

The RAM GENE-1 markII

Gamma Contamination and Dose Rate Monitor

The RAM GENE-1 markII model is the latest edition to the successful line of GENE instruments produced by Rotem. We have upgraded the basic reliable model to be compliant to applications which demand a rugged instrument for harsh environments.

Ideal for Emergency Response Teams, Ambulance Services and the Police force.

The RAM GENE-1 markII features a specially designed energy filter embedded in the cap for ambient dose equivalent dose rate radiation monitoring down to 17keV, with the additional flexibility of a contamination meter.

The RAM GENE-1 is equipped with a recessed, internal GM pancake detector using a thin mica window protected by a stainless steel screen. The transition between measuring radiation dose rate and contamination is achieved with the aid of a mechanical switch on the gm housing which is activated by either removing or replacing the plastic cap



Features

- Aluminum case with splash resistant keypad
- Backlight for easy reading in unfriendly environments
- Large, four digit, continuous ranging, LCD display
- Simple, three key operation
- Large 1.75" pancake GM detector
- Suitable for alpha, beta or gamma contamination detection
- Unit readouts of count rate:
(CPS in contamination mode and (μ Sv/hr) in dose mode.
- Audible and visual (LED) count rate indication
- Smart software provides fast, yet stable response
- Dead time correction
- Alarms for overflow, low battery and detector failure
- Automatic self diagnostic routines



**RAM GENE-1 Mark I
In Suitcase**

Technical Data

| | |
|--------------------|--|
| Display | Large, four digit, continuous ranging LCD readout for display of count rate, dose rate, overflow, low battery, and detector failure |
| LED | Flashing count rate indication |
| Audio | Piezo electric element synchronized with count LED |
| Units | Counts per second (cps) or counts per minute (cpm) and $\mu\text{Sv/hr}$ or mR/hr |
| Controls | Three key keypad with positive feedback for ON/OFF Key combinations for selecting count rate or dose rate unit displays |
| Power | Standard 9V alkaline battery - provides approximately 50 hours continuous use with speaker off. Automatic battery check under full load. |
| Detector | 1.75" Pancake GM tube - LND73118 or equivalent |
| Window | Mica, 1.5 - 2.0 mg/cm^2 protected by stainless steel mesh |
| Count Range | 0 - 42,000 cps |
| Sensitivity | Approximately 5.8 $\text{cps}/\mu\text{Sv/hr}$ (58 cps/mR/hr) - ^{137}Cs |
| Measuring Range | 0.05 mR/hr to 700 mR/hr (0.05 $\mu\text{Sv/hr}$ to 7000 $\mu\text{Sv/hr}$) |
| Display Resolution | 0.001 mR/hr (0.01 $\mu\text{Sv/hr}$) |
| Background | 0 - 1 cps |
| Temperature Range | Operation: -10°C to $+50^\circ\text{C}$ (15°F to 122°F) Storage: -20°C to $+60^\circ\text{C}$ (-5°F to 140°F) |
| Humidity Range | 40% to 95% RH (non condensing) |
| Case | High impact ABS |
| Dimensions | 11cm x 6.7cm x 7.4cm (4.3" x 2.6" x 2.9") |
| Weight | 0.340 Kg (0.75 lbs) |

Variation of Response with Particle Energy

- $E_{\text{max}} < 0.2 \text{ MeV}$ – ^{14}C
- E_{max} between 0.2 MeV and 0.5 MeV – ^{147}Pm and ^{60}Co
- $E_{\text{max}} > 0.5 \text{ MeV}$ - ^{36}Cl and $^{90}\text{Sr}/^{90}\text{Y}$

| Nuclide | Activity (Bq cm^{-2}) | Instrument Indication (counts s^{-1}) | Response Factor | Uncertainty |
|----------------------------------|----------------------------------|--|-----------------|-------------|
| $^{90}\text{Sr} + ^{90}\text{Y}$ | 70.55 | 277 | 3.92 | $\pm 10\%$ |
| ^{36}Cl | 35.84 | 135 | 3.78 | $\pm 10\%$ |
| ^{60}Co | 34.62 | 56 | 1.63 | $\pm 10\%$ |
| ^{147}Pm | 18.65 | 19.6 | 1.05 | $\pm 10\%$ |
| ^{14}C | 142.64 | 143 | 1.00 | $\pm 10\%$ |
| ^{241}Am | 21.57 | 27.2 | 1.26 | $\pm 10\%$ |
| ^{238}Pu | 21.54 | 27.9 | 1.30 | $\pm 10\%$ |

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Health Physics Instrumentation Dept.

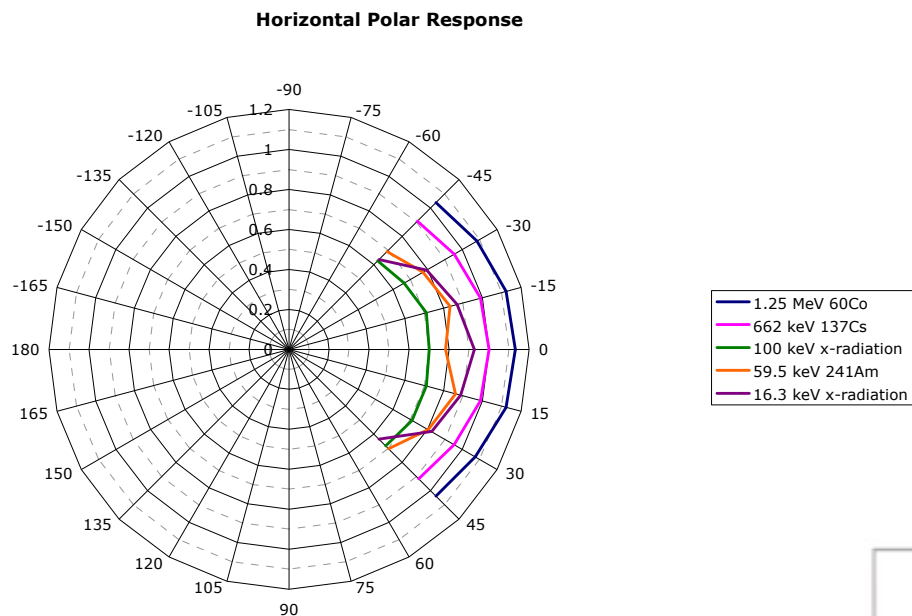
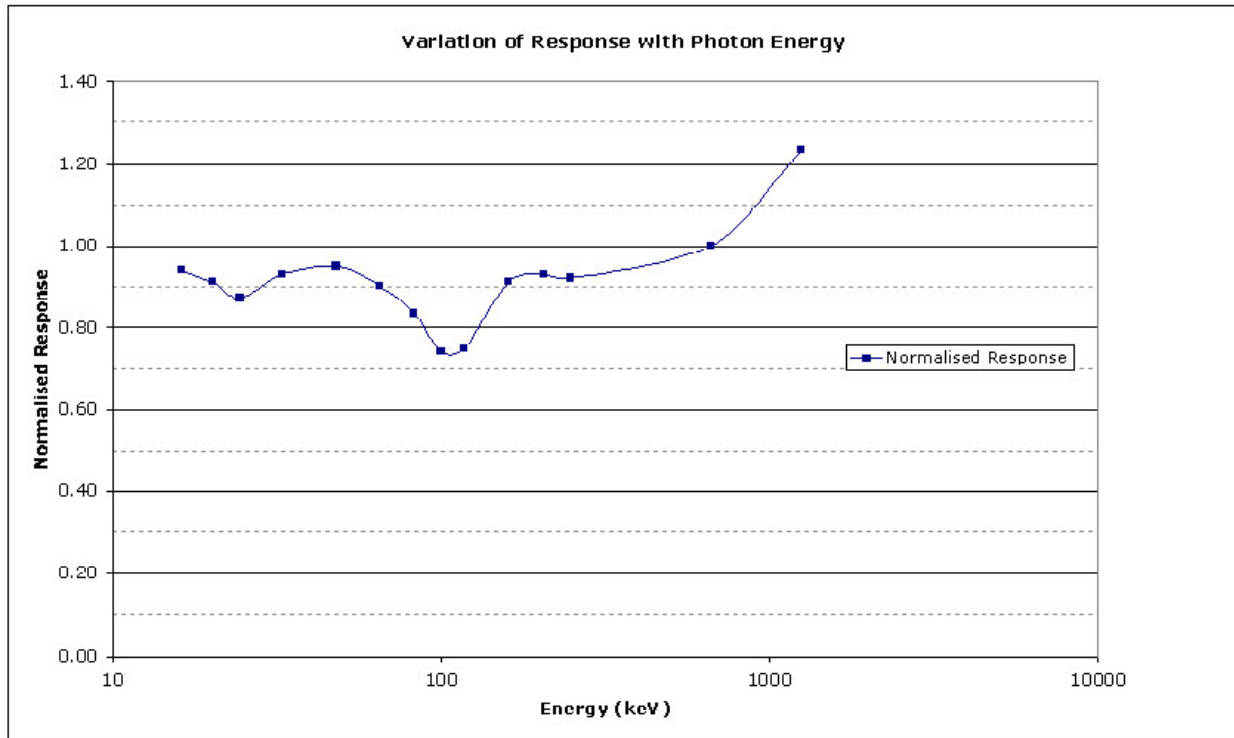
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Compliant to IEC 60846 and IEC 60325 for ambient dose equivalent and contamination monitoring

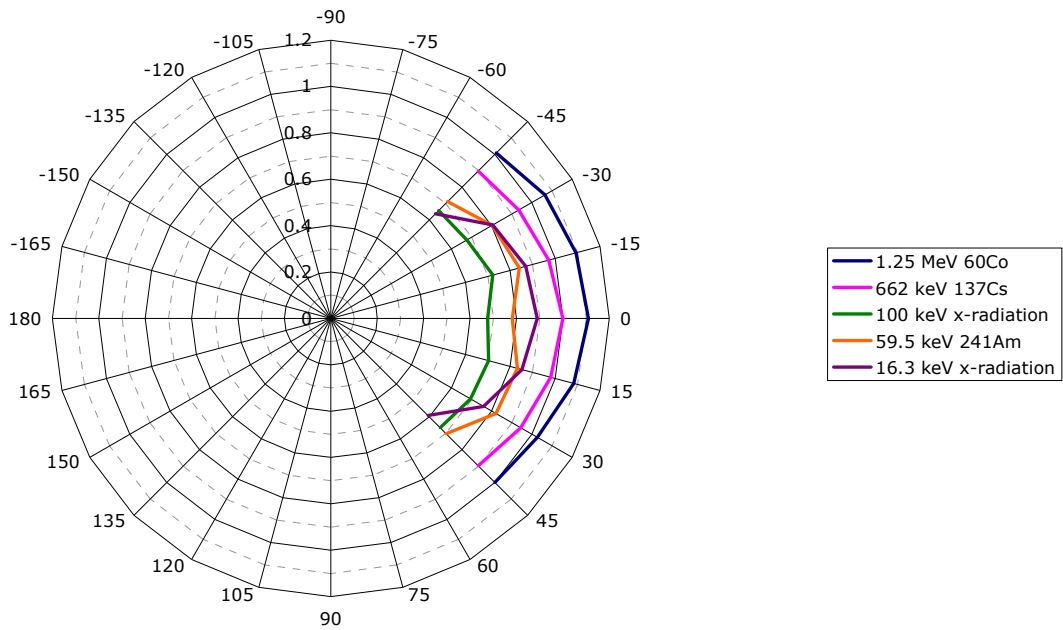


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Vertical Polar Response



Full Energy Response Data

| Radiation Quantity | Energy (keV) | Normalized Response | Uncertainty |
|--------------------------------------|--------------|---------------------|-------------|
| ⁶⁰ Co γ radiation | 1250 | 1.17 | $\pm 10\%$ |
| ¹³⁷ Cs γ radiation | 662 | 1 | $\pm 10\%$ |
| ISO Low series x-radiation | 248 | 0.92 | $\pm 10\%$ |
| ISO Low series x-radiation | 205 | 0.93 | $\pm 10\%$ |
| ISO Low series x-radiation | 161 | 0.91 | $\pm 10\%$ |
| ISO Low series x-radiation | 118 | 0.75 | $\pm 10\%$ |
| ISO Low series x-radiation | 100 | 0.74 | $\pm 10\%$ |
| ISO Low series x-radiation | 83 | 0.83 | $\pm 10\%$ |
| ISO Low series x-radiation | 65 | 0.9 | $\pm 10\%$ |
| ²⁴¹ Am γ radiation | 59.5 | 0.94 | $\pm 10\%$ |
| ISO Low series x-radiation | 48 | 0.95 | $\pm 10\%$ |
| ISO Low series x-radiation | 33 | 0.93 | $\pm 10\%$ |
| ISO Low series x-radiation | 24.5 | 0.87 | $\pm 10\%$ |
| ISO Low series x-radiation | 20.2 | 0.91 | $\pm 10\%$ |
| ISO Low series x-radiation | 16.3 | 0.94 | $\pm 10\%$ |

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