

14000 Ambient Air Monitor

Condensation Particle Counter & Optical Particle Counter



The Particles Plus 14000 is the first real-time dual mode ambient monitor to feature both a condensation particle counter and an optical particle counter in an integrated unit. The 14000 condensation particle counter is designed to detect and count aerosol particles by first enlarging the particulates using a supersaturated vapor. These robust monitors provide reliable, accurate measurement of airborne particles across a very wide size range (from fines to ultrafines) allowing for the detection of environmental and public health concerns involving airborne particulates.

Real-Time Data

The optical particle counter (OPC) bins fine particulates in up to 30 particle size channels (from 0.3 μm to 25 μm) which are stored in on-board memory at a user-defined data sampling rate (1 second to 99 hours per sample). The condensation particle counter (CPC) measures ultrafine particulates as small as 5 nm (0.005 μm) and provides a total particle count above this threshold, this data is also stored in each of the above samples to provide a more complete view of air quality.

Internet-Enabled

Particles Plus systems are configured to allow users to push real-time data to the cloud where sensor outputs can be visualized by authorized stakeholders.

Fully Integrated Environmental Sensor System

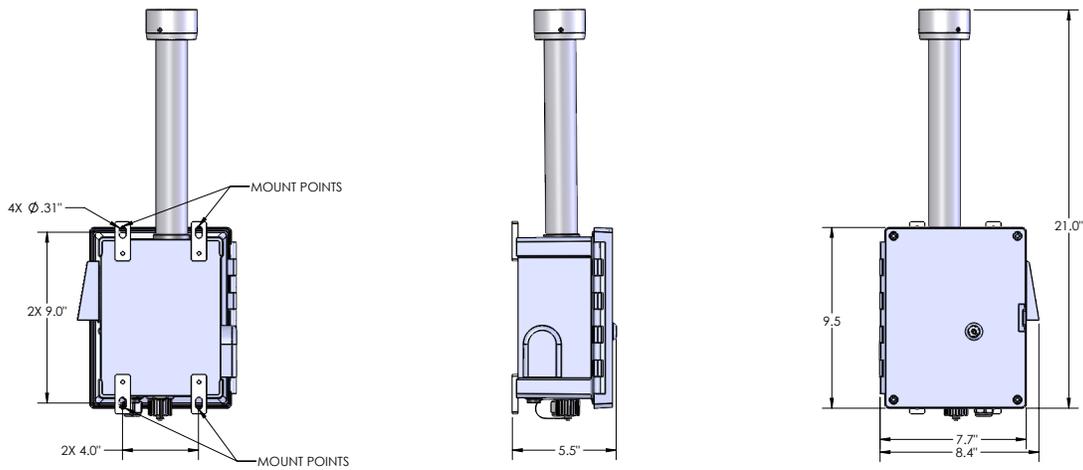
Integration of additional sensors for measurement of environmental and meteorological parameters including relative humidity, temperature, barometric pressure.

Applications

- Airborne Pollution and Environmental Research
- Perimeter or Fence-line Monitoring for Construction, Remediation or Waste Sites
- Mine and Quarry Fence-line Monitoring for dust control operations
- City Wide or Community Air Pollution Monitoring
- Roadside Emissions Monitoring
- Medical Facilities Property Monitoring
- Power Line Wild-Fire Monitoring
- Environmental Disasters

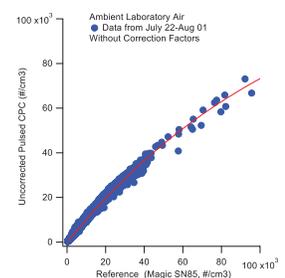
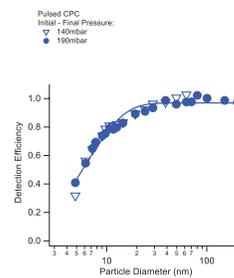
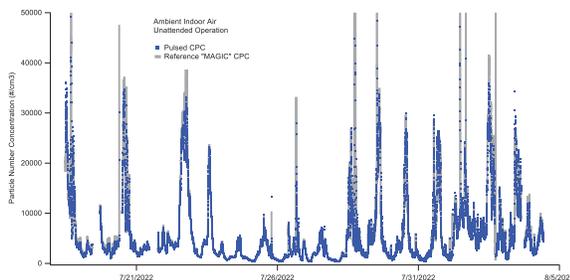
Features and Benefits

- User-selectable PM sizes from 0.3 to 25 μm (from the OPC)
- Total particulate counts above the ultrafine threshold (0.005 μm , from the CPC)
- Closed-loop humidity control for the OPC airstream
- Closed-loop condensation control within the enclosure
- CPC Aerosol Concentration Range of 0 to 100,000 particles per cubic centimeter
- ULTRAGUARD® Fiberglass reinforced polyester NEMA 4 rated outdoor tamper-proof enclosure with internal thermal control
- Optional pole or tripod mount options
- Optional Cloud based data management software subscription available for remote monitoring
- Monitor for 24 hours a day, 7 days a week, 365 days a year



Specifications

Model 14000	Optical Particle Counter	Condensation Particle Counter
Measured Parameter	Fine particle counts, concentration and mass	Ultrafine particle concentration
Operating Principle	Optical light scattering	Optical light scattering after water vapor growth
Condensation Approach	None	Near-adiabatic expansion with single particle counting
Concentration Range	0.01 to 20,000 $\mu\text{g}/\text{m}^3$ (50,000,000 particles/ ft^3)	0 to 100,000 particles/ cm^3
Particle Size Range	0.3 to 25 μm	0.005 to 3.0 μm
Size Channels	Factory calibrated at 0.3, 0.5, 1.0, 2.5, 5.0, 10.0 μm variable binning	0.005 μm threshold (one size bin)
Efficiency	50% @ 0.3 μm ; 100% for particles >0.45 μm per JIS	$\pm 10\%$ below 30,000/ cm^3 , $\pm 20\%$ at higher concentrations
Sample Rate	Minimum 1 second with no hold time, maximum 99 hours	6s cycle time
Number of Channels	Up to 30 channels	1
Liquid Requirement	None	Distilled water
Flow Rate	1.2 LPM	Variable
Internal Vacuum Pump	Internal pump with closed-loop control	Internal pump with local control
Operating Conditions	-4° to 122°F (-20° to 50°C) / 20% to 95% non-condensing	45° to 100°F (5 to 38°C)
Custom Size Channels	Calibration for custom size channels available	
Communication Modes	Ethernet, USB. (Optional) Wireless 802.11 b/g, RS485, RS232 or LoRaWAN	
Environmental Sensor	Temperature -4° to 122°F (-20° to 50°C) $\pm 1^\circ\text{F}$ (0.5°C) Relative Humidity 0 -100% $\pm 2\%\text{RH}$	
Alarm	Alarms for all particle values, environmental sensors, flow and sensor failure	
Instrument Calibration	Particle sensor recommended once per year	
User Calibration	Field calibration of temperature and humidity possible with included utility software	
External Surface	ULTRAGUARD® Fiberglass reinforced polyester - compression molded SMC box and Cover	
Dimensions (L x W x H)	5.5 x 8.4 x 21 inch (13.9 x 21.3 x 53.3 cm) includes barb fittings	
Weight	6.7 lbs. (3.0 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 65,000 sample records (rotating buffer) including particle count data and environmental data	
Power	110 to 240 VAC 50/60 Hz universal in-line power supply	
Warranty	2 year limited warranty. Extended warranties available	



PAT. <https://particlepatents.com/> Additional Patents Pending.
 Particles Plus, Inc. reserves the right to change specifications without notice.
 Contact hello@particlesplus.com or your local distributor for more details.
 Particles Plus and the Particles Plus logo are trademarks of Particles Plus, Inc.
 ©2022 Particles Plus, Inc. All rights reserved.

REV 20230913-14000



31 Tosca Drive
 Stoughton, MA 02072 U.S.A.
 +1-781-341-6898
www.particlesplus.com