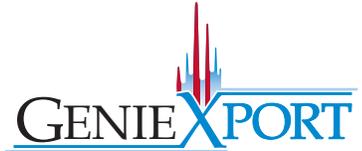




DETECT, LOCATE, IDENTIFY, QUANTIFY

# SPIR-Ace™ with GenieXPort™

Radionuclide Identification Device (RID)  
with Spectroscopy Capability



**Adds Genie™ software compatibility & ISOCS™ Characterization to the SPIR-Ace RID for proven activity determination and reporting**

## FEATURES

- Versatile use for search, detect and identification operations
- Solves heavily shielded and unbalanced Special Nuclear Material masking scenarios
- Simple operation with versatile alarm modes
- Energy-stabilized (without a source), for use in variable temperatures
- Ultra-fast and accurate compact identifier
- Radiological performance exceeds current standards for RIIDs and RIDs
- Live data transmission and reachback capability
- Multiple usage scenarios: radiological security, nuclear accident, source assessment applications, *in situ* measurements, etc.
- Optional external contamination alpha/beta probe
- Option for integrated neutron detection/alerts
- Onboard GPS for trajectory and mapping
- Remote display and control via web browser
- *GenieXPort application provides compatibility with Genie™ 2000 software for proven activity determination and reporting*
- *The SPIR-SPEC package also includes generic ISOCS characterization of the SPIR-Ace detector*
- *Preloaded efficiency calibrations for easy quantification*
- *Use ISOCS software to create efficiency calibrations for unique geometries that can be loaded to the device as well*

## DESCRIPTION

The **SPIR-Ace** is a versatile Radionuclide Identification Device (RID) addressing all applications requiring efficient detection and identification of radiological threats and assessment of nuclear materials for security applications, power plants, safeguards inspections, and forensic laboratories. The **GenieXPort application** for Genie compatibility and ISOCS efficiency characterization allow the SPIR-Ace user to quantify radionuclide activities and uncertainties. The device, coupled with offline Genie software, becomes a highly portable, but powerful instrument for *in situ* measurement applications.

The SPIR-Ace device includes active temperature stabilization and the option to add neutron detection and alarms. It also offers user-friendly and state-of-the-art features such as easy localization with directional indication, geolocation and remote data transfer to a command center. Each application screen is viewed simply by swiping left or right on the touch display. The SPIR-Ace device is available with a NaI detector for more efficient measurements or LaBr<sub>3</sub> for better resolution needed with complex spectra.

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Capabilities of the standard SPIR-Ace RID:

Passive Detection

Detection of higher gamma or neutron rates activate the screen, generate alarm signals, and may automatically start a spectrum acquisition for on board nuclide identification.

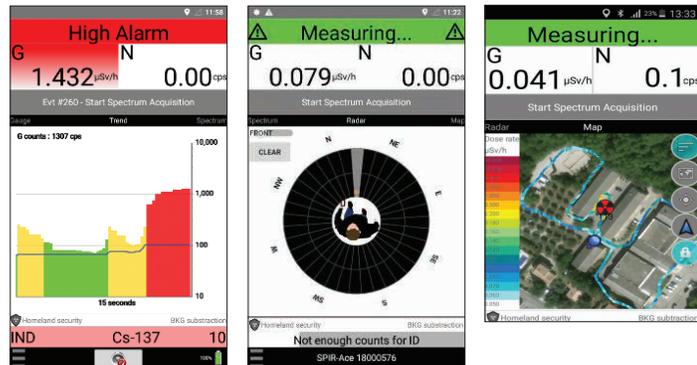
- Upon detection, the SPIR-Ace device vibrates and triggers various visual and sound alarms (configurable).
- The **Gauge** screen provides quick and easy radiological evaluation.
- Adjustable low, high, and danger alarm levels.



Search

Use the Radar and Histogram screens to localize a source, and geolocation to map the response.

- The **Trend** screen helps locate the source (automated identification may already provide a result).
- The **Radar** screen provides direction to the source.
- **Mapping** with hotspot localization.



On Board Nuclide Identification

SPIR-Ace unit provides rapid nuclide identification directly on the device.

- The SPIR-Ace unit offers on-device identification performance beyond current standards for RIDs such as for heavily shielded isotopes, unbalanced mixtures of nuclides and Special Nuclear Material (SNM) masked by medicals or Naturally Occurring Radioactive Material (NORM) within a few seconds.



Remote Display and Start

Connect to the SPIR-Ace device with a hotspot or WiFi connection and enable acquisition from a safe or more accessible location.

- Use the SPIR-Ace device to create a local hotspot, or connect it to an existing WiFi network.
- Accessible via a web browser, including easy access with a QR code.
- Start a spectrum count, view active updates of the current count rate and spectrum, and review past events or counts.
- This can be to minimize the operator being near the measurement location, especially for longer acquisition counts.
- Remote start enables difficult-to-access or high dose rate measurement campaigns.

**Additional Capabilities of the SPIR-SPEC Spectroscopy RID:**

**Nuclide ID Confirmation and Quantification**

Acquire spectra for longer time to improve statistics and export to Genie for confirmed nuclide identification and activity calculation.

**Factory Calibration for SPIR-SPEC**

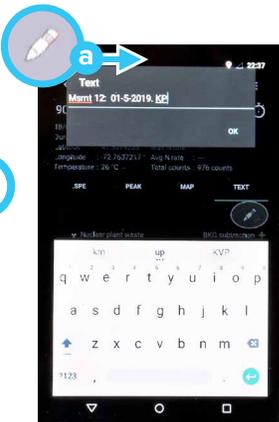
- Prior to shipment, the SPIR-Ace unit is evaluated by our spectroscopy team. Each unit is calibrated for energy and FWHM, so that export to Genie software is seamless and reliable. Additionally, the SPIR-Ace device has auto recalibration functionality, so that a simple check source can be used to reset the effective energy range if long term gain shifts are observed.

**ISOCS Characterization**

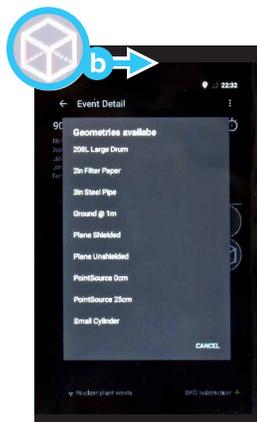
- Each SPIR-SPEC package comes with a generic ISOCS efficiency characterization of the SPIR-Ace detector accurate to 15%-25%. When combined with S573C ISOCS Calibration software, users can create custom geometries for most *in situ* applications. These efficiencies can be used to either accurately calibrate and analyze spectra already acquired, or they can be loaded into the SPIR-Ace device.
- When an efficiency is loaded into the SPIR-Ace unit, it becomes available for selection as a geometry and is immediately associated with a count, allowing for activity to be calculated in a single step in Genie software.



**1** Select **Confirm Identification** to start spectrum. At end of count, select **ANALYSIS** to view the event details.



**2**



- a** Optionally enter a sample description
- b** Select a geometry/efficiency calibration

**Exit** to save and create Genie Spectral file.

**3**

Export CNF file to Genie via USB or Email on WiFi. Analyze with your familiar ASFs in Genie software for full quantification and nuclide analysis reporting.



**Genie Spectroscopy Software**

- Genie 2000 Spectroscopy Software is a comprehensive environment for display, analysis and reporting of the spectrometry data acquired on the SPIR-Ace device. The software is based upon time-proven methodologies that have a long history of acceptance and refinements; it includes patented and defensible analysis and calibration techniques.
- Efficiency calibrations can be created with ISOCS software and the 3-dimensional Geometry Composer for interactive definition and visualization of custom counting geometries. The ISOCS process is widely accepted and compliant with 2009 NRC Regulatory Guide 1.21.

## NUCLEAR CHARACTERISTICS

### Detectors

- NaI(Tl) version: dia 35 mm x 51 mm (1.4" dia x 2")
- LaBr<sub>3</sub> (Ce) version: dia 25.4 mm x 34 mm (1" dia x 1.34")
- Energy compensated GM tube for high gamma dose rate
- Optional neutron detector: moderated <sup>6</sup>LiZnS:Ag scintillator
- Optional external alpha/beta probe

### Energy range

- 25 keV to 3 MeV (gamma)
- 0.025 eV to 15 MeV (neutron)

### Gamma dose rate range

- 0.001 μSv/h to 100 mSv/h (0.1 μR/hr to 10 R/hr)

### Identification

- Fast digital, MCA 1024 channels, throughput >100 000 cps
- Single, bare or shielded, and mixed isotopes
- 7 libraries containing 80 nuclides
- Identifies up to 8 nuclides simultaneously
- Detection and identification performance exceeds ANSI N42-34, IEC62327 and IAEA NSS 1
- Identifies the radionuclides in 5 to 15 seconds at a dose rate of 0.5 μSv/h (50 μR/h)

## FUNCTIONAL FEATURES

### Interface

- 4.3" color touch screen LCD
- LCD readable in all lighting conditions
- Fast display update (every 0.25 s)
- Alarm indicators: LEDs, vibrator and sound
- Touch screen and 2 buttons for gloves/Personal Protective Equipment (PPE) operation
- Earphone jack

### Connectivity

- Internet connection by WiFi or cellular:
  - Send measurements by emails (includes .n42 files)
  - Remote supervision with SpirVIEW or other software using file transfer (FTP or HTTP/SSL)
- Remote display and control via a web enabled wireless devices (WiFi)
- Records the location of all measurements/events
- Micro USB connection
- Wireless:
  - Cellular UMTS/HSPA/HSPA+, global (800/850, 900, AWS1700, 1900, 2100 MHz)
  - Wi-Fi b/g/n
  - GNSS receiver (global GPS)

### Measurements

- Wake-up on alarm
- Automated acquisition and identification upon alarm
- Manual measurement mode (start/stop/resume)

## CHARACTERISTICS

### Standards Compliance

- ANSI N42.34
- IEC62327
- CE

### Environment

- Operating temperature range: -20 °C to +55 °C (-4 °F to +131 °F)
- Humidity: 93% relative humidity at 40 °C
- Water and dust: IP65

### Electrical

- Li-ion rechargeable, 6700 mAh, 3.6 V, built-in charger, replaceable
- Charge time: 5 hours using a standard micro USB charging cord

### Physical

- Weight: maximum (NaI and <sup>6</sup>LiZnS detectors) 1.45 kg (2.2 lb)
- Dimensions: 206 x 153 x 57 mm (8.1 x 6.2 x 2.2")

## ACCESSORIES AND OPTIONS

- Included accessories
  - Transportation and storage case
  - USB AC power adapter
  - Micro USB cable
  - Hand strap
  - Earphones
- Options
  - S573C ISOCS Efficiency Calibration Software
  - GMP-25 alpha/beta pancake probe
  - IP67 carrying case

## ORDERING INFORMATION

### SPIR-SPEC-NG: SPIR-Ace NaI GenieXPort G2K PGK w/ SOCS

- SPIR-Ace Integrated radionuclide Identification device with NaI Detector, GenieXPort application, ISOCS Characterization, and Genie Software S504C and S501C Gamma Analysis

### SPIR-SPEC-LG: SPIR-Ace LaBr<sub>3</sub> GenieXPort G2K PGK w/ SOCS

- SPIR-Ace Integrated radionuclide Identification device with LaBr<sub>3</sub> Detector, GenieXPort application, ISOCS Characterization, and Genie Software S504C and S501C Gamma Analysis

### SPIR-SPEC-N: SPIR-Ace NaI GenieXPort w/ SOCS

- SPIR-Ace Integrated radionuclide Identification device with NaI Detector, GenieXPort application, and ISOCS Characterization

### SPIR-SPEC-L: SPIR-Ace LaBr<sub>3</sub> GenieXPort w/ SOCS

- SPIR-Ace Integrated radionuclide Identification device with LaBr<sub>3</sub> Detector, GenieXPort application, and ISOCS Characterization

