

## Model 334AB-G Alpha/Beta Particulate Monitor

Part Number: 48-3864-G

### Features

- Integrated LCD and Touch Screen Display
- Acute and Chronic Dose, Concentration, and Flow Logging Measurements
- Radon Compensation
- Built-In Gamma Guard Detector
- American or SI Units of Measurement
- 8-Hour Battery Life

### Introduction

The Model 334AB-G is a lightweight, battery-powered, alpha-beta air monitor that can be used as a portable workplace monitor or a portable CAM (continuous air monitor) for emergency-response assessments. Its design provides workers with an early warning of an airborne release of alpha- or beta-emitting particulates. The instrument can monitor up to two alpha isotopes of interest simultaneously with beta monitoring.

The Model 334AB-G has an internal 7-LPM pump. (An external pump with a higher flow rate is available as an option.) The integrated LCD and touchscreen displays information on instrument status and readings during operation. The estimated dose of the isotope(s) of interest and the instrument status are displayed at all times. A visual/audio alarm stack also indicates instrument status. An ion-implanted silicon detector and 1024-channel multi-channel analyzer feed data to the embedded processor board to perform beta detection and alpha spectral analysis for radon background compensation.

### Background Subtraction Using Peak Shape Fitting

State-of-the-art alpha peak fitting quantifies the alpha and beta counts from radon and thoron progeny. This technique uses the profiles of multiple alpha isotope peaks to create a composite curve which best fits the actual alpha spectrum. Because the individual radon peaks are independently determined, the beta background compensation is impervious to radon equilibrium changes and contributes to low probability of false alarms.

### Guard Detector

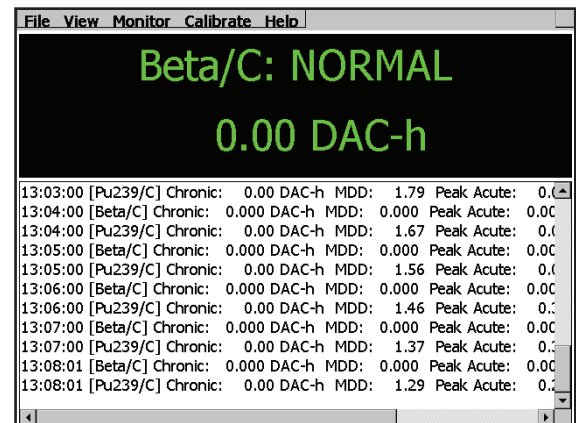
An internal guard detector provides real-time beta compensation for changing gamma background levels. An adjustable gamma subtraction factor allows for correction of slight differences in beta and guard count rate in a fixed gamma field to produce proper energy response.

### Sensitivity and Response Time

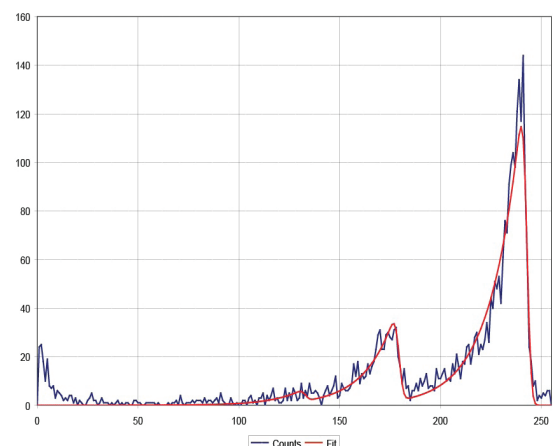
The Model 334AB-G's sensitivity varies primarily as a function of the window time. The longer Chronic Window has improved sensitivities over the shorter Acute Window time. Sensitivity is reported in Minimum Detectable Concentration (MDC) in Bq/m<sup>3</sup> (DAC) and Minimum Detectable Dose (MDD) in Bq-h/m<sup>3</sup> (DAC-h).



Main Display with Historical Readings



Alpha Spectrum with Peak Shape Fitting



## Specifications

### SAMPLING HEAD and FLOW

- Detector: solid-state ion-implanted silicon (450 mm<sup>2</sup> active area, 300 µm depletion)
- Air Flow Measurement: electronic mass flow control
- Pump: internal diaphragm-type, 7.0 LPM max flow rate
- Filter: 37 mm (1.5 in.) PTFE membrane or glass fiber filter (25 mm [1 in.] collection area)

### BETA DATA ANALYSIS

- Single beta channel with upper/lower discriminator setting
- Gamma guard detector provides real-time compensation for changing gamma background levels
- Acute (fast response, 120 sec. window) and chronic (high sensitivity, 240 min. window) measurements, plus net count rate alarm
- Beta Efficiency: 7 - 18%, energy-dependent

### ALPHA DATA ANALYSIS

- MCA: 1024-channel ADC binned to 256 channel alpha spectrum
- Radon compensation with alpha peak-shape-fitting, plus fixed background subtraction
- Acute (fast response, 120 sec. window) and chronic (high sensitivity, 240 min. window) measurements, plus net count rate alarm
- Monitoring of up to two alpha isotopes of interest
- Alpha Energy Range: 1.0 - 9.0 MeV

### OPERATION

- Processor: Windows CE-based
- Max. Count Rate: 600,000 (beta + alpha)
- Source Response Check diagnostic
- Calibration: electro-plated stainless steel sources required for efficiency calibration, 32 mm dia. with 25 mm active area
- Display: 140 mm (5.5 in.) LCD resistive touch screen with backlight; Upper window shows dose and instrument status; Lower window shows either historical readings and battery status or current alpha spectrum; Top menu bar provides access to configuration and calibration functions
- Display Update Rate: 1 to 5 sec. (adjustable)
- Control Buttons:
  - Units: cycles the upper window display units between Bq-h/m<sup>3</sup>, Bq, CPM, and Bq/m<sup>3</sup> (or DAC-h, pCi, CPS, and DAC)
  - Alarm Ack: silences alarm audio and clears latched alarms
  - Channel: cycles the upper window display between beta, alpha isotope channels, and flow rate
- Alarms: separate chronic dose, chronic concentration, and acute dose alarms can be set for beta measurements and for each alpha isotope. Visual/audio alarm stack includes red alarm light and audible alarm (other indicator options are available). Alarm audio intensity is 94 dB at 1 m (3 ft). Recognizes and alarms on any equipment failure.
- Data Logging: acquired data is saved in CSV format to internal memory or to an SD memory card. Logged data includes acute and chronic dose readings, as well as spectrum log files. A detailed log trend of at least three days of data can be shown in the display.

### PHYSICAL

- Temperature Range: -20 to 50 °C (0 to 122 °F)
- Humidity: 0% to 100% (non-condensing)
- Environmental Rating: IP rating of 53
- Power: 8.4 V Li-Ion battery (6.6 Ah, 8-hour run-time, 4-hour charge time) or wall mount transformer (100 - 250 Vac, 50 - 60 Hz, single phase)
- Size (W x H x D): 25 x 30 x 13 cm (10 x 12 x 5 in.)
- Weight: 3.8 kg (8.3 lb)

### Activity Response Check

Response Check Parameters

High Limit (dpm): 123200

Low Limit (dpm): 100800

Count Time (sec): 60

Source: Alpha

Expose source to detector and press Start Count. Press Skip to skip response check.

Start Count

Skip

Reading in dpm:

### Setup/Options Menu

General | Logging | Beta | Iso 1 | Iso 2 | Flow | ASCII

Serial No: 329

Acute: 120 Seconds

Chronic: 240 Minutes

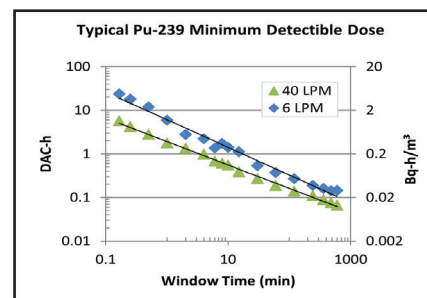
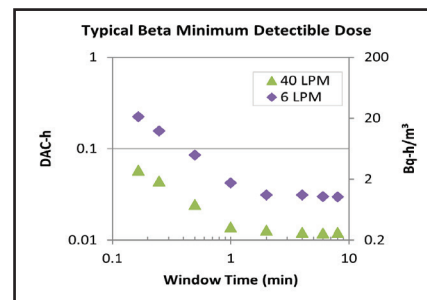
Calibration Expiration Settings

Calibration expires: 5/25/2022

Calibrations are valid for 365 days,  End of Month

but not more than 8800 runtime hours.

OK Cancel



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Note: specifications subject to change without notification. We are not responsible for errors or omissions.