# Dust Sentry

**aeroqual**

## Specification Sheet

## Near reference real-time particle monitor

Designed for environmental professionals who need to monitor and manage multiple outdoor dust and particle size fractions, simultaneously, in real-time.

The Dust Sentry with PCX delivers simultaneous measurement of TSP, $PM_{10}$, $PM_4$, $PM_{2.5}$ and $PM_1$. It is MCERTS certified for $PM_{10}$ and $PM_{2.5}$ and South Coast AQMD 1466 pre-approved for $PM_{10}$.

The Dust Sentry with nephelometer measures one PM fraction depending on the cyclone separator selected and is MCERTS certified and South Coast AQMD 1466 pre-approved for $PM_{10}$.

## Benefits

- Set up and deploy in under 5 minutes - get live data flowing to your PC or mobile
- Minimize downtime and failure with a purpose-built outdoor monitor
- Eliminate flow checks with integrated flow sensing and automated control (PCX)
- Reduce site visits with two-way communications that allow you to calibrate, remotely troubleshoot, upgrade software, and change settings
- Avoid invalid data caused by incorrect wind sensor orientation with a fully integrated self-orientating met sensor (optional)
- Power up with quick and easy interface to solar and battery systems
- Act swiftly before an exceedance occurs with real-time alerts

## What can it measure?

- Specific dust fractions, wind, weather and noise

TSP  $PM_{10}$  $PM_4$  $PM_{2.5}$  $PM_1$

dB  RH

## Who is it for?

- Industrial site operators who need to manage dust and particulates from site activities, within regulatory or permitted limits:
    - Construction and remediation projects
    - 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 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 | Dust Sentry

| Particle module | Particulate Matter Size Fractions | 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 |

| 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, mounting bracket and (PCX) built in temp/RH sensor |
| Dimensions | Dust Sentry (PCX): 685 mm x 330 mm x 187 mm (27" x 13" x 7⅜") [HxWxD] Includes PM inlet<br>Dust Sentry (Nephelometer): 843 mm x 330 mm x 187 mm (33" x 13" x 7½") [HxWxD] 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. Optional tripod mount available. |
| 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), 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 |
| Sample Flow | 12 V brushless DC diaphragm with automated flow measurement and control system (PCX) |
| Optics | PCX: 650 nm industrial laser, hemispherical-focusing OPC<br>Nephelometer: 670 nm laser, near-forward scattering nephelometer |
| Zero calibration | Auto-zero on start-up and at user-selected intervals |

| 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 |
| Dust Sentry $PM_{10}$ Nephelometer | Yes - Sira MC130235/02 | Yes |
| Dust Sentry 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, PCX, modem, heater on
[5] Optional
[6] Available with optional PDI Core upgrade

Dust Sentry PCX $PM_{2.5}$ $PM_{10}$    Dust Sentry $PM_{10}$

mCERTS Sira MC240434/01    mCERTS Sira MC130235/02   CE C FC

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