

# AT1120M, AT1120MA Spectrometers



*High sensitivity*

*Energy range: 20 keV – 7 MeV*

*Continuously recorded scanning data with GPS georeferencing*

Sensitive spectrometer / radioisotope identification device for search, detection, and identification of low activity materials and radiation sources, as well as for measuring ambient dose equivalent rate of X-ray and gamma radiation.



## Application

- Sanitary and epidemiological inspection
- Nuclear industry
- Radioecology
- Nuclear medicine
- Emergency rescue service
- Research activities
- Customs and border control
- Radioactive waste disposal

## Features

- Wide energy range
- High sensitivity and quick accommodation to changes in radiation level
- Short measurement cycle (1/3 s) provided by the search algorithm enables highly confident estimation of rapidly changing radiation field dynamics and highly precise localization of radioactive sources
- Scintillation detection unit with integrated LED stabilization and temperature compensation system
- Continuously recorded scanning data with GPS georeferencing
- "GARM" application software for further data processing and analysis in expert mode



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Instruments and Technologies for Nuclear  
Measurements and Radiation Monitoring



**Zievert**

Ionizing radiations  
detectors and  
instruments

# AT1120ME Spectrometer

## Operating principle

Information from scintillation detection unit is sent to PU5 Processing Unit.

PU5 is a hand-held PC (HPC) with integrated detection module, which extends measurement range of X-ray and gamma radiation ambient dose equivalent rate.

Operation algorithm provides measurement continuity and real time statistical processing and displaying of measurement results.

Upon detection of radioactive source the spectrometer activates alarm and automatically identifies its radionuclide composition.

The spectrometer offers the following additional functionality:

- Sound and visual alarm of exceeded threshold level
- GPS georeferencing of measurement results to geographical coordinates and time
- Automatic recording and storing over 10,000 measurements with GPS georeferencing
- Voice messaging option for identification results
- Data can be loaded to a PC for further analysis and processing in expert GARM Software



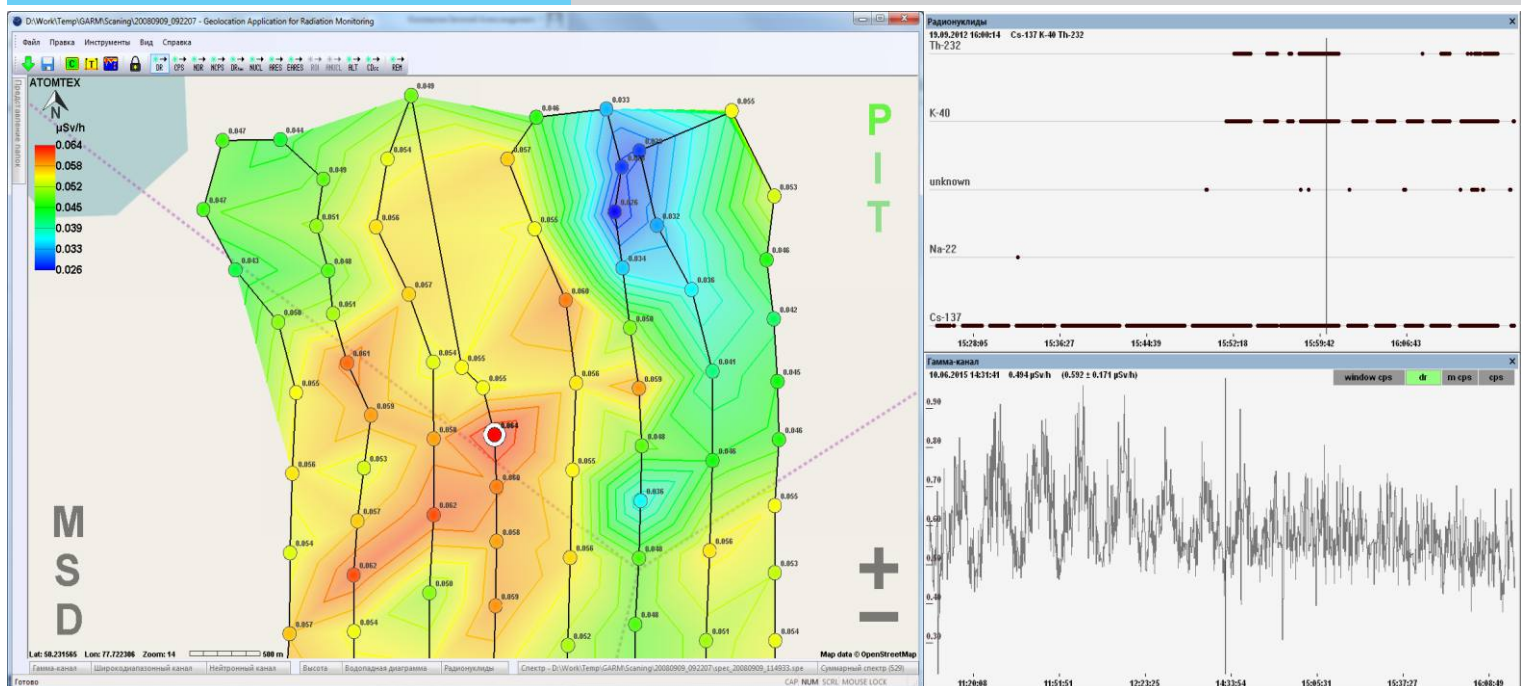
## Application software

# GARM

## Geolocation Application for Radiation Monitoring

## Purpose:

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





# AT1120M, AT1120MA Spectrometers

Specifications		AT1120M	AT1120MA
Detection unit (DU)		BDKG-11M	BDKG-05M
Detectors	DU PU5	Scintillation, NaI(Tl) Ø63x63 mm Geiger-Muller counter tube	Scintillation, NaI(Tl) Ø40x40 mm Geiger-Muller counter tube
Energy range	DU PU5	20 keV – 7 MeV 60 keV – 3 MeV	
Radionuclide identification	DU	Medical, industrial and natural radionuclides <i>(The library content can be modified on request)</i>	
Typical energy resolution at 662 keV ( <sup>137</sup> Cs)	DU	7.5%	
Detectable activity of <sup>137</sup> Cs source, located at the distance of 20 cm in a time not longer than 2 s	DU	(30±6) kBq	(50±10) kBq
		95% probability of source detection with false alarm rate not above 1 in 10 minutes	
Measurement range of ambient dose equivalent rate	DU PU5	0.03 – 150 µSv/h 1 µSv/h – 100 mSv/h	0.03 – 300 µSv/h 1 µSv/h – 100 mSv/h
Limits of tolerable intrinsic relative error		±20%	
Typical sensitivity to gamma radiation	DU	14200 cps/(µSv·h <sup>-1</sup> ) [ <sup>241</sup> Am] 2700 cps/(µSv·h <sup>-1</sup> ) [ <sup>137</sup> Cs] 1200 cps/(µSv·h <sup>-1</sup> ) [ <sup>60</sup> Co]	4500 cps/(µSv·h <sup>-1</sup> ) [ <sup>241</sup> Am] 870 cps/(µSv·h <sup>-1</sup> ) [ <sup>137</sup> Cs] 350 cps/(µSv·h <sup>-1</sup> ) [ <sup>60</sup> Co]
Energy dependence relative to 662 keV ( <sup>137</sup> Cs)	DU PU5	±15% (50 keV – 7 MeV) -25% to +35% (60 keV – 3 MeV)	
Response time for dose rate change from 0.1 to 1 µSv/h	DU	≤2 s	
Response time for dose rate change from 1 to 10 µSv/h	PU5	<7 s	
Maximum input statistical load	DU	10 <sup>5</sup> s <sup>-1</sup>	
Number of ADC channels	DU	1024	
Continuous operation time		≥12 h	
Burn-up life		≥100 Sv	
Average operating life		≥15 years	
Protection rating	DU	IP54	
	PU5	IP67	
Operation temperature range		-20°C to +50°C	
Relative air humidity		≤95% (Air temperature ≤35 °C without condensation)	
Overall dimensions (assembled with handle)		355x190x170 mm	330x180x160 mm
Weight (assembled with handle)		2.65 kg	1.85 kg

*Design and specifications are subject to change without notice*



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