ORTEC®
AMETEK®

RADEAGLE
Radioisotope Identification Device

Detection and Identification: Fast, Accurate and Easy

RADEAGLE

Radioisotope Identification Device

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

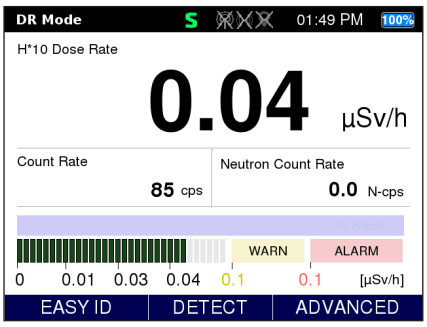
- ✓ First Responders and Emergency Management
- ✓ Customs and Border Protection
- ✓ Security and Military Forces
- ✓ Nuclear Safeguards
- ✓ Environmental Management and Cleanup
- ✓ Nuclear Medicine and Scientific Institutes
- ✓ Scrap Steel and Recycling

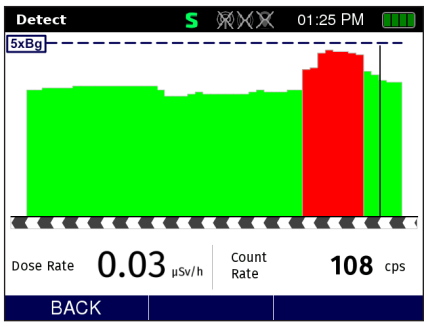
Intelligent Algorithm –
Unparalleled Speed and Accuracy

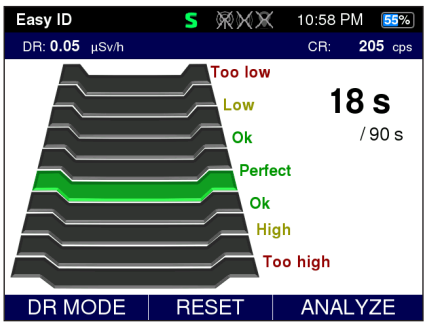
The RADEAGLE algorithm is unique, using a neuron ensemble to create a multi-agent system. This multi-agent system in turn uses a mimetic learning algorithm that adapts reference data to the unique signature of the detector's sensors. While continuously measuring background radiation, this "neuro-spectroscopic brain," delivers unparalleled speed and accuracy for detecting and identifying over 67 nuclides, exceeding ANSI 42.34 requirements.

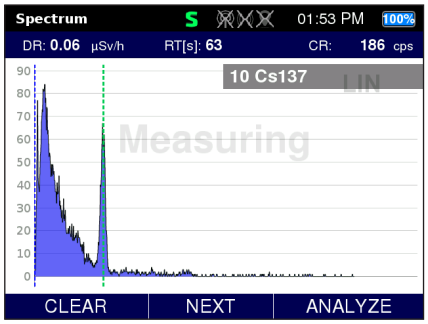
Operating Modes

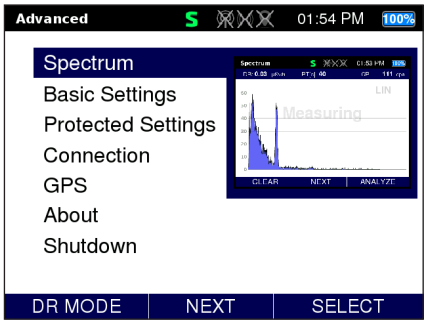
The RADEAGLE uses five basic operating modes: Dose Rate, Detect, Easy-ID, Spectrum, and Advanced. These **five simple modes gives the user full system control** ranging from quick and accurate identification to extensive spectrum analysis to expert system configurations.











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.

RADEAGLE

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Common Technical Specifications

RADIOLOGICAL PERFORMANCE	
Energy Range/MCA	11 keV to 3 MeV/2048 channels
Calibration Source	Natural background. Optional embedded calibration source.
Nuclide Library	Default Isotopes: ^{110}mAg, ^{241}Am, ^{133}Ba, ^{207}Bi, ^{109}Cd, ^{252}Cf (requires neutron detection), ^{57}Co, ^{60}Co, ^{51}Cr, ^{134}Cs, ^{137}Cs, ^{152}Eu, ^{68}Ga, ^{123}I, ^{125}I, ^{131}I, ^{111}In, ^{40}K, ^{54}Mn, ^{99}Mo2, ^{22}Na, ^{237}Np, ^{238}Pu, ^{239}Pu, (^{240}Pu, ^{241}Pu as part of compositions) ^{226}Ra, ^{75}Se, ^{99m}Tc, ^{232}Th, ^{201}Tl, ^{233}U, ^{235}U, ^{238}U
	Optional Isotopes (contact factory): ^{109m}Ag, ^{198}Au, ^{135m}Ba, ^{140}Ba, ^{213}Bi, ^{116}Cd, ^{58}Co, ^{139}Ce, ^{141}Ce, ^{144}Ce, ^{131}Cs, ^{64}Cu, ^{67}Cu, ^{165}Dy, ^{18}F, ^{59}Fe, ^{67}Ga, ^{68}Ge, ^{166m}Ho, ^{124}I, ^{132}I, ^{133}I, ^{194}Ir, ^{42}K, ^{81m}Kr, ^{138}La, ^{140}La, ^{173}Lu, ^{174}Lu, ^{176}Lu, ^{177}Lu, ^{177m}Lu, ^{56}Mn, ^{24}Na, ^{95}Nb, ^{96}Nb, ^{147}Nd, ^{212}Pb, ^{103}Pd, ^{144}Pr, ^{82}Rb, ^{186}Re, ^{188}Re, ^{106}Rh, ^{103}Ru, ^{106}Ru, ^{153}Sm, ^{113}Sn, ^{82}Sr, ^{89}Sr, ^{90}Sr, ^{132}Te, ^{228}Th, ^{44}Ti, ^{202}Tl, ^{204}Tl, ^{232}U, ^{237}U, ^{187}W, ^{131m}Xe, ^{133}Xe, ^{133}mXe, ^{135}Xe, ^{88}Y, ^{90}Y, ^{169}Yb, ^{177}Yb, ^{65}Zn, ^{95}Zr
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, (3SGA models are IP68)
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	He3**	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	NaI(Tl)	76.2x25.4 mm (3x1 in)	3”	✓		≤7.2%	>2500	0.01–200	1	~2620
RADEAGLE-3SG-H	NaI(Tl)	76.2x25.4 mm (3x1 in)	3”	✓	✓	≤7.2%	>2500	0.01–200	1	~2720
RADEAGLE-3SGA	NaI(Tl)	76.2x25.4 mm (3x1 in)	3”	✓		≤7.2%	>2500	0.01–200	1	~2620
RADEAGLE-3SGA-H	NaI(Tl)	76.2x25.4 mm (3x1 in)	3”	✓	✓	≤7.2%	>2500	0.01–200	1	~2720
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	~2620
RADEAGLE-3CG	CeBr3	76.2x20.3 mm (3x0.8 in)	3”	✓		≤4.0%	>2500	0.01–200	1	~2620
RADEAGLE-3CG-H	CeBr3	76.2x20.3 mm (3x0.8 in)	3”	✓	✓	≤4.0%	>2500	0.01–200	1	~2720
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

*see ordering information for GPS models
**with internal moderator

RADEAGLE

Radioisotope Identification Device

RADEAGLE AQUA

- IP 68
- Submersible to 15 meters
- Tested and proven ID algorithm with special modification to compensate for attenuation and scatter in water
- Floats in the water
- Rugged and durable for military use
- Bright yellow color for easy location in water
- Ideal for use in maritime environments — immune to salt spray

It Floats!

Ordering Information (All models include carrying case and accessories)

Model	Description
RADEAGLE-3SG	Gamma Handheld RIID with 3x1 NaI(Tl) detector and GM tube.
RADEAGLE-3SG-ES	Gamma Handheld RIID with 3x1 NaI(Tl) detector, GM tube and embedded calibration source.
RADEAGLE-3SG-GPS	Gamma Handheld RIID with 3x1 NaI(Tl) detector, GM tube and GPS.
RADEAGLE-3SG-GPS-ES	Gamma Handheld RIID with 3x1 NaI(Tl) detector, GM tube, GPS and embedded calibration source.
RADEAGLE-3SG-H	Gamma/Neutron Handheld RIID with 3x1 NaI(Tl) detector, GM tube, and He-3 detector.
RADEAGLE-3SG-H-ES	Gamma/Neutron Handheld RIID with 3x1 NaI(Tl) detector, GM tube, He-3 detector and embedded calibration source.
RADEAGLE-3SG-H-GPS	Gamma/Neutron Handheld RIID with 3x1 NaI(Tl) detector, GM tube, He-3 detector and GPS.
RADEAGLE-3SG-H-GPS-ES	Gamma/Neutron Handheld RIID with 3x1 NaI(Tl) detector, GM tube, He-3 detector GPS and embedded calibration source.
RADEAGLE-3SGA	Gamma Handheld RIID with 3x1 NaI(Tl) detector, GM tube and AQUA option.
RADEAGLE-3SGA-ES	Gamma Handheld RIID with 3x1 NaI(Tl) detector, GM tube, AQUA option and embedded calibration source.
RADEAGLE-3SGA-GPS	Gamma Handheld RIID with 3x1 NaI(Tl) detector, GM tube, AQUA option and GPS.
RADEAGLE-3SGA-GPS-ES	Gamma Handheld RIID with 3x1 NaI(Tl) detector, GM tube, AQUA option, GPS and embedded calibration source.
RADEAGLE-3SGA-H	Gamma/Neutron Handheld RIID with 3x1 NaI(Tl) detector, GM tube, AQUA option and He-3 detector.
RADEAGLE-3SGA-H-ES	Gamma/Neutron Handheld RIID with 3x1 NaI(Tl) detector, GM tube, AQUA option, He-3 detector and embedded calibration source.
RADEAGLE-3SGA-H-GPS	Gamma/Neutron Handheld RIID with 3x1 NaI(Tl) detector, GM tube, AQUA option, He-3 detector, and GPS.
RADEAGLE-3SGA-H-GPS-ES	Gamma/Neutron Handheld RIID with 3x1 NaI(Tl) detector, GM tube, AQUA option, He-3 detector, GPS and embedded calibration source.
RADEAGLE-2CG	Gamma Handheld RIID with 2x1 CeBr3 detector and GM tube.
RADEAGLE-2CG-ES	Gamma Handheld RIID with 2x1 CeBr3 detector, GM tube and embedded calibration source.
RADEAGLE-2CG-GPS	Gamma Handheld RIID with 2x1 CeBr3 detector, GM tube and GPS.
RADEAGLE-2CG-GPS-ES	Gamma Handheld RIID with 2x1 CeBr3 detector, GM tube, GPS and embedded calibration source.
RADEAGLE-2CG-H	Gamma/Neutron Handheld RIID with 2x1 CeBr3 detector, GM tube and He-3 detector.
RADEAGLE-2CG-H-ES	Gamma/Neutron Handheld RIID with 2x1 CeBr3 detector, GM tube, He-3 detector and embedded calibration source.
RADEAGLE-2CG-H-GPS	Gamma/Neutron Handheld RIID with 2x1 CeBr3 detector, GM tube, He-3 detector and GPS.
RADEAGLE-2CG-H-GPS-ES	Gamma/Neutron Handheld RIID with 2x1 CeBr3 detector, GM tube, He-3 detector, GPS and embedded calibration source.
RADEAGLE-3CG	Gamma Handheld RIID with 3x0.8 CeBr3 detector and GM tube.
RADEAGLE-3CG-ES	Gamma Handheld RIID with 3x0.8 CeBr3 detector, GM tube and embedded calibration source.
RADEAGLE-3CG-GPS	Gamma Handheld RIID with 3x0.8 CeBr3 detector, GM tube and GPS.
RADEAGLE-3CG-GPS-ES	Gamma Handheld RIID with 3x0.8 CeBr3 detector, GM tube, GPS and embedded calibration source.
RADEAGLE-3CG-H	Gamma/Neutron Handheld RIID with 3x0.8 CeBr3 detector, GM tube and He-3 detector.
RADEAGLE-3CG-H-ES	Gamma/Neutron Handheld RIID with 3x0.8 CeBr3 detector, GM tube, He-3 detector and embedded calibration source.
RADEAGLE-3CG-H-GPS	Gamma/Neutron Handheld RIID with 3x0.8 CeBr3 detector, GM tube, He-3 detector and GPS.
RADEAGLE-3CG-H-GPS-ES	Gamma/Neutron Handheld RIID with 3x0.8 CeBr3 detector, GM tube, He-3 detector, GPS and embedded calibration source.
RADEAGLE-2LG	Gamma Handheld RIID with 2x1 LaBr3(Ce) detector and GM tube.
RADEAGLE-2LG-GPS	Gamma Handheld RIID with 2x1 LaBr3(Ce) detector, GM tube and GPS.
RADEAGLE-2LG-H	Gamma/Neutron Handheld RIID with 2x1 LaBr3(Ce) detector, GM tube and He-3 detector.
RADEAGLE-2LG-H-GPS	Gamma/Neutron Handheld RIID with 2x1 LaBr3(Ce) detector, GM tube, He-3 detector and GPS.

Ordering Information - Accessories

Model	Description
RE-AP009-1	Accu-Pack Smart Battery Pack with batteries
RE-AP009-2	Accu-Pack Smart Battery Pack without batteries
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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