

# AIR MONITOR-GAS, GROSS BETA-GAMMA PARTICULATE, AND IODINE MODEL # BAM-33

The **BAM-33** series are three channel air monitors for simultaneous measuring of gross beta / gamma particulates, and noble gaseous radioactivity, and iodine. Like all of the **BAM-33** series, these are continuous duty, high capacity, rugged skid or caster mounted systems. Electronics consists of Computer with 17" COLOR LCD Monitor. Electronics are plug-in modules allowing change or addition of function as needed and allowing rapid repair by substitution of modules in the field. The modular system is covered by T/A's unique exchange warranty, in addition to the full one year warranty covering all T/A products.

Shields are void free lead encased in welded steel and with stainless steel liners for long, useful life and easy decontamination. Filters are easily changed via quick disconnect, o-ring sealed filter holder. Shield can be opened for filter change or cleaning with minimum effort. All shield connections and openings are sealed against air leaks. The air moving system is based on a high capacity oil less air pump capable of delivering 120 lpm (4cfm) free air and including Real time flow rate measurement and data analysis.



The entire system is mounted in a self-contained rugged cabinet and comes complete with all cabling, connectors, and software in place, setup, and ready to operate. The standard unit is operated from 115 V single phase, 60 Hz; 220V optional, 50 or 60 Hz.

**TA** **TECHNICAL ASSOCIATES**

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## SPECIFICATIONS FOR BAM-33

**CHANNELS:** Three  
**ACTIVITY DETECTED:** Gross beta-gamma particulate, iodine, noble gas.

Activity Detected	Gross Beta-Gamma Particulate	Iodine	Nobel Gas
Filters	2" dia	2.5" dia x 1" thick	One Liter Chamber
Filter Type	Glass Fiber Filter	Activated Charcoal Cartridge	Stainless Steel Lined
Collection Efficiency	Up to 99% Efficiency at 0.3 micron particle size		

Detector: 1 each Particulate Beta-Gamma: 2 inch diameter GM or optional Proportional Detector  
 1 each Iodine: 2 inch diameter NaI(Tl) Model PGS-3LI (Spectroscopic Grade)  
 2 each Gas Standard Range: 2 inch diameter GM or Optional Proportional Detectors  
 Shielding: 3 inch Lead; 4pi. Plus 1 inch lead placed between adjacent detectors  
 Detector Sensitivity: Monitor is more sensitive on all channels by factors of 5 to 500 than is required by USNRC and other Regulatory Agencies.

Type of Detector	1 Minute	1 Hour	10 Hours	1 Day	1 Week
<b>Particulate Beta-Gamma</b>	$6 \times 10^{-10}$ uCi/ml/min	$1 \times 10^{-11}$ uCi/ml $3.7 \times 10^{-7}$ Bq/ml	$1 \times 10^{-12}$ uCi/m $3.7 \times 10^{-8}$ Bq/ml	$6 \times 10^{-13}$ uCi/ml $2.4 \times 10^{-8}$ Bq/ml	$1 \times 10^{-13}$ Bq/ml $4 \times 10^{-9}$ Bq/ml
<b>Iodine</b>	$3 \times 10^{-9}$ uCi/ml/min	$1 \times 10^{-11}$ uCi/ml $3.7 \times 10^{-7}$ Bq/ml	$1 \times 10^{-12}$ uCi/m $3.7 \times 10^{-8}$ Bq/ml	$6 \times 10^{-13}$ uCi/ml $2.4 \times 10^{-8}$ uCi/ml	$1 \times 10^{-13}$ Bq/ml $4 \times 10^{-9}$ Bq/ml
Gas-Standard Range	$6 \times 10^{-7}$ uCi/ml	$1 \times 10^{-7}$ uCi/ml $3.7 \times 10^{-3}$ Bq/ml	$2.7 \times 10^{-8}$ uCi/ml $1 \times 10^{-3}$ Bq/ml	$1 \times 10^{-8}$ Bq/ml $3.7 \times 10^{-4}$ Bq/ml	$2.7 \times 10^{-9}$ Bq/ml $1 \times 10^{-4}$ Bq/ml

Monitor is more sensitive on all channels by factors of 5 to 500 than is required by USNRC and other regulatory agencies

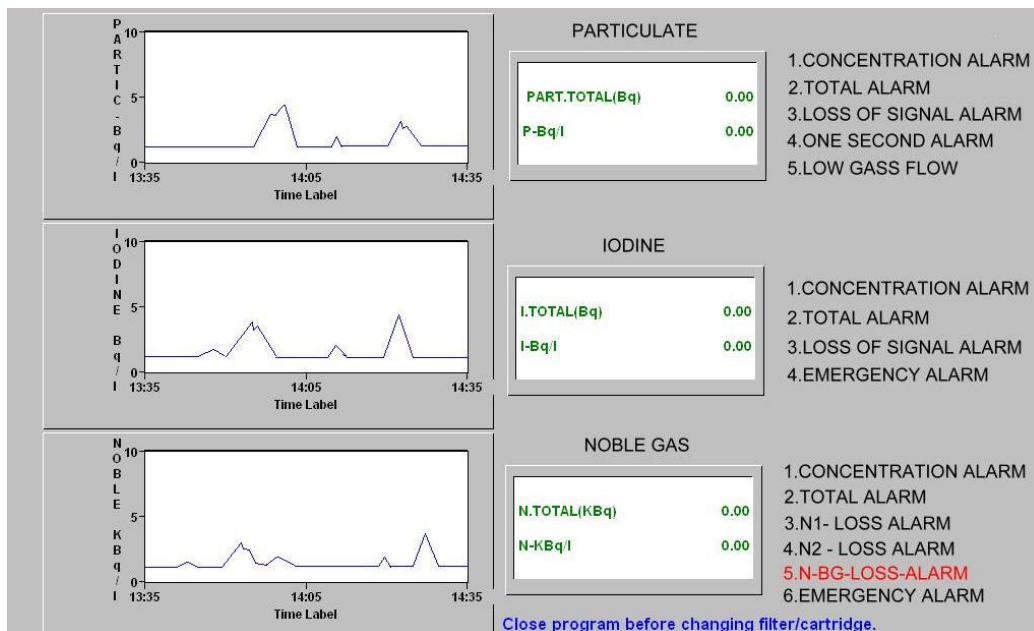
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# AIR MONITOR-GAS, GROSS BETA-GAMMA PARTICULATE, AND IODINE MODEL # BAM-33

**Display Mode:** Model BAM-33 features a Intel Pentium 4 Computer with a Color LCD Monitor

**Operation:** When BAM-33 continuous air monitor is in normal operation, the Color LCD Monitor displays:



- High Voltage Supply:** Separately variable from 0 to 2000 VDC at 200 uA on scintillation or proportional channels.
- LCD Color Monitor:** 17 inch Monitor shows both real time concentration and accumulated dose for all Channels
- ACCURACY:** ± 10% except for resolution loss and statistical variation.
- ALARMS:** Alarms are pre-settable to any trigger level.
- Low level Alarm:** Automatic Reset
- AIR MOVING SYSTEM:** High level alarm remains activated until RESET button is pushed.
- Alarm Indication Lights:** Red-high level Amber-Low count
- Audio:** 1000 Hz, greater than 80db.
- Air Pump:** Extremely rugged continuous duty.
- Pumping System:** Pump noise is reduced by heavy duty internal muffler.
- Oil less Pump Motor:** ¾ Horsepower, 50/60hz, capacitor start, induction run.
- Flow Control:** Flow Regulator Controls the flow from 0-4 cfm ± 0.2 cfm.
- Settable Flowrate:** On screen Flow Rate Display 0 to 4 or 0-120 lpm.
- Inlet and Outlet:** (20 foot ¾) hose inlet: 6 meter 2.5 cm I.D.  
20 foot 1" hose outlet. May be extended.
- Flow Rate:** Factory setting is at 4 cfm. Mass flowmeter feeds Real Time data to CAM-33 software.
- Outputs:** Alarm Condition Outputs:
  1. Logic Level Signal
  2. Contact Closure or Opening
  3. Ethernet LAN Connection or 56K baud Modem

# AIR MONITOR-GAS, GROSS BETA-GAMMA PARTICULATE, AND IODINE MODEL # BAM-33

<b>Standard Installation:</b>	Cabinet of heavy gauge steel. Skid or caster mounted With 4 five inch ball bearing casters. Two of these are full 360 degree swiveling.
<b>Special Safety:</b>	Loss of system vacuum air flow alarm and relay switch closure. Loss of signal alarm. All System Circuits are Fused.
<b>Features:</b>	Thermal Protection on Motor. Positive displacement Pump
<b>Options:</b>	Three Channel push-button check sources (License Exempt Quantities) to Detect and Test each of the three channels. Also as a final option the flow rate can be increased to 30 cfm with minor changes in the plumbing.
<b>Dimensions:</b>	29" wide by 31" long by 41" high exclusive of casters.
<b>Weight:</b>	1800 lbs. (Lighter weight models are available with 1" Shielding.)
<b>Shipping Weight:</b>	2100 lbs.

**ELECTRONIC SYSTEM DESCRIPTION** : Computer is Intel Pentium 4 based, including:

1. CPU with data acquisition
2. High Resolution, 17" LCD Color Monitor Display
3. Mouse
4. Graphic Printer for hard copy – 3 trace graphs.
5. 3 Channel 4-20mA Chart Recorder Drive available as option
6. Keyboard
7. Audio
8. Manuals
9. CD/DVD Writer Combo
10. Minimum 200 gigabyte hard drive – Stores programs, plus room to add additional new software functions in the future.
12. Specialized Air Monitor software custom tuned and designed for the CAM-33 Air Monitor.

**Technical Associates standard modular series – all solid state:**

- 1 ea Digital Acquisition Board
- 1 ea. MGA-5202 with 4 amplifiers including fully adjustable single channel analyzer w/ independent High Voltage power supply for scintillation detector.
- 1 ea. MVR-0-5-24 Power Supply Module
- 1 ea. HP Deskjet Color Inkjet Printer
- 1 ea. MAL-B3 Alarm Module
- 1 ea. PPC-33 Pump Power Control Module
- 1 ea. Mass Flow Meter with on-screen display

**AIR MONITOR-GAS, GROSS BETA-GAMMA  
PARTICULATE, AND IODINE  
MODEL # BAM-33**

Options: Shrouded probe or other air collection Nozzles are available.  
Touch screen feature on the LCD color monitor  
Lighter weight system with 1" shielding  
Titanium detector cover  
Proportional detectors to replace GM detectors  
4-20mA output signals – 3 channels

**Special Upgrades Incorporated Into TA BAM-33 Air Monitors**

Big 17" Color LCD Monitor  
LABTECH Virtual Instrument Software  
Real-Time Mass Flowmeter  
3" Lead (Pb) shields now lighter weight due to more compact Beta-gamma Detectors  
Positive position check sources with greater "throw length" and trouble free operation.

**BAM-3HVM CAN SUBSTITUTE FOR PING-1A**

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