IoT Management Group

The Leading Enterprise Internet of Things Solution

PM2.5 AIR QUALITY

Wireless Air Quality - PM 2.5 um Meter

General Description

The GEN 3 wireless PM2.5 um meter measures PM1, PM2.5 and PM10 concentrations in the air and transmits the measurement to IOT

- Measurement range:
  - PM1: 0.3 to 1.0 um
  - PM2.5: 1.0 to 2.5 um
  - PM10: 2.5 to 10 um

Principle of Operation

The PM2.5 meter works by turning on a small fan at the beginning of a measurement cycle to bring in a volume of ambient air and measuring the particulate matter (PM) content of that sample volume. The sensor measures PM content using a laser that scatters based on the number and size of particles suspended in the air. It is important to keep the inlet ports of the sensor clear to ensure proper readings.

Example Applications

- Building/Room Air Quality
- Pollution Sensing
- Mines and Quarries
- Cement Factories
- Construction/Demolition Sites
- Petrochemicals
- Agricultural/Waste
- Many additional applications

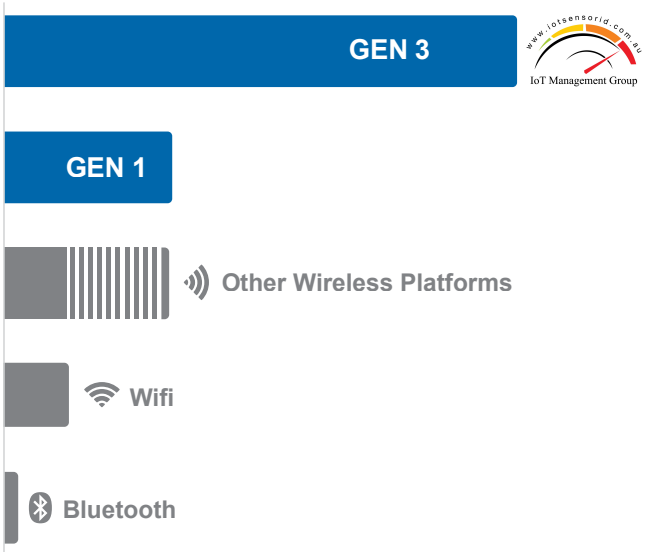
Features of GEN 3 Sensors

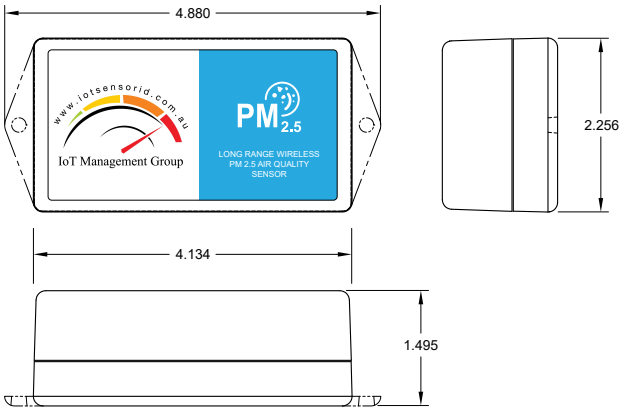
- Wireless range of 1,200+ feet through 12+ walls *
- Frequency-Hopping Spread Spectrum (FHSS)
- Improved interference immunity
- Improved power management for longer battery life ** (12+ years on AA batteries)
- Encrypt-RF® Security (Di ie-Hellman Key Exchange + AES-128 CBC for sensor data messages)
- All sensors now have up to 3200 readings:
  - 10-minute heartbeats = 22 days
  - 2-hour heartbeats = 266 days
- Over-the-air updates (future proof)
- Free basic online wireless sensor monitoring and noti ication system to con igure sensors, view data and set alerts via SMS text and email

* Actual range may vary depending on environment.

** Battery life is determined by sensor reporting frequency and other variables. Other power options are also available.

Wireless Range Comparison





ALTA Air Quality - PM2.5 um Meter AA | Technical Specifications	
Supply voltage	2.0–3.8 VDC (3.0–3.8 VDC using power supply) *
Current consumption	0.2 µA (sleep mode), 0.7 µA (RTC sleep), 570 µA (MCU idle), 2.5 mA (MCU active), 5.5 mA (radio RX mode), 22.6 mA (radio TX mode)
Operating temperature range (commercial version) **	-18°C to 55°C (0°F to 130°F) with Alkaline Batteries -40°C to 85°C (-40°F to 185°F) with Lithium Battery
Operating temperature range (industrial version) **	-40°C to 85°C (-40°F to +185°F) with Industrial Battery
Measurement sensitivity	PM1: 0.3 to 1.0 um PM2.5: 1.0 to 2.5 um PM10: 2.5 to 10 um
Counting efficiency	50% @ 0.3 um, 98% @ >= 0.5 um
Effective range	0 to 500 ug/m^3
Maximum range	0 to 1000 ug/m^3
Maximum consistency error	+/- 10% @ 100 to 500 g/m^3 +/- 10 ug/m^3 @ 0 to 100 ug/m^3
Response time	~10 Seconds***
Active current	~180 mA @ 3.3 battery voltage, ~0.6 W overall
Operating temperature	-10 to 60 C
Operating humidity	0 to 99%
Storage temperature	-40 to 80 C
Mean time to failure	>= 3 Years
Integrated memory	Up to 3200 sensor messages
Wireless range	1,200+ ft non-line-of-sight
Wireless operation	900 MHz—Frequency-Hopping Spread Spectrum 868 MHz and 433 MHz—Frequency-Agile Wireless
Security	Encrypt-RF® (256-bit key exchange and AES-128 CTR)
Weight	3.7 ounces
Certifications FC CE Industry Canada	900 MHz product; FCC ID: ZTL-G2SC1 and IC: 9794A-G2SC1. 868 and 433 MHz product tested and found to comply with: EN 300 220-2 V3.1.1 (2017-02), EN 300 220-2 V3.1.1 (2017-02) and EN 60950

* Hardware cannot withstand negative voltage. Please take care when connecting a power device.
** At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.
*** Response time may vary with stability threshold setting and PM concentration. Increasing the stability threshold will improve response time but reduce stability and accuracy of readings. With higher PM concentrations the sensor will acquire stable readings more quickly.

Installation Note

Install the meter with the intake slits pointing down to prevent accumulation of dust and or moisture in the sensing element housing. Ensure that the intake slit is open to the ambient air without any obstructions within 1 inch from the slits.

Commercial Grade Sensors

IOT's commercial grade sensors are designed for applications in ordinary environments (normal room temperature, humidity and atmospheric pressure). Do not use these sensors under the following conditions as these factors can deteriorate the product characteristics and cause failures and burn-out.

- Corrosive gas or deoxidizing gas: chlorine gas, hydrogen sulfide gas, ammonia gas, sulfuric acid gas, nitric oxides gas, etc.
- Volatile or flammable gas
- Dusty conditions
- Low-pressure or high-pressure environments
- Wet or excessively humid locations
- Places with salt water, oils chemical liquids or organic solvents
- Where there are excessively strong vibrations
- Other places where similar hazardous conditions exist

Use these products within the specified temperature range. Higher temperature may cause deterioration of the characteristics or the material quality.

www.iotsensorid.com.au
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