FIDAS® 200

The Fidas® system was developed specifically for use in regulatory environmental monitoring. It is the market leader for the continuous and simultaneous monitoring of $PM_{2.5}$ and PM_{10} ambient concentrations in European countries and those that follow European standards. Fidas® 200 is a 19-inch rack-mount unit designed for use in climate-controlled monitoring stations (temperature range 5–40 °C). Fidas® 200 E features a remote sensor (for easier integration into stations with existing roof penetrations). Fidas® 200 S (with a stainless steel weatherproof housing) is designed for outdoor installation. Depending on site conditions, protection from direct sunlight may be required. All versions are available with different weather stations and sampling tubes of varying 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 particulate matter monitor uses the recognized optical light-scattering measurement technology for individual particles in accordance with ISO 21501-1 and is equipped with an LED light source that offers high light intensity, high light stability, and a long service life. The instrument's calibration can be quickly and easily verified at any time—even when installed—using a monodisperse test aerosol, and adjusted if necessary.

The Fidas® 200's sampling system operates at a flow rate of approximately 0.3 m³/h.

It is equipped with a Sigma-2 sampling head in accordance with VDI 2119, which enables representative sampling even in strong winds, as well as a drying section that has been proven to prevent measurement distortion caused by condensation effects at high humidity.

The Fidas® 200 particulate matter analyzer offers a wide range of communication options and allows for both complete remote control and remote maintenance of the systems as well as online data access via palas.de. The included software provides a variety of options for data analysis (including comprehensive statistics and mean value calculations) and for exporting measurement data.

Comparison Measurements

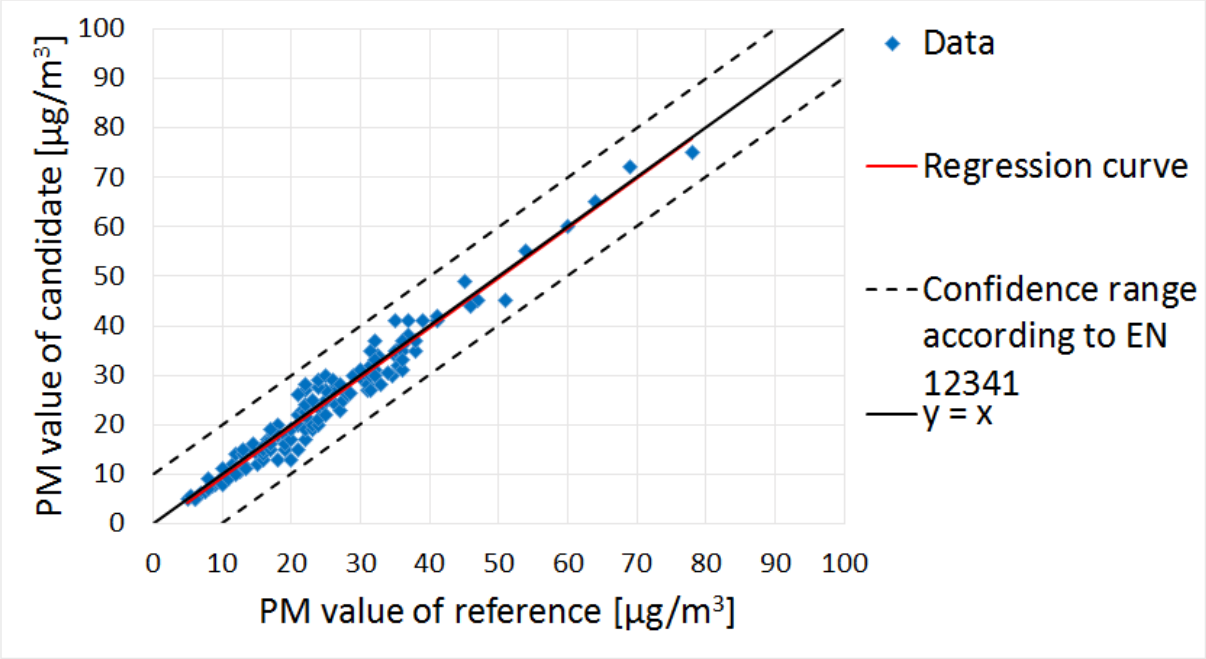

Fig. 1: Reference equivalence function for PM_{10} of the Fidas® 200 S compared to a reference small-filter device as part of the suitability test, taken from "Report on the Supplementary Test of the Fidas® 200 S and Fidas® 200 Air Pollution Monitoring Devices from PALAS GmbH for the Components PM_{10} and $PM_{2.5}$ Particulate Matter, TÜV Report: 936/21227195/B"
Different separation curves can be applied simultaneously to the same size distribution, allowing, for example, $PM_{2.5}$ and PM_{10}, as well as other mass fractions, to be calculated and displayed at the same time.

Extensions/Accessories

The drying section (Intelligent Aerosol Drying System – IADS) is controlled based on the outside temperature, air pressure, and relative humidity. These measured values are provided by a weather station; upon request, wind speed, wind direction, and precipitation can also be measured. A filter holder for flat 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

NORMS AND CERTIFICATES

VDI 4202-1, VDI 4203-3, EN 12341, EN 14907, EN 16450, EU-Äquivalenzleitfaden, EN 15267-1/-2, ISO 21501-1, LCSQA (2023)

DATASHEET

Measuring principle	Optical light scattering at single particles, 90° sideways scattering
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)	0.178 - 17.8 μm (additional: 0.4 - 40μm, 1-100μm)
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, 450, (see Qal1.de))
Volume flow	4.8 Nl/min (25°C, 1013 hPa) < +/- 1% (MFC-controlled diaphragm pump)
Size channels	64 (32/decade)
Time resolution	1s - 24h variable adjustable
Interfaces	USB, Ethernet (LAN), RS-232, Wi-Fi (Dongle), digital
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
Data acquisition	Max. 256 raw data channels (32 size channels/decade)
Light source	Polychromatic LED
Housing	19″, 4U (desktop and rack-mount housing)
Operating system	Windows 10 IoT (LTSC)
Power supply	90 – 264 V, 50/60 Hz
Installation conditions	Operating temperature: +5–+40 °C, operating humidity: 0–100% (non-condensing)
Sampling head	Sigma head (non-selective passive collector)
Dimensions	482 • 320 • 182 mm (W • D • H)
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)
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”)
Repeatability	3 %

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/en/product/fidas200