



UPAS Ultrasonic Personal Air Sampler



“Imagine if personal air
sampling was simple.

One, lightweight, quiet,
pre-programmed,
and tamper proof unit.

No calibration.
No tubes. No tape.
Simple.”

The Ultrasonic Personal Air Sampler (UPAS) provides a new paradigm of exposure assessment for particulate matter air pollution.

Variable Particle Sizes

Depending on the user there are typically 3 particle sizes of interest, the smallest being PM 2.5 and largest being PM 10. In between there's Respirable, usually referenced to Silica. The UPAS has different inlets to size-select the particles you want to collect. Those inlets are also sized differently for different flow rates.

Benefits of Tubeless Design

The UPAS is a self-contained, filter-integrated sampler. It's ultrasonic pumping technology provides substantial reductions in size, weight, noise, and cost along with increased durability over traditional sampling equipment.

Additionally the hassle-free tubeless design allows the UPAS to fit directly onto a person with no tubes or tape required. It is silent and light enough to be worn directly in the subject's breathing zone. Therefore it is easy for the subject to wear while performing daily activities.

Reliable Steady Flow Rate

In addition to being quiet and energy efficient, the mass flow sensor enables the device to maintain a constant sampling flow rate and measures changes in pressure drop across the filter media, giving the UPAS the advantage of having reliably steady flow rate over time.

APPLICATIONS

- Construction
- Outdoor Studies
- Indoor Studies
- Industrial Hygienists
- Environmental Consultants
- Researchers
- Epidemiologists

FEATURES

- Integrated Size Selective inlets
- 35+ hours of battery life
- GPS tracking
- Wireless connectivity
- UPAS App control

SPECIFICATION

• Exterior Size	128mm x 70mm x 23mm
• Weight	230g
• Noise	<40 dB
• Filter Cartridge	37 mm (quick inter-changeable cartridge)
• Battery Type	Li-ion
• Operation Temperature	0-50°C
• Flow Rates	0.5LPM to 3.0 LPM ($\pm 5\%$) accuracy
• Particle Size	PM2.5 - PM10
• Battery Endurance	>35 hours at 1 L min ⁻¹ (std) External Battery (optional)
• On-board Sensors	Mass Flow Control Atmospheric Pressure Temperature Relative Humidity GPS Filter Differential Pressure
• Mounting	Body - Armband, clothing clip, lanyard, safety vest etc Fixed - Standard tripod mount

**Easy Setup**

In all gravimetric samples, filter media must be pre and post-weighed before and after sample collection. Most users work with their local laboratory to weigh the filter and return the mass data. The UPAS collects all of the data during a sample session and logs that to a file that can be exported over Bluetooth or extracted directly from the micro SD card that is part of the UPAS hardware.

The logfiles hold additional information that provide details of the sample, time stamps, GPS, temperature, humidity and pump flow control throughout the sample. Other pumps must have their flow checked before/after each sample run to ensure that the flow was maintained at the correct flow. Note that some test standards/methods require this anyway even though the UPAS maintains the flow rate on its own.

**Easy Access to Data**

The UPAS app is primarily a method to program the UPAS and set up the sample parameters along with various options for initiating the sample (now, at a future time, or next press of the start button). It can be quickly programmed from any tablet or phone to fit the users' needs across various applications. Collected data can be uploaded wirelessly to a phone or computer with the UPAS app. Data is easily accessible while keeping the UPAS deployed.

Less Maintenance

Because it is designed with no moving parts, it requires less time for overall maintenance and service.

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Rev 1.0 Sept 19

