



# Particulate Matter Sensor

Experts in Environmental Sensing

## SPS30 – Particulate Matter Sensor for HVAC and Air Quality Applications

- Unique long-term stability due to Sensirion's innovative contamination-resistance technology
- Advanced particle size binning provided through calibrated digital output
  - Mass concentration: PM1.0, PM2.5, PM4 and PM10
  - Number concentration: PM0.5, PM1.0, PM2.5, PM4 and PM10
- Small, ultra-slim package

# Particulate Matter Sensor SPS30

The SPS30 particulate matter (PM) sensor represents a new technological breakthrough in optical PM sensors. Its measurement principle is based on laser scattering and makes use of Sensirion's innovative contamination-resistance technology. This technology, together with high-quality and long-lasting components, enables accurate measurements from the device's first operation and throughout its lifetime of more than eight years.

## APPLICATIONS

The SPS3x has been designed for use in various applications and devices, such as:

- Air purifiers
- HVAC equipment
- Demand-controlled ventilation systems
- Air conditioners
- Air quality and environmental monitors
- Smart home and IoT devices

## TECHNOLOGY AND BENEFITS

Technology	Benefits
Proprietary contamination-resistance technology and long-lasting components	Lifetime of more than eight years while operating continuously for 24 hours/day. No need for cleaning and/or maintenance, thus avoiding problems related to sensor drift or malfunction.
Laser-based scattering principle and advanced algorithms	Accurate measurements for different types of dust and other particles.
Accurate high-resolution particle size binning	Enables new use cases and device-specific actions based on detected particle composition.
Small, ultra-slim package	Easy to integrate into devices where size and space are limited.
Fully calibrated digital output. UART and I <sup>2</sup> C interfaces	Simple interfacing and read-out.

## SENSOR SPECIFICATIONS

Particulate Matter Sensor Specifications	
Mass concentration accuracy <sup>1</sup>	± 10 µg/m <sup>3</sup> @ 0 to 100 µg/m <sup>3</sup> ± 10% @ 100 to 1'000 µg/m <sup>3</sup>
Mass concentration range	0 to 1'000 µg/m <sup>3</sup>
Mass concentration resolution	1 µg/m <sup>3</sup>
Particle detection size range	Mass concentration: PM1.0, PM2.5, PM4 and PM10 Number concentration: PM0.5, PM1.0, PM2.5, PM4 and PM10
Lower limit of detection	0.3 µm
Minimum sampling interval	1 s (continuous mode)
Lifetime	> 8 years operating continuously 24h/day
Dimensions	40.6 x 40.6 x 12.2 mm <sup>3</sup>
Operating temperature range	-10 to +60 °C
Storage temperature range	-40 to +70 °C
Electrical Specifications	
Interface	UART, I <sup>2</sup> C
Supply voltage	4.5–5.5V
Average supply current @ 1 Hz measurement rate	< 60 mA

<sup>1</sup> Specified for PM2.5 at 25 °C using potassium chloride salt particles and the TSI DustTrak™ DRX Aerosol Monitor 8533 as a reference.

<sup>2</sup> PMx defines particles with a size smaller than "x" micrometers (e.g., PM2.5 = particles smaller than 2.5 µm).