



*Count what is countable,
measure what is measurable,
and what is not measurable,
make measurable.*

Galileo Galilei



Next Generation Air Quality Monitoring: AQ Guard

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The Challenge: Problems of Current Fine Dust Monitoring

- Existing ambient air monitoring networks are not dense enough to detect local pollution
→ Many fine dust sources go undiscovered
- Monitoring of industrial or civil works often doesn't require type approved technology
- Fidas® 200 is too expensive for large-scale use,
Fidas® Frog is not suitable for stationary use, as well as too expensive
- Cheaper low cost sensors are known to be inaccurate
- Competing devices in the mid-price segment are nephelometers,
i.e. "tuned" low-cost devices, and also inaccurate under certain conditions

Our Solution: AQ Guard System

- Compact state-of-the-art fine dust measuring devices
- Same technology as much more expensive type-approved analyzers
- Suitable for monitoring indoor as well as for ambient air pollution





AQ Guard: Indoor Air

- Combination of advanced technology and attractive design
- Integrated display (with touch functionality) and various interfaces
- Access to PM_{2.5} and PM₁₀ data,
Fine Dust Professional package for additional PMs and PSD
- MonoDust calibration similar to Fidas 200 & Frog
USP: On-site calibration with traceable standard, user cleanable sensor
- Upgrade with *Healthy Rooms* package for
 - Sensors for CO₂, TVOC
 - Air Quality Index
 - **USP:** *Germ indicator* (patent pending)
- Power over Ethernet capable



AQ Guard Ambient: Outdoor Air

- AQ Guard + protective cover + compact IADS = AQ Guard Ambient
- IADS compensates humidity influence on PM data even at 100% rH, and eliminates fog droplets (proven in comparison with Fidas® 200)
- Reasonably priced device for ambient air monitoring, with PM measured as precisely as by the type approved Fidas® 200
- MonoDust calibration capable similar to Fidas® 200 & Frog
USP: On-site calibration with traceable standard, user cleanable sensor
- No local network available? 4G *Connectivity* package
- Data is always under control of the user - no external processing or cloud services required



Features

	AQ Guard	AQ Guard Ambient
PM _{2.5}	●	●
PM ₁₀	●	●
°C	●	●
%rH	●	●
p _{abs}	●	●
Upgrade Packages		
Outdoor (Outdoor housing, IADS compact)	○	●
Fine Dust Professional (PM ₁ , PM ₄ , TSP, C _n , PSD)	○	○
Healthy Rooms (CO ₂ , VOC, AQI, Germ Indicator)	○	
Outdoor Gas (CO ₂ , VOC)		○
Connectivity (4G modem, ...)	○	○

● Included ○ Optional

Specifications

Technical data	
Measuring range (size)	0.175 – 20 µm
Measuring principle	90° optical light scattering, single particle counting
Measuring range (number C _N)	0 – 20,000 particles/cm ³
Reported data	PM ₁ , PM _{2.5} , PM ₄ , PM ₁₀ , TSP, C _N , particle size distribution, pressure, temperature, relative humidity, CO ₂ , TVOC, germ indicator, air quality index (optional)
Linearity	0.95 – 1.05 (measured against EN 16450 certified Fidas® 200)
Interfaces	USB, Ethernet, WiFi, 4G (optional) Data access by UDP ASCII, modbus TCP, ... (available Fidas protocols can be ported over to AQ Guard)
Data storage	10 GB
Installation conditions	Operating temperature -20° – +50° C, AQ Guard Ambient is weatherproof with IP 54 protective cover
Power supply	12V DC or Power over Ethernet (POE)*
Power consumption	< 15 W (AQ Guard) 15 – 50 W (AQ Guard Ambient)
Weight	AQ Guard: 2.4 kg AQ Guard Ambient: 3.9 kg
Dimensions (H • W • D, mm)	AQ Guard: 175 • 280 • 140 mm AQ Guard Ambient: 240 • 320 • 190 • mm

Application Ideas

Public spaces

Classrooms & lecture halls, nurseries, hospitals, hotels, offices, public service buildings

Residential buildings

Near construction sites or other polluted areas



Application Ideas

Industry

Production processes, bulk material handling (mixing, discharge, storage, packaging)
Fence line monitoring for refineries, open pit mining

Civil works

Road & railroad construction, tunnel works, landfills, demolition sites



Application Ideas

Public transport

Train, bus, tram & underground stations, air & naval ports

Passenger cabin, e.g. in tram, train



Competition Overview

	Palas® AQ Guard Ambient	Turnkey APM Osiris	Aeroqual Dust Sentry	TSI Environmental DustTrak™	Casella CEL-712 Dust Detective Kit
Environmental Mode	PM _{2.5} , PM ₁₀ , CO ₂ , VOC, AQI (+ PM ₁ , PM _{tot} , PM ₄ , C _N , PSD)	TSP, PM ₁ , PM _{2.5} , PM ₁₀	TSP <u>or</u> PM [1 value only]	PM _{tot} , PM ₁ , PM _{2.5} , PM ₁₀	TSP <u>or</u> PM [1 value only]
Measuring range	0 – 20,000 µg/m ³	0 – 6,000 µg/m ³	Not specified	0 – 150,000 µg/m ³	1 µg/m ³ – 250 g/m ³ ??
Particle size range	0.175 – 20 µm (64 size channels per decade)	0.5 – 20 µm	Not specified	Not specified	Not specified
Detector	90° optical light scattering	Turnkey laser nephelometer	Nephelometer	Nephelometer	Nephelometer
Detection limit	0.1 µg/m ³	0.01 µg/m ³	Not specified	1 µg/m ³	1 µg/m ³
Operating temperature	-20° – +50°C	-5°C – +50°C	Not specified	-20°C – +50°C	0 °C – +40 °C
Data storage	10 GB	Internal with separate battery backup	Not specified	45 days	Not specified
Price	€ 9,390 (Basic Ambient Version)	€ 6,500 – 7,000 + Extras	~ € 6,750 [\$7,500]	> € 12,000 fully featured	~ € 5,000



Commercial

- SP Demo units available at the usual conditions (50%, keep 3 years)
- Test units for reference labs / leading networks free of charge
- Basic version is fine dust only
- Add-on packages add more hardware & software features, prices are on the product page
- Palas will apply for certification





*Thank you for
your attention!*