

CERTIFICATE

of Product Conformity (QAL1)

Certificate No: 0000036945_05

Certified AMS: DUSTHUNTER SP100 for dust

Manufacturer: Endress+Hauser SICK GmbH + Co. KG
Bergener Ring 27
01458 Ottendorf-Okrilla
Germany

Test Institute: TÜV Rheinland Energy & Environment GmbH

**This is to certify that the AMS has been tested
and found to comply with the standards
EN 15267-1 (2009), EN 15267-2 (2023), EN 15267-3 (2007)
as well as EN 14181 (2014).**

Certification is awarded in respect of the conditions stated in this certificate
(this certificate contains 13 pages).
The present certificate replaces certificate 0000036945_04 dated 2 June 2021.



Suitability Tested
EN 15267
QAL1 Certified
Regular
Surveillance

www.tuv.com
ID 0000036945

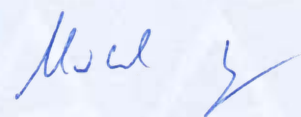
Publication in the German Federal Gazette
(BAnz) of 3 May 2021

German Environment Agency

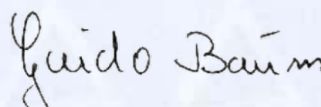
Dessau, 3 May 2026

This certificate will expire on:
2 May 2031

TÜV Rheinland
Energy & Environment GmbH
Cologne, 2 May 2026



Dr. Marcel Langner
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Test institute accredited to EN ISO/IEC 17025 by DAkkS (German Accreditation Body).
This accreditation is limited to the accreditation scope defined in the enclosure to the certificate D-PL-11120-02-00.

Test report: 936/21246256/C dated 17 September 2020
Initial certification: 20 July 2012
Expiry date: 2 May 2031
Certificate: Renewal (of previous certificate 0000036945_04 of 2 June 2021 valid until 2 May 2026)
Publication: BAnz AT 03.05.2021 B9, chapter I No. 1.3

Approved application

The tested AMS is suitable for use at plants according to Directive 2010/75/EC, chapter III (combustion plants / 13th BImSchV:2020), chapter IV (waste incineration plants / 17th BImSchV:2013), TA Luft:2002, 30th BImSchV:2019 and 27th BImSchV:2013. The measured ranges have been selected so as to ensure as broad a field of application as possible.

The suitability of the AMS for this application was assessed on the basis of a laboratory test and a sixteen-month field test at a waste incineration plant.

The AMS is approved for an ambient temperature range of -40 °C to +60 °C.

The notification of suitability of the AMS, performance testing and the uncertainty calculation have been effected on the basis of the regulations applicable at the time of testing. As changes in legal provisions are possible, any potential user should ensure that this AMS is suitable for monitoring the emission limit values relevant to the application.

Any potential user should ensure, in consultation with the manufacturer, that this AMS is suitable for the installation at which it will be installed.

Note

The legal regulations mentioned correspond to the current state of legislation during certification. Each user should, if necessary, in consultation with the competent authority, ensure that this AMS meets the legal requirements for the intended use. In addition, it cannot be ruled out that legal regulations governing the use of a measuring device for emission monitoring may change during the lifetime of the certificate.

Basis of the certification

This certification is based on:

- Test report 936/21246256/C dated 17 September 2020 of TÜV Rheinland Energy GmbH
- Suitability announced by the German Federal Environment Agency (UBA) as the relevant body
- The ongoing surveillance of the product and the manufacturing process

Publication in the German Federal Gazette: BAnz AT 03.05.2021 B9, chapter I No. 1.3,
Announcement by UBA dated 31 March 2021:

AMS designation:

DUSTHUNTER SP100 for dust

Manufacturer:

SICK Engineering GmbH, Ottendorf Okrilla

Field of application:

For measurements at plants requiring official approval and
plants according to 27th BImSchV

Measuring ranges during the performance test:

Component	Certification range	Supplementary measurement ranges			Unit
Dust	0 – 7.5	0 – 10	0 – 15	0 – 50	mg/m ³
		0 – 100	0 – 200	0 – 500	mg/m ³

Software version:

Sensor (Standard and Ex): 01.08.00

MCU: 01.12.05

Restrictions:

During performance testing in accordance with EN 15267-3, the requirement for the determination coefficient R^2 of the calibration function was not fulfilled.

Notes:

1. The maintenance interval is six months.
2. The dust concentration is determined in wet flue gas under operational conditions.
3. Certification also covers the Ex version of the instrument.
4. A probe of 735 mm length was used for testing. Certification also covers shorter probes.
5. Supplementary testing as regards Federal Environment Agency (UBA) notices of 12 February 2013 (BAnz AT 05.03.2013 B10, chapter I number 1.5) and of 27 May 2020 (BAnz AT 31.07.2020 B10, chapter I number 1.2).

Test Report: TÜV Rheinland Energy GmbH, Cologne

Report No.: 936/21246256/C dated 17 September 2020

Publication in the German Federal Gazette: BAnz AT 05.08.2021 B5, Chap. IV notification 40, Announcement by UBA dated 29 June 2021:

40 Notification as regards Federal Environment Agency (UBA) notice of 31 March 2021 (BAnz AT 03.05.2021 B9, chapter I number 1.3)

The latest software versions of the DUSTHUNTER SP100 measuring system for dust manufactured by SICK Engineering GmbH are:

Sensor (Standard and Ex): 01.08.00,
MCU: 01.14.00

Statement issued by TÜV Rheinland Energy GmbH dated 3 May 2021

Publication in the German Federal Gazette: BAnz AT 28.07.2022 B4, Chap. III notification 20, Announcement by UBA dated 28 June 2022:

20 Notification as regards Federal Environment Agency (UBA) notices of 31 March 2021 (BAnz AT 03.05.2021 B9, chapter I number 1.3) and of 29 June 2021 (BAnz AT 05.08.2021 B5, chapter IV notification 40)

The current software versions of the measuring device DUSTHUNTER SP100 for dust of the company SICK Engineering GmbH are:

Sensor (standard and Ex): 01.10.00
MCU: 01.16.00

Statement issued by TÜV Rheinland Energy GmbH dated 26 April 2022

Publication in the German Federal Gazette: BAnz AT 02.08.2023 B7, Chap. III notification 17, Announcement by UBA dated 5 July 2023:

17 Notification as regards Federal Environment Agency (UBA) notices of 31 March 2021 (BAnz AT 03.05.2021 B9, chapter I number 1.3) and of 28 June 2022 (BAnz AT 28.07.2022 B4, chapter III notification 20)

The current software versions of the DUSTHUNTER SP100 measuring system for dust from SICK Engineering GmbH are:

Sensor (standard and Ex): 01.14.03
MCU: 01.16.00

Statement issued by TÜV Rheinland Energy GmbH dated 7 February 2023

Publication in the German Federal Gazette: BAnz AT 10.05.2024 B7, Chap. V notification 32, Announcement by UBA dated 19 March 2024:

32 Notification as regards Federal Environment Agency (UBA) notices of 31 March 2021 (BAnz AT 03.05.2021 B9, chapter I number 1.3) and of 5 July 2023 (BAnz AT 02.08.2023 B7, chapter III notification 17)

The current software versions for the DUSTHUNTER SP100 measuring system for dust from SICK Engineering GmbH are as follows:

Sensor (standard and Ex): 01.14.03
MCU: 01.20.00

Statement issued by TÜV Rheinland Energy GmbH dated 27 September 2023

Publication in the German Federal Gazette: BAnz AT 31.10.2024 B9, Chap. IV notification 34, Announcement by UBA dated 21 August 2024:

34 Notification as regards Federal Environment Agency (UBA) notices of 31 March 2021 (BAnz AT 03.05.2021 B9, chapter I number 1.3) and of 19 March 2024 (BAnz AT 10.05.2024 B7, chapter V notification 32)

The current software versions for the DUSTHUNTER SP100 measuring system for dust from the company SICK Engineering GmbH are:

Sensor (Standard and Ex): 01.14.05
MCU: 01.22.00

Software version 01.14.04 can also be used for the sensor.

Statement issued by TÜV Rheinland Energy & Environment GmbH dated 10 May 2024

Publication in the German Federal Gazette: BAnz AT 19.05.2025 B3, Chap. IV
notification 12, Announcement by UBA dated 2 April 2025:

**12 Notification as regards Federal Environment Agency (UBA) notices
of 31 March 2021 (BAnz AT 03.05.2021 B9, chapter I number 1.3) and
of 21 August 2024 (BAnz AT 31.10.2024 B9, chapter IV notification 34)**

Change of the company name of the manufacturer of the DUSTHUNTER SP100
measuring system for dust of the previous company SICK Engineering GmbH.

The analysis division of Sick AG and Sick Engineering GmbH (flow and dust
measurement technology) have entered into a joint venture with Endress+Hauser.
The companies will operate under the new company name "Endress+Hauser
SICK GmbH + Co. KG" from 9 December 2024. As a result, the QAL1-certified
products will be sold under this joint company name in future.

The joint venture company address is
Endress+Hauser SICK GmbH + Co. KG
Bergener Ring 27
01458 Ottendorf-Okrilla, Germany

Statement issued by TÜV Rheinland Energy & Environment GmbH
dated 20 December 2024

Certified product

This certificate applies to automated measurement systems conforming to the following description:

The measuring system DUSTHUNTER SP100 uses scattered light as its measuring principle (forward scattering). The measured scattered light intensity [SI] is proportional to the dust concentration [c]. However, since the scattered light intensity depends not only on the number and size of the particles but also on their optical properties, the measuring system must be calibrated through gravimetric parallel measurements in order to guarantee an exact measurement of dust concentrations.

The determined calibration coefficients can be entered directly into the measuring system according to the following formula:

$$c = cc2 \cdot SI^2 + cc1 \cdot SI + cc0$$

(Default configuration ex-works: $cc2 = 0$, $cc1 = 1$, $cc0 = 0$).

The tested DUSTHUNTER SP100 measuring system comprises the following parts:

- DHSP-T sender/receiver unit
- signal cable for connecting the sender/receiver unit to the control unit (lengths: 5 m, 10 m)
- flange with tube
- MCU control unit for the control, evaluation and output of data provided by the sender/receiver unit(s) connected via a RS485 interface
 - MCU-P with integrated purge air supply for internal duct pressure of -50 ... +2 mbar
 - MCU-N without integrated purge air supply (external purge air unit required)
- Optional external purge air unit, for internal duct pressure of -50 ... +30 mbar

Communication between sender/receiver unit and MCU

By default, every sender/receiver unit is connected via signal cable to an individual control unit. Nevertheless, more than one sender/receiver unit can be optionally connected to a single MCU-N control unit. In this case, every sender/receiver unit must be supplied with purge air separately.

Sender/Receiver Unit

The sender/receiver unit comprises two main modules:

- electronic unit

It contains the optical and electronic modules for sending and receiving the light beam. It also holds the modules for processing and evaluating signals.

- measuring probe

The measuring probe is available in various designs, materials and nominal lengths, as well as for different gas temperature ranges. The type used defines the device version.

Data transfer to the control unit, as well as voltage supply from it (24V DC) is carried out with a 7 pole cable with plug-type connector. A RS485 interface is available for service purposes. A purge air nozzle provides clean air for cooling the probe and avoiding contamination of the optical surfaces.

The sender/receiver unit is mounted to the duct by a flange with tube.

The measuring probe is available in various designs, nominal lengths, materials and for various gas temperature ranges. The probe defines the instrument version.

Remarks:

- Sender/Receiver units with nominal lengths greater than 735 mm are intended solely for installation at thick-walled or double-walled ducts.
- The distance between the inner duct wall and the measuring opening shall not exceed 450 mm.

Versions

The different versions of the sender/receiver unit are labelled with a type code:

Sender/Receiver unit: DHSP-TXXX

- a Maximum permissible gas temperature: (- 2: 220 °C, - 4: 400 °C)
- b Material
- c Nominal length of measuring probe

MCU Control Unit

The control unit has the following functions:

- Control of data traffic and processing of data from the unit(s) connected via RS485 interface
- Signal output via analogue output (measured value) and relay outputs (instrument status)
- Signal input via analogue and digital inputs
- Voltage supply to the connected units using a 24 V switching power supply with wide-range input
- Communication with supervisory control systems via optional modules

The control unit can be connected to external devices via a USB port. This way, the setup of plant and instrument parameters can be easily and comfortably carried out via a laptop running the operating software. The parameters are saved efficiently in the MCU in the event of a power outage. By default, the control unit is housed in a sheet steel enclosure.

Standard interfaces

Analogue outputs:

3 outputs 0/2/4–22 mA (galvanically isolated, active) for output of: scattered light intensity, dust concentration (uncalibrated), dust concentration (calibrated), 12 bit resolution

Relay outputs:

5 changeover contacts (120 V, AC, 1A, 30 V DC 2A) for output of status signals:

• Operation/Malfunction • Maintenance • Function check • Service requirement • Limit value

Analogue inputs:

2 inputs 0 ... 20 mA (standard; without galvanic separation) or 0 ... 5/10 V, 10 bit resolution

Digital inputs:

4 inputs for connecting potential-free contacts, e.g. for connecting a maintenance switch or triggering control cycle

Communication:

- USB 1.1 and RS232 (on grips) for measured value enquiry, parameterisation and software update
- RS485 for sensor connection

Versions:

- MCU-N control unit without integrated purge air supply
- MCU-P control unit with integrated purge air supply

This version also contains a purge air blower, an air filter, and purge air nozzles used for connecting the air hose to the sender/receiver unit. The purge air hose is a separate component of the measuring system.

General notes

This certificate is based upon the equipment tested. The manufacturer is responsible for ensuring that on-going production complies with the requirements of the EN 15267. 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 systems shall be subject to regular surveillance.

If a product of the current production does not conform to the certified product, TÜV Rheinland Energy & Environment GmbH must be notified at the address given on page 1.

A certification mark with an ID-Number that is specific to the certified product is presented on page 1 of this certificate. This certification mark may be applied to the product or used in advertising materials for the certified product.

This document as well as the certification mark remains property of TÜV Rheinland Energy & Environment GmbH. With revocation of the publication the certificate loses its validity. After the expiration of the certificate and on requests of the TÜV Rheinland Energy & Environment GmbH this document shall be returned and the certificate mark must not be employed anymore.

The relevant version of this certificate and its expiration is also accessible on the internet: gal1.de.

History of documents

Certification of DUSTHUNTER SP100 is based on the documents listed below and the regular, continuous monitoring of the Quality Management System of the manufacturer:

Basic test

Test report: 936/21208609/B dated 20 October 2008

TÜV Rheinland Immissionsschutz und Energiesysteme GmbH

Publication: BAnz. 11 March 2009, No. 38, p. 899, chapter I number 1.2

UBA announcement dated 19 February 2009

Notifications

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 5 October 2010

Publication: BAnz. 26 January 2011, No. 14, p. 294, chapter IV notification 12

UBA announcement dated 10 January 2011

(Software changes)

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 8 November 2010

Publication: BAnz. 26 January 2011, No. 14, p. 294, chapter IV notification 30

UBA announcement dated 10 January 2011

(Software changes)

Initial certification according to EN 15267

Certificate No. 0000036945_00: 20 August 2012
Expiry date of the certificate: 19 July 2017
Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 20 March 2012
Publication: BAnz AT 20.07.2012 B11, chapter IV notification 18
UBA announcement dated 6 July 2012

Supplementary testing according to EN 15267

Certificate No. 0000036945_01: 22 March 2013
Expiry date of the certificate: 19 July 2017
Test report: 936/21219384/B dated 27 September 2012
TÜV Rheinland Energie und Umwelt GmbH
Publication: BAnz AT 05.03.2013 B10, chapter I number 1.5
UBA announcement dated 12 February 2013

Notifications

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 22 March 2013
Publication: BAnz AT 23.07.2013 B4, chapter V notification 11
UBA announcement dated 3 July 2013
(New software version)

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 25 March 2013
Publication: BAnz AT 23.07.2013 B4, chapter V notification 13
UBA announcement dated 3 July 2013
(SOPAS ET Software version)

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 24 March 2015
Publication: BAnz AT 26.08.2015 B4, chapter V notification 11
UBA announcement dated 22 July 2015
(Software changes)

Statement issued by TÜV Rheinland Energy GmbH dated 25 April 2016
Publication: BAnz AT 01.08.2016 B11, chapter V notification 12
UBA announcement dated 14 July 2016
(Software changes)

Statement issued by TÜV Rheinland Energy GmbH dated 13 October 2016
Publication: BAnz AT 15.03.2017 B6, chapter V notification 22
UBA announcement dated 22 February 2017
(Software changes)

Renewal of certificates

Certificate No. 0000036945_02: 18 July 2017
Expiry date of the certificate: 19 July 2022

Notifications

Statement issued by TÜV Rheinland Energy GmbH dated 28 September 2017
Publication: BAnz AT 26.03.2018 B8, chapter V notification 44
UBA announcement dated 21 February 2018
(Software changes)

Statement issued by TÜV Rheinland Energy GmbH dated 28 February 2019
Publication: BAnz AT 22.07.2019 B8, chapter V notification 16
UBA announcement dated 28 June 2019

(Soft- and hardware changes)

Supplementary testing according to EN 15267

Certificate No. 0000036945_03: 7 September 2020
Expiry date of the certificate: 30 July 2025
Test report: 936/21246256/B dated 10 March 2020
TÜV Rheinland Energy GmbH
Publication: BAnz AT 31.07.2020 B10, chapter I number 1.2
UBA announcement dated 27 May 2020

Supplementary testing according to EN 15267

Certificate No. 0000036945_04: 2 June 2021
Expiry date of the certificate: 2 May 2026
Test report: 936/21246256/C dated 17 September 2020
TÜV Rheinland Energy GmbH
Publication: BAnz AT 03.05.2021 B9, chapter I number 1.3
UBA announcement dated 31 March 2021

Notifications

Statement issued by TÜV Rheinland Energy GmbH dated 3 May 2021
Publication: BAnz AT 05.08.2021 B5, chapter IV notification 40
UBA announcement dated 29 June 2021
(Software changes)

Statement issued by TÜV Rheinland Energy GmbH dated 26 April 2022
Publication: BAnz AT 28.07.2022 B4, chapter III notification 20
UBA announcement dated 28 June 2022
(Software changes)

Statement issued by TÜV Rheinland Energy GmbH dated 7 February 2023
Publication: BAnz AT 02.08.2023 B7, chapter III notification 17
UBA announcement dated 5 July 2023
(Software changes)

Statement issued by TÜV Rheinland Energy GmbH dated 27 September 2023
Publication: BAnz AT 10.05.2024 B7, chapter V notification 32
UBA announcement dated 19 March 2024
(Software changes)

Statement issued by TÜV Rheinland Energy & Environment GmbH dated 10 May 2024
Publication: BAnz AT 31.10.2024 B9, chapter IV notification 34
UBA announcement dated 21 August 2024
(Software changes)

Statement issued by TÜV Rheinland Energy & Environment GmbH dated 20 December 2024
Publication: BAnz AT 19.05.2025 B3, chapter IV notification 12
UBA announcement dated 2 April 2025
(new manufacturer name)

Renewal of certificates

Certificate No. 0000036945_05: 3 May 2026

Expiry date of the certificate: 2 May 2031

Calculation of overall uncertainty according to EN 14181 and EN 15267-3

Measuring system

Manufacturer
AMS designation
Serial number of units under test
Measuring principle

SICK Engineering GmbH
DUSTHUNTER SP100
547 / 428
Scattering light (forward)

Test report

Test laboratory
Date of report

936/21246256/C
TÜV Rheinland
2020-09-17

Measured component

Certification range

Dust
0 - 7.5 mg/m³

Calculation of the combined standard uncertainty

Tested parameter

Standard deviation from paired measurements under field conditions *
Lack of fit
Zero drift from field test
Span drift from field test
Influence of ambient temperature at span
Influence of supply voltage
Uncertainty of reference material at 70% of certification range

			u^2
u_D	0.070 mg/m³	0.005	(mg/m³)²
u_{lof}	0.040 mg/m³	0.002	(mg/m³)²
u_{dz}	-0.017 mg/m³	0.000	(mg/m³)²
$u_{d,s}$	-0.104 mg/m³	0.011	(mg/m³)²
u_t	0.121 mg/m³	0.015	(mg/m³)²
u_v	0.015 mg/m³	0.000	(mg/m³)²
u_{rm}	0.061 mg/m³	0.004	(mg/m³)²

* The larger value is used :

"Repeatability standard deviation at set point" or

"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u_c)

$$u_c = \sqrt{\sum (u_{max,j})^2} \quad 0.19 \text{ mg/m}^3$$

Total expanded uncertainty

$$U = u_c \cdot k = u_c \cdot 1.96 \quad 0.37 \text{ mg/m}^3$$

Relative total expanded uncertainty

Requirement of 2010/75/EU

Requirement of EN 15267-3

U in % of the ELV 5 mg/m³	7.5
U in % of the ELV 5 mg/m³	30.0
U in % of the ELV 5 mg/m³	22.5