

The PM-7 gamma portal monitor is a microcomputer-based radiation detection system which provides a rapid and sensitive indication of personnel contamination.

PM-7

Gamma Portal Monitor



The PM-7 utilizes six large gamma-sensitive plastic scintillation detectors to monitor personnel passing through the portal. Traffic flow can be either direction. Two detector assemblies are located in each side of the portal, for head-to-toe-monitoring.

Operation of the PM-7 has been simplified to the extent that no keypads or complicated displays are necessary. The only operator control is an alarm acknowledge switch, on the right hand display, which is used to silence the audible alarm after contamination has been detected. The operational status of the portal is clearly indicated by a set of vertical system indicator lights located on both sides of the portal frame.

The System Indicator Lights Are As Follows:

- Contaminated: A red light indicating the presence of contamination.
- Ready: A green light indicating that the PM-7 is ready to use and is measuring background.
- Counting: A white light indicating that the portal is monitoring a user for contamination.
- Re-Count: A yellow light indicating that the user exited the portal before the count interval was complete.
- Out of service: A blue light indicating that the personnel monitor has a failed component.

Along with these indicators, a human silhouette, located on the right hand side of the portal frame, indicates which of the six detector zones are "contaminated" thus aiding in localizing the contamination on an individual. Two audible signals are included, one to signify contamination and re-count alarms, and a chime to indicate the completion of a count where no contamination was detected.

- Microcomputer controlled
- Automatic background subtraction
- RS-232C serial communication port
- Large-area plastic scintillation detectors

The basic operating mode of the PM-7 is based on minimum count time. The user enters the desired Reliably Detectable Activity (RDA) and the personnel monitor determines the appropriate alarm level and minimum necessary count time to achieve the RDA. The personnel monitor continuously counts while a user is within the sensitive region of the portal even though the required count time may be less than the time the user is within this region. The recount alarm sounds if the user exits the portal before at least one count interval can be satisfied. A typical RDA level for a 0.4 second walk through time is 100 nCi.

Calibration and configuration of the portal is accomplished using a small, light-weight portable computer connected to a built-in RS-232C communication port. The software provided by Thermo Fisher Scientific provides for a menu driven, easy to use method for complete setup of the portal. No access to any internal components is necessary for routine calibration. The PC calibration program will perform automatic detector plateauing efficiency calculations, and report generation.

PM-7 Specifications

Maintenance is simplified and spare part inventories are reduced by the use of six identical single board computers. These computers furnish high voltage, pre-amp/ amp and discriminator for the detector, compute alarms, communicate with the RS-485 distributed processing system bus and support the indicators. All components are mounted within the portal frame, eliminating the need for any external electronics package. The system indicators can be supplied on a remote panel.

Exterior Dimensions:	2.29 x 1.02 x 0.51 m (90 x 40 x 20 in.)
Interior Opening:	1.98 x 0.61 m (78 x 24 in.)
Weight Approx:	396 kg (874 lbs) without lead, 795 kg (1752 lbs.) with lead. Lead shielding, 1.9 cm (0.75 in.) thick is field removed/installed.
Battery Backup:	8 hours operating.
Temperature:	0 to 50 °C (32 to 122 °F)
Humidity Range:	10 to 95% relative humidity, non-condensing.
Power:	105 to 125 Vac, 47 to 63 Hz, 1 A.

Options

- PM7 OPT1:	PM-7 remote annunciator, audible and visual.
- PM7 OPT2:	Calibration interface device, program, cable.
- PM7 OPT3:	Calibration/configuration software.
- CA-71-60:	Remote annunciator cable, 18.288 m (60 ft.) long.
- PM7 OPT5:	Traffic barrier, yellow chain, poly, "S" hooks, bolts.
- PM7 OPT6:	Calibration jig, magnetic
- PM7 OPT8:	PM7 host computer software.
- PM7 OPT9:	Low attenuation detector panels.
- CA-41-80:	Serial communications cable, DB9F to DB9M for calibration

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Worldwide
Frauenauracher Strasse 96 +49 (0) 9131 909-0
D 91056 Erlangen, Germany +49 (0) 9131 909-205 fax

United Kingdom
Bath Road, Beenham, +44 (0) 118 971 2121
Reading RG7 5PR United Kingdom +44 (0) 118 971 2835 fax

United States +1 (508) 520-2815
27 Forge Parkway +1 (800) 274-4212 toll-free
Franklin, MA 02038 USA +1 (508) 428-3535 fax

www.thermo.com/rmp

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