aeroqual

AQS 1

Near reference real-time monitor for particulate fractions plus O_3 /NO_2 /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, PM2.5, PM1, TSP, and up to three gases, all simultaneously.

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 I 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/m³	<±(2 µg/m³ + 5% of reading)	0.1 µg/m³	<1 µg/m³
Profiler (Optical Particle Counter)	PM_1, $PM_{2.5}$, PM_{10} AND TSP	PM_1 200 µg/m³ $PM_{2.5}$ 2000 µg/m³ PM_{10} 5000 µg/m³ TSP 5000 µg/m³	<±(5 µg/m³ + 15% of reading)	0.1 µg/m³	<1 µg/m³
	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 (ppb)	Noise Zero / ppb; Span % of reading	Lower Detection Limit / ppb	Precision	Linearity (% of FS)	Drift 24 hour Zero / ppb; Span % of FS
Ozone O_3	0-500 ppb	0.1	<1 <1 %	1	<2 % of reading or 2 ppb	<1.5 %	1; 0.2 %
Nitrogen dioxide NO_2	0-500 ppb	0.1	1 <1 %	2	<2 % of reading or 3 ppb	<2.0 %	2; 1 %
VOC (Low range)	0-500 ppb	0.1	1 <1 %	<1	<2 % of reading or 1 ppb	<1.0 %	1; 1 %
VOC (High range)	0-30 ppm	10	<100; <0.20 or 1 %	<50	<2 % of reading or 20 ppb	<2.0 %	100; 1 %

System Specifications	
Control System	Embedded fanless PC (Intel Celeron® N3350, 1.1GHz, dual core, 4GB RAM, 32GB SSD hard drive), Ubuntu Linux Operating System
Communications[1]	Standard: WIFI, Ethernet (LAN) Optional modem: Cellular IP 3G HSPA or 4G LTE
Software	**Aeroqual Connect** instrument operating system. **Aeroqual Cloud** instrument monitoring, management and technical support via secure cloud servers, accessed via web browser (IE, Firefox, Chrome, Safari). • Cloud standard features; configuration, calibration, diagnostics, remote technical support. • Cloud optional features; text (SMS) and email alerts, 3rd party sensor measurements, full data visualisation with charts, wind and pollution roses, data reporting with auto data export via FTP and API, full instrument event journal capture.
Data logging	32 GB Hard Drive (> 5 years data storage)
Outputs	2 x Relay (optional), 4 x 4-20 mA (optional)
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): 36.6[a] W / 31.3[b] W Regulated 12 VDC (if required): 40.3[a] W / 34.3[b] 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 size selection Pump: 12 V brushless DC diaphragm Optics: 670 nm laser, near-forward scattering nephelometer with sheath air protection
Dimensions	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[3]	< 13 kg (28.6 lbs)
Environmental operating range	-10 °C to +45 °C (14 °F to 113 °F)
Mounting	Pole, tripod and wall mounting brackets included
47mm Sample Filter (Optional)	47 mm filter for particle loading analysis
Factory Integrated & Tested Sensors (Optional)	Gill WindSonic (ultrasonic wind sensor), Vaisala WXT536 (weather transmitter), Met One MSO (weather transmitter), Cirrus MK427 Class 1 (noise sensor), Novalynx Pyranometer (solar radiation), 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.
[2,3] Configuration used for power and weight calculations: base unit, nephelometer, PM_{10} sharp cut, modem, heater on.
[a] Configured as per note 2, and incl. Moxa modem.
[b] Configured as per note 2, and incl. Sierra modem.
[4] Dimensions are for enclosure. PM sampling inlet with cyclone adds 360 mm (14.17") to total height.