PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

DUSTHUNTER T100

Manufactured by:

Endress+Hauser SICK GmbH+Co. KG

Bergener Ring 27
01458 Ottendorf-Okrilla
Germany

has been assessed by CSA Group
and for the conditions stated on this certificate complies with:

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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 15267-1:2009, EN15267-2:2009, EN 15267-3:2007
& QAL 1 as defined in EN 14181: 2014

Certification ranges:

Dust	0 to 0.1 Ext*
	0 to 0.05 Ext
	0 to 0.2 Ext
	0 to 0.5 Ext
	0 to 1.0 Ext

*0 to 0.1 Ext (at 5m optical path length) ≡ 0-15 mg/m^3 dust

Project No.:	80252988
Certificate No:	CSA MC090151/04
Initial Certification:	17 August 2009
This Certificate issued:	24 April 2025
Renewal Date:	16 August 2029

Andrew Young
Environmental Team Manager

MCERTS is operated on behalf of the Environment Agency by

CSA Group Testing UK Ltd
Unit 6, Hawarden Industrial Park
Hawarden, Deeside, CH5 3US
Tel: +44 (0)1244 670 900

Form 1335
Issue 12

Certificate Contents

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 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 applications.

The field trial was conducted over 6 months with the T100 mounted on a municipal waste incinerator.

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 Rheinland Report Number 936/21210076/A dated 24.10.2008

Product Certified

The measuring system consists of the following parts:

- Sender/receiver unit DHT-T
- Connection cable to connect the sender/receiver unit to the control unit
- Reflector/scattered light receiver DHT-R
- Control unit MCU for data control, evaluation and output
    - With integrated purge air supply, for internal duct pressure -50… +2 mbar
    - Without purge air supply, therefore additionally required:
- Optional external purge air unit, for internal duct pressure -50…+30mbar

This certificate applies to all instruments fitted with software version 1.026 (MCU) 01.03.04 (Sensor unit) and 02.16 (SOPAS ET operating software), serial number 08328558 (SR unit) 07478637 (MCU), 08328560 (Ref unit) 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 certification range 0 to 0.1 Ext.

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time						
Dust					28s (with 30s damping time)	<200s
Repeatability standard deviation at zero point						
Dust	0.1					<2.0%
Repeatability standard deviation at reference point						
Dust	0.1					<5.0%
Lack-of-fit					Note 1	
0-0.1 Ext			1.0			<3.0%
0-0.2 Ext			1.0			<3.0%
0-0.5 Ext			-1.7			<3.0%
0-1.0 Ext			-1.0			<3.0%
Influence of ambient temperature zero point					Note 1	
Dust		-0.9				<5.0%
Influence of ambient temperature reference point					Note 1	
Dust	0.1					<5.0%
Influence of voltage variations 190 to 250V					Note 1	
Dust (at zero point)		-0.8				<2.0%
Influence of vibration (10 to 60Hz (±0.3mm), 60 to 150Hz at 19.6m/s^2)					Note 2	
Dust	0.3					To be reported

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Measurement uncertainty Dust (For and ELV of 10 mg/m^3)					Guidance - at least 25% below max permissible uncertainty 6%	<22.5% (30%)
Calibration function (field) Dust					Note 3 0.72	>0.90
Response time (field) Dust					28s (with 30s damping time)	<200s
Lack of fit (field) Dust			1.4			<3.0%
Maintenance interval Dust					Note 4 3 Months	>8 days
Zero and Span drift requirement	Statement from manufacturer: ***Zero value measurement*** *The sender diode is switched off for zero point control so that no signal is received. This means possible drifts or zero point deviations are detected reliably in the overall system (e.g. due to an electronic defect). An error signal is generated when the 'zero value' is outside the specified range.* ***Control value measurement (Span test)*** *Sender beam intensity changes between 70% and 100% during the determination of the control value. The difference of the light intensity received is compared against the standard value. The AMS generates an error signal for deviations >±2%. The error message is cleared again when the check cycle next runs successfully. The control value is determined with high precision through statistical evaluation of a high number of intensity changes (50 changes with 70 measurements each for scattered light measurement; 50 changes with 70 measurements for each transmission measurement). The control value is calculated with the control reflector swivelled in.*					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		-0.5				<3.0%
Change in reference point over maintenance interval Dust				2.9		<3.0%

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Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Availability Dust					99.3%	>95%
Reproducibility Dust				2.8		<3.3%

Note 1: The T100 and T200 measuring systems are almost identical, other than 2 additional functionalities carried by the T200:

- Automatic compensation of optical axis misalignment due to external factors such as temperature fluctuations. adjusting device in the optical head
- Contamination compensation on both sides (T100 has this only on the sender/receiver unit).

The following tests have been conducted on the T200 analyser and are deemed equivalent for the T100: lack-of-fit, influence of ambient temperature and influence of voltage variations

Note 2: The vibration test was conducted on the C200 model (transmission and scattered light measurement) which contains all functionalities of the T100.

Note 3: The calibration function result / R^2 values are between 0.72 and 0.81 is due to low dust levels. The CEMS pass the EN14181 criteria, but not the requirement for EN15267-3, which is an R^2 value of 0.9. This criterion is based on the premise of wide spread of data over the measurement range. Lower and/or clusters of data would lower the R^2 value, although a CEM still could be well within the criterion for the variability test given in EN14181.

Note 4: The T100 has a maintenance interval of 3 months. In the case of a new installation the measuring system should be tested by all means at weekly or biweekly intervals via visual inspection.

The work detailed below has to be carried out at regular intervals, depending on local conditions:

- Visual inspection of the CEM
- Examination of the S/R unit and the reflector by swinging out from the duct visual inspection. The optical surfaces should be cleaned if necessary.
- Determination of zero and span point
- Examination of the purge air supply
- Check cycle operation including a check of zero and span point and of the contamination signal.

Description

The DUSTHUNTER T100 uses transmission measurement to determine the mass concentration of dust in flowing gases.

The measuring system utilises a dual pass transmission of light in the visible range through the gas between a sender/receiver unit and reflector. The light source is a high-performance LED. While passing through the measurement path, the transmitted light is attenuated by the particles in the beam and the resultant light is captured by the measurement receiver. Continuous monitoring of the sender output registers the smallest changes in brightness of the light beam sent which serves to determine the measurement signal.

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 MC090151.

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.