

# PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

## ***Airly Air Quality Sensor PM+Gas***

Manufactured by:

***Fideltronik Poland Sp. Z o.o.***  
*Beniowskiego 1*  
*34-200 Sucha Beskidzka*  
*Poland*

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

Project No.: 80153474  
Certificate No: CSA MC230420/00  
Initial Certification: 17 August 2023  
This Certificate issued: 17 August 2023  
Renewal Date: 16 August 2028



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MCERTS is operated on behalf of the Environment Agency by

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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 general guidance on monitoring techniques refer to the Environment Agency guidance 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 1<sup>st</sup> January 2023 to the 31<sup>st</sup> March 2023 on two candidate 'Airly Air Quality Sensor PM+Gas' systems, collocated with a Palas Fidas 200 (the reference method). The location of the field test was Ladywood, Birmingham, UK. The serial numbers of the two 'Airly Air Quality Sensor PM+Gas' systems were 'PM 9437' and 'PM 13055'.

## 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. AIR18443191, dated May 2023, "Airly - Test of the Airly PM and PM+Gas Sensor Systems for use as an Indicative Monitor for PM<sub>10</sub> and PM<sub>2.5</sub>"

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## Product Certified

The 'Airly Air Quality Sensor PM+Gas' measuring system (*note 1*) consists of the following parts:

- Airly PM+Gas Sensor unit
- 5V power supply
- solar panels (optional)

### *Sensor type and firmware version*

Plantower PMS5003, firmware version 2.3

### *Firmware and Algorithm Version*

Firmware version 2.1.1.39, algorithm version 2.1

This certificate applies to all instruments fitted with serial number PM13055 onwards.

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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 <i>Note 2</i>	To remain constant within $\pm 3\%$
Tightness of the sampling system			1.54%			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>					0.33µg/m <sup>3</sup>	≤2.5µg/m <sup>3</sup>
PM <sub>2.5</sub>					0.25µg/m <sup>3</sup>	≤2.5µg/m <sup>3</sup>
Intra-instrument uncertainty for the candidate method						
PM <sub>10</sub>						
All data (n=80)					0.63µg/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=1)					1.01µg/m <sup>3</sup>	
< 30 µg/m <sup>3</sup> (n=79)					0.64µg/m <sup>3</sup>	
PM <sub>2.5</sub>						
All data (n=80)					0.26µg/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=5)					0.49µg/m <sup>3</sup>	
< 18 µg/m <sup>3</sup> (n=75)					0.25µg/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=80)					21.5%	
≥ 30 µg/m <sup>3</sup> (n=1)					24.4%	
PM <sub>2.5</sub>						
All data (n=80)					23.8%	
≥ 18 µg/m <sup>3</sup> (n=5)					20.3%	
Maintenance Interval					≥2weeks Note 3	≥2 weeks

**Note 1** - The Airly PM + Gas Sensor system has additional gas monitoring sensing cartridges fitted to the base of the standard Airly PM sensor. This certification is only applicable to the PM sensor for the parameters PM<sub>2.5</sub> and PM<sub>10</sub>. PM monitoring was found to be unaffected by the additional gas sensors. This was demonstrated by additional testing using two Airly Air Quality PM sensor systems and two Airly Air Quality PM+Gas sensor systems. The serial numbers were PM7672 and PM 7690 and PM7201 and PM7803, for the Airly Air Quality PM sensor and Airly Air Quality PM+Gas sensors, respectively. The two variants were found to agree well, with R<sup>2</sup> = 0.998 and slopes close to 1 for both PM<sub>2.5</sub> and PM<sub>10</sub>.

**Note 2** - This test was not applicable because the 'Airly Air Quality Sensor PM+Gas' has a fan rather than a pump.

**Note 3** - Maintenance - during the 12-week field trial no maintenance was required.

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## Description

The Airly Sensor PM + Gas offers a plug & play solution for air quality monitoring. It provides monitoring on particulate matter, including PM1, PM2.5, and PM10, while also keeping track of ambient conditions such as temperature, humidity, and atmospheric pressure. The Airly hardware design accounts for humidity effects on the measurements.

The device not only ensures data transmission but also supports bi-directional communications. This communication capability allows for remote configuration, firmware updates, and sensor calibration through the Airly web platform.

## 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. CSA MC230420/00.
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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