: 3 x 3 x 1.1 mm

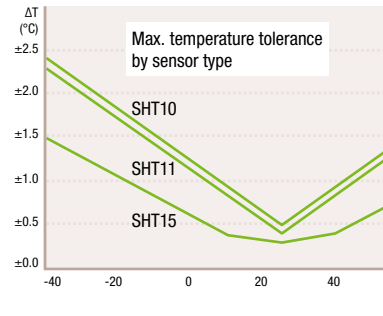
- SMD package
- Wide supply voltage range
- Suitable for mass production
- Size: 7.5 x 4.9 x 2.6 mm

Humidity sensor	SHT20	SHT21	SHT25	SHT10	SHT11
Typical accuracy (% RH)	± 3.0	± 2.0	± 1.8	± 4.5	± 3.0
Maximum accuracy tolerance (% RH)	± 4.5	± 3.0	± 2.0	± 4.5	± 3.0
Hysteresis max. (% RH)	± 1.0	± 1.0	± 1.0	± 1.0	± 1.0
Long term drift (% RH/yr)	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Operating range (% RH)	0 – 100	0 – 100	0 – 100	0 – 100	0 – 100
Resolution (bits)	8, 10, 11, 12	8, 10, 11, 12	8, 10, 11, 12	8, 12	8, 12
Response time τ 63 % [1] (s)	8	8	8	8	8
Temperature sensor					
Typical accuracy (°C)	± 0.3	± 0.3	± 0.2	± 0.5	± 0.4
Maximum accuracy tolerance (°C)	± 0.4	± 0.4	± 0.35	± 0.5	± 0.4
Long term drift (°C/yr)	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Operating range (°C)	-40 – 125	-40 – 125	-40 – 125	-40 – 123.8	-40 – 123.8
Resolution (bits)	11, 12, 13, 14	11, 12, 13, 14	11, 12, 13, 14	12, 14	12, 14
Response time τ 63 % [1] (s)	5 – 30	5 – 30	5 – 30	5 – 30	5 – 30
Electrical					
Sensor interface	I²C, S-bus, PWM, SDM	I²C, S-bus, PWM, SDM	I²C, S-bus	S-bus	S-bus
Supply voltage (V)	2.1 – 3.6	2.1 – 3.6	2.1 – 3.6	2.4 – 5.5	2.4 – 5.5
Avg. power consumption [2] (µW)	≈ 3.2	≈ 3.2	≈ 3.2	≈ 90	≈ 90





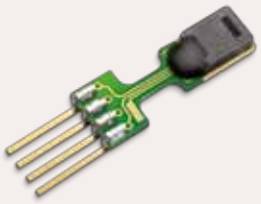




Please note that the stated values are only indicatory. For detailed information, consult current datasheets for individual sensor types.

[1] Temperature response times very much depend on the thermal conductivity of the sensor substrate material.

[2] Average power consumption values are for one 8 bit measurement per second at 3 V supply voltage and temperature <60 °C.

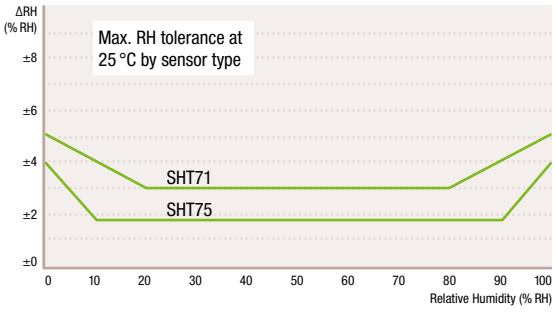


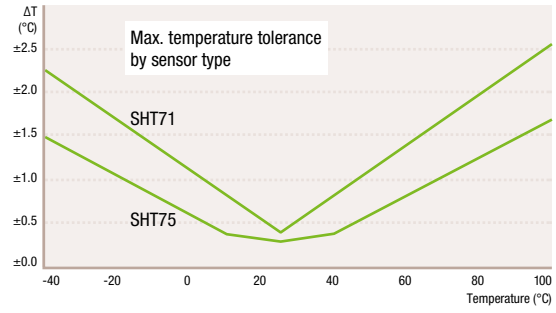
- Pin-type package
- Suitable for manual assembly
- Wide supply voltage range
- Size: 19.5 x 5.8 x 3.1 mm

SHT15	SHT71	SHT75
± 2.0	± 3.0	± 1.8
± 2.0	± 3.0	± 1.8
± 1.0	± 1.0	± 1.0
< 0.5	< 0.5	< 0.5
0 – 100	0 – 100	0 – 100
8, 12	8, 12	8, 12
8	8	8

± 0.3	± 0.4	± 0.3
± 0.3	± 0.4	± 0.3
< 0.04	< 0.04	< 0.04
-40 – 123.8	-40 – 123.8	-40 – 123.8
12, 14	12, 14	12, 14
5 – 30	5 – 30	5 – 30

S-bus	S-bus	S-bus
2.4 – 5.5	2.4 – 5.5	2.4 – 5.5
≈ 90	≈ 90	≈ 90





What we offer

Sensirion's fourfold customer focus meets your requirements:

Technology & Innovation
Innovative CMOSens® technology enables the sensor element to be combined with the analog and digital signal processing circuitry on a tiny CMOS silicon chip. This provides the basis for extremely high measurement accuracy, long term stability and miniaturization.

Quality & Reliability
CMOSens® technology is based on proven and reliable standard processes used in semiconductor fabrication, which contribute to the high reliability and reproducibility of Sensirion sensor solutions. Furthermore, Sensirion is strongly committed to continuous improvement.

Support
Whether you are planning, implementing or updating sensor technology, we offer a wide range of services designed for your needs. With our application know-how we assist you in all stages of development.

Cost Effectiveness
As a standard semiconductor fabrication process, CMOS is optimized for reliable mass production. Our sensors are based on this cost-optimized standard process, which gives our customers the best possible value for money.

About Sensirion

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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 automotive, HVAC, medical and consumer industries). Sensirion's sensors help ensure energy efficiency, environmental protection, health, safety, and comfort and make a contribution to a more intelligent world. Sensirion's range of high-quality products includes

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

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

Sensirion's expert staff of around 300 employees 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 with subsidiaries in the USA, Germany, China, Japan and Korea, as well as 13 representatives and 4 distributors.

CMOSens®
TECHNOLOGY

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SENSIRION
THE SENSOR COMPANY

Certified Management System SQS ISO 9001 / ISO 14001

Certified Management System SQS ISO/TS 16949