

# PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

***Multi-gas Micro Monitoring Station (MMS)  
Portable version***

Manufactured by:

***Envea***

111 Boulevard Robespierre  
BP 4513  
78304 Poissy Cedex  
France

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 60 mg/m <sup>3</sup>	0 to 100 mg/m <sup>3</sup>
O <sub>3</sub>	0 to 360 µg/m <sup>3</sup>	0 to 500 µg/m <sup>3</sup>
NO	0 to 1200 µg/m <sup>3</sup>	
NO <sub>2</sub>	0 to 400 µg/m <sup>3</sup>	0 to 500 µg/m <sup>3</sup>

Certification is awarded in respect of the conditions stated in this certificate

Project No.: 6740412 /80018592  
Certificate No: Sira MC090161/04  
Initial Certification: 13 November 2009  
This Certificate issued: 13 November 2019  
Renewal Date: 12 November 2024



Emily Alexander  
Environmental Project Engineer

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



0011



*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.....	2
Certified Performance .....	3
Description.....	8
General Notes .....	8

## 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 these tests this certificate is valid when the instrument is used for urban air quality monitoring and similar applications. (sometimes rural as well depending on data)

## 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 Report	Report Number 936/21205818/C dated 05/03/07
TUV Report	Report Number 936/21205818/D dated 05/03/07
TUV Report	Report Number 936/21206773/D dated 06/06/08

## Product Certified

The Multi-gas Micro Monitoring Station (MMS) measuring system consists of the following parts:

- AC32M NO<sub>x</sub> analyser
- CO12M CO analyser
- O342M O<sub>3</sub> analyser

This certificate applies to all instruments fitted with software version 2.45 (NO<sub>x</sub>), software version 1.26 (CO) and software version 1.31 (O<sub>3</sub>) and software version 3.0 onwards (MMS) (serial number 10 onwards).

Certificate No : Sira MC090161/04  
This Certificate issued : 13 November 2019

*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.

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Repeatability standard deviation at zero						
CO					0.20 µmol/mol	<1.0 µmol/mol
O3					0.40 nmol/mol	<1.0 nmol/mol
NOx					0.60 nmol/mol	<1.0 nmol/mol
Repeatability at hourly limit value						
CO					0.10 µmol/mol	<3.0 µmol/mol
O3					1.0 nmol/mol	<3.0 nmol/mol
NOx					2.7 nmol/mol	<3.0 nmol/mol
Residual lack of fit at zero						
CO					0.10 µmol/mol	<0.2 µmol/mol
O3					0.00 nmol/mol	<5.0 nmol/mol
NOx					0.50 nmol/mol	<5.0 nmol/mol
Lack of fit (largest residual from the linear regression line)						
CO				2.1		<4.0% of the measured value
O3			-1.8			<4.0% of the measured value
NOx		0.80				<4.0% of the measured value
Sensitivity coefficient to sample gas pressure						
CO					See Note 1	<0.7 µmol/mol/kPa
O3						<2.0 nmol/mol/kPa
NOx						<8.0 nmol/mol/kPa
Sensitivity coefficient to sample gas temperature						
CO					0.02 µmol/mol/K	<0.3 µmol/mol/K
O3					0.04 nmol/mol/K	<1.0 nmol/mol/K
NOx					-0.06 nmol/mol/K	<3.0 nmol/mol/K

Certificate No : Sira MC090161/04  
This Certificate issued : 13 November 2019

*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
	<0.5	<1	<2	<5		
Sensitivity coefficient of surrounding air temperature						
CO					0.05 µmol/mol/K	<0.3 µmol/mol/K
O3					0.07 nmol/mol/K	<1.0 nmol/mol/K
NOx					0.20 nmol/mol/K	<3.0 nmol/mol/K
Sensitivity coefficient of electrical supply voltage						
CO					0.0 µmol/mol/V	<0.3 µmol/mol/V
O3					-0.04 nmol/mol/V	<0.3 nmol/mol/V
NOx					0.09 nmol/mol/V	<0.3 nmol/mol/V
Converter efficiency						
NOx					98.4%	>98%
Interferents by H2O (at concentration of 19 nmol/mol)						
CO					0.07 µmol/mol	<1.0 µmol/mol
O3					1.1 nmol/mol	<10 nmol/mol
NOx					2.3 nmol/mol	<5.0 nmol/mol
Interferents by CO2 (at concentration of 500 µmol/mol)						
CO					-0.14 µmol/mol	<0.5 µmol/mol
NOx					2.0 nmol/mol	<5.0 nmol/mol
Interferents by NO (at concentration of 1 µmol/mol)						
CO					0.13 µmol/mol	<0.5 µmol/mol
Interferents by N2O (at concentration of 50 nmol/mol)						
CO					0.14 µmol/mol	<0.5 µmol/mol
Interferents by ozone (at concentration of 200 nmol/mol)						
NOx					1.0 nmol/mol	<2.0 nmol/mol
Interferents by NH3 (at concentration of 200 nmol/mol)						
NOx					1.7 nmol/mol	<5.0 nmol/mol
Interferents by toluene (at concentration of 0.5 µmol/mol)						
O3					2.6 nmol/mol	<5.0 nmol/mol

Certificate No : Sira MC090161/04  
This Certificate issued : 13 November 2019

*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
	<0.5	<1	<2	<5		
Interferents by m-xylene (at concentration of 0.5 µmol/mol) O <sub>3</sub>					2.5 nmol/mol	<5.0 nmol/mol
Averaging effect						
CO				-3.9		<7.0% of the measured value
O <sub>3</sub>				3.0		<7.0% of the measured value
NO <sub>x</sub>			1.9			<7.0% of the measured value
Reproducibility standard deviation under field conditions						
CO				3.4		<5.0% of average of 3 months period
O <sub>3</sub>				3.2		<5.0% of average of 3 months period
NO <sub>x</sub>				4.9		<5.0% of average of 3 months period
Long term zero drift						
CO					0.38 µmol/mol	<5.0 µmol/mol
O <sub>3</sub>					0.79 nmol/mol	<5.0 nmol/mol
NO <sub>x</sub>					0.78 nmol/mol	<5.0 nmol/mol
Long term span drift						
CO			1.38			<5.0% of the average of 3 months period
O <sub>3</sub>				3.55		<5.0% of the average of 3 months period
NO <sub>x</sub>		0.79				<5.0% of the average of 3 months period
Short term drift at zero (12hrs)						
CO					0.10 µmol/mol	<2.0 µmol/mol
O <sub>3</sub>					-0.60 nmol/mol	<2.0 nmol/mol
NO <sub>x</sub>					-0.70 nmol/mol	<2.0 nmol/mol
Short term drift at span (12 hrs)						
CO					0.10 µmol/mol	<0.6µmol/mol
O <sub>3</sub>					0.30 nmol/mol	<6.0 nmol/mol
NO <sub>x</sub>					1.2 nmol/mol	<6.0 nmol/mol

Certificate No : Sira MC090161/04  
This Certificate issued : 13 November 2019

*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
	<0.5	<1	<2	<5		
Response time (rise)						
CO					32 s	<180 s
O3					14 s	<180 s
NOx					18 s	<180 s
Response time (fall)						
CO					31 s	<180 s
O3					15 s	<180 s
NOx					19 s	<180 s
Difference between rise and fall time						
CO				2.4		<10% relative difference
O3					7.8%	<10% relative difference
NOx					6.2%	<10% relative difference
Difference between sample and calibration port						
CO					See Note 1	<1.0%
O3						<1.0%
NOx						<1.0%
Difference in NO2 due to residence time in analyser						
NOx					0.35 nmol/mol	<4.0 nmol/mol
Period of unattended operation						
CO					4 weeks	3 months not less than 2 weeks
O3					4 weeks	3 months not less than 2 weeks
NOx					4 weeks	3 months not less than 2 weeks

Certificate No : Sira MC090161/04  
This Certificate issued : 13 November 2019

*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
	<0.5	<1	<2	<5		
Availability						
CO					98.7%	>90%
O3					98.7%	>90%
NOx					98.1%	>90%
Total expanded measurement uncertainty (laboratory and field)						
CO					10.29%	15%
O3					9.63%	15%
NOx					4.99%	15%

Note 1: Test not applicable.

Certificate No : Sira MC090161/04  
This Certificate issued : 13 November 2019

*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 Micro Monitoring Station (MMS) consists of a single IP54 enclosure, in which up to 3 modules can be housed.

NO<sub>x</sub> module: the NO<sub>x</sub> sample concentration is determined by chemiluminescence. The chemiluminescence reaction between ozone and nitric oxide (NO) yield electronically excited nitrogen dioxide (NO<sub>2</sub>). The transition to the mass flow rate of NO<sub>2</sub> into a temperature controlled reaction chamber. The light is measured with a PM tube.

O<sub>3</sub> module: the O<sub>3</sub> sample concentration is determined by UV absorption, which consists in measuring UV absorption of ozone molecules. Ozone concentration is determined by difference between UV absorption of the gas sample and the sample without ozone after filtration performed by a catalytic converter.

CO module: the CO sample concentration is determined by IR GFC (Infra Red Gas Filter Correlation). IR GFC consists in measuring how much infrared light the sample gas absorbs as it flows through a multi-cell correlation wheel filled on one side with a reference CO cell (reference beam) and on the other side with an empty cell (the measurement beam). As the wheel turns around, the light beam passes alternatively through the CO cell and the empty cell and then through an interference optical filter before reaching the optical detector. If the sample contains CO, the reference beam will not be attenuated by it, since it was attenuated by the CO of the reference cell. The measurement beam however will be attenuated by the CO in the sample.

## 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 defined in the Sira Design Schedule V00 for certificate No. Sira MC090161/01
3. 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.

Certificate No : Sira MC090161/04  
This Certificate issued : 13 November 2019

*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)*