

# PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

**U3600-QAL1**

Manufactured by:

**Auburn Systems, LLC**

8 Electronics Avenue  
Danvers, MA 01923  
USA

has been assessed by Sira Certification Service  
And for the conditions stated on this certificate complies with:

**MCERTS Performance Standards for Continuous Emission  
Monitoring Systems, Version 3.5 dated June 2016  
EN15267-3:2007,  
& QAL 1 as defined in EN 14181: 2014**

Certification Ranges:

Dust      0 to 1,000 pA  
            0 to 10,000 pA  
            0 to 100,000 pA

Project No.                    70137346  
Certificate No                Sira MC170330/00  
Initial Certification         28 September 2017  
This Certificate issued      28 September 2017  
Renewal date                 27 September 2022

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Deputy Certification Manager

MCERTS is operated on behalf of the Environment Agency by

## Sira Certification Service

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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)*

On the basis of the assessment and the ranges required for compliance with EU Directives this instrument is considered suitable for use on waste incineration and large coal-fired combustion plant applications. This CEM has been proven suitable for its measuring task (parameter and composition of the flue gas) by use of the QAL 1 procedure specified in EN14181, for IED Chapter III and IED Chapter IV applications for the ranges specified. The lowest certified range for each determinand shall not be more than 1.5X the daily average emission limit value (ELV) for IED Chapter IV applications, and not more than 2.5X the ELV for IED Chapter III and other types of application.

The instrument can only be used at plants with a constant flow velocity. At a flow velocity of 10 m/s the allowed deviation is  $\pm 10\%$ . At other flue gas velocities an estimation of the uncertainty contribution has to be performed in advance.

The measuring system may not be used downstream of an ESP.

The measuring system may only be used in flue gases which are not saturated with water.

The field test was conducted for three months on a natural gas-fired process.

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### 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:

TUV Rheinland Report 936/21232911/A dated 6 March 2017

TUV Rheinland Report 936/21232911/BE dated 5 September 2017

### Product Certified

The U3600-QAL1 measuring system consists of the following parts:

- Electronic control unit using u-1.1 software
- Dust measuring probe rod
- Coaxial line connecting sensor to electronics

This certificate applies to all instruments fitted with software version u-1.1 (serial number 160175-A) onwards.

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## Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: -20°C to +50°C  
Instrument IP rating: IP66

Results are expressed as error % of certification range 0 to 1,000 pA, unless otherwise stated.

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time						
Dust (0 to 1,000 pA)					25s	<200s
Dust (0 to 10,000 pA)					24s	<200s
Dust (0 to 100,000 pA)					27s	<200s
Repeatability standard deviation at zero point						
Dust	0.1					<2.0%
Repeatability standard deviation at reference point						
Dust	0.2					<2.0%
Lack-of-fit						
Dust (0 to 1,000 pA)	-0.1					<2.0%
Dust (0 to 10,000 pA)	0.04					<2.0%
Dust (0 to 100,000 pA)	0.04					<2.0%
Influence of ambient temperature zero point (-20°C to +50°C)						
Dust	-0.1					<5.0%
Influence of ambient temperature reference point (-20°C to +50°C)						
Dust		-0.6				<5.0%
Influence of voltage variations (196V to 253V)	0.1				No influence	<2.0%
Influence of vibration (10 to 60Hz (±0.3mm), 60 to 150Hz at 19.6m/s <sup>2</sup> )	0.3					To be reported

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Measurement uncertainty Dust (For and ELV of 10 mg/m <sup>3</sup> )					Guidance - at least 25% below max permissible uncertainty 3.5%	<22.5% (30%)
Calibration function (field) Dust					Note 1 <0.9	>0.90
Response time (field) Dust					<26s	<200s
Lack of fit (field) Dust	-0.3					<2.0%
Maintenance interval					Note 2 3 months	>8 days
Zero and Span drift requirement	<p>It is possible to record zero and span drift. This complies with the requirements of QAL3 according to EN 14181. The system is not equipped with an automatic drift check. When reaching the limits during automatic drift checks, a status signal is produced.</p>					<p>Clause 6.13 &amp; 10.13</p> <p>Manufacturer shall provide a description of the technique to determine and compensate for zero and span drift.</p>
Change in zero point over maintenance interval Dust	0.2					<3.0%
Change in reference point over maintenance interval Dust	0.8					<3.0%
Availability					99.4%	>95%
Reproducibility Dust			1.3			<3.3%

Note 1: The calibration function / R<sup>2</sup> value was <0.9. However this was due to the relatively low dust levels during the field trial. The instrument passed the variability tests.

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Note 2: The U3600-QAL1 has a maintenance interval of three months. The work details below have to be carried out at regular intervals, depending on local conditions:

- Regular visual inspections
- Span checks every three months using reference materials (automatic control cycle or model 2902 signal generator with zero tube)
- See manual for additional duties

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## Description

The TRIBO.*dsp* U3600-QAL1 is an all-digital, self-checking particulate monitor for stack monitoring, dust collector compliance, maintenance, and other process applications. It is a 4th generation Auburn Systems design for monitoring fabric filter baghouses, dust collectors, cyclones and process particulate flow monitoring.

TRIBO.*dsp* proprietary core technology combines both the DC impaction and AC induction signals for the most complete signal. TRIBO.*dsp* unified particulate monitors uses the complete electrostatic/triboelectric signal to provide a complete representation of the total dust signal.

The TRIBO.*dsp* U3600-QAL1 consists of a single display unit (electronics) that outputs the information from a connected remote sensor probe. When the probe is inserted into a stream of particles it senses the dust levels in the collector exhaust gas and sends the raw current value to the TRIBO.*dsp*. This current is digitized and the electronics displays the data, as well as provides a continuous analog output and set of relay contacts for local alarming.

The fully digital technology allows for the circuit to perform constant automatic drift and offset tracking to eliminate false signals due to temperature effects and other issues. In addition, the U3600-QAL1 periodically performs a zero and span check to verify the performance of the electronics. The device will also routinely check for contamination on the probe and send a signal to alert the user to perform maintenance.

## 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 Sira Certificates'. The design of the product certified is defined in the Sira Design Schedule V00 for certificate No. Sira MC170330/00.
2. If certified product is found not to comply, Sira Certification Service should be notified immediately at the address shown on this certificate.
3. The Certification Marks that can be applied to the product or used in publicity material are defined in 'Regulations Applicable to the Holders of Sira Certificates'.
4. This document remains the property of Sira and shall be returned when requested by the company.

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