

AQS 1

Specification Sheet

Near reference real-time monitor for particulates plus O₃/NO₂/CO/SO₂/H₂S/CH₄/VOC

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 PM₁₀, PM₄, PM_{2.5}, PM₁, TSP, and up to three gases, O₃, NO₂, CO, SO₂, H₂S, CH₄ and VOC, all simultaneously.

The AQS 1 PM₁₀ is MCerts certified and South Coast AQMD 1466 pre-approved.

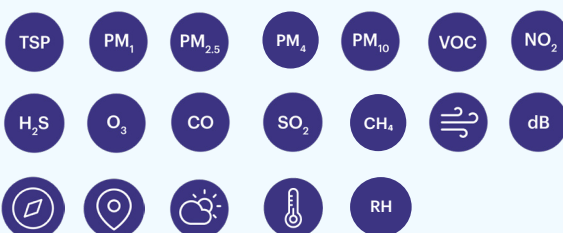


Benefits

- 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
- Industry-leading gas sensing technology from Aeroqual comes fully integrated in the same compact format

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
 - 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 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 - 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	0.1µm to 40µm
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	0.1µm to 40µm

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	0-10,000 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	0-100 ppm	0.01 ppm	0.02 ppm; 0.3%	0.04 ppm	0.4% of reading or 0.06 ppm	<1%	0.04ppm; 1%

Base System Specifications

Control system	Embedded PC with on board data storage (>5 years)
Communications ²	Standard: WIFI, Ethernet (LAN) Optional modem: Cellular IP 4G LTE, Integrated high gain antenna
Software	Talk to our sales team to learn more about Aeroqual Cloud plans.
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, built in temp/RH sensor (PCX)
Dimensions	685 mm x 330 mm x 187 mm (27" x 13" x 7 3/4") Includes PM inlet
Weight ⁴	< 13 kg (28.6 lbs)
Operating range	-10 °C to +45 °C (14 °F to 113 °F) Low temperature operation extendable with winterization pack
Mounting	Pole, tripod and wall mounting brackets included
Factory integrated sensors ⁵	Gill WindSonic (ultrasonic wind sensor), Vaisala WXT536 (weather transmitter), Cirrus MK427 Class 1 (noise sensor), Novalynx Pyranometer (solar radiation), Airmar 200WX (weather station)
Compatible tested sensors	A wide range of other sensors can be connected including: Victron SmartSolar MMPT 100-20 (solar charge controller), BSWA 308 (sound level meter) and Svantek SV971A (sound level meter). Contact Aeroqual for more information.
Inputs/Outputs ⁶	0-5V analog input, 4-20mA input, configurable relay output

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 calibration	Auto-zero on start-up and at user selected intervals

Gas System Specifications

Inlet	Inert glass-coated stainless steel and Teflon sample inlet
Pump	Long life KNF 12 V brushless DC diaphragm
Baseline stability	Automatic Baseline Correction (ABC) minimizes sensor baseline drift

Compliance

In conformity with EC 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
AQS 1 PM ₁₀ Nephelometer	Yes - Sira MC210385/00	Yes
AQS 1 PCX	PM ₁₀ PM _{2.5}	Yes N/A

¹ Representative values for PM_{2.5}; for individual channel performance please see the Aeroqual Technical Performance Guide
² 4G LTE not available in all markets

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

⁵ Optional

⁶ Available with optional PDI Core upgrade