

AT1120 & AT1120A Radiation Monitors



High sensitivity

GPS referencing

**Wide energy range
(20 keV – 7 MeV)**

Radionuclide identification

Radiation monitors are high-responsive instruments for search and quick detection of low activity radiation materials and sources and measurement of ambient gamma radiation dose equivalent rate.

Automatic weighted mean energy calculation facilitates photon radiation average energy estimation when dose rate measurement is in progress.

Radiation monitor functionality expanded by adding natural, industrial and medical radionuclide identification capability.

Operating principle

Information from scintillation detection unit is sent to PU4 processing unit. PU4 is a hand-held PC (HPC) with integrated detection module, which extends measurement range of gamma radiation ambient dose equivalent rate. Operation algorithm provides measurement continuity and real time statistical processing and display of measurement results. When radioactive source is detected the instrument activates alarm and identifies radionuclide composition of the source.

Radiation Monitors offer the following additional functions:

- Sound and visual alarm of exceeded threshold level
- GPS referencing of measurement results
- Automatic recording and storing over 10,000 measurements with GPS referencing
 - Data can be loaded to PC for further analysis and processing in professional "GARM" application software (Option)
 - Data can be automatically transferred to a remote server by "ARMS" software [over FTP server; integrated 3G modem or connection to a Wi-Fi network has to be available] (Option).

Application

- Sanitary and Epidemiological Inspection
- Nuclear industry
- Radioecology
- Nuclear medicine
- Emergency rescue service
- Research activities
- Radioactive waste disposal

Features

- High sensitivity and wide energy range
- Quick accommodation to changes in radiation level
- Search mode algorithm with short measurement cycle (1/3 s) enables estimation of rapid changing radiation field dynamics with high confidence and localization of radioactive sources with high precision
- Integrated LED stabilization and temperature compensation system in scintillation detection unit
- Scanning data are constantly recorded for further analysis
- "GARM" application software for further data processing and analysis in expert mode
- Measurement results can be fixed to a location (GPS function)
- Friendly user interface

"SurveyM" preinstalled software (HPC)



ATOMTEX

INSTRUMENTS AND TECHNOLOGIES FOR NUCLEAR
MEASUREMENTS AND RADIATION MONITORING

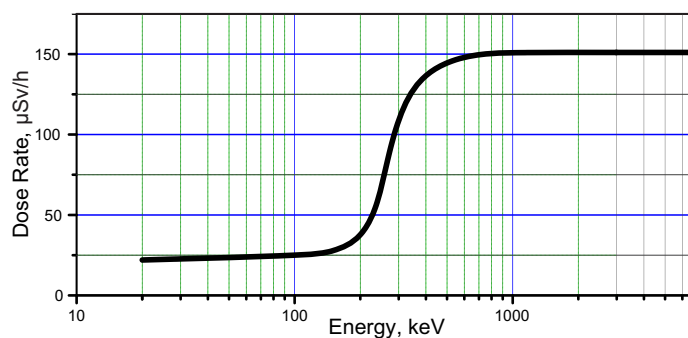
AT1120 & AT1120A Radiation Monitors

Specifications		AT1120	AT1120A
Detection unit (DU)		BDKG-11M	BDKG-05M
Detectors	DU PU4	Nal(Tl) scintillator, Ø63x63 mm Geiger-Muller counter tube (GMT)	Nal(Tl) scintillator, Ø40x40 mm Geiger-Muller counter tube (GMT)
Energy range	DU PU4	20 keV – 7 MeV 60 keV – 3 MeV	
Ambient gamma and x-ray radiation dose equivalent rate measurement range	DU PU4	0.03 – 150 µSv/h 0.3 µSv/h – 100 mSv/h	0.03 – 300 µSv/h 0.3 µSv/h – 100 mSv/h
Limit of gamma and x-ray radiation dose rate measurement intrinsic relative error		±20%	
Sensitivity to gamma radiation from ¹³⁷ Cs	DU	2700 cps/µSv·h ⁻¹	870 cps/µSv·h ⁻¹
Energy dependence relative to 662 keV (¹³⁷ Cs)	DU PU4	±20% (in 40 keV – 7 MeV energy range) -25 to +35% (in 60 keV – 3 MeV energy range)	
Response time for dose rate change from 0.1 to 1 µSv/h	DU	<2 s [accuracy error ≤10%]	
Response time for dose rate change from 1 to 10 µSv/h	PU4	<7 s [accuracy error ≤10%]	
Radionuclide identification		Medical, Industrial, Natural (Library of identified radionuclides can be corrected)	
Maximum input statistical load	DU	≥10 ⁵ s ⁻¹	
Number of ADC channel	DU	1024	
Continuous run time		≥12 h	
Burn-up life		≥100 Sv	
Protection class	DU PU4	IP54 IP67	
Operation temperature range	DU PU4	From -20°C to +50°C From -30°C to +60°C	
Relative humidity		≤95% (with air temperature ≤35°C w/o condensation)	
Overall dimensions, weight	DU PU4	Ø78x320 mm, 1.7 kg 258x87x40 mm, 0.6 kg	Ø60x300 mm, 0.9 kg 258x87x40 mm, 0.6 kg

Design and specifications are subject to change

Typical Dependence of *BDKG-11M* Dose Rate Measurement Range Upper Limit on the Gamma Radiation Energy

When threshold count rate (380 000 cps) or maximum dose rate (150 µSv/h) values are exceeded Radiation Monitor switches from *BDKG-11M* measurement results display mode to GMT measurement results display mode automatically.



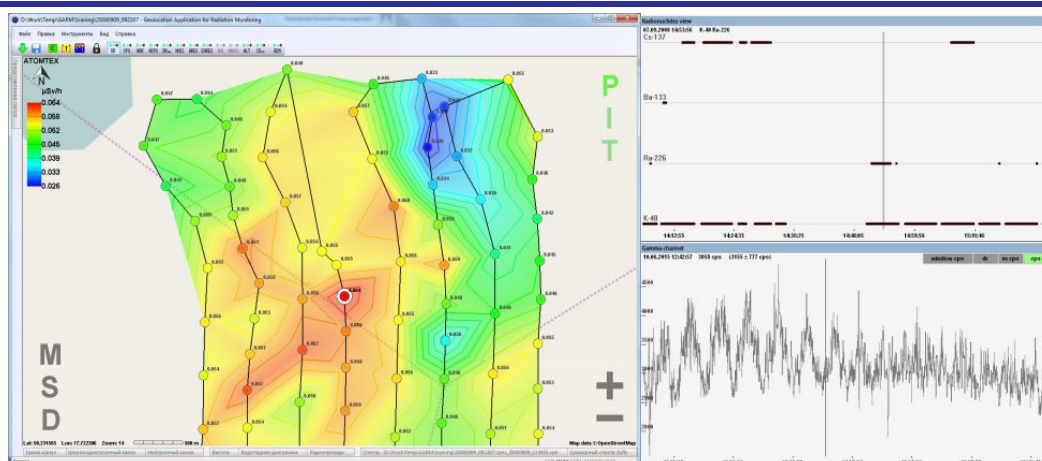
Application Software (optional)

«GARM»

Geolocation Application for Radiation Monitoring

Purpose:

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



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