

# CERTIFICATE

## of Product Conformity (QAL1)

Certificate No.: 0000053803\_02

**AMS designation:** D-R 808 for dust

**Manufacturer:** DURAG GmbH  
Kollastr. 105  
22453 Hamburg  
Germany

**Test Laboratory:** TÜV Rheinland Energy 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 (2009), EN 15267-3 (2007)  
and EN 14181 (2014).

Certification is awarded in respect of the conditions stated in this certificate  
(this certificate contains 11 pages).  
The present certificate replaces certificate 0000053803\_01 of 08 September 2017.



Suitability Tested  
EN 15267  
QAL1 Certified  
Regular  
Surveillance

www.tuv.com  
ID 0000053803

Publication in the German Federal Gazette  
(BAnz) of 31 July 2017

German Federal Environment Agency  
Dessau, 02 March 2022

This certificate will expire on:  
14 March 2027

TÜV Rheinland Energy GmbH  
Cologne, 01 March 2022



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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 certificate D-PL-11120-02-00.

<b>Test report:</b>	936/21232768/C of 02 March 2017
<b>Initial certification:</b>	25 April 2017
<b>Expiry date:</b>	14 March 2027
<b>Certificate</b>	Renewal (of previous certificate 0000053803_01 of 08 September 2017 valid until 14 March 2022)
<b>Publication:</b>	BAnz AT 31.07.2017 B12, chapter I number 1.2

### **Approved application**

The tested AMS is suitable for use at combustion plants according to Directive 2010/75/EU, chapter III (13<sup>th</sup> BImSchV), chapter IV (17<sup>th</sup> BImSchV), 30<sup>th</sup> BImSchV, plants in compliance with TA Luft, plants according to the 27<sup>th</sup> BImSchV and other plants requiring official approval. 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 6-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 limit values relevant to the application.

Any potential user should ensure, in consultation with the manufacturer, that this AMS is suitable for the intended purpose.

### **Basis of the certification**

This certification is based on:

- Test report 936/21232768/C of 02 March 2017 by 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 31.07.2017 B12, chapter I number 1.2, UBA announcement dated 13 July 2017:

**AMS designation:**

D-R 808 for dust

**Manufacturer:**

DURAG GmbH, Hamburg

**Field of application:**

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

**Measuring ranges during performance testing:**

Component	Certification range	Unit
Dust	0 – 7.5 *	mg/m <sup>3</sup>

\*) corresponds to 0 to 500 SL

Component	Supplementary ranges			Unit
Dust	0 – 1,000	0 – 4,000	0 – 20,000	SL

**Software versions:**

D-R 808: 02.00R0002  
D-ISC 100: 01.04R0017  
D-ESI 100: 1.1.017

**Restrictions:**

None

**Notes:**

1. The maintenance interval is three months.
2. The measuring system comes with either of the following: D-ISC 100 evaluation unit, D-TB 200 supply unit or D-TB 100 supply unit.
3. The measuring system needs to be supplied with purge air (compressed air) via the D-TB 200 supply unit or via an external source.
4. The D-ISC 100 universal control unit has the following interfaces: Modbus RTU and Modbus TCP according to VDI 4201 parts 1 and 3 (EIA-485, serial und TCP/IP, Ethernet).
5. The D-R 808 measuring system has the following interfaces: digital Modbus RTU according to VDI 4201 parts 1 and 3 (EIA-485, serial).



6. When combined with the D-ISC 100 universal control unit, the D-R 808 measuring system's Modbus interface cannot be used. Instead, the interface of the D-ISC 100 universal control unit is used.
7. When operated without the D-ISC 100 universal control unit, the measuring system is controlled via a standard PC/notebook/tablet running the D-ESI 100 software.
8. Supplementary testing (extension of the maintenance interval) as regards Federal Environment Agency (UBA) notice of 22 February 2017 (BAnz AT 15.03.2017 B5, chapter I number 2.1).

**Test Report:**

TÜV Rheinland Energy GmbH, Cologne

Report no.: 936/21232768/C of 02 March 2017

Publication in the German Federal Gazette: BAnz AT 26.03.2018 B8, chapter IV  
4<sup>th</sup> correction, UBA announcement dated 21 February 2018:

**4 Correction as regards Federal Environment Agency (UBA) notice of 22 February 2017 (BAnz AT 15.03.2017 B6, chapter I number 2.1) and of 13 July 2017 (BAnz AT 31.07.2017 B12, chapter I number 1.2)**

The software version for the D-ISC 100 evaluation unit of the D-R 808 measuring system for dust manufactured by DURAG GmbH as found in the above-mentioned announcements is not correct.

The correct software versions of the measuring system are as follows:

D-R 808: 02.00R0002  
D-ISC 100: 01.04R0007  
D-ESI 100: 1.1.017

Test report 936/21232768/C dated 2 March 2017 was amended accordingly and has been replaced by report 936/21232768/D dated 30 September 2017.

Statement issued by TÜV Rheinland Energy GmbH dated 8 December 2017

Publication in the German Federal Gazette: BAnz AT 26.03.2018 B8, chapter V  
25<sup>th</sup> notification, UBA announcement dated 21 February 2018:

**25 Notification as regards Federal Environment Agency (UBA) notice of 13 July 2017 (BAnz AT 31.07.2017 B12, chapter I number 1.2)**

The current software versions of the D-R 808 measuring system for dust manufactured by DURAG GmbH are:

D-R 808: 02.10R0002  
D-ISC 100: 01.04R0007  
D-ESI 100: 01.10R0007

The following intermediary versions have also been approved:  
D-ESI 100: 1.2.003

In the D-ISC 100, the Phoenix Contact QUINT4-PS/1AC/24DC/10 power supply unit may be used instead of the XPPower DNR240PS24-I power supply unit used up to now.

Statement issued by TÜV Rheinland Energy GmbH dated 8 December 2017

Publication in the German Federal Gazette: BAnz AT 26.03.2019 B7, chapter IV  
5<sup>th</sup> notification, UBA announcement dated 27 February 2019:

**5 Notification as regards Federal Environment Agency (UBA) notices of 13 July 2017 (BAnz AT 31.07.2017 B12, chapter I number 1.2) and of 21 February 2018 (BAnz AT 26.03.2018 B8, chapter V 25<sup>th</sup> notification)**

The current software versions of the D-R 808 measuring system for dust manufactured by DURAG GmbH are:

D-R 808: 02.10R0002  
D-ISC 100: 02.02R0066  
D-ESI 100: 01.10R0007

Thus, the following software versions have also been approved:

D-ISC 100: 02.00R0048, 02.02R0020

The measuring system may be equipped with a revised version of the D-ISC 100 control unit. It is available in the following model versions:

- D-ISC 100 M (standard)
- D-ISC 100 C (compact housing)
- D-ISC 100 P (c/w purge air blower)
- D-ISC 100 R (housing for 19" rack mounting)

The D-ISC 100 control unit also provides a digital Modbus interface which complies with VDI standard 4201, parts 1 and 3.

The results of the tests on the revised D-ISC 100 are available in the report by TÜV Rheinland Energy GmbH, report no.: 936/21242380/A of 14 September 2018.

Statement issued by TÜV Rheinland Energy GmbH dated 14 January 2019

Publication in the German Federal Gazette: BAnz AT 07.05.2020 B8, chapter III  
1<sup>st</sup> notification UBA announcement dated 31 March 2020:

**1 Notification as regards Federal Environment Agency (UBA) notices of 13 July 2017 (BAnz AT 31.07.2017 B12, chapter I number 1.2) and of 27 February 2019 (BAnz AT 26.03.2019 B7, chapter IV 5<sup>th</sup> notification)**

The current software versions of the D-R 808 measuring system for dust manufactured by DURAG GmbH are:

D-R 808: 02.10R0002  
D-ISC 100: 02.02R0066  
D-ESI 100: 01.11R0018

D-ESI 100 software version 01.11R0017 may also be used.

An alternative supplier for the spreading disc or line spreading disc has been qualified. Technical specification of those components resemble those of their predecessors.

Statement issued by TÜV Rheinland Energy GmbH dated 1 October 2019



### Certified product

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

The D-R 808 is a dust monitor operating on the basis of the scattered light principle. The measuring system is an advancement of the D-R 800 system already certified to EN 15267 manufactured by DURAG GmbH. The D-R 808 uses the principle of forward scattering. Focussed modulated light of a red laser diode beams through the measurement volume. Light scattered as a result of forward scattering is captured with a highly sensitive detector and electronically evaluated. The measured intensity of scattered light is proportional to the dust concentration in the flue gas duct. After a gravimetric calibration the relationship between the scattered light units and the dust concentration can be determined. The D-R 808 is equipped with zero point and span point measurement and determination of soiling for the purpose of functional checks.

The measuring system comprises the following components:

D-R 808 measurement probe; and

- Electronic D-TB 100 connection box for voltage supply or
- D-TB 200 supply unit with blower purge; or
- Universal D-ISC 100 control panel.

When using the D-TB 100 or the D-TB 200 connection box, the D-R 808 measuring system is controlled via a PC with control software D-ESI 100. The universal D-ISC 100 control panel allows operating the measuring system without a PC. When using the D-TB 100 and the D-ISC 100 connection devices, the measuring system needs to be equipped with an external purge air supply, e.g. pressured air with a class 1 specification in accordance with ISO 8573-1:2010.

The connection boxes mentioned function as connection unit with signal transfer without actually influencing processing of the measured values. The D-TB 200 connection box additionally provides purge air supply. The generation of measured values and all measurement relevant calculations (incl. analogue and digital generation of measured values) take place in the measurement head itself. The measuring system has a digital interface Modbus RTU and Modbus TCP in accordance with VDI 4201 part 1 and 3 (EIA-485, serial and TCP/IP, Ethernet).

The measuring system is available with two different lengths of the probe (probe length 400mm and 800mm) While the two versions differ in terms of probe length, they are otherwise identical. This particularly applies to the measuring gap and the measured volume.

The measuring probe can be adapted in terms of the direction of connectors in relation to the flow and the situation at the waste gas duct. Thus, purge air supply maybe provided horizontally, for example, or electrical connectors may face downward. In any case, the flow direction determines the position of the measurement volume.

During performance testing, the averaging time for the measured value was set to 30s.

In addition to the automatic functions zero point check, span checks and contamination check, it is possible to perform manual linearity tests. This is effected by pluggable opacity filters. As long as there is no excess pressure in the measurement channel, the instrument does not have to be removed from the measurement cess for this. For the filter test, the filter holder is screwed into the cleaning opening opposite the purge air connection. The measurement then uses ND filters which can be inserted into the holder.





### General remarks

This certificate is based upon the equipment tested. The manufacturer is responsible for ensuring that ongoing production complies with the requirements of the EN 15267. The manufacturer is required to maintain an approved quality management system controlling the manufacturing process for 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 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 document as well as the certification mark remains property of TÜV Rheinland Energy GmbH. Upon revocation of the publication the certificate loses its validity. After the expiration of the certificate and on request of TÜV Rheinland Energy GmbH this document shall be returned and the certificate mark must no longer be used.

The relevant version of this certificate and its expiration date are also accessible on the internet at [qal1.de](http://qal1.de).

### Document history

Certification of the D-R 808 measuring system is based on the documents listed below and the regular, continuous surveillance of the manufacturer's quality management system:

#### Initial certification according to EN 15267

Certificate no. 0000053803\_00: 25 April 2017  
Expiry date of the certificate: 14 March 2022  
Publication: BAnz AT 15.03.2017 B6, chapter I number 2.1  
UBA announcement dated 22 February 2017

#### Supplementary testing according to EN 15267

Certificate no. 0000053803\_01: 08 September 2017  
Expiry date of the certificate: 14 March 2022  
Test report: 936/21232768/C of 02 March 2017  
TÜV Rheinland Energy GmbH  
Publication: BAnz AT 31.07.2017 B12, chapter I number 1.2  
UBA announcement dated 13 July 2017

#### Notifications according to EN 15267

Statement issued by TÜV Rheinland Energy GmbH dated 08 November 2017  
Publication: BAnz AT 26.03.2018 B8, chapter V notification 4  
UBA announcement dated 21 February 2018  
(Design and software changes)

Statement issued by TÜV Rheinland Energy GmbH dated 08 November 2017  
Publication: BAnz AT 26.03.2018 B8, chapter IV notification 25  
UBA announcement dated 21 February 2018  
(Design and software changes)

Statement issued by TÜV Rheinland Energy GmbH dated 14 January 2019  
Publication: BAnz AT 26.03.2019 B7, chapter IV notification 5  
UBA announcement dated 27 February 2019  
(Design and software changes)

Statement issued by TÜV Rheinland Energy GmbH dated 1 October 2019  
Publication: BAnz AT 07.05.2020 B8, chapter III notification 1  
UBA announcement dated 31 March 2020  
(Design and software changes)

**Renewal of the certificate**

Certificate no. 0000053803\_02: 02 March 2022  
Expiry date of the certificate: 14 March 2027

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

**Measuring system**

Manufacturer	DURAG GmbH
AMS designation	D-R 808
Serial number of units under test	484/485/812/813/814/815
Measuring principle	Scattered light

**Test report**

Test laboratory	936/21232768/C
Date of report	TÜV Rheinland 2017-03-02

**Measured component**

Certification range	Dust 0 - 7.5 mg/m <sup>3</sup>
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**Calculation of the combined standard uncertainty**

**Tested parameter**

			$u^2$
Standard deviation from paired measurements under field conditions *	$u_D$	0.114 mg/m <sup>3</sup>	0.013 (mg/m <sup>3</sup> ) <sup>2</sup>
Lack of fit	$u_{lof}$	0.030 mg/m <sup>3</sup>	0.001 (mg/m <sup>3</sup> ) <sup>2</sup>
Zero drift from field test	$u_{d,z}$	-0.030 mg/m <sup>3</sup>	0.001 (mg/m <sup>3</sup> ) <sup>2</sup>
Span drift from field test	$u_{d,s}$	-0.056 mg/m <sup>3</sup>	0.003 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of ambient temperature at span	$u_t$	0.030 mg/m <sup>3</sup>	0.001 (mg/m <sup>3</sup> ) <sup>2</sup>
Influence of supply voltage	$u_v$	0.030 mg/m <sup>3</sup>	0.001 (mg/m <sup>3</sup> ) <sup>2</sup>
Uncertainty of reference material at 70% of certification range	$u_{rm}$	0.061 mg/m <sup>3</sup>	0.004 (mg/m <sup>3</sup> ) <sup>2</sup>

\* The larger value is used :  
"Repeatability standard deviation at set point" or  
"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty ( $u_c$ )	$u_c = \sqrt{\sum (u_{max, j})^2}$	0.15 mg/m <sup>3</sup>
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	0.30 mg/m <sup>3</sup>

**Relative total expanded uncertainty**

Requirement of 2010/75/EU	<b>U in % of the ELV 5 mg/m<sup>3</sup></b>	<b>6.0</b>
Requirement of EN 15267-3	<b>U in % of the ELV 5 mg/m<sup>3</sup></b>	<b>30.0</b>
	<b>U in % of the ELV 5 mg/m<sup>3</sup></b>	<b>22.5</b>