AQ GUARD SMART 1000



DESCRIPTION

AQ Guard Smart 1000 is a compact and cloud-ready measuring instrument for the determination of ambient air quality. In addition to the measuring principle of optical scattered light measurement of single particles based on the technology of the EN 16450-certified Fidas® 200 for fine dust measurement.

The AQ Guard Smart received MCERTS certification as an Indicative Ambient Particulate Monitor[1] .

The system is designed for the requirements of outdoor air measurement in the smart city environment to improve granularity while maintaining high comparability to official measurements, for environmental monitoring and health protection.

Thus, the AQ Guard Smart 1000 supports model calculations of the current fine dust pollution and forecasts, which will require stricter limit values in the future and thus the necessary lower uncertainties for local measurements. Seasonal and cyclical particulate matter forecasts can be carried out in a more differentiated manner and with higher accuracy. This enables timely planning of measures to prevent particulate matter pollution and protect health, differentiated implementation of measures to protect the population, and implementation of abatement strategies to reduce pollution, e.g., through predictive traffic control.

[1] MCERTS: https://www.csagroup.org/en-gb/services/mcerts/mcerts-product-certification/mcerts-certified-products/mcerts-certified-products-indicative-ambient-pa



Fig. 1: AQ Guard Smart in use on the volcanic island of La Palma

For a better understanding of the fine dust input and its cause, the device is optionally available with a corresponding weather station, which provides supplementary meteorological information. Sensors that measure temperature, humidity and pressure are integrated as standard.



Fig. 2: AQ Guard Smart on a tripod

The AQ Guard Smart 1000 is the most modern, continuous air quality measurement system available, which also offers manufacturers and users of lower-resolution sensors a comparison option and thus a plausibility check before the measured values are made available for further processing in formation and dispersion studies.

The **cloud application** MyAtmosphere[2] created for this purpose enables both private and governmental operators to retrieve current measured values directly, to compare them with other devices without delay and further processing, or to integrate them into their own systems/environments via an optional programming interface (API). It speaks for itself that the usual protocols such as ASCII, MODBUS via TCP or UDP are also integrated.

[2]Link auf My Attmosphere: http://www.my-atmosphere.net/

BENEFITS

- Technology based on the certified Fidas® 200 series (EN 16450 and MCERTS)
- Simultaneous measurement of PM1, PM2.5, PM4, PM10, Cn with high temporal resolution
- Easy and fast installation
- Data visualization via cloud "MyAtmosphere
- Communication via GPRS/3G/4G/Ethernet/Wi-Fi, optional: LoRaWAN
- Extendable with weather station / LoRa / solar protection

DATASHEET

Measuring principle	Optical light scattering of 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, optional: SO_2, CO, NO_2, O_3
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 – 100 mg/m^3 (depending on the composition of the aerosol)
Measurement uncertainty	< 15 % for $PM_{2.5}$, < 20 % for PM_{10} (expanded measurement uncertainty according to EN 16450, corrected – MCERTS)
Time resolution	1 min, moving average 1 min
Light source	Long term stable LED
Power consumption	1.2 A in standard operation, 1.7 A with additional heating
Weight	Approx. 6 kg
Installation conditions	-20 – +50 °C
Interfaces	USB, Ethernet (LAN), Wi-Fi, 3G/4G via Modem, optional: LoRaWAN
Protocols	ASCII, MODBUS, UDP
Power supply	12 V, supplied power supply
Special features	Heated inlet, Accessories: Mast / tripod mount, optional: weather station, sunshade, LoRa modem
Dimensions	530 • 270 • 208 mm (H • W • D)
Data management	Cloud connection to MyAtmosphere (separate registration necessary; cloud license fees may apply or SIM card required)

APPLICATIONS

- Urban air quality monitoring
- Smart city projects
- Open pit mining and landfills
- Formation and dispersion studies
- Construction sites
- Immission monitoring of industrial plants
- Measurement of dust emissions from road and rail traffic as well as ports
- Risk areas (natural and anthropogenic)

Mehr Informationen:
https://www.palas.de/product/aq-guard-smart1000

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