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# PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

## ***RM 230 Dust Concentration Monitor***

manufactured by:

### **SICK MAIHAK GmbH**

*Nimburger Straße 11  
79276 Reute  
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 :

Particulate Concentration: 0 to 5 mg/m<sup>3</sup>

0 to 15 mg/m<sup>3</sup>

0 to 150 mg/m<sup>3</sup>

\*The procedure for selecting and converting the measurement ranges is automated on this model

Project No: 674/0184  
Certificate No: Sira MC 050050/01  
Initial Certification: 02 February 2005  
This Certificate Issued: 08 August 2007  
Renewal Date: 01 February 2010

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  
Tel: 01322 520500 Fax: 01322 520501

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## Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range:  $-20^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$

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

Test	Results expressed as % of certification range				Other results	MCERTS* specification
	<0.5	<1	<2	<4		
Linearity		a				< $\pm 2\%$
Temperature dependent zero drift	a					< $0.3\%/^{\circ}\text{C}$
Temperature dependent span drift	a					< $0.3\%/^{\circ}\text{C}$
Response time					See note 1	<200s
Detection limit	a				See note 2	<5%
Accuracy/Analysis function (field)					>90%	>90% ( $<20\text{mg}/\text{m}^3$ )
					-	>95% ( $>20\text{mg}/\text{m}^3$ )
Integral performance					7,6%	<20% ( $<20\text{mg}/\text{m}^3$ )
					-	<10% ( $>20\text{mg}/\text{m}^3$ )
Availability (field)					95,8%	>95%
Voltage effect, at $\pm 15\%$ from the norm	a					<2%
Zero shift (weekly) (field)	a					< 3% ( $<20\text{mg}/\text{m}^3$ )
					-	<2% ( $>20\text{mg}/\text{m}^3$ )
Span shift (weekly) (field)	a					< 3% ( $<20\text{mg}/\text{m}^3$ )
					-	<2% ( $>20\text{mg}/\text{m}^3$ )

\* MCERTS performance limit Version 2 Revision 1, April 2003 2003 Specification given is for range  $<20\text{mg}/\text{m}^3$

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Test	Results expressed as % of certification range				Other results	MCERTS* specification
	<0.5	<1	<2	<4		
Reproducibility					44  -	> 30 (<20mg/m <sup>3</sup> )  >50 (>20mg/m <sup>3</sup> )
Vibration test					See note 3	Not specified
Sample gas pressure					See note 4	To be reported
Sample gas temperature					See note 4	To be reported
Maintenance Interval					≥ 4 weeks	To be reported

\* MCERTS performance limit Version 2 Revision 1, April 2003 Specification given is for range <20mg/m<sup>3</sup>

- Note 1: The response time of the monitors is adjustable between 1 and 255 seconds. Standard setting for the response time is 60 s that easily fulfils the requirement.
- Note 2: The detection limit is presented as % of the smallest certification range.
- Note 3: 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. Also the field test results from different types of plants have shown that typical vibrations on site have no influence to the measuring signal of these instruments.
- Note 4: The RM230 in situ analyser measures the dust concentration directly within the stack in operating conditions.

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## Field Test Site

The RM210 analyser was assessed on the basis of a five month trial mounted on a waste incinerator on both 0-5mg/m<sup>3</sup> and 0-15mg/m<sup>3</sup> ranges, to which the RM230 has shown to be equivalent.

## Approved Site Application

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

The monitor is suited for monitoring extremely low to medium dust concentration or soot values (e.g. toxic dust limit values), i.e. power plant and steel, cement, asbestos and food industries.

Particulate monitors may exhibit sensitivity to various in-stack effects. Potential interferences are site specific and may vary from stack to stack. *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.*

For general guidance on stack emission monitoring techniques refer to Environment Agency Technical Guidance Note M2: Monitoring of stack emissions to air. This is available on the Agency's website at [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

## 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: 352/0855/93-58 32 07/01 dated 14<sup>th</sup> September 1995

TÜV Essen Report No: 1.6 / 206 26 789-04 dated 21 April 2004

It should be noted that the above reports refer to the RM210 model certificate number MC040043/00, the RM230 is identical except for changes to the software that were assessed to demonstrate equivalency in the TÜV Essen report no. 1.6 / 206 26 789-04.

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)

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## Product Certified

The tested system RM230 consists of the main components:

- Transceiver unit: RM230-M
- The electronic connection unit RM210/230-A
- Services programme MEPA
- The light trap
- The air purge unit

The software status certified is version 0000, E-Prom number 2030794 and programme number 9088654 onwards.

## Description:

RM230 is an in-situ analyser for the measurement of low to medium dust concentration in flue gases on a continuous basis. The dust monitor operates according to the scattered light measuring principle and its various configurations allow representative measurement to be made in small and in large diameter ducts.

The automatic zero point and span check cycle includes a contamination measurement of all optical components and this is used to correct the measurement values automatically.

The RM230 is the second-generation of the MCERTS certified dust monitor RM210, in which software changes have been made to simplify and automate the procedure for selecting and converting the measurement range. The new variable operating software programme enables the measurement ranges to be easily set without changing the measurement sensitivity and measurement accuracy.

No hardware changes have been made, so the performance remains the same and parts are completely compatible and interchangeable.

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### 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 050050/01.
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.

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