

AT1120ME Spectrometer



PU5 Processing Unit:

- Continuously recorded scanning data with GPS georeferencing
- Geiger-Muller counter tube
- IP67 dust proof and water resistant
- 6" capacitive screen

BDKG-05S Detection Unit:

- $\text{SrI}_2(\text{Eu})$ scintillation detector
- Typical energy resolution: 3.2% at 662 keV (^{137}Cs)
- IP67 dust proof and water resistant

Highly sensitive radiation-survey instrument with high energy resolution for searching, detecting and identifying low activity materials and sources, as well as for measuring ambient dose equivalent rate of X-ray and gamma radiation.

Application

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

Features

- High energy resolution
- 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

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 is available
- Data can be loaded to a PC for further analysis and processing in expert GARM Software



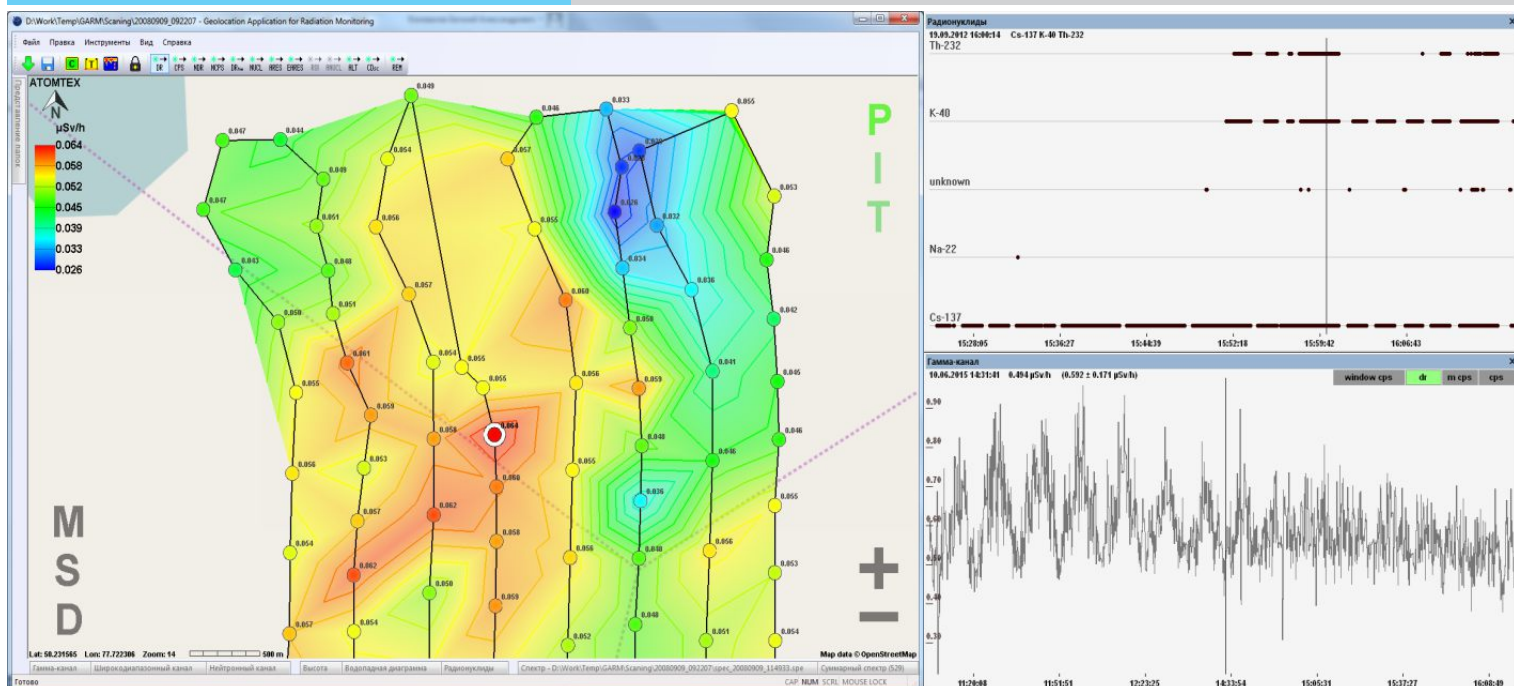
Application software

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.



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Specifications		AT1120ME
Detection unit (DU)		BDKG-05S
Detectors	DU PU5	Scintillation, SrI ₂ (Eu) Ø38x38 mm Geiger-Muller counter tube
Energy range	DU PU5	20 keV – 3 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 (¹³⁷ Cs)	DU	3.2%
Detectable activity of ¹³⁷ Cs source, located at the distance of 20 cm in a time not longer than 2 s	DU	(40±4) 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
Limits of tolerable intrinsic relative error		±20%
Typical sensitivity to gamma radiation, cps/(µSv·h ⁻¹)	DU	5500 [²⁴¹ Am] 850 [¹³⁷ Cs] 450 [⁶⁰ Co]
Energy dependence relative to 662 keV (¹³⁷ Cs)	DU PU5	±20% (50 keV - 3 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
Number of ADC channels	DU	1024
Continuous operation time		≥12 h
Burn-up life		≥100 Sv
Average operating life		≥15 years
Protection class		IP67
Operation temperature range		-20°C to +50°C
Relative air humidity		≤95% (air temperature ≤35°C without condensation)
Overall dimensions (assembled with handle)		320x180x160 mm
Weight (assembled with handle)		1.85 kg

Design and specifications are subject to change without notice



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