## aeroqual

# AQS 1

## Near reference real-time monitor for particulates plus O<sub>3</sub>/NO<sub>2</sub>/CO/VOC

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

The AQS 1 delivers affordable and defensible measurement of PM10, PM2.5, PM1, TSP, and up to three gases, O<sub>3</sub>, NO<sub>2</sub>, CO, and VOC, all simultaneously.

#### What is it?

- Reduce failure and downtime thanks to this robust purpose-built outdoor monitor for dust and gaseous pollutants
- Industry-leading gas sensing technology from Aeroqual comes fully integrated in the same compact format
- Reduce site visits using two-way communications remotely troubleshoot, upgrade software, change settings, and calibrate
- Plug in all your devices noise, weather, reference monitors – to the AQS 1 power and data interface and view data in one software dashboard
- Power up with quick and easy interface to solar and battery systems
- Respond in real-time via configurable email / SMS alerts

#### What can it measure?

• Multiple dust fractions, gases, wind, weather and noise





#### Who is it for?

- Industrial operators who need a cost-effective and robust solution to manage and control 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 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

Nephelometer       PMs PM25 PM0 OL 50 60.000 µg/m3 $\pm (2 µg/m3 + 5\% of reading)$ 0.1 µg reading)         Profiler (Optical Particle Counter) $PM_{5} PM_{52} PM_{0}$ $PM_{52} D0.0 µg/m3$ $\pm (5 µg/m3 + 15\% of reading)$ 0.1 µg reading)         Gas Module $PM_{5} PM_{52} PM_{0}$ $PM_{52} D0.0 µg/m3$ $\pm (5 µg/m3 + 15\% of reading)$ 0.1 µg reading)         Gas Module $PM_{5} PM_{52} PM_{0}$ $PM_{52} PM_{52} PM_{0}$ $ECOPE PM_{1} PM_{2} PM_{$	/m <sup>3</sup>		
Profiler (Optical Particle Counter)       PM, pM2, PM0, AND TSP       PM6, 5000 µg/m3 PM6, 5000 µg/m3 TSP 5000 µg/m3       ±(5 µg/m3 + 15% of reading)       O.1 µg         Gas Module       Optional Particulate Counts: 0.3, 0.5, 0.7, 1.0, 2.0, 3.0, 5.0, 10 microns (counts in Span % of reading)       Image: Counts in Detection       <		1 µg/m³	
Gas ModuleRangeResolutionNoise Zero; Span % of readingLower Detection Limit (20)PrecisionOzone O30-500 ppb0.1 ppb1 ppb; 1 %1 ppb2 % of reading or 2 ppbNitrogen Dioxide NO20-500 ppb0.1 ppb1 ppb; 1 %1 ppb2 % of reading or 2 ppbCarbon Monoxide CO0-500 ppm0.001 ppm1 ppb; 1 %1 ppb2 % of reading or or 2 ppbCarbon Monoxide CO0-500 ppm0.1 ppm1 ppb; ppm1 ppb3% of reading or or 1 ppbVOC (Low range)0-500 ppm0.1 ppm1 ppb; pph1 ppb2 % of reading or or 1 ppbVOC (High range)0-500 ppm0.1 ppm0.1 ppm; ppm0.05 ppm2 % of reading or 0.05 ppmSystem SpecificationsEmbedded fanless PC (Intel Celeron* N3350, 16GHz, dual core, 4GB RAM, 324 Linux Operating System2 % of reading or 0.05 ppmControl SystemStandard: WIFI, Ethernet (LAN) Optional modem: Cellular IP 4G LTEAeroqual Connect instrument operating system. Accessed Via dei browsert IE, configuration, calibration, diagnostics, remote tecl - Cloud standard features; configuration, calibration, diagnostics, remote tecl - Cloud standard features; text (SMS) and email alerts, 3rd party sensor meas with charts, wind and pollution roses, data storage)Outputs2 x Relay (optional), 4 x 4-20 mA (optional)Averaging period1 min, 5 min, 10 min, 15 min, 20 min, 30 min, 11 r, 2 hr, 4 hr, 8 hr, 12 hr, 24 hrPower requirements <sup>2</sup> 100-260 VAC (standard); 36.6* W / 31.3* W Regula	/m <sup>3</sup>	1 µg/m <sup>3</sup>	
Gas ModuleRangeResolutionZercy: Span % of readingLower Detection Limit (20)PrecisionOzone O30-5000.1 ppb1 ppb; 1 ppb1 ppb2 % of reading or 2 ppbNitrogen Dioxide NO20-500 ppb0.1 ppb1 ppb; 1 %1 ppb2 % of reading or 2 ppbCarbon Monoxide CO0-25 ppm0.001 ppb1 ppb; 1 %1 ppb2 % of reading or 2 ppbVOC (Low range)0-500 ppm0.1 ppm1 ppb; ppb1 ppb; 1 %1 ppb2 % of reading or 1 ppbVOC (High range)0-500 ppm0.1 ppm1 ppb; 1 %1 ppb2 % of reading or 1 ppbVOC (High range)0-500 ppm0.01 ppm0.1 ppm; 1 %0.05 ppm2 % of reading or 0.05 ppmSystem SpecificationsEmbedded fanless PC (Intel Celeron* N3350, 16GHz, dual core, 4GB RAM, 324 Linux Operating System2 % of reading or 0.05 ppmCommunications!Standard: WIFI, Etherter (LAN) Optional modem: Cellular IP 4G LTEAeroqual Connect instrument operating system. Acroqual Could instrument monitoring, management and technical support v accessed via web browser (IE, Friefox, Chrome, Safari). Collud standard features; configuration, calibration, diagnostics, remote tecl 	ange: 0-100,0	000 counts/L)	
Gas ModuleRangeResolutionZero: Span % of readingDetection Limit (20)PrecisionOzone O30-500 ppb0.1 ppb1 ppb; 1 %1 ppb2 % of reading or 2 ppbNitrogen Dioxide NO20-500 ppb0.1 ppb1 ppb; 1 %1 ppb2 % of reading or 2 ppbCarbon Monoxide CO0-25 ppm0.001 ppm0.02 ppm ppm0.04 ppm3% of reading or 0.05 ppmVOC (Low range)0-500 ppm0.1 ppm1 ppb; ppm1 ppb2 % of reading or 0.05 ppmVOC (High range)0-500 ppm0.1 ppm1 ppb; ppm1 ppb2 % of reading or 1 ppbVOC (High range)0-30 ppm0.01 ppm1 ppb; ppm0.05 ppm2 % of reading or 0.05 ppmSystem SpecificationsEmbedded fanless PC (Intel Celeron' N3350, 16GHz, dual core, 4GB RAM, 320 Linux Operating System0.05 ppm2 % of reading or 0.05 ppmControl SystemEmbedded fanless PC (Intel Celeron' N3350, 16GHz, dual core, 4GB RAM, 320 Linux Operating System0.05 ppm2 % of reading or 0.05 ppmSoftwareEmbedded fanless PC (Intel Celeron' N3350, 16GHz, dual core, 4GB RAM, 320 Linux Operating System		Drift 24 hour	
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VOC (Low range)ppbppb1 %1 ppbor 1 ppbVOC (High range)0-30 ppm0.01 ppm0.1 ppm; ppm0.05 ppm2 % of reading 	1%	0.14 ppm; 2%	
VOC (High range)ppm1%0.05 ppmor 0.05 ppmSystem SpecificationsControl SystemEmbedded fanless PC (Intel Celeron* N3350, 1.6GHz, dual core, 4GB RAM, 320 Linux Operating SystemCommunications1Standard: WIFI, Ethernet (LAN) Optional modem: Cellular IP 4G LTEAeroqual Connect instrument operating system. Aeroqual Cloud instrument monitoring, management and technical support vaccessed via web browser (IE, Firefox, Chrome, Safari). • Cloud optional features; configuration, calibration, diagnostics, remote tecl 	1%	1 ppb; 1 %	
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SoftwareAeroqual Connect instrument monitoring, management and technical support vaccessed via web browser (IE, Firefox, Chrome, Safari). • Cloud standard features; configuration, calibration, diagnostics, remote tech • Cloud optional features; text (SMS) and email alerts, 3rd party sensor meas with charts, wind and pollution roses, data reporting with auto data export event journal capture.Data logging32 GB Hard Drive (> 5 years data storage)Outputs2 x Relay (optional), 4 x 4-20 mA (optional)Averaging period1 min, 5 min, 10 min, 15 min, 20 min, 30 min, 1 hr, 2 hr, 4 hr, 8 hr, 12 hr, 24 hrPower requirements²100-260 VAC (standard): 36.6ª W / 31.3ª W Regulated 12 VDC (if required): 40EnclosureLockable IP65 GRP cabinet with integrated aluminum solar shield armorPM Sampling SystemInlet: Omni-directional 36 cm (14.1 inches) heated inlet; Optional sharp cut cyce Pump: 12 V brushless DC diaphragm Optics: 670 nm laser, near-forward scattering nephelometer with sheath air pDimensions483 H x 330 W x 187 D mm (19 H x 13 W x 7.4 D inches) Includes solar shield armor	GB SSD hard	drive), Ubuntu	
SoftwareAeroqual Cloud instrument monitoring, management and technical support vaccessed via web browser (IE, Firefox, Chrome, Safari). 			
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PM Sampling SystemPump: 12 V brushless DC diaphragm Optics: 670 nm laser, near-forward scattering nephelometer with sheath air pDimensions483 H x 330 W x 187 D mm (19 H x 13 W x 7.4 D inches) Includes solar shield a	Lockable IP65 GRP cabinet with integrated aluminum solar shield armor		
		<sub>0</sub> , PM <sub>2.5</sub> or PM <sub>1</sub>	
Weight <sup>3</sup> $< 13$ kg (28.6 lbs)	483 H x 330 W x 187 D mm (19 H x 13 W x 7.4 D inches) Includes solar shield armor & mounting brackets		
Operating range -10 °C to +45 °C (14 °F to 113 °F)			
Mounting Pole, tripod and wall mounting brackets included			
47mm sample filter <sup>5</sup> 47 mm filter for particle loading analysis			
Factory integrated sensors <sup>5</sup> Gill WindSonic (ultrasonic wind sensor), Vaisala WXT536 (weather transmitter transmitter), Cirrus MK427 Class 1 (noise sensor), Novalynx Pyranometer (sola		1SO (weather	
Compatible tested sensors BSWA 308 (sound level meter) Met-One BC-1060 (black carbon monitor), Meternuation Mass Monitor)		M PLUS (Beta-	

<sup>2.3</sup> Configuration used for power and weight calculations: base unit, nephelometer, PM<sub>10</sub> sharp cut, modem, heater on.
 <sup>a</sup> Configured as per note 2, and incl. Moxa modem, <sup>b</sup> Configured as per note 2, and incl. Sierra modem.
 <sup>4</sup> Dimensions are for enclosure. PM sampling inlet with cyclone adds 360 mm (14.17") to total height.



<sup>5</sup> Optional





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