FIDAS® SMART 100

Fidas® Smart 100 is the most advanced compact measuring instrument for ambient air quality. It continuously and reliably analyzes airborne fine dust particles in the size range of 0.18 – 18 μm. The Fidas® Smart is approved by TÜV for $PM_{2.5}$ and PM_{10} for official measurements.

In addition to the fine dust fraction relevant for regulatory immission control, Fidas® Smart 100 simultaneously calculates and stores PM_1, PM_4, total dust, particle number concentration, and their particle size distribution, including pressure, temperature, humidity, CO_2.

MODEL VARIATIONS

Fidas® Smart 100 E

Fine dust measuring device for existing roof openings for measuring $PM_{2.5}$ and PM_{10} (EN 16450-certified) and other parameters such as PM_1, PM_4, TSP

OPERATION PRINCIPLE

COMPACT MEASURING INSTRUMENT FOR THE DETERMINATION OF FINE DUST

The system works on the 90-degree scattered light measurement principle on a single particle, considering signal duration and shape. Technology and algorithms were developed based on the EN 16450-certified Fidas ® 200[1] . Automatic calibration tracking of the measurement system allows operation for up to two years without recalibration. If necessary, the calibration status can be checked and corrected using a test dust calibrated by Palas.

Palas aerosol spectrometers are thus the only optical fine dust measuring instruments that can be calibrated against a traceable standard by the user at the point of operation.

Fidas® Smart 100 features Ethernet, WLAN, and mobile phone connectivity. All measured values are calculated and recorded directly and, if desired, can be transferred to Palas' own cloud MyAtmosphere[2] directly for visualization or further processing.

Comparison measurement

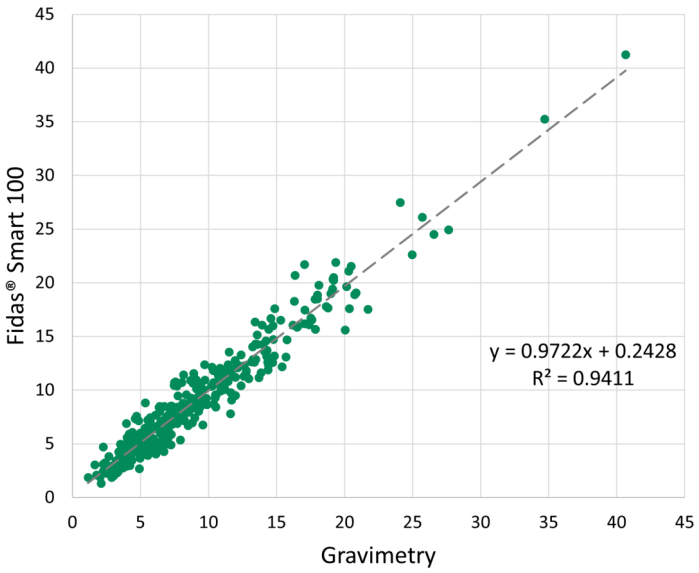

Fig. 1: Fidas® Smart 100 vs. Gravimetry $PM_{2.5}$

[1] Fidas® 200: https://www.palas.de//product/fidas200
[2] MyAtmosphere: https://my-atmosphere.net/

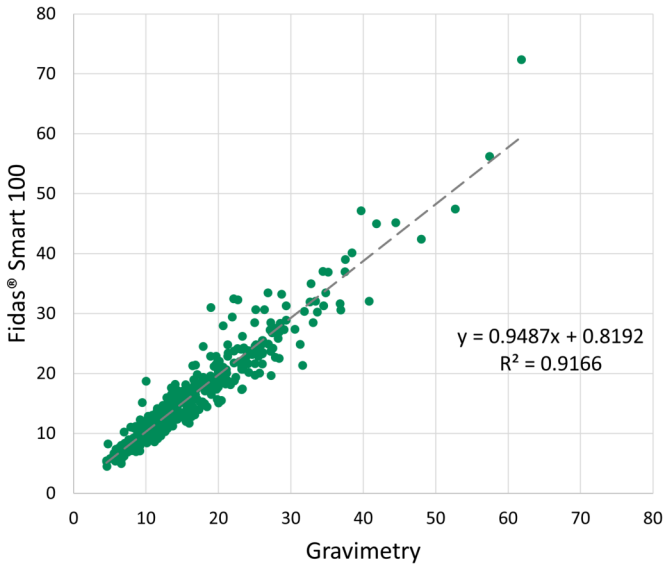

Fig. 2: Fidas® Smart 100 vs. Gravimetry PM_{10}

Extensions/Accessories

Fidas® Smart 100 is equipped with robust weather protection and can be combined with various commercially available mounting systems via a VESA mount.

BENEFITS

- Technology based on the certified Fidas® 200 series (EN16450 and MCERTS); simultaneous measurement of C_n, PM_1, $PM_{2.5}$, PM_4, PM_{10}
- High accuracy due to advanced algorithms
- Long-term stable: up to 2 years of operation without calibration possible.
- On-site calibration with test dust (NIST traceable) is possible
- Operation with AC or DC power source
- Long-life blower for sample airflow
- Regulated aerosol heating to avoid condensation

NORMS AND CERTIFICATES

ISO 21501-1, EN 15267, EN 16450

DATASHEET

Measuring principle	Optical light scattering at single particles, 90° sideways scattering
Reported data	$PM_{2.5}$, PM_{10} (optional PM_1, PM_4, $PM_{xCE,}$TSP), C_N, CN, T, rH, p, CO_2, particle size distribution, AQI
Measurement range (number C_N)	0 – 20,000 particles/cm³
Measurement range (size)	0.178- 17.8 μm
Measurement range (mass)	0 – 20,000 μg/m³
Measurement uncertainty	9.0 % for $PM_{2.5}$, 9.7 % for PM_{10} (expanded measurement uncertainty according to EN 16450, TÜV Report)
Volume flow	1 l/min +/-1.5% (-20 to +50°C), time-of-flight volume flow control
Size channels	64 (32/decade)
Time resolution	1s - 60s
Interfaces	USB, Ethernet (LAN), Wi-Fi, 4G (optional via LTE stick)
User interface	Touchscreen 800 • 480 Pixel, 5″ (12,7 cm)
Protocols	UDP, ASCII, Modbus, Bayern/Hessen
Data logger storage	Approx. 6 GB data storage (2 years)
Data acquisition	Max. 256 raw data channels (32 size channels/decade)
Light source	Polychromatic LED
Housing	Polymer housing with weather protection and tripod/wall/pole mount option
Operating system	Windows 10 IoT (LTSA)
Power supply	115 – 230 V, 50/60 Hz
Power consumption	Normal operation: 15 W, max. 60 W
Installation conditions	Operating temperature: -20 to +50 °C (weatherproof), operating humidity: 0 to 100% (non-condensing)
Sampling head	Sigma head (non-selective passive collector)
Dimensions	240 • 320 • 190 mm (H • W • D)
Weight	3.9 kg
Sampling system	Intelligent Aerosol Drying System (Compact-IADS) -Version E: extended inlet for installation in measuring containers
Noise emission	< 40 dB(A)
Resolution	0.1 μg/m^3
Data Management	Prepared for connection to the Palas Cloud MyAtmosphere (“MyAtmosphere-ready”)

APPLICATIONS

- Regulatory environmental monitoring
- Construction sites
- Networks with roads, railways, and ports
- Smart City
- Occupational safety
- Industry

Mehr Informationen:
https://www.palas.de/product/fidas-smart100