

PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

D-R 808

Manufactured by:

DURAG GmbH

Kollastraße 105
22453 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 3.5 dated June 2016**

EN15267-3:2007,

& QAL 1 as defined in EN 14181: 2014

Certification Ranges :

Dust 0 to 7.5 mg/m³ 0 to 500 SL
 0 to 1,000 SL
 0 to 4,000 SL
 0 to 20,000 SL
 0 to 100 SL

Project No.: 70117751
Certificate No: Sira MC170324/00
Initial Certification: 03 May 2017
This Certificate issued: 03 May 2017
Renewal Date: 02 May 2022

Emily Alexander
Deputy Certification Manager

MCERTS is operated on behalf of the Environment Agency by

Sira Certification Service

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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 the assessment and the ranges required for compliance with EU Directives this instrument is considered suitable for use on waste incineration and large coal-fired combustion plant applications. This CEM has been proven suitable for its measuring task (parameter and composition of the flue gas) by use of the QAL 1 procedure specified in EN14181, for IED Chapter III and IED Chapter IV applications for the ranges specified. The lowest certified range for each determinand shall not be more than 1.5X the daily average emission limit value (ELV) for IED Chapter IV applications, and not more than 2.5X the ELV for IED Chapter III and other types of application.

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 Rheinland Test Report No. 936/21232768/B dated 12 October 2016

TUV Rheinland Test Report No. 936/21232768/C dated 30 January 2017

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Product Certified

The measuring system consists of the following parts:

1. D-R 808 measuring device
2. D-ISC 100 universal control unit, D-TB 200 supply unit or D-TB 100 supply unit.
3. The measuring system needs to be supplied with purge air (compressed air) via the D-TB 200 supply unit or via an external source.
4. The D-ISC 100 universal control unit has the following interfaces: Modbus RTU and Modbus TCP according to VDI 4201 parts 1 and 3 (EIA-485, serial and TCP/IP, Ethernet).
5. The D-R 808 measuring system has the following interfaces: digital Modbus RTU according to VDI 4201 parts 1 and 3 (EIA-485, serial).
6. When combined with the D-ISC 100 universal control unit, the D-R 808 measuring system's Modbus interface cannot be used. Instead, the interface of the DISC 100 universal control unit is used.
7. When operated without the D-ISC 100 universal control unit, the measuring system is operated via a standard PC/notebook running the D-ESI 100 software.

This certificate applies to all instruments fitted with software version 2.02R0000 (serial number 1258484) onwards.

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Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: -40°C to +60°C
Instrument IP rating: IP65

Results are expressed as error as a percentage of certification range 0 to 7.5 mg/m³ (0 to 500 SL), unless otherwise stated.

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time						
Dust (0 to 500 SL)					51s	<200s
Dust (0 to 1000 SL)					52s	<200s
Dust (0 to 4000 SL)					51s	<200s
Dust (0 to 20,000 SL)					52s	<200s
Dust (0 to 100 SL)					51s	<200s
Repeatability standard deviation at zero point						
Dust (0 to 500 SL)	0.1					<2.0%
Repeatability standard deviation at reference point						
Dust (0 to 500 SL)	0.2					<5.0%
Lack-of-fit						
Dust (0 to 500 SL)		0.8				<3.0%
Dust (0 to 1000 SL)		-0.7				<3.0%
Dust (0 to 4000 SL)		-0.6				<3.0%
Dust (0 to 20,000 SL)		0.6				<3.0%
Dust (0 to 100 SL)		0.9				<3.0%
Influence of ambient temperature zero point (-40°C to +60°C)						
Dust (0 to 500 SL)		0.7				<5.0%
Influence of ambient temperature reference point (-40°C to +60°C)						
Dust (0 to 500 SL)		0.7				<5.0%

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Influence of voltage variations (196V to 230V) Dust (0 to 500 SL)	0.5					<2.0%
Influence of vibration Dust (0 to 500 SL)	-0.3					To be reported
Measurement uncertainty Dust (ELV of 5 mg/m ³)					Guidance - at least 25% below max permissible uncertainty 6.0%	<22.5% (30%)
Calibration function (field) Dust (0 to 500 SL)					0.97	>0.90
Response time (field) Dust (0 to 1000 SL)					53s Note 1	<200s
Lack of fit (field) Dust (0 to 500 SL) Dust (0 to 1000 SL) Dust (0 to 8000 SL)					-0.6 1.40 1.61	<3.0% <3.0% <3.0%
Maintenance interval					4 weeks	>8 days
Zero and Span drift requirement	<p>It is possible to record zero and span drift. This complies with the requirement for QAL3 according to EN14181. The measuring system is equipped with an automatic compensation for contamination. If contamination exceeds the pre-set level, a status signal is set.</p>					<p>Clause 6.13 & 10.13</p> <p>Manufacturer shall provide a description of the technique to determine and compensate for zero and span drift.</p>
Change in zero point over maintenance interval Dust (0 to 500 SL)		0.7				<3.0%
Change in reference point over maintenance interval Dust (0 to 500 SL)			1.3			<3.0%
Availability					99.3%	>95%

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Reproducibility Dust (0 to 500 SL)				3.2		<3.3%

Note 1: Response time in the field was only conducted over range 0 to 1000SL, but is not notably affected by the scaling of the output.

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Description

The D-R 808 is based on the forward scattering principle and is suitable for monitoring small to medium dust concentrations. It is mounted one-sided at vertical or horizontal oriented stacks whereas the probe is in direct contact with the flue gas.

A red laser (650 nm) irradiates the dust particles in the measurement volume of the flue gas duct with modulated light. The light scattered by the dust particles in forward direction is collected by an objective and then guided to a highly sensitive detector by an optical waveguide.

The D-R 808 automatically carries out the following control functions in regular intervals (programmable) or on demand:

- Contamination check
- Zero point check
- Reference point check (span check)

The zero point check is performed with laser switched off. For the contamination and reference point check, a beam splitter is used which splits the laser beam into two parallel beams, which are alternately blocked by a shutter.

If the device is in reference check or contamination check, the laser power is attenuated in order to generate a signal which is 70%-90% of the certified measuring range as required by EN 15267-3. For the linearity check, which is performed using transmission filters, the 100% signal is adjusted to match the signal range end of a customer selectable output channel.

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 MC170324/00
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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