



Personal Air Monitor (PAM) Spec Sheet

Measurement Capabilities

- Atmospheric Constituents Measured: carbon monoxide (CO), carbon dioxide (CO₂), particulate matter (PM₁, PM_{2.5}, and PM₁₀)
- Other Environmental Parameters Measured: pressure, temperature, and humidity
- Measurement Frequency: 1 sample per 8 seconds
- On-board Data Storage with microSD card
- Accurate timestamp logged with measurements

Sensor Specs *per manufacturers

Carbon Dioxide (CO₂)

- Sensor: Amphenol T6713 (NDIR)
- Measurement Range (ppm limit of performance warranty): 0-5000
- Accuracy: higher of ± 30 ppm or $\pm 3\%$ of reading
- Response Time: < 3 minutes for 90% step change typical

Particulate Matter (PM₁, PM_{2.5}, PM₁₀)

- Sensor: Plantower PM1003 (Laser Scattering)
- Particle Size Range: 0.3-10 μm
- Measurement Range: 0-999 $\mu\text{m}/\text{m}^3$
- Count Accuracy: 50% @ 0.3 μm , 98% @ $\geq 0.5 \mu\text{m}$
- Quasi Volume: 0.1 L
- Response Time: < 10 seconds

Carbon Monoxide (CO)

- Sensor Type: Alphasense CO-A4 (Electrochemical)
- Sensitivity (nA/ppm in 2ppm CO): 220 to 375
- Response (time t_{90} (s) from zero to 10ppm CO): < 20
- Noise (± 2 standard deviations (ppb equivalent)): 20
- Range (ppm limit of performance warranty): 0-500
- Linearity (ppm CO error at full scale, linear at zero, 15ppm CO): $< \pm 1$

Pressure, Temperature, and Humidity

- Pressure Specs:
 - Measurement Range: 300 to 1100 hPa
 - Absolute Accuracy Pressure: ± 1.0 hPa
 - Resolution: 0.18 Pa
 - Long-Term Stability: ± 1.0 hPa per year
- Humidity Specs:
 - Measurement Range: 0 to 100 %RH
 - Absolute Accuracy Tolerance: $\pm 3\%$ RH
 - Resolution: 0.008 %RH
- Temperature Specs:
 - Measurement Range: Operational: -40 to + 85 °C / Full accuracy: 0 to + 65 °C
 - Absolute Accuracy Temperature: At 25°C: ± 0.5 °C / 0 to 65° C: ± 1.0 °C
 - Resolution: 0.01 °C

Real-time, Wireless Data Transfer

- Bluetooth Low Energy (BLE): Pairs with mobile application where data can be viewed in real-time and compared against EPA reference air quality monitors. BLE has a low range of transmission.
- PAM uses 3G cellular or WiFi to upload data automatically to AQTreks.com.

Power Requirements / Consumption

The PAM is powered by a 3.7V 2000mAh lithium ion battery and has a battery life of about 8 hours.

Calibration Services

Pre-rental sensor calibrations available for rentals.