AQ Guard

AQ Guard, currently the most advanced compact analyzer for determining indoor air quality, continuously and reliably analyses airborne fine dust particles in the range 0.175 – 20 μm ([*1] IAHP-Package starting from 0.15 μm). A newly developed mass conversion algorithm calculates PM values based on single particle optical light scattering, considering signal duration and shape.

AQ Guard simultaneously calculates and stores PM_1, $PM_{2.5}$, PM_4, and PM_{10}, the total dust load, the particle number concentration CN, and the particle size distribution. Thus, AQ Guard provides comprehensive, accurate information on indoor particulate matter. This is only possible in this form with a counting single particle measurement method.

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}
- With the "Indoor Air Hygiene Professional" extension: increased counting efficiency for nano-scaled particles from 0.15 μm
- Computation of air quality index based on measurements of particulates, CO_2, and VOC
- Estimation of infection risk based on measurements of CO_2 and particulate matter
- High accuracy due to advanced algorithms
- Long term stable due to self-calibration for measurement of flow rate, particulates, and gaseous pollutants
- Two years operation without calibration
- Operates on AC, DC, or power-over-Ethernet

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 cabins, e.g., in trams, train

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, CO_2, TVOC, Infection Risk Index, Air Quality Index (depending on configuration)
Measurement range (number C_N)	0 – 20,000 particles/cm³	Measurement range (size)	0.175 – 20 µm (with IAHP-Package installed, starting from 0.150 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 l/min ≙ 0.06 m³/h	Size channels	64 (32/decade)
Interfaces	USB, Ethernet (LAN), Wi-Fi, 4G (optional via LTE stick)	User interface	Touchscreen, 800 • 480 pixel, 5″ (12.7 cm)
Protocols	UDP, ASCII	Data logger storage	10 GB
Software	PDAnalyze	Data acquisition	Digital, 22 MHz processor, 256 raw data channels
Light source	Long term stable LED	Operating system	Windows 10 IoT Enterprise
Power consumption	< 20 W	Installation conditions	-20 – +50 °C
Response time	1 s, moving average configurable	Aerosol conditioning	Optional: thermal with compact IADS

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