

AQ Guard System



Air Quality Measurements made easy.

The air that we breathe

Every one inhales 12 m³ of air per day, and all pollutants contained. This alone should raise our attention to the quality of the air that we breathe.

Why air pollution needs to be measured

Contamination of air with fine and ultra fine particles has become one of the major health risks worldwide. According to the World Health Organization (WHO), particulate pollution increases the risk of heart attacks, strokes and lung cancer, as well as many other diseases. On a global average, every person loses three years of lifetime due to polluted air.

Our solution to the challenge: AQ Guard

Increasing geographical coverage and density of an existing air monitoring network should not result in lower data quality. Usage of low-cost sensors may cause severe doubts about general data validity, and integrity. The solution: Compact state-of-the-art fine dust measuring devices, equipped with the same technology as type-approved analyzers for monitoring indoor and ambient air pollution.



Small Device. Big Power.

Knowledge is power. Know the air that you breathe

Palas® AQ Guard and AQ Guard Ambient provide exact, reliable indoor and ambient air quality data, as standalone units as well as in a network of devices. Take your decisions based on precise information.

The new standard for compact fine dust monitors

AQ Guard is the first compact, stationary fine dust monitor equipped with the unique optical particle sensor of Fidas® 200. Its principle of counting and sizing individual particles, and Palas® highly effective aerosol drying technology ensure exact measurements under any conditions, even at 100% relative humidity (rH). AQ Guard raises the bar in its class.

Versatile, reliable and stable

AQ Guard is not just the most advanced compact fine dust monitor, it allows you to manage application-specific requirements based on your feature selection. Due to advanced self diagnostics AQ Guard provides reliable data for up to two years without calibration. This not only means that you can trust data but also helps to reduce operation costs

Reference quality data at the price of a portable device

AQ Guard makes Palas® unique detection principle and algorithms for determining particulate matter pollution available at the price of a hand-held instrument.

The right choice: Cutting edge aerosol technology from Palas®

Based on decades of experience in aerosol technology Palas® set new standards for regulatory ambient air dust monitoring in 2014, when the Fidas® 200 series was introduced. Go for the technology that improved quality and reliability of ambient air fine dust detection in more than 1,200 monitoring stations worldwide.

AQ Guard

AQ Guard combines advanced technology and an attractive design, which elegantly integrates in offices, public spaces, or vehicle cabins.

An integrated display and various interfaces give access to PM_{2.5} and PM₁₀ data, and more – including a high resolution particle size distribution – is optionally available in the *Fine Dust Professional* package.

The *Healthy Rooms* package upgrades AQ Guard with sensors for carbon dioxide and volatile organic compounds, and provides an air quality index. *Healthy Rooms* includes a unique feature for indoor air monitoring:

Germ indicator (pat. pending), an innovative combination of sensor technology and software, visualises the probability of air contamination with potentially infectious exhaled particles.



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AQ Guard Ambient

A protective cover and a heated aerosol inlet turn the AQ Guard into the AQ Guard Ambient. The compact Intelligent Aerosol Drying System compensates humidity influence on PM data even at 100% rH and can even eliminate cloud and fog droplets,

AQ Guard Ambient is the perfect solution for those in need of reasonably priced monitoring of areas, with PM measured as precisely as by the type approved Fidas® 200. The capability to calibrate on-site to a NIST traceable standard ensures equivalence with data from official networks.

If no local network is available, the *Connectivity* package comes in. No matter how users access the data, it is always under their control. No external processing is required.



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	AQ Guard	AQ Guard Ambient
PM _{2.5}	●	●
PM ₁₀	●	●
°C	●	●
% relative Humidity	●	●
p _{abs}	●	●
Enhancement Packages		
Outdoor Package (Outdoor housing, IADS)	○	●
Fine Dust Professional Package (PM ₁ , PM ₄ , TSP, CN, PSD)	○	○
Healthy Rooms Package (CO ₂ , VOC, AQI, Germ Indicator)	○	
Outdoor Gas Package (CO ₂ , VOC)		○
Connectivity Package (4G Modem)	○	○

- included
- optional

Technical features

Measuring principle (dust)	Single particle optical light scattering with evaluation of signal duration and shape, advanced mass conversion algorithm
Measuring range (dust)	<p>PM₁, PM_{2.5}, PM₄, PM₁₀, TSP 0 – 20,000 µg/m³</p> <p>Total number concentration C_N: 0 - 20,000 particles/cm³</p> <p>Particle size 0.175 - 20 µm, distribution in 128 size channels</p>
Measuring range (gas)	<p>Temperature: -20 - +60 °C</p> <p>Relative humidity: 0 - 100%</p> <p>Pressure: 700 - 1100 hPa</p> <p>CO₂: 0 - 5,000 ppm</p> <p>TVOC: 0 - 60,000 ppb</p>
Linearity (dust)	0.95 - 1.05
Accuracy (dust)	<p>R² > 0.98 for PM_{2.5}</p> <p>R² > 0.94 for PM₁₀</p> <p>(15-min averages, vs. Fidas[®] 200)</p>
Resolution (dust)	0.1 µg/m ³

Zero point (dust)	0 µg/m ³ based on 24 h average
Air sampling rate	1.0 l/min = 0.06 m ³ /h
Response time (PM data)	Down to 1 s (user definable)
Interfaces	<p>5" high resolution color display with touch functionality</p> <p>USB, Ethernet, WiFi, 4G (optional)</p>
Data storage	10 GB (internal)
Communication	<p>UDP ASCII, ASCII/TCP, Modbus RTU, UIDEP, Bayern-Hessen</p> <p>Built-in web server for universal access</p>
AirQualityIndex	based on PM _{2.5} , PM ₁₀ , CO ₂ , TVOC
Operating conditions	-20 - +50 °C
Power	<p>12 V ±10% DC, consumption: < 15 W (AQ Guard), PoE option</p> <p>15 - 50 W (AQ Guard Ambient)</p>
Weight	<p>2.4 kg (AQ Guard)</p> <p>3.9 kg (AQ Guard Ambient)</p>
Dimensions (W · D · H)	<p>280 · 140 · 175 mm (AQ Guard)</p> <p>320 · 190 · 240 mm (AQ Ambient)</p>

We reserve the right to make technical changes without prior notice.

Palas®

go green to breathe clean.

Palas® is a leading developer and manufacturer of high-precision instruments for the generation, measurement, and characterization of particles in air.

With more than 20 active patents, Palas develops technologically leading and certified fine dust and nanoparticle analyzers, aerosol spectrometers, generators and sensors as well as related systems and software solutions.

Palas® was founded in 1983 and employs around 70 people at its headquarters in Karlsruhe. Palas is ISO 9001:2015 certified.

Palas GmbH

Partikel- und Lasermesstechnologie

Greschbachstrasse 3 b | 76229 Karlsruhe, Germany

Phone: +49 721 96213-0 | Fax: +49 721 96213-33

www.palas.de