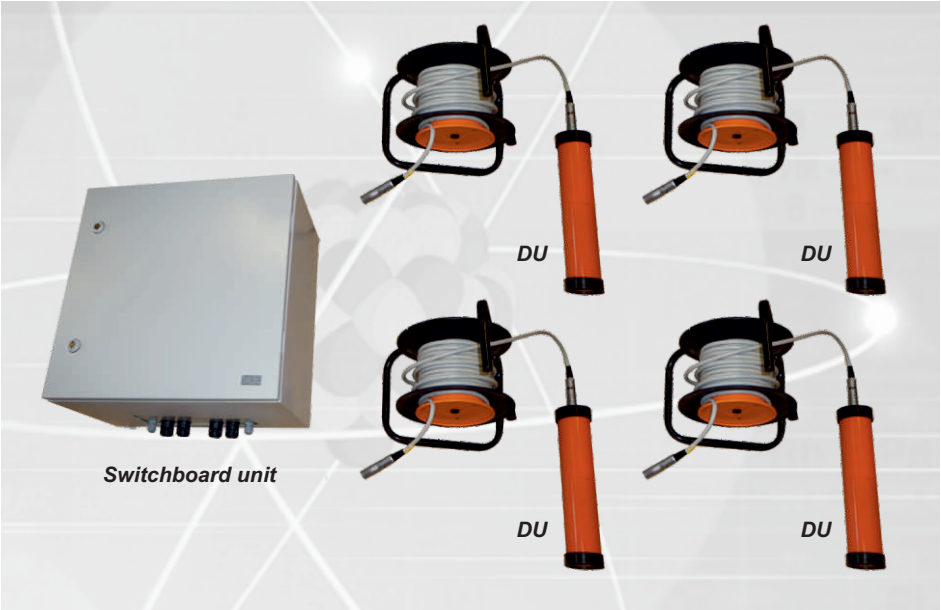
AT6105 Spectrometric System for Radiation Monitoring

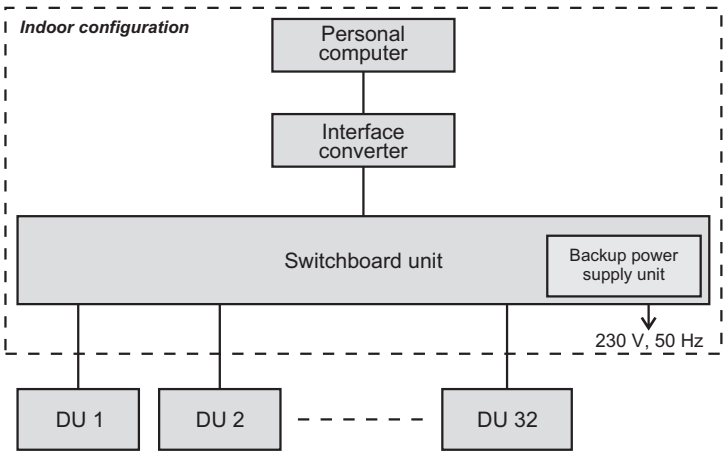


Applications

- Well monitoring in radioactive waste disposal sites
- Monitoring of radioactive and nuclear material waste repository areas
- Part of radionuclide certification service
- Induced-radioactivity well survey
- Liquid radioactive waste monitoring

The System is designed for continuous and uninterrupted dosimetric and spectrometric radiation monitoring of grounds, facilities, wells and other sites.

The System is a network of interconnected gamma radiation detection units (BDKG-205M and/or BDKG-211M) with connection to PC. Detection units are monitored and controlled by "SSRM" software to collect and display all measurement data on PC screen.



AT6105 system architecture

For single-channel variant (SSRM-AT6105 with one smart probe) no Switchboard unit is used.

Operating principle

SSRM-AT6105 operating principle is based on intermittent reading of dose rate measurement result and instrument spectrum of gamma radiation for each detection units in the system. The measured spectrum is used to identify the composition of gamma radiation source.

If dose rate value transmitted by the Detection unit exceeds "Alarm" threshold setting or an "alarming" nuclide has been identified (software setting for each detection unit), the system initiates a sound and visual alarm on the PC.

Features

- Separate display of spectra and dose rate data by each detection unit on site plan or terrain map
- Energy range expandable to 5 MeV
- Up to 32 detection units
- Sealed detection unit construction

System functions

- Continuous measurement of gamma radiation spectra in a set period of time
- Measurement of gamma radiation dose rate
- Identification of source radionuclide composition
- Evaluation of exceeded dose rate threshold
- Activation of sound and light alarm when threshold levels are exceeded or monitored radionuclides are identified
- All data stored in a log and event history
- Test of detection unit operation
- Detection unit stabilisation by check sample

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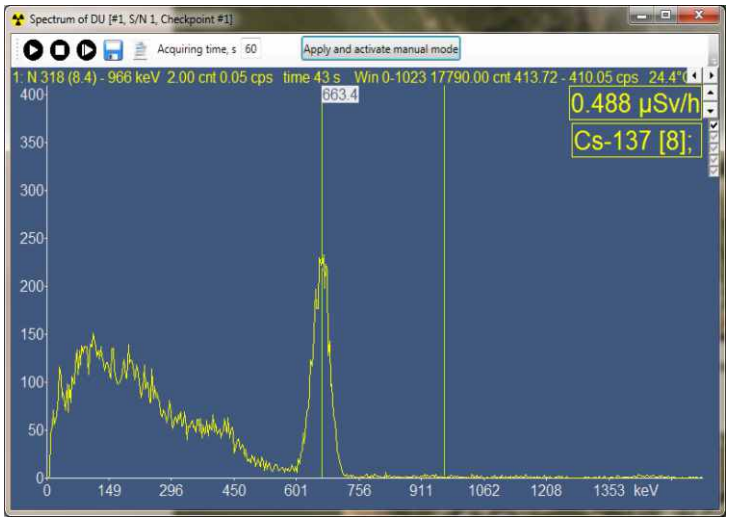
System specification

Number of detection units	1 ... 32
Maximum communication line distance between detection units and PC	1000 m
Maximum communication line distance between switchboard unit and PC	100 m
Identified radionuclides	Medical ▪ Industrial ▪ Natural
Optional services	Library of identified radionuclides can be modified
Initialisation time	≤1 min
Continuous run time	24 h for AC supply, 230V, 50Hz; 6 h for self-contained power supply from fully charged battery pack.
PC interface	USB

System detection units specifications

Gamma radiation detection units	BDKG-205M	BDKG-211M
Detector	Scintillation, NaI(Tl) 40x40 mm	Scintillation, NaI(Tl) Ø63x63 mm
Energy range	30 keV ... 3 MeV	
Gamma radiation dose rate measurement range	0.01 μSv/h ... 300 μSv/h	0.01 μSv/h ... 150 μSv/h
Limit of dose rate measurement intrinsic relative error	±20%	
Energy dependence relative to 662 keV (^{137}Cs)	±20% (for energy range from 60 keV to 3 MeV)	
Typical resolution at 662 keV (^{137}Cs)	7%	7.5%
Sensitivity to gamma radiation ^{241}Am ^{137}Cs ^{60}Co	 5400 cps/μSv·h^{-1} 800 cps/μSv·h^{-1} 420 cps/μSv·h^{-1}	 13900 cps/μSv·h^{-1} 2450 cps/μSv·h^{-1} 1300 cps/μSv·h^{-1}
Maximum input statistical load	≥10^{5} s^{-1}	
Number of ADC channels	1024	
Radiation overloading	Detection unit withstands 10-fold measurement range upper limit increase for up to 5min during gamma radiation dose rate measurement	
Protection class	IP67	
Interface	RS485	
Operation temperature range	-30°C ... +50°C	
Relative humidity with air temperature ≤40°C without condensation	≤98%	
Overall dimensions	Ø68×320 mm	Ø78×350 mm
Weight	1 kg	2 kg

"SSRM" "Software



ATOMTEX ®
http://www.atomtex.com
5, Gikalo st.,220005 Minsk,
Republic of Belarus
Tel./fax: +375 17 2928142
E-mail: info@atomtex.com

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