PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

V-CEM5100 Flow Monitor

manufactured by:

Codel International Ltd

Station Building
Station Road
Bakewell
Derbyshire, DE45 1GE
UK

has been assessed by Sira Certification Service
and for the conditions stated on this certificate complies with:

Environment Agency Guidance
"MCERTS for stack emissions monitoring equipment at industrial installations"
- Continuous emissions monitoring systems(CEMS)
Published 20 October 2020
EN 15267-1, EN15267-2, EN 15267-3
& QAL 1 as defined in EN 14181: 2014

Certification ranges :

Gas Velocity 3 to 50 m/s

Project number:	70044336/ 80057533
Certificate number:	Sira MC150284/02
Initial certification:	06 October 2015
This certificate issued:	09 November 2020
Renewal date:	05 October 2025

Andrew Young
Environmental Team Manager

MCERTS is operated on behalf of the Environment Agency by

Sira Certification Service
Unit 6, Hawarden Industrial Park
Hawarden, Deeside, CH5 3US
Tel: +44 (0)1244 670 900

UKAS PRODUCT CERTIFICATION 0011

The MCERTS certificate consists of this document in its entirety.
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Form 1335
Issue 9

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 technical guidance on monitoring, available at www.mcerts.net

This instrument is considered suitable for use on waste incineration and large combustion plant applications. This CEMS 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. The lowest certified range for each determinand shall not be more than 1.5 times the daily average emission limit value (ELV) for incineration plants, and not more than 2.5 times the ELV for other types of application.

The device shall be used in a duct with a diameter of > 0.5 m and under the following flue gas conditions: humidity of >2 %, temperature of >40 °C.

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 Report Number 936/21216334/C dated 20 March 2012

Product certified

The V-CEM5100 Flow Monitor consists of the following parts:

- 2 transceivers with 10 m cable (standard length)
- 2 mounting flanges
- 2 Air Purges
- 2 Sight Tubes
- 1 power supply unit (PSU)
- 1 signal processing unit (SPU)
- 1 display and control unit with data output (DDU)

See description for additional information.
This certificate applies to all instruments fitted with software version DDU 507-105C, SPU 507-030A & 507-031A (serial number VCEM5100-0208 onwards).

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Certified performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: -20°C to +50°C
Instrument IP rating: IP65

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					60s	<60s
Repeatability standard deviation at zero point	0.00					<2.0%
Lack-of-fit	0.4					<2.0%
Influence of ambient temperature zero point	0.4					<5.0%
Influence of ambient temperature reference point			-1.2			<5.0%
Influence of voltage variations 196 to 230V						
Zero Point	0.1					<2.0%
Reference Point		0.9				<2.0%
Influence of vibration (10 to 60Hz (±0.3mm), 60 to 160Hz at 1g)	0.0					To be reported
Measurement uncertainty					Guidance - at least 25% below max permissible uncertainty	
					3.1%	(10%) 7.5%

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Calibration function (field)					0.9983 to 0.9918	>0.90
Response time (field)					60s 30s damping	<200s
Lack of fit (field)		0.6				<2.0%
Maintenance interval					3 months	>8 days
Zero and Span drift requirement	The AMS allows for recording zero and span drift and therefore fulfils the requirement of QAL3 according to EN 14181. The AMS doesn't perform any checks or compensation procedures.					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	0.31					<3.0%
Change in reference point over maintenance interval	-0.69					<3.0%
Availability					99.4%	>95%
Reproducibility			1.8			<3.3%

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Description

The AMS Codel VCEM 5100 flow monitoring system is using a cross correlation principle to determine the velocity in gas flows.

Series of vortexes caused by turbulences in the gas flow are transported by the gas flow. The infrared radiation of hot waste gas is characterized by special flickering caused by the gas vortexes. These characteristic infrared signals are detected by two infrared detectors mounted at the duct wall in flow direction with a defied distance to determine the time delay between the two sensors to calculate the gas velocity.

The V-CEM5100 Flow Monitor consists of the following parts:

The sensor unit "Transducer unit" Each sensor unit consists of a broadband infrared detector, a lens which focuses the radiation onto the detector and a preamplifier All components are in egg-NEM epoxy-coated aluminium housing. tight encapsulated.

The power supply "Power Supply Unit (PSU)" The power supply is fed from the mains supply with AC voltage and supplies the sensor units with 48V DC.

The signal processing unit "Signal Processor Unit (SPU)" The signal processing unit (SPU) is supplied with 48 V DC power from the power supply (PSU). The signals from the two sensors are processed and compared to the transit time of the gas stream from the sensor 1 to the sensor 2 to identify and to determine the flow velocity. Diagnostic values are transferred from the display unit (DDU).

The display unit "Data Display Unit (DDU)" The separate display unit (DDU) is connected to the signal processing unit (SPU) via a four-wire cable. The indicator allows device settings, measured values and diagnostic messages, and a 32 character alphanumeric display. In addition, there are two 4 to 20 mA outputs and relay alarms available.

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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'.

2. The design of the product certified is held and maintained by TÜV Rheinland for certificate No. Sira MC150284/02.

3. If a certified product is found not to comply, Sira should be notified immediately at the address shown on this certificate.

4. 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'.

5. This document remains the property of Sira and shall be returned if requested by Sira.

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