

# Smoke detectors

## Humidity sensors for faster response and false alarm prevention

High humidity environments present a functionality concern for smoke detectors as they can trigger false alarms. False alarms are a concern because they tend to prompt users to deactivate the smoke sensors, leading to a higher risk of undetected fires and serious hazard. SHT40 humidity sensors greatly enhance smoke detectors by reducing moisture triggered false alarms.

Additionally, in slow burning fires, standard smoke detectors are slow reacting and triggering the alarm. The integration of SHT40 can greatly shorten this elapsed time. Built in SHT40 smoke detectors are particularly effective in humid environments like kitchens or bathrooms, where fumes and steam are prevalent. Integrating our humidity sensors, smoke detectors offer precise and dependable fire safety solution, meeting the growing demand for enhanced protection.



### Application challenges

- 1 40% People disconnect the alarms due false alerts
- 2 Traditional smoke detectors take long times to alert
- 3 Some slow starting fires are hard to detect due signal drifting
- 4 Smoke detectors are size, power and cost constrained

### Sensirion's solutions

- 1 RH sensing technology reduces false alerts
- 2 RH/T detection can speed-up response time
- 3 Three signals (RH, T, Smoke detection) can avoid delayed detection
- 4 Sensirion SHT40 are small, power and cost-effective RH/T sensors

# Sensirion sensor solution:



SHT40: High accuracy humidity and temperature sensor

Size (LxWxH): 1.5 x1.5 .05 mm3

## Key sensor features

- Patented sensing technology for condensing environments
- Ultra-low power consumption for battery operated smoke detectors
- SHT40: High accuracy over a wide operating range ( $\pm 1.8\% \text{ RH}$ ,  $\pm 0.2^\circ \text{ C}$ )
- Fully factory calibrated

## Other applications

- Indoor air quality monitors
- Smart thermostats
- Air purifiers
- Trackers and data loggers
- Refrigerators
- Weather stations

## 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 RH/T feature to a smoke detector?

Humidity detection is crucial to prevent false alarms, as high moisture levels trigger smoke detectors. Numerous research proved a clear correlation between false alarms, disconnection of smoke detectors and risk of death. Integrating a humidity sensor can lead to a safer and faster fire detection.

### • 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

## Related sensors

- ↗ SHT41
- ↗ SHT43
- ↗ SHT45

## Useful documents



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