



# PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

***X-STREAM O<sub>2</sub> Combustion Flue Gas Transmitter  
With Xi Interface***

manufactured by:

***Emerson Process Management, Rosemount Analytical, Inc.***

*Process Analytic Division  
6565P Davis Industrial Parkway  
Solon, Ohio  
44139 USA*

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 3.1 dated July 2008,  
EN15267-3:2007,  
& QAL 1 as defined in EN 14181: 2004**

Certification Range :

O<sub>2</sub> 0 to 25%vol

Project No: 674/0395  
Certificate No: Sira MC 090156/00  
Initial Certification: 08 September 2009  
This Certificate Issued: 08 September 2009  
Renewal Date: 07 September 2014

Technical Director

*MCERTS is operated on behalf of the Environment Agency by*

**Sira Certification Service**

12 Acorn Industrial Park, Crayford Road, Crayford  
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## Approved Site Application

*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. Operators with installations falling under the Large Combustion Plant Directive or Waste Incineration Directive must refer to Technical Guidance Note M20: Quality Assurance of Continuous Emission Monitoring Systems, for guidance on the suitability of CEMS for their installations. M2 and M20 are available on the Agency's website at [www.mcerts.net](http://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 LCPD and WID applications for the ranges specified. The lowest certified range for each determinand shall not be more than 1.5X the emission limit value (ELV) for WID applications, and not more than 2.5X the ELV for LCPD 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 Report Number 936/21208608/B dated 10/10/08

## Product Certified

The X-STREAM O2 Combustion Flue Gas Transmitter consists of the following parts:

- Transmitter Models XS-O2, XS-O2XP and XS-O2XPFA
- Remote Xi

This certificate applies to all instruments (serial number F-09001670 onwards) fitted with software version V1.02 for the X-STREAM Transmitter board, software version V1.04B for the X-STREAM Xi CPU board and software version V1.04B for the X-STREAM Xi Remote board.

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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: IP66

Note: 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.

Unless otherwise stated the evaluation was carried out on the certification range O<sub>2</sub> 0 to 25%vol.

Test	Results expressed as %vol				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time					32s	<200s
Repeatability standard deviation at zero point	0.01					<0.2% vol
Repeatability standard deviation at reference point	0.03					<0.2% vol
Lack-of-fit	0.10					<0.2% vol
Influence of ambient temperature zero point	-0.03					<0.50% vol
Influence of ambient temperature reference point	0.30					<0.50% vol
Influence of sample gas pressure	0.10					<0.2% vol
Influence of sample gas flow for extractive CEMS					Not applicable	<0.2% vol
Influence of voltage variations 190 to 250V					No influence	<0.2% vol
Influence of vibration (10 to 60Hz (±0.3mm), 60 to 150Hz at 19.6m/s <sup>2</sup> )	-0.1					<0.2% vol
Cross-sensitivity at zero with interferents: H <sub>2</sub> O, CO, CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, NO, NO <sub>2</sub> , NH <sub>3</sub> , SO <sub>2</sub> , HCl	0.17					<0.40% vol
Cross-sensitivity at reference with interferents: H <sub>2</sub> O, CO, CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, NO, NO <sub>2</sub> , NH <sub>3</sub> , SO <sub>2</sub> , HCl	0.19					<0.40% vol
Converter Efficiency					Not applicable	>95%

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Test	Results expressed as % vol				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Measurement uncertainty				2.4		Guidance - at least 25% below max permissible uncertainty
Calibration function (field)					0.96	>0.90
Response time (field)					28s	<200s
Lack of fit (field)	0.10					<0.2% vol
Maintenance interval					4 weeks Note 1	>8 days
Zero and Span drift requirement	<p>The X-STREAM Transmitter with Remote Xi as a system does not contain automatic drift correction. The electronics will monitor the sensing cell to determine its 'health' and ability to provide an accurate oxygen reading. If the cell is determined to be 'unhealthy', the electronics will recommend calibration. If recalibration cannot return to 'health', the X-STREAM will fail calibration and require maintenance to correct.</p> <p>A calibration is performed with zero and span gases (usually 0.4% and 8.0% O<sub>2</sub>) to establish a calibration constant and slope used in the O<sub>2</sub> calculation formula. At the same time, the impedance of the sensor cell is measured and established.</p> <p>As the sensing cell ages, the impedance will increase over time. The electronics will check the cell impedance approximately once per second during normal operation. When the cell impedance initially reaches 100Ω, the electronics will create a 'Calibration recommended' alarm. If the X-STREAM is connected to an auto calibration device (e.g. IMPS Intelligent Multiprobe Sequencer [MCERTS Certified with Rosemount's Oxymitter product]) and the setup is correct, a calibration will occur automatically. If no auto calibration device is connected, it is up to the operator to respond to the alarm and perform a calibration. As the sensing cell further ages, this process will repeat when the impedance increase another 50Ω since the last calibration.</p> <p>Each time a calibration occurs, the slope and constant will change slightly. If at any time the slope falls outside the range of 34.5 – 57.5 mV /decade or the constant falls outside the range of ±20 mV, the calibration will fail. The X-STREAM will continue operating with the old calibration parameters but the electronics will create a "Calibration Failed" alarm.</p>					<p>Clause 6.13 &amp; 10.13</p> <p>Manufacturer shall provide a description of the technique to determine and compensate for zero and span drift.</p>

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Test	Results expressed as % vol				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Change in zero point over maintenance interval	0.10					<0.2% vol
Change in reference point over maintenance interval	0.20					<0.2% vol
Availability					99.63%	>98%
Reproducibility	0.11					<0.20% vol

Note 1: The X-STREAM has a maintenance interval of 4 weeks. The work detailed below has to be carried out at regular intervals, depending on local conditions:

- Monthly calibration of the AMS at zero and reference point and visual inspection.

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### Description:

The X-STREAM O<sub>2</sub> combustion Flue Gas Transmitter is an in-situ stack mounted device designed to measure the net concentration of remaining oxygen in an industrial combustion process after the fuels have been oxidized. The equipment measures oxygen percentage by reading the voltage developed across a heated yttria stabilized zirconia disk. The electronics within the transmitter controls the temperature and provides an isolated 4-20 mA output proportional to the measured oxygen concentration along with HART digital communication.

The HART digital signal provides communication between the Transmitter and Remote Xi Interface. The Remote Xi provides additional software features and enables two Transmitters to be operated from a single Remote Xi. The Remote Xi provides an isolated 4-20 mA output to the control system proportional to the measured oxygen concentration along with HART digital communication. The Remote Xi includes an LCD display and keypad for monitoring, operating and troubleshooting.

### 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 090156/00.
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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