

E-Sampler

Dual Ambient Air Monitor/Sampler

The **E-Sampler** is a dual technology instrument that combines the real-time measurement capability of light scatter with the accuracy standard of filter methods.

Real-Time Monitoring: The **E-Sampler** provides real-time particulate measurement through near-forward light scattering. A long lifetime diaphragm pump draws air at 2 LPM into the sensing chamber where it passes through visible laser light. Aerosols in the air scatter light in proportion to the particulate load in the air. Scattered light is collected by precise glass optics and focused on a PIN diode.

Filter Sampling: Filter medium can be selected based on laboratory analysis requirements. The simple filter loading process testifies to the seamless blending of both technologies. Filters can be extracted and replaced in less than one minute. Particulate loading on the filter does not reduce performance due to the Met One actual flow control protocol. Ambient temperature and barometric pressure are measured, and actual flow is calculated and controlled by the E-Sampler microprocessor, independent of filter loading change.

The **E-Sampler** is a rugged, highly portable, and easy to use ambient air sampling instrument. The all-aluminum enclosure is not only rugged but provides electronic stability by filtering potential RF interference. Every E-Sampler is factory calibrated using polystyrene latex spheres of known index of refraction and diameter.



Features

- PM_{10} , $PM_{2.5}$, PM_{1} , & TSP Monitoring
- Laser-Diode Precision Optical Engine, Protected by Purge Air
- Integral 47mm Analysis Filter
- Completely Self-Contained Unit with Aluminum Weatherproof Enclosure
- Automatic Flow Control Protocol
- Measures Ambient Temp and BP
- Programmable Auto-Zero & Auto-Span
- Internal Data Logger
- Optional Internal Battery
- User-Friendly Filter Replacement

Specifications

Measurement Principles:	Laser Light Scatter and 47mm low flow gravimetric filter sampler.
Available Cut Points:	TSP Inlet Standard. (PM ₁₀ , PM _{2.5} , and PM ₁ sharp-cut cyclones available.)
Measurement Range:	0 to 100 mg/m ³ dynamic range.
Nephelometer Accuracy:	± 10% to gravimetric method typical when K-factored to local particulate type.
Gravimetric Accuracy:	± 8% of NIOSH 0600.
Precision:	Greater of 3 µg/m ³ or 2%.
Data Storage Resolution:	1 µg/m ³
Data Storage Intervals:	User-Selectable 1, 5, 10, 15, 30, or 60 minute averages.
Data Update Interval:	1-second measurements, available on analog output and display.
Sample Cycles:	Continuous operation or programmable scheduled sample runs.
Particle Size Sensitivity:	0.1 to 100 micron. Optimal sensitivity 0.5 to 10 micron particles.
Laser Type:	Diode Laser, 5 mW, 670nm. Visible red.
Long Term Stability:	5% with clean optics.
Flow Rate:	2.0 liters/minute ± 0.1 lpm. Actual volumetric flow.
Pump Type:	10,000 hour brushless diaphragm sample pump and secondary purge pump.
Gravimetric Filter Type:	47mm disc filters (not included). Accepts standard FRM filter holder cartridges.
Automatic Zero and Span:	User-selectable 1 hour, 2 hour, 12 hour, or 24 hour intervals. ≈2.8 min cycle.
Optional Internal Battery:	12V, 5 Amp-Hour. (Optional, deep cycle AGM, MOI P/N 390037.)
Internal Battery Run Time:	Up to 12.5 hours with inlet heater off. Up to 4 hours with inlet heater on.
Power Supply:	Universal 100-240 VAC input, 15 VDC output power supply included. Compatible with solar power kits or external batteries using optional DC power cable.
Power Consumption:	1.1 amps @ 12 VDC (15 Watts) max continuous draw, running with inlet heater on. 0.35 amps (4.2 Watts) running with inlet heater off.
Operating Temp Range:	0 to +50°C . (Ambient Temperature Sensor Range -30 to +50°C).
Barometric Pressure Range:	60,000 to 104,000 Pascal pressure sensor range.
Ambient Humidity Range:	0 to 90% RH, non-condensing.
Humidity Control:	Automatic 10 Watt inlet heater module controlled to sample RH setpoint. Sample RH sensor standard. Ambient RH standard with 83832 Temp/RH Sensor.
Approvals:	ISO-9001. Designed to agree with EPA Class I and Class III FRM/FEM particulate samplers and monitors. (Not an EPA-designated equivalent method.)
User Interface:	Menu-driven interface with color LCD 2 button and selector knob user input.
Analog Voltage Output:	0-1, 0-2.5, or 0-5 volt DC output. User-set range with 1-second real-time output.
Serial Interface:	RS-232 duplex serial port for PC, data logger, or modem communications.
Alarm Contact Closure:	Normally closed contact closure relay output. Contact rating 0.3A @ 125V VAC; 1A @ 30 VDC.
Compatible Software:	Comet™ (included), Air Plus™, terminal programs such as HyperTerminal®
Alarm Reporting:	Available through serial port data files, display, and relay output.
Memory:	22,528 data logger records (938 days @ 1 record/hr, 15.6 days @ 1 record/min).
Factory Service Interval:	24 Months typical, under continuous use in normal ambient air.
Mounting Options:	Pole or wall mount bracket included. (Optional EX-905 tripod recommended.)
Unit Weight:	5 kg (11 lbs) without tripod, battery, or optional accessories.
Unit Dimensions:	65cm high, 27cm wide, 16.5cm deep. (25.5" x 10.5" x 6.5"). With inlet assembly.



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