

Model RPM-1 – Radiation Portal Monitor with plastic scintillator detectors



Model RPM-1

Model RPM-1 is a Portal or Gate Monitoring system with two plastic scintillators forming two sides of the portal. Model RPM-1 is designed and manufactured indigenously by Para Electronics Mfg. Division of Electronic Enterprises (I) Pvt. Ltd. for monitoring gamma contamination on persons walking through it.

1980 mm H x 280 mm W x 48 mm T are typical dimensions of plastic scintillators on which a 2" dia PMT is mounted. Detectors are covered with 5 mm lead sheet to minimize background radiation. They are fitted in steel frames covered with SS covers. The inner sides of the detectors are covered with a thin plastic sheet. Detector electronics includes HV supply, preamplifier, amplifier and single channel analyzer are housed in a pluggable enclosure on the PMT socket. TTL outputs from both the channels serve as input to the counters used in the readout unit.



PC Screen shot

Readout unit uses Silab microcontroller which indicates the counts and background of both channels on 4 x 20-character LCD. 8 Keys are also provided to carry out the setup, which allows user to select the operating mode, counting time, background counts and alarm counts. Portal Monitor, Model RPM-1, uses PIR sensor, camera and IR based occupancy sensors to detect and record the presence of person. Image of the person &, contamination level are recorded on PC which is coupled through ethernet.

Portal Monitor, Model RPM-1 offers two modes of operation, i.e. **Walk-Through and Stop & Count**. In Walk Through mode, person can simply walk through the portal and the measurement is carried out while the person is crossing the frame. In Stop & Count mode, person is expected to stand in the frame for set duration of time. Measurement is completed when the person moves out of the frame. Capturing the photo of the person, detection of presence of person in the portal frame, is done while the person is approaching the frame and then passing through it.

Information acquired by camera and detectors is communicated to PC, connected through ethernet cable. This information is permanently stored in PC memory for viewing later. Software written for this application allows user to see the alarm status, counts information and photo of the person at a remote location. Detector fail, high background, Count Rate alarm conditions are detected and indicated locally on tower lamp with audio alarm. User can carry out setup through PC software as well. This information is also displayed on PC, LCD as well as on the remote alarm indication and display box supplied as an option.

Specifications (model RPM-1 Radiation Portal Monitor)



Parameter	PORTAL MONITOR MODEL RPM-1
Radiation detected	Gamma
No. of Detectors	Two
Detector Type	Plastic Scintillator detector mounted on 2" dia PMT
Dimensions of detector	1980 mm (H) x 280 mm (W) x 48 mm (T)
Background Reduction	5 mm thick lead shield around three sides of the detector mounted on steel frame covered with stainless steel sheets
Detector Electronics	2 separate channels with independent HV supplies, pre amp, amplifier and Single Channel Analyzers
Occupancy Detection	PIR sensor, IR based light disrupted sensors mounted on either side of frame to detect presence of person
Operating modes	Walk-Through or Stand & Count (software settable)
Counting Time	For stop and count mode, Settable from 1,2,5,10 seconds (software settable)
Camera Capture	100 frames a second
HV supply	Two HV modules settable to 1250V
Display	4 x 20 Char large LCD for display of counts per channel, background counts, alarm counts etc
Keyboard	Front panel mounted 8 keys, for set up
Alarms	Green / Amber / Red Tower Lamps with audio alarm
Alarm Setting	High Background, High CPM Alarm, Detector Fail
Outputs	Potential free Relay contacts, Ethernet through ethernet switch to PC and camera
Software	Acquisition, storage, Display software
PC/Laptop	Supplied optionally
Remote Alarm Unit	Available optionally, Remote alarm audio and visual indication, Acknowledge and Reset Keys
Mechanical Enclosure	SS covers mounted on steel frame with pedestal
Power	230V / 50 Hz Single Phase, AC Mains supply

Due to continuous R&D, specifications are likely to change without notice

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