# 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, 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.

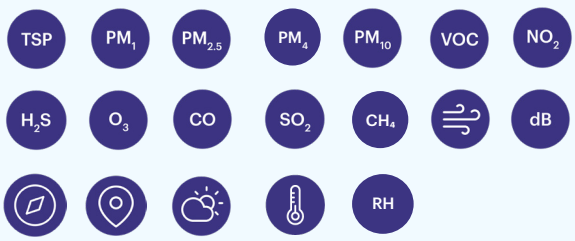
The AQS 1 $PM_{10}$ is MCerts certified and South Coast AQMD 1466 pre-approved.

## 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 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/m³ | 0.1 µg/m³ | 0.1 µg/m³ | ± 3% of reading | < 5% of reading | ± 0.1 µg/m³ over 24 hour period | 0.1µm to 40µm |
| 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 | 0.1µm 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 $H_2S$ | 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 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% | 0.04ppm; 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 7⅜") Includes PM inlet |
| Weight[4] | < 13 kg (28.6 lbs) |
| Operating range | -10 °C to +45 °C (14 °F to 113 °F) Low temporature 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 | $PM_{10}$<br>$PM_{2.5}$ | Yes<br>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
[5] Optional
[6] Available with optional PDI Core upgrade

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

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