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.

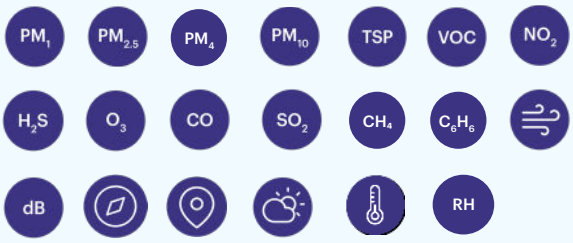
The AQS 1 is MCerts certified and South Coast AQMD Rule 1466 pre-approved.

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

T: 1 800 701 5032 **E:** sales@aeroqual.com **W:** aeroqual.com

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/m³	0.1 µg/m³	0.1 µg/m³	± 3% of reading	< 5% of reading	± 0.1 µg/m³ 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/m³	0.1 µg/m³	<1 µg/m³	± 1% of reading	±(2 µg/m³ + 5% of reading)	± 0.1 µg/m³ 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_2S	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_6H_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 7⅜") 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

[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
[3,4] Configuration used for power and weight calculations: base unit, nephelometer, PM_{10} sharp cut, modem, heater on

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AQS 1 PCX $PM_{2.5}$ PM_{10} MCERTS Sira MC240434/01
AQS1 PM_{10} MCERTS Sira MC210385/00