BioHawk 8-channel collection and bioidentification system

BioHawk® is a portable 8-channel automated bioassay system equipped with an onboard aerosol collector. It is suitable for the high-sensitivity identification of biological agents of all kinds contained either in liquid samples introduced into its sample port, or aerosols collected with its built-in 325 LPM air sampler. Assay results are typically available in 15 to 20 minutes.

No prior experience performing wet bioassays is necessary. All assay protocol steps are programmed into the unit. Samples are processed automatically.

In addition to assaying liquid biological samples, the built-in air sampler allows BioHawk to continuously monitor surrounding air for threat agents and to periodically transfer wet samples to the bioidentifier portion with all steps automatically performed.

Windows-based software provided at no extra charge allows sophisticated users the option of writing and downloading their own sampling and bioassay protocols.

Bioassays are performed within a disposable credit card-sized plastic assay coupon which can be used for up to 10 assay procedures before being discarded. Because a single assay coupon can handle up to eight different analytes simultaneously, a user can perform up to 80 individual assays before discarding the coupon. Assay results are transmitted through the touch panel LCD display, an audible alarm, a pulsating light, or by Bluetooth wireless or RS-232 link to personnel at a remote location. System operation may also be remotely controlled in real time.

Functions such as air sampling and bioidentification are performed using multi-step recipes developed by Research International and stored in the system's computer memory. Users need only the most fundamental level of training since the internal processes and steps are preset through the built-in computerized recipes. For more advanced users, Windows-based software allows the user to develop their own customized sample collection and detection protocols.

FEATURES

- The only fully automated portable bio-identifier in the world
- Liquids, liquefied solids, and aerosol samples
- Fully automated procedures for processing all sample types
- Portable. Weighs less than
- 12.1 kg fully loaded.
- Aerosol sample collection at 325 LPM, nominal.
- Disposable wet assay coupon. Reusable up to 10 times.
- Fast assays: 10 - 15 minutes typ.
- Auto-flush protocols for decontamination.
- Toxins, bacteria, spores, fungi, multi-cellular pathogens.
- Designed to MILSPEC 810F.
- Flash memory retains data for over 6,000 assays.

APPLICATION AREAS

- Environmental
- Air quality
- Agriculture
- Public Health
- Medical facilities
- Homeland security
- Military
- Power plants

General Specifications for BioHawk 8-Channel Collector/Bioidentifier	
Characteristic	**Description**
Use profile	Indoor/outdoor collection, transfer, and assay of liquid or aerosol samples; storage of 255 assay recipes; user in full MOPP gear either walking or in moving vehicle.
Sample introduction	4ml liquid or liquefied solid sample inserted into sample port, or automated aerosol sample collection and transfer protocol based on built-in wetted-wall cyclone.
Assay method	Disposable wet assay coupon is re-useable up to 10 times. Eight simultaneous software-based assays. Antibody-based. Coupon reseals on removal for archival storage.
Fluid Handling	Fluids manipulated under microprocessor control using peristaltic and syringe pumps; sample may be oscillated to lower assay time; reagent is recovered for reuse up to 10 times.
Fluids storage	Snap on 3-section fluid pack. Clean water: 1 liter; Buffer: 250 ml. Waste: 500ml. Assay confirmation samples may be optionally stored in a detachable 8cc vial for later analysis.
Human interface	Day/night Touchscreen LCD display. Usable in MOPP gear.
Digital communication	RS-232 bi-directional serial link
Physical size	35.6 cm W x 36.5 cm H x 17.1 cm D
Weight	21.7 lbs. dry; 26.7 lbs. with battery and fluids (9.8/12.1 kg).
Operating/storage	1 to 66°C and -29 to 66°C. Reagent deterioration can reduce upper limit significantly
Humidity	10% and above. May be operated in rain.
Survivability	MILSPEC 810F; MTBF of about 30,000 hours is determined by air sampler fan.
Data storage	Flash memory retains raw/processed data for over 6000 assays.
Power Consumption	6.2 W at idle; 17.8W with fan operating and one assay performed every 30 minutes.
Power source	BA-5590/U primary battery; or rechargeable battery UBI-2590. Universal lump-in-cord power supply, 82-265 Volt (47-63 Hz).
Alarm	Visual LED and 103 dB @0.6m waterproof horn; adjustable. RS-232 data link.
Decontamination	Auto-flush protocols using onboard water, or manual flush with detergent and/or disinfectant. High-performance pull-through fan easily remove if contaminated.
Sound level	60 dB (A).
Ancillary equipment	Heavy-duty hard-shell transport case with wheels.
Bioassay Specifications	
Analyte range	Toxins, viruses, bacteria, spores, fungi, multicellular pathogens
Sensitivity	Analyte dependent, 1 to 10 ppb typical for toxins, 100 to 100,000 CFU/ml for bacteria.
Assay time	Dependent on assay; 10 to 20 minutes typical
Reagent storage	Reagent stored onboard assay coupon; may be reused up to 10 times depending on assay protocol.
Confirmatory sample	Confirmatory sample may be stored in assay coupon or 8cc sample vial.
Air Sampling Specifications	
Air collection rate	325 LPM, nominal
Particulates collection range	1-10 µm
Concentration ratio	65,000/min., nominal
Liquid inventory	4 to 5cc. Factory set but adjustable under computer control. Patented control process maintains a constant liquid volume in the sampler, independent of collection time, temperature, or humidity; useful for concentrating trace airborne analytes.
Air inlet	Screened rectangular opening. Hose adapters available.
Research International reserves the right to change specifications without prior notice.	

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