# **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 lodide (CsI) gamma scintillator and Lithium Iodide (Lil) neutron scintillator of the NeutronRAE II provide a fast 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

Immersible (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 (239Pu) and gamma rays from potential "dirty bomb" materials
- Sensitive CsI and Lil scintillators for excellent search capability and fast response
- · Prominent visible, audible and vibration alarms
- Immersible in water for easy decontamination
- Top-mounted, invertable display
- · Continuous digital readout in microRem/hour (µR/h) or microSievert/hour (µSv/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 a kaline batteries last up to 600 hours
- Large, 30,000-point datalog capacity, downloaded via cablefree Bluetooth® connection

#### **Intrinsically Safe**

#### 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



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## **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 <sup>137</sup> Cs	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 $\mu R$ to 999 R (0.01 $\mu Sv$ 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 <sup>137</sup> Cs check source. Factory calibration available if needed.	
ALARMS		
Time to Alarm	≤2 seconds (gamma), ≤5 seconds (neutron)	
Alarm Alerts	<ul> <li>Loud audible buzzer (85+ dB @ 30 cm)</li> <li>Built-in vibration alarm</li> <li>Highly visible LED lights on both sides of LCD graphic display</li> <li>Can be separately enabled or disabled</li> </ul>	
Alarm Modes	Search Mode: Gamma and neutron alarm thresholds based on variations in local background level Safety Mode: User-programmable low and high gamma alarm thresholds based on dose rate (applies to gamma alarm only)	
DATALOGGING AND COMMUNICATION		
Datalog Size	30,000 data points (20 days at 60-second intervals)	
Datalog Modes	Continuous: Logs data at all times Event-Driven: Starts logging data on alarm	
Datalog Interval	User programmable, 1 to 3,600 seconds	
Communication	Built-in Bluetooth <sup>®</sup> radio interfaces wi h computer for datalog download	
POWER		
Battery	2 AA alkaline batteries	
Battery Runtime	Up to 600 hours	
OPERATING ENVIRO		
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	Cer ified to meet Class I, Div. I, Groups A, B, C, D, T4 ATEX II 1G EEx ia IIC T4	

PHYSICAL CHARACTERISTICS	
Display	Graphic LCD wi h 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 $\mu$ R/h or $\mu$ Sv/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



#### www.raesystems.com

#### **RAE Systems Inc.**

3775 North First Street San Jose, CA 95134 USA raesales@raesystems.com USA/Canada 1-877-723-2878 Europe +45 8652 5155 Middle East +971 4 887 5562 China +86 10 5885 8788 Asia +852 2669 0828

