

# AT1321 Spectrometer

## Spectrometric Personal Radiation Detector

Spectrometric Personal Radiation Detector (SPRD) is a compact instrument for rapid detection of radiation materials and sources with natural, medical, industrial radionuclide identification function.



### Operating principle

The radiation detector operation principle is based on constant count rate measurement of gamma radiation impulses by a scintillation detector, data analysis in order to detect gamma-radiation pollution, amplitude spectrum measurement with subsequent automatic processing to receive dose rate value and radionuclide composition data of the relevant gamma radiation source. These data are stored in the non-volatile memory of the detector.



Geiger-Muller counter tube with a filter is used to extend the dose rate measuring range. The filter facilitates smoothing of sensibility energy dependence.

SPRD has internal GPS-module for geo-referencing and mapping of measurement data.



Holster for instrument storage and transportation

### Applications

- Emergency situations on nuclear energy facilities
- Radiation monitoring during decontamination operations
- Suppression of unlawful traffic of radioactive sources
- Monitoring of premises and environment
- Radiation safety control during work with radioisotopes
- Radiation monitoring of nuclear industry, oil and gas complex, and other fields
- Radiopharmaceuticals production and Nuclear medicine
- Dosimetry survey of ground, radioactive mapping

### Features

- Compact and highly-sensitive to gamma radiation
- Spectrum analysis and radionuclide identification can be done without PC
- Internal GPS-module for geo-referencing of measurement data
- USB and Bluetooth interfaces for connecting to PC
- At least 700 spectrum files can be stored in detector internal memory
- Low weight and small size
- Sound, light and vibration notification

### Application software

#### «SpectEx»

Real time display of instrument data with further ability to process and save into PC, as well as management of instrument file system.

#### «GARM»

Process the results of instrument radiation survey like gamma radiation dose rate and count rates values, radioisotope composition identification results and radiation survey geographical coordinates.



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INSTRUMENTS AND TECHNOLOGIES FOR NUCLEAR  
MEASUREMENTS AND RADIATION MONITORING

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## Specification

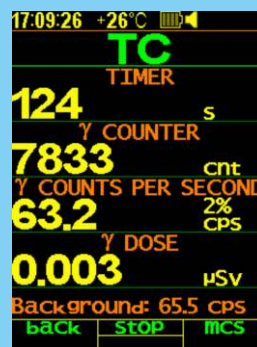
<b>Detectors</b>	Scintillator NaI(Tl), Ø25x40 mm Integrated Geiger-Muller counter tube
<b>Energy range</b>	20 keV – 3 MeV
<b>Radionuclide identification</b>	Industrial Natural Medical
<b>Individual order:</b>	Library of identified radionuclides can be corrected
<b>Typical resolution at 662 keV (<sup>137</sup>Cs)</b>	8.5%
<b>Detectable activity of <sup>137</sup>Cs source,</b> located at the distance of 15 cm in a time not longer than 2 s	(50±10) kBq
<b>Measurement range of ambient radiation dose rate equivalent</b>	
NaI(Tl)	0.03 µSv/h – 300 µSv/h
Geiger-Muller counter tube	10 µSv/h – 100 mSv/h
<b>Typical sensitivity to gamma radiation [NaI(Tl)]</b>	
<sup>241</sup> Am	4700 cps/(µSv·h <sup>-1</sup> )
<sup>137</sup> Cs	425 cps/(µSv·h <sup>-1</sup> )
<sup>60</sup> Co	210 cps/(µSv·h <sup>-1</sup> )
<b>Response time [NaI(Tl)] for dose rate change from 0.1 to 1 µSv/h</b>	<2 s (accuracy error ±±10%)
<b>Limit of intrinsic relative error of dose rate measurement</b>	±20%
<b>Energy dependence relative to 662 keV (<sup>137</sup>Cs)</b>	
NaI(Tl) detector	±20% (in 50 keV – 3 MeV energy range)
Geiger-Muller counter tube	-25% to +45% (in 60 keV – 3 MeV energy range)
<b>Burn-up life</b>	≥100 Sv
<b>Number of ADC channels</b>	1024
<b>Continuous run time</b>	
In standby mode *	≥16 h
In active mode **	≥9 h
<b>Protection class</b>	IP54
<b>Working temperature range</b>	-20°C to +50°C
<b>Relative air humidity with temperature ≤+35°C without condensation</b>	≤95%
<b>Overall dimensions</b>	145x100x50 mm
<b>Weight</b>	0.7 kg

\* - When fully charged rechargeable batteries with capacity 2400mAh are used and display is off.

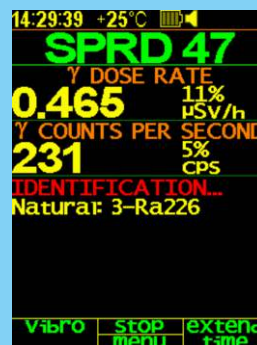
\*\* - When fully charged rechargeable batteries with capacity 2400mAh are used and display is continuously on.

Design and specifications are subject to change without notice

## Capabilities



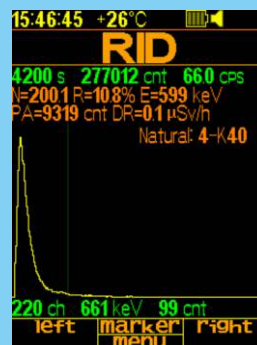
Detection of radiation sources



Measurement of gamma radiation dose rate and count rate, radionuclide identification



Continuous measurement of gamma radiation dose rate and count rate



Spectrum processing, radionuclide identification

AT1321 Spectrometer meets International standard requirements: IEC 62327:2006  
Safety standard requirements:  
IEC 61010-1:2001  
EMC requirements:  
EN 55011:2009  
IEC 61000-4-2:2008  
IEC 61000-4-3:2008

AT1321 Spectrometer meets the NSS1 requirements (IAEA).



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