

The PM-10 Detector

0 to 50,000 CPS

Radiation Detection Division

Health Physics



The PM-10 is a gamma scintillation probe for detection of low energy gamma and X-rays and optimized for detection of I-125 and other low energy gamma emitters.

The high efficiency of the PM-10 provides a minimum detectable level (MDL) of 0.35Bq/cm^2 (approximately $1 \times 10^{-5} \mu\text{Ci/cm}^2$ surface contamination of I-125).

The PM-10 can be connected to the RAM DA-2000, Portable Survey Meter or the DRM-3000, DPU-3 Area Monitors within the WebiSmarts System as a highly sensitive effluent detector.

The PM-10 contains a highly efficient, hermetically sealed, NaI(Tl) scintillator, 2" diameter and 0.04" thick, coupled to a 2" photomultiplier tube encased in a rugged, splash proof housing for protection against shock, vibration and humidity.

The probe also contains a high voltage power supply, single channel analyzer (SCA), pulse shaper, GM saturation indicator, detector identifier and malfunction detection circuitry. This configuration minimizes noise, improving sensitivity and stability.

Applications

Used in the WebiSmarts System as an effluent detector capable of detecting I-125 releases.

Technical Data

Radiation Detected Low energy gamma, 10keV to 80keV

Scintillator NaI(Tl) 2" diameter, 0.04" thick. Window of 1 mil. (0.001") aluminum

Energy Calibration SCA within the energy range ± 5 keV (minimum)

Count Rate Range 0 - 50,000 cps

Output Signals TTL pulses.

Detector status: ID, OK, malfunction, overflow

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)

Dimensions 290mm (11.4") length, 70mm (2.8") width

Weight 1.25kg (2.8lbs)

Casing Aluminum, splash proof

Surface Sensitivity (in contact):

Isotope	Sensitivity	MDL Bq/cm ²
	cpm/Bq/cm ² (a) / (b)	(a) / (b)
⁵¹ Cr	4.60 / 0.65	150 / 225
¹²⁵ I	460 / 440	1.50 / 0.35
¹³¹ I	90 / 35	7.50 / 4.30
^{99m} Tc	150 / 30	4.50 / 4.50
⁹⁰ Sr+ ⁹⁰ Y	280 / 40	2.50 / 3.50
³⁶ Cl	8.0 / 3.50	85 / 43
²¹⁰ Pb	95 / 35	7.40 / 4.30
³² P	180 / 30	4.0 / 4.50

(a) without SCA calibration (open window)

(b) Energy calibrated to ¹²⁵I (approx. 30keV)

* Minimum detectable level calculations are based on background

Rotem Part# **Model PM-10**

BAK-1490

Model PM-10 (energy window for I-125)

BAK-1491

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