AQS 1

Specification Sheet

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

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

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

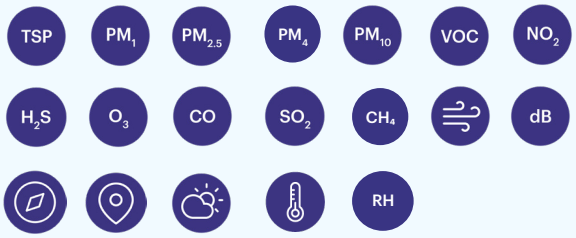
The AQS 1 PM_{10} is MCerts certified and South Coast AQMD 1466 pre-approved.

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 operators who need to manage dust and particulates 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 | AQS 1

Particle module	Particle Sizes	Range	Display Resolution	LDL (2σ)	Precision	Accuracy	Zero Stability	Min. Detect. Particle Size
PCX[1] (Optical Particle Counter)	PM_1, $PM_{2.5}$, PM_4, PM_{10} and TSP	0 - 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	50% eff.: 0.3µm
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/m ³+ 5% of reading)	± 0.1 µg/m³ over 24 hour period	Optimal performance at 0.5 to 10 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	0-10,000 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	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	<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
Software	Talk to our sales team to learn more about Aeroqual Cloud plans.
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[3]	100-260 VAC (standard): 15-30 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 7⅜") Includes PM inlet, solar shield armor & mounting bracket
Weight[4]	< 13 kg (28.6 lbs)
Operating range	-10 °C to +45 °C (14 °F to 113 °F)
Mounting	Pole, tripod and wall mounting brackets included
Factory integrated sensors[5]	Gill WindSonic (ultrasonic wind sensor), Vaisala WXT536 (weather transmitter), Met One MSO (weather transmitter), Cirrus MK427 Class 1 (noise sensor), Novalynx Pyranometer (solar radiation)
Compatible tested sensors	BSWA 308 (sound level meter), Met-One BC-1060 (black carbon monitor), Met-One E-BAM PLUS (Beta-Attenuation Mass Monitor), Airmar 200WX (weather station), Victron SmartSolar MMPT 100-20 (solar charge controller)

PM System Specifications	
Inlet	Omni-directional sample inlet with integrated heater
Pump	12 V brushless DC diaphragm, with automated flow measurement and control system (PCX)
Optics	PCX: 650 nm laser OPC (optical partical counter), long life industrial grade laser diode; Nephelometer: 670 nm laser, near-forward scattering nephelometer with sheath air protection
Technology	Auto-zero on start-up

Gas System Specifications	
Inlet	Inert glass-coated stainless steel and Teflon sample inlet
Pump	Long life KNF 12 V brushless DC diaphragm
Technology	Automatic Baseline Correct (ABC) minimizes sensor 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	1466 Approved
AQS 1 PM_{10} Nephelometer	Yes - Sira MC210385/00	Yes
AQS 1 PCX	PM_{10} Pending $PM_{2.5}$ Pending	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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