

# 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** - The 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** - An 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.

## Intrinsically Safe - Immersible

### Applications

*Alerts first responders to radioactive threats*

Customs & Border Patrols • Law Enforcement • Military  
Government Agencies • HazMat Teams • Fire Departments

### Key Features

- Detects neutrons from weapons grade Plutonium ( $^{239}\text{Pu}$ ) 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, invertable display
- Continuous digital readout in  $\mu\text{R}/\text{h}$  or  $\mu\text{Sv}/\text{h}$  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 Bluetooth® connection

# Specifications\*

## Detector Specifications

### SENSOR

<b>Radiation Detector</b>	Gamma: 3cc CsI (TI) with Photodiode Neutron: 1cc LiI (Eu) with Photodiode
<b>Energy Range</b>	Gamma: 0.06 to 3.0 MeV Neutron: thermal to 14 MeV
<b>Dose Equivalent Rate (DER) Range for <sup>137</sup>Cs</b>	1 to 4,000 µR/h (0.01 to 40 µSv/h)
<b>Accuracy of DER</b>	±20%
<b>Neutron Measuring Range</b>	1 to 100 cps
<b>Dose Range</b>	1 µR to 999 R (0.01 µSv to 9.9 Sv), gamma only
<b>Background Reference</b>	Background level reference automatic on start-up, plus user-initiated as needed (Search Mode only)
<b>Calibration</b>	None required. Periodic functional test recommended using 1 µCi <sup>137</sup> Cs check source. Factory calibration available if needed.

### ALARMS

<b>Time to Alarm</b>	≤2 seconds (gamma), ≤5 seconds (neutron)
<b>Alarm Alerts</b>	<ul style="list-style-type: none"> <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>
<b>Alarm Modes</b>	<p><b>Search Mode:</b> Gamma and neutron alarm thresholds based on variations in local background level</p> <p><b>Safety Mode:</b> User-programmable low and high gamma alarm thresholds based on dose rate (applies to gamma alarm only)</p>

### DATALOGGING AND COMMUNICATION

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

### POWER

<b>Battery</b>	2 AA alkaline batteries
<b>Battery Runtime</b>	Up to 600 hours

### OPERATING ENVIRONMENT

<b>Temperature</b>	-20° C to 50° C (-4° F to 122° F)
<b>Temperature Alarm</b>	Temperatures above 50° C (122° F) will cause a high-temperature alert message
<b>Humidity</b>	0% to 95% (non-condensing)
<b>Shock Resistance</b>	Passes drop test from 1.5 m (59")
<b>IP Rating</b>	IP67 (immersion)
<b>Intrinsic Safety</b>	Certified to meet Class I, Div. I, Groups A, B, C, D, T4 ATEX II 1G EEx ia IIC T4

### PHYSICAL CHARACTERISTICS

<b>Display</b>	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)
<b>Direct Readout</b>	Dose rate, peak rate, minimum rate, total gamma dose, battery status, current time and date, current time since start-up, internal temperature
<b>Ergonomics</b>	Nonslip rubber housing with grippable ridges securely fits hand or glove
<b>Keypad</b>	2 operation/program buttons
<b>Size</b>	4.92" x 2.68" x 1.38" (125 mm x 68 mm x 35 mm)
<b>Weight</b>	10 oz (283 g)
<b>Attachments</b>	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



ATEX



Wireless

