

PM 1703 GN Personal Radiation Detectors



PM1703GN/GNA

Polimaster's gamma-neutron personal radiation detectors PM1703GN and PM1703GNA are designed to detect the slightest amounts of the gamma and neutron radiation emitting materials. The instruments are equipped with a CsI(Tl) (for gamma detection) and a LiI(Eu) (for neutron detection) scintillation detectors to alert the user that the radiation levels have exceeded the preset threshold values.

The PM1703GN/GNA perform the following functions:

- Detect gamma and neutron radiation sources, even if they are shielded;
- Search for and locate the gamma or neutron radiation sources including nuclear weapons materials;
- Alert the user of the presence of a radiation source through audible, visual and vibrating alarms;
- Record and store data for up to 1000 events in the instruments' non-volatile memory;
- Transmit all recorded data to a PC via IR channel for the data processing and analysis.

Once the detector is turned on, it automatically starts taking measurements and storing the background radiation information. The personal radiation detectors PM1703GN and PM1703GNA can detect even the slightest increase in radiation environment that causes the radiation levels to exceed the preset thresholds. The instruments' advanced processing algorithm enables the user to update the background levels and setup the alarm thresholds thus adjusting to the specific radiation environments and satisfy the requirements for the false alarm rate.

The PM1703GN/GNA are additionally designed to ensure adequate adaptation to the background level so that the instruments can locate a radioactive source in changing environments. For example, the detectors are able to detect radiation sources when the background decreases due to radiation shielding or when the background radiation intensity is high requiring the source to be located among high radiation level.

The PM1703GN/GNA have a hermetic and shockproof case and the LCD screen's fluorescent backlight for easy operation even in the harshest, most unfavorable environments or weather conditions. The personal radiation detectors are recommended for first responders, security guards, police, customs officers and border patrol. No special experience or training is necessary to operate the instruments.

PM1703GNB

In addition to the functions of the PM1703GN/GNA models, the PM1703GNB model has Bluetooth module for communication with PDA or laptop PC, equipped with Polimaster proprietary identification software, and can be used for the radioisotope identification of the radiation source.

The Bluetooth module allows user to be at a safe distance from the possible radiation sources while the PM1703GNB is operating. In that way, the instrument's operator is being protected from the radiation exposure by distance.

SPECIFICATIONS

	PM1703GN	PM1703GNA	PM1703GNB
Detector			
gamma	CsI(Tl)	CsI(Tl)	CsI(Tl)
neutron	Li ₆ I (Eu)	Li ₆ I (Eu)	Li ₆ I (Eu)
Sensitivity			
for ¹³⁷ Cs, no less	100 (s ⁻¹)/(μSv/h) (1.0 (s ⁻¹)/(μR/h))	100 (s ⁻¹)/(μSv/h) (1.0 (s ⁻¹)/(μR/h))	100 (s ⁻¹)/(μSv/h) (1.0 (s ⁻¹)/(μR/h))
for ²⁴¹ Am, no less	100 (s ⁻¹)/(μSv/h) (1.0 (s ⁻¹)/(μR/h))	200 (s ⁻¹)/(μSv/h) (2.0 (s ⁻¹)/(μR/h))	200 (s ⁻¹)/(μSv/h) (2.0 (s ⁻¹)/(μR/h))
Energy range			
gamma	0.033 – 3.0 MeV	0.033 – 3.0 MeV	0.033 – 3.0 MeV
neutron	from thermal to 14.0 MeV	from thermal to 14.0 MeV	from thermal to 14.0 MeV
Dose Rate			
gamma	0.01 – 99.99 μSv/h (1 – 9999 μR/h)	0.01 – 99.99 μSv/h (1 – 9999 μR/h)	0.01 – 99.99 μSv/h (1 – 9999 μR/h)
neutron	1 - 999 s ⁻¹	1 - 999 s ⁻¹	1 - 999 s ⁻¹
Dose			
Accuracy	±30% (in range 0.1 – 70 μSv/h (10 – 7000 μR/h))	±30% (in range 0.1 – 70 μSv/h (10 – 7000 μR/h))	±30% (in range 0.1 – 70 μSv/h (10 – 7000 μR/h))
Response time	0.25 s	0.25 s	0.25 s
Radionuclide identification using Bluetooth communication with external Pocket PC or smartphone			
Special nuclear materials (SNM)			²³³ U, ²³⁵ U, ²³⁷ Np, Pu
Medical radionuclides			¹⁸ F, ⁶⁷ Ga, ⁵¹ Cr, ⁷⁵ Se, ⁸⁹ Sr, ^{99m} Tc, ¹⁰³ Pd, ¹¹¹ In, ¹²³ I, ¹³¹ I, ¹⁵³ Sm, ²⁰¹ Tl, ¹³³ Xe
Naturally occurring radioactive materials (NORM)			⁴⁰ K, ²²⁶ Ra, ²³² Th and daughters, ²³⁸ U and daughters
Industrial radionuclides			⁵⁷ Co, ⁶⁰ Co, ¹³³ Ba, ¹³⁷ Cs, ¹⁹² Ir, ²²⁶ Ra, ²⁴¹ Am
Standards compliance	ITRAP/IAEA requirements, ANSI N42.32, ANSI N42.33(1), IEC 62401	ITRAP/IAEA requirements, ANSI N42.32, ANSI N42.33(1), IEC 62401	ITRAP/IAEA requirements, ANSI N42.32, ANSI N42.33 (1), ANSI N42.34, IEC 62401
Alarm type	visual, audio, vibration	visual, audio, vibration	visual, audio, vibration
Data recording	1000	1000	1000
Environmental protection	IP65	IP65	IP65
Drop test on concrete floor	1.5 m (4.9 ft) 0.7 m (2.3 ft) without cover	1.5 m (4.9 ft) 0.7 m (2.3 ft) without cover	1.5 m (4.9 ft) 0.7 m (2.3 ft) without cover
Power supply	one AA battery	one AA battery	one AA battery
Battery life time	up to 1000 hours	up to 1000 hours	up to 1000 hours
Operating temperature	-30°C to 50°C (-22°F to 122°F)	-30°C to 50°C (-22°F to 122°F)	-30°C to 50°C (-22°F to 122°F)
Size (without cover)	72 x 32 x 87 mm (2 7/8" x 1 1/4" x 3 3/8")	72 x 32 x 87 mm (2 7/8" x 1 1/4" x 3 3/8")	75 x 35 x 98 mm (2 15/16" x 1 3/8" x 3 7/8")
Weight			
(without cover)	200 g (7.05 oz)	200 g (7.05 oz)	230 g (8.1 oz)
(with cover)	240 g (8.5 oz)	240 g (8.5 oz)	270 g (9.5 oz)
Low battery warning	LCD	LCD	LCD
Overload indication			
gamma	OL	OL	OL
neutron	999	999	999
PC Communication	IRDA	IRDA	IRDA, Bluetooth

