PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

Endura AZ20 / AZ30 measuring system

Manufactured by:

ABB Ltd
Oldends Lane
Stonehouse
Gloucestershire
GL10 3TA

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
EN15267-1:2009, EN15267-2:2009, EN15267-3:2007,
& QAL 1 as defined in EN 14181: 2014

Certification Ranges :

O_2	0 to 25%vol
	0 to 5%vol

Project No.:	70102656
Certificate No:	Sira MC110191/03
Initial Certification:	22 November 2011
This Certificate issued:	22 November 2016
Renewal Date:	21 November 2021

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:

TUV Rheinland	Report Number 936/21213673/A dated 10 October 2011
ABB witness test report	Report Number 16A32433 dated 7 November 2013

Product Certified

The measuring system consists of the following parts:

AZ20
- AZ20/ coded version of the standard probe with integrated measuring transmitter (type 211111327110GSTD tested)
- Pump for the reference air supply

OR
- AZ20/ coded version of the standard probe with external measuring transmitter (type 212112327112GSTD tested)
- Pump for the reference air supply

AZ30
- AZ30/ coded version of the standard probe with integrated measuring transmitter
- Pump for the reference air supply

OR
- AZ30/ coded version of the standard probe with external measuring transmitter
- Pump for the reference air supply

This certificate applies to all AZ20 instruments fitted with software version 2000.01.15 and above with measuring transmitter serial number 3K220000048374 onwards.

This certificate applies to all AZ30 instruments fitted with software version 2000.01.15 and above with measuring transmitter serial number 3K220000196958 onwards.

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 AZ20 for the certification range O2 0 to 25%vol. Both integrated and external measuring transmitter tested, worst result recorded.

Test	Results expressed as %vol				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time						
AZ20						
O_2 (dry gas) (0 to 25%vol)					12s	<200s
O_2 (wet gas) (0 to 25%vol)					17s	<200s
O_2 (dry gas) (0 to 5%vol)					32s	<200s
O_2 (wet gas) (0 to 5%vol)					18s	<200s
AZ30						
O_2 (dry gas) (1 to 21%vol)					16s	<200s
O_2 (wet gas) (1 to 21%vol)					20s	<200s
Repeatability standard deviation at zero point						
O_2	0.01					<0.2%
Repeatability standard deviation at reference point						
O_2	0.07					<0.2%
Lack-of-fit						
O_2 (0 to 25%vol)	0.09					<0.2%
O_2 (0 to 5%vol)	0.03					<0.2%

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Test	Results expressed as %vol				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Influence of ambient temperature zero point O_2	0.04					<0.50%
Influence of ambient temperature reference point O_2	0.15					<0.50%
Influence of sample gas pressure O_2	-0.20					<0.2%
Influence of voltage variations 190 to 250V O_2	0.06					<0.2%
Influence of vibration at zero (10 to 60Hz (±0.3mm), 60 to 150Hz at 19.6m/s^2)	-0.11					To be reported
Influence of vibration at reference (10 to 60Hz (±0.3mm), 60 to 150Hz at 19.6m/s^2)	-0.17					To be reported
Cross-sensitivity at zero with interferents: H_2O, CO, CO_2, CH_4, N_2O, NO, NO_2, NH_3, SO_2, HCl O_2	0.00					<0.40%
Cross-sensitivity at reference with interferents: H_2O, CO, CO_2, CH_4, N_2O, NO, NO_2, NH_3, SO_2, HCl O_2	-0.23					<0.40%
Measurement uncertainty O_2 (Based on a range 25%vol)					Guidance - at least 25% below max permissible uncertainty 2.6%	7.5%
Calibration function (field) O_2					0.98	>0.90
Response time (field) O_2					15s	<200s

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Test	Results expressed as %vol				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Lack of fit (field) O_2	0.07					<0.2%
Maintenance interval					4 weeks Note 1	>8 days
Zero and Span drift requirement	The CEM tested was tested for zero and span drift manually. The Endura AZ20 & AZ30 are available with an optional attachment for automatic zero and span checks, although this option was not evaluated during the test programme Full Description and techniques are given in the ABB product manuals for calibration / compensation of zero drift. (See last page "Description" in this document for more information)					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 O_2	0.16					<0.2%
Change in reference point over maintenance interval O_2	0.19					<0.2%
Availability					99.4%	>95% (>98% for O_2)
Reproducibility O_2	0.19					<0.20%

Note 1: Manufacturer instructions must be followed. Monthly maintenance works conducted during field trial:

- Visual check of the system
- test gas calibration check at zero and span point
- temperature check of the sensor oven
- check of reference air flow from pump or air supply

Description

System equipment comprises a (process-mounted) Endura AZ20 or AZ30 oxygen probe, controlled by an integral or remote transmitter. During operation, a zirconia cell within the probe is held at a constant temperature of 700°C (1292 °F) by a probe heater and control thermocouple assy.

An output generated at the zirconia cell is processed in the transmitter to give a locally displayed O2 reading, and a self powered 4 to 20 mA retransmission signal with HART digital communications,(any range between 0 % and 100% O2.) AZ30 limited to 0% to 21% due to hazardous area certification

Optional automatic calibration (AutoCal) enables automatic, semi-automatic or manual calibration to be performed using gas control solenoids mounted within the probe head. The gas calibration sequencing is software-controlled from the transmitter, and can be set to provide automatic or manual “performance” checking which does not alter any calibration coefficients, or, “full calibration” which resets the calibration coefficients, all results are logged for later reference.

Optional restrictors in the probe head control the test gas and reference air flows, if restrictors are not fitted, flowmeters are required to set the correct test gas & reference air flows.

The AZ20 probes are available in various mounting flange options and insertion lengths from 0.5 metre to 4.0 metre. All probes are capable operating in process temperatures from -20°C to 800°C.

The AZ30 probes are available in various mounting flange options and insertion lengths from 0.5 metre to 2.0 metre. All probes are capable of operating in process temperatures from -20°C to 700°C.

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 V00 for certificate No. Sira MC110191/03

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.