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PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

S700 Modular Gas Analyser (Modules UNOR, MULTOR, OXOR-P & OXOR-E)

manufactured by:

SICK MAIHAK AG
Poppenbüttler Bogen 9b
22399 Hamburg
Germany

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 2, Revision 1 (April 2003)

Certification Ranges :

	UNOR*	MULTOR**	OXOR-P & OXOR-E
CO	0 to 100 mg/m ³	0 to 200 mg/m ³	-----
NO	0 to 100 mg/m ³	0 to 250 mg/m ³	-----
SO ₂	0 to 100 mg/m ³	0 to 250 mg/m ³	-----
O ₂	-----	-----	0 to 25%vol

* Single component analyser

** Multi component analyser

Project No: 674/001131
Certificate No: Sira MC 040037/03
Initial Certification: 14 July 2004
This Certificate Issued: 18 July 2008
Renewal Date: 13 July 2009

Technical Director

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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Certified Performance

The instrument was evaluated for use under the following conditions:
Ambient Temperature Range: 5 to 40 °C

UNOR Module

Performance values are expressed as a percentage of the certification range, except for availability and analysis function, and '✓' indicates compliance with MCERTS requirements.

Test-results for single component analyser module UNOR for CO, NO, SO ₂	Results expressed as % of certification range				Other results	MCERTS* specification
	<0.5	<1	<2	<4		
Linearity:	✓					<±2%
Cross sensitivity: CO, NO SO ₂			✓	✓		<±4% <±4%
Temperature dependent zero drift:	✓					<0.3%
Temperature dependent span drift:	✓					<0.3%
Response time: CO NO SO ₂					<42 <66 <76 See note 5	<200s <200s <200s
Detection limit	✓				See note 1	<2%
Accuracy/Analysis function (field): NO CO, SO ₂					99.9% 99.9%	>95% >95%
Availability (field):					99,6%	>95%
Zero shift (field):			✓			<2%/week
Span shift (field):			✓			<4%/week
Vibration test					See note 2	Not specified
Sample gas pressure					See note 3	To be reported

*MCERTS performance limit Version 2 Revision 1, April 2003

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UNOR Module continued

Test-results for single component analyser module UNOR for CO, NO, SO ₂	Results expressed as % of certification range				Other results	MCERTS* specification
	<0.5	<1	<2	<4		
Sample gas temperature					See note 4	To be reported
Maintenance Interval					7 days See note 6	To be reported

*MCERTS performance limit Version 2 Revision 1, April 2003

- Note 1: The detection limit is presented as % of the certification range.
 Note 2: A visual examination did not identify any components in the probe that are likely to be affected by vibration. Hence the test was not carried out.
 Note 3: Test not required, as system is an extractive analyser with a pumped sampling system
 Note 4: Test not required as no active detection parts are exposed to the flue gas temperature
 Note 5: "Response time" is related to the complete extractive system including the gas conditioning system
 Note 6: An automatic calibration unit for a longer maintenance interval is available

MULTOR Module

Performance values are expressed as a percentage of the certification range, except for availability and analysis function, and '✓' indicates compliance with MCERTS requirements.

Test-results for multi component analyser module MULTOR for CO, NO, SO ₂	Results expressed as % of certification range				Other results	MCERTS* specification
	<0.5	<1	<2	<4		
Linearity: NO CO, SO ₂	✓	✓				<±2% <±2%
Cross sensitivity: NO CO, SO ₂			✓			<±4% <±4%
Temperature dependent zero drift:	✓					<0.3%
Temperature dependent span drift:	✓					<0.3%

* MCERTS performance limit Version 2 Revision 1, April 2003

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MULTOR Module continued

Test-results for multi component analyser module MULTOR for CO, NO, SO ₂	Results expressed as % of certification range				Other results	MCERTS* specification
	<0.5	<1	<2	<4		
Response time: CO NO SO ₂					79s 84s 98s See note 5	<200s <200s <200s
Detection limit	✓				See note 1	<2%
Accuracy/Analysis function (field): CO NO, SO ₂					99.9% 99.9%	>95% >95%
Availability (field):					99,6%	>95%
Zero shift (field):			✓			<2%/week
Span shift (field):			✓			<4%/week
Vibration test					See note 2	Not specified
Sample gas pressure					See note 3	To be reported
Sample gas temperature					See note 4	To be reported
Maintenance Interval					7 days See note 6	To be reported

* MCERTS performance limit Version 2 Revision 1, April 2003

- Note 1: The detection limit is presented as % of the certification range.
 Note 2: A visual examination did not identify any components in the probe that are likely to be affected by vibration. Hence the test was not carried out.
 Note 3: Test not required, as system is an extractive analyser with a pumped sampling system
 Note 4: Test not required as no active detection parts are exposed to the flue gas temperature
 Note 5: "Response time" is related to the complete extractive system including the gas conditioning system
 Note 6: An automatic calibration unit for a longer maintenance interval is available

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OXOR-P & OXOR-E Modules

Performance values are expressed as a percentage of the certification range, except for availability and analysis function, and '✓' Indicates compliance with MCERTS requirements.

Test-results analyser modules OXOR-P and OXOR-E for O ₂	Results expressed as % of certification range				Other results	MCERTS* specification
	<0.5	<1	<2	<4		
Linearity: OXOR-E OXOR-P	✓	✓				<±0.3%vol
Cross sensitivity:	✓					<±4%
Temperature dependent zero drift:	✓					<0.5%vol
Temperature dependent span drift:	✓					<0.5%vol
Response time: OXOR-E OXOR-P					68s 51s See note 4	<200s <200s
Detection limit	✓					<0.2%
Accuracy/Analysis function (field):	✓				99.9%	>95%
Availability (field):					99,6%	>95%
Zero shift (field):		✓				<0.2%vol /week
Span shift field):		✓				<0.2%vol /week
Vibration test					See note 1	Not specified
Sample gas pressure					See note 2	To be reported
Sample gas temperature					See note 3	To be reported

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Test-results analyser modules OXOR-P and OXOR-E for O ₂	Results expressed as % of certification range				Other results	MCERTS* specification
	<0.5	<1	<2	<4		
Maintenance Interval					7 days See note 5	To be reported

*MCERTS performance limit Version 2 Revision 1, April 2003

- Note 1: A visual examination did not identify any components in the probe that are likely to be affected by vibration. Hence the test was not carried out.
- Note 2: Test not required, as system is an extractive analyser with a pumped sampling system
- Note 3: Test not required as no active detection parts are exposed to the flue gas temperature
- Note 4: "Response time" is related to the complete extractive system including the gas conditioning system
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Field Test Site

The S700 analyser was assessed on the basis of a three month trial mounted on a waste incinerator.

Approved Site Application

On the basis of these tests and the certified ranges of the instruments this certificate is valid when the instrument is used on large coal-fired combustion plant applications.

S 700 is a modular gas analyser system for a wide range of applications. Using the modular system, the manufacturer states that a customized and application specific analyzer can be assembled for nearly every industrial measurement application.

However any potential user should ensure, in consultation with the manufacturer, that the emission monitoring system is suitable for the process on which it will be installed. The MCERTS standard gives guidance of process conditions for some other types of plant.

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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:

TÜV Essen Report No: 1.6/1190/94-203 75 784 dated 2 February 2001
TÜV Essen Report No: 1.6/01190/1994-205 20 010 dated 29 January 2002
TÜV Essen Statement No: 1.6/Wks/Sigl-205 93 492 dated 15 October 2003
TÜV Rheinland Report No: 936/21203478/A dated 10 January 2005

TÜV reports are accepted on the basis of the Environment Agency's document 'MCERTS – Guidance on the acceptance of German type approval test reports for CEMS' Version 2 (October 2003)

Product Certified

This certificate applies to the S700 Series that includes UNOR, MULTOR, OXOR-P and OXOR-E modules.

The systems consists of:

- Gas cooler
- Sampling system with probe, filter and gas line

The certificate also covers S710, S715 and S720, which are three different types of housings. Each enclosure can be equipped with a maximum of three analyser modules.

The software status certified is version 1.25 onwards.

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Description:

The S 700 is a modular extractive gas analyser system using the Non-Dispersive Infra-red (NDIR) principle for the measurement of CO, NO and SO₂ and the paramagnetic (OXOR-P) or electrochemical (OXOR-E) principle for oxygen measurements.

Each enclosure can be equipped with at maximum three analyser modules. The UNOR is an analyser module for the measurement of one component with a very high accuracy, the MULTOR is a multi component analyser module for the measurement of up to three measuring components and additionally H₂O for cross sensitivity compensation.

The ranges stated are the minimum, consult the manufacturer for details on higher ranges.

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 MC 040037/03.
2. If certified product is found not to comply, Sira Certification Service should be notified immediately at the address shown on page 1.
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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