PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

Serinus 10 O_3 Analyser

manufactured by:

ABB S.p.A.
Via L. Lama 33
20099 Sesto S. Giovanni (MI)
Italy

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

MCERTS Performance Standards for Continuous Ambient Air Quality Monitoring Systems, Version 6, dated December 2008,

Certification Ranges :

O_3 0 to 250 ppb

Project No:	16A22352
Certificate No:	Sira MC100172/03
Initial Certification:	25 February 2010
This Certificate Issued	15 May 2013
Renewal Date:	24 February 2015

R Cooper | Eng MInst MC

MCERTS is operated on behalf of the Environment Agency by

Sira Certification Service
12 Acorn Industrial Park, Crayford Road, Crayford
Dartford, Kent, UK DA1 4AL
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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

All tests have been conducted in accordance with BS EN 14625. On the basis of these tests this certificate is valid when the instrument is used for urban air quality monitoring and similar applications.

The field trial was conducted on an urban background site for 3 months.

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:

Sira Report 674/0362 dated 17th February 2010

Product Certified

The Serinus 10 O_3 analyser measuring system consists of the following parts:

- Ozone scrubber
- Valve manifold
- Lamp
- Optic bench
- UV detector

This certificate applies to all instruments fitted with software version 1.23.0000 (serial number 08-0758 onwards).

Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: 0°C to +30°C

Note: If the instrument is supplied with an enclosure then the ambient temperature shall be monitored inside the enclosure to ensure that it stays within the above ambient temperature range.

Test	Results expressed as % of measured value				Other results	MCERTS specification Note: nmol/mol = ppb
	<0.5	<1	<2	<5		
Repeatability at zero					0.85 nmol/mol	<1 nmol/mol
Repeatability at hourly limit value					1.64 nmol/mol	<3 nmol/mol
Residual lack of fit at zero					-1.91 nmol/mol	<5 nmol/mol
Lack of fit (largest residual from the linear regression line)			1.49			<4%
Sensitivity coefficient to sample gas pressure					0.26 nmol/mol	<2 nmol/mol/kPa
Sensitivity coefficient to sample gas temperature					0.11 nmol/mol	<1 nmol/mol/K
Sensitivity coefficient to surrounding air temperature					0.29 nmol/mol	<1 nmol/mol/K
Sensitivity coefficient to electrical supply voltage					-0.01 nmol/mol	<0.3 nmol/mol/V
Interference by H_2O (at concentration of 19 nmol/mol)					3.97 nmol/mol	<10 nmol/mol
Interference by m-xylene (concentration of 0.5 μmol/mol)					-2.39 nmol/mol	<5 nmol/mol
Interference by toluene (at concentration of 0.5μmol/mol)					2.31 nmol/mol	<0.5 nmol/mol

Test	Results expressed as % of measured value				Other results	MCERTS specification Note: nmol/mol = ppb
	<0.5	<1	<2	<5		
Averaging effect				3.08		<7%
Short term zero drift (over 12h)					0.89 nmol/mol	<2 nmol/mol
Short term span drift (over 12h)					-0.81 nmol/mol	<6 nmol/mol
Response time (rise)					83.3s	180 s
Response time (fall)					76.3s	180 s
Difference between rise and fall time					8.5s	<10s
Reproducibility under field conditions				3.77		<5% averaged over three month period
Long term zero drift (over 3months)					1.10 nmol/mol	<5 nmol/mol
Long term span drift (over 3 months)			1.37			<5% of the max of certification range
Period of unattended operation					1 month	3 months not less than 2 weeks
Availability (data capture)					94.69%	>90%
Total expanded uncertainty					11.81%	<15%

Description:

The measurement of ozone in the Serinus 10 is based on classical ultraviolet absorption; ozone absorbs UV light at a wavelength of 254nm. Ozone molecules absorb radiation emitted by a mercury vapour lamp and the remaining intensity of the radiation is measured by a UV detector. A valve manifold is utilised to continuously switch between the sample and an ozone free sample (reference gas). The quantity of ozone is derived from the Beer-Lambert theory using the difference between the absorption due to the sample and the absorption due to the ozone free sample.

The analyzer software automatically corrects for gas temperature and pressure changes and is referenced to 0°C, 20°C or 25°C at 1 atmosphere. The analyser can store 8 years of one minute data of up to twelve analyser parameters.

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 for certificate No. Sira MC100165/02

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.