



# Outdoor Air Quality Monitor

## AirGradient Open Air (Model: O-1PST)

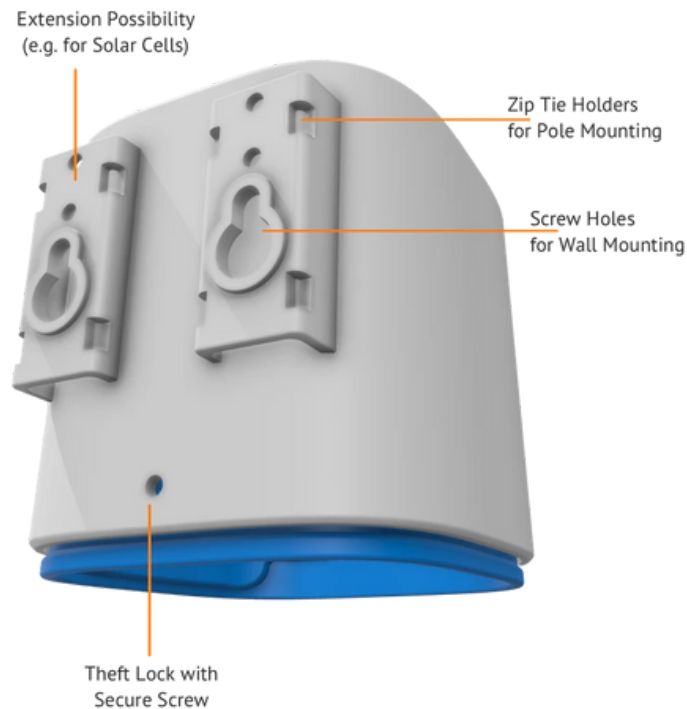
Open Air is an outdoor air quality monitor enabling you to know if the air quality is healthy or not. It measures CO<sub>2</sub>, PM<sub>1</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>, TVOCs, NO<sub>x</sub>, Temperature and Humidity. It's fully open-source and customizable, so you can extend it in whatever way you like.

### Technical Data

Specification	Description
Model	O-1PST (AirGradient Open Air)
Microcontroller	ESP32-C3-MINI (32-bit RISC-V single-core processor, up to 160MHz, 384 KB ROM, 400 KB SRAM, 8 KB SRAM in RTC, 4 MB flash in chip package)
WiFi	2.4GHz IEEE 802.11 b/g/n-compliant
Bluetooth	Bluetooth LE: Bluetooth 5, Bluetooth mesh
Extensions	Broken out on PCB: I2C, 3 GPIO, 2 UART
Peripherals	Status LED, Push Button, USB C Connector
External Hardware Watchdog	Texas Instruments TPL5010
Particle Sensor Module	Plantower PMS5003T (laser scattering principle). Accuracy: $\pm 10\%$ @100~500 $\mu\text{g}/\text{m}^3$ , $\pm 10\mu\text{g}/\text{m}^3$ @0~100 $\mu\text{g}/\text{m}^3$
CO <sub>2</sub> Sensor Module	SenseAir S8 (NDIR). 400 to 10000ppm. Accuracy: $\pm 40\text{ ppm} \pm 3\%$ of reading at 5 to 30°C, 20-70%RH (400 - 2000ppm range)
TVOC/NO <sub>x</sub> Module	Sensirion SGP41. Accuracy: TVOC $< \pm 15$ @ 0 to 500 VOC Index; NO <sub>x</sub> $< \pm 50$ @ 0 - 500 NO <sub>x</sub> Index
Temperature and Humidity	ENS210 (inside PMS5003T module). Accuracy: Temperature $\pm 0.2^\circ\text{C}$ @ 0 - 70°C; Humidity $\pm 3.5\%$ RH @ 20 - 80% RH
Enclosure	ASA Plastic, UV Resistant and Weather Proof
Mounting Options	Wall or pole mounting options
Cable	4m USB C Cable including data lines for flashing
Certifications	CE, RoHS, REACH, FCC ID: 2AC7Z-ESPC3MINI
License	Open Hardware under CC-BY-SA, Source Code available

# Mounting Options

Flexible wall or pole mounting options



## What does it measure?

The monitor focuses on measuring particulate matter, especially PM2.5, which can be harmful to our health. These tiny particles are released into the air from sources like vehicle emissions, industry, fossil fuel burning, and wildfires. When we breathe in PM2.5, it can go deep into our lungs and cause various health problems. Long-term exposure to PM2.5 is linked to respiratory and heart diseases, including asthma, bronchitis, heart attacks, and even early death.

This version of the Open Air also contains a NDIR CO2 sensor from Sensirion and a TVOC/NOx sensor from Senseair allowing the collecting of additional air quality parameters.

## About AirGradient

AirGradient started as a volunteer project in a school in Northern Thailand monitoring dangerously high air pollution levels in classrooms during the “burning season.”

Our mission is to enable people to breathe healthy air by providing open-source, reliable and accurate air quality monitors and supporting organizations and citizens in understanding the air quality in their communities.



[www.airgradient.com](http://www.airgradient.com)

[support@airgradient.com](mailto:support@airgradient.com)