

AQS 1

Near reference real-time monitor for particulate fractions plus O₃ /NO₂ /VOC

Designed for those who need to monitor and manage specific outdoor dust 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.



What is it?

- A robust weather-proof monitor with integrated solar shielding for outdoor monitoring of dust, VOCs, and other gases.
- A modular and configurable monitoring platform for measuring targeted particulate and gases, with the option to integrate wind, noise, and weather sensors.
- A flexible communication platform that transfers real-time data wirelessly.
- A web interface accessed via browser that lets you view all your data and set email / sms alerts on parameters of concern.

What can it measure?

Nephelometer version measures single size of particulate. Profiler version measures multiple sizes of particulates. Both measure selected gasses.

Who is it for?

Industrial operators who need a cost effective and robust solution to manage and control dust and VOC emissions from activities at:

- Construction and remediation sites
- Quarry and mine sites
- Port and bulk-handling terminals
- Waste management sites

Air Quality Professionals who need a real-time alternative to diffusion tubes and dust samplers, or a more affordable alternative to analyzers for environmental impact assessments.

Regulatory authorities who require deployable, rapid response incident monitoring

Environmental health & safety managers who must demonstrate that they are providing a safe work environment.



GEO-INSTRUMENTS — EXPERTS IN AUTOMATED MONITORING

Particle Module	PM Size : Range (µg/m ³)	Accuracy	Resolution	Lower Detectable Limit (2σ)
Nephelometer	PM ₁ , PM _{2.5} , PM ₁₀ or TSP : 0 to 60,000	<±(2 µg/m ³ + 5% of reading)	0.1 µg/m ³	< 1 µg/m ³
Profiler (OPC)	PM ₁ , PM _{2.5} , PM ₁₀ and TSP: 200, 2000, 5000, 5000	<±(5 µg/m ³ + 15% of reading)	0.1 µg/m ³	< 1 µg/m ³
	Configurable particulate counts: 0.4, 0.5, 0.7, 1, 2, 3, 5, 10 microns			

Gas Module	Range ppb	Resolution ppb	Noise at Zero Noise with Test Gas	Lower Detect Limit ppb	Precision % of rdg or ppb	Linearity	24 hr Drift at Zero 24 hr Drift with Gas
Ozone O ₃	0-500	0.1	<1 ppb <1% of reading	1	<2% or 2	<1.5%	1 ppb 0.2% FS
NO ₂	0-500	0.1	1 ppb <1% of reading	2	<2% or 3	<2.0%	2 ppb 1% FS
VOC low range	0-500	0.1	1 ppb <1% of reading	<1	<2% or 1	<1.0%	1 ppb 1% FS
VOC high range	0-30 ppm	10	<100 ppb < 0.20 or 1% of rdg	<50	<2% or 20	<2.0%	100 ppb 1% FS

Specify high or low range for VOC sensor when ordering. High range is currently preferred in the US.

System Specifications	
Control & Logging System	Embedded fanless PC running Ubuntu Linux OS with 32 GB SSD capacity for 5 years of data.
Communications	WiFi, Ethernet (LAN) standard. Cellular modem optional.
Software	Connect: Runs on embedded PC and accessed via web browser. Cloud: Runs on secure cloud servers, access via web browser. Features: Remote configuration, diagnostics, journal, calibration and data acquisition. Optional features: SMS and email alerts, auto data export via email or FTP.
Averaging Period	1, 5, 10, 15, 20, 30 minutes, 1, 2, 4, 8, 12, 24 hours.
PM Sampling System	Inlet: Omni-directional 14.1 inch heated inlet with sharp cut cyclone for selected particle size. Pump: 12V brushless DC diaphragm pump. Optics: 670 nm laser, near-forward scattering nephelometer with sheath air protection.
Gas Sampling System	Inlet: Teflon, glass-coated stainless steel. 12V brushless DC diaphragm pump
Power Requirements (min/max)	100-260 VAC @ 21 W / 30W or regulated 12 VDC @ 21W / 30W.
Environmental Operating Range	14 to 122 °F (-10 to +50 °C).
Enclosure & Brackets	Lockable IP65 GRP cabinet with integrated solar shield. Brackets for pole, tripod and wall.
Dimensions H, W, D and Weight	19 x 13 x 7.4 inch. 28.6 lb.
Optional Output Module	4 x 4-20mA and 2 x relays
Optional Sensors (factory Integrated)	Gill WindSonic (ultrasonic wind sensor), Vaisala WXT536 or Met One MSO (weather transmitters, Cirrus MK427 Class 1 (noise sensor), Novalynx Pyranometer (solar radiation).

Aeroqual products are designed, manufactured, and patented by Aeroqual Limited, 460 Rosebank Road, Avondale, Auckland 1026, New Zealand