

ORTEC®

RADEAGLE®

Next Generation Radioisotope Identification Device



Detection and Identification:
Fast, Accurate and Easy

AMETEK®
ADVANCED MEASUREMENT TECHNOLOGY

RADEAGLE

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

- Combining a large, high sensitivity, NaI(Tl) crystal with an intelligent algorithm, the RADEAGLE can quickly, accurately, and simultaneously detect and identify up to four 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.
- 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

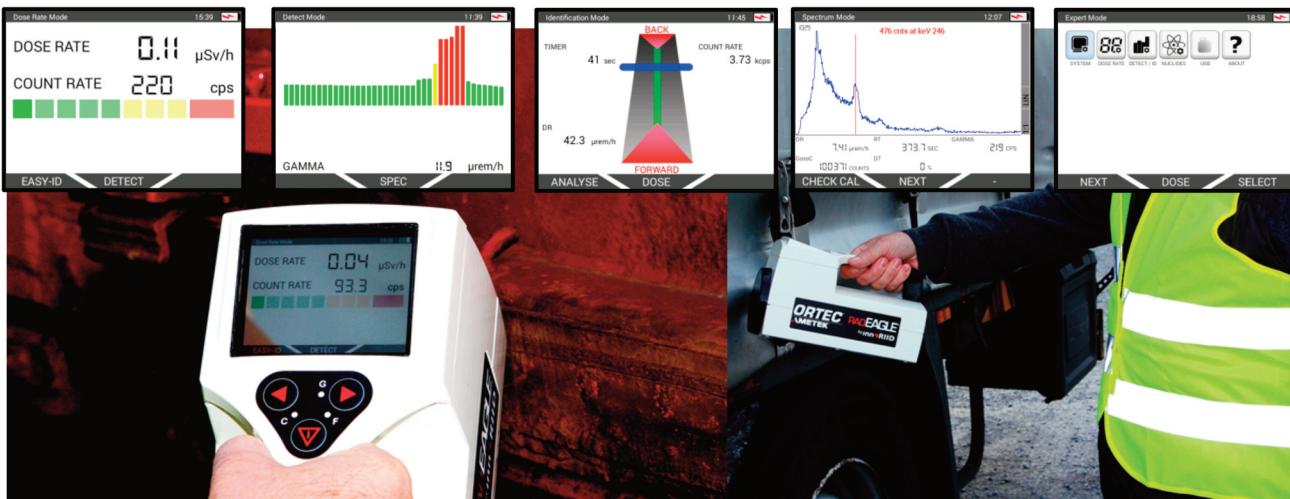
The RADEAGLE algorithm is unique, using a neuron ensemble to create a multi-agent system. This multi-agent system in turn uses a mimetic learning algorithm that adapts reference data to the unique signature of the detector's sensors. While continuously measuring background radiation, this "neuro-spectroscopic 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 Expert. 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.

Ordering Information

Detector Kits			
Model Number	Description		
RADEAGLE-3SG	RADEAGLE NaI(Tl) 3x1, GM Handheld RIID with Carrying Case and Accessories		
RADEAGLE-3SG-H	RADEAGLE NaI(Tl) 3x1, GM, He3 Handheld RIID with Carrying Case and Accessories		
Detector Accessories			
Model Number	Description	Model Number	Description
RE-AP009-1	Accu-Pack w/ batteries	RE-HB021	Holster w/ belt
RE-AP009-2	Accu-Pack w/o batteries	RE-CC022	Carrying Case
RE-CA019	Car Adapter 12 V	RE-RF023	RE Firmware
RE-CM020	Charger Module		

RADEAGLE

Technical Specifications

DETECTORS	
Gamma	Sodium Iodide NaI(Tl): 76.2 mm [3.0"] x 25.4 mm [1.0"]
Dose Rate	Geiger-Muller tube
Neutron [optional]	³ He tube
RADIOLOGICAL PERFORMANCE	
FWHM Resolution	≤7.5% for 662 keV ¹³⁷ Cs at ambient room temperature [for NaI]
Energy Range/MCA	11 keV to 3 MeV / 2048 channels
Sensitivity	>2500 cps/[μSv/h] measured at 662 keV ¹³⁷ Cs
Calibration Source	Natural background. No internal source required.
Dose Rate Range	0.01–200 μSv/h [scintillator]; Up to 1 Sv/h [GM tube]
Nuclide Library	^{109m} Ag, ^{110m} Ag, ²⁴¹ Am, ¹⁹⁸ Au, ¹³³ Ba, ^{135m} Ba, ¹⁴⁰ Ba, ²⁰⁷ Bi, ²¹³ Bi, ¹⁰⁹ Cd, ¹¹⁶ Cd, ²⁵² Cf [requires neutron detection], ⁵⁷ Co, ⁵⁸ Co, ⁶⁰ Co, ⁵¹ Cr, ¹³⁹ Ce, ¹⁴¹ Ce, ¹⁴⁴ Ce, ¹³¹ Cs, ¹³⁴ Cs, ¹³⁷ Cs, ⁶⁴ Cu, ⁶⁷ Cu, ¹⁶⁵ Dy, ¹⁵² Eu, ¹⁸ F, ⁵⁹ Fe, ⁶⁷ Ga, ⁶⁸ Ga, ⁶⁸ Ge, ^{166m} Ho, ¹²³ I, ¹²⁴ I, ¹²⁵ I, ¹³¹ I, ¹³² I, ¹³³ I, ¹¹³ In, ¹⁹² Ir, ¹⁹⁴ Ir, ⁴⁰ K, ⁴² K, ^{81m} Kr, ¹³⁸ La, ¹⁴⁰ La, ¹⁷³ Lu, ¹⁷⁴ Lu, ¹⁷⁶ Lu, ¹⁷⁷ Lu, ^{177m} Lu, ⁹⁹ Mo2, ⁵⁴ Mn, ⁵⁶ Mn, ²² Na, ²⁴ Na, ⁹⁵ Nb, ⁹⁶ Nb, ¹⁴⁷ Nd, ²³⁷ Np, ²¹² Pb, ¹⁰³ Pd, ¹⁴⁴ Pr, ²³⁸ Pu, ²³⁹ Pu, ²⁴⁰ Pu, ²⁴¹ Pu as part of compositions], ²²⁶ Ra, ⁸² Rb, ¹⁸⁶ Re, ¹⁸⁸ Re, ¹⁰⁶ Rh, ¹⁰³ Ru, ¹⁰⁶ Ru, ¹³² Te, ⁷⁵ Se, ¹⁵³ Sm, ⁸² Sr, ⁸⁸ Sr, ⁹⁰ Sr, ¹¹³ Sn, ^{99m} Tc, ²⁰¹ Tl, ²⁰² Tl, ²⁰⁴ Tl, ²²⁸ Th, ²³² Th, ⁴⁴ Ti, ²³² U, ²³³ U, ²³⁵ U, ²³⁷ U, ²³⁸ U, ¹⁸⁷ W, ^{131m} Xe, ¹³³ Xe, ^{133m} Xe, ¹³⁵ Xe, ¹⁶⁹ Yb, ¹⁷⁷ Yb, ⁸⁸ Y, ⁹⁰ Y, ⁶⁵ Zn, ⁹⁵ Zr
Nuclide Categories	Special nuclear material (SNM), Naturally occurring radiation (NORM), Industrial emitter (IND), or Medical source (MED)
PHYSICAL	
Weight	2300 g [5 lbs.], aluminum housing
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	>10 hours 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
COMPUTATIONAL	
Memory	> 16 GB [1,000,000 spectra]
CPU Speed	1 GHz
File Formats	ANSI N42.42, SPE [IAEA]
Connectivity	USB, WiFi [optional], GPS [optional]
SOFTWARE	
Operating System	Microsoft Windows [XP, Vista, 7, 8, 10], MAC OS X Yosemite, Linux [tested for Ubuntu]

Specifications subject to change
092915

ORTEC®

www.ortec-online.com

Tel. (865) 482-4411 • Fax (865) 483-0396 • ortec.info@ametek.com
801 South Illinois Ave., Oak Ridge, TN 37830 U.S.A.
For International Office Locations, Visit Our Website

AMETEK®

ADVANCED MEASUREMENT TECHNOLOGY