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PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

FW 100 Series Dust Concentration Monitor Models FW101 and FW102

manufactured by:

SICK Engineering GmbH
*Bergener Ring 43
01458 Ottendorf-Okrilla
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 Range :

Particulate Concentration 0-15 mg/m³

Project No: 674/0113B
Certificate No: Sira MC 040041/02
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
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°C to +50°C

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 expressed as % of certification range				Other results	MCERTS* specification
	<0.5	<1	<2	<4		
Linearity: FW 101 FW 102		✓	✓			<±2%
Temperature dependent zero drift	✓					<0.3%
Temperature dependent span drift	✓					<0.3%
Response time					See note 1	<200s
Detection limit	✓				See note 2	<5%
Accuracy/Analysis function (field)					99.4%	>90%
Integral performance			✓			< 10%
Availability (field)					99%	>95%
Voltage effect, at ±15% from the norm	✓					<2%
Zero shift (field)	✓					< 3%/week
Span shift (field)	✓					< 3%/week
Field repeatability (reproducibility): FW 101 model FW 102 model					93 58	>30 >30

*MCERTS performance limit Version 2 Revision 1, April 2003 Specification given is for range <20mg/m³)

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Test	Results expressed as % of certification range				Other results	MCERTS* specification
	<0.5	<1	<2	<4		
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/m³)

- Note 1: The response time of the monitors is adjustable between 0,1 and 600 seconds. Setting for the response time was 60 s (FW 101) and 5 s (FW 102) during the testing which met the requirement.
- Note 2: The detection limit is presented as % of the 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: FW 100 analysers measure the dust concentration directly within the stack under operating conditions. Information on temperature, pressure and humidity of the gas is required to calculate the normal concentration of the dust.

Field Test Site

The application for MCERTS certification sought by the manufacturer was for a waste incineration plant and large combustion plant.

The FW 100 analysers were assessed on the basis of a five month trial on a cement kiln that was burning waste.

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Approved Site Application

The FW101 certification is for use on waste incinerators, large combustion plant and crematoria. The FW102 certification is for use on stack diameters that do not exceed 500 mm e.g. crematoria.

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.

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: 2.4.2/0855/93-203 55 395 -101 dated July 7 th 2000 (FW 101)
TÜV Essen	Report No: 2.4.2/0855/93-20355 395-102 dated July 11 th 2000 (FW 102)
TÜV Essen	Statement No: 1.6 Wks/Sigl-205 92 933 dated July 23 th 2003 (FW 102)

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 FW101 and FW102 instruments

The system consists of:

- Measurement probe FW101 or FW102
- Electronic connection unit
- Purge air system

The software status certified is version 03001128 onwards.

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Description:

The FW100 Series operates according to the scattered light measurement principle (forward scattering). The sensitivity of this principle makes it particularly suitable for measuring very small particle concentrations. The scattered-light measurement is mounted in a probe, so the FW100 can measure even minimal dust concentration levels independent of the gas velocity. No mechanical adjustments or calibration in a dust-free measuring path is necessary.

The principal difference between FW 101 and FW 102 is the different size of the probe. FW 101 is suitable for ducts with a diameter of more than 500 mm, FW 102 is suitable for use in smaller ducts.

The measuring range is selectable between 0 – 5mg/m³ and 0 – 200mg/m³.

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 040041/02.
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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