

BioHawk LF[®]

Automated Detection, Collection, and Bioidentification

The BioHawk LF[®] is an automated system for detecting, collecting and identifying airborne pathogens based on bio-fluorescent detection and multi-analyte lateral flow immunoassay (ticket) identification. The system will sample a targeted air stream for a period of up to months without human intervention. Upon detection of a suspicious aerosol, the bioidentification process can be programmed to occur automatically or may alternatively be manually initiated.



BioHawk LF[®] system for automated detection, collection, and bioidentification

Results are provided through an onboard display and serial digital data link.

The biodetector-triggered assay mode significantly lowers operating costs. Assays are only performed when a bioaerosol has been detected, and there is no lag between processing and testing. This is in contrast to protocols where assays are run at fixed intervals or in batch product processing where each batch must be tested before release.

Using commercial, off-the-shelf bioassay tickets, the presence of up to eight biothreat agents may be determined in a time period of 5 to 15 minutes. Bioassay tickets are provided in hermetically sealed carrier modules that are loaded into the instrument. Loaded carrier modules are viable for several months and provide the ultimate in automated long-term bio-surveillance.

Machine vision methods are used to determine the presence of pathogens. There is no need to educate users on assay interpretation. Assays are insensitive to ambient light level or color balance. A transfer vial is standard for after-assay storage of sample fluid for use with an alternative confirmation method.

Bioassay ticket testing is perhaps the most widely used and mature technology for the identification of biothreats at trace levels. Tickets have a long shelf life, typically 12 to 18 months, and require no special storage conditions. Bioassay tickets are available for a variety of possible threats from multiple sources, and tests for new threats are commonly developed as the need arises. The BioHawk LF is obsolescence-resistant in that regard.

FEATURES

- A sophisticated aerosol biodetector/sampler/wet bioidentifier
- Suitable for toxins, bacteria, spores, fungi, multi-cellular pathogens
- Performs up to 8 simultaneous bioassays on collected samples
- 325 liter/minute air sampling rate
- Hours-long air sampling times
- Uses widely available lateral flow immunoassay tickets
- Room temperature storage of consumables
- Machine vision-based assay protocol
- Incorporates multiple novel patented technologies
- Fast assays: 5 - 15 minutes typ.
- Auto-flush protocol for decontamination and cleaning
- Flash memory retains data for over 6,000 assays

APPLICATION AREAS

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

The biodetector and automated ticket assay module are patented technologies that are also used in other Research International products – notably the AnCam 6100 and VBAD 3600 – systems that are currently in use by world governments to determine the presence of airborne pathogens.

The BioHawk LF is particularly well-suited for use as part of a complete CBRN monitoring program. It is cost-competitive, reliable and user-friendly. Its high degree of automation results in ease of use by less experienced personnel.

Typical Specifications for the BioHawk LF®	
Characteristic	Description
Exterior air sampling rate	300 liters/min. Weather-proof inlet and outlet penetrations.
Aerosol biodetector - trigger for sampling process	UV bio-fluorescence detector. Average time-to-alarm is 30 secs. Will detect 20 ACPLA bioaerosol levels with 90% or better probability at a background alarm rate of 1 per month.
Air sampling rate for biological aerosol detector	1.4 liters/min
Biological sample preparation after trigger signal	Liquid sample: wetted wall cyclone
Confirmatory assay sample preparation after trigger signal	An 8 ml sample is automatically provided in a polyethylene vial.
Bioassay method	Automatic robotic lateral flow immunoassay. Minimum and maximum times-to-detect are 5 and 15 minutes, respectively. Overall time 20 minutes or less.
Number of simultaneously identifiable biological agents	Up to 8 agents on a single test cassette.
Bioassay procedures performed before system requires service	One
Bioassay consumables life	18 months, typical, when stored unopened between 5°C and 40°C. Single-use product.
Consumables	1) Bulk deionized water; 2) buffer; and 3) wash fluid. Buffer and wash fluid are provided as single use bottles.
Process control details	Industrial PC-based control/protocol software. Touch screen control. Fully automated and integrated sampling, sample preparation, bioassay and cleaning protocols. Immediate operator alert upon any detected fault.
Output upon positive result	Immediate light and sound alarms, signal provided for remote alarm
Ethernet connectivity	Standard RJ-45 connection to onboard computer
Operating temperature range	5°C to 40°C
Environmental standards, shock and vibration	Appropriate sections of MIL-STD-810
Power	37 W at 28 VDC
Physical footprint (cm); weight	47.0 W x 24.8 D x 36.5 H (cm); 13 kg
Exterior Noise level	Less than 70 dB-a
<i>Research International, Inc. reserves the right to change product and system specifications without prior notice.</i>	

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