Features:

- Completely portable isotope identification system in one hand
- Identification of multiple radionuclides concurrently within one second
- Special Nuclear Material (SNM) detection, enhanced with integrated neutron detection option
- Spectra and user settings transfer easily to PC through CompactFlash card, Ethernet, or USB adapter
- Operates for over 6 hours on standard AA batteries

Applications:

- Emergency Response, Law Enforcement, Homeland Security,
- Undercover Surveillance, HAZMAT, Industrial, Medical, Radiation Safety,
- Passenger and Freight Monitoring, Non-proliferation Enforcement, Health Physics,
- Environmental Waste Monitoring, Unattended/Remote Monitoring
The SAM 940

New radioactive isotope identification instruments from Berkeley Nucleonics Corporation (BNC) offer specialized options for use in the health physics, law enforcement and homeland security industries. The SAM Defender (standard resolution) and SAM Revealer (high resolution) are portable radiation identification systems developed to provide simple operation for the first responder who needs to react quickly, as well as detailed analyses for the sophisticated technical user. Several modes of operation give all users the information they need right at their fingertips.

Detector Options:
The SAM systems offer several detector choices:

**Sodium Iodide:** For isotope identification, good efficiency and optimum price/performance, the Sodium Iodide option (NaI) gives users fast and accurate identification at an excellent value. The NaI option utilizes advanced algorithms to discriminate peaks and identify sources in real time.

**Cerium Bromide:** For the professional spectroscopist, an optional CeBr detector is available for the SAM system. This new material offers the end users a typical resolution of 4.5% at 662 KeV and ensures the spectroscopic reports have unparalleled analytical capability.

**Lithium:** For Sensitive Nuclear Material detection or safeguarding of WGPu, the Lithium (\(^{6}\text{Li}\)) option for the SAM system allows users to alarm on neutrons and perform a variety of coincidence checks, comparing peak analysis with the presence of neutron radiation.

**First Isotope Identifier RIID Designed After ANSI 42.34**

For years, the Surveillance and Measurement System (SAM) family of instruments has been synonymous with high overall performance in a portable isotope identifier. The earliest SAM model was the first real-time radiation area monitor capable of isotope identification in one second. A later model was the first device to give field operators the ability to identify sources on the move without having to stop and hold position while the instrument collected data. BNC continues its legacy of technical progression with the release of the Model 940 designed in response to ANSI 42.34 (American National Standard Performance Criteria for Hand-held Instruments for the Detection and Identification of Radionuclides).
The systems offer a variety of Gamma Detectors and an optional Neutron Detector. A convenient Ethernet connection, CompactFlash card, USB adapter, or RS-232 ensure easy data storage, archive, or transfer. Spectral reporting is generated in XML compliant formats according to the ANSI N42.42 standard. An auxiliary port allows the use of application-specific third party hardware such as a Bluetooth data transmission, or wireless 802.11 / ZigBee protocol. The new compact, portable, and lightweight enclosure is ergonomically designed for single-hand operation which is ideal for downrange use or in hot zone environments. Whether your work involves emergency response, interdiction, or environmental clean-up, the new SAM Defender and SAM Revealer will deliver the most advanced tools available in a portable isotope identifier.

**SAM 940 Features**

1. **High Performance Gamma/Neutron Detectors**  
   Choose from NaI, 6Li, or CeBr options

2. **IP56 Rated Enclosures & Cable Assembly**  
   Ideal for field environments, rain, dust, vibration, etc.

3. **Battery Compartment**  
   Uses standard or rechargeable AA batteries

4. **Handheld, Ergonomic Package**  
   Reduces fatigue during extended field use

5. **Detector Retention Clip**  
   Hot-swap detectors for various applications

6. **Workglove Friendly Soft-Keys**  
   With Tactile Feedback  
   Ideal for operators wearing PPE

7. **Ultra-Bright Transreflective**  
   32000-color Display  
   Effective for outdoor, any-angle viewing

8. **Light-Weight System**  
   4.5 lbs. with detector included

9. **Water-Resistant I/O Panel**  
   Includes network ready connectivity, flash memory card, backup of ANSI compliant reports

10. **Auxiliary Port**  
    Provides serial communication, AC power, third party applications

11. **Temperature Stabilized Detector Circuitry**  
    With norm auto-calibration

12. **Stable Base Unit**  
    Convenient for lab analysis or optional tripod mount for fixed geometry applications
**Essential Services**

To address the complexity and benefits of using the SAM Handheld Isotope Identifier instruments, our team of health physicists and first responder trainers offer a variety of support services. From classroom exercises to onsite field testing, Berkeley Nucleonics has built an enhanced support architecture to give you application-specific solutions. We offer onsite and regional training programs, custom application development, and a robust reachback program that supports a range of radiation detection.

## Model Selector

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>940-2-G</td>
<td>SAM Defender</td>
<td>NaI, 6Li, or optional CeBr</td>
<td>Digital signal-processing MCA</td>
<td>18 keV – 3 MeV</td>
<td>320 x 240 high brightness 32000-color 3.5” transreflective LCD display</td>
<td>10/100 Ethernet port and CompactFlash reader with USB adapter</td>
<td>8 standard AA batteries</td>
<td>4.5 lbs. with 2” x 2” NaI detector and batteries</td>
<td>12” L x 4” H x 5” W (excluding detector)</td>
<td>IP56</td>
<td>-20 to 50°C</td>
<td>7-key custom keypad with one-thumb operation</td>
<td>Visual (on screen) and Audio (internal speaker or optional headphones)</td>
<td>2” x 2” or 3” x 3” NaI detector options, with or without Neutron detector</td>
<td>Quadratic Compression Conversion (QCC) allows for identification of mixed isotopes in one second</td>
<td>Provides 97% I.D. confidence level in 2 seconds</td>
</tr>
<tr>
<td>940-2-GN</td>
<td>SAM Defender GN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>940-3-G</td>
<td>SAM Defender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>940-3-GN</td>
<td>SAM Defender GN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>940-2C</td>
<td>SAM Revealer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Specifications

- **Detector:** NaI, 6Li, or optional CeBr
- **Integrated Electronics:** Digital signal-processing MCA
- **Energy Range:** 18 keV – 3 MeV
- **Controller Display:** 320 x 240 high brightness 32000-color 3.5” transreflective LCD display
- **Controller I/O:** 10/100 Ethernet port and CompactFlash reader with USB adapter
- **Power:** 8 standard AA batteries
- **Weight:** 4.5 lbs. with 2” x 2” NaI detector and batteries
- **Dimensions:** 12” L x 4” H x 5” W (excluding detector)
- **Water/Dust Resistance:** IP56
- **Temperature Range:** -20 to 50°C
- **Controls:** 7-key custom keypad with one-thumb operation
- **Alarm:** Visual (on screen) and Audio (internal speaker or optional headphones)
- **Detachable Detectors:** 2” x 2” or 3” x 3” NaI detector options, with or without Neutron detector
- **Patented Technology:** Quadratic Compression Conversion (QCC) allows for identification of mixed isotopes in one second
- **Hysteresis:** Provides 97% I.D. confidence level in 2 seconds
- **ADC:**
  - **Type:** Base converter 14-bit pipelined-flash
  - **Conv. Modes:** Linear 256, 512, 1024, QCC 256, 512 (U.S. Patent 5,608,222)
- **Calibration:** Automatic stabilization with temperature
- **Customization:** Modifications of isotopes and their associated energy lines, either in the field or using Microsoft Excel
- **Functions:** Nuclide identification, spectrum analysis, dose rate calculation (rem/Sv), total dose, audible search tool, data logging

2955 KERNER BLVD. SAN RAFAEL, CA 94901 • TEL 415.453.9955 • FAX 415.453.9956 INFO@BERKELEYNUCLEONICS.COM • WWW.BERKELEYNUCLEONICS.COM