

# PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

***Praxis/Urban***

Manufactured by:

**South Coast Science**  
Unit 9, Freshfield Industrial Estate,  
Brighton, East Sussex, BN2 0DF  
UK

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

**MCERTS Performance Standards for Indicative Ambient Particulate Monitors  
Environment Agency, August 2017, version 4**

Certification ranges:

PM <sub>2.5</sub>	0 - 1,000µg/m <sup>3</sup>
PM <sub>10</sub>	0 - 1,000µg/m <sup>3</sup>

Project No.: 80087174  
Certificate No: Sira MC210387/00  
Initial Certification: 19 August 2022  
This Certificate issued: 19 August 2022  
Renewal Date: 18 August 2027



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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](http://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 field tests were carried out from the 4<sup>th</sup> November 2020 to the 25<sup>th</sup> March 2021 on two candidate Praxis/Urban samplers collocated with a Palas Fidas 200 (the reference method).

## 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:

Bureau Veritas, Test report ref. AIR6486860, dated 29 November 2021, "South Coast Science, Test of the Praxis/Urban for use as an Indicative Monitor for PM<sub>10</sub> and PM<sub>2.5</sub>, November 2021"

## Product Certified

The "Praxis/Urban" measuring system consists of the following parts:

Praxis/Urban monitor with Alphasense OPC-N3 sensor and associated firmware, version 1.17a

This certificate applies to all instruments fitted with firmware version 'm20' onwards (serial number 570).

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**Certified Performance**

Test ( <i>Laboratory</i> )	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Constancy of the sample volumetric flow					Not applicable Note 1	To remain constant within $\pm 3\%$
Tightness of the sampling system			0.1%			Leakage not to exceed 2% of sampled volume

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Test (Field)	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Intra-instrument uncertainty for the reference method						
PM <sub>10</sub>					0.33 µg/m <sup>3</sup>	≤2.5µg/m <sup>3</sup>
PM <sub>2.5</sub>					0.25 µg/m <sup>3</sup>	≤2.5µg/m <sup>3</sup>
Intra-instrument uncertainty for the candidate method						
PM <sub>10</sub>						
All data (n=97)					0.58 µg/m <sup>3</sup>	≤5µg/m <sup>3</sup> for all data as well as for the subsets: < or ≥ 30 µg/m <sup>3</sup>
≥ 30 µg/m <sup>3</sup> (n=5)					1.49 µg/m <sup>3</sup>	
< 30 µg/m <sup>3</sup> (n=92)					0.48 µg/m <sup>3</sup>	
PM <sub>2.5</sub>						
All data (n=97)					0.35 µg/m <sup>3</sup>	≤5µg/m <sup>3</sup> for all data as well as for the subsets: < or ≥ 30 µg/m <sup>3</sup>
≥ 18 µg/m <sup>3</sup> (n=12)					0.83 µg/m <sup>3</sup>	
< 18 µg/m <sup>3</sup> (n=85)					0.21 µg/m <sup>3</sup>	
Highest resulting uncertainty estimate comparison against data quality objective (Measurement Uncertainty)						
PM <sub>10</sub>						W <sub>CM</sub> ≤ 50% W <sub>CM</sub> ≤ W <sub>dpo</sub> (W <sub>dpo</sub> Measurement uncertainty defined as 50% for indicative instruments)
All data (n=97)					32.2%	
≥ 30 µg/m <sup>3</sup> (n=5)					46.7%	
PM <sub>2.5</sub>						
All data (n=97)					34.8%	
≥ 18 µg/m <sup>3</sup> (n=12)					44.2%	
Maintenance Interval					6 months Note 3	≥2 weeks

Note 1 - The Praxis/Urban utilises a fan and not a pump, therefore it was decided that this test was not applicable.

Note 2 - In order to be used for indicative purposes the Praxis/Urban must be set up in the same configuration as which it was tested, namely the following must be installed: i) Sensor Type and Firmware version: Alphasense OPC-N3 Firmware Version 1.17a. Modifications to the sensor firmware version would require verification by the certification committee. Modifications to the sensor itself may require repeating the field test or comparing systems operating different versions of the sensor to show that there are no differences to the measurements. ii) Algorithm Version: m20. Certification of other algorithms would require the field test to be repeated.

Note 3 - Maintenance interval: the manufacturer recommends i) six monthly inspection of the PM sensor to clear any dust build-up around the intake; and ii) replacement of the PM sensors every 24 months

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## Description

The South Coast Science Praxis/Urban instrument uses an optical particle counter with a size detection range between 0.35 and 40 microns. The device measures PM<sub>10</sub> and PM<sub>2.5</sub> simultaneously.

The Praxis/Urban uses a light scattering technique to measure the size and number of individual particles carried through a laser beam in a sample volume. The Praxis/Urban classifies each particle size, counting the number of particles within each of 24 pre-set size ranges. These counts, together with other sensor and environmental metrics are passed as inputs to a set of machine learning models installed on the device. The output of these models provides PM<sub>10</sub> and PM<sub>2.5</sub> measurements.

The machine learning models automatically compensate for variation in flow rate, temperature and humidity, therefore no heater tube is required, and no further data interpretation is needed. The typical sampling rate is one reading every 10 seconds. Where lower frequency readings are desired, these are achieved by aggregation.

## 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 V00 for certificate no. Sira MC210387/00.
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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