

Meets recommendations of IAEA, Interpol and World Customs Organization, according to the ITRAP program for handheld radiation monitors
It also meets the GOST P.51635-2000 requirements for the portable instruments of gamma sensitivity of IIIH_{γ20} category and for neutron sensitivity of IVH_{n100} category.

SEARCH AND SPECTROMETRY GAMMA CHANNEL

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|--|--------------------------|
| Detector | CsI(Tl) |
| Sensitivity , (s ⁻¹ / (μSv/h)) no less than: | |
| On ²⁴¹ Am | 200,0 |
| On ¹³⁷ Cs | 200,0 |
| Energy range of gamma radiation, (MeV) according to a special order | 0,06 – 3,0 0,03 – 3,0 |
| Coefficientn 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 | to100 |
| Detection of gamma radiation sources at a distance of 0,2 m, velocity of 0.5 m/s and level of radiation background of no more than 0,25 μSv/h when the activity of the sources(kBq) is: | |
| ¹³³ Ba | 55,0 |
| ¹³⁷ Cs | 100,0 |
| ⁶⁰ Co | 50,0 |
| Detection of the sampling sources at a distance of 0,2m,velocity of 0.5m/s and level of radiation background no more than 0,25 μSv/h when the weight of the sources (g) is: | |
| -Pu | 0,3 |
| -U | 10 |

NEUTRON SEARCH CHANNEL

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|--|----------------------|
| Detector | Slow neutron counter |
| Energy range , (MeV) | From thermal to 14 |
| Coefficientn setting range , (the number of mean square deviations of background) | 1,0-9,9 |
| Detection of the ²⁵² Cf alternative source with neutron flux 1,5x10 ⁴ s ⁻¹ at a distance of 1 m, velocity of 0.5 m/s and the level of radiation background of no more than 0.25 μSv/h, equivalent of plutonium (g) | 250 |

MEASURING GAMMA-CHANNEL

| | |
|--|-----------------------|
| Detector | GM-counter |
| Dose equivalent rate measurement range (DER) , (μSv/h) | 0,1 – 10 ⁵ |
| Energy range , (MeV) | 0,015 – 20 |
| Energy response relative to 0,662 MeV (¹³⁷Cs) 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 20,0 MeV | ±30 |
| The allowable limits of the main relative error of DER measurement*, (%) | ±(15 +K/H) |

* where □- DER value in mSv/h, K- coefficient equal 0,0015 mSv/h

MEASURING ALPHA-CHANNEL

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| Detector | GM-counter |
| α-flux density measurement range of, (min ⁻¹ .cm ⁻²) the minimal detectable flux density (min ⁻¹ .cm ⁻²) | from 15 to 10 ⁵ from 2 |
| 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) |

MEASURING BETA-CHANNEL

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|--|-----------------------------|
| Detector | GM-counter |
| β- flux density measurement range, (min ⁻¹ .cm ⁻²) | from 6,0 to 10 ⁵ |
| 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) |

Design and specifications of the device can be changed without further notice.

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Innovating Radiation Detection Technologies Since 1992

MULTIPURPOSE HANDHELD RADIATION MONITOR PM1401K



PM1401K is a new instrument designed for performing all types of radiation monitoring. Belt clip and ability to enable an automatic mode of operation make PM1401K the smallest and lightest instrument in the world which is capable to operate simultaneously as an alarming device, search instrument, survey meter, spectrometer and identifier.

Form factor

- All detector channels are built into one low weight and compact case
- Shock and water resistant case ensures IP65 class environmental protection

Performance capabilities:

- Alarm: can detect all types of radioactive sources: gamma, alpha, beta and neutron
- Location: capable of searching for gamma and nuclear radioactive materials
- Identification: can identify the radioactive isotope from its spectra in combination with a PDA or a PC
- Built-in IR and Bluetooth channels for communication to a PC or a PDA
- Built-in audio and external vibration alarms. Ability to enable/disable for a hidden detection
- Can be used a part of expert analytical system

Recommended use:

- By the customs, border and special services for preventing both illegal trafficking of radioactive and nuclear materials and using these materials for terrorist purposes.
- By radiological and isotope laboratories.
- By emergency services.
- By fire brigades.
- By police.
- By various industry branches etc. where the nuclear technical units and ionizing radiation sources are used.



ALARM



LOCATION



IDENTIFICATION



MEASUREMENT

IRDA

Bluetooth



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The built-in software of the PM1401K allows storing in its non-volatile memory the information of the status of the instrument as well as different settings, results of measurement, history of the operation of the instrument and up to 100 gamma spectra.

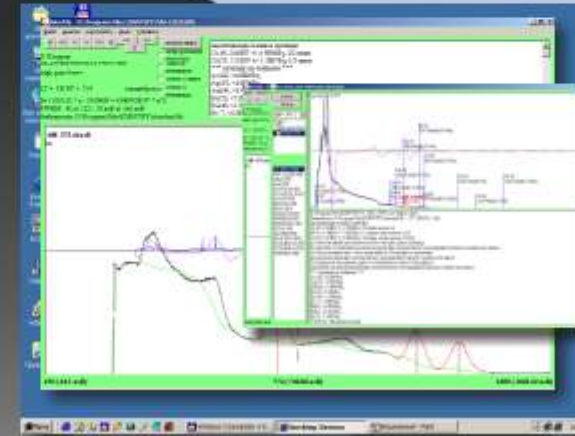
The built-in LCD allows controlling the process of spectra accumulation as well as viewing the spectra that have been already accumulated.

In the PC communication mode it is possible to enter or change the operating modes of the instrument and its parameters. It is also possible to transfer the stored information to a PC for further processing.

For radionuclide identification, the spectra stored in the instrument are transferred to a PC through IRDA (IR-channel) or through Bluetooth (radio channel) to a pocket PC.



- 1 The combined block**
Measures the DER of photon radiation and the flux density both of alpha and beta-particles
- 2 Photon radiation filter**
Ensures accurate measurement of DER Hp(10) of photon radiation within the wide energy range
- 3 Neutron radiation detector**
Searches (detects and locates) the neutron sources
- 4 Gamma radiation detector**
Searches (detects and locates) the photon radiation sources. Accumulates and stores collected gamma spectra for further transfer to a PC for further analysis and/or storage



Identification can be performed:

- automatically when the program analyses data and gives the list of the identified radionuclides,
- by a user himself by analyzing the spectrum shown in the LCD.

The radionuclide spectra libraries being used for identification can be selected and the instrument can be applied for resolving specific tasks



The using Bluetooth radiochannel and microcomputer allows making measurements and identification at a distance from radiation source that is safe for operator.



The spectra accumulated in the instrument can be transferred to a PC for being analyzed with the other software.

GENERAL SPECIFICATIONS OF THE INSTRUMENT

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|--|--|
| Alarms | visual (LCD), audible built-in, and external vibration |
| Data transfer communication channels | IRDA (IR-channel) Bluetooth (radiochannel) |
| Period of continuous operation of the instrument with one battery to, (h) | 600 |
| Battery | AA |
| Environmental : -temperature range, (°C) | from -30 to +50 |
| Protection degree | IP65 |
| Weight, (g) | 650 |
| Dimensions, (mm) | 240 x 57 x 55 |