

Datasheet SPS30

Particulate Matter Sensor for Air Quality Monitoring and Control

- Unique long-term stability
- Advanced particle size binning
- Superior accuracy in mass-concentration sensing
- Small, ultra-slim package
- Fully calibrated digital output



Product Summary

The SPS30 Particulate Matter (PM) sensor is a 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 its first operation and throughout its lifetime of more than eight years. In addition, Sensirion's advanced algorithms provide superior accuracy for different PM types and higher-resolution particle size binning, opening up new possibilities for the detection of different sorts of environmental dust and other particles. With dimensions of only 41 x 41 x 12 mm³, it is also the perfect solution for applications where size is of paramount importance, such as wall-mounted or compact air quality devices.

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1 Particulate Matter Sensor Specifications

Default conditions of 25 °C and 5 V supply voltage apply to values in the table below, unless otherwise stated.

Parameter	Conditions	Value	Units
Mass concentration accuracy ¹	0 to 100 µg/m ³	±10	µg/m ³
	100 to 1'000 µg/m ³	±10	%
Mass concentration range	-	0 to 1'000	µg/m ³
Mass concentration resolution	-	1	µg/m ³
Mass concentration size range ²	PM1.0	0.3 to 1.0	µm
	PM2.5	0.3 to 2.5	µm
	PM4	0.3 to 4.0	µm
	PM10	0.3 to 10.0	µm
Number concentration range	-	0 to 3'000	1/cm ³
Number concentration size range ²	PM0.5	0.3 to 0.5	µm
	PM1.0	0.3 to 1.0	µm
	PM2.5	0.3 to 2.5	µm
	PM4	0.3 to 4.0	µm
	PM10	0.3 to 10.0	µm
Sampling interval	-	1	s
Start-up time	-	< 8	s
Lifetime ³	24 h/day operation	> 8	years
Acoustic emission level	0.2 m	25	dB(A)
Weight	-	26	g

Table 1: Particulate Matter sensor specifications.

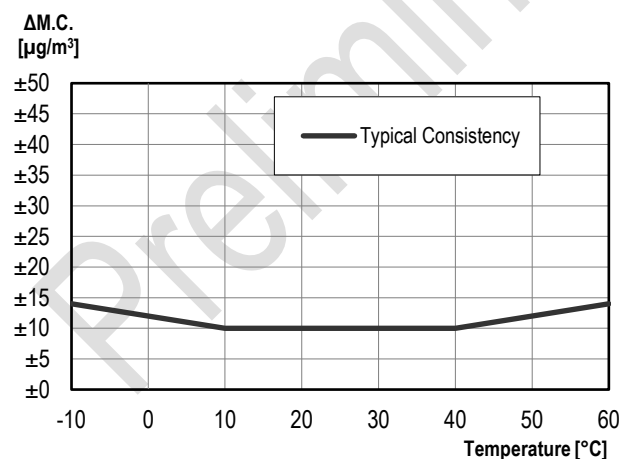


Figure 1: Typical consistency tolerance for PM2.5 in µg/m³ between 0-100 µg/m³.

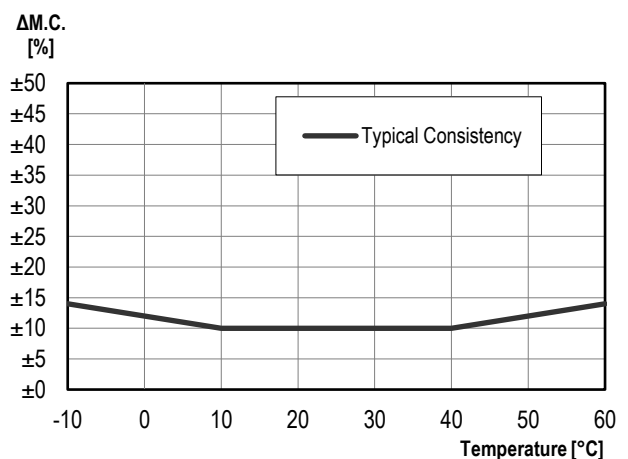


Figure 2: Typical consistency tolerance for PM2.5 in % between 100-1000 µg/m³.

¹ Deviation to TSI DustTrak™ DRX Aerosol Monitor 8533 reference. PM2.5 accuracy is verified for every sensor after calibration using a defined potassium chloride particle distribution. Ask Sensirion for further details on accuracy characterization procedures.

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

³ Validated with accelerated aging tests. Ask Sensirion for further details on accelerated aging validation procedures. Lifetime might vary depending on different operating conditions.