FIDAS® SMART 100

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

DESCRIPTION

Fidas® Smart 100 the currently most advanced compact measuring instrument for the determination of ambient air quality, continuously and reliably analyzes airborne fine dust particles in the size range 0.175 - 20 μm and is released and approved by TÜV for $PM_{2.5}$ and PM_{10} for official measurements. A newly developed algorithm for mass determination calculates PM values via optical scattered light measurement on the single particle, taking into account signal duration and shape. Measurement system and algorithms were developed based on the technology of the EN 16450-certified Fidas® 200.

The heated aerosol inlet ensures that the measurement result is independent of humidity or mist droplets. Fidas® Smart 100 thus achieves high accuracy under all weather conditions.

In addition to the fine dust fraction $PM_{2.5}$ and PM_{10} which is relevant for official immission control, Fidas® Smart 100 simultaneously calculates and stores PM_1, PM_4, the total dust load, the particle number concentration C_n as well as the particle size distribution. Fidas® Smart 100 thus provides comprehensive and accurate information on fine dust particles, which in this form is only possible with a counting single particle measurement method.

Fidas® Smart 100 is designed for unattended continuous operation and features an exceptionally durable blower for the sample air stream. The aerosol sampling, aerosol conditioning and optical sensor system are resistant to contamination and can still be cleaned by the user if necessary.

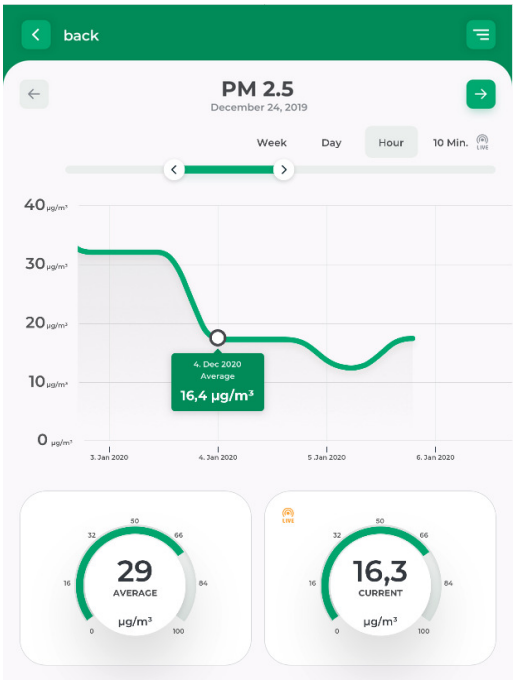
Automatic calibration tracking of the measuring system ensures unprecedented long-term stability and allows operation for up to two years without recalibration. The calibration status can be checked by means of a test dust calibrated by Palas®.

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

Pict. 1: Fidas® Smart 100 mounting

Fidas® Smart 100 is equipped with a robust, stylish weather protection and can be combined with a variety of commercially available mounting systems via a VESA mount. Special versions for heavy-duty environments are available on request.

Fidas® Smart 100 records air temperature, pressure and relative humidity with integrated sensors. Additional sensors for gaseous pollutants are in development.



Pict. 2: Web interface

Fidas® Smart 100 features fast data interfaces and allows real time access over Ethernet, Wi-Fi or cellular network. Since all results are calculated and recorded within the analyzer it requires no external data processing by, e.g., cloud computing. Users retain full control over their data and decide over information access. Fidas® Smart 100 can provide numerical data, using various communication protocols, as well as visualize information on any type of device using a modern web interface. Its compact design simplifies installation and integration in an existing infrastructure.

Benefits

- Technology based on the type approved Fidas® 200 series (EN16450 and MCERTS); simultaneous measurement of C_n, PM_1, $PM_{2.5}$, PM_4, PM_{10}
- Computation of air quality index based on measurements of particulates, CO_2, and VOC
- High accuracy due to advanced algorithms
- Long term stable due to self calibration for measurement of flow rate, particulates, and gaseous pollutants
- 2 years operation without calibration; re-calibration with NIST traced test powder possible on site
- Operates on AC or DC

DATASHEET

Measuring principle	Optical light scattering of single particles
Reported data	PM1, PM2.5, PM4, PM10, TSP, CN, particle size distribution, ambient pressure, ambient temperature, rel. ambient humidity, CO2, TVOC, Air Quality Index, source indication (depending on configuration)
Measurement range (number C_N)	0 – 20,000 particles/cm³
Size channels	64 (32/decade)
Measurement range (size)	0.175 – 20 μm
Measurement range (mass)	0 – 20,000 μg/m³
Measurement uncertainty	R2 > 0.98 for $PM_{2.5}$ and R2> 0.94 for PM_{10} versus EN 16450-certified Fidas® 200 (15 min average, each)
Volume flow	1.0 l/min $\hat{=}$ 0.06 m³/h
Data acquisition	Digital, 22 MHz processor, 256 raw data channels
Light source	Long term stable LED
Power consumption	Normal operation: 15 W, max. 60 W
User interface	Touchscreen 800 • 480 pixel, 5″ (12.7 cm)
Weight	3.9 kg
Operating system	Windows 10 IoT Enterprise
Data logger storage	10 GB
Software	PDAnalyze
Response time	1 s
Aerosol conditioning	Thermal with compact IADS
Installation conditions	-20 – +50 °C, weatherproof
Interfaces	USB, Ethernet (LAN), Wi-Fi, 4G
Protocols	UDP, ASCII
Dimensions	240 • 320 • 190 mm (H • W • D)
Linearity	0.95 – 1.05 (measured against EN 16450 certified Fidas® 200)

APPLICATIONS

- Industry:
  - Production processes
  - Bulk material handling (mixing, discharge, storage, packaging etc.)
  - Fenceline Monitoring
- Construction sites: Roads, railroads, demolition sites
- Buildings: Schools, kindergartens, hospitals, hotels, offices, public service buildings
- Residential buildings near construction sites or other polluted areas
- Public transportation: Airports, train stations, tramway underground stations, cruise ships, passenger cabin, e.g. in tram, train

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

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