

# PORTABLE AIR MONITOR

便携式空气监测器

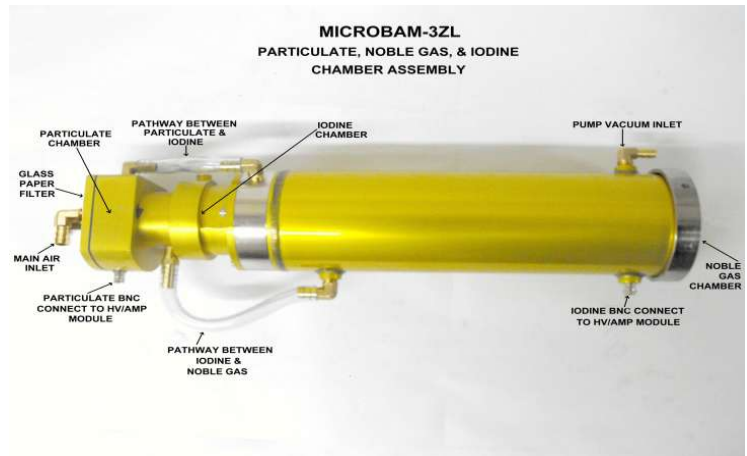
Model # MicroBAM-3ZL



MicroBAM-3ZL Hand Carry



MicroBAM-3ZL on Cart Mount.



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## TECHNICAL ASSOCIATES

7051 ETON AVENUE \* CANOGA PARK, CA 91303 TELEPHONE (818) 883-7043 \* FAX(818) 883-6103

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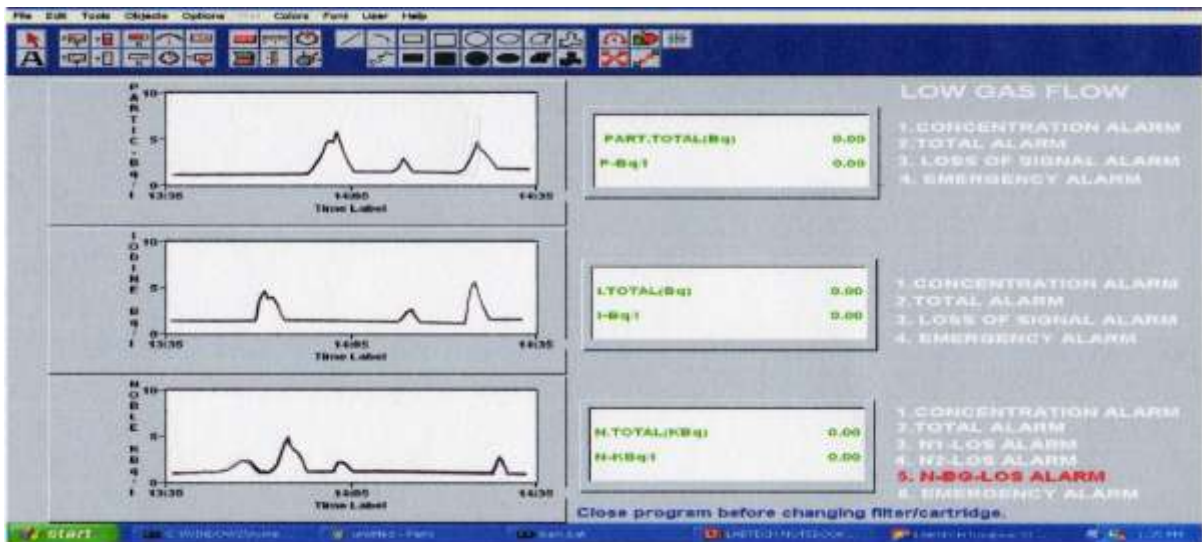
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Model # MicroBAM-3ZL

### FEATURES:特点

- TOTAL SYSTEM WEIGHT ONLY 11 KG整个系统仅重11千克  
PLUS DETACHABLE CART AND PRINTER 加上可拆卸车和打印机
- HIGH SENSITIVITY TO  $10^{-13}$   $\mu\text{Ci}/\text{cc}$ 高灵敏度达到 $10^{-13}$   $\mu\text{Ci}/\text{cc}$
- SIMULTANEOUSLY MEASURES AND DISPLAYS 2 CHANNELS同时测量并显示2道
- 2 Ghz PORTABLE PC (INCLUDED) ( 包括 ) 2 Ghz便携式PC
- REAL TIME ALARMS BASED ON CONCENTRATION根据所测量浓度实时报警  
NOT JUST ACCUMULATION 不仅仅累加
- READS DIRECTLY IN  $\mu\text{Ci}/\text{cc}$  直接读出单位 $\mu\text{Ci}/\text{cc}$   
AS WELL AS TOTAL DOSE (DAC or any units)还有总剂量 ( DAC或任何单位 )
- ALL CALCULATIONS DONE AUTOMATICALLY所有计数自动完成
- PRINTS OUT GRAPHS OF ALL CHANNELS打印所有通道图形
- ALL DATA STORES ON FLASH DRIVE OR 500 GB HARD DRIVE所有数据存储在闪存里或500 GB硬盘里
- DVD WRITER – OPTIONAL 可选购 DVD刻录机
- DYNAMIC BACKGROUND SUBTRACT动态本底扣除
- SAMPLING HEADS ARE SEPARABLE AND REMOVABLE独立采样头，可移动
- MEETS REG. GUIDE 8.25 AND REVISED 10 CFR 20 符合 REG.指南 8.25 和修订《美国联邦法规》



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### GENERAL DESCRIPTION: 一般描述

The MicroBAM-3ZL series are multi channel air monitors for SIMULTANEOUS measuring Alpha and Beta PARTICULATE, radioactivity, like all of the MicroBAM-3 series, these are continuous duty, high capacity, rugged, portable systems. 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.

MicroBAM-3ZL系列为多通道空气监测器，同时测量 $\alpha$ - $\beta$ 粒子，及活性，像所有MicroBAM-3系列一样，都是连续工作，高容量，坚固，便携的系统。电子学带便携PC显示的微处理器。独立探头以允许改变或附加功能（如果需要），允许现场更换以便快速进行维修。此系统在TA模块包换范围内，此外所有TA产品都在一整年保修范围内。

Both filter paper and optional 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 dependable pump, capable of delivering 1CFM, or **optional** 4CFM, through clean filter paper. A bypass valve and flow meter allow the user to adjust air flow through filters from 0 to maximum range. 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 to allow easy movement. System is 115V single phase; 220V **optional**, 50/60 Hz.

通过TA独特的快换、无泄漏、O型密封滤网托，滤纸和（可选购）碳滤芯都容易更换。所有管道连接件和开口都密封以防空气泄漏。气动系统基于一个可靠的泵，透过干净滤纸，输送能力1CFM，可选购4CFM，配有旁路阀和流量计以允许用户调整气流通过滤网，范围：0到最大量，整个系统极其轻便，便于运输，自带所有软管，缆线和连接件，经过全面的测试，并已准备就绪，包括一个推车以便运输，系统使用单相电115V，选购220V，50/60 Hz

### SPECIFICATIONS:规格

•Channels: Three 三道

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

检出辐射：总 $\beta$ - $\gamma$ 粒子，碘，惰性气体

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#### Model # MicroBAM-3ZL

DETECTORS 探测器	Model MicroBAM-3ZL (Standard) MicroBAM-3ZL ( 标准 )	Optional Alternative Detectors 可选购其它探测器
Particulate Beta-Gamma $\beta$ - $\gamma$ 粒子	2" dia. GM 2mg/cm <sup>2</sup> Model T-1190 直径2"GM管 , 2mg/cm <sup>2</sup> , 型号T-1190 47-55mm dia filter paper 直径47-55mm滤纸	2" dia. sealed proportion detector 直径2" 密封正比探测器 Alpha particulate detectors $\alpha$ 粒子探测器
Iodine: Gamma 碘 : $\gamma$	2" dia. Scintillation NaI(Ti) 直径 2" 闪烁NaI(Ti) 2" dia. charcoal cartridge 直径 2" 碳滤芯	BGO or CSI Scintillation BGO或CSI闪烁体 Silver Zeolite cartridge 银沸滤芯
Noble Gas: Beta-Gamma 惰性气体 : $\beta$ - $\gamma$	2" dia. GM 2mg/cm <sup>2</sup> 直径2"GM管 , 2mg/cm <sup>2</sup>	Solid state or Beta scintillator 固态或 $\beta$ 闪烁体

**CART VS. HAND CARRY:** The MicroBAM-3ZL system comes complete, operational, and cart mounted for easy transport. The MicroBAM-3ZL **can also be hand carried** to hard to reach locations. For this, the printer and the cart can be left behind.

**手推VS.手提:** MicroBAM-3ZL自带内安装推车易操作方便运输。此系统也有手提式, 不易运到目的地, 因此, 打印机和轮车可不带

System sensitivity: Sensitivity and weights given below are based on one week of operation, average background of 0.5mR/hour.

系统灵敏度: 以下给出的灵敏度和重量根据一周操作得出, 平均本底0.5mR/hour

	MicroBAM-3ZL	MicroBAM-3ZPb
<b>Shielding, full four pi:</b> 辐射屏, 全4 $\pi$	none 无	12 lead (Pb) 12铅屏
<b>Particulate: Beta-Gamma</b> $\beta$ - $\gamma$ 粒子	6 x 10-11 $\mu$ Ci/cc.	2 x 10-13 $\mu$ Ci/cc.
<b>Iodine: Gamma</b> 碘 : $\gamma$	6 x 10-11 $\mu$ Ci/cc.	2 x 10-13 $\mu$ Ci/cc.
<b>Noble Gas: Beta-Gamma</b> 惰性气体 : $\beta$ - $\gamma$	9 x 10-7 $\mu$ Ci/cc	1 x 10-7 $\mu$ Ci/cc
<b>3 Channel Printer (Optional)</b> 3道打印机 ( 选购 )	0.5 or 2.1 kg	2kg
<b>System Weight, TOTAL (Approx.)</b> 系统重量, 总重 ( 约 )	16 kg	45kg
<b>Hand Carry Weight (Approx.)</b> 手提重量 ( 约 )	11 kg	39kg



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includes computer, pump, detectors 包括电脑, 泵, 和探测器

excludes printer and cart 不包括打印机和轮车

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

这款空气监测器全通道灵敏度比USNRC和其它监管机构要求的高出5-500倍

**High Voltage:** Separately variable per detector from 0 to 1,500V (or 2,500V).

高压 独立变量, 每个检测器从0-1,500V (或2,500V).

**Readout Screen:** 读数屏

Showing both real-time concentration and accumulated doses for all channels simultaneously.

同时显示所有通道实时浓度和累计量

**Status Lights** “ON”, “Alarm”, “Fault”.

状态灯 “开通”“报警”“故障”

**Accuracy: ±** 10% except for resolution loss and statistical variation.

精度 10%, 除了分辨率损失和统计变化外

**Alarms:** All alarms are easily set by user to any value within BAM range.

报警 所有报警水平用户在BAM范围内 设定

**Alert Level Alarm:** Automatic Reset.

警告水平报警: 自动设定

**High Level Alarm:** High level alarm remains activated until RESET button is pushed.

高水平报警: 在按下RESET按钮前, 高水平报警处于持续激活状态

**Display Units:** User selectable: concentration  $\mu\text{Ci/cc}$ ,  $\text{Bq/m}^3$ , etc.

显示单位 用户可设定: 浓度 $\mu\text{Ci/cc}$ ,  $\text{Bq/m}^3$ ,等等

Integrated  $\text{Bq/m}^3$ , DAC-h

一体的活度浓度 $\text{Bq/m}^3$ , DAC-h

Filter cps, cpm, Bq, etc.

滤网cps, cpm, Bq,等

**Display Update :** Update time is user settable from 1 to 120 seconds

显示更新 更新时间用户设定从1到120秒

**Trend Display:** Graphical Display One Day, week, month or year.

趋势显示 图形显示一天、一周、一个月或一年

**Alarm Indication:** PC Screen displays all alarms.

报警指示 PC屏显示所有报警

**Optional:** MAL-Z Alarm module has lights for each channel: Red-High level and Amber-Low Level. Audio:

选购 1000Hz, greater than 80db and fail-safe and alarm relays for customer use. See charts.

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MAL-Z报警模块为每个检测道配有灯，红---高水平，琥珀色---低水平。音频1000Hz，优于80分贝，故障安全和报警继电器供顾客使用，见表

**Self Tests :** Automatic self test at start-up, continuous self tests and alarm for pump and each detector.

自测 在启动时自动自检，不断自我测试并就泵和每个探测器报警

**Environmental :** 0°C to 45°C, 0 to 95% Relative Humidity

环境 0°C 到 45°C，相对湿度 0 to 95%

### AIR MOVING SYSTEM气动系统

•**Air Pump:** Constant Flow Rate, Extremely rugged continuous duty. Alternatively in-house vacuum system

气泵： 不间断流量，极其坚固持续工作，也可使用内部真空系统

•**Pump Drive Meter:** Continuous duty.

泵传动仪： 连续工作

•**Mass Flow Gauge:**质量流量计

Rated 0-200L/m delivers flow data to the software in real time for more accurate concentration results

测流量0-200L/m，传送流量数据到软件，实时监控，取得更准确的浓度结果。

•**Bypass Valve:** Adjustable bypass valve allows rate to be set to  $\pm 0.1$  CFM with clean filters, for 0 to maximum CFM. (Automatic Air flow regulation - **(Optional)**)

旁路阀：可调整的旁路阀允许流量设定到 $\pm 0.1$  CFM，带干净滤网，0到最大CFM值（自动空气流调节，选购）

•**Inlet + Outlet:** 15 Foot inlet and outlet hoses provided. May be extended.

输入+输出：提供15英尺软管，可延长

•**Auto Calibration:** Instrument calibrates itself when user inserts standard sources.

自动校正：当用户插入标准源后，仪器自我校正

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

电子系统描述（微处理器）

Electronics is high quality portable PC including;

电子学高质量便携PC包括：

**USB Port : USB接口**

**Windows Operating System**

Windows操作系统

**CPU with Data Acquisition**

带数据采集CPU

**Touch Pad Pointer**

触摸板指针

**USB-Flash Drive**

USB闪存

Excel Spread Sheet

Excel电子表格

High Resolution, COLOR display

高分辨率彩屏

Manuals

手册

For data storage – 1 year storage

数据一年存储

Keyboard

键盘

Audio

音频

500 Gigabyte hard drive. Stores programs and 20 YEAR'S Detailed DATA plus alarm record room for new

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software functions in the future.

500G硬盘，存储程序，20年详细数据信息，加报警记录室以备未来新软件使用

Specialized TA air monitor TAquire™ software.

TA专用空气监测软件TAquire™

Graphics printer for hard copy.3 trace graphs at the push of two buttons (optional).

硬拷贝使用的印图机。按下两个按钮，打印三轨迹图（选购）

### Printer Options:打印机选项

Standard computer printer - full size (2.1kg) Optional

标准电脑打印机—全尺寸(2.1kg),选购

Miniature on-board printer - very small (1kg) Optional

小型机载打印机，(1kg)选购

USB Flash Drive for data archive portability

USB闪存以便数据档案携带

**Outputs:** Alarm condition outputs: 输出：报警条件输出

1. Logic Level Signal - From PC 逻辑水平信号—来自PC

2. Contact closure or opening - From **Optional** MAL-Z alarm module.

触点闭合开放—来自选购的MAL-Z报警模块

**Standard Installation:** 2 wheel cart mounted for transporting long distances, single hand portability.

标准安装 架置了的2轮车用于长途运输，单手便携

**Hand Carry:** System can be easily hand carried without cart.

手提：不用轮车，系统可以容易提起

### Special Safety Features:特别安全特点

Loss of air flow and loss of signal alarms, all circuits fused.气流和信号丢失报警，所有电路融合

Thermal protection on motor. 电机热保护

### Accessories: 配件

System is shipped with all necessary accessories included and tested with system including all cables, hoses and manuals.装船系统包括所有必要的测试了的配件，包括缆线，软管和手册

**Dimensions:** Per attached drawings.尺寸：每个附图

**Power:** 110 VAC - 60 Hz, 220 VAC optional 50/60 Hz

电源：110 VAC - 60 Hz, 220 VAC，选购50/60 Hz

**Shipping Weight:** 35 kg. 装船重量35 kg

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#### Consumables:耗材

System is shipped with starter kit containing consumables including filter paper, charcoal cartridges, printer paper and ink/toner.

装船系统带入门套件耗材，包括：滤纸，碳滤芯，打印纸，墨水和墨粉

**Extra Cost Options:** Air monitor available with alternate 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)

附加成本选项：供应带备用气泵的空气监测器，较宽量程到 12 数级，不同探头类型，不同大小轮车，Iso-Kinetic 操作，MAL-Z 报警 /继电器模块，包括以太网和 USB，可选购适用 4-20mA, RS-485 其它接口。校正了的辐射标准(Cs-137, Ba-133)

<b>FEATURES</b> 特点	<b>TYPICAL:</b> (Not Technical Associate) 典型仪器 (非TA产品)	<b>TECHNICAL ASSOCIATES:</b> MicroBMA-3ZL TA公司MicroBMA-3ZL
<b>Corrects for Activity Build Up on Filters and Reads Directly in Concentration:</b> 纠正累积在滤网上辐射活度，直接读出浓度	Some Do, Some Do Not 有些可以，有些不可以	Yes 可以
<b>Display:</b> 显示	40 Characters 40个字	14" Color LCD Monitor 14"LCD彩色显示器
<b>Dependable: 可靠性</b>	No 无	Yes 有
<b>Simultaneous Collection and Measurement Alpha and Beta particulate</b> 同时收集并测量 $\alpha$ - $\beta$ 粒子	No 无	Yes 有
<b>Number of <u>Simultaneous</u> Measurement Channels:</b> 同时测量道数量	1	3
<b>Micro-Processor Speed:</b> 微处理器速度	Various 各种速度	2 GHz 2 GHz



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<b>Data Storage Capacity:</b> 数据存储能力		
<b>Bytes:</b> 字节	0.05 megabytes. 0.05兆字节	500 gigabytes 500GB
<b>Years:</b> 年	83 days 83天	20 Year Data 20年数据
<b>Precision: Data Storage Intervals:</b> 精度：数字存储间隔	Every Hour 每小时	Every 2 Minutes 每2分钟
<b>Removable Data Storage</b> 可移动数据存储	No 无	64 gigabyte flash drive 64GB闪存
<b>Optional DVD - Writer:</b> 可选购DVD刻录机	No 无	Yes 8 gig/disk 有，8G盘
<b>Real Time Gamma Compensation:</b> 实时γ补偿	No 无	10 μR/h to 25 mR/h 10 μR/h 到25 mR/h
<b>Numerical and Graph Print-Out:</b> 数字和图形打印		
<b>Any Day This Year:</b> 当年任意时间	No 无	Yes 有
<b>Any Month This Year:</b> 当年任意月份	No 无	Yes 有
<b>This Year to Date:</b> 年内迄今	No 无	Yes 有
<b>Daily Average or Total:</b> 日平均或总量	No 无	Yes 有
<b>Monthly Average or Total:</b> 月平均或总量	No 无	Yes 有
<b>Full Year Average or Total:</b> 全年平均或总量	No 无	Yes 有
<b>Choice of Pumps:</b> 泵选择	No 无	Yes 有



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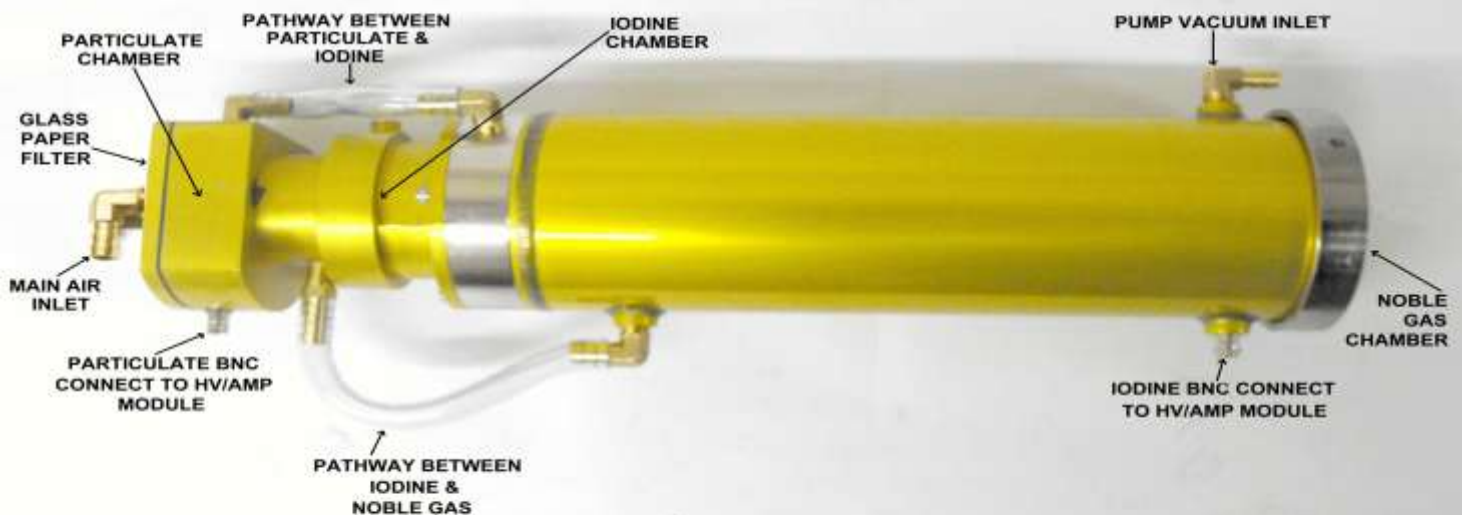
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<b>Quiet Pump Available:</b> 静音泵供应	No 无	Yes , 30 LPM (Almost No Sound) 有, 几乎无声
<b>Ethernet Supplied (Standard):</b> 提供以太网 (标准)	No 无	Yes 有
<b>Optional Charcoal Filter for Chemicals</b> 选购化学物质用炭滤网	No 无	Yes 有
<b>System Weight (Total):</b> 系统重量 (总)	39 kg Typical 典型39kg	26 kg 26 kg
<b>(Hand Carry):</b> 手提	20 kg Typical 典型20kg	11 kg 11 kg
<b>Wheels:</b> 轮子	2` dia 直径2`	6 dia.Steel with Rubber Treads 直径6英寸钢轮带橡胶面

## MICROBAM-3ZL PARTICULATE, NOBLE GAS, & IODINE CHAMBER ASSEMBLY



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