FIDAS® 200

The Fidas® 200 System particulate matter monitor was explicitly developed for environmental regulatory monitoring. It is the market leader for continuous and simultaneous monitoring of ambient $PM_{2.5}$ and PM_{10} in European countries and countries close to Europe. At the same time, the Fidas® 200 system is the most service-friendly, continuously measuring device. The officially recognized possibility to validate the system on-site is unique.

The Fidas® 200 version is a 19″ plug-in unit for air-conditioned monitoring stations (temperature range 5 - 40 °C). Variants are the Fidas® 200 E with remote sensor (for easier integration into stations with existing roof penetration) and the Fidas® 200 S designed for outdoor installation (with stainless steel weatherproof housing), whereby this does not require full air conditioning, but can only be operated with an auxiliary heater for indoor temperatures below 5°C.

All versions are available with different weather stations and sampling tubes of different lengths.

MODEL VARIATIONS

Fidas® 200 E

EN 16450 approved fine dust aerosol spectrometer for simultaneous measurement of $PM_{2.5}$ and PM_{10}, featuring a separate sensor for existing roof glands

Fidas® 200 S

EN 16450 approved fine dust aerosol spectrometer for simultaneous measurement of $PM_{2.5}$ and PM_{10} in weatherproof cabinet for outdoor installation

OPERATION PRINCIPLE

EN 16450 CERTIFIED MEASUREMENT TECHNOLOGY

The Fidas® 200 fine dust monitor uses the recognized measuring technique of optical light scattering according to ISO 21501-1 on the single particle and is equipped with an LED light source of high light intensity, high light stability, and long service life. The instrument's calibration can be easily and quickly checked and, if necessary, adjusted at any time, even when installed, using a monodisperse test aerosol. The sampling system of the Fidas® 200 operates with a volume flow of approx. 0.3 m^3/h.

It is equipped with a Sigma-2 sampling head according to VDI 2119, which enables representative sampling even in strong winds, as well as a drying section, which demonstrably prevents falsification of the measurement due to condensation effects at high humidity.

The Fidas® 200 fine dust monitor offers a wide range of communication options and allows complete remote control and remote maintenance of the systems as well as data access online via palas.de. The supplied software offers a wide range of options for evaluation (including extensive statistics and mean value calculations) and for exporting measurement data.

Comparison measurements

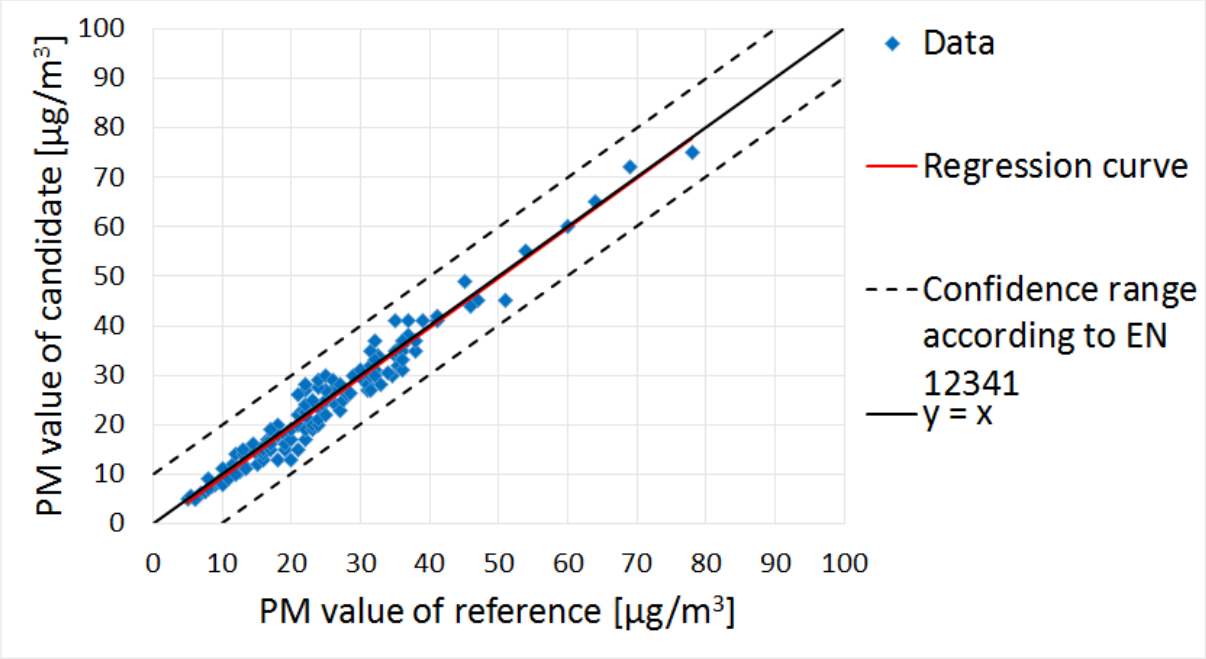

Fig. 3: PM_{10} reference equivalence function of the Fidas® 200 S in comparison with a reference small-filter device during suitability testing from the "Report on supplementary testing of the Fidas® 200 S respectively Fidas® 200 measuring system manufactured by Palas GmbH for the components suspended particulate matter PM_{10} and $PM_{2.5}$, TÜV report no.: 936/21227195/B".

Multiple separation curves can be applied simultaneously to the same size distribution data, which allows simultaneous calculation and output of, e.g., PM_{10} and $PM_{2.5}$ and other mass fractions.

Extensions/Accessories

The drying section (Intelligent Aerosol Drying System - IADS) is controlled based on the outside temperature, air pressure, and relative humidity. A weather station supplies these measured values; wind speed, wind direction, and precipitation can also be measured on request. A filter holder for planar filters (ø 47 mm or ø 50 mm) is integrated into the sampling system, which enables, for example, subsequent chemical analysis of the aerosol composition.

Benefits

- Type-approved and certified according to latest EN requirements (EN 15267)
- Continuous and simultaneous real-time measurement of multiple PM values
- Additional information on particle number concentration and particle size distribution
- Long service life
- Low maintenance
- External check of calibration on site possible
- Intuitive and easy to operate
- Reliable function, very high data availability (> 99 %)
- Permanent monitoring of status, among others online monitoring of calibration
- No radioactive material and no consumables
- Low energy consumption

DATASHEET

Measuring principle	Optical light scattering at single particles
Reported data	PM_1, $PM_{2.5}$, PM_4, PM_{10}, TSP, C_N, particle size distribution, ambient pressure, ambient temperature, rel. ambient humidity
Measurement range (number C_N)	0–20.000 particles/cm^3
Measurement range (size)	0.18–18 μm (certified range, other measuring ranges on request)
Measurement range (mass)	0–10,000 $\mu g/m^3$
Measurement uncertainty	9.7 % for $PM_{2.5}$, 7.5 % for PM_{10} (expanded measurement uncertainty according to EN 16450, TÜV Report)
Volume flow	4.8 l/min $\triangleq$ 0.3 $m^3/h \pm 3\%$ (24h), complient with EN 16450
Size channels	64 (32/decade)
Time resolution	1 s–24 h
Interfaces	USB, Ethernet (LAN), RS-232, Wi-Fi
User interface	Touchscreen, 800 • 480 pixel, 7″ (17.78 cm)
Protocols	UIDEP, UDP, ASCII, MODBUS, Bayern-Hessen
Data logger storage	Capacity for 2 years continuous operation at 60 s storage interval
Software	PDAnalyze
Data acquisition	Digital, 20 MHz processor, 256 raw data channels
Light source	Long term stable LED
Housing	Table housing, optional: with mounting brackets for rack-mounting
Operating system	Windows 10 IoT Enterprise
Power supply	115 – 230 V, 50/60 Hz
Installation conditions	+5–+40 °C
Response time	< 2 s
Sampling head	Passive collector Sigma-2
Dimensions	450 • 320 • 180,5 mm (H • B • T), 19″
Weight	Control unit: 9.3 kg, sample head: 2.25 kg, sample tube: 4.5 kg
Sampling system	Drying of the aerosol by IADS (Intelligent Aerosol Drying System)
Noise emission	< 70 dB(A)
Fuse	T2A
Resolution	0.1 $\mu g/m^3$
Power consumption	Normal operation: 60 W, max. 200 W
Data Management	Prepared for connection to the Palas Cloud MyAtmosphere (″MyAtmosphere-ready″); internet access and separate registration required.MyAtmosphere terms and conditions of use apply.

APPLICATIONS

- Regulatory pollution control in monitoring networks
- Ambient air monitoring campaigns
- Long-term studies
- Emission source attribution
- Emission dispersion studies (e.g. fires, volcanoes)

Mehr Informationen:
https://www.palas.de/product/fidas200