

The PM-11 Detector

0 to 50,000 CPS

Radiation Detection Division

Health Physics



The PM-11 is a scintillation probe for detection of gamma radiation. The PM-11 contains a highly efficient, hermetically sealed, NaI(Tl) scintillator, 2" diameter and 2" thick, coupled to a 2" photomultiplier tube. This is encased in a rugged, splash proof housing for protection against shock, vibration and humidity.

The detector contains a microprocessor circuit, high voltage power supply, single channel analyzer (SCA), pulse shaper, RS-232 or RS-485 communication port, DC to DC converter, and TTL output. This configuration minimizes noise, improving sensitivity and stability.

Calibration and internal parameters are set via software through the connecting instrument.

The PM-11 is our primary, highly sensitive effluent detector used in WebiSmarts and can be connected to our Coincidence Box, DRM-3000, DPU-3, RAM DA 2000 and RAM R-200 (RP-11).

Applications

WebiSmarts Primary Stack Monitor

Mounted in the exhaust stack of cyclotrons to provide online data of released concentration and total activity.

Mounted in water tanks to control the release to the environment according to the online radiation levels within.

Portable External Detector

Connected to a portable instrument to provide environmental readings of radiation levels to the user.

Technical Data

Indicated Use:	low-level, wide-energy gamma detection		
Suggested Instruments:	WebiSmarts Coincidence Detector, RAM DA-2000 and RAM R-200 (RP-11)		
Detector:	5.1 x 5.1 cm (2 x 2 in.) (Dia x L) NaI scintillator		
Efficiency:	¹²⁵ I for 4%; ⁵⁷ Co for 20%; ¹³⁷ Cs for 9%; ⁶⁰ Co for 15%		
Radiation Detected:	Gamma above 50 keV		
Recommended Energy Range:	30 keV – 3.0 MeV		
Energy Response:	energy dependent		
Energy Calibration:	Factory calibrated energy widow specifically for F-18, Ga-68, O-15, C-11 and N-13 or I-131 or Tc-99m, Ga-67 and Tl-201		
Count Rate Range:	0 to 50,000 CPS		
Background:	9750 cpm (in 10 µR/hr field)		
Photomultiplier Tube:	5.1 cm (2 in.) diameter, magnetically shielded		
Operating Voltage:	500 to 1200 volts		
Temperature Range:	-10°C to +50°C (15°F to 122°F)		
Environmental Rating:	IP65		
Connector:	AMP Type		
Construction:	Aluminum, splash proof		
Size:	340mm (13.4") length, 70 mm (2.75") diameter		
Weight:	1.75kg (3.9 lbs)		
Sensitivity:	Radionuclide	Sensitivity (cpm/Bq/cm²)	MDL (Bq/cm²)
	F-18	350	10
	I-131	320	12
	Tc-99m	315	12
	Cr-51	27	140
	Cs-137	300	1.2
* Minimum detectable level calculations are based on background reading of 600 cpm			
(511 keV window) and 3600 cpm (open window) The confidence level is 99%.			

Rotem Part#	Open Window	BAK-1501
	Closed Window (511 keV)	BAK-1510

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