

# PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

## **Serinus 30 CO Analyser**

Manufactured by:

### **Ecotech Pty Ltd**

1492 Ferntree Gully Road  
Knoxfield, Victoria, 3180  
Australia


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 10 dated June 2016**

Certification Ranges:

CO 0 to 100 mg/m<sup>3</sup>

Project No.: 80068779  
Certificate No: Sira MC100166/08  
Initial Certification: 25 February 2010  
This Certificate issued: 24 February 2021  
Renewal Date: 24 February 2026



Andrew Young  
Environmental Team Manager

MCERTS is operated on behalf of the Environment Agency by

## **Sira Certification Service**

Unit 6, Hawarden Industrial Park  
Hawarden, Deeside, CH5 3US  
Tel: +44 (0)1244 670 900



*The MCERTS certificate consists of this document in its entirety.  
For conditions of use, please consider all the information within.  
This certificate may only be reproduced in its entirety and without change  
To authenticate the validity of this certificate please visit [www.csagroupuk.org/mcerts](http://www.csagroupuk.org/mcerts)*

## Certificate Contents

Approved Site Application.....	2
Basis of Certification .....	2
Product Certified.....	3
Certified Performance .....	4
Description.....	6
General Notes .....	6

## 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)*

All tests have been conducted in accordance with BS EN 14626:2012. 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 <sup>(Note 1)</sup> Report 674/0362 dated 17<sup>th</sup> February 2010

Ecotech <sup>(Note 2)</sup> Report MCERTS Application Serinus 30 Carbon Monoxide Analyser dated 29<sup>th</sup> January 2010

TÜV Rheinland Energie und Umwelt GmbH, Köln, Report no.: 936/21221977/D-EN dated 08 October 2013

Note 1: UKAS accredited for product certification (0011) to EN 45011:1998 for MCERTS Performance Standards for Continuous Ambient Air Quality Monitoring Systems, Version 6, dated December 2008

Note 2: NATA accredited test laboratory from 09/03/2012 to ISO/IEC 17025:2005 for type approval tests according to EN 14626:2005

Certificate No: Sira MC100166/08  
This Certificate issued: 24 February 2021

*This certificate may only be reproduced in its entirety and without change  
To authenticate the validity of this certificate please visit [www.csagroupuk.org/mcerts](http://www.csagroupuk.org/mcerts)*

---

### Product Certified

The Serinus 30 CO analyser measuring system consists of the following parts:

- Infrared source
- Gas filter wheel
- Measurement cell
- IR detector

This certificate applies to all instruments fitted with software version 1.23.0000 (serial number 08-0760 onwards).

Certificate No: Sira MC100166/08  
This Certificate issued: 24 February 2021

*This certificate may only be reproduced in its entirety and without change  
To authenticate the validity of this certificate please visit [www.csagroupuk.org/mcerts](http://www.csagroupuk.org/mcerts)*

## 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.

Results are expressed as error % of certification range, unless otherwise stated.

Test	Results expressed as % of the certification range				Other results	MCERTS specification Note nmol/mol = ppb
	<0.5	<1	<2	<5		
Repeatability at zero					0.02µmol/mol	<0.3 µmol/mol
Repeatability at hourly limit value					0.03 µmol/mol	<0.4 µmol/mol
Residual lack of fit at zero					-0.1 µmol/mol	<0.5 µmol/mol
Lack of fit (largest residual from the linear regression line)		0.93				<4%
Sensitivity coefficient to sample gas pressure					0.04	<0.7 µmol/mol/kPa
Sensitivity coefficient to sample gas temperature					0.0	<0.3 µmol/mol/K
Sensitivity coefficient to surrounding air temperature					0.046	<0.3 µmol/mol/K
Sensitivity coefficient to electrical supply voltage					0.001	<0.3 µmol/mol/V
Interference by H <sub>2</sub> O (at concentration of 19 nmol/mol)					0.23	<1 µmol/mol
Interference by NO (at concentration of 1 µmol/mol)					-0.11	<0.5 µmol/mol
Interference by CO <sub>2</sub> (at concentration of 500µmol/mol)					0.05	<0.5 µmol/mol
Interference by N <sub>2</sub> O (at concentration of 50µmol/mol)					0.01	<0.5µmol/mol

Certificate No: Sira MC100166/08  
This Certificate issued: 24 February 2021

*This certificate may only be reproduced in its entirety and without change  
To authenticate the validity of this certificate please visit [www.csagroupuk.org/mcerts](http://www.csagroupuk.org/mcerts)*

Test	Results expressed as % of the certification range				Other results	MCERTS specification Note nmol/mol = ppb
	<0.5	<1	<2	<5		
Averaging effect			-1.55			≤7%
Short term zero drift (over 12hr)					-0.08	≤0.1%
Short term span drift (over 12hr)					0.18	≤0.6%
Response time (rise)					51s	≤180s
Response time (fall)					56s	≤180s
Difference between rise and fall time					-5s	≤10s
Difference between sampling and calibration port	-0.17					≤1%
Reproducibility under field conditions				3.45		≤5%
Long term zero drift (over 3 months)					-0.47	≤0.5 μmol/mol
Long term span drift (over 3 months)		0.9				≤5%
Period of unattended operation					4 weeks	≤3 months Note 1
Availability (data capture)					100%	≥90%
Total expanded uncertainty					10.47	≤15%

Note 1: Subject to necessary maintenance tasks

Certificate No: Sira MC100166/08  
 This Certificate issued: 24 February 2021

*This certificate may only be reproduced in its entirety and without change  
 To authenticate the validity of this certificate please visit [www.csagroupuk.org/mcerts](http://www.csagroupuk.org/mcerts)*

## Description

The measurement of carbon monoxide in the Serinus 30 is based on non-dispersive infrared spectrometry; CO absorbs infrared radiation (IR) at a wavelength near 4.7µm. Specifically the method involves determining the difference in infrared energy absorption passed by the optical system between a gas sample containing the compound of interest and a reference path. The difference in infrared energy absorbed is proportional to the concentration of CO.

Light produced by an infrared source passes through the 'chopper wheel' (a gas filter alternating between CO and N<sub>2</sub>) and into the cell. Inside the cell, the IR light is passed up and down, reflecting off mirrors, to achieve the sensitivity required, and then is focused out of the cell onto the detector. Flowing through the analyzer cell, the sample gas stream is irradiated by this infrared light. The differing intensity of light focused onto the detector from each chopper wheel window gives the CO sample concentration. The chopper wheel (correlation wheel) contains three compartments, one containing CO which acts as a reference, the second one containing N<sub>2</sub> which allows the measurement of CO, and the last one contains a mask to measure cell background levels.

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'.
2. The design of the product certified is held and maintained by TUV Rheinland for certificate No. Sira MC100166/08.
3. If certified product is found not to comply, Sira Certification Service 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 Sira Certificates'.
5. This document remains the property of Sira and shall be returned when requested by the company.

Certificate No: Sira MC100166/08  
This Certificate issued: 24 February 2021

*This certificate may only be reproduced in its entirety and without change  
To authenticate the validity of this certificate please visit [www.csagroupuk.org/mcerts](http://www.csagroupuk.org/mcerts)*