

AQS1

AQS – Urban Air Quality Monitor Continuous Outdoor PM / Ozone / NO₂ / VOC Monitor

The AQS is a tool that allows air quality professionals to target specific applications of interest in the urban environment. Combining a robust light scattering particulate monitor, and Aeroqual's sensor-based gas analyzer modules, the monitor performs to Near Reference levels yet costs much less than comparable analyzers; it is also lightweight and can be installed and moved with ease.

What does the AQS measure?

The AQS can measure particulate matter (PM) and up to two gases at the same time. You can choose from the following parameters.

- Particulate matter (TSP, PM₁₀, PM_{2.5}, PM₁)
- Gases: Ozone (O₃), Nitrogen dioxide (NO₂), VOCs
- Meteorological (temp, humidity, rain, pressure, wind speed / direction, solar radiation)
- Noise

At any time the AQS can be upgraded to measure additional parameters by adding new modules. New modules can be added in the field; there is no need to return the unit to the factory.

How is the AQS different?

Patented technology underpins AQS performance. The gas sensitive semiconductor O₃ technology is proprietary to Aeroqual, as is Automatic Baseline Correction (ABC) and the technique for removing ozone interference on the electrochemical NO₂ sensor.

In head to head tests with traditional EPA-approved analyzers, the AQS has shown R² correlations as high as 0.98.

Collectively the key features of the AQS enable it to deliver Near Reference data quality over extended periods of time – several years with appropriate maintenance.



PM and gas



Gas only

Key Features

- Pumped sampling
- Inlet filters
- Heated PM inlet
- Automatic Baseline Correction (ABC)
- Part-per-billion gas detection
- Traceable calibration
- Rugged protective enclosure
- Wireless data connectivity
- Quick set up and relocation in under 10 minutes
- Optional plug and play environmental sensors

Applications

- Construction dust and emissions
- Roadside traffic emissions
- Rail corridor and terminal emissions
- Mapping smog formation and distribution
- Validation of air quality models
- Community exposure studies
- Remediation site emissions
- Port and shipping emissions

AQS 1 Specifications

Particle Module	Sizes		Range	Accuracy		Flow Rate	Lower Detection Limit (2σ)
Nephelometer	PM ₁₁ , PM _{2.5} , PM ₁₀ <u>OR</u> TSP		0 to 2000 µg/m ³	<±(2 µg/m ³ + 5% of reading)		2.0 LPM	<1 µg/m ³
Profiler (OPC)	PM ₁₁ , PM _{2.5} , PM ₁₀ AND TSP		PM1 200 µg/m ³ PM2.5 2000 µg/m ³ PM10 5000 µg/m ³ TSP 5000 µg/m ³	<±(5 µg/m ³ + 15% of reading)		1.0 LPM	<1 µg/m ³
Gas Module	Range (ppb)	Resolution (ppb)	Noise	Lower Detection Limit / ppb	Precision	Linearity (% of FS)	Drift 24 hour
			Zero / ppb; Span % of reading				Zero / ppb; Span % of FS
Ozone O ₃	0-500	0.1	<1 <1%	1	<2% of reading or 2 ppb	<1.5%	1; 0.2%
Nitrogen dioxide NO ₂	0-500	0.1	1 <1%	2	<2% of reading or 3 ppb	<2.0%	2; 1%
VOC	0-500	0.1	<1 <1%	<1	<2% of reading or 1 ppb	<1.0%	1; 1%
System Specifications							
Control System			Embedded fanless PC, Intel Atom N2600, 1.6GHz, 2GB RAM, 32GB SSD, Ubuntu Linux Operating System				
Communications			Standard: WIFI, Ethernet (LAN) Optional: Cellular IP HSPA 4G modem				
Software			Connect: Runs on embedded PC, access via browser (IE, Firefox, Chrome, Safari) Cloud: Runs on secure 'cloud' servers, accessed via web browser Connect / Cloud Features: configuration, diagnostics, journal, calibration and data acquisition, plus SMS and email alerts (optional), auto data export via FTP and email (optional), and data export API (optional)				
Data logging			32GB 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			100-260VAC (standard): 21W / 30W * Regulated 12VDC (if required): 21W / 30W *				
Enclosure			Lockable IP65 GRP cabinet with integrated aluminium solar shield armour				
PM Sampling System			Inlet: 36cm heated inlet Pump: 12V brushless DC diaphragm				
Gas Sampling System			Inlet: Teflon, glass-coated stainless steel Pump: 12V brushless DC diaphragm				
Dimensions			483H x 330W x 187D mm (including solar shield armour & mounting brackets)				
Weight			<12.5 kg *				
Environmental operating range			-10°C to +45°C				
Mounting			Pole, tripod and wall mounting brackets included				
Factory Integrated & Tested Sensors (Optional)			Gill WindSonic (ultrasonic wind sensor), Vaisala WXT520 (weather transmitter), Met One MSO (weather transmitter), Cirrus MK427 Class 1 (noise sensor), Novalynx Pyranometer (solar radiation)				

* Configuration used for power and weight calculations: base unit, nephelometer, PM₁₀ sharp cut, O₃ module, modem, heater off / heater on.