

AQS 1

Near reference real-time monitor for particulates plus O₃/NO₂/CO/VOC

Designed for environmental professionals who need to monitor and manage specific outdoor dust and particulates, and gases continuously and in real-time.

The AQS 1 delivers affordable and defensible measurement of PM₁₀, PM_{2.5}, PM₁, TSP, and up to three gases, O₃, NO₂, CO, and VOC, all simultaneously.

MCERTS certified for PM₁₀ by the UK Environment Agency.



What is it?

- Reduce failure and downtime thanks to this robust purpose-built outdoor monitor for dust and gaseous pollutants
- Industry-leading gas sensing technology from Aeroqual comes fully integrated in the same compact format
- Reduce site visits using two-way communications – remotely troubleshoot, upgrade software, change settings, and calibrate
- Plug in all your devices – noise, weather, reference monitors – to the AQS 1 power and data interface and view data in one software dashboard
- Power up with quick and easy interface to solar and battery systems
- Respond in real-time via configurable email / SMS alerts

What can it measure?

- Multiple dust fractions, gases, wind, weather and noise



Who is it for?

- **Industrial operators** who need a cost-effective and robust solution to manage and control dust and gas emissions from site activities within regulatory or permitted limits:
 - Construction and remediation
 - Oil and gas facilities
 - Quarry and mine operators
 - Port and bulk handling terminals
 - Waste management sites
- **Environmental consultants** who want defensible data without the usual time and hassle of air monitoring projects
- **Regulatory authorities** who need to fill the gaps in the regulatory PM monitoring network
- **EHS managers** who need to demonstrate that they are providing a safe environment for the people in their care
- **Researchers** who want to collect accurate, scientifically robust data without the cost of a reference PM monitor

Specifications | AQS 1

Particle Module	Sizes	Range	Accuracy	Resolution	Lower Detectable Limit (2σ)		
Nephelometer	PM ₁ , PM _{2.5} , PM ₁₀ OR TSP	0 to 60,000 µg/m ³	±(2 µg/m ³ + 5% of reading)	0.1 µg/m ³	1 µg/m ³		
Profiler (Optical Particle Counter)	PM ₁ , PM _{2.5} , PM ₁₀ AND TSP	PM ₁ 200 µg/m ³ PM _{2.5} 2000 µg/m ³ PM ₁₀ 5000 µg/m ³ TSP 5000 µg/m ³	±(5 µg/m ³ + 15% of reading)	0.1 µg/m ³	1 µg/m ³		
		Optional Particulate Counts: 0.3, 0.5, 0.7, 1.0, 2.0, 3.0, 5.0, 10 microns (counts range: 0-100,000 counts/L)					
Gas Module	Range	Resolution	Noise	Lower Detection Limit (2σ)	Precision	Linearity (% of FS)	Drift 24 hour
			Zero; Span % of reading				Zero; Span % of FS
Ozone O ₃	0-500 ppb	0.1 ppb	1 ppb; 1 %	1 ppb	2 % of reading or 2 ppb	1.5 %	1 ppb; 0.2 %
Nitrogen Dioxide NO ₂	0-500 ppb	0.1 ppb	1 ppb; 1 %	1 ppb	2 % of reading or 2 ppb	1 %	2 ppb; 1 %
Carbon Monoxide CO	0-25 ppm	0.001 ppm	0.02 ppm 1 %	0.04 ppm	3% of reading or 0.05 ppm	1 %	0.14 ppm; 2 %
VOC (Low range)	0-500 ppb	0.1 ppb	1 ppb; 1 %	1 ppb	2 % of reading or 1 ppb	1 %	1 ppb; 1 %
VOC (High range)	0-30 ppm	0.01 ppm	0.1 ppm; 1 %	0.05 ppm	2 % of reading or 0.05 ppm	2 %	0.1 ppm; 1 %
System Specifications							
Control System	Embedded fanless PC (Intel Celeron® N3350, 1.6GHz, dual core, 4GB RAM, 32GB SSD hard drive), Ubuntu Linux Operating System						
Communications ¹	Standard: WIFI, Ethernet (LAN) Optional modem: Cellular IP 4G LTE						
Software	Aeroqual Cloud – Choose a plan that is right for you Optimize: Reduce site visits and improve data quality by managing your monitors and optimizing network performance remotely. Plus: Stay one step ahead with enhanced features for viewing and sharing data, real-time alerts, and analysis. Talk to our sales team to learn more about Aeroqual Cloud plans.						
Data logging	32 GB Hard Drive (> 5 years data storage)						
Averaging period	1 min, 5 min, 10 min, 15 min, 20 min, 30 min, 1 hr, 2 hr, 4 hr, 8 hr, 12 hr, 24 hr						
Power requirements ²	100-260 VAC (standard): 31.3 W Regulated 12 VDC (if required): 34.3 W						
Enclosure	Lockable IP65 GRP cabinet with integrated aluminum solar shield armor						
PM Sampling System	Inlet: Omni-directional 36 cm (14.1 inches) heated inlet; Optional sharp cut cyclones for PM ₁₀ , PM _{2.5} or PM ₁ Pump: 12 V brushless DC diaphragm Optics: 670 nm laser, near-forward scattering nephelometer with sheath air protection						
Dimensions ³	483 H x 330 W x 187 D mm (19 H x 13 W x 7.4 D inches) Includes solar shield armor & mounting brackets						
Weight ⁴	< 13 kg (28.6 lbs)						
Operating range	-10 °C to +45 °C (14 °F to 113 °F)						
Mounting	Pole, tripod and wall mounting brackets included						
Factory integrated sensors ⁵	Gill WindSonic (ultrasonic wind sensor), Vaisala WXT536 (weather transmitter), Met One MSO (weather transmitter), Cirrus MK427 Class 1 (noise sensor), Novalynx Pyranometer (solar radiation)						
Compatible tested sensors	BSWA 308 (sound level meter), Met-One BC-1060 (black carbon monitor), Met-One E-BAM PLUS (Beta-Attenuation Mass Monitor)						

¹ 4G LTE not available in all markets.

^{2,4} Configuration used for power and weight calculations: base unit, nephelometer, PM₁₀ sharp cut, modem, heater on.

³ Dimensions are for enclosure. PM sampling inlet with cyclone adds 360 mm (14.17") to total height.

⁵ Optional

