

NeutronRAE II

Personal Radiation Detector

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 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 and gamma rays
- ▶ 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 micro Rem/hour ($\mu\text{R}/\text{h}$) or micro Sievert/hour ($\mu\text{Sv}/\text{h}$) and counts per second (cps)
- ▶ Two operation keys and simple, intuitive programming
- ▶ Long calibration life
- ▶ Two AA alkaline batteries last up to 600 hours
- ▶ Large, 30,000-point data log 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

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Sensor

Radiation Detector.....	Gamma: 3cc CsI (Tl) 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.....	1 to 4,000 µR/h (0.01 to 40 µSv/h)
(DER) Range for ¹³⁷ Cs	
Accuracy of DER	±20%
Neutron Measuring	1 to 100 cps
Range	
Dose Range	1 µR to 999 R (0.01 µSv to 9.99 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.....	▶ 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 Search.....	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)

Data Logging and Communications

Data log Size.....	30,000 data points (20 days at 60-second intervals)
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Data log Modes.....	Logs data at all times
Continuous	
Event-Driven:.....	Starts logging data on alarm
Data log Interval	User programmable, 1 to 3,600 seconds
Communication	Built-in Bluetooth® radio interfaces with computer for data log download

Power

Battery	2 AA alkaline batteries
Battery Runtime.....	Up to 600 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.....	IP-67 (immersible)
Intrinsic Safety.....	Certified to meet Class I, Div. I, Groups A, B, C, D, T4

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