

PEDESTRIAN MONITORING SYSTEM TYPE: PM 1000

Technical Data

FEATURES

- Detector : 1.5 mtrs. High grade sensitive as scintillator coupled to suitable PMT.
- Built-in compact HV and pulse processing electronics.
- Visual local LCD display to indicate data & alarm status & fault diagnostics status.
- Measures gross gamma & X-radiations in CPS & CPM.
- Alarms range above natural BG settable throughout the range of measurement.
- Alarms : Both aural & visual alarms have been provided.
- Visual display option
 - (a) Local at detector location
 - (b) Remote in security / control room or both through RS232 port for security reasons.
- Power : 230V AC, 50Hz

Pedestrian Monitoring System Type: PM1000 manufactured by NUCLEONIX has been specifically designed to detect clandestine movement of radioactive and special nuclear material by pedestrians across the borders, sea ports, airports, nuclear fissile and other high security installations.

This system may be installed at various entry/exit points of the installations where pedestrians are to be monitored.

Pedestrian Monitoring System PMS 1000 can be offered in **two configurations**

- a) Gamma detection unit on single side of the pedestrian
- b) Gamma detection units on the both sides of the pedestrian.

Each gamma detection system essentially comprises of a long plastic scintillator based detector. Each detector (PVT) has dimensions of 3" dia x 1.5mtrs. Ht.

The gamma detector assembly is housed inside a low Z material based detector pillar so as to facilitate low energy detection

One/Two such pillars are placed along side the passage from where the pedestrians pass through This system has been designed to automatically detect the presence of radioactive material being carried by pedestrians. This system does this by measuring radiation level profile while a person passes through the detection area and comparing this to the background radiation level that is measured and updated when the detection area is unoccupied. Continuous measurement of background and re-adjustment of the alarm threshold enables a proper alarm threshold level to be maintained.

The system uses occupancy sensors to detect the passing of pedestrians as they come closer to detector system. This indicates to the monitoring system to know when to monitor for the background levels and when to monitor the pedestrians for radioactivity.

The pedestrian monitor can be offered as a single or dual pillar monitor. A barrier optionally installed on other side of passage restricts the pedestrian traffic to within 1 metre of the monitor, when pedestrian corridor is larger than 1.0 m, the dual pillar monitor should be installed.

SPECIFICATIONS

A. GAMMA DETECTION SYSTEM:

Detectors Type: High Sensitivity PVT detectors coupled to PMT.

No. of Monitoring detector channels : 1 for single side detection unit, 2 for both side detection unit.

Sensitive volume of each detector pillar : 6800 cc

Total Height of the detector pillar : 2000mm

Energy range : 30KeV to 5MeV

Sensitivity of each detector : 150 Cps/ μ R/h
(Approx)

High Voltage & Front end electronics : PVT detector, Photomultiplier Tube, high voltage and front end electronics are all housed together in each of the detector pillar.

i. A PVT plastic scintillation detector coupled to suitable PMT along with suitable lead shielding for gamma only detection system (As described in section A)

No. of detector pillar : 1 for single pillar portal, 2 for dual pillar portal.

B) MEASUREMENT & ALARM UNIT : The unit essentially comprises of advanced electronic circuits with embedded code built-in to receive data from the gamma detector assembly and correct for background levels and generate audio/visual alarms in the event counts due to pedestrian monitoring exceed the preset levels set. Alarm data can be automatically transferred at the end of monitoring to the central PC for further investigation by the law enforcement/security personnel.

Total number of monitoring channels : 1 per detector pillar.

Display : 16x2 LCD display

User Interface: 2x3 matrix keypad

Measurement Unit : CPS or CPM

Measurement Range : 0 to 99999 CPS or 0 to 999999 CPM

Alarm Range: 0 to 99999 CPS or 0 to 999999 CPM

Background Updation: Automatic (by sensing absence of pedestrians in the monitor passage area by use of occupancy sensor).

Alarm Setting Adjustment: Automatic based on the background level.

Occupancy Sensing : IR Proximity sensors are used to detect pedestrian movement.

Detection Area & Performance Criteria :

Vertical : 0 to 2m

Horizontal : 0 to 1.0m (Parallel to the direction of movement)

Walking Speed : 1.2m/s

Audio/ Visual Alarms: Buzzer and flasher have been provided for the purpose of annunciation of audio/visual alarms.

(C) MINIMUM DETECTABLE ACTIVITY :

MDA is computed @1 sec counting time from when the following sources are kept @ 1 meter distance from the middle of detector assembly.

Source	MDA
Cs-137	90 k Bq
Co-60	60 k Bq
Ba-133	90 k Bq

PEDESTRIAN IDENTIFICATION (OPTIONAL) :

D)COMPUTER SOFTWARE & PC

CONFIGURATION: The data acquisition and control application software running on the host PC with a WIN 7/ WIN P OS will communicate with the processing electronics through RS232/Ethernet port. This software facilities remote configuration of parameters, live acquisition of data and reporting of any clandestine movement.

The software is extremely flexible allowing the user to easily configure the system general operations like adjustment of detector parameters and accessing of database of all the individual pedestrian scans. The software is so designed that it does not require the operator to understand physics to operate the equipment.

The software in offered is two configurations-single system monitoring and multi-system monitoring. Multi-system data acquisition software facilitates simultaneous monitoring of multiple pedestrian lanes where as single-lane data acquisition software facilitates only single pedestrian lane monitoring.



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Typical Detector Arrangement for Pedestrian monitoring system

