

CERTIFICATE

of Product Conformity (QAL1)

Certificate No.: 0000043107_03

Certified AMS: APDA-372 and APDA-372E for suspended particulate matter PM₁₀ and PM_{2,5}

Manufacturer: HORIBA Europe GmbH
Hans-Mess-Str. 6
61440 Oberursel /Ts.
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
VDI 4202-3 (2019), EN 12341 (1999), EN 14907 (2005), EN 16450 (2017),
Guide for Demonstration of Equivalence of Ambient Air Monitoring Methods (2010),
EN 15267-1 (2009) and EN 15267-2 (2009).**

Certification is awarded in respect of the conditions stated in this certificate
(this certificate contains 19 pages).
The present certificate replaces certificate 0000043107_02 dated 2 June 2019.



Suitability Tested
Complying with
2008/50/EC
EN 15267
Regular
Surveillance
www.tuv.com
ID 0000043107

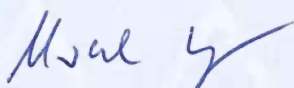
Publication in the German Federal Gazette
(BAnz) of 2 April 2015

German Environment Agency

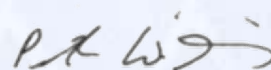
Dessau, 20 March 2024

This certificate will expire on:
25 March 2029

TÜV Rheinland
Energy & Environment GmbH
Cologne, 13 March 2024



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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:	936/21226418/C dated 7 December 2016 and Addendum 936/21243705/A dated 7 September 2018
Initial certification:	2 April 2015
Expiry date:	25 March 2029
Certificate:	Renewal (of previous certificate 0000043107_02 of 2 June 2019 valid until 25 March 2024)
Publication:	BAnz AT 02.04.2015 B5, chapter III No. 3.1 and BAnz AT 26.03.2019 B7, chapter IV notification 38

Approved application

The tested AMS is suitable for continuous ambient air parallel monitoring of PM₁₀ and PM_{2,5} (stationary operation).

The suitability of the AMS for these applications was assessed based on a laboratory test and a field test at four different locations over different time periods.

The AMS is approved for an ambient temperature range of +5 °C to +40 °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 measured values relevant to the application.

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

Basis of the certification

This certification is based on:

- Test report 936/21226418/C dated 7 December 2016 of TÜV Rheinland Energy GmbH and Addendum 936/21243705/A dated 7 September 2018 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 02.04.2015 B5, chapter III No. 3.1,
Announcement by UBA dated 25 February 2015:

AMS designation:

APDA-372 for suspended particulate matter PM₁₀ and PM_{2,5}

Manufacturer:

HORIBA Europe GmbH, Oberursel

Field of application:

For continuous and parallel ambient air monitoring of suspended particulate matter,
PM₁₀ and PM_{2,5} fractions, (stationary operation)

Measuring ranges during the performance test:

Component	Certification range	Unit
PM ₁₀	0 - 10,000	µg/m ³
PM _{2,5}	0 - 10,000	µg/m ³

Software versions:

Measuring system: 100380.0014.0001.0001.0011
Implemented evaluation algorithm: PM_ENVIRO_0011
Evaluation software PDAnalyze: 1.010

Restrictions: None

Notes:

1. The measuring system complies with the requirements of guideline "Demonstration of Equivalence of Ambient Air Monitoring Methods" for the component PM₁₀ and PM_{2,5}.
2. One of the tested instruments did not meet the requirements for the variation coefficient R² as defined in EN 12341 during the campaign in Cologne, summer.
3. The measuring system is designed for indoor use at temperature controlled sites.
4. The sensitivity of the particle sensor has to be checked once a month using CalDust 1100.
5. The instrument must be calibrated on-site regularly using a gravimetric PM₁₀ reference method in accordance with EN 12341.
6. The instrument must be calibrated on-site regularly using a gravimetric PM_{2,5} reference method in accordance with EN 14907.
7. This report on the performance test is available online at www.qal1.de.

Test Institute:

TÜV Rheinland Energie und Umwelt GmbH, Cologne
Report No.: 936/21226418/A dated 29 September 2014

Publication in the German Federal Gazette: BAnz AT 14.03.2016 B7, Chap. V notification 5, Announcement by UBA dated 18 February 2016:

5 Notification as regards Federal Environment Agency (UBA) notice of 25 February 2015 (BAnz AT 02.04.2015 B5, chapter III number 3.1)

The manual for the APDA-372 measuring system for PM₁₀ and PM_{2,5} manufactured by HORIBA Europe GmbH was found to contain a mistake regarding the description of the IADS control function. The description must correctly read as follows:

"The temperature of the IADS is controlled depending on the ambient temperature and humidity (measured by the weather station). The minimum temperature is 23°C. The moisture compensation is carried out by a dynamic adjustment of the IADS temperature up to a maximum heating output of 90 watt."

The manufacturer corrected this mistake in manual versions from HE0141015 and after. Test report no. 936/21226418/A dated 29 September 2014 prepared by TÜV Rheinland Energie und Umwelt GmbH was corrected accordingly and replaced by test report no. 936/21226418/B dated 15 October 2015.

In the future, the measuring system may alternatively be operated with the WS300-UMB weather station. An extended IADS is available for the measuring system. It is adaptable between 1.20 m and 2.10 m.

Moreover, instrument version APDA-372E is available with an external sensor. The current software version is: 100396.0014.0001.0001.0011.

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 6 November 2015

Publication in the German Federal Gazette: BAnz AT 01.08.2016 B11, Chap. V notification 34, Announcement by UBA dated 14 July 2016:

34 Notification as regards Federal Environment Agency (UBA) notices of 25 February 2015 (BAnz AT 02.04.2015 B5, chapter III number 3.1 and of 18 February 2016 (BAnz AT 14.03.2016 B7, chapter V notification 4)

The sensitivity test of the particle sensor for the APDA 372 PM₁₀ and PM_{2,5} particle monitor manufactured by Horiba Europe GmbH can be performed with MonoDust 1500 at an IADS temperature between 35 °C and 50 °C.

The measuring system may provide two additional contacts for the control of an external pump/flow regulator (not relevant to the performance-tested instrument version).

The current software version of the measuring system is:
100408.0014.0001.0001.0011

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 24 February 2016

Publication in the German Federal Gazette: BAnz AT 15.03.2017 B6, Chap. V notification 9, Announcement by UBA dated 22 February 2017:

9 Notification as regards Federal Environment Agency (UBA) notices of 25 February 2015 (BAnz AT 02.04.2015 B5, chapter III number 3.1) and of 14 July 2016 (BAnz AT 01.08.2016 B11, chapter V notification 34)

The APDA-372 measuring system for PM₁₀ and PM_{2,5} manufactured by Horiba Europe GmbH may alternatively be used with the new Siargo FS4008-10-O6-CV-A flow sensor instead of the Honeywell AWM5102VN version used so far. The new factors for temperature compensation are as follows: 0.19 (APDA-372E) and 0.17 (APDA-372).

A mistake found in test report no. 936/21226418/B dated 15 October 2015 issued by TÜV Rheinland Energie und Umwelt GmbH was corrected. Unlike stated in two places in the report, the APDA-372 ambient air quality measuring system for PM₁₀ and PM_{2,5} operates with a moving 900 sec average (15 min) rather than a 30-minute mean. Test report 936/21226418/C dated 7 December 2016 issued by TÜV Rheinland Energy & Environment GmbH replaces the afore-mentioned report.

The current software version of the measuring system is:
100417.0014.0001.0001.0011

Statement issued by TÜV Rheinland Energy GmbH dated 13 December 2016

Publication in the German Federal Gazette: BAnz AT 31.07.2017 B12, Chap. II notification 31, Announcement by UBA dated 13 July 2017:

31 Notification as regards Federal Environment Agency (UBA) notices of 25 February 2015 (BAnz AT 02.04.2015 B5, chapter III number 3.1) and of 22 February 2017 (BAnz AT 15.03.2017 B6, chapter V notification 9)

The current software version for the APDA-372 and APDA-372E for PM₁₀ and PM_{2,5} manufactured by HORIBA Europe GmbH is:
100427.0014.0001.0001.0011

Statement issued by TÜV Rheinland Energy GmbH dated 7 March 2017

Publication in the German Federal Gazette: BAnz AT 26.03.2018 B8, Chap. V notification 7, Announcement by UBA dated 21 February 2018:

7 Notification as regards Federal Environment Agency (UBA) notices of 25 February 2015 (BAnz AT 02.04.2015 B5, chapter III number 3.1) and of 13 July 2017 (BAnz AT 31.07.2017 B12, chapter II notification 31)

The current software versions for the APDA-372 and APDA-372E measuring system for PM₁₀ and PM_{2,5} manufactured by HORIBA Europe GmbH are:

100430.0014.0001.0001.0011
100431.0014.0001.0001.0011
100434.0014.0001.0001.0011.

Statement issued by TÜV Rheinland Energy GmbH dated 2 October 2017

Publication in the German Federal Gazette: BAnz AT 17.07.2018 B9, chapter III notification 29, Announcement by UBA dated 03 July 2018:

29 Notification as regards Federal Environment Agency (UBA) notices of 25 February 2015 (BAnz AT 02.04.2015 B5, chapter III number 3.1) and of 21 February 2018 (BAnz AT 26.03.2018 B8, chapter V notification 7)

In order to improve practicability of the leak test for the APDA-372 and APDA-372E particle monitors for PM₁₀ and PM_{2,5} manufactured by HORIBA Europe GmbH, the criterion for passing the leak test with the instrument inlet blocked was changed to 0 ± 0.5 l/min (entire system without the Sigma-2 sampling head) and 0 ± 0.08 l/min (APDA-372 control unit on its own).

In the future, the measuring system will be equipped with an LED protective shield. It is possible to retrofit systems.

Statement issued by TÜV Rheinland Energy GmbH dated 2 May 2018

Publication in the German Federal Gazette: BAnz AT 26.03.2019 B7, Chap. IV
notification 38, Announcement by UBA dated 27 February 2019:

**38 Notification as regards Federal Environment Agency notices
of 25 February 2015 (BAnz AT 02.04.2015 B5, chapter III number 3.1) and
of 3 February 2018 (BAnz AT 17.07.2018 B9, chapter III 29th notification)**

The APDA-372 and APDA-372E measuring system for PM₁₀ and PM_{2,5} manufactured by HORIBA Europe GmbH meet the requirements defined in standard EN 16450 (July 2017 version). An addendum to test report No. 936/21243705/A is available online at www.qal1.de.

The instrument's software version has been revised. The current software version is:

100449.0014.0001.0001.0011.

In addition to this version, the following intermediate version are also valid:

100435.0014.0001.0001.0011,
100437.0014.0001.0001.0011,
100439.0014.0001.0001.0011,
100440.0014.0001.0001.0011,
100441.0014.0001.0001.0011,
100443.0014.0001.0001.0011,
100444.0014.0001.0001.0011,
100445.0014.0001.0001.0011,
100447.0014.0001.0001.0011,
100448.0014.0001.0001.0011.

An o-ring at the sampling rod of the IADS was optimised. A resistance on the temperature measurement board was replaced by a new resistance with optimised temperature behaviour.

Statement issued by TÜV Rheinland Energy GmbH dated 8 October 2018

Publication in the German Federal Gazette: BAnz AT 22.07.2019 B8, Chap. V notification 13, Announcement by UBA dated 28 June 2019:

13 Notification as regards Federal Environment Agency (UBA) notices of 25 February 2015 (BAnz AT 02.04.2015 B5, chapter III number 3.1) and of 27 February 2019 (BAnz AT 26.03.2019 B7, chapter IV notification 38)

The software of the APDA-372 and APDA-372E for PM₁₀ and PM_{2,5} manufactured by HORIBA Europe GmbH has been updated. The current software version is:
100451.0014.0001.0001.0011.

Alongside this version, the following intermediary versions can also be used:
100450.0014.0001.0001.0011.

At present, it is possible to use the APDA-372 sensor with or without insect protection. In future, an insect protection ring with additional seal and cement for the remaining slit will be available.

In future, the length of the sampling tube may vary between 1.2 m and 2 m according to customers specifications. The measuring system can also be operated with the Lufft WS500-UMB weather station.

Statement issued by TÜV Rheinland Energy GmbH dated 6 March 2019

Publication in the German Federal Gazette: BAnz AT 24.03.2020 B7, Chap. IV notification 52, Announcement by UBA dated 24 February 2020:

52 Notification as regards Federal Environment Agency (UBA) notices of 25 February 2015 (BAnz AT 02.04.2015 B5, chapter III number 3.1) and of 28 June 2019 (BAnz AT 22.07.2019 B8, chapter V notification 13)

The software of the APDA-372 and APDA-372E for PM₁₀ and PM_{2,5} manufactured by HORIBA Europe GmbH has been updated.

The current software version is:
100454.0014.0001.0001.0011.

The sensitivity of the particle sensor has to be checked once every three months using CalDust 1100 or MonoDust 1500.

The new sensor housing may be used for the APDA-372E in the future.

Statement issued by TÜV Rheinland Energy GmbH dated 19 September 2019

Publication in the German Federal Gazette: BAnz AT 03.05.2021 B9, Chap. III
notification 34, Announcement by UBA dated 31 March 2021:

**34 Notification as regards Federal Environment Agency (UBA) notices
of 25 February 2015 (BAnz AT 02.04.2015 B5, chapter III number 3.1) and
of 24 February 2020 (BAnz AT 24.03.2020 B7, chapter IV notification 52)**

The software version of the APDA-372 and APDA-372 E measuring systems for
PM₁₀ and PM_{2,5} from the company HORIBA Europe GmbH has been revised. The
current software version is:

100465.0014.0001.0001.0011.

Alongside this version, the following intermediary version can also be used:

100464.0014.0001.0001.0011.

In future, the APDA-372 or APDA-372 E measuring systems can alternatively be
equipped with the Hamamatsu H10721-210 photomultiplier or with the Axiomtek
Pico318-N3350 single-board computer including the DLC 0700 touch-sensitive
screen.

In the future, the measuring systems will have three additional holes with blind
plugs on the back of the control unit. In addition, the measuring system does not
have an electromechanical operating hours counter. When using the Pico318-
N3350 single-board computer, the HY-070MRLA0-CLTPA1 touch-sensitive screen
from HY-LINE can also be used in the future. Alternatively, the panel PC ARCHMI-
807AR from Wachendorff or AFL3-W07A-AL from iEi can be used. Furthermore, in
the future the measuring system can alternatively be equipped with either the
switching power supply RPS-300-24-C from the company Meanwell or the
switching power supply TOP-200-124-C from the company Traco.

Statement issued by TÜV Rheinland Energy GmbH dated 15 September 2020

Publication in the German Federal Gazette: BAnz AT 11.04.2022 B10, Chap. VI
notification 16, Announcement by UBA dated 9 March 2022:

**16 Notification as regards Federal Environment Agency (UBA) notices
of 25 February 2015 (BAnz AT 02.04.2015 B5, chapter III number 3.1) and
of 31 March 2021 (BAnz AT 03.05.2021 B9, chapter III notification 34)**

The measuring devices APDA-372 or APDA-372 E for PM₁₀ and PM_{2,5} of the company HORIBA Europe GmbH can be equipped in the future alternatively with the LED SBM-40-SC of the manufacturer Luminus. As an alternative to the sampling pump of type 1420VDP BLDC of the company Thomas Pumps used so far, the 2-head diaphragm pump of type NMP830.1.2KPDC-B HP 24V of the company KNF can be used in the future.

The current software version is:

100525.0014.0001.0001.0011

In addition to this version number, the following intermediate versions are also valid:

100468.0014.0001.0011 and

100524.0014.0001.0001.0011

Statement issued by TÜV Rheinland Energy GmbH dated 8 December 2021

Publication in the German Federal Gazette: BAnz AT 28.07.2022 B4, Chap. III
notification 43, Announcement by UBA dated 28 June 2022:

**43 Notification as regards Federal Environment Agency (UBA) notices
of 25 February 2015 (BAnz AT 02.04.2015 B5, chapter III number 3.1) and
of 9 March 2022 (BAnz AT 11.04.2022 B10, chapter VI notification 16)**

The measuring devices APDA-372 or APDA-372 E for PM₁₀ and PM_{2,5} of the company HORIBA Europe GmbH can be equipped in the future alternatively with the weather station HTP-Geber compact with actively ventilated weather protection from the company Thies starting from the software version 100532.0014.0001.0011.

For measuring the LED temperature, the sensor B57861S0103F040 from TDK can be used as an alternative in the future.

For the connection of the weather station and the IADS module the plugs WSV 50 or SV 50 (weather station) and WSV 60 or SV 60 (IADS module) of the company Lumberg can be used alternatively.

The current software version is:

100532.0014.0001.0001.0011

In addition to this version number, the following intermediate version is also valid:

100527.0014.0001.0001.0011.

Statement issued by TÜV Rheinland Energy GmbH dated 28 April 2022

Publication in the German Federal Gazette: BAnz AT 20.03.2023 B6, Chap. IV notification 77, Announcement by UBA dated 21 February 2023:

77 Notification as regards Federal Environment Agency (UBA) notices of 25 February 2015 (BAnz AT 02.04.2015 B5, chapter III number 3.1) and of 9 March 2022 (BAnz AT 11.04.2022 B10, chapter VI notification 34)

The current software version of the APDA-372 or APDA-372 E measuring systems for PM₁₀ and PM_{2,5} from the company HORIBA Europe GmbH is:

100535.0014.0001.0001.0011

The operational amplifiers on the SLA board can be installed either as THT components or as SMD components.

The measuring system can alternatively be operated with the weather station EVA730 from Kroneis.

Statement issued by TÜV Rheinland Energy GmbH dated 16 September 2022

Publication in the German Federal Gazette: BAnz AT 02.08.2023 B7, chapter III notification 35, Announcement by UBA dated 05 July 2023

35 Notification as regards Federal Environment Agency (UBA) notices of 25 February 2015 (BAnz AT 02.04.2015 B5, chapter III number 3.1) and of 21 February 2023 (BAnz AT 20.03.2023 B6, chapter IV notification 77)

The current software version for the APDA-372 / APDA-372 E measuring systems for PM₁₀ and PM_{2,5} from HORIBA Europe GmbH is:

100537.0014.0001.0001.0011

In addition to this version number, the following intermediate version is also valid:

100536.0014.0001.0001.0011

If the PC Pico318-N3350 is installed, it can also have a memory capacity of 128 GB instead of 32 GB up to now.

Statement issued by TÜV Rheinland Energy GmbH dated 31 March 2023

Certified product

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

With the exception of a modified front design (“Horiba” replaces “Palas” and “APDA-372” replaces “Fidas® 200”) and an adapted software, the APDA-372 ambient dust monitor is absolutely identical to the Fidas® 200 measuring system designed and completely manufactured by PALAS GmbH.

The APDA-372 and APDA-372E are optical aerosol spectrometers that determine the particle count and size with the help of a scattered light analysis of individual particles in accordance with Lorenz-Mie. The particle count and size distributions are converted into the mass concentration with the help of a size-related and weighted algorithm.

The ambient air monitor is available in two different versions: the APDA-372 for installation at temperature-controlled measurement sites (e.g. air-conditioned measuring station) and the APDA-372E (which is identical with the APDA-372 but has an external sensor unit). The tested measuring system consists of a Sigma-2 sampling head, the sampling tube c/w IADS humidity compensation module (standard or long version), the control unit with integrated aerosol sensor (APDA-372) or with external sensor unit (APDA-372E), the compact WS600-UMB or WS300-UMB weather station, the optional UMTS receiver, the required connecting tubes and cables, a bottle of CalDust 1100 or MonoDust 1500 as well as the manuals in German.

At a flow rate of 4.8 l/min (at 25°C and 1013hPa), the particle sample passes through the Sigma 2 sampling head and reaches the sampling tube which connects the sampling head to the control unit. In order to avoid water condensation effects especially at high ambient humidity, the IADS humidity compensation module is used. The IADS is controlled according to the ambient temperature and moisture levels (as determined by the compact weather station). The minimum temperature is 23°C. The moisture compensation is carried out by a dynamic adjustment of the IADS temperature up to a maximum heating output of 90 watt. The IADS module is controlled via the firmware. After passing through the IADS module, the particle sample eventually reaches the aerosol sensor which is where the actual measurement takes place. Downstream of the aerosol sensor, the sample passes through an absolute filter which may be used for further analyses of the collected aerosol. The APDA-372 and APDA-372E measuring systems also come with an integrated weather station (type Lufft WS300-UMB for recording parameters such as wind speed, wind direction, precipitation rates, type of precipitation, temperature, humidity and pressure; the alternative is the Lufft WS600-UMB for recording temperature, humidity and pressure). The measuring system's control unit does not only provide the necessary electronics for operating the system, but also 2 sampling pumps, which are connected in parallel. If one pump fails, the other one takes over to ensure smooth operation.

The APDA-372 and APDA-372E measuring systems store data in the raw-format. To determine mass concentration values, the stored raw data will have to be converted with the help of evaluation algorithm. To this effect, a size-dependent and weighted algorithm converts particle size and counts into mass concentrations. Algorithm PM_ENVIRO_0011 was used for conversion in the context of performance testing.

The measuring system may be operated either directly via the touch screen at the front of the instrument or remotely via an internet connection using a wireless modem using appropriate software (e.g. Teamviewer). The user may retrieve measurement data and system information, change parameters and perform functionality tests 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: qal1.de.

History of documents

Certification of APDA-372 / APDA-372 E is based on the documents listed below and the regular, continuous monitoring of the Quality Management System of the manufacturer:

Initial certification according to EN 15267

Certificate No. 0000043107_00: 30 April 2015
Expiry date of the certificate: 01 April 2020
Test report: 936/21226418/A dated 29 September 2014
TÜV Rheinland Energie und Umwelt GmbH
Publication: BAnz AT 02.04.2015 B5, chapter III number 3.1
UBA announcement dated 25 February 2015

Certificate based on a notification

Certificate No. 0000043107_01: 25 April 2016
Expiry date of the certificate: 01 April 2020
Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 6 November 2015
Test report: 936/21226418/C dated 15 October 2015
Publication: BAnz AT 14.03.2016 B7, chapter V notification 5
UBA announcement dated 18 February 2016
(Correction of the manual, alternative weather station and new software version)

Notifications

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 24 February 2016
Publication: BAnz AT 01.08.2016 B11, chapter V notification 34
UBA announcement dated 14 July 2016
(Soft- and hardware changes)

Statement issued by TÜV Rheinland Energy GmbH dated 13 December 2016
Test report: 936/21226418/C dated 7 December 2016
Publication: BAnz AT 15.03.2017 B6, chapter V notification 9
UBA announcement dated 22 February 2017
(Soft- and hardware changes)

Statement issued by TÜV Rheinland Energy GmbH dated 7 March 2017
Publication: BAnz AT 31.07.2017 B12, chapter II notification 31
UBA announcement dated 13 July 2017
(Software changes)

Statement issued by TÜV Rheinland Energy GmbH dated 2 October 2017
Publication: BAnz AT 26.03.2018 B8, chapter V notification 7
UBA announcement dated 21 February 2018
(Software changes)

Statement issued by TÜV Rheinland Energy GmbH dated 2 May 2018
Publication: BAnz AT 17.07.2018 B9, chapter III notification 29
UBA announcement dated 3 July 2018
(Modification of function test and hardware changes)

Certificate based on a notification

Certificate No. 0000043107_02: 2 June 2019
Expiry date of the certificate: 25 March 2024
Statement issued by TÜV Rheinland Energy GmbH dated 8 October 2018
Addendum: 936/21243705/A dated 7 September 2018
Publication: BAnz AT 26.03.2019 B7, chapter IV notification 38
UBA announcement dated 27 February 2019
(Fulfillment of the requirements according to DIN EN 16450)

Notifications

Statement issued by TÜV Rheinland Energy GmbH dated 6 March 2019
Publication: BAnz AT 22.07.2019 B8, chapter V notification 13
UBA announcement dated 28 June 2019
(Soft- and hardware changes)

Statement issued by TÜV Rheinland Energy GmbH dated 19 September 2019
Publication: BAnz AT 24.03.2020 B7, chapter IV notification 52
UBA announcement dated 24 February 2020
(Soft- and hardware changes and new hardware version (APDA-372 E))

Statement issued by TÜV Rheinland Energy GmbH dated 15 September 2020
Publication: BAnz AT 03.05.2021 B9, chapter III notification 34
UBA announcement dated 31 March 2021
(Soft- and hardware changes)

Statement issued by TÜV Rheinland Energy GmbH dated 8 December 2021
Publication: BAnz AT 11.04.2022 B10, chapter VI notification 16
UBA announcement dated 9 March 2022
(Soft- and hardware changes)

Statement issued by TÜV Rheinland Energy GmbH dated 28 April 2022
Publication: BAnz AT 28.07.2022 B4, chapter III notification 43
UBA announcement dated 28 June 2022
(Soft- and hardware changes)

Statement issued by TÜV Rheinland Energy GmbH dated 16 September 2022
Publication: BAnz AT 20.03.2023 B6, chapter IV notification 77
UBA announcement dated 21 February 2023
(Soft- and hardware changes)

Statement issued by TÜV Rheinland Energy GmbH dated 31 March 2023
Publication: BAnz AT 02.08.2023 B7, chapter III notification 35
UBA announcement dated 5 July 2023
(Software changes)

Renewal of certificate

Certificate No. 0000043107_03: 20 March 2024
Expiry date of the certificate: 25 March 2029

Expanded uncertainty PM_{2,5}

Comparison candidate with reference according to Standard EN 16450:2017				
Candidate	FIDAS 200 S	SN	SN 0111 & SN 0112	
Status of measured values	Slope and offset corrected	Limit value	30	µg/m ³
		Allowed uncertainty	25	%
All comparisons				
Uncertainty between Reference	0.58	µg/m³		
Uncertainty between Candidates	0.44	µg/m³		
SN 0111 & SN 0112				
Number of data pairs	225			
Slope b	0.999	not significant		
Uncertainty of b	0.010			
Ordinate intercept a	0.012	not significant		
Uncertainty of a	0.178			
Expanded meas. uncertainty W _{CM}	10.53	%		
All comparisons, ≥18 µg/m³				
Uncertainty between Reference	0.63	µg/m³		
Uncertainty between Candidates	0.78	µg/m³		
SN 0111 & SN 0112				
Number of data pairs	54			
Slope b	0.971			
Uncertainty of b	0.023			
Ordinate intercept a	0.771			
Uncertainty of a	0.715			
Expanded meas. uncertainty W _{CM}	13.21	%		
All comparisons, <18 µg/m³				
Uncertainty between Reference	0.57	µg/m³		
Uncertainty between Candidates	0.31	µg/m³		
SN 0111 & SN 0112				
Number of data pairs	171			
Slope b	1.108			
Uncertainty of b	0.030			
Ordinate intercept a	-1.010			
Uncertainty of a	0.304			
Expanded meas. uncertainty W _{CM}	17.70	%		

Comparison candidate with reference according to Standard EN 16450:2017				
Candidate	FIDAS 200 S	SN	SN 0111 & SN 0112	
Status of measured values	Slope and offset corrected	Limit value	30	$\mu\text{g}/\text{m}^3$
		Allowed uncertainty	25	%
Cologne, Summer				
Uncertainty between Reference	0.66	$\mu\text{g}/\text{m}^3$		
Uncertainty between Candidates	0.11	$\mu\text{g}/\text{m}^3$		
	SN 0111		SN 0112	
Number of data pairs	81		82	
Slope b	1.036		1.034	
Uncertainty of b	0.031		0.033	
Ordinate intercept a	-0.518		-0.478	
Uncertainty of a	0.337		0.351	
Expanded meas. uncertainty W_{CM}	10.54	%	10.86	%
Cologne, Winter				
Uncertainty between Reference	0.54	$\mu\text{g}/\text{m}^3$		
Uncertainty between Candidates	0.51	$\mu\text{g}/\text{m}^3$		
	SN 0111		SN 0112	
Number of data pairs	51		50	
Slope b	0.976		0.942	
Uncertainty of b	0.013		0.013	
Ordinate intercept a	0.962		0.951	
Uncertainty of a	0.291		0.303	
Expanded meas. uncertainty W_{CM}	8.73	%	10.22	%
Bonn				
Uncertainty between Reference	0.62	$\mu\text{g}/\text{m}^3$		
Uncertainty between Candidates	0.65	$\mu\text{g}/\text{m}^3$		
	SN 0111		SN 0112	
Number of data pairs	50		50	
Slope b	1.034		0.993	
Uncertainty of b	0.023		0.025	
Ordinate intercept a	-0.394		-0.144	
Uncertainty of a	0.531		0.575	
Expanded meas. uncertainty W_{CM}	12.29	%	12.76	%
Bornheim				
Uncertainty between Reference	0.42	$\mu\text{g}/\text{m}^3$		
Uncertainty between Candidates	0.46	$\mu\text{g}/\text{m}^3$		
	SN 0111		SN 0112	
Number of data pairs	45		45	
Slope b	1.124		1.098	
Uncertainty of b	0.050		0.050	
Ordinate intercept a	-1.027		-1.137	
Uncertainty of a	0.598		0.598	
Expanded meas. uncertainty W_{CM}	21.43	%	16.74	%
All comparisons, $\geq 18 \mu\text{g}/\text{m}^3$				
Uncertainty between Reference	0.63	$\mu\text{g}/\text{m}^3$		
Uncertainty between Candidates	0.78	$\mu\text{g}/\text{m}^3$		
	SN 0111		SN 0112	
Number of data pairs	54		54	
Slope b	0.994		0.948	
Uncertainty of b	0.023		0.024	
Ordinate intercept a	0.515		1.011	
Uncertainty of a	0.701		0.74	
Expanded meas. uncertainty W_{CM}	13.11	%	14.17	%
All comparisons, $< 18 \mu\text{g}/\text{m}^3$				
Uncertainty between Reference	0.57	$\mu\text{g}/\text{m}^3$		
Uncertainty between Candidates	0.31	$\mu\text{g}/\text{m}^3$		
	SN 0111		SN 0112	
Number of data pairs	173		173	
Slope b	1.130		1.090	
Uncertainty of b	0.030		0.030	
Ordinate intercept a	-1.095		-0.929	
Uncertainty of a	0.304		0.308	
Expanded meas. uncertainty W_{CM}	21.05	%	15.38	%
All comparisons				
Uncertainty between Reference	0.58	$\mu\text{g}/\text{m}^3$		
Uncertainty between Candidates	0.44	$\mu\text{g}/\text{m}^3$		
	SN 0111		SN 0112	
Number of data pairs	227		227	
Slope b	1.017	not significant	0.981	not significant
Uncertainty of b	0.010		0.010	
Ordinate intercept a	-0.053	not significant	0.111	not significant
Uncertainty of a	0.176		0.182	
Expanded meas. uncertainty W_{CM}	10.92	%	11.23	%

Expanded uncertainty PM₁₀

Comparison candidate with reference according to Standard EN 16450:2017				
Candidate	FIDAS 200 S	SN	SN 0111 & SN 0112	
Status of measured values	Slope & offset corrected	Limit value	50	µg/m ³
		Allowed uncertainty	25	%
All comparisons				
Uncertainty between Reference	0.62			µg/m ³
Uncertainty between Candidates	0.64			µg/m ³
SN 0111 & SN 0112				
Number of data pairs	227			
Slope b	0.999			not significant
Uncertainty of b	0.011			
Ordinate intercept a	0.015			not significant
Uncertainty of a	0.249			
Expanded measured uncertainty WCM	7.43			%
All comparisons, ≥30 µg/m³				
Uncertainty between Reference	0.67			µg/m ³
Uncertainty between Candidates	1.10			µg/m ³
SN 0111 & SN 0112				
Number of data pairs	35			
Slope b	0.949			
Uncertainty of b	0.036			
Ordinate intercept a	2.181			
Uncertainty of a	1.530			
Expanded measured uncertainty WCM	10.34			%
All comparisons, <30 µg/m³				
Uncertainty between Reference	0.61			µg/m ³
Uncertainty between Candidates	0.55			µg/m ³
SN 0111 & SN 0112				
Number of data pairs	192			
Slope b	1.023			
Uncertainty of b	0.021			
Ordinate intercept a	-0.408			
Uncertainty of a	0.364			
Expanded measured uncertainty WCM	7.43			%

Comparison candidate with reference according to Standard EN 16450:2017				
Candidate	FIDAS 200 S		SN	SN 0111 & SN 0112
Status of measured values	Slope & offset corrected		Limit value	50 $\mu\text{g}/\text{m}^3$
			Allowed uncertainty	25 %
Cologne, Summer				
Uncertainty between Reference	0.80	$\mu\text{g}/\text{m}^3$		
Uncertainty between Candidates	0.26	$\mu\text{g}/\text{m}^3$		
	SN 0111		SN 0112	
Number of data pairs	81		82	
Slope b	0.986		0.970	
Uncertainty of b	0.026		0.026	
Ordinate intercept a	-0.098		0.009	
Uncertainty of a	0.463		0.462	
Expanded measured uncertainty W_{CM}	7.63	%	9.14	%
Cologne, Winter				
Uncertainty between Reference	0.53	$\mu\text{g}/\text{m}^3$		
Uncertainty between Candidates	0.63	$\mu\text{g}/\text{m}^3$		
	SN 0111		SN 0112	
Number of data pairs	51		50	
Slope b	1.006		0.971	
Uncertainty of b	0.014		0.014	
Ordinate intercept a	0.238		0.216	
Uncertainty of a	0.378		0.377	
Expanded measured uncertainty W_{CM}	6.41	%	7.77	%
Bonn				
Uncertainty between Reference	0.38	$\mu\text{g}/\text{m}^3$		
Uncertainty between Candidates	0.85	$\mu\text{g}/\text{m}^3$		
	SN 0111		SN 0112	
Number of data pairs	50		50	
Slope b	0.985		0.948	
Uncertainty of b	0.026		0.027	
Ordinate intercept a	1.372		1.510	
Uncertainty of a	0.776		0.817	
Expanded measured uncertainty W_{CM}	9.01	%	10.07	%
Bornheim				
Uncertainty between Reference	0.54	$\mu\text{g}/\text{m}^3$		
Uncertainty between Candidates	0.82	$\mu\text{g}/\text{m}^3$		
	SN 0111		SN 0112	
Number of data pairs	47		47	
Slope b	1.064		1.022	
Uncertainty of b	0.037		0.037	
Ordinate intercept a	-0.425		-0.597	
Uncertainty of a	0.693		0.681	
Expanded measured uncertainty W_{CM}	13.42	%	7.60	%
All comparisons, $\geq 30 \mu\text{g}/\text{m}^3$				
Uncertainty between Reference	0.67	$\mu\text{g}/\text{m}^3$		
Uncertainty between Candidates	1.10	$\mu\text{g}/\text{m}^3$		
	SN 0111		SN 0112	
Number of data pairs	35		35	
Slope b	0.979		0.919	
Uncertainty of b	0.036		0.037	
Ordinate intercept a	1.526		2.795	
Uncertainty of a	1.539		1.56	
Expanded measured uncertainty W_{CM}	10.47	%	11.52	%
All comparisons, $< 30 \mu\text{g}/\text{m}^3$				
Uncertainty between Reference	0.61	$\mu\text{g}/\text{m}^3$		
Uncertainty between Candidates	0.55	$\mu\text{g}/\text{m}^3$		
	SN 0111		SN 0112	
Number of data pairs	194		194	
Slope b	1.046		1.002	
Uncertainty of b	0.021		0.020	
Ordinate intercept a	-0.510		-0.305	
Uncertainty of a	0.372		0.358	
Expanded measured uncertainty W_{CM}	9.94	%	6.74	%
All comparisons				
Uncertainty between Reference	0.62	$\mu\text{g}/\text{m}^3$		
Uncertainty between Candidates	0.64	$\mu\text{g}/\text{m}^3$		
	SN 0111		SN 0112	
Number of data pairs	229		229	
Slope b	1.017	not significant	0.981	not significant
Uncertainty of b	0.011		0.011	
Ordinate intercept a	-0.037	not significant	0.081	not significant
Uncertainty of a	0.252		0.249	
Expanded measured uncertainty W_{CM}	8.24	%	8.19	%