

PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

“Nubo Air” - NMO-LTE with Sensor Cartridge NMO-CE1

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 ranges:

PM_{2.5} 0 - 75µg/m³

Project No.: 80078312
Certificate No: Sira MC200352/01
Initial Certification: 01 April 2020
This Certificate issued: 01 April 2021
Renewal Date: 31 March 2025



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Environmental Team Manager

MCERTS is operated on behalf of the Environment Agency by

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Approved Site Application

Any potential user should ensure, in consultation with the manufacturer, that the monitoring system is suitable for the intended application. For general guidance on monitoring techniques refer to the Environment Agency Monitoring Technical Guidance Notes 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 ($\pm 50\%$), as specified by the Air Quality Directive (2008). 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. Consistent results of the calibration may lead to less frequent repetition of the calibration process, in agreement with a competent authority, such as the Environment Agency or other Environmental regulator.

They **cannot** be used as a substitute for continuous ambient air quality monitoring systems (CAMs) employed in national air quality monitoring networks for the EU Air Quality Directive

Basis of Certification

This certification is based on the following Test Report(s) and on Sira's assessment and ongoing surveillance of the product and the manufacturing process:

MCERTS Report 80035702 dated 02/03/2020

Product Certified

The measuring system consists of the following parts:

- Nubo Air Quality Monitor(NMO-LTE)
- Sensor Cartridge NMO-CE1

This certificate applies to all instruments fitted with sensor 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	0.67 $\mu\text{g}/\text{m}^3$	$\leq 2.5 \mu\text{g}/\text{m}^3$
Intra-instrument uncertainty for the candidate method		
All data (125)	0.36 $\mu\text{g}/\text{m}^3$	$\leq 5 \mu\text{g}/\text{m}^3$
$\geq 18 \mu\text{g}/\text{m}^3$	0.53 $\mu\text{g}/\text{m}^3$	
$\leq 18 \mu\text{g}/\text{m}^3$	0.14 $\mu\text{g}/\text{m}^3$	
Highest resulting uncertainty estimate comparison against data quality objective (Measurement Uncertainty)	10.9%	WCM \leq Wd _{qo} 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

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Description

Nubo Air Quality Monitoring System is an ambient particulate monitor based on optical detection of particles. In order to provide maximal data consistency and quality it employs a dual redundant detection system. Each sensing element 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 sensor included in the Nubo Air Quality Monitor 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 V02 for certificate No. Sira MC200352.
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'.
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