

PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

Solar Cemnex

Manufactured by:

Signal Group

Standards House
Doman Road
Camberley
Surrey, GU15 3DF

has been assessed by CSA Group
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)
Updated 28 August 2024
EN 15267-1:2023, EN15267-2:2023, EN 15267-3:2023
& QAL 1 as defined in EN 14181: 2014

Certification ranges:

Parameter	Units	Certification range	Supplementary range 1	Supplementary range 2
TOC	mg/m ³	0-15	0-30	0-500

Project No.: 80259402
Certificate No: CSA MC250401/00
Initial Certification: 15 September 2025
This Certificate issued: 15 September 2025
Renewal Date: 14 September 2030



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MCERTS is operated on behalf of the Environment Agency by

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Approved Site Application

Any potential user should make sure, in consultation with the manufacturer, that the monitoring system is suitable for the intended application. For further information on stack emissions monitoring refer to the Environment Agency's guidance available at www.mcerts.net

This instrument is considered suitable for use on waste incineration and large combustion plants. 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 the 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 applications.

The field test was carried out from July to December 2024 at a waste incineration plant.

Basis of Certification

This certification is based on the following test report(s) and on CSA Group's assessment and ongoing surveillance of the product and the manufacturing process:

TÜV SÜD Industrie Service GmbH, Munich, Report no. 3448437, dated 16.05.2025

Product Certified

The Solar Cemnex measuring system consists of the following parts:

1. Sample Probe – FILT/870001 sintered stainless steel probe
2. Heated Filter – 363SM pre-filter with internal temperature control
3. Heated Sample Line – 20MHL 20m heated line with 54020MHL 540 Temperature Controller
4. Valve Control – 301XC (for automatically applying zero gas to the sample line inlet)
5. Analyser – Solar HFID

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 CEM.
- 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 V1.530 for the analyser and V1.20 for the GUI Tablet and serial number 20422 onwards.

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Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: +5°C to +40°C
Instrument IP rating: IP40

Note: The area of use is restricted to locations with protection from temperatures within the tested temperature range (+5 to +40°C). Roofing on the place of assembly and protection from precipitation or splashing water are mandatory.

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

Test	Result expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
LABORATORY TESTS						
Response time						
TOC (0 - 15 mg/m³)					29s	≤200 s
TOC (0 - 30 mg/m³)					28s	≤200 s
TOC (0 - 500 mg/m³)					26s	≤200 s
Repeatability standard deviation at zero point						
TOC (0 - 15 mg/m³)	0.14					≤2.0 %
Repeatability standard deviation at span point						
TOC (0 - 15 mg/m³)	0.16					≤2.0 %
Lack of fit						
TOC (0 - 15 mg/m³)	0.41					≤2.0 %
TOC (0 - 30 mg/m³)	-0.19					≤2.0 %
TOC (0 - 500 mg/m³)	0.16					≤2.0 %
Influence of ambient temperature zero point (+5°C to +40°C)						
TOC (0 - 15 mg/m³)				3.1		≤5.0 %
Influence of ambient temperature span point (+5°C to +40°C)						
TOC (0 - 15 mg/m³)				3.2		≤5.0 %
Influence of sample gas pressure at span point						
TOC (0 - 15 mg/m³)	Not applicable					≤2.0 %
Influence of sample gas flow for extractive CEMS						
TOC (0 - 15 mg/m³)			1.83			≤2.0 %
Influence of voltage variations (196V to 253V) - zero						
TOC (0 - 15 mg/m³)			-1.86			≤2.0 %
Influence of voltage variations (196V to 253V) - span						
TOC (0 - 15 mg/m³)			-1.92			≤2.0 %
Influence of vibration (10 to 60Hz (±0.35mm), 60 to 150 Hz at 0.5g)						
TOC (0 - 15 mg/m³)	Not applicable					≤2.0 %

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Test	Result 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, CH ₄ , CO ₂ , CO, N ₂ O, NO, NO ₂ , NH ₃ , SO ₂ , HCl						
TOC (0 - 15 mg/m ³)				3.20		≤4.0 %
Cross-sensitivity at span with interferents: O ₂ , H ₂ O, CH ₄ , CO ₂ , CO, N ₂ O, NO, NO ₂ , NH ₃ , SO ₂ , HCl						
TOC (0 - 15 mg/m ³)				3.60		≤4.0 %
Excursion of the measurement beam of cross-stack in-situ CEM						
TOC (0 - 15 mg/m ³)	Not applicable					≤2.0 %
Response factors for TOC CEMS for 0 - 15mg/m ³						
Methane	1.06 & 1.07					0.90 to 1.20
Aliphatic hydrocarbons	1.00 & 1.08					0.90 to 1.10
Aromatic hydrocarbons	0.85 & 1.07					0.80 to 1.10
Chlorinated hydrocarbons	0.80 & 1.04					0.75 to 1.15
Unsaturated hydrocarbons	0.96 & 1.14					0.75 to 1.15
Aliphatic alcohols	0.78 & 0.84					0.70 to 1.05
Ester and ketones	0.62 & 0.64					0.50 to 1.05
Organic acids	0.52 & 0.53					0.50 to 1.05
Response factors for TOC CEMS for 0 - 15mg/m ³						
Effect of oxygen	1.87					≤2.0 %
Measurement uncertainty					Guidance - at least 25% below max permissible uncertainty	
TOC (0 - 15 mg/m ³) - for an ELV of 10mg/m ³					11.6%	22.5%

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Test	Result expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
FIELD TESTS						
Coefficient of determination of calibration function, R ²						
TOC (0 - 15 mg/m ³)					0.984	≥0.90
Response time						
TOC (0 - 15 mg/m ³)					37s	≤200 s
Lack of fit						
TOC (0 - 15 mg/m ³)	0.4					≤2.0 %
Minimum maintenance interval						
for all parameters					4 weeks	≥8 days
Zero and span drift requirement						
	The Signal Solar Cemnex incorporates an automated zero and span drift compensation system compliant with the requirements of EN 14181. The system performs automatic zero adjustment every 24 hours using synthetic air or an internal zero gas generator. Optionally but not necessary to fulfil the requirements of QAL1 according to EN14181, automatic span adjustment is also possible using a test gas corresponding to 70-90% of the measuring range. Zero and test gases are applied automatically at the measurement gas entry point via the heated filter to detect and correct deviations from nominal values. This process mitigates measurement uncertainty caused by contamination in pipes or filters. An operational status signal is generated when set limits for zero and span drift are reached, ensuring reliable and accurate TOC monitoring.					cl. 6.13 & 10.13 Manufacturer shall provide a description of the technique to determine and compensate for zero and span drift.
Drift at zero point within maintenance interval						
TOC (0 - 15 mg/m ³)				-2.5		≤3.0 %
Drift at span point within maintenance interval						
TOC (0 - 15 mg/m ³)				-2.4		≤3.0 %
Availability						
TOC (0 - 15 mg/m ³)					97.4	≥95%
Reproducibility, R _f						
TOC (0 - 15 mg/m ³)				2.0		≤3.3 %

Note 1: The maintenance interval is four weeks.

Note 2: The CEMS shall be aligned at a time interval of 24 hours by the automatic alignment function at zero point.

Note 3: Zero gas can be provided by connecting synthetic air or by the internal zero gas preparation.

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Description

The Signal Solar Cemnex is a Continuous Emissions Monitoring system (CEMS) designed for Total Organic Compound (TOC) monitoring across various industries, including large- and medium-scale combustion plants and waste incineration facilities. The system is available in a standard 19-inch rack configuration for integration or as individual components for wall or benchtop mounting.

The system features a heated Flame Ionization Detector (FID) that continuously measures TOC concentrations in sample gas. Organic compounds are ionized in a hydrogen flame, generating a current proportional to the organic carbon content, ensuring real-time TOC quantification. The heated detector design minimizes condensation and maintains sample integrity.

For fully automated, unmanned operation, the analyser can be integrated with a heated sample line, sample prefilter, or multi-point heated sampling system. Optional configurations support calibration gas inputs and automated zero/span checks.

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 CSA Group Testing UK Ltd Certificates'.
2. The design of the product certified is held and maintained by TÜV Rheinland for certificate No. CSA MC250401.
3. If a certified product is found not to comply, CSA Group 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 CSA Group Testing UK Ltd Certificates'.
5. This document remains the property of CSA Group and shall be returned when requested by CSA Group.

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