10000 Ambient Air Monitor

1.2 LPM

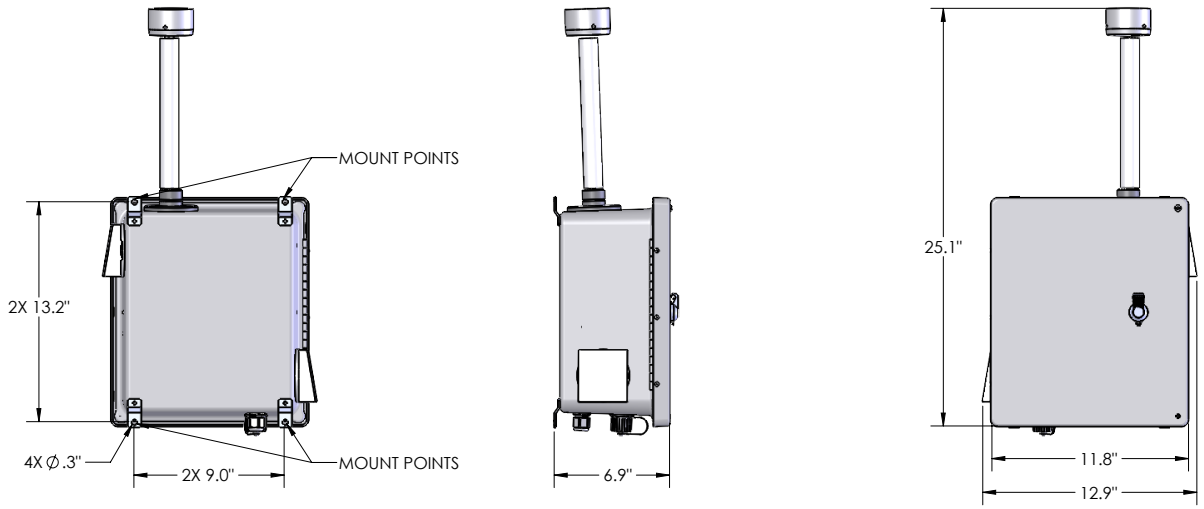
The Particles Plus® 10000 Ambient Air Quality Monitor is engineered for reliable, continuous measurement of ambient particulate matter in outdoor environments. Housed in a NEMA 4 weatherproof enclosure, this unit measures particle sizes from 0.3 to 25.0 µm, and can display up to six user-selectable size channels, ideal for regulatory, research, and public health applications. The 1.2 LPM flow rate is optimized for high-concentration environments providing improved accuracy, reduced coincidence loss, and extended instrument lifespan in comparison to higher-flow models.

The 10000 delivers reliable performance in applications ranging from roadside monitoring and urban air studies to industrial fence-line surveillance and environmental research. Its durable design withstands harsh weather conditions while maintaining high accuracy and sensitivity across a wide range of particle concentrations.

A touchscreen interface inside the enclosures allows for real-time data, feedback and setting adjustment. Optional CO2, TVOC, temperature and humidity sensors further support comprehensive air quality analysis. Data can be simultaneously communicated and logged locally, exported as .CSV, or analyzed via the free Particles Plus® software. The system supports remote internet-based diagnostics and offers multiple communication protocols for seamless integration with environmental monitoring networks, smart city platforms, and government air quality systems. Whether deployed as a standalone or as part of a larger distributed sensor network, the 10000 delivers dependable, field-ready performance for long-term outdoor particulate monitoring.

Features and Benefits

- Measures up to six particle size channels simultaneously
- Approximates mass concentration in µg/m³ with density and refractive index corrections
- User selectable PM sizes from 0.3 µm to 10 µm including TPM of up to 25.0 µm
- Long-life laser diode technology for reliable performance
- Inlet sample humidty and enclosure temperature regulation for precise particle sizing
- Stores up to 45,000 sample records, 1,000 locations, and 50 sampling recipes
- Resolve issues quickly from any location with internet-enabled remote diagnostics
- ULTRAGUARD® Fiberglass reinforced polyester NEMA 4 tamper-proof enclosure
- Optional pole or tripod mount options
- 2 Year Limited Warranty (Extended and Lifetime Warranties available)



Specifications

Model	**10000**
Size Range	0.3 to 25 µm
Size Channels	Factory calibrated at 0.3, 0.5, 1.0, 2.5, 5.0, 10.0 µm
Flow rates	1.2 LPM ±3%
Concentration Limits	15,000,000 particles/ft^3 @ 10% coincidence (per ISO 21501-4), 30,000,000 particles/ft^3 @ 10% coincidence (as tested and validated[1])
Aerosol Concentration Range	0.01 to 20,000 µg/m^3
Light Source	Long life laser diode
Resolution	0.00003 µg/m^3
Zero Stability	No appreciable drift
Count Modes	Particles/second, Real-Time Meter, cumulative/diff. (count/m^3 and count/ft^3) and mass concentration (PM)
Log Interval	1 second to 99 hours
Calibration	NIST traceable
Display	Enclosed 4.3″ (10.9 cm) WQVGA (480×272) color touch screen
Vacuum Source	Internal pump with automatic flow control
Filtered Exhaust	Internal HEPA filter
Number of Channels	6
Custom Size Channels	Calibration for custom size channels available
Communication Options	MODBUS™ TCP over Wired. Optional MODBUS™ TCP over WiFi and optional MODBUS™ RTU or MODBUS™ ASCII over RS-485 or RS-232
Environmental Sensor	Temperature and relative humidity probe: -4º to 122ºF (-20º to 50ºC) ±1ºF (0.5ºC), 0 -100% ± 2%RH
Optional Sensors	NDIR CO_2 (0-5000 ppm, resolution 1 ppm, accuracy ±1% FS, Response rate 20 seconds) TVOC PID, 0-50 ppm / min. detection level 5 ppb, accuracy ±1.5%, Response rate <3 seconds
Alarm	Alarms for all particle values, environmental sensors, flow and sensor failure
Calibration	Particle sensor recommended once per year
User Calibration	Field Calibration of Temperature, Humidity, CO_2 and TVOC possible with included utility software
External Surface	ULTRAGUARD® Fiberglass reinforced polyester - compression molded SMC box and Cover
Dimensions (L x W x H)	12.85 x 7.41 x 25.54 in (32.7 x 18.9 x 64.9 cm) includes barb fittings
Weight	12.5 lbs. (5.66 kg)
Accessories	Quick start guide, operating manual on USB flash drive, mounting feet
Optional Accessories	Printed manual, data cable, pole mounting hardware kit
Data Storage	Internal 45,000 sample records (rotating buffer) including particle count data and environmental data
Power	110 to 240 VAC 50/60 Hz universal in-line power supply
Operating Conditions	-4º to 122ºF (-20º to 50ºC) / 20% to 95% non-condensing
Warranty	2 year Limited Warranty (Extended and Lifetime warranties available)

1- Validated by independent analysis see paper available at www.particlesplus.com/aac2022_paper

PAT. https://particlepatents.com/ Additional Patents Pending.
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