

# PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

**AQ Guard**

Manufactured by:

**Palas GmbH**

Greschbachstrasse 3b  
76229 Karlsruhe  
Germany

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 - 20,000µg/m <sup>3</sup>
PM <sub>10</sub>	0 - 20,000µg/m <sup>3</sup>

Project No.:	80091227
Certificate No:	Sira MC210388/00
Initial Certification:	31 August 2021
This Certificate issued:	31 August 2021
Renewal Date:	30 August 2026



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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 as a substitute for continuous ambient air quality monitoring systems (CAMs) employed in national air quality monitoring networks for the EU Air Quality Directive.

The field tests were carried out at two site locations and were representative of urban and industrial background particulate loading.

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### **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:

TÜV Rheinland Energy GmbH, Report: 936/21250983/A, Cologne, 15 June 2021

### **Product Certified**

The "AQ Guard" measuring system consists of the following parts:

AQ Guard measuring system (with Fidas dust sensor) with weather proof housing.

This certificate applies to all instruments fitted with software version 1.0.4 and serial number 12248 onwards.

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## Certified Performance

Test ( <i>Laboratory</i> )	Other results	MCERTS specification
Constancy of the sample volumetric flow		
Average sample volumetric flow	-0.59%	+/- 3%
All instantaneous values	3.9%	+/- 5%
Tightness of the sampling system	<2.0% (Pass)	≤2.0%

Test ( <i>Field</i> )	Other results	MCERTS specification
Intra-instrument uncertainty for the reference method		
PM <sub>2.5</sub>	0.24 µg/m <sup>3</sup>	≤5µg/m <sup>3</sup>
PM <sub>10</sub>	0.27 µg/m <sup>3</sup>	≤5µg/m <sup>3</sup>
Intra-instrument uncertainty for the candidate method		
PM <sub>2.5</sub>		
All data (n = 85)	0.56 µg/m <sup>3</sup>	
≥ 18 µg/m <sup>3</sup> (n = 11)	1.16 µg/m <sup>3</sup>	≤5µg/m <sup>3</sup>
≤ 18 µg/m <sup>3</sup> (n = 74)	0.40 µg/m <sup>3</sup>	
PM <sub>10</sub>		
All data (n = 97)	1.17 µg/m <sup>3</sup>	
≥ 30 µg/m <sup>3</sup> (n = 11)	3.05 µg/m <sup>3</sup>	≤5µg/m <sup>3</sup>
≤ 30 µg/m <sup>3</sup> (n = 86)	0.64 µg/m <sup>3</sup>	
Highest resulting uncertainty estimate comparison against data quality objective (Measure Uncertainty)		$W_{CM} \leq W_{dqo}$ ( $W_{dqo}$ Measurement uncertainty defined as 50% for indicative instruments)
PM <sub>2.5</sub>	15.6%	
PM <sub>10</sub>	23.0%	
Maintenance Interval	1 year	≥2 weeks
	Note 1	

Note 1: Work required in the maintenance interval (with reference also to the instrument manual)

- i) using "MonoDust"
- ii) calibration of volumetric flow
- iii) performance of a leak test
- iv) cleaning of the inlet

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## Description

The AQ Guard employs a 90° single particle light scattering spectrometer to accurately measure aerosol particle size distribution. The light is focused on a confined optical detection volume with each pulse analyzed for signal length, amplitude and shape. Usage of a polychromatic light source in conjunction with 90° scattered light detection enables the determination of a calibration curve over the whole measurement range resulting in a high-resolution size distribution. An advanced algorithm is then used to convert this information simultaneously to PM<sub>2.5</sub> and PM<sub>10</sub> aerosol mass concentrations.

The aerosol is sampled through a fan-assisted sampling head set to maintain the volumetric flow at 1 l/min (ambient conditions). A heated, humidity and temperature controlled, aerosol conditioning line eliminates humidity effects on the PM readings.

All data are available as real-time readings, via several data protocols and is automatically logged on the device. Self-diagnostics are used to maintain long-term stability in the field.

## 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 held and maintained by TÜV Rheinland for certificate No. Sira MC210388/00.
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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