Smart thermostats

Sensors enable smart thermostats to operate with best accuracy, reliability, and low power consumption

Smart thermostats serve a dual purpose: Providing a comfortable environment by monitoring and regulating indoor temperature, humidity, and CO_2 levels, while optimizing energy consumption through intelligent algorithms, geo-fencing, and other advanced features. Smart thermostats seamlessly integrate with smart home ecosystems, including heat pumps, HVAC systems, and heat and energy recovery ventilation systems.

Target customers:
- Thermostat manufacturers (OEMs & ODMs)
- Climate control solution providers
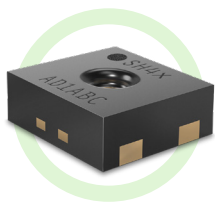

SHT40

STCC4

Application challenges

1. Size constraints

2. High accuracy and reliability

3. Cost pressure

4. Compliance with building standards

Sensirion's solutions

1. Sensirion's temperature, humidity and CO_2 sensors are among the smallest on the market

2. Demonstrated success in millions of households worldwide for effective climate management

3. Sensor variants can be tailored for every application need and budget

4. Scan the QR code of this brochure to find out which sensors are WELL, RESET, CA24, USGBC and ASHRAE compliant

SENSIRION

Sensirion sensor solution:

SHT40: High accuracy humidity and temperature sensor

Size (LxWxH): 1.5 x1.5 .05 mm3
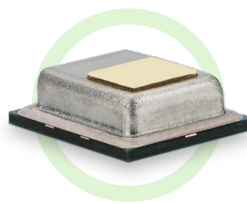
STCC4: CO₂ sensor with unmatched form factor

Size (LxWxH): 4 x 3 x 1.2 mm3

Key sensor features

- SHT40: High accuracy over a wide operating range (± 1.8% RH, ± 0.2° C)
- STCC4: Current consumption of 850uA at 1Hz
- Fully factory calibrated
- Cost efficient

Other applications

- Indoor air quality monitors
- Smart speakers
- Wearables
- Air purifiers

FAQs

- **What support does Sensirion offer for successful design-in?**
  If support for design-in, algorithm development or data analysis is necessary, Sensirion's field application engineering teams cover all continents and are ready to support. With excellent sensor expertise, design-in experience, in-house testing set-ups and applications insights, with Sensirion you can comfortably rely on bringing solutions successfully to market.

- **At what point in the development process do I need to involve Sensirion?**
  Involving Sensirion should occur as soon as the design and requirements of the application have been defined. Early collaboration ensures optimal sensor performance and preventing common pitfalls.

- **What is the value of adding a CO₂ feature to a thermostat?**
  CO₂ detection is crucial for defining air freshness, as high levels indicate poor air quality. Numerous research proved a clear correlation between CO₂ levels and sleep quality, cognitive performance and virus infection risk. Integrating a CO₂ sensor can prompt manual action such as opening a window or an automated response such as activating an HRV system.

- **Why Sensirion?**
  As one of the largest manufacturers, Sensirion sensors are integrated into millions of households worldwide, intensively cooperating with numerous renowned brands. With decades of experience, robust supply chains and manufacturing control, Sensirion ensures top-quality products.

Getting started

 SHT40 evaluation kit

 STCC4 evaluation kit

Related sensors

↗ SHT40
↗ SCD41
↗ SGP41
↗ STCC4

Useful documents

 Datasheets, application notes, handling instructions, sample codes, step files, certificates

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