



PM1610B X-Ray and Gamma Radiation Personal Dosimeter

Overview:

PM1610 series of electronic personal dosimeters (EPDs) are intended for measurement of the personal dose equivalent $H_p(10)$ and personal dose equivalent rate $\dot{H}_p(10)$. The dosimeters are suitable for multiple applications providing the measurement of X-ray (continuous and pulsed) and gamma radiation in the wide energy range.

PM1610B model has an extended dose measurement range up to 20 Sv and improved accuracy of the dose rate measurement. Instead of a rechargeable battery, this model is powered by AAA (LR03) battery which is easy to replace, affordable and safe to handle.

PM1610 dosimeters have unique features for operation in workplaces requiring the use of personal protective equipment or a harsh environment, including a shockproof rubberized case, a high contrast display with a fluorescent backlight, and two big buttons for easy use even while wearing protective gloves.

Operation principle

PM1610 EPDs allow the setting of two dose rate alarm thresholds and two dose alarm thresholds. The instruments continuously control the threshold levels and alert the user with audible, visual and vibration alarms when the threshold levels are exceeded. PM1610 automatically records and stores in its non-volatile memory up to 7500 dose rate and dose measurement history events.

EPD is supplied with the user software for downloading measurement history to a PC, maintaining personnel exposure database and adjusting the settings of the dosimeter. PM1610 dosimeters are also compatible with PM530 Automated Personal Dosimetry System for maintaining the instrument history database and monitoring personnel exposure.

Features

- Easily replaceable long-life AAA battery: at least 480 hours
- Extended energy range: from 20 keV to 10 MeV
- Wide dose and dose rate measurement ranges
- Measurement of pulsed photon radiation
- Simple navigation with two large buttons
- Audible, visual and vibration alarms
- USB communication with PC
- Shockproof hermetic case
- Small and lightweight

Applications

- Customs and border control
- Healthcare professionals
- Nuclear power plants
- Emergency services
- Police and security
- Industrial facilities
- First responders

Specifications:

Detector	Geiger-Mueller tube
Dose rate measurement range	0.1 $\mu\text{Sv/h}$ to 10 Sv/h
Dose rate measurement accuracy	$\pm(10+0.0015/\dot{H}+0.0015\cdot\dot{H}) \%$, where \dot{H} is the measured dose rate value in mSv/h
Dose measurement range – continuous photon radiation – pulsed photon radiation	0.05 μSv to 20 Sv 10 μSv to 20 Sv
Dose measurement accuracy	$\pm 20 \%$
Energy range	20 keV to 10 MeV
Energy response relative to 0.662 MeV (^{137}Cs)	–60 % (20 keV to 33 keV) –40 % (33 keV to 48 keV) $\pm 30 \%$ (48 keV to 3 MeV) $\pm 50 \%$ (3 MeV to 10 MeV)
Minimum pulse duration of pulsed X-ray radiation	1 ms
Memory	7500 events
Alarms	visual, audible, vibration
Communication	USB
Power supply	AAA (LR03) battery; external via USB
Battery lifetime (average dose rate < 0.3 $\mu\text{Sv/h}$, active alarms < 20 s / 24 h)	≥ 480 hours
Ingress protection	IP65
Drop test	1.5 m
Dimensions	$\leq 71 \times 59 \times 20$ mm
Weight	≤ 90 g
Operating conditions – ambient temperature – atmospheric pressure – relative humidity	–20 °C to 50 °C 84 kPa to 106.7 kPa up to 98 % at 35 °C