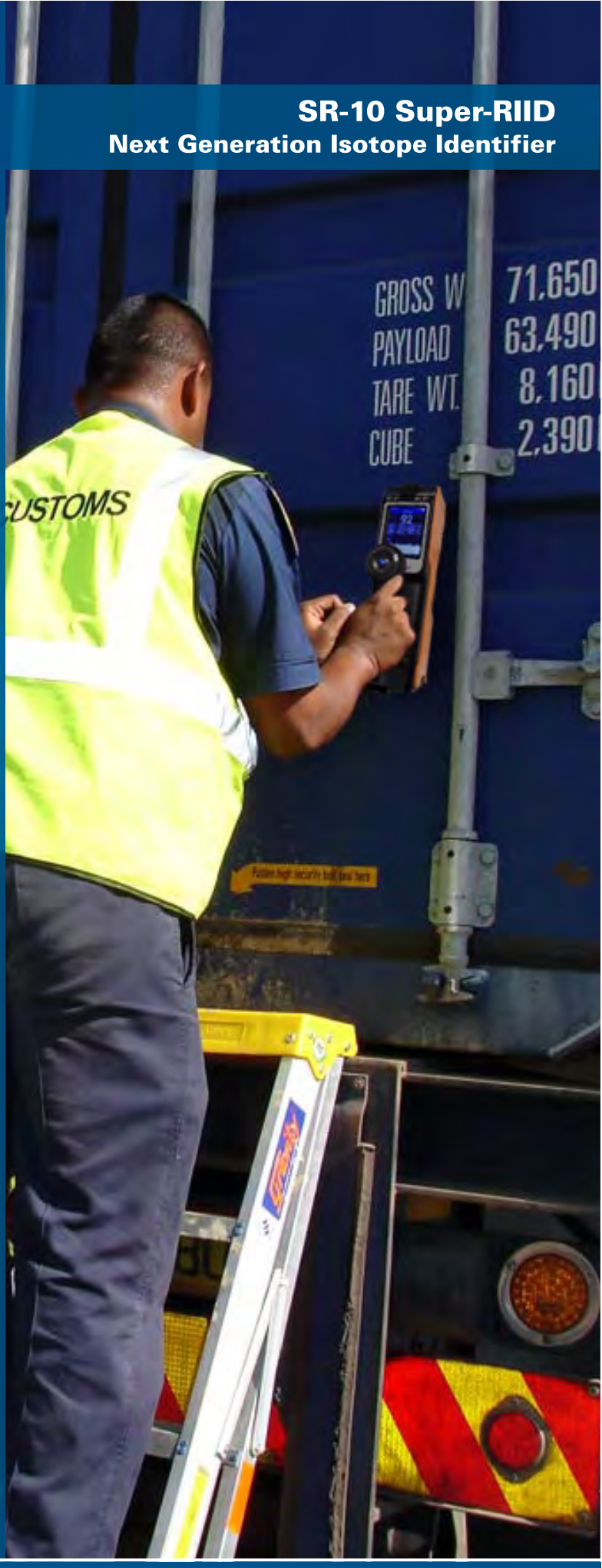
RADIATION SOLUTIONS INC

SR-10 Super-RIID
Next Generation Isotope Identifier



Unique Features

- Large NaI detector (6.3ci) for maximum sensitivity performance
- The most advanced NUCLIDE ID available in a handheld unit
- Integrated He^3 detector for Neutron detection
- Integrated GM tube for hi-dose rate protection
- Full color display with automatic bright sunlight readable feature for maximum contrast in the field
- Integrated GPS detector for location information
- Special First Responder mode for easy link to REACHBACK for verification
- Well balanced easy-to-use unit with one-hand "joy stick" operation, even with gloves-on
- NO RADIOACTIVE SOURCES REQUIRED FOR USER OPERATION
- Wi-Fi and USB connectivity
- 8 hour battery life – with fast-change battery pack for long life applications
- Waterproof to IP55 and meets or exceeds all ANSI 42.34-2006 specifications

The SR-10 Super-RIID has a large color display featuring an automatic "black and white" high contrast mode for superior visibility in high sunlight operation.

BREAKTHROUGH TECHNOLOGY SUPERIOR PERFORMANCE

SR-10 Super-RIID

RSI's SR-10 Super-RIID is the new instrument of choice for security applications requiring the detection and interception of nuclear materials and radioactive sources. The unit is compact, rugged and light weight yet designed for easy joystick operation, even with gloves on.

Leading Edge Technology

Making the SR-10 Super-RIID the most sophisticated instrument on the market is the superior Nuclide ID for real time data. The Nuclide ID capability (NID) of the SR-10 utilizes the latest technology of ultra-stable spectra, peak analysis and template matching to achieve an unprecedented level of identification.

The system features a fully digital high precision FPGA based linearized spectrometer with ultra-high throughput. This proprietary process significantly improves system Nuclide ID performance as well as ensuring standardization across multiple units. FPGA design permits very high throughput (250,000cps) with a typical increase of 20% in real signal over less sophisticated spectrometers.

RSI staff experience along with thousands of user's feedback has shown that SEARCH is often a difficult process to perform successfully by users whose expertise is NOT radiation detection. RSI has developed an advanced SEARCH mode especially useful for scanning TRUCKS or CONTAINERS as it provides a very visual alarm overview to locate potential sources.

MODES OF OPERATION

The SR-10 Super-RIID offers the user three modes of operation, enabling the instrument to be used by novice users in the **User** mode, expert users in the **Advanced** mode and a special **First Responders** Mode.

When set in the **User** mode, the system is significantly simplified to permit straightforward operation. As an example the unit starts up directly in the SEARCH mode, ready to go.

In the **Advanced** mode, the user interacts with the display via the 5-function button system to select from menus as required for specialized functions.

In **First Responder** mode the unit facilitates incorporation of background and reference spectra with the unknown sample data and metadata for optimum REACHBACK support.

DETECTORS

Large 2"x 2" Sodium-Iodide detector
This large 6.3 cu in (0.1L) rugged NaI detector is an optimal size for sensitivity balanced by portability. Improved Nuclide ID requires the maximum count rate possible to limit statistical counting errors. Experimentation shows that very small high resolution detectors have no merit over larger NaI detectors because statistical noise limits effective performance.

Integrated He^3 Neutron detector mounted inside the handle which uses the hand for extra moderation.

Integrated GM tube for high dose rates. The GM tube is mounted close to the NaI detector for best coupling to give extended Dose Rate protection to the user.

Internal Detachable battery pack
Li-Ion - 8 hours battery life. The spare Li-Ion battery pack is externally chargeable as a backup, permitting unlimited battery life for the user. By carrying a spare module in the pocket, if the battery runs out it can be replaced in seconds without any loss of data.

4 way arrow controls with central OK (=ENTER) mounted on handle for easy user interaction. In **User** mode system operation is essentially a one button action only. However, the 4 direction arrow buttons add special fast-selection features to ease user response.

4 high intensity LEDs for "instant" user alert
4 LEDs are used to signal the user of urgent issues. Settings are **GAMMA** alarm, **NEUTRON** Alarm, **LOW-BATTERY** rate alarm, or **ERROR** data results. These lights enable user to respond faster than just reading the supplementary data on the display.

Large 2.1"x 2.8" colour display. Users will appreciate the unit's unique **Sunlight Readable** feature – a BW mode for high sunlight operation. In normal light conditions the unit operates in a full color mode. In high sunlight conditions the display changes automatically to a black and white mode for maximum display contrast.

Integrated microphone permits adding details to the data as required. In many applications the local user will want to add details to the data ***as they happen***. The microphone permits the user to verbally add pertinent details easily which are combined with the data in a time sequence for easy interpretation in later processing.

Integrated GPS for absolute timing and location data. The unit has a built-in high accuracy GPS capability to add location data to all data records. In addition an external GPS can be used and location data imported enabling higher precision GPS instrumentation for special applications.

Wi-Fi Capability
The SR-10 Super-RIID's built-in Wi-Fi capability permits the system to operate inside a secure WiFi network. This capability permits fast REACHBACK connectivity if required. Also Wi-Fi link is preferred by many users for easy data transfer.

Aluminum casting with non-slip surface and integrated boot for mechanical protection. Results in very light weight but extremely rugged construction to suit field environments. The unit case is coated with a non-slip rubberized material and the additional protective boot enhances system ruggedness.

REACHBACK Support
Many front-line users utilize an official technical group for final assessment of the alarm threat – normally referred to as REACHBACK. In the past the main issue for REACHBACK is how to assess multiple instruments with variable performance. So a protocol was developed for any submission to include a background spectrum, a Reference spectrum, the actual sample of interest AND some Metadata including user contact information as well as estimated information regarding shielding. Most systems have a variety of data that must be sent but RSI has integrated this capability inside the SR-10 so this package of data occurs in a single N.42 format data file for much simpler REACHBACK support.

USB external data connectivity for data transfer and Internet linkage as required.

Highlights

- **NUCLIDE ID (NID)** - by the use of peak analysis and multi spectral templates, RSI has developed the most advanced NID capability in a small hand held unit
- **AUTO-STABILIZATION** - the SR-10 uses NO internal or external radioactive sources and utilizes the local NORM background for auto gain stabilization - resulting in no shipping restrictions with this unit
- **DISPLAY** - the large area COLOR display is very easy to read for users but most importantly when operated in bright sunlight - the display converts automatically to provide very high contrast readability
- **MASS STORAGE** - the SR-10 can be connected to any user's PC allowing for SR-10 data extraction using Windows Explorer
- **FIRST RESPONDER** - the SR-10 is uniquely setup for 1st Responder support which requires reference and background data as well as sample spectra to send to REACHBACK for support. The SR-10 provides this capability integrated into a single N.42 format file for easy REACHBACK support.
- **MICROPHONE** - the integrated microphone allows the user to store audio messages with the data thus enhancing post mission analysis and avoids the use of pen/paper etc. that can be hard to correlate later
- **GPS** - the integrated GPS capability records data with location for simpler data analysis and map making
- **JOYSTICK** - easy to use joystick that enables users wearing gloves to easily operate the unit
- **MEMORY** - the unit has a huge data memory capability so most users utilize the AUTO-SAVE feature to ensure no data is lost as there is essentially unlimited data storage
- **DATA OUTPUT** - all data files that are specified by ANSI are formatted in the N.42 format making them easy to read on any software

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Technical data

Detectors	• Sodium-Iodide (NaI) = 2"x2" (6.3ci - 0.35L) • GM tube = 27.9mm x 7.82mm diam • He^3 = active 63.5mm x 11.4mm diam = 6.51 cm^3
Sensitivity	• Sodium-Iodide = 2,009cps/uSv/h • Neutron = 15cps/nV, 5.5cps/mrem/h
Spectrometer	• Fully DIGITAL high precision FPGA based linearized spectrometer 1024 channel Gamma spectral output
Dose rate range	• NaI detector = 0 - 100uGy/h, 0 -100uSv/h, 0 - 10mR/h GM tube = 0 - 10mGy/h, 0 - 10mSv/h, 0 - 1R/h
Size	• 11.25" long x 3.2" wide x 6.5" high (286mm x 81mm x 165mm)
Weight	• 5 lbs. (2.3Kgs) including batteries
Temp. range	• -20 °C to + 50 °C
Display	• Trans-reflective color display with BW mode for high sunlight operation • 2.1" x 2.8" (72 x 54mm) - 3.54" 90mm diagonal - 240x320 pixels
Alerts	• Visual - 4 high intensity LEDs for "instant" user alert • Audio - 28mm diam loudspeaker
Internal memory	• 5,000 NID records - in full N.42 compliant format • 1,000 Notes as wav files • 1,000 SEARCH records / 1,000 Stabilization records / 1,000 Alarm records / 1,000 System Log records
Connectivity	• Integrated GPS for absolute timing and location data • USB 2.0 and Wi-Fi 802.1 1n connectivity for secure bi-level data transfer • Bluetooth capability for connection to external audio devices for covert audio
Software	• Software upgradeable via PC connection RiidAssist proprietary software supplied for parameter setup • N.42 viewer proprietary software supplied to view N.42 data files
Batteries	• Internal DETACHABLE battery pack — Li-Ion - 8 hrs. battery life • Additional ALKALINE (6 AA) battery pack with fast change
Certifications	• Full CE certification with EM protection to FCC (47 CFR part 15) for Class E certification • Dust and water resistant to IP55 and meets or exceeds all ANSI 42.34 specifications.