

PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

SPS30 Particulate Matter Sensor with SEK Eval Kit

Manufactured by:

SENSIRION AG

4F, Building 2, No. 800
Jiuxin Highway
Jiuting Town
Songjiang District
SHANGHAI 201615
China

has been assessed by CSA Group
and for the conditions stated on this certificate complies with:

**MCERTS Performance Standards for Indicative Ambient Particulate Monitors,
Version 4, dated August 2017**

Certification range:

PM_{2.5} 0 - 75 µg/m³

Project No.: 80237340
Certificate No: CSA MC200350/03
Initial Certification: 08 January 2020
This Certificate issued: 06 January 2025
Renewal Date: 07 January 2030



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Environmental Team Manager

MCERTS is operated on behalf of the Environment Agency by

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The MCERTS certificate consists of this document in its entirety.

For conditions of use, please consider all the information within.

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Approved Site Application

Any potential user should make sure, in consultation with the manufacturer, that the monitoring system is suitable for the intended application. For further information on stack emissions monitoring refer to the Environment Agency's guidance available at www.mcerts.net

The indicative dust monitoring analyser(s) can be operated in one of two ways:

For qualitative measurements: Providing qualitative measurement data for the analysis of particulate pollution trends, and source identification studies based for example on pollution roses etc. Such application can rely on instrument factory calibration only.

For quantitative measurements: Providing measurement data with the uncertainty defined for indicative instruments (+/- 50%). This can be achieved on condition that each instrument used for measurement has been calibrated on the specific site where monitoring is taking place against a standard reference method for a period of two weeks and the resulting slope and intercept have been used for instrument calibration. Using non-standard filters and procedures for this purpose is not acceptable. To maintain the validity of data this calibration has to be repeated at least every twelve months or when the instrument is moved to a different site.

They **cannot** be used on national automatic monitoring networks for compliance reporting against the Ambient Air Quality Directives.

The sampling frequency used during the certification testing was 1 second. This certificate is only applicable for the sample frequency used during the certification testing.

The power supply is 4.5 to 5.5V supply voltage.

The field test was carried out from the 22nd March to the 24th July 2019 on two candidate 'SPS30 Particulate Matter Sensor' systems, collocated with a Palas Fidas 200 measuring PM_{2.5} (the reference method). The location of the field test was at a EMPA facility in Dübendorf, Switzerland (*urban*).

Basis of Certification

This certification is based on the following test report(s) and on CSA Group's assessment and ongoing surveillance of the product and the manufacturing process:

MCERTS Report 80010867, dated 25/11/2019

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Product Certified

The SPS30 measuring system consists of the following parts:

- SPS30 Particulate Matter Sensor (including fan, laser and photodiode)
- SEK-SPS30 USB Sensor Evaluation Kit

The measuring system is a modular, sensor-based system and would require an enclosure, with a specification for the enclosure.

This product is only MCERTS certified if it is used in a suitable enclosure that has been approved by CSA Group.

The specification of the enclosure must meet the same requirements as the enclosure used during certification testing. This includes aspects such as: the dimensions (e.g. ~50mm x 60mm x 30mm), the aperture (to make sure the inlets and outlets are not obstructed and properly coupled to ambient air), the IP rating IP43 and the use of suitable protection from direct sunlight and protection from rain.

Further information on these requirements are detailed in Note 2. of this certificate.

This certificate applies to all instruments fitted with firmware version 1.0 and manufactured date 28/11/2019 onwards.

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Certified Performance

Test	Result	MCERTS specification
Consistency of the sample volumetric flow	Pass	Remain constant within $\pm 3\%$ of rated value
Tightness of the sampling system	Pass	Leakage not to exceed 2% of sampled volume
Intra-instrument uncertainty for the reference method	1.73 $\mu\text{g}/\text{m}^3$	$\leq 5 \mu\text{g}/\text{m}^3$
Intra-instrument uncertainty for the candidate method		
All data (125)	0.22 $\mu\text{g}/\text{m}^3$	$\leq 5 \mu\text{g}/\text{m}^3$
$\geq 18 \mu\text{g}/\text{m}^3$	0.54 $\mu\text{g}/\text{m}^3$	
$\leq 18 \mu\text{g}/\text{m}^3$	0.15 $\mu\text{g}/\text{m}^3$	
Highest resulting uncertainty estimate comparison against data quality objective (Measurement Uncertainty)	8.9%	WCM \leq Wdqp Measured uncertainty defined as 50% for indicative instruments
Maintenance Interval	>Two weeks Note 1	>Two weeks

Note 1: No maintenance was required over the 4-month field trial in an urban location.

Note 2: Manufacturer's recommendations for design and use of enclosure with the SPS30, as follows:

- The SPS30 features two air inlets and one air outlet that should not be obstructed and should be properly coupled to ambient air.
- Placement - the sensor should be placed as close as possible to the enclosures outer shell using large openings (a tightly sealed separation between inlet and outlet is favorable).
- Orientation - Vertical - placing the sensor with the inlets/outlet facing down avoids dust accumulation. Lateral - inlets should always be above the outlet to avoid unwanted recirculation of dust from the outlet through the effects of gravity. Horizontal - The green marked side "Sensirion" should be positioned facing the ground.
- Insulation from airflow - isolate sensor from external airflows when the flow velocity is greater than 1m/s.

More detailed information relating to assembly guidelines can be found here:

https://sensirion.com/media/documents/7990F04A/616544B0/Sensirion_Part particulate_Matter_AppNotes_SPS30_Mechanical_Design_and_As.pdf

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Description

The SPS30 Particulate Matter Sensor uses a focused laser beam to illuminate the incoming sample air, which is controlled by a fan. The light scattered by particles in the air stream is collected on a photodiode that converts the light intensity into an electrical signal.

Using proprietary algorithms, the SPS30 Particulate Matter Sensor converts the electrical signal into various mass and number concentration outputs, even with a small sample airflow (due to the miniaturized design) and a short measurement time. The monitoring system uses unique contamination resistance technology to keep the optics clean and maintenance-free throughout its lifetime.

General Notes

1. This certificate is based upon the equipment tested. The Manufacturer is responsible for ensuring that on-going production complies with the standard(s) and performance criteria defined in this certificate. The manufacturer is required to maintain an approved quality management system controlling the manufacture of the certified product. Both the product and the quality management system shall be subject to regular surveillance according to 'Regulations Applicable to the Holders of CSA Group Testing UK Ltd Certificates'.
2. The design of the product certified is defined in the CSA Group design schedule for certificate No. CSA MC200350/03.
3. If a certified product is found not to comply, CSA Group should be notified immediately at the address shown on this certificate.
4. The certification marks that can be applied to the product or used in publicity material are defined in 'Regulations Applicable to the Holders of CSA Group Testing UK Ltd Certificates'.
5. This document remains the property of CSA Group and shall be returned when requested by CSA Group.

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