# NeutronRAE II

## Personal Radiation Detector

### An intrinsically safe, rapid detector of γ-ray (gamma) and neutron sources

**NeutronRAE II** is the first personal radiation detector to provide rapid detection of both gamma (γ) ray and neutron 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) and Lithium Iodide (LiI) scintillators of the **NeutronRAE II** provide a fast response to radiological threats.

**Loud Alarm**

**NeutronRAE II** alerts the wearer with a loud 85+ dB alarm, big, bright flashing LEDs, and a vibration alarm. For stealth operations, law enforcement personnel can disable each alarm individually.

**Water Resistant**

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

**Dosage Accumulation**

The **NeutronRAE II** accumulates approximate total dosage from gamma radiation. Stored dosage 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 ($^{239}Pu$)
- Detects 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, invertable display
- Continuous digital readout in µR/h (µRem/h), µSv/h (µSieverts/h) and cps (counts per second) for gamma; cps (counts per second) for neutron radiation
- Two operation keys, simple intuitive programming
- Dust and shock resistant
- Long calibration life
- Two AA alkaline batteries last up to 600 hours
- Automatic background level referencing on start-up and upon user demand (mode dependent)
- Passes drop test from 59" (1.5m) to hard concrete
- Low EMI interference from cell phones and portable radios
- Programmable gamma and neutron search and high and low gamma safety alarms

### *Applications*

- Alert 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


ISO 9001 CERTIFIED

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# Specifications*

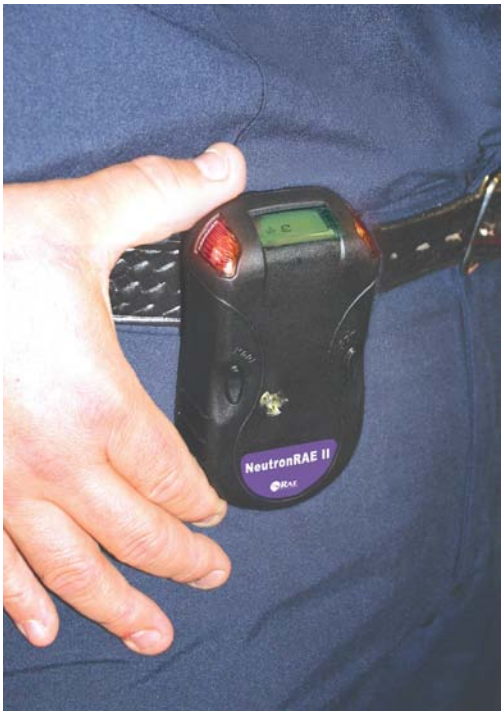
## Detector Specifications

| | |
|---|---|
| **SENSOR** | |
| **Radiation Detector** | Gamma: CsI(TI)/Photodiode<br>Neutron: LiI(Eu)/Photodiode |
| **Energy Range** | Gamma: 0.06 to 3.0 MeV<br>Neutron: thermal to 14 MeV |
| **Dose Equivalent Rate (DER) Range for $^{137}$Cs** | 1 to 4000 μR/h (0.01 to 40 μSv/h) |
| **Accuracy of DER** | ±20% |
| **Neutron Measuring Range** | 1 to 100 cps |
| **Dosage Range** | 1 μR - 999 R (gamma only) |
| **Daily Background Reference** | Background level reference automatic on start-up, plus user-initiated as needed (Search Mode only) |
| **User Calibration** | None required. Periodic functional test 1μCi $^{137}$Cs. Factory calibration recommended every two years |
| **ALARMS** | |
| **Time to Alarm** | ≤2 seconds (gamma), ≤5 seconds (neutron) |
| **Alarm Alerts** | • Loud 85+ dB @ 30 cm for noisy environments<br>• Built-in vibration alarm<br>• Highly visible LED lights on both sides of LCD graphic display<br>• Can be separately enabled or disabled |
| **Alarm Settings** | **Search Mode**: Gamma and neutron alarm thresholds based on variations in local background level<br>**Safety Mode**: User-programmable low and high gamma alarm thresholds based on dose rate (applies to gamma alarm only) |
| **DATALOGGING AND COMMUNICATION** *Free Upgrade Available Summer 2006* | |
| **Datalog Size** | 30,000 data points (20 days at 60-second intervals) |
| **Datalog Modes** | **Continuous:** Logs data at all times<br>**Event-Driven:** Starts logging data on alarm |
| **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 easily accessible with a coin |
| **Operating Period** | 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) 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 |
| **Intrinsic Safety** | Certified to meet Class I, Div. I, Groups A, B, C, D, T4 |
| **PHYSICAL CHARACTERISTICS** | |
| **Display** | Graphic LCD display with 1.2" x 0.75" viewable area can be flipped for view by user;<br>Radiation intensity displayed in cps (gamma, neutron) or dosage rate in μR/hr or μSv/hr (gamma only) |
| **Direct Readout** | Dosage rate, peak rate, minimum rate, total gamma dosage, 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 |
| **Key Pad** | 2 operation/program buttons |
| **Size** | 4.92" x 2.68" x 1.38" (125 x 68 x 35 mm) |
| **Weight** | 9.5 oz. (270g) |
| **Attachments** | Rugged metal belt clip and wrist strap |

* Ongoing projects to enhance our products mean that these specifications are subject to change.

## Detector includes:

- Belt clip
- 2 AA alkaline batteries
- Wrist strap




DISTRIBUTED BY:

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