

PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

Servomex 4900 Multigas Analyser

Manufactured by:

Servomex Group Ltd

Jarvis Brook
Crowborough
East Sussex
TN6 3DU
UK

Technical and Service Center
4 Constitution Way
Woburn
MA 01801-1087
USA

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

**MCERTS Performance standards for continuous emissions
monitoring systems (CEMS) and Transportable-CEMS, Version 4 dated July 2018,
EN15267-3:2007,
& QAL 1 as defined in EN 14181: 2014**

Certification Ranges:

SO ₂	0 to 572 mg/m ³
CO	0 to 75 and 0 to 100 mg/m ³
NO	0 to 268 and 0 to 650 mg/m ³
O ₂	0 to 25 % vol.

Project No.: 80022805
Certificate No: Sira MC030013/12
Initial Certification: 24 June 2011
This Certificate issued: 26 August 2020
Renewal Date: 05 March 2023



Emily Alexander
Environmental Project Engineer

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 Environment Agency stack emissions monitoring guidance available at www.mcerts.net

This instrument is considered suitable for use on waste incineration and large coal-fired 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 waste incineration plants, and not more than 2.5 times the ELV for other types of application.

The Servomex 4900 is not suitable for use with corrosive samples and consequently must always be used with an appropriate sample system. Potential interference's are site specific so the effect of interference must be considered at each sample location.

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 Essen Report:	Report number RWTÜV-3.5.2/0784/95//674377/01, dated 1997
	Report number RWTÜV-3.5.2/0784/95//597632/01, dated 1996
	Report number RWTÜV-5.0.2/0784/94//20363886, dated 1999
SIRA Report:	Report number N 0415, dated November 2002
TÜV Köln Report:	Report number 936/21209718/A, dated July 2008
SIRA Report:	Report number 70142125, dated August 2017
CSA Report:	Report number 80022805, dated 27 th July 2020

Product Certified

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The 4900 Multigas Analyser measuring system consists of the following parts:

Sample Probe	Heated Filter	Heated Sample Line	Gas Conditioning	Analyser
Model: JCT-JES 301 / Buhler 222.20 Heated filter Probe	Model: N/A – Integrated with sample probe	Model: JCT-JH3F Length: To suit application	Model: Bespoke system with JCT / Universal Analyser coolers	Model: 4900 Analyser

Allowable variations could include:

- A different brand or model of sampling system of the same type, provided that there is evidence the alternative system works with similar types of CEMS.
- Additional manifolds and heated valves used to allow more than one analyser to share a sampling system.

This certificate applies to all instruments fitted with software version 4X00/CP0_08 onwards (serial number 653043 onwards).

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Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: Stack mounted components -10°C to +55°C
Control Unit +5°C to +45°C
Instrument IP rating: IP20

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 ranges CO 0 to 75mg/m³, NO 0 to 268mg/m³, SO₂ 0 to 572 mg/m³ and O₂ 0 to 25%vol, unless otherwise stated.

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time						
CO (0 to 75 mg/m ³)					34s	<200s
CO (0 to 100 mg/m ³)					43s	<200s
NO (0 to 268 mg/m ³)					35s	<200s
NO (0 to 650 mg/m ³)					26s	<200s
SO ₂					48s	<200s
O ₂					26s	<200s
Repeatability standard deviation at zero point						
CO		0.93				<2.0%
NO	0.07					<2.0%
SO ₂	0.13					<2.0%
O ₂	0.00					<0.2%
Repeatability standard deviation at reference point						
CO	0.07					<2.0%
NO	0.22					<2.0%
SO ₂	0.13					<2.0%
O ₂	0.08					<0.2%
Lack-of-fit						
CO (0 to 75 mg/m ³)	0.4					<2.0%
CO (0 to 100 mg/m ³)	0.6					<2.0%
NO (0 to 268 mg/m ³)	0.4					<2.0%
NO (0 to 650 mg/m ³)	0.6					<2.0%
SO ₂	0.5					<2.0%
O ₂	0.1					<0.2%

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Influence of ambient temperature zero point -10°C to +55°C						
CO			-1.5			<5.0%
NO		-0.8				<5.0%
SO ₂			1.6			<5.0%
O ₂	0.01					<0.50%
Influence of ambient temperature reference point -10°C to +55°C						
CO			1.31			<5.0%
NO			-1.8			<5.0%
SO ₂			-1.7			<5.0%
O ₂	-0.04					<0.50%
Influence of sample gas flow for extractive CEMS						
CO		0.66				<2.0%
NO	-0.25					<2.0%
SO ₂	0.31					<2.0%
O ₂	-0.17					<0.2%
Influence of voltage variations 190V to 250V						
CO	0.15					<2.0%
NO	0.00					<2.0%
SO ₂	0.19					<2.0%
O ₂	0.07					<0.2%

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Cross-sensitivity at zero with interferents: O ₂ , H ₂ O, CO, CO ₂ , CH ₄ , N ₂ O, NO, NO ₂ , NH ₃ , SO ₂ , HCl,						
CO			1.80			<4.0%
NO				3.30		<4.0%
SO ₂			1.30			<4.0%
O ₂	0.00					<0.40%
Cross-sensitivity at reference with interferents: O ₂ , H ₂ O, CO, CO ₂ , CH ₄ , N ₂ O, NO, NO ₂ , NH ₃ , SO ₂ , HCl,						
CO			1.80			<4.0%
NO		0.60				<4.0%
SO ₂				2.70		<4.0%
O ₂	0.00					<0.40%
Measurement uncertainty					Guidance - at least 25% below max permissible uncertainty	
CO					5.5%	<7.5% (10%)
NO					7.3%	<15% (20%)
SO ₂					13.7%	<15% (20%)
O ₂					2.3%	<30% (40%)
Calibration function (field)						
CO					>0.999	>0.90
NO					>0.999	>0.90
SO ₂					>0.999	>0.90
O ₂					>0.999	>0.90
Response time (field)					Note 1	
CO					34s	<200s
NO					35s	<200s
SO ₂					48s	<200s
O ₂					26s	<200s

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Lack of fit (field)					Note 2	
CO			<2			<2.0%
NO			<2			<2.0%
SO ₂			<2			<2.0%
O ₂			<2			<0.2%
Maintenance interval	With SO ₂ = 2 weeks Without SO ₂ = 3 weeks					>8 days
Zero and Span drift requirement	Compensation for zero and span drift is performed by introducing suitable zero and span gases as described in the 4900 analyser manual					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						
CO			<2.0		2 weeks	<3.0%
NO			1.2		2 weeks	<3.0%
SO ₂				2.1	3 weeks	<3.0%
O ₂				2.8	2 weeks	<0.2%
Change in reference point over maintenance interval						
CO						<3.0%
NO	0.4				2 weeks	<3.0%
SO ₂	0.4				3 weeks	<3.0%
O ₂			1.2		2 weeks	<0.2%
Availability					98.9%	>95% (>98% for O ₂)

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Reproducibility						
CO			1.34			<3.3%
NO		1.0				<3.3%
SO ₂			1.32			<3.3%
O ₂	0.41					<0.20%

Note 1. Response time stated is from the lab test.

Note 2. Data derived from the calibration function test (field)

Description

The Servomex 4900 samples flue gas via an extractive process. The analyser measures oxygen by a magnetodynamic paramagnetic sensor and NO, CO and SO₂ by infrared gas filter correlation technology.

The Servomex 4900 series system tested consisted of a Servomex 4995 sample conditioning system and two Servomex 4900 analysers to both measure NO, CO, SO₂ and O₂. The system also included a heated filter probe model JES 300 (located within the stack) and a heated line model JH3F, both are manufactured by JCT Consulting & Trading GmbH. The configuration of analysers and sample conditioning system can be varied depending upon the application and customer requirements.

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 defined in the Sira Design Schedule V06 for certificate No. Sira MC030013/12.
3. If a certified product is found not to comply, Sira Certification Service 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 when requested by the company.

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