



NeutronRAE II

Personal Radiation Detector

An intrinsically safe, rapid detector of gamma and neutron radiation sources

NeutronRAE II is the first personal radiation detector to provide rapid detection of both gamma and neutron radiation sources even in potentially flammable environments. Certified intrinsically safe and water-immersible for chemical decontamination purposes, the NeutronRAE II can be safely used in more environments than any other personal gamma and neutron radiation detector.

Fast Response

The sensitive Cesium Iodide (CsI) gamma scintillator and Lithium Iodide (LiI) neutron scintillator of the NeutronRAE II provide a fast, two-second response to radiological threats.

Loud Alarm

NeutronRAE II alerts the wearer with a loud audible buzzer, big, bright flashing LEDs, and a built-in vibration alarm. For stealth operations, users can disable each alarm individually.

Water Resistant

Immersion (IP67) design makes for reliable operation in wet environments and easy decontamination.

Dose Accumulation

The NeutronRAE II accumulates approximate total dose from gamma radiation. Stored dose data can be cumulative or cleared and reset for each use period.

Intrinsic Safety (IS)

IS certification permits operation in potentially flammable/explosive environments.

Key Features

- Detects neutrons from weapons grade Plutonium (^{239}Pu) and gamma rays from potential "dirty bomb" materials
- Sensitive CsI and LiI scintillators for excellent search capability and fast response
- Prominent visible, audible and vibration alarms
- Immersible in water for easy decontamination
- Top-mounted, invertible display
- Continuous digital readout in microRem/hour ($\mu\text{R/h}$) or microSievert/hour ($\mu\text{Sv/h}$) and counts per second (cps) for gamma radiation, and counts per second for neutron radiation
- Two operation keys and simple, intuitive programming
- Long calibration life
- Two AA alkaline batteries last up to 600 hours
- Large, 30,000-point datalog capacity, downloaded via cable-free Bluetooth[®] connection

Applications

- Alerts first responders to radioactive threats
- Customs & border patrols
- Law enforcement
- Security officers in nuclear power facilities, banks, government laboratories, medical facilities
- Military
- Government agencies
- HazMat teams
- Fire Departments



Intrinsically Safe

Immersible



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www.raesystems.com



ATEX



NeutronRAE II

Specifications*

Detector Specifications

SENSOR	
Radiation Detector	Gamma: 3cc CsI (TI) with Photodiode Neutron: 1cc LiI (Eu) with Photodiode
Energy Range	Gamma: 0.06 to 3.0 MeV Neutron: thermal to 14 MeV
Dose Equivalent Rate (DER) Range for ¹³⁷Cs	1 to 4,000 µR/h (0.01 to 40 µSv/h)
Accuracy of DER	±20%
Neutron Measuring Range	1 to 100 cps
Dose Range	1 µR to 999 R (0.01 µSv to 9.9 Sv), gamma only
Background Reference	Background level reference automatic on start-up, plus user-initiated as needed (Search Mode only)
Calibration	None required. Periodic functional test recommended using 1 µCi ¹³⁷ Cs check source. Factory calibration available if needed.
ALARMS	
Time to Alarm	≤2 seconds (gamma), ≤5 seconds (neutron)
Alarm Alerts	<ul style="list-style-type: none"> • Loud audible buzzer (85+ dB @ 30 cm) • Built-in vibration alarm • Highly visible LED lights on both sides of LCD graphic display • Can be separately enabled or disabled
Alarm Modes	<p>Search Mode: Gamma and neutron alarm thresholds based on variations in local background level</p> <p>Safety Mode: User-programmable low and high gamma alarm thresholds based on dose rate (applies to gamma alarm only)</p>
DATALOGGING AND COMMUNICATION	
Datalog Size	30,000 data points (20 days at 60-second intervals)
Datalog Modes	<p>Continuous: Logs data at all times</p> <p>Event-Driven: Starts logging data on alarm</p>
Datalog Interval	User programmable, 1 to 3,600 seconds
Communication	Built-in Bluetooth® radio interfaces with computer for datalog download
POWER	
Battery	2 AA alkaline batteries
Battery Runtime	Up to 900 hours
OPERATING ENVIRONMENT	
Temperature	-20° C to 50° C (-4° F to 122° F)
Temperature Alarm	Temperatures above 50° C (122° F) will cause a high-temperature alert message
Humidity	0% to 95% (non-condensing)
Shock Resistance	Passes drop test from 1.5 m (59")
IP Rating	IP67 (immersible)
Intrinsic Safety	Certified to meet Class I, Div. I, Groups A, B, C, D, T4 ATEX II 1G EEx ia IIC T4

DISTRIBUTED BY:

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PHYSICAL CHARACTERISTICS	
Display	Graphic LCD with 1.2" x 0.75" (30.5 mm x 19 mm) viewable area can be flipped for view by user; Radiation intensity displayed in cps (gamma, neutron) or dose rate in µR/h or µSv/h (gamma only)
Direct Readout	Dose rate, peak rate, minimum rate, total gamma dose, battery status, current time and date, current time since start-up, internal temperature
Ergonomics	Nonslip rubber housing with grippable ridges securely fits hand or glove
Keypad	2 operation/program buttons
Size	4.92" x 2.68" x 1.38" (125 mm x 68 mm x 35 mm)
Weight	10 oz (283 g)
Attachments	Rugged metal belt clip and wrist strap

*Specifications are subject to change

Detector kit includes:

- NeutronRAE II personal radiation detector
- Belt clip
- 2 AA alkaline batteries
- Wrist strap
- User's Guide
- Calibration certificate
- ProRAE Studio Radiation software

