

ORTEC[®]

RADEAGLE

Next Generation Radioisotope Identification Device



Detection and Identification:
Fast, Accurate and Easy

RADEAGLE

RADEAGLE is a state-of-the-art handheld, radioisotope identification device (RIID) delivering superior speed and accuracy.

- Combining a large, high sensitivity crystal with an intelligent algorithm, the RADEAGLE can **quickly, accurately, and simultaneously detect and identify** four or more isotopes, typically in under 30 seconds, even in complex shielded or masked scenarios.
- **ANSI 42.34 compliant**, the RADEAGLE offers a **user-friendly interface** that is intuitive, simple to navigate, provides visually clarity, and utilizes an extensive array of alarms.
- Supports a **variety of scintillation crystals** including NaI(Tl), CeBr₃ and LaBr₃(Ce) to optimize performance across multiple applications.
- Incorporating **decades of industry expertise** in detection and identification algorithms along with advanced hardware, electrical, and software systems, the **RADEAGLE is the handheld RIID of choice**.

Key Customers and Applications

- ✓ First Responders and Emergency Management
- ✓ Customs and Border Protection
- ✓ Security and Military Forces
- ✓ Nuclear Safeguards
- ✓ Environmental Management and Cleanup
- ✓ Nuclear Medicine and Scientific Institutes
- ✓ Scrap Steel and Recycling

Intelligent Algorithm – Unparalleled Speed and Accuracy

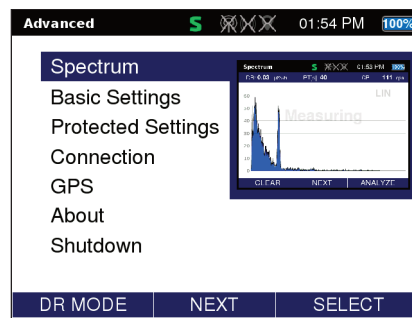
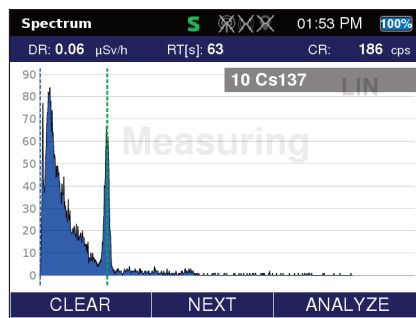
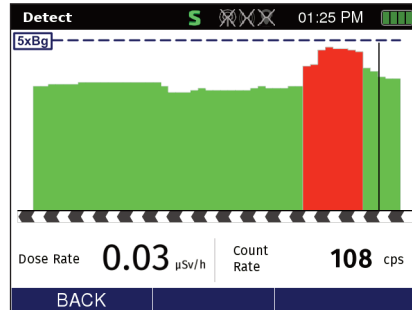
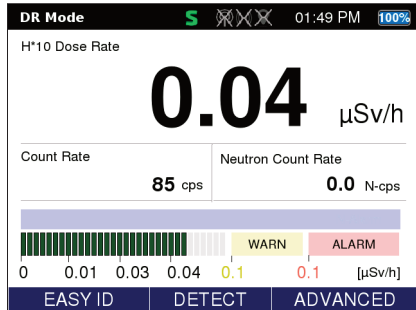
The RADEAGLE algorithm is unique, using a neuron ensemble to create a multi-agent system. This multi-agent system in turn uses a mimetic learning algorithm that adapts reference data to the unique signature of the detector's sensors. While continuously measuring background radiation, this “neuro-spectroscopic brain,” delivers unparalleled speed and accuracy for detecting and identifying over 100 nuclides, exceeding ANSI 42.34 requirements.



RADEAGLE

Operating Modes

The RADEAGLE uses five basic operating modes: Dose Rate, Detect, Easy-ID, Spectrum, and Advanced. These **five simple modes gives the user full system control** ranging from quick and accurate identification to extensive spectrum analysis to expert system configurations.



Application Centric Approach

A key benefit of the RADEAGLE algorithm is its optimization for multiple real-world applications. Through extensive simulation, validated and refined with real world empirical testing, the RADEAGLE's performance is tuned and optimized for key isotopes associated with SNM in the nuclear security and safeguards market, NORM and IND for environmental and industrial applications and MED for nuclear medicine. Underwater measurements are also supported with a submersible, NaI model.

Common Technical Specifications

RADIOLOGICAL PERFORMANCE	
Energy Range/MCA	11 keV to 3 MeV / 2048 channels
Calibration Source	Natural background. No internal source required.
Nuclide Library	<p>Default Isotopes: ^{110m}Ag, ²⁴¹Am, ¹³³Ba, ²⁰⁷Bi, ¹⁰⁹Cd, ²⁵²Cf (requires neutron detection), ⁵⁷Co, ⁶⁰Co, ⁵¹Cr, ¹³⁴Cs, ¹³⁷Cs, ¹⁵²Eu, ⁶⁸Ga, ¹²³I, ¹²⁵I, ¹³¹I, ¹¹¹In, ⁴⁰K, ⁵⁴Mn, ⁹⁹Mo, ²²Na, ²³⁷Np, ²³⁸Pu, ²³⁹Pu, (²⁴⁰Pu, ²⁴¹Pu as part of compositions) ²²⁶Ra, ⁷⁵Se, ^{99m}Tc, ²³²Th, ²⁰¹Tl, ²³³U, ²³⁵U, ²³⁸U</p> <p>Optional Isotopes (contact factory): ^{109m}Ag, ¹⁹⁸Au, ^{135m}Ba, ¹⁴⁰Ba, ²¹³Bi, ¹¹⁶Cd, ⁵⁸Co, ¹³⁹Ce, ¹⁴¹Ce, ¹⁴⁴Ce, ¹³¹Cs, ⁶⁴Cu, ⁶⁷Cu, ¹⁶⁵Dy, ¹⁸F, ⁵⁹Fe, ⁶⁷Ga, ⁶⁸Ge, ^{166m}Ho, ¹²⁴I, ¹³²I, ¹³³I, ¹⁹⁴Ir, ⁴²K, ^{81m}Kr, ¹³⁸La, ¹⁴⁰La, ¹⁷³Lu, ¹⁷⁴Lu, ¹⁷⁶Lu, ¹⁷⁷Lu, ^{177m}Lu, ⁵⁶Mn, ²⁴Na, ⁹⁵Nb, ⁹⁶Nb, ¹⁴⁷Nd, ²¹²Pb, ¹⁰³Pd, ¹⁴⁴Pr, ⁸²Rb, ¹⁸⁶Re, ¹⁸⁸Re, ¹⁰⁶Rh, ¹⁰³Ru, ¹⁰⁶Ru, ¹⁵³Sm, ¹¹³Sn, ⁸²Sr, ⁸⁹Sr, ⁹⁰Sr, ¹³²Te, ²²⁸Th, ⁴⁴Ti, ²⁰²Tl, ²⁰⁴Tl, ²³²U, ²³⁷U, ¹⁸⁷W, ^{131m}Xe, ¹³³Xe, ^{133m}Xe, ¹³⁵Xe, ⁸⁸Y, ⁹⁰Y, ¹⁶⁹Yb, ¹⁷⁷Yb, ⁶⁵Zn, ⁹⁵Zr</p>
Nuclide Categories	Special nuclear material (SNM), Naturally occurring radiation (NORM), Industrial emitter (IND), or Medical source (MED)
PHYSICAL	
Dimensions	248 mm x 115 mm x 152 mm (9.8" x 4.5" x 6.0")
Display	640 x 480, 89 mm (3.5") Transflective Color TFT
Batteries	Rechargeable AA NiMH battery pack, auxiliary battery case for AA NiMH or alkaline
Operational Run Time	>8 hours with standard battery pack
ENVIRONMENTAL	
Operating Temperature	-20 °C to +50 °C (-4 °F to +122 °F)
Relative Humidity	10% – 90%, non-condensing
Protection Rating	IP65, submersible to 15 meter for models 3SGA and 3SGA-H
COMPUTATIONAL	
Memory	>16 GB (1,000,000 spectra)
CPU Speed	1 GHz
File Formats	ANSI N42.42, SPE (IAEA)
Connectivity	USB, WiFi, GPS (optional)
SOFTWARE	
Operating System	Microsoft Windows (XP, Vista, 7, 8, 10), MAC OS X Yosemite, Linux (tested for Ubuntu)

Model Specific Technical Specifications

Model	Detector Type	Detector Dimensions	PMT	GM	He ³ *	Resolution @ 662 keV ¹³⁷ Cs at ambient room temp	Sensitivity cps/μSv/h @ 662 keV ¹³⁷ Cs	Dose Rate Range Detector μSv/h	Dose Rate Range GM, up to Sv/h	Weight (grams)
RADEAGLE-3SG	Nal(Tl)	76.2x25.4 mm (3x1 in)	3"	✓		≤7.2%	>2500	0.01–200	1	~2500
RADEAGLE-3SG-H	Nal(Tl)	76.2x25.4 mm (3x1 in)	3"	✓	✓	≤7.2%	>2500	0.01–200	1	~2800
RADEAGLE-3SGA	Nal(Tl)	76.2x25.4 mm (3x1 in)	3"	✓		≤7.2%	>2500	0.01–200	1	~2500
RADEAGLE-3SGA-H	Nal(Tl)	76.2x25.4 mm (3x1 in)	3"	✓	✓	≤7.2%	>2500	0.01–200	1	~2800
RADEAGLE-2CG	CeBr3	50.8x25.4 mm (2x1 in)	3"	✓		≤4.0%	>1600	0.01–300	1	~2200
RADEAGLE-2CG-H	CeBr3	50.8x25.4 mm (2x1 in)	3"	✓	✓	≤4.0%	>1600	0.01–300	1	~2500
RADEAGLE-3CG	CeBr3	76.2x20.3 mm(3x0.8 in)	3"	✓		≤4.0%	>2500	0.01–200	1	~2500
RADEAGLE-3CG-H	CeBr3	76.2x20.3 mm(3x0.8 in)	3"	✓	✓	≤4.0%	>2500	0.01–200	1	~2800
RADEAGLE-2LG	LaBr3(Ce)	50.8x25.4 mm (2x1 in)	3"	✓		≤3.0%	>1600	0.01–300	1	~2250
RADEAGLE-2LG-H	LaBr3(Ce)	50.8x25.4 mm (2x1 in)	3"	✓	✓	≤3.0%	>1600	0.01–300	1	~2550

*with internal moderator



Ordering Information

Model	Description
RADEAGLE-3SG	RADEAGLE NaI(Tl) 3x1, GM Handheld RIID. Includes Carrying Case and Accessories.
RADEAGLE-3SG-GPS	RADEAGLE NaI(Tl) 3x1, GM Handheld RIID with GPS. Includes Carrying Case and Accessories.
RADEAGLE-3SG-H	RADEAGLE NaI(Tl) 3x1, GM, He3 Handheld RIID. Includes Carrying Case and Accessories.
RADEAGLE-3SG-H-GPS	RADEAGLE NaI(Tl) 3x1, GM, He3 Handheld RIID with GPS. Includes Carrying Case and Accessories.
RADEAGLE-3SGA	RADEAGLE NaI(Tl) 3x1, GM Handheld RIID with Underwater option. Includes Carrying Case and Accessories.
RADEAGLE-3SGA-GPS	RADEAGLE NaI(Tl) 3x1, GM Handheld RIID with Underwater option and GPS. Includes Carrying Case and Accessories.
RADEAGLE-3SGA-H	RADEAGLE NaI(Tl) 3x1, GM, He3 Handheld RIID with Underwater option. Includes Carrying Case and Accessories.
RADEAGLE-3SGA-H-GPS	RADEAGLE NaI(Tl) 3x1, GM, He3 Handheld RIID with Underwater option and GPS. Includes Carrying Case and Accessories.
RADEAGLE-2CG	RADEAGLE CeBr3 2x1, GM Handheld RIID. Includes Carrying Case and Accessories.
RADEAGLE-2CG-GPS	RADEAGLE CeBr3 2x1, GM Handheld RIID with GPS. Includes Carrying Case and Accessories.
RADEAGLE-2CG-H	RADEAGLE CeBr3 2x1, GM, He3 Handheld RIID. Includes Carrying Case and Accessories.
RADEAGLE-2CG-H-GPS	RADEAGLE CeBr3 2x1, GM, He3 Handheld RIID with GPS. Includes Carrying Case and Accessories.
RADEAGLE-3CG	RADEAGLE CeBr3 3x0.8, GM Handheld RIID. Includes Carrying Case and Accessories.
RADEAGLE-3CG-GPS	RADEAGLE CeBr3 3x0.8, GM Handheld RIID with GPS. Includes Carrying Case and Accessories.
RADEAGLE-3CG-H	RADEAGLE CeBr3 3x0.8, GM, He3 Handheld RIID. Includes Carrying Case and Accessories.
RADEAGLE-3CG-H-GPS	RADEAGLE CeBr3 3x0.8, GM, He3 Handheld RIID with GPS. Includes Carrying Case and Accessories.
RADEAGLE-2LG	RADEAGLE LaBr3(Ce) 2x1, GM Handheld RIID. Includes Carrying Case and Accessories.
RADEAGLE-2LG-GPS	RADEAGLE LaBr3(Ce) 2x1, GM Handheld RIID with GPS. Includes Carrying Case and Accessories.
RADEAGLE-2LG-H	RADEAGLE LaBr3(Ce) 2x1, GM, He3 Handheld RIID. Includes Carrying Case and Accessories.
RADEAGLE-2LG-H-GPS	RADEAGLE LaBr3(Ce) 2x1, GM, He3 Handheld RIID and GPS. Includes Carrying Case and Accessories.

Ordering Information – continued

Accessories	
RE-AP009-1	Accu-Pack Battery Charger with battery (spare)
RE-AP009-2	Accu-Pack Battery Charger only.
RE-CA019	Auto Power Adapter, 12 V
RE-CC022	Carrying Case
RE-CM020	Charger Module
RE-HB021	Carrying Holster with Strap

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Specifications subject to change
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