



# BioHawk Plus High-Volume Concentrator + 8-Channel Collector/Bioidentifier

**PLUS PRODUCTS:** Combinations That Make Sense



**BioHawk Plus – Concentrator  
PLUS 8-Channel  
Bioidentification System.**

BioHawk Plus combines a high-volume aerosol concentrator (SASS 4000) with an 8-channel collector/bioidentifier (BioHawk). The system concentrates particulates from ambient air then passes them on to a wetted-wall air sampler that extracts the particulates from the air stream and transfers them into a liquid phase. The liquid sample is then automatically analyzed by fluoro-immunoassay.

The system continuously samples over 3500 liters/minute of ambient air. Particulates in this air stream are transferred to a much smaller secondary air stream using centrifugal and virtual impaction principles. Particles are then routed into the secondary flow where

centrifugal force and particle momentum isolate and concentrate the particles. The secondary flow can reach aerosol concentrations that are 4X to 15X higher than present in the incoming air.

Secondary airflow is then routed (via a hose connection) into the integrated wetted-wall aerosol collector of the BioHawk system where particulates are captured and concentrated in the collector operating fluid. Then the concentrated sample is automatically transferred to the bioidentifier portion. Assay results are typically available in 20 minutes. Bioassays are performed within a small disposable credit card-sized plastic assay coupon which may be used for up to 10 assay procedures before being discarded. Since a single assay coupon can handle up to eight different analytes simultaneously, up to 80 individual assays may be performed before discarding or removing the coupon. This capability simplifies field use and substantially reduces life cycle costs.

## FEATURES

- Maintenance is minimal.
- Wide operating temperature range.
- Sampled air volume is maximized, improving collection statistics.
- Man portable.
- Air collection at 325 LPM, nominal.
- Disposable wet assay coupon reusable up to 15 times.
- Eight simultaneous assays.
- Fast assays: 10 - 15 minutes typical.
- Identifies: toxins, bacteria, spores, fungi, multi-cellular pathogens.
- Sensitivity: analyte dependent, 1 to 10 ppb typical for toxins, 100 to 100,000 CFU/ml for bacteria.
- Designed to MILSPEC 810F.

## APPLICATION AREAS

- Counter-terrorism
- Epidemiology
- Agriculture
- Food processing air quality
- Medical facility air quality



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## BioHawk Plus Dry/Wet Air Sampling and Bioidentification System Specifications

Concentrator (SASS 4000)	
Characteristic	Description
<b>Primary airflow:</b>	3,600+ liters/min is sampled uniformly from around the concentrator's circumference.
<b>Secondary airflow:</b>	325 LPM at +0.4 cm of water static head.
<b>Secondary airflow connection:</b>	Hose barb fitting on base surface for nominal 3.8 cm ID hose.
<b>Concentration enhancement:</b>	4 - 15 times, typical, depending on primary/secondary airflow ratio.
<b>Overall size:</b>	38 cm high x 25.4 cm diameter max.
<b>Weight:</b>	6.32 kg (13.9 lbs.)
<b>Operating temperature range:</b>	-40°C to 60°C
<b>Power consumption:</b>	<ul style="list-style-type: none"> <li>• 90 watts for 28 V ECM drive motor. If operated from DC, please specify DC source voltage of 12, 24 or 28 VDC.</li> <li>• 100 to 230 VAC lump-in cord AD/DC converter supplied. Please specify AC voltage range required.</li> </ul>
<b>Sound level:</b>	72 db-A @ 1 meter radius on inlet equatorial plane.
<b>Mounting:</b>	Quick-detach tripod legs; 0.53m to 1.46m adjustable height.
<b>Accessories:</b>	<ul style="list-style-type: none"> <li>• Hard shell carrying case.</li> <li>• Electret sample filter assembly (for stand-alone operation).</li> </ul>
8-Channel Collector/Bioidentifier (BioHawk)	
<b>Use profile</b>	Indoor/outdoor sample collection, transfer, and assay; storage of 255 assay recipes; user in full MOPP gear either walking or in moving vehicle.
<b>Collection principle</b>	Multi-stage wetted-wall cyclone with enhanced particulate collection.
<b>Assay method</b>	Disposable wet assay coupon-reuseable more than 10 times. Eight simultaneous software-based assays. Antibody or nucleic acid. Coupon reseals on removal for archival storage.
<b>Fluid Handling</b>	Fluids manipulated under microprocessor control using peristaltic and syringe pumps; sample may be oscillated to lower assay time; reagent is recovered for reuse.
<b>Fluids storage</b>	Snap on 3-section fluid pack. Clean water: 1 liter; Buffer: 250 ml. Waste: 500ml. Assay samples may be optionally stored in a detachable 8cc vial for later analysis.
<b>Human interface</b>	Day/night Touchscreen LCD display. Usable in MOPP gear.
<b>Digital communication</b>	RS-232 bi-directional serial link
<b>Physical size</b>	35.6 cm W x 36.5 cm H x 17.1 cm D
<b>Weight</b>	21.7 lbs. dry; 26.7 lbs. with battery and fluids (9.8/12.1 kg).
<b>Operating/storage</b>	1 to 66°C and -29 to 66°C. Reagent deterioration can reduce upper limit significantly
<b>Humidity</b>	10% and above. May be operated in rain.
<b>Survivability</b>	MILSPEC 810F; MTBF of about 30,000 hours is determined by air sampler fan
<b>Data storage</b>	Flash memory retains raw/processed data for over 6000 assays.
<b>Power Consumption</b>	6.2 W at idle; 17.8W with fan operating and one assay performed each 30 minutes

<b>Power source</b>	Primary battery BA-5390A/U, 1.05 kg (2.3 lb); lifetime 14 to 45 hours. Rechargeable battery UBI-2590; lifetime is approximately 56% of the BA5390A/U primary battery. Universal lump-in-cord power supply, 82-265 Volt (47-63 Hz).
<b>Alarm</b>	Visual LED and 103 dB @0.6m waterproof horn; adjustable. RS-232 data link.
<b>Decontamination</b>	Auto-flush protocols using onboard water, or manual flush with detergent and/or disinfectant. High-performance pull-through fan easily remove if contaminated.
<b>Sound level</b>	60 dB (A).
<b>Ancillary equipment</b>	Heavy-duty hard-shell transport case with wheels.
<b>Analyte range</b>	Toxins, viruses, bacteria, spores, fungi, multicellular pathogens
<b>Sensitivity</b>	Analyte dependent, 1 to 10 ppb typical for toxins, 100 to 100,000 CFU/ml for bacteria.
<b>Assay time</b>	Dependent on assay; 10 to 20 minutes typical.
<b>Reagent storage</b>	Reagent stored onboard assay coupon; may be reused up to 15 times depending on assay protocol.
<b>Confirmatory sample</b>	Confirmatory sample may be stored in assay coupon or 8cc sample vial.
<i>Research International reserves the right to change specifications without prior notice</i>	

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