

AQS 1

Specification Sheet

Near reference real-time monitor for particulates plus $O_3/NO_2/CO/SO_2/H_2S/CH_4/VOC/C_6H_6$

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

The AQS 1 delivers affordable and defensible measurement of PM_1 , $PM_{2.5}$, PM_4 , PM_{10} , TSP, and up to three gases, O_3 , NO_2 , CO , SO_2 , H_2S , CH_4 , C_6H_6 and VOC, all simultaneously.

The AQS 1 is MCerts certified and South Coast AQMD Rule 1466 pre-approved.



Benefits

- Industry-leading PM and gas sensing technology from Aeroqual in a compact format
- Minimize downtime and failure with a purpose-built outdoor monitor
- Reduce site visits with filter change notifications, and two-way communications that allow you to calibrate, remotely troubleshoot, upgrade software, and change settings
- Eliminate flow checks with integrated flow sensing and automated control (PCX)
- Avoid invalid data caused by incorrect wind sensor orientation with the self-orienting met sensor
- Act swiftly before an exceedance occurs with real-time alerts

What can it measure?

- Specific dust fractions, gases, wind, weather, noise, and location



Who is it for?

- Industrial site operators who need to manage 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
 - Landfills and Wastewater treatment plants
- 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 air quality 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 monitor

Specifications | AQS 1

Particle module	Particle Sizes	Range	Display Resolution	LDL (2σ)	Precision	Accuracy	Zero Stability	Particle Size Range
PCX ¹	PM ₁ , PM _{2.5} , PM ₄ , PM ₁₀ and TSP	0 to 30,000 µg/m ³	0.1 µg/m ³	0.1 µg/m ³	± 3% of reading	< 5% of reading	± 0.1 µg/m ³ over 24 hour period	0.1 µm to 40 µm
Nephelometer	PM ₁ , PM _{2.5} , PM ₁₀ or TSP	0 to 60,000 µg/m ³	0.1 µg/m ³	<1 µg/m ³	± 1% of reading	±(2 µg/m ³ + 5% of reading)	± 0.1 µg/m ³ over 24 hour period	0.1 µm to 40 µm
Gas module	Range	Display Resolution	Noise Zero; Span % of reading	Lower Detection Limit (2σ)	Precision	Linearity (% of FS)	Drift 24 hour 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%	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	1.5%	1 ppb; 0.2%	
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%	<0.1 ppm	2% of reading or 0.05 ppm	2%	0.1 ppm; 1%	
Hydrogen Sulfide H ₂ S	0-5,000 ppb	0.1 ppb	1 ppb; 0.1%	2 ppb	1% of reading or 3 ppb	0.5%	<1 ppb; <0.5%	
Sulfur Dioxide SO ₂	0-10,000 ppb	0.1 ppb	1 ppb; 0.02%	2 ppb	0.14% of reading or 2 ppb	0.6%	1 ppb; 0.3%	
Methane CH ₄	0-500 ppm	0.01 ppm	0.02 ppm; 0.3%	0.04 ppm	0.4% of reading or 0.06 ppm	<1%	0.04 ppm; 1%	
Benzene C ₆ H ₆	0-100 ppb	0.01 ppb	0.05 ppb; 1%	<0.2 ppb (3σ)	1% of reading or 0.2 ppb	2%	0.05 ppb; 1%	
Base System Specifications								
Control system	Embedded PC with on board data storage (>5 years)							
Communications ²	Standard: WIFI, Ethernet (LAN); Optional modem: Cellular 3G or 4G LTE; Integrated high gain antenna							
Software	Talk to our sales team to learn more about Aeroqual's software products							
Averaging period	User selectable averaging interval from 1 min to 24 hr							
Power requirements ³	100-260 VAC or 9-36VDC battery/solar: Power usage: 15 to 30 W max steady state (configuration dependent)							
Enclosure	Lockable IP65 GRP cabinet with integrated aluminum solar shield armor							
Dimensions	685 H x 330 W x 187 D mm (27" x 13" x 7 3/8") Includes PM inlet							
Weight ⁴	< 13 kg (28.6 lbs)							
Operating range	-10 °C to +45 °C (14 °F to 113 °F) extending the lower operating range to -40 °C with jacket and heater module, or to -20 °C with the jacket alone							
Mounting	Pole, tripod and wall mounting brackets included							
Factory integrated sensors	Gill WindSonic (ultrasonic wind sensor), Vaisala WXT536 (weather transmitter), Cirrus MK427 Class 1 (noise sensor), Novalynx Pyranometer (solar radiation), Airmar 300WX (weather station)							
Compatible tested sensors	Victron SmartSolar MMPT 100-20 (solar charge controller), BSWA 308 (sound level meter) and Svantek SV971A (sound level meter)							
Inputs/Outputs	0-5V analog input, 4-20mA input, configurable relay output, built in temp/RH sensor (PCX)							
PM System Specifications								
Inlet	Omni-directional sample inlet with integrated heater							
Pump	Long life 12 V brushless DC diaphragm, with automated flow measurement and control system (PCX)							
Optics	PCX: 650 nm industrial laser, hemispherical-focusing OPC; Nephelometer: 670 nm laser, near-forward scattering nephelometer							
Zero Check/Calibration	Auto-zero check on start-up. Auto-zero check or calibration at user selected intervals							
Gas System Specifications								
Inlet	Inert glass-coated stainless steel and Teflon sample inlet							
Pump	Long life (>10,000 hours) 12 V brushless DC diaphragm							
Module Tech	Automatic Baseline Correction (ABC) minimizes sensor baseline drift							
Compliance								
In conformity with CE Directives 2014/30/EU and 2014/35/EU; FCC 47 CFR Part 15; RoHS 3 (EU2015/863), REACH								
Certified Modules			MCERTS			South Coast AQMD rule 1466 pre-approved		
AQS 1 PM ₁₀ Nephelometer			Yes - Sira MC210385/00			Yes		
AQS 1 PCX			PM ₁₀ PM _{2.5}			Yes N/A		

¹Representative values for PM_{2.5}; for individual channel performance please see the Aeroqual Technical Performance Guide

²4G LTE not available in all markets

^{3,4} Configuration used for power and weight calculations: base unit, nephelometer, PM₁₀ sharp cut, modem, heater on