PM1401K / KM Hand Held Radionuclide Identification Device

The compact Hand Held Radionuclide Identification Device designed for detection of the alpha, beta, gamma and neutron radiation sources and radioisotope identification of the gamma emitting sources.

The PM1401K / KM is a unique light-weight multipurpose hand held radionuclide identifier designed for easy detection and location of the alpha, beta, gamma and neutron radiation sources, precise measurement of the alpha and beta surface contamination levels and gamma dose rate, and reliable identification of the radioisotopes. For example, the PM1401K / KM is able to distinguish between naturally occurring radiation materials (NORM), medical isotopes, industrial sources of radiation, which are potentially dangerous to the general population, and of the sources of radiation that are inherently dangerous, such as weapons-grade nuclear materials.

PM1401K is equipped with alpha, beta, gamma and neutron detectors.

PM1401KM is equipped with alpha, beta and gamma detectors.

The PM1401K / KM performs the following functions:

- Isotope identification: both a single radionuclide and their mixtures.
- Detect, search and locate the alpha, beta, gamma (both modifications) and neutron (only PM1401K) radiation sources including nuclear weapon materials;
- Measurement of the alpha and beta surface contamination levels;
- Accurate measurement of the dose rate;
- User alert of the presence of a radiation source through audible and vibrating alarms;
- Recording and storing up to 500 event and 100 gamma spectra in its non-volatile memory;

YOUR PARTNER FOR ALL NUCLEAR MEASUREMENT DEVICES AND ACCESSORIES

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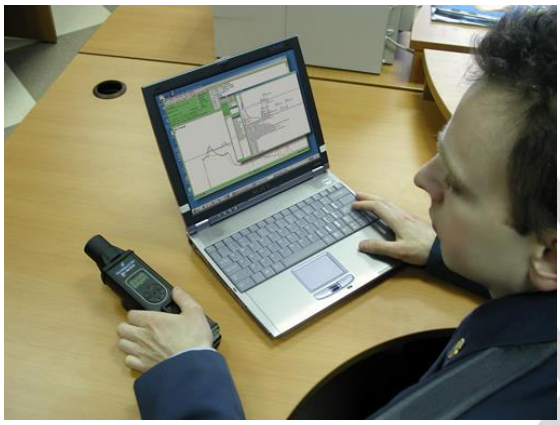
- Transmitting all of the recorded data via IR or radio (Bluetooth) channels to a PC or PDA.
- PoliIdentify software for radionuclide identification on PC or PDA.

In contrast to the conventional radionuclide identifiers which need a calibration source build in and/or a regular calibration procedure for correct operation, the PM1401K / KM does not require calibration due to the stable parameters of the CsI(Tl) crystal deployed in unique scintillation crystal-photodiode packing technology. The PM1401K / KM can be used for the radioisotope identification of the radiation source using its build-in Bluetooth communication module and Polimaster proprietary identification software for PDA or laptop PC.



Identification software can be used in two operation modes: automatic mode for non-trained users and expert mode for advanced users.

The Bluetooth communication between PM1401K / KM and PDA (laptop PC) allows user to be at a safe distance from the possible radiation sources while the PM1401K / KM is operating.

The identifiers's small, hermetic and shockproof case and the fluorescent backlight on the instrument's LCD screen allow for easy operation even in the harshest, most unfavorable environments or weather conditions.

Polimaster's PM1401K / KM hand held radionuclide identification device can also be equipped with various functional accessories, including:

- External Vibration-Alarming Device that allows the instruments user to be notified secretly of potential radiation sources without drawing the attention of other observers;
- Telescopic Extension Tube, which allows the instrument to take measurements in otherwise difficult-to-access areas and ensures a higher degree of radiation protection for the user;
- External Neutron Moderator to increase the neutron sensitivity by a factor 10.

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Specifications

	PM1401K / KM Identifier
Detector	CsI(Tl)
Sensitivity, no less than	
On ^{241}Am	200 (s^{-1}) / (µSv/h) 2.0 (s^{-1}) / (µR/h)
On ^{137}Cs	200 (s^{-1} / (µSv/h) 2.0 (s^{-1} / (µR/h)
Energy range of gamma radiation	0.015 - 15.0 MeV
Energy range in Search Mode	0.03 - 3.0 MeV
Coefficient n setting range, (the number of mean square deviations of background)	1.0 - 9.9
The number of accumulation channels of the scintillation spectra	1024
The number of spectra, stored in non-volatile memory	up to 100
Detection of gamma radiation sources at a distance of 0.2m (0.7 ft), velocity of 0.5 m/s (1.64 ft/s) and level of radiation background of no more than 0,25 µSv/h (25 µR/h) when the activity of the sources is	
^{133}Ba	55.0 kBq
^{137}Cs	100.0 kBq
^{60}Co	50.0 kBq
Detection of the sampling sources at a distance of 0,2m (0.7 ft), velocity of 0.5m/s (1.64 ft/s) and level of radiation background no more than 0,25 µSv/h (25 µR/h) when the weight of the sources is	
Pu	0.3 g
U	10 g
Neutron search channel	
Detector	Slow neutron counter (only in PM1401K)
Energy range	0.025 eV - 14 MeV (only in PM1401K)
Coefficient n setting range, (the number of mean square deviations of background)	1.0 - 9.9 (only in PM1401K)
Detection of the ^{252}Cf alternative source with	250 g (only in PM1401K)

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neutron flux 1,5x10^4 s^{-1} at a distance of 1 m (3.28 ft), velocity of 0.5 m/s (1.64 ft/s) and the level of radiation background of no more than 0.25 µSv/h (25 µR/h), equivalent of plutonium	
Measuring gamma-channel	
Detector	GM-counter
Dose equivalent rate measurement range (DER)	0.1 µSv/h - 100 mSv/h
Energy range	0.015 - 15 MeV
Energy response relative to 0.662 MeV (^{137}Cs) in the photon radiation measuring mode, (%) no more:	
-within the energy range from 0.015 up to 0.045 MeV	±40%
-within the energy range from 0.045 up to 15.0 MeV	±30%
The allowable limits of the main relative error of DER measurement (where H is the DER value in mSv/h)	± (15 + 0.0015/H) %
Measuring alpha and beta channel	
Detector	GM-counter
Alpha-flux density measurement range	from 15 min^{-1}xcm^{-2} to 10^5 min^{-1}xcm^{-2}
The minimal detectable flux density	from 2 min^{-2}xcm^{-1}
The limits of allowable main relative error of measurement of the α- flux density on ^{239}Pu (where ϕ - the measured density of α-flux in min^{-1}cm^{-2} A coefficient equal 450 min^{-1}cm^{-2})	± (20 + A/ϕ)%
β-flux density measurement range	from 6 min^{-1}cm^{-2} to 10^5 min^{-1}cm^{-2}
The limits of allowable main relative error of measurement of β-particles within the range on ^{90}Sr+^{90}Y (where ϕ - the measured density of β-flux in min^{-1}cm^{-2} A, coefficient equal 60 min^{-1}cm^{-2})	± (20 + A/ϕ)%
General specifications	
Identification of radionuclides:	
Special nuclear materials	^{233}U, ^{235}U, ^{237}Np, Pu
Medical radionuclides	^{18}F, ^{67}Ga, ^{51}Cr, ^{75}Se, ^{89}Sr, ^{99}Mo, ^{99}mTc, ^{103}Pd, ^{111}In, ^{123}I, ^{131}I, ^{153}Sm, ^{201}Ti, ^{133}Xe
Naturally occurring radioactive materials	^{40}K, ^{226}Ra, ^{232}Th and daughters, ^{238}U and daughters
Industrial radionuclides	^{57}Co, ^{60}Co, ^{133}Ba, ^{137}Cs, ^{192}Ir,

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	^{226}Ra, ^{241}Am
Alarming devices	visual (LCD), audible built-in,and external vibration
Data transfer communication channels	IRDA (IR-channel), Bluetooth (radio-channel)
Battery lifetime	600 h
Battery	AA
Operating conditions	
temperature range, °C (°F)	-30°C to 50°C (-22°F to 122°F)
relative humidity at 35 °C (95 °F)	up to 95% at 35°C (95°F)
Protection degree	IP65
Weight	650 g (22.9 oz)
Dimensions	242 x 58 x 57 mm (9½'' x 2¼'' x 2¼'')

Contact us for other models or technical details

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