

# Dual Radon Detectors and Radon Expel Water and Gas System and Monitor

## Model – Rn-EX-DET



**RnCAM - INSTALLED OR PORTABLE RADON MONITOR**



**INSTALLED NEX-ALPHA-R RADON IN WATER DETECTOR**



**FM-9W ELECTRONICS**

## Features

### Radon in Water and Gas System and Monitor

- Total Radon And Entrained Radon Gas
- User Settable Units - PicoCi/ml or Bq/m3 etc.
- Two Detectors –
  - (1) System Integrated or Detachable / Portable Radon in Air (RnCAM)
  - (1) System Integrated Radon In Water (NEX-ALPHA-R)

### - FM-9W Electronics

- One Display From Two Detectors
- Wall Mount
- Wide Range - Digital Accuracy
- Programmable Digital Readout
- AC/DC Power
- High Level Alarms
- Computer Interface – USB and Ethernet

### Radon in Water – NEX-ALPHA-R

- (1) Integrated System For Radon in Water
- Measures Total Radon in Water

### Radon Expel

- System Removes and Cleans Radon From Water

### Radon in Air (RnCAM)

- (1) Integrated System or Detachable / Portable For Radon in Air
- User Settable Units - PicoCi/ml or Bq/m3 etc.
- Rn-220 and Rn-222
- Wide Range - Digital Accuracy
- Programmable Digital Readout
- AC/DC Power
- RS-232 Computer Interface



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## Model – Rn-EX-DET

### Application **Many applications including:**

- To measure Radon in the air within an aquatic ecosystem environment.
- For measurement of Radon in water.

### Situation Exposure to Radon is harmful and has been found to cause cancer.

- Radon enters ground water, surface water, wells, and drinking water from rocks and minerals naturally occurring in the ground.
- Radon entering water is a natural process and happens everywhere.
- The Radon that enters water sources as a result of earthquakes, mining, or fracking which exacerbates this natural process releasing much more harmful Radon than naturally occurring.

### Solution

#### STEP 1 To avoid and reduce harm.

- 1.1 Locate the source of the Radon in water.
- 1.2 Measure Radon content.

#### STEP 2 Stop using water from that source.

- 2.1 Ideally, seal leaks from Uranium or Radon source leaking into water.
- 2.2 Install suitably sized Radon Expel / Removal system for water system.

### Description The RnCAM Radon Air Monitor is detachable from the system and can be used as a portable RnCAM Air Monitor with either AC/DC power.

**AIR:** Radon Gas is detected by the RnCAM Radon Air Monitor. It includes an ultra-sensitive electrometer and an ion chamber for detection and measurement of airborne Radon.

**TIMING:** The user sets the standard deviation and low range of sensitivity for the RnCAM Radon Air Monitor. Sensitivity is time determined from 5-30 minutes and is user settable. A short time frame can be set for a quick measurement. A longer time frame results in high sensitivity. The RnCAM Radon Air Monitor is detachable from the full system and can stand alone with its own electronics and sensors. If detached from the FM-9W electronics and the piping of the full system it can be used as a Portable Radon Air Monitor, expanding its mission and applications.

#### SEPARATOR CHAMBER:

The Radon Gas is separated from water in the Separator Chamber by means of heating and aerating. This provides a bubbling, trapping the Radon Gas and causing the Gas to rise, moving into the RnCAM Radon Air Monitor for measurement.

**WATER:** Total Radon Gas in water is determined with the special Alpha scintillator in the NEX-ALPHA-R water monitor. Once Radon Gas has been separated, the water is directed out of the Separator Chamber via the Calibrated Metering Pump to the water outlet and drain.

#### FM-9W ELECTRONICS:

Serves as one readout for two detectors.  
Has Data Archive and Retrieval.



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### Specifications System *User Manual Included:*

#### RnCAM - Air Monitor- *(Integrated in System or Detachable)*

- **Detects:** Radon 220 and Radon 222
- **Ranges:** 0.1 to 2,000 pCi/L
- **Detector:** Pulsed Ionization Chamber
- **Display:** Large, easy to read digital LED readout
- **Smoke, Dust and Ion Elimination:** Filter and deionizer reduce effects to negligible level.
- **Circuit:** Electrometer circuit amplifies signal.
- **Ion Chamber Volume:** 300 ml radon internal chamber.
- **Alarms:** User Settable

#### Electronics – RnCAM – FM-9W When Integrated in System (See Below)

#### Electronics – RnCAM – Stand Alone Monitor When Detached and Used as Portable

- **AC Power:** 105-125 VAC, 50-60 Hz (220 V optional) 7.5 DC adapter
- **Battery Backup:** 3.6 V / 10 Ah Rechargeable Battery;  
24 hours between charges. (Standard)

#### NEX-ALPHA-R- Water Monitor

- **Ranges:** Compact, easy to read digital LCD readout.  
100 pCi/L to 2000 pCi/L
- **Alpha Scintillation Detector:** Sensitive – 5” Diameter. (1,100 cm<sup>2</sup>)
- **Alarms:** Low Water Flow, High Red Light, Audio. User Settable.
- **Sample Temperature:** Standard – up to 80° F (26.6° C).

#### Electronics:

- **Power:** 105-125 VAC, 50-60 Hz (220 V optional)
- **Optional:** Electronic Flow Meter

#### FM-9W - Electronics: Serves as one readout for two detectors.

**Engineering Units:** User can input correct conversion factor and change to any units.

**Controls: Front Panel:** On-Off, Alarm-mute, Rate, Integrate, Reset, Digital

**Recessed or Internal:** Discriminator level, high voltage. Other adjustable settings.

**Input Sensitivity:** Adjustable from less than 1 millivolt to 100 millivolt  
Anti-saturation and Dead-time Corrections are available.

**Alarm:** 2000 Hz audio tone with Audio “mute” switch + RED LIGHT  
High current relay. 0-100% of full scale.

**Alarm Set Point:** User settable to any point on detector range.

**On Board Computer:** Data Archive and Retrieval

**Serial Output:** Two-way USB standard, Ethernet.

**Power:** 105-125 VAC, 50-60 Hz (220 V optional)



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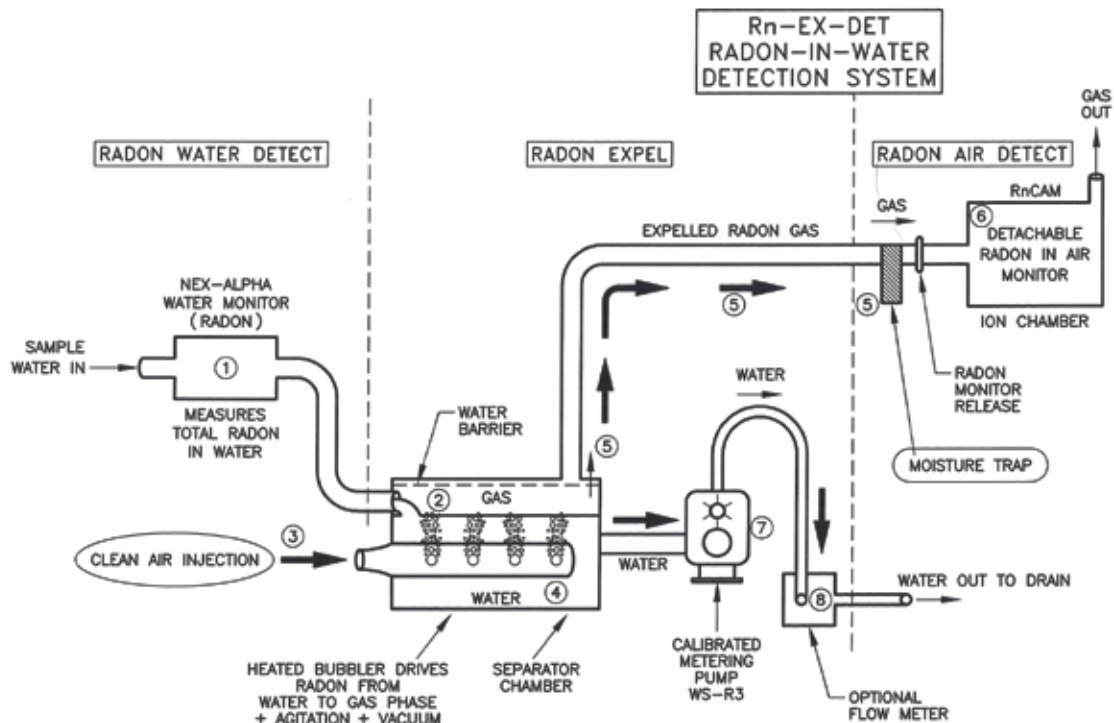
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## RADON in WATER and RADON GAS FLOW CHART

### FLOW PATH

#### RADON in WATER and RADON GAS

- 1 Water Sample enters the Nex-Alpha-R Water Monitor. (Measures Total Radon in Water).
- 2 Water enters Water / Gas Separator Chamber by Vacuum from Calibrated Metering Pump.
- 3 Clean Air is injected into the Separator Chamber.
- 4 Separator Chamber water is heated, agitated, and bubbles of Radon gas are formed expanding into the upper part of the Separator Chamber.
- 5 Radon Gas from the Separator Chamber is moves up through the moisture trap.
- 6 Radon Gas then passes into the RnCAM Air Detector for measurement and then released.
- 7 Water from the Separator Chamber is pulled in through the Calibrated Metering Pump.
- 8 Water moves through optional Electronic Flow Meter and is expelled through the water outlet to drain.



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