

## BioGuardian® Air Sampler

The BioGuardian® Air Sampler is a unique high volume air sampling system based on InnovaTek's patented technology developed under U.S. Defense Department funding. Four different models are available that capture and concentrate airborne chemicals and bioparticles in the size range of interest for human health or agricultural monitoring. The BioGuardian Sampler can be designed for your specific needs and desired particle size range.



### System Components

**Pre-separator** also known as the “clamshell” this component has a transparent “hopper” and removes particles  $\geq 20 \mu\text{m}$  from the air stream before entering the Cyclone Collector/ Concentrator

**Cyclone Collector/Concentrator** is an integration of several stainless steel and plastic subcomponents in a patented system that separates small particles (1-10  $\mu\text{m}$ ) from the air and concentrates them into a small volume (about 10 ml) of liquid using centrifugal forces.

**Fluidics System** consists of the system's plumbing, i.e. pumps, valves, and tubing to load, cycle, and eject liquid.

**Fluid Bottles** are 0.5-3 liter sterile bottle/bags with a septum at the base that are used to hold the liquids used during system operation; two liquids are typically used: 1) 0.01% surfactant/antifoam solution used for sampling and rinsing, and 2) 3% hydrogen peroxide used for decontaminating. Sterile bottles and septum closures may be purchased directly from Nalgene®.

**Electronics System** consists of a microcontroller, a timer, switches, relays, voltage regulators, MOSFET switches, and a power supply. The microcontroller allows the system to perform a complete collection cycle with the touch of a single button.

**Control Panel** is used to start and stop the sample mode and to set the sample time; it loads the system with liquid, turns on the blower for the time period specified with the timer, stops the blower, and ejects the liquid from the system.

**Sample Output** liquid with concentrated bio-particles is ejected into a sterile 50-ml conical vial for further analysis. Alternatively, sample tubing may be connected to your integrated detector for real time analysis.

**Carrying Case** on wheels with a pull handle is used to ship and transport the system.

## System Specifications

- Collects and concentrates invisible airborne particles (1-10  $\mu\text{m}$  size range) & chemical vapors
- Particles concentrated into small volume of liquid (10-15 ml) for output in batch mode, or can deliver a constant amount of liquid over time (e.g. 1 ml per minute) for continuous sampling
- Pre-separator removes large interfering particles  $\geq 20 \mu\text{m}$
- > 70% collection efficiency for *Bacillus spores*
- Automatic replacement of liquid lost to evaporation; maintains a constant liquid level of about 10 ml
- Automated control features
- Continuous or intermittent sampling times, minutes to hours
- Automated decontamination using hydrogen peroxide or bleach
- Operating temperature 5 to 40°C
- Storage temperature -20 to 60°C

|                    | Model 12.03-1000   | Model 5.03-450     |
|--------------------|--------------------|--------------------|
| Air Flow Rate*     | 1000 LPM           | 450 LPM            |
| Power requirements | 450 Watts, 110 VAC | 250 Watts, 110 VAC |
| Height/Diameter**  | 61 cm/37 cm        | 59 cm/33.5 cm      |
| Weight             | 60 lbs/23 kg       | 50 lbs/19 kg       |

\* 100 LPM system available by special order

\*\* OEM system geometry can be designed to your specifications

## Technology Design

- Second generation design optimized for high collection and concentration efficiency
- Novel wet-walled multi-cyclone inner collector (patented)
- Unique outer centrifuge/impactor to reduce system interference from large particles (patented)
- User-friendly control system and carrying case

## Pricing

Price quotes are available upon request.

Price reduction of 10% or more for quantity orders.

Further price reductions for OEM units. Please contact us to discuss your needs.