

# PORTABLE AIR MONITOR

## MicroBAM-3ZL Series

### Model – MicroBAM-3ZL & Model – MicroBAM-3ZL-G-ID

#### FEATURES:

- FAST, PORTABLE DETECTION & ANALYSIS OF AIRBORNE RADIATION
- **ACTIVITY DETECTED:** GROSS BETA-GAMMA PARTICULATE, IODINE, NOBLE GAS, NEUTRON.
- SIMULTANEOUSLY MEASURES; DISPLAYS 1, 2, or 3 CHANNELS
- REAL TIME ALARMS BASED ON CONCENTRATION NOT JUST ACCUMULATION
- SAMPLING HEAD IS SEPARABLE AND REMOVABLE
- ALL CALCULATIONS DONE AUTOMATICALLY
- DISPLAYS GRAPHS OF 1, 2, or 3 CHANNELS
- READS DIRECTLY IN  $\mu\text{Ci}/\text{cc}$  as well as TOTAL DOSE (DAC or **ANY UNITS**)
- SYSTEM WEIGHT: 35 lbs. (16 kg)
- DETACHABLE CART
- HIGH SENSITIVITY TO  $10^{-13} \mu\text{Ci}/\text{cc}$
- LAPTOP COMPUTER WITH SOFTWARE (INCLUDED)
- ALL DATA STORES ON FLASH DRIVE AND / OR HARD DRIVE
- USB AND ETHERNET PORT FOR DATA TRANSFER
- DYNAMIC BACKGROUND SUBTRACT
- MEETS REG. GUIDE 8.25 AND REVISED 10 CFR 20

#### MICROBAM-3ZL-G-ID

- ISOTOPE IDENTIFIER FOR GAMMA **MICROBAM-3ZL-G-ID**
- MULTICHANNEL ANALYZER (MCA) FOR GAMMA **MICROBAM-3ZL-G-ID**
- GOOD SPECTRUM DISPLAY - - **MICROBAM-3ZL-G-ID**



#### 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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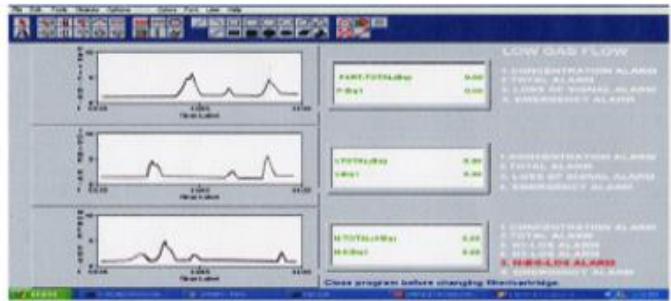
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MAIN SCREEN DISPLAY

### 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:

- Standard Channels: Three
- Activity Detected: Gross Beta-Gamma particulate, Iodine, Noble Gas.
- Optional 2 Channels: Alpha & Beta Particulates; Measured and Recorded Separately & Simultaneously

DETECTORS	Model MicroBAM-3ZL (Standard)	Optional Alternative Detectors
Particulate Beta-Gamma	2" dia. GM 2mg/cm <sup>2</sup> Model T-1190	Alpha particulate detector
	47-55mm dia filter paper	
Iodine: Gamma	2" dia. Scintillation Nal(Ti)	BGO Scintillator
	2" dia. charcoal cartridge	Silver Zeolite cartridge
Noble Gas: Beta-Gamma	2" dia. GM 2mg/cm <sup>2</sup>	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
<b>Shielding: Full Four pi (<math>\pi</math>)</b>	None	Thin lead (Pb)
<b>Particulate: Beta-Gamma</b>	$6 \times 10^{-11}$ $\mu$ Ci/cc.	$2 \times 10^{-13}$ $\mu$ Ci/cc.
<b>Iodine: Gamma</b>	$6 \times 10^{-11}$ $\mu$ Ci/cc.	$2 \times 10^{-13}$ $\mu$ Ci/cc
<b>Noble Gas: Beta-Gamma</b>	$9 \times 10^{-7}$ $\mu$ Ci/cc	$1 \times 10^{-7}$ $\mu$ Ci/cc
<b>System Weight, TOTAL (Approx.)</b>	35 lbs. (16 kg)	108 lbs. (45kg)
<b>Hand Carry Weight (Approx.)</b> includes computer, pump, detectors. Excludes cart	24.5 lbs. (11 kg)	86 lbs. (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:  $\mu$ Ci/cc, Bq/m<sup>3</sup>, 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

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

### ELECTRONIC SYSTEM DESCRIPTION: (Micro-processor based)

Electronics is high quality portable PC including:

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

### WEIGHT, DIMENSIONS, SHIPPING INFORMATION:

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

### MANUAL INCLUDED



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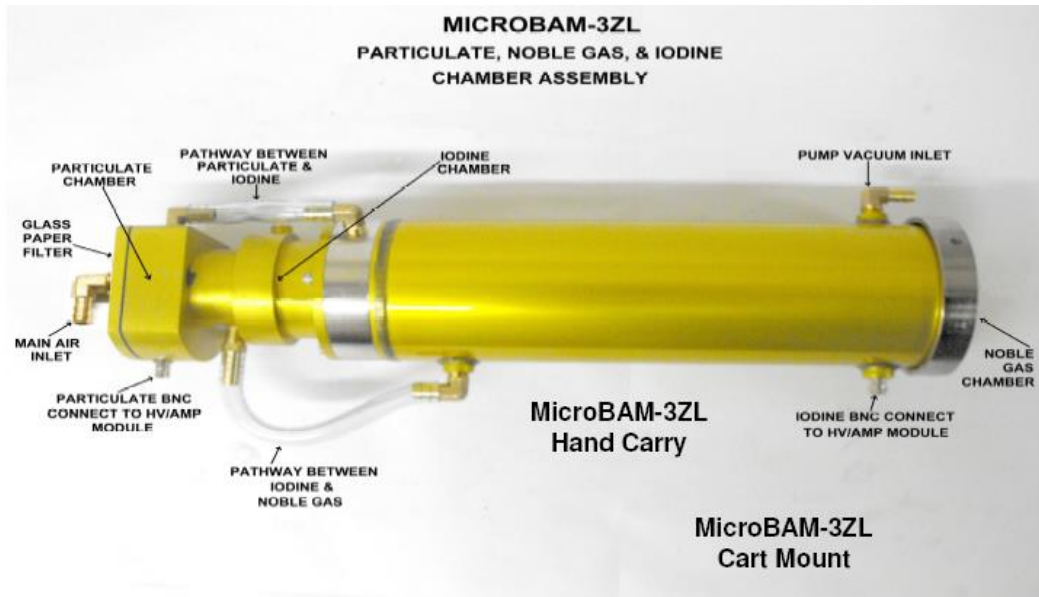
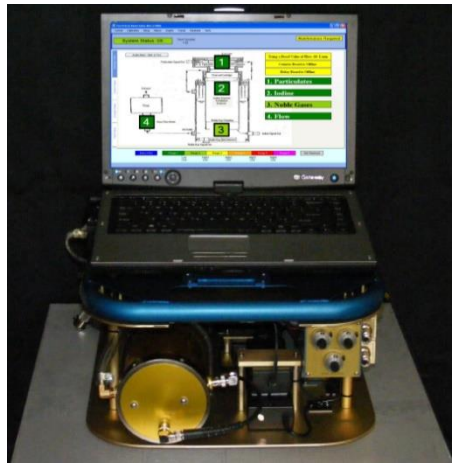
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#### OPTIONS:

- 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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MARKET COMPARISON		
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
<b>Data Storage Capacity</b>		
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
<b>Optional: Numerical &amp; Graph Print Out</b>		
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)	86 lbs. (39 kg) Typical	35 lbs. (16 kg)
Hand Carry Weight	44 lbs. (20 kg) Typical	24.5 lbs. (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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