

Highlights

- Weighs 5.9 lbs.,
- 6-Hour battery life
- Uses alpha peak-shape-fitting for individual measurements of nuclide counts—significantly reducing false alarms
- Performs both fast-responding (Acute) and high-sensitivity (Chronic) measurements
- Can be plumbed to house vacuum or external pump for higher flow rates and improved sensitivity
- Acute and Chronic dose, concentration, and flow logging as well as spectrum logging
- Wireless 802.11b RadNet Output Option for remote monitoring
- Typical sensitivity of 1.0 DAC-h (Chronic) and 30 DAC-h (Acute) with less than one false alarm per 2080 hours of operation
- Radon Mode Option displays PAEC and also indicates radon progeny equilibrium
- American or SI units

Description

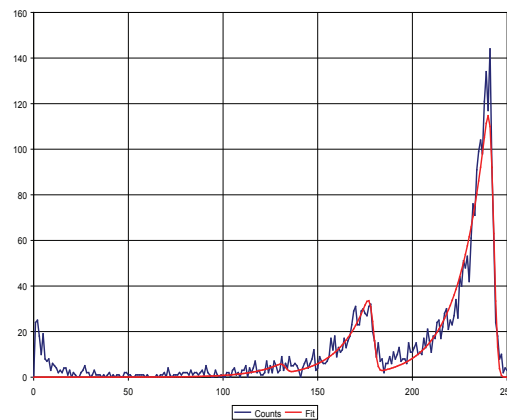
The Bladewerx *SabreAlert²*TM is a lightweight, battery-powered, alpha air monitor that can be used as a portable workplace monitor or a portable CAM for emergency-response assessments. Using Bladewerx' acclaimed peak-fitting software for radon-background subtraction means more accurate workplace measurement and alarm indications. A self-contained pump, built-in detector head, alarm light, sonalert and battery operation, allow the ultimate in alpha air monitoring portability. A solid-state, ion-implanted, silicon detector and reliable 1024-channel multi-channel analyzer provide the input for an iPAQ processor that performs the spectral analysis. An integrated 6-LPM pump, lithium-ion battery and charging electronics complete the package allowing battery operation of more than six hours.



The SabreAlert may be factory-configured for either the measurement of special nuclear materials (SNM), or for radon progeny measurements of potential alpha energy concentration (PAEC).

Alpha Peak-Shape-Fitting

State-of-the-art alpha peak shape fitting is used to separate the spectrum into the contributions from its constituent nuclides and quantify the spectrum counts from radon progeny and one or two user-defined isotopes-of-interest. Alpha peak shape fitting is a technique that uses the profiles of multiple alpha isotope peaks to create a composite curve which best fits the actual spectrum counts. Because the individual nuclide peaks are independently determined, the separation of nuclides is impervious to radon equilibrium changes and contributes to a very low probability of false alarms. Precise fitting of the ²¹⁸Po tail results in excellent sensitivity—superior, in many cases, to instruments sampling at 40 LPM.

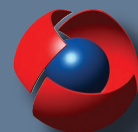


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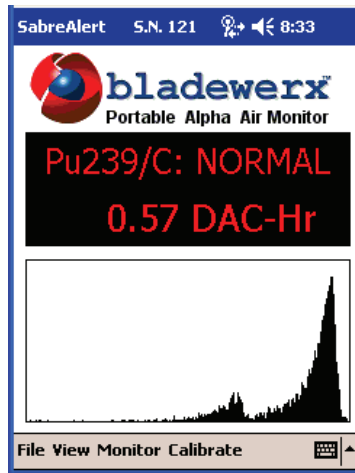
bladewerxTM

Remote Monitoring

With the 802.11 WiFi wireless RadNet Output Option installed, multiple SabreAlerts report their status and readings to a wireless access point, up to 300 feet away, networked with a laptop or PC workstation running Bladewerx *RadNet Client* software, or other RadNet compliant client software. This capability allows remote supervisory monitoring, in real-time, of up to ten work areas or vehicles.

Local Display Features

An integrated LCD and touch screen displays detailed information on the instrument status and readings while in operation. The dose estimate of the isotope(s) of interest and instrument status are prominently displayed at all times, while a window below either displays the historical readings and battery status, or displays the current spectrum. The user may switch between the two displays from the View menu.



Data Logging

The SabreAlert creates log files of both the Acute (from 1- to 30-second detail) and Chronic (1-minute detail) readings, along with spectrum log files at a user-defined interval. These log files may be saved in the internal memory, or stored on a removable SD memory card, for later retrieval and review. The log files use the comma-separated-variable (*.csv) format, recognized by most spreadsheet and database software.

Radon Mode Option

The SabreAlert may be factory-configured for a 'Radon Mode' where the instrument will monitor the potential-alpha-energy-concentration (PAEC) of airborne radon progeny. The display units can be configured for either American units of milli-Working Levels (mWL) and WL-h, or SI units of $\mu\text{J}/\text{m}^3$ and $\mu\text{J}\cdot\text{h}/\text{m}^3$. Because the individual progeny concentrations are known, the effective (dis)equilibrium ratio of radon progeny can be determined and displayed. This feature can provide useful insights into the 'age' of the air sampled.

Sensitivity and Response Time

The sensitivity of the SabreAlert is dependent on several factors including, radon background, filter type, flow rate, acute and chronic window settings, and, of course, the energy of the isotope of interest. The chart below provides an example of typical MDD behavior for a window setting of 4-hours with a radon background of approximately 1.8 pCi/l.



Specifications

Sampling Head and Flow

- Detector: Solid-state ion-implanted silicon (450 mm² active area)
- Pump: diaphragm-type, 6.0 LPM (typical)
- Filter: 37 mm Speclon™ 1.5 μm PTFE membrane or compatible 37mm PTFE filter (25 mm collection area)

Data Analysis

- MCA: 1024-channel ADC binned to 256 channel spectrum
- Peak-fitting algorithm for ²¹⁴Po, ²¹⁸Po (Radon Mode also fits ²¹²Po and ²¹⁰Po) and two additional radionuclides (e.g. ²³⁹Pu)
- Acute (120 sec. window) and Chronic (240 min. window) sensitivities, plus net count rate alarm
- Processor: Windows CE-based PDA, 533 MHz Intel X-Scale processor
- Max Count Rate: 600,000 cpm
- Source Response Check diagnostic
- Calibration: Electro-plated stainless steel source required for efficiency calibration. 37mm diameter with 25mm active area. ²⁴¹Am or ²³⁹Pu recommended.
- Energy Range: 1.0 - 8.0 MeV (1.0 - 10 MeV in Radon Mode)

Physical

- Battery powered: 8.4 V Li-Ion, 4.1Ah (6 Hr run-time, 4-hour charge time)
- Weight: 5.2 lbs (2.4 kg)
- Dimensions: 7" w x 9" h x 4" d (18 x 23 x 10cm)
- Temperature: 0 to 122 °F (-20 to 50°C)
- Humidity: 5 to 100% (non-condensing)
- Splash/dust-proof enclosure

Options

BIN-ALT2-OPT1	Wireless RadNet Output
BIN-ALT2-OPT2	SI Units
BIN-ALT2-OPT3	Radon Mode
BIN-ALT2-OPT4	Delete internal pump
BAC-RNCL-1	RadNet Client software
BPT-WAPB-1	802.11b wireless access point
BPT-WAPG-1	802.11g wireless access point

Consumables

BSP-FILT-15B037	1.5 μm pore Speclon filter
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Spare Parts

BPT-LION-4100	4100 mA-h Li-Ion battery
BSP-PUMP-6L	6.0 LPM pump
BSP-SMCA-A1	SabreMCA board
BSP-ANNUN-A1	Annunciator board
BSP-PAMP-P1	Sabre preamp board
BPT-IFT4-ALT	X-Scale board (pre-config.)
BSP-CABL-1305	Pump/Battery cable
BPT-DETC-SD450	Detector, 450 mm ²
BPT-ACADP-1222	AC adapter/charger (U.S.)
BPT-ACADP-1222AUSAC	adapter/charger (AUS)
BPT-ACADP-1222UK	AC adapter/charger (U.K.)