

PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

Model APNA 370 NO_x Analyser

Manufactured by:

Horiba Limited

*Miyano Higashi
Kisshoin
Minami-Ku
Kyoto
Japan*

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 (June 2016)

Certification Ranges :

NO 0 to 1200 $\mu\text{g}/\text{m}^3$
NO₂ 0 to 400 $\mu\text{g}/\text{m}^3$
0 to 500 $\mu\text{g}/\text{m}^3$

Project No.: 70120923
Certificate No: Sira MC070090/04
Initial Certification: 10 January 2007
This Certificate issued: 23 May 2017
Renewal Date: 20 May 2022

Emily Alexander
Deputy Certification 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*

Certificate Contents

Approved Site Application 2
 Basis of Certification 2
 Product Certified..... 2
 Certified Performance 3
 Description..... 5
 General Notes 5

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

On the basis of these tests this certificate is valid when the instrument is used for urban air quality monitoring and similar applications.

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:

- TÜV Köln Report Number: 936/21204643/C dated 07/07/06
- TÜV Rheinland Report Number: 936/21204643/C dated 05/10/2013

Product Certified

The APNA 370 measuring system consists of the following parts:

Horiba APNA 370 Oxides of Nitrogen analyser

This certificate applies to all instruments fitted with software version P1000878001C onwards (serial number 432866-10021 onwards).

Certificate No : Sira MC070090/04
 This Certificate issued : 23 May 2017

*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*

Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: +5°C to +40°C

Test	Results expressed as % of measured value				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Repeatability at zero					0.16 nmol/mol	<1 nmol/mol
Repeatability at hourly limit value					1.70 nmol/mol	<3 nmol/mol
Residual lack of fit at zero					1.20 nmol/mol	<5 nmol/mol
Lack of fit (largest residual from the linear regression line)			1.1			<4%
Sensitivity coefficient to sample gas pressure					0.14 nmol/mol/kPa	<8 nmol/mol/kPa
Sensitivity coefficient to sample gas temperature					0.23 nmol/mol/K	<3 nmol/mol/K
Sensitivity coefficient to surrounding air temperature					Zero: 0.03 nmol/mol/K Span: 0.33 nmol/mol/K	<3 nmol/mol/K <3 nmol/mol/K
Sensitivity coefficient to electrical supply voltage					0.03 nmol/mol/V	<0.3 nmol/mol/V
Residence Time					2.33 seconds	<3 seconds
Converter efficiency					98.6%	>95%
Interference by H ₂ O (at concentration of 19 nmol/mol)					1.37 nmol/mol	<5 nmol/mol

Certificate No : Sira MC070090/04
 This Certificate issued : 23 May 2017

*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*

Test	Results expressed as % of measured value				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Interference by NH ₃ (at concentration of 200 nmol/mol)					3.62 nmol/mol	<5 nmol/mol
Interference by CO ₂ at concentration of 500µmol/mol					2.16 nmol/mol	<5 nmol/mol
Interference by Ozone at concentration of 200 nmol/mol					1.04 nmol/mol	<2 nmol/mol
Averaging effect				4.4		<7%
Short term zero drift (over 12h)					0.1 nmol/mol	<2 nmol/mol
Short term span drift (over 12h)					0.2 nmol/mol	<6 nmol/mol
Response time (rise)					87 s	180 s
Response time (fall)					87 s	180 s
Difference between rise and fall time	0					<10%
Reproducibility under field conditions Note 1				3.8		<5% averaged over three month period
Long term zero drift (over 3months) Note 1					1.0 nmol/mol	<5 nmol/mol
Long term span drift (over 3 months) Note 1				2.4		<5% of the max of certification range
Period of unattended operation Note 1					3 months	3 months not less than 2 weeks
Availability (data capture) Note 1					98%	>90%
Total Expanded Uncertainty					10.81%	<15%

Note 1: Field test: The field test was performed at an urban site for 3 months.

Certificate No : Sira MC070090/04
 This Certificate issued : 23 May 2017

*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*

Description

The APNA 370 ambient air analyser measures NO_x using a combination of dual cross flow modulation and the chemiluminescence (CLD) method. This monitor continuously measures the concentrations of nitrogen oxides (NO, NO₂, and NO_x (NO + NO₂)) in the atmosphere.

The APNA 370 divides the sampled gas into two flows; one is used for NO_x (NO + NO₂) concentration measurement by reducing NO₂ to NO with a NO_x converter; the other is used for NO concentration measurement directly. An internal reference gas is also generated internally. The NO_x sample, NO sample and reference gas gases are switched to every 0.75s with solenoid valves, and are introduced to the reaction chamber in turn. The concentrations of NO₂ are calculated from those of NO and NO_x.

The detector used is silicon photodiode sensor to prolong working life.

The analyser also has internal data storage capacity for three different mean value periods.

An addition of an RS-232C port (optional) allows direct data communications to be performed.

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 MC070090/04
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.

Certificate No : Sira MC070090/04
This Certificate issued : 23 May 2017

*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*