Umwelt Bundesamt

TÜVRheinland®
Precisely Right.

CERTIFICATE

of Product Conformity (QAL1)

Certificate No.: 0000040212_06

Certified AMS:	Fidas® 200 S, Fidas® 200, Fidas® 200 E for suspended particulate matter PM_{10} and $PM_{2,5}$
Manufacturer:	PALAS GmbH Siemensallee 84 76187 Karlsruhe 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 0000040212_05 dated 12 June 2019.

TÜVRheinland® CERTIFIED
Suitability Tested
Complying with 2008/50/EC
EN 15267
Regular Surveillance
www.tuv.com
ID 0000040212

Publication in the German Federal Gazette (BAnz) of 26 August 2015

This certificate will expire on: 25 March 2029

German Environment Agency

Dessau, 20 March 2024

Dr. Marcel Langner
Head of Section II 4

TÜV Rheinland Energy & Environment GmbH
Energy & Environment GmbH
Cologne, 13 March 2024

ppa. Dr. Peter Wilbring

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TÜV Rheinland Energy & Environment GmbH
Am Grauen Stein
51105 Köln

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:	936/21227195/C dated 12 October 2016 and Addendum 936/21239834/A dated 8 September 2017 and 936/21239834/B dated 7 September 2018
Initial certification:	1 April 2014
Expiry date:	25 March 2029
Certificate:	Renewal (of previous certificate 0000040212_05 of 12 June 2019 valid until 25 March 2024)
Publication:	BAnz AT 26.08.2015 B4, chapter III No. 2.1 and BAnz AT 26.03.2019 B7, chapter IV number 44

Approved application

The tested AMS is suitable for continuous and simultaneous ambient air monitoring of suspended particulate matter, PM_{10} and $PM_{2.5}$ (stationary operation).

The suitability of the AMS for this application was assessed on the basis of a laboratory test and a sixteen-months field test.

The Fidas® 200 S version of the instrument is approved for an ambient temperature range of -20 °C to +50 °C. The Fidas® 200 and Fidas® 200 E versions of the instrument are 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 936/21227195/C dated 12 October 2016
  of TÜV Rheinland Energy GmbH and
  Addendum 936/21239834/B 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 26.08.2015 B4, chapter III No. 2.1, Announcement by UBA dated 22 July 2015:

AMS designation:

Fidas® 200 S, Fidas® 200 and Fidas® 200 E
for suspended particulate matter PM_{10} and $PM_{2,5}$

Manufacturer:

PALAS GmbH, Karlsruhe

Field of application:

For continuous and simultaneous ambient air monitoring suspended particulate matter, PM_{10} and $PM_{2,5}$ fractions (stationary sources)

Measuring ranges during the performance test:

Component	Certification range	Unit
PM_{10}	0 - 10,000	µg/m³
$PM_{2,5}$	0 - 10,000	µg/m³

Software versions:

100380.0014.0001.0001.0011

Restrictions:

None

Notes:

1. The Fidas® 200 S measuring system is also available as an indoorversion for installation at temperaturecontrolled locations. It is then called Fidas® 200.
2. Both, the four comparison campaigns (initial testing) and the six comparison campaigns (supplementary testing) meet the requirements for PM_{10} and $PM_{2,5}$ stipulated by the Guide to “Demonstration of Equivalence of Ambient Air Monitoring Methods”.
3. One of the tested instrument tested at the site in Cologne in the summer failed to meet the requirements for the variation coefficient R^2 in accordance with standard EN 12341 (1998 version).
4. The particle sensor’s sensitivity has to be checked on a monthly basis using Cal-Dust 1100 or MonoDust 1500.
5. The measuring system must be calibrated on site at regular intervals by using the gravimetric $PM_{2,5}$ and PM_{10} reference method according to EN 12341 (2014 version).
6. The test report on performance testing is available on the internet at www.qal1.de.
7. Supplementary testing (extended equivalence testing, presentation of design changes, inclusion of the MonoDust1500 test standard) as regards Federal Environment Agency notices of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter IV number 5.1) and of 25 February 2015 (BAnz AT 02.04.2015 B5 chapter IV notification 14).

Test Institute:

TÜV Rheinland Energie und Umwelt GmbH, Cologne

Report No.: 936/21227195/A dated 9 March 2015

Publication in the German Federal Gazette: BAnz AT 14.03.2016 B7, Chap. V notification 6, Announcement by UBA dated 18 February 2016:

6 Notification as regards Federal Environment Agency (UBA) notice of 22 July 2015 (BAnz AT 26.08.2015 B4, chapter III number 2.1)

A mistake regarding the description of the of the IADS-control functions was detected in the manual for the Fidas® 200 S or the Fidas® 200 measuring system for PM_{10} and $PM_{2,5}$ manufactured by PALAS GmbH. The description should correctly read as follows:

"The temperature of the IADS is controlled as a function of the ambient tempera-ture and humidity (as measured by the weather station). The minimum temperature is 23 °C. Moisture compensation is ensured via a dynamic adjustment of the IADS temperature up to a maximum heat capacity of 90 Watt."

The manufacturer corrected this mistake as of manual version V0140815. Test report 936/21227195/A dated 9 March 2015 issued by TÜV Rheinland Energie und Umwelt GmbH was corrected accordingly and replaced by Test report 936/21227195/B dated 5 October 2015.

The measuring system can alternatively be operated with a WS300-UMB weather station. An extended IADS adaptable for lengths between 1.20 m and 2.10 m is available for the measuring system.

Furthermore, the Fidas® 200 E version of the measuring system may be used 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,
chapter V notification 35, UBA announcement dated 14 July 2016

35 Notification as regards Federal Environment Agency (UBA) notices of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter IV number 5.1) and of 18 February 2016 (BAnz AT 14.03.2016 B7, chapter V notification 6)

The sensitivity test of the particle sensor for the Fidas® 200, Fidas® 200 S or Fidas® 200 E for PM_{10} and $PM_{2.5}$ particle monitor with MonoDust 1500 manufactured by PALAS GmbH can be performed 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 for 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 10,
Announcement by UBA dated 22 February 2017:

10 Notification as regards Federal Environment Agency (UBA) notices of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter IV number 5.1) and of 14 July 2016 (BAnz AT 01.08.2016 B11, chapter V notification 35)

The particle sensor's sensitivity of the Fidas® 200, Fidas® 200 S and Fidas® 200 E for PM_{10} and $PM_{2,5}$ manufactured by PALAS GmbH has to be checked using CalDust 1100 or MonoDust 1500 every three months.
These measuring systems may alternatively be used with the Siargo FS4008-10-O6-CV-A flow sensor instead of the Honeywell AWM5102VN model used so far.
The new temperature compensation factors for each instrument are as follows: 0.15 (Fidas® 200 S), 0.19 (Fidas® 200 E) and 0.17 (Fidas® 200).
To ensure effective heating for the outdoor enclosure of the Fidas® 200 S variant the fan heater has been repositioned. The air flow produced by the fan heater now flows from the bottom to the top of the enclosure.
A mistake in the test report no. 936/21227195/B dated 5 October 2015 prepared by TÜV Rheinland Energie und Umwelt GmbH has been corrected. Instead of a 30-minute moving average as stated in two instances in the report, the Fidas® 200 S, Fidas® 200 E and Fidas® 200 ambient air quality monitors operate with a moving average over 900s (15 minutes). Test report 936/21227195/C dated 12 October 2016 issued by TÜV Rheinland Energy 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 12 October 2016

Publication in the German Federal Gazette: BAnz AT 31.07.2017 B12, Chap. II notification 30, Announcement by UBA dated 13 July 2017:

30 Notification as regards Federal Environment Agency (UBA) notices of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter IV number 5.1) and of 22 February 2017 (BAnz AT 15.03.2017 B6, chapter V notification 10)

The current software version for the Fidas® 200, Fidas® 200 S and Fidas® 200 E monitoring PM_{10} and $PM_{2,5}$ manufactured by PALAS 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 10, Announcement by UBA dated 21 February 2018:

10 Notification as regards Federal Environment Agency (UBA) notices of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter IV number 5.1) and of 13 July 2017 (BAnz AT 31.07.2017 B12, chapter II 30th notification)

The Fidas® 200, Fidas® 200 S and Fidas® 200 E measuring systems for PM_{10} and $PM_{2.5}$ manufactured by PALAS GmbH meet the requirements of standard EN 16450 (July 2017 version). An addendum no. 936/21239834/A as integral part of test report is available online at www.qal1.de.

The current software versions are:
100430.0014.0001.0001.0011
100431.0014.0001.0001.0011
100434.0014.0001.0001.0011

Statement issued by TÜV Rheinland Energy GmbH dated 8 September 2017

Publication in the German Federal Gazette: BAnz AT 17.07.2018 B9, chapter III notification 30, UBA announcement dated 3 July 2018:

30 Notification as regards Federal Environment Agency (UBA) notices of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter IV number 5.1) and of 21 February 2018 (BAnz AT 26.03.2018 B8, chapter V notification 10)

In order to improve practicability of the leak test for the Fidas® 200, Fidas® 200 S and Fidas® 200 E particle monitors for PM_{10} and $PM_{2.5}$ manufactured by PALAS 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 44, Announcement by UBA dated 27 February 2019:

44 Notification as regards Federal Environment Agency (UBA) notices of 27 February 2014 (BAnz AT 01.04.2014 B9, chapter IV number 5.1) and of 3 July 2018 (BAnz AT 17.07.2018 B9, chapter III notification 30)

The addendum no. 936/21239834/A dated 1 September 2017 to the report on testing the Fidas® 200 S, Fidas® 200 E and Fidas® 200 measuring systems for PM_{10} and $PM_{2,5}$ manufactured by PALAS GmbH contains a mistake regarding the uncertainty determination of the reference method. This error was corrected by way of an additional addendum to test report no. 936/21239834/B dated 7 September 2018. The addendum no. 936/21239834/A dated 1 September 2017 was withdrawn.
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 14, Announcement by UBA dated 28 June 2019:

14 Notification as regards Federal Environment Agency (UBA) notices of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter IV number 5.1) and of 27 February 2019 (BAnz AT 26.03.2019 B7, chapter IV notification 44)

The software version of the Fidas® 200 S, Fidas® 200 E and Fidas® 200 measuring system for PM_{10} and $PM_{2,5}$ has been updated. The latest 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 Fidas sensor with or without insect protection. In future, an insect protection ring with additional seal and cement for the remaining slit will be available. 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 07.05.2020 B8, Chap. III notification 4, Announcement by UBA dated 31 March 2020:

4 Notification as regards Federal Environment Agency (UBA) notices of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter IV number 5.1) and of 28 June 2019 (BAnz AT 22.07.2019 B8, chapter V notification 14)

The software version of the Fidas® 200 S, Fidas® 200 E and Fidas® 200 measuring system for PM_{10} and $PM_{2,5}$ has been updated.

The current software version is:
100454.0014.0001.0001.0011.

The new sensor housing may be used for the Fidas® 200 E in the future.

Statement issued by TÜV Rheinland Energy GmbH dated 06 December 2019

Publication in the German Federal Gazette: BAnz AT 31.07.2020 B10, Chap. II notification 16, Announcement by UBA dated 27 May 2020:

16 Notification as regards Federal Environment Agency (UBA) notices of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter IV number 5.1) and of 31. März 2020 (BAnz AT 07.05.2020 B8, chapter III, notification 4)

The software version of the Fidas® 200 S, Fidas® 200 E and Fidas® 200 measuring system for PM_{10} and $PM_{2,5}$ has been updated. The current software version is:
100465.0014.0001.0001.0011

In addition to this version, the following intermediate versions are also valid:
100464.0014.0001.0001.0011

The Fidas® 200 S, Fidas® 200E or Fidas® 200 measuring system may alternatively be equipped with the Hamamatsu H10721-210 photomultiplier and with the panel PC Pico318-N3350 manufactured by Axiomtek incl. touch screen DLC 0700 manufactured by DLC.

Statement issued by TÜV Rheinland Energy GmbH dated 7 May 2020

Publication in the German Federal Gazette: BAnz AT 03.05.2021 B9, Chap. III notification 45, Announcement by UBA dated 31 March 2021:

45 Notification as regards Federal Environment Agency (UBA) notices of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter IV number 5.1) and of 27 May 2020 (BAnz AT 31.07.2020 B10, chapter II notification 16)

The Fidas® 200 S, Fidas® 200 E or Fidas® 200 measuring systems from the company Palas GmbH can in future alternatively be equipped with either the switching power supply unit RPS-300-24-C from the company Meanwell or the switching power supply unit TOP-200-124-C from the comopany Traco.

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.

Statement issued by TÜV Rheinland Energy GmbH dated 10 November 2020

Publication in the German Federal Gazette: BAnz AT 11.04.2022 B10, Chap. VI notification 21, Announcement by UBA dated 09 March 2022:

21 Notification as regards Federal Environment Agency (UBA) notices of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter IV number 5.1) and of 31 March 2021 (BAnz AT 03.05.2021 B9, chapter III notification 45)

The measuring devices Fidas® 200 S, Fidas® 200 E or Fidas® 200 PM_{10} and $PM_{2,5}$ of the company Palas GmbH can be equipped in the future alternatively with the LED SBM-40-SC of the manufacturer Luminus. As an alternative to the previously used sampling pump of type 1420VDP BLDC from the company Thomas Pumps, the 2-head diaphragm pump of type NMP830.1.2KPDC-B HP 24V from the company KNF can be used in the future.
In the future, the sampling tube can be varied in length between 1.2 and 2 m according to customer requirements.

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 44, Announcement by UBA dated 28 June 2022:

44 Notification as regards Federal Environment Agency (UBA) notices of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter IV number 5.1) and of 9 March 2022 (BAnz AT 11.04.2022 B10, chapter VI notification 21)

The measuring devices Fidas® 200 S, Fidas® 200 E resp. Fidas® 200 for PM_{10} and $PM_{2,5}$ of the company Palas GmbH can be equipped alternatively with the weather station HTP-Geber compact with active ventilated weather protection of the company Thies from the software version 100532.0014.0001.0011 on.
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:
100527.0014.0001.0011.

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 80, Announcement by UBA dated 21 February 2023:

80 Notification as regards Federal Environment Agency (UBA) notices of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter IV number 5.1) and of 28 June 2022 (BAnz AT 28.07.2022 B4, chapter III notification 44)

The current software version of the Fidas® 200 S, Fidas® 200 E resp. Fidas® 200 measuring systems for PM_{10} and $PM_{2,5}$ from the company Palas GmbH is:
100535.0014.0001.0001.0011

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

Statement issued by TÜV Rheinland Energy GmbH dated 5 September 2022

Publication in the German Federal Gazette: BAnz AT 02.08.2023 B7, chapter III notification 36, Announcement by UBA dated 05 July 2023

36 Notification as regards Federal Environment Agency (UBA) notices of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter IV number 5.1) and of 21 February 2023 (BAnz AT 20.03.2023 B6, chapter IV notification 80)

The current software version for the Fidas® 200 S, Fidas® 200 E / Fidas® 200 measuring systems for PM_{10} and $PM_{2.5}$ from Palas 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:

The Fidas® 200 S, Fidas® 200 and Fidas® 200 E are optical aerosol sensors which determine the particle size and number using scattered light on single particles in accordance with Lorenz-Mie. For the determination of mass concentrations, particle size and count distributions are converted using a size-dependent and weighted evaluation algorithm.
The measuring system is available as instrument versions Fidas® 200 S (for use outdoors, incl. protective enclosure), Fidas® 200 (for installation at temperature controlled sites such as air-conditioned measurement stations) and as Fidas® 200 E (as Fidas® 200, but with 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 Fidas® control unit with in-tegrated aerosol sensor (Fidas® 200 S or Fidas® 200) or with external sensor unit

At a flow rate of 4.8 l/min (at 25 °C and 1013 hPa), the particle sample passes through the Sigma2 sampling head and reaches the sampling tube which connects the sampling head to the Fidas control unit. In order to avoid water condensation effects especially at high ambient humidity, the IADS humidity compensation module is used. The IADS was controlled in relation to ambient temperature and moisture (as measured using a compact weather station). The minimum temperature is 23 °C. Moisture compensation is ensured via a dynamic adjustment of the IADS temperature up to a maximum heat capacity of 90 Watt. The IADS module is controlled via the Fidas firmware. After passing through the IADS module, the particle sample finally reaches the aerosol sensor which is were 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 Fidas® 200 S, Fidas® 200 and Fidas® 200 E 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 Fidas® 200 S, Fidas® 200 and Fidas® 200 E 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 is able to check measurement data and instrument information, change parameters and check correct functionality of the AMS.

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 Fidas® 200 S, Fidas® 200, Fidas® 200 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. 0000040212_00: 29 April 2014
Expiry date of the certificate: 31 March 2019
Test report: 936/21218896/A dated 20 September 2013
TÜV Rheinland Energie und Umwelt GmbH
Publication: BAnz AT 01.04.2014 B12, chapter IV number 5.1
UBA announcement dated 27 February 2014

Notifications
Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 27 September 2014
Publication: BAnz AT 02.04.2015 B5, chapter IV notification 14
UBA announcement dated 25 February 2015
(Hardware changes)

Supplementary testing according to EN 15267
Certificate No. 0000040212_01: 30 September 2015
Expiry date of the certificate: 31 March 2019
Test report: 936/21227195/A dated 9 March 2015
TÜV Rheinland Energie und Umwelt GmbH
Publication: BAnz AT 26.08.2015 B4, chapter III number 2.1
UBA announcement dated 22 July 2015

Certificate based on a notification
Certificate No. 0000040212_02: 25 April 2016
Expiry date of the certificate: 31 March 2019
Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 6 November 2015
Test report: 936/21227195/B dated 5 October 2015
Publication: BAnz AT 14.03.2016 B7, chapter V notification 6
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 35
UBA announcement dated 14 July 2016
(Change in the test procedure, hardware amendment, nw software version)

Correction of certificate
Certificate No. 0000040212_03: 28 February 2017
Expiry date of the certificate: 31 March 2019
(Correction of the quote taken from the standard referred to)

Notifications
Statement issued by TÜV Rheinland Energy GmbH dated 12 October 2016
Test report: 936/21227195/C dated 12 October 2016
Publication: BAnz AT 15.03.2017 B6, chapter V notification 10
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 30
UBA announcement dated 13 July 2017
(Software changes)

Certificate based on a notification
Certificate No. 0000040212_04: 13 April 2018
Expiry date of the certificate: 31 March 2019
Statement issued by TÜV Rheinland Energy GmbH dated 8 September 2017
Addendum: 936/21239834/A dated 1 September 2017
Publication: BAnz AT 26.03.2018 B8, chapter V notification 10
UBA announcement dated 21 February 2018
(Compliance with the requirements of EN 16450 (2017), new software version)

Notifications
Statement issued by TÜV Rheinland Energy GmbH dated 2 May 2018
Publication: BAnz AT 17.07.2018 B9, chapter III notification 30
UBA announcement dated 3 July 2018
(Hardware changes and modification of function test)

Certificate based on a notification
Certificate No. 0000040212_05: 12 June 2019
Expiry date of the certificate: 25 March 2024
Statement issued by TÜV Rheinland Energy GmbH dated 8 October 2018
Addendum: 936/21239834/B dated 7 September 2018
Publication: BAnz AT 26.03.2019 B7, chapter IV notification 44
UBA announcement dated 27 February 2019
(Correction of uncertainty calculation, new software version)

Notifications
Statement issued by TÜV Rheinland Energy GmbH dated 6 March 2019
Publication: BAnz AT 22.07.2019 B8, chapter V notification 14
UBA announcement dated 28 June 2019
(Soft- and hardware changes)

Statement issued by TÜV Rheinland Energy GmbH dated 6 December 2019
Publication: BAnz AT 07.05.2020 B8, chapter III notification 4
UBA announcement dated 31 March 2020
(Software changes)

Statement issued by TÜV Rheinland Energy GmbH dated 7 May 2020
Publication: BAnz AT 31.07.2020 B10, chapter II notification 16
UBA announcement dated 27 May 2020
(Soft- and hardware changes)

Statement issued by TÜV Rheinland Energy GmbH dated 10 November 2020
Publication: BAnz AT 03.05.2021 B9, chapter III notification 45
UBA announcement dated 31 March 2021
(Hardware changes)

Statement issued by TÜV Rheinland Energy GmbH dated 8 December 2021
Publication: BAnz AT 11.04.2022 B10, chapter VI notification 21
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 44
UBA announcement dated 28 June 2022
(Soft- and hardware changes)

Statement issued by TÜV Rheinland Energy GmbH dated 5 September 2022
Publication: BAnz AT 20.03.2023 B6, chapter IV notification 80
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 36
UBA announcement dated 5 July 2023
(Software changes)

Renewal of certificate
Certificate No. 0000040212_06: 20 March 2024
Expiry date of the certificate: 25 March 2029

Summary of the results for equivalence testing, SN 0111 & SN 0112 Measured component $PM_{2.5}$ after correction of the slope, evaluation algorithm PM_ENVIRO_0011

Comparison candidate with reference according to Standard EN 16450: 2017				
Candidate	FIDAS 200 S	SN	SN 0111 & SN 0112	
		Limit value	30	µg/m³
Status of measured values	Slope corrected	Allowed uncertainty	25	%
All comparisons				
Uncertainty between Reference	**0.53**	**µg/m³**		
Uncertainty between Candidates	**0.45**	**µg/m³**		
SN 0111 & SN 0112				
Number of data pairs	**313**			
Slope b	**0.999**	**not significant**		
Uncertainty of b	**0.008**			
Ordinate intercept a	**-0.190**	**not significant**		
Uncertainty of a	**0.136**			
Expanded meas. uncertainty W_{CM}	**9.67**	**%**		
All comparisons, ≥18 µg/m³				
Uncertainty between Reference	**0.60**	**µg/m³**		
Uncertainty between Candidates	**0.80**	**µg/m³**		
SN 0111 & SN 0112				
Number of data pairs	**67**			
Slope b	**0.981**			
Uncertainty of b	**0.020**			
Ordinate intercept a	**0.306**			
Uncertainty of a	**0.630**			
Expanded meas. uncertainty W_{CM}	**12.83**	**%**		
All comparisons, <18 µg/m³				
Uncertainty between Reference	**0.51**	**µg/m³**		
Uncertainty between Candidates	**0.31**	**µg/m³**		
SN 0111 & SN 0112				
Number of data pairs	**246**			
Slope b	**1.065**			
Uncertainty of b	**0.023**			
Ordinate intercept a	**-0.782**			
Uncertainty of a	**0.224**			
Expanded meas. uncertainty W_{CM}	**11.59**	**%**		

Comparison candidate with reference according to Standard EN 16450: 2017					
Candidate	FIDAS 200 S		SN	SN 0111 & SN 0112	
			Limit value	30	µg/m³
Status of measured values	Slope corrected		Allowed uncertainty	25	%
Cologne, Summer					
Uncertainty between Reference	**0.66**	**µg/m³**			
Uncertainty between Candidates	**0.11**	**µg/m³**			
	SN 0111		**SN 0112**		
Number of data pairs	**81**		**82**		
Slope b	**1.053**		**1.050**		
Uncertainty of b	**0.032**		**0.033**		
Ordinate intercept a	**-0.850**		**-0.810**		
Uncertainty of a	**0.342**		**0.357**		
Expanded meas. uncertainty W_{CM}	**10.92**	**%**	**11.21**	**%**	
Cologne, Winter					
Uncertainty between Reference	**0.54**	**µg/m³**			
Uncertainty between Candidates	**0.52**	**µg/m³**			
	SN 0111		**SN 0112**		
Number of data pairs	**51**		**50**		
Slope b	**0.991**		**0.956**		
Uncertainty of b	**0.013**		**0.013**		
Ordinate intercept a	**0.656**		**0.645**		
Uncertainty of a	**0.296**		**0.307**		
Expanded meas. uncertainty W_{CM}	**8.87**	**%**	**9.77**	**%**	
Bonn					
Uncertainty between Reference	**0.62**	**µg/m³**			
Uncertainty between Candidates	**0.66**	**µg/m³**			
	SN 0111		**SN 0112**		
Number of data pairs	**50**		**50**		
Slope b	**1.050**		**1.008**		
Uncertainty of b	**0.024**		**0.026**		
Ordinate intercept a	**-0.723**		**-0.471**		
Uncertainty of a	**0.539**		**0.584**		
Expanded meas. uncertainty W_{CM}	**12.67**	**%**	**12.67**	**%**	
Bornheim					
Uncertainty between Reference	**0.42**	**µg/m³**			
Uncertainty between Candidates	**0.47**	**µg/m³**			
	SN 0111		**SN 0112**		
Number of data pairs	**45**		**45**		
Slope b	**1.142**		**1.115**		
Uncertainty of b	**0.051**		**0.050**		
Ordinate intercept a	**-1.370**		**-1.482**		
Uncertainty of a	**0.607**		**0.607**		
Expanded meas. uncertainty W_{CM}	**22.49**	**%**	**17.60**	**%**	
Teddington, Winter					
Uncertainty between Reference	**0.42**	**µg/m³**			
Uncertainty between Candidates	**0.52**	**µg/m³**			
	SN 0111		**SN 0112**		
Number of data pairs	**44**		**44**		
Slope b	**0.964**		**0.963**		
Uncertainty of b	**0.012**		**0.011**		
Ordinate intercept a	**-0.004**		**-0.143**		
Uncertainty of a	**0.223**		**0.208**		
Expanded meas. uncertainty W_{CM}	**9.67**	**%**	**10.21**	**%**	
Teddington, Summer					
Uncertainty between Reference	**0.25**	**µg/m³**			
Uncertainty between Candidates	**0.35**	**µg/m³**			
	SN 0111		**SN 0112**		
Number of data pairs	**44**		**44**		
Slope b	**0.934**		**0.926**		
Uncertainty of b	**0.020**		**0.020**		
Ordinate intercept a	**0.461**		**0.399**		
Uncertainty of a	**0.232**		**0.229**		
Expanded meas. uncertainty W_{CM}	**11.56**	**%**	**13.45**	**%**	
All comparisons, ≥18 µg/m³					
Uncertainty between Reference	**0.60**	**µg/m³**			
Uncertainty between Candidates	**0.80**	**µg/m³**			
	SN 0111		**SN 0112**		
Number of data pairs	**67**		**67**		
Slope b	**0.999**		**0.965**		
Uncertainty of b	**0.020**		**0.021**		
Ordinate intercept a	**0.134**		**0.443**		
Uncertainty of a	**0.642**		**0.65**		
Expanded meas. uncertainty W_{CM}	**12.99**	**%**	**13.69**	**%**	
All comparisons, <18 µg/m³					
Uncertainty between Reference	**0.51**	**µg/m³**			
Uncertainty between Candidates	**0.31**	**µg/m³**			
	SN 0111		**SN 0112**		
Number of data pairs	**248**		**248**		
Slope b	**1.083**		**1.052**		
Uncertainty of b	**0.023**		**0.023**		
Ordinate intercept a	**-0.841**		**-0.744**		
Uncertainty of a	**0.227**		**0.226**		
Expanded meas. uncertainty W_{CM}	**14.04**	**%**	**10.25**	**%**	
All comparisons					
Uncertainty between Reference	**0.53**	**µg/m³**			
Uncertainty between Candidates	**0.45**	**µg/m³**			
	SN 0111		**SN 0112**		
Number of data pairs	**315**		**315**		
Slope b	**1.014**	**not significant**	**0.985**	**not significant**	
Uncertainty of b	**0.008**		**0.008**		
Ordinate intercept a	**-0.225**	**not significant**	**-0.137**	**not significant**	
Uncertainty of a	**0.137**		**0.137**		
Expanded meas. uncertainty W_{CM}	**9.82**	**%**	**10.47**	**%**	

Compilation of results of the equivalence testing, SN 0111 & SN 0112, measured component PM_{10} after slope and offset correction, evaluation algorithm PM_ENVIRO_0011

Comparison candidate with reference according to Standard EN 16450: 2017				
Candidate	FIDAS 200 S	SN	SN 0111 & SN 0112	
		Limit value	50	µg/m³
Status of measured values	Slope & offset corrected	Allowed uncertainty	25	%
All comparisons				
Uncertainty between Reference	**0.58**	**µg/m³**		
Uncertainty between Candidates	**0.65**	**µg/m³**		
SN 0111 & SN 0112				
Number of data pairs	**316**			
Slope b	**1.000**	**not significant**		
Uncertainty of b	**0.009**			
Ordinate intercept a	**0.010**	**not significant**		
Uncertainty of a	**0.208**			
Expanded measured uncertainty WCM	**7.51**	**%**		
All comparisons, ≥30 µg/m³				
Uncertainty between Reference	**0.68**	**µg/m³**		
Uncertainty between Candidates	**1.15**	**µg/m³**		
SN 0111 & SN 0112				
Number of data pairs	**44**			
Slope b	**0.955**			
Uncertainty of b	**0.034**			
Ordinate intercept a	**2.060**			
Uncertainty of a	**1.490**			
Expanded measured uncertainty WCM	**10.86**	**%**		
All comparisons, <30 µg/m³				
Uncertainty between Reference	**0.56**	**µg/m³**		
Uncertainty between Candidates	**0.55**	**µg/m³**		
SN 0111 & SN 0112				
Number of data pairs	**272**			
Slope b	**1.006**			
Uncertainty of b	**0.018**			
Ordinate intercept a	**-0.122**			
Uncertainty of a	**0.300**			
Expanded measured uncertainty WCM	**6.82**	**%**		

Umwelt Bundesamt

Certificate:
0000040212_06 / 20 March 2024

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Comparison candidate with reference according to Standard EN 16450: 2017					
Candidate	FIDAS 200 S		SN	SN 0111 & SN 0112	
			Limit value	50	µg/m³
Status of measured values	Slope & offset corrected		Allowed uncertainty	25	%
Cologne, Summer					
Uncertainty between Reference	**0.80**	**µg/m³**			
Uncertainty between Candidates	**0.26**	**µg/m³**			
	SN 0111		**SN 0112**		
Number of data pairs	**81**		**82**		
Slope b	**1.007**		**0.990**		
Uncertainty of b	**0.027**		**0.027**		
Ordinate intercept a	**-0.221**		**-0.112**		
Uncertainty of a	**0.473**		**0.471**		
Expanded measured uncertainty W_{CM}	**6.97**	**%**	**7.35**	**%**	
Cologne, Winter					
Uncertainty between Reference	**0.53**	**µg/m³**			
Uncertainty between Candidates	**0.64**	**µg/m³**			
	SN 0111		**SN 0112**		
Number of data pairs	**51**		**50**		
Slope b	**1.026**		**0.990**		
Uncertainty of b	**0.014**		**0.014**		
Ordinate intercept a	**0.130**		**0.107**		
Uncertainty of a	**0.385**		**0.384**		
Expanded measured uncertainty W_{CM}	**8.33**	**%**	**6.08**	**%**	
Bonn					
Uncertainty between Reference	**0.38**	**µg/m³**			
Uncertainty between Candidates	**0.87**	**µg/m³**			
	SN 0111		**SN 0112**		
Number of data pairs	**50**		**50**		
Slope b	**1.005**		**0.968**		
Uncertainty of b	**0.026**		**0.028**		
Ordinate intercept a	**1.279**		**1.419**		
Uncertainty of a	**0.792**		**0.834**		
Expanded measured uncertainty W_{CM}	**10.65**	**%**	**9.22**	**%**	
Bornheim					
Uncertainty between Reference	**0.54**	**µg/m³**			
Uncertainty between Candidates	**0.84**	**µg/m³**			
	SN 0111		**SN 0112**		
Number of data pairs	**47**		**47**		
Slope b	**1.086**		**1.043**		
Uncertainty of b	**0.038**		**0.038**		
Ordinate intercept a	**-0.555**		**-0.731**		
Uncertainty of a	**0.707**		**0.694**		
Expanded measured uncertainty W_{CM}	**16.81**	**%**	**9.28**	**%**	
Teddington, Winter					
Uncertainty between Reference	**0.48**	**µg/m³**			
Uncertainty between Candidates	**0.73**	**µg/m³**			
	SN 0111		**SN 0112**		
Number of data pairs	**44**		**44**		
Slope b	**0.963**		**0.934**		
Uncertainty of b	**0.017**		**0.016**		
Ordinate intercept a	**-0.195**		**-0.179**		
Uncertainty of a	**0.426**		**0.405**		
Expanded measured uncertainty W_{CM}	**10.49**	**%**	**15.24**	**%**	
Teddington, Summer					
Uncertainty between Reference	**0.46**	**µg/m³**			
Uncertainty between Candidates	**0.54**	**µg/m³**			
	SN 0111		**SN 0112**		
Number of data pairs	**45**		**45**		
Slope b	**0.912**		**0.910**		
Uncertainty of b	**0.028**		**0.029**		
Ordinate intercept a	**1.264**		**0.868**		
Uncertainty of a	**0.457**		**0.489**		
Expanded measured uncertainty W_{CM}	**13.74**	**%**	**15.68**	**%**	
All comparisons, ≥30 µg/m³					
All comparisons, ≥30 µg/m³	**0.68**	**µg/m³**			
Uncertainty between Candidates	**1.15**	**µg/m³**			
	SN 0111		**SN 0112**		
Number of data pairs	**44**		**44**		
Slope b	**0.983**		**0.928**		
Uncertainty of b	**0.035**		**0.034**		
Ordinate intercept a	**1.474**		**2.590**		
Uncertainty of a	**1.518**		**1.50**		
Expanded measured uncertainty W_{CM}	**11.33**	**%**	**11.63**	**%**	
All comparisons, <30 µg/m³					
Uncertainty between Reference	**0.56**	**µg/m³**			
Uncertainty between Candidates	**0.55**	**µg/m³**			
	SN 0111		**SN 0112**		
Number of data pairs	**274**		**274**		
Slope b	**1.025**		**0.990**		
Uncertainty of b	**0.018**		**0.017**		
Ordinate intercept a	**-0.172**		**-0.102**		
Uncertainty of a	**0.308**		**0.297**		
Expanded measured uncertainty W_{CM}	**8.20**	**%**	**7.17**	**%**	
All comparisons					
Uncertainty between Reference	**0.58**	**µg/m³**			
Uncertainty between Candidates	**0.65**	**µg/m³**			
	SN 0111		**SN 0112**		
Number of data pairs	**318**		**318**		
Slope b	**1.016**	**not significant**	**0.983**	**not significant**	
Uncertainty of b	**0.009**		**0.009**		
Ordinate intercept a	**-0.019**	**not significant**	**0.043**	**not significant**	
Uncertainty of a	**0.212**		**0.209**		
Expanded measured uncertainty W_{CM}	**8.32**	**%**	**8.18**	**%**	