PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

LM3086 EPA and LM3086 SE

Manufactured by:

MIP Electronics Oy

Palokorvenkatu 2
04250 Kerava
Finland

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 0.2 Ext.*
*0 to 52mg-m^{-3} for a 5m path length

Project No.:	70170599
Certificate No:	Sira MC180335/00
Initial Certification:	16 April 2018
This Certificate issued:	16 April 2018
Renewal Date:	15 April 2023

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
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Form 1335
Issue 3

Certificate Contents

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:

TÜV Rheinland report no: 936/21202183/A dated 02/07/2004
TÜV Rheinland report no: 936/21202183/B dated 16/05/2004
TÜV Rheinland report no: 936/21240676/A dated 03/11/2017

Product Certified

The MIP LM 3086 (models LM 3086 EPA3 and LM 3086 SE) measuring system consists of the following parts:

- 620-000 Receiver unit EPA3/SE
- Optional 620-024 Receiver unit EPA3/SE (with more welded together parts)
- 632-000 Transmitter unit EPA3 (includes laser tube with wavelength 543nm)
    - EPAStack ver. 3.42 onwards

  or
- 631-000 Transmitter unit SE (includes semi-conductor laser with wavelength 655nm)
    - L308SE ver. 1.12 onwards
- 642-038 Monitor unit EPA3
    - EPAMON ver. 3.41 onwards

  or
- 641-000 Monitor unit SE
    - EPAMON ver 3.41 onwards
- Zero pipe and signal wire (length options 3,1m, 5,5m 10,5m, 12,5m, 15,5m, 17,5m 20,5m, 25m)
- 645-001 EPA3-SE optical calibration filter set (set of 3 filters from selection)
- Optional 960-007 external purge air unit (needed if not connected to factory's instrument air system)
- Optional 631-069 Transmitter unit SE steel enclosure

This certificate applies to all instruments fitted with software versions EPAMON 3.41 (at monitor unit EPA3/SE), EPASTACK 3.42 (at Transmitter unit EPA3), L308SE 1.12 (at Transmitter unit SE) (serial numbers LM 3086 EPA3: 730251 and LM 3086 SE: 3195019) onwards.

Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: -20°C to +50°C
Instrument IP rating: IP52

Note: For outdoor installations the analyser needs to be mounted into an IP65 environment. If the instrument is supplied with an enclosure, then the ambient temperature shall be monitored inside the enclosure to ensure that it stays within the above ambient temperature range.

Results are expressed as error % of certification range, unless otherwise stated.

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time Dust					6s	<200s
Repeatability standard deviation at zero point Dust		0.5				<2.0%
Repeatability standard deviation at reference point Dust			-1.0			<5.0%
Lack-of-fit Dust			-1.8			<3.0%
Influence of ambient temperature zero point (-20°C to +50°C) Dust			-1.0			<5.0%
Influence of ambient temperature reference point (-20°C to +50°C) Dust	0.3					<5.0%
Influence of voltage variations (190V to 250V) Dust					No influence	<2.0%
Measurement uncertainty Dust					Guidance - at least 25% below max permissible uncertainty 10.4	<15% (20%)
Calibration function (field) Dust					0.99	>0.90

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time (field) Dust					Note 1 N/A	<200s
Lack of fit (field) Dust				2.0		<3.0%
Maintenance interval					Note 2 4 weeks	>8 days
Zero and Span drift requirement	The evaluation of the automatic controls of the measuring instruments revealed no relevant change in the zero point display or reference point display. Even with regular in the field test performed zero point and reference point controls could not have any relevant drift effects at the measuring devices.					Clause 6.13 & 10.13 Manufacturer shall provide a description of the technique to determine and compensate for zero and span drift.
Change in zero point over maintenance interval Dust			1.1			<3.0%
Change in reference point over maintenance interval Dust			1.6			<3.0%
Availability					99.3	>95%
Reproducibility Dust			1.5			<2.0%

Note 1: Response time has not been included in the field trial as it was not deemed relevant for an optical in-situ instrument.
Note 2: The instrument has a maintenance interval of 4 weeks. The work details below has to be carried out at regular intervals, depending on local conditions.

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Description

MIP LM 3086 is a dust concentration and opacity monitor. It is designed for monitoring dust concentrations in industrial plants, even across long measurement paths. LM 3086 operates on the single pass measuring principle. The light source directs light through the channel where it is received on the opposite side. The measurement is calculated by how much light was able to pass through the channel. Single pass principle is selected f. ex. to minimize light scattering problems. LM 3086 has optical reference path (zero pipe) between the receiver and the transmitter which provides the continuous Zero and Calibration check several times per second. All optical surfaces are continuously monitored, and possible contamination will be compensated automatically.

LM 3086 has two optional models which share the same technology. The major difference comes from the laser utilized depending on the standard. LM 3086 EPA3 has a green helium-neon gas laser per the requirements of the USEPA and fits current ASTM regulation. This model's transmitter enclosure is made of fiber-glass composite. LM 3086 SE has a red semi-conductor laser, which laser type is the most common and reliable wavelength. This model's transmitter enclosure is made of stainless steel, steel enclosure is provided as an option.
LM 3086 has an inbuilt port for optical linearity check using optical calibration filters. For that there is no need to dismount units from stack.
Maintenance interval is 4 weeks for the following maintenance tasks:

- Check contamination value from system parameters
    - Visual inspection / cleaning of optics if value >4%
- Check error log
- Check cross-stack alignment
- Check linearity using optical filters
- Clean / replace blower filters, if needed

It's recommended that minimum once a year, units are unmounted from stack and placed on a dust-free place for thorough cleaning as well as zero and span point check.

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 V001 for certificate No. Sira MC180335/00

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.