

PORTABLE AIR MONITOR

MicroBAM Series

Model – MicroBAM-3ZL

FEATURES:

- FAST, PORTABLE DETECTION & ANALYSIS OF AIRBORNE RADIATION
- SYSTEM WEIGHT ONLY 11 KG
- DETACHABLE CART
- HIGH SENSITIVITY TO 10^{-13} $\mu\text{Ci/cc}$
- SIMULTANEOUSLY MEASURES; DISPLAYS 3 CHANNELS
- 2 Ghz PORTABLE PC (INCLUDED)
- REAL TIME ALARMS BASED ON CONCENTRATION NOT JUST ACCUMULATION
- READS DIRECTLY IN $\mu\text{Ci/cc}$ as well as TOTAL DOSE (DAC or **ANY UNITS**)
- ALL CALCULATIONS DONE AUTOMATICALLY
- DISPLAYS GRAPHS OF ALL 3 CHANNELS
- ALL DATA STORES ON FLASH DRIVE OR TERABYTE HARD DRIVE
- ETHERNET PORT FOR DATA TRANSFER
- DYNAMIC BACKGROUND SUBTRACT
- SAMPLING HEAD IS SEPARABLE AND REMOVABLE
- MEETS REG. GUIDE 8.25 AND REVISED 10 CFR 20
- **OPTIONAL:** PRINTER



CART or HAND CARRY



PROBLEM:

Radioactive material can become airborne quickly and silently within the workplace or in a hazmat situation.

Breathing radioactive material can cause irreversible damage to health. Most air monitors are not portable and most portable radiation monitors will not detect airborne radiation.

SOLUTION:

The **MicroBam-3ZL** is a lightweight portable air radiation monitor. With real time alarms it both detects and analyzes airborne radiation providing critical information for enacting emergency procedures such as donning respirators and hazmat clothing and evacuation of unprotected personnel.



TECHNICAL ASSOCIATES

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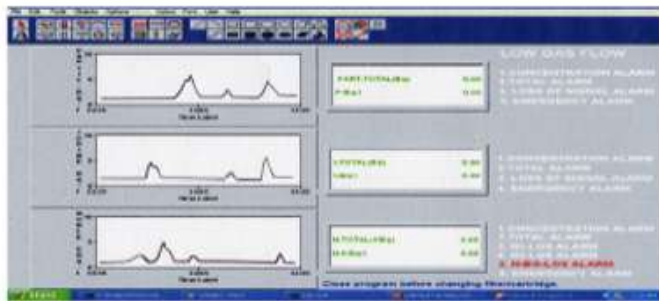


US NUCLEAR CORP

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MAIN SCREEN DISPLAY

GENERAL DESCRIPTION:

The MicroBAM-3ZL is a continuous duty, high capacity, rugged, portable system. The MicroBAM-3ZL is a multi channel air monitor for SIMULTANEOUS measurement of Alpha and Beta particulate radioactivity.

Electronics are microprocessor with portable PC display.

Detector heads are self contained allowing change or addition of function as needed and allowing rapid repair by substitution in the field. The system is covered by TA's unique module exchange warranty, in addition to the full one year warranty covering all TA products.

Both filter paper and charcoal cartridge are easily changed via TA's unique quick-change, no-leak o-ring/ gasket sealed filter holders.

All plumbing connectors and openings are sealed against air leaks.

The **air moving system** is based on a **Green Turtle** pump, capable of delivering 1CFM, or **optional** 4 CFM, through clean filter paper. A **real-time mass flow meter** measures air flow through filters and the data goes directly to software calculation for higher accuracy concentration analysis.

The entire system is extremely light and transportable, and comes complete with all hoses, cabling and connectors in place, fully tested and ready to operate. A cart is included for easy movement.

System is 115V single phase; 220V **optional**, 50/60 Hz.

CART VS. HAND CARRY:

The MicroBAM-3ZL system comes completely operational and cart mounted for easy transport. For hard to reach locations the MicroBAM-3ZL **can also be hand carried** and the cart left behind.

SPECIFICATIONS:

•**Channels:** Three

•**Activity Detected:** Gross Beta-Gamma particulate, Iodine, Noble Gas.

DETECTORS	Model MicroBAM-3ZL (Standard)	Optional Alternative Detectors
Particulate Beta-Gamma	2" dia. GM 2mg/cm ² Model T-1190	Alpha particulate detector
	47-55mm dia filter paper	
Iodine: Gamma	2" dia. Scintillation NaI(Tl)	BGO Scintillator
	2" dia. charcoal cartridge	Silver Zeolite cartridge
Noble Gas: Beta-Gamma	2" dia. GM 2mg/cm ²	Beta scintillator or Solid state detector



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SYSTEM SENSITIVITY:

Sensitivity given below are based on one week of operation,
average background of 0.5mR/hour:

	SENSITIVITY MicroBAM-3ZL	SENSITIVITY MicroBAM-3ZPb
Shielding: Full Four pi (π)	None	Thin lead (Pb)
Particulate: Beta-Gamma	6×10^{-11} μ Ci/cc.	2×10^{-13} μ Ci/cc.
Iodine: Gamma	6×10^{-11} μ Ci/cc.	2×10^{-13} μ Ci/cc
Noble Gas: Beta-Gamma	9×10^{-7} μ Ci/cc	1×10^{-7} μ Ci/cc
System Weight, TOTAL (Approx.)	16 kg	45kg
Hand Carry Weight (Approx.) includes computer, pump, detectors. Excludes cart	11 kg	39kg

This Air Monitor is more sensitive on all channels by factors of 5 to 500 beyond what is required by the USNRC and other regulatory agencies.

- High Voltage:** Separately variable per detector from 0 to 1,500V (or 2,500V).
- Readout Screen:** Showing both real-time concentration and accumulated doses for all channels simultaneously.
- Status Lights:** "ON", "Alarm", "Fault".
- Accuracy:** $\pm 10\%$ except for resolution loss and statistical variation.
- Alarms:** All alarms are easily set by user to any value within BAM range.
- Alert Level Alarm:** Automatic Reset.
- High Level Alarm:** High level alarm remains activated until RESET button is pushed.
- Alarm Indication:** PC Screen displays and sounds all alarms.
MAL-Z Alarm module has lights and audio for each channel:
Red-High level / Amber-Low Level.
Audio: 1000Hz, greater than 80db and fail-safe and alarm relays for customer use.
See charts.
- Display Units:** User Selectable:
Concentration: μ Ci/cc, Bq/m³, etc.
Integrated: DAC-H
Filter Build-Up: cps, cpm, Bq, microCurie, etc.
- Display Update:** Update time is user settable from 1 to 120 seconds
- Trend Display:** Graphic Display: One Day, week, month or year.
- Self Tests:** Automatic self test at start-up
Continuous self tests and alarm for pump and each detector.
- Environmental:** 0°C to 45°C , 0 to 95% Relative Humidity



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AIR MOVING SYSTEM

Green Turtle Air Pump:	Constant Flow Rate – 30 Lpm, Extremely rugged continuous duty. Alternative: In-house vacuum system
Real-Time Mass Flow Meter:	Rated 0-200L/m delivers flow data to the software in real time for highly accurate concentration results.
Optional Bypass Valve:	Optional Adjustable bypass valve allows rate to be set to ± 0.1 CFM with clean filters, for 0 to maximum CFM.
Inlet + Outlet:	15 Foot inlet and outlet hoses provided. Longer hoses may be used.
Auto Calibration:	Instrument calibrates itself when user inserts standard sources.

ELECTRONIC SYSTEM DESCRIPTION: (Micro-processor based)

Electronics is high quality portable PC including:

Windows Operating System:	TAquire™ custom software plus Excel Spread Sheet
CPU with Data Acquisition:	High Resolution COLOR display, Audio
Data Ports:	USB & Ethernet
USB-Flash Drive:	For data storage – 1 year storage
Terabyte hard drive.	Stores programs and 20 YEAR'S of Detailed DATA plus alarm record. Room for new software functions in the future. Specialized TA air monitor TAquire™ software.
Power:	110 VAC - 60 Hz, 220 VAC optional 50/60 Hz
Special Safety Features:	All circuits fused. Loss of air flow and loss of signal alarms. Thermal protection on motor.
Outputs:	Alarm condition outputs: <ol style="list-style-type: none">1. Logic Level Signal - From PC2. Contact closure or opening - From Optional MAL-Z alarm module.
Standard Installation:	2 wheel cart mounted or single hand portability.
Hand Carry:	System can be easily hand carried without cart. See Manual for directions.
OPTIONAL:	Graphics printer for hard copy;. 3 trace graphs

WEIGHT, DIMENSIONS, SHIPPING INFORMATION:

Dimensions:	Overall Cart & Instrument: W 19.5" x H 42" x D 24".
	Instrument: W 14.5" x H 10" x D 20".
Shipping Weight:	35 kg.
Consumables:	System is shipped with starter kit containing consumables including filter paper, charcoal cartridges.
Accessories:	System is shipped with all necessary accessories included and tested with system including all cables, hoses and manuals.

MANUAL INCLUDED



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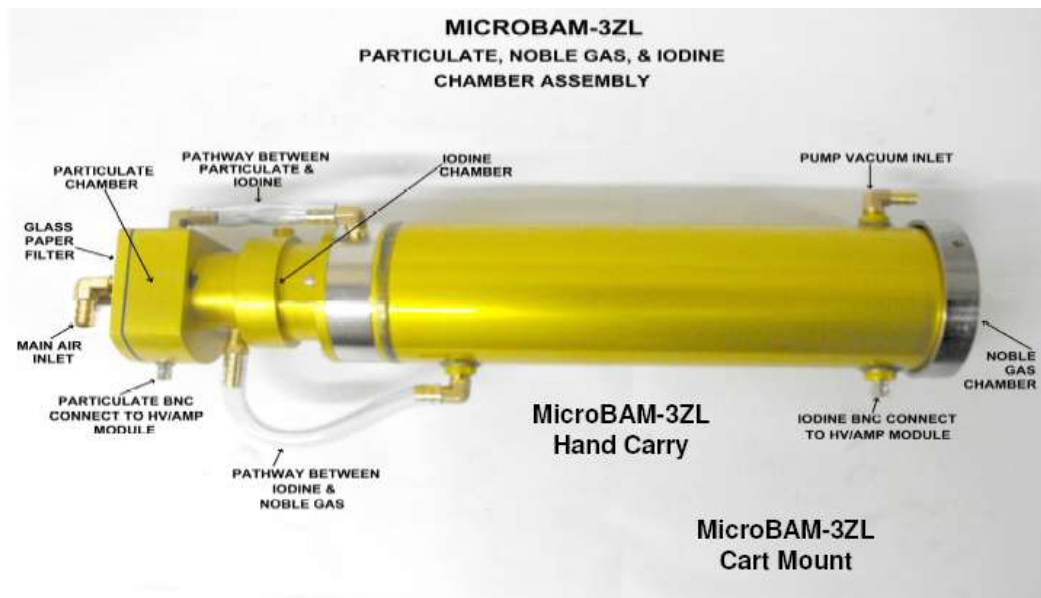
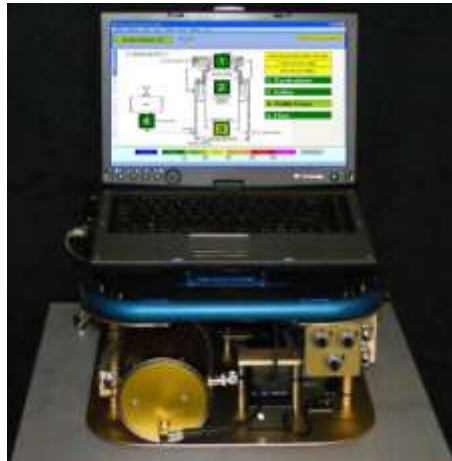
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OPTIONS:

- Air monitor available with alternate air movers.
- Broader range to 12 decades.
- Different detector types,
- Different cart size,
- Iso-Kinetic operation,
- MAL-Z alarm/relay module,
- Ethernet and USB are included, other interfaces for 4-20mA, RS-485, are optional.
- Calibrated Radiation Standards (Cs-137, Ba-133)



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FEATURES	TYPICAL (Open Market)	TECHNICAL ASSOCIATES MicroBam-3ZL
Corrects for Activity Build Up on Filters and Reads Directly in Concentration	Some do, Some Do Not	YES
Display	40 Characters	14" Color LCD Monitor
Dependable	NO	YES
Simultaneous Collection & Measurement: Alpha & Beta Particulate	NO	YES
Number of Simultaneous Measurement Channels	1	3
Micro-Processor Speed	Various	2GHz
Data Storage Capacity		
Bytes	0.05 MB	1 TB
Years	83 days	20 Year Data
Precision: Data Storage Intervals	Every Hour	2x each minute
Removable Data Storage	NO	Flash Drive
Real Time Gamma Compensation	NO	10 µR/h to 25 mR/h
Optional: Numerical & Graph Print Out		
Any Day This Year	NO	YES
Any Month This Year	NO	YES
This Year to Date	NO	YES
Daily Average or Total	NO	YES
Monthly Average or Total	NO	YES
Full Year Average or Total	NO	YES
Choice of Pumps	NO	YES
Quiet Pump	NO	YES
Ethernet & USB	NO	YES
Charcoal Filter for Chemicals	NO	YES
System Weight (Total)	39 kg Typical	26 kg
Hand Carry Weight	20 kg Typical	11 kg
Overall Dimensions with Cart		W 19.5" x H 42" x D 24"
Instrument Only		W 19.5" x H 10" x D 20"
Wheels	2" diameter	6" diameter Steel with Rubber Tread



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