# AT6101
# AT6101B

# SPECTROMETERS

Portable multifunctional scintillation gamma radiation spectrometers to search, detect and identify radionuclides, measure gamma radiation energy distribution, ambient gamma radiation dose equivalent rate $H^*(10)$ and alpha and beta radiation flux density

## IDENTIFICATION

natural - $^{40}K$, $^{232}Th$, $^{238}U$

industrial - $^{241}Am$, $^{133}Ba$, $^{57}Co$, $^{60}Co$, $^{137}Cs$, $^{192}Ir$, $^{237}Np$, $^{226}Ra$, $^{228}Th$, $^{22}Na$, $^{54}Mn$, $^{152}Eu$, $^{75}Se$

medical - $^{67}Ga$, $^{123}I$, $^{125}I$, $^{131}I$, $^{111}In$, $^{99m}Tc$, $^{201}Tl$, $^{133}Xe$, $^{51}Cr$

nuclear materials - $^{239}Pu$, $^{233}U$, $^{235}U$

## Features

- *Spectrometric smart probes with computer interface*
- *Effective search mode*
- *Spectrometric dose rate measuring method by transformation operator 'Spectrum-dose'*
- *Built-in G-M counter in the processing unit (PU) to extend the dose rate measuring range*
- *Dose rate and flux density measuring with automatic background subtraction*
- *Continuous automatic LED stabilization of the energy scale and its periodic calibration check-up using a KCl check sample*
- *Digital temperature compensation of the measuring path by an internal temperature sensor*
- *Audible and visual alarm at searching and identifying gamma radiation radionuclides, at dose rate and flux density threshold exceeding*
- *Logging up to 300 spectra*
- *Spectrometric data readout on a backlit matrix LCD 128x64*
- *Wide-temperature operation under field conditions*
- *Hermetic enclosure 121x477 mm, for submerging*



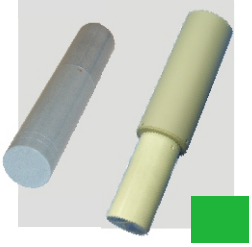

## Application

- *Environmental monitoring*
- *Radioactive waste monitoring*
- *Illicit trafficking of radioactive sources and materials monitoring*
- *Radiation monitoring of scrap metal*
- *Nuclear industry*
- *Geological survey*
- *Nuclear medicine*
- *Scientific research*
- *Emergency*

**BDPA-01**
**BDPB-01**



**BDKG-05**
**BDKG-11**



**PU**







**ATOMTEX**

*INSTRUMENTS AND TECHNOLOGIES FOR NUCLEAR MEASUREMENTS AND RADIATION MONITORING*

# Specification

**Detectors**
AT6101 (BDKG-05) ..... NaI(Tl) 40x40 mm
AT6101B (BDKG-11) ..... NaI(Tl) 63x63 mm
PU ..... G-M counter CI-29BG

**Gamma radiation detection in energy ranges**
BDKG-05, BDKG-11 ..... 20 - 1500 and 40 - 3000 keV

**Alpha radiation detection in energy range**
BDPA-01 ..... 4 - 7 MeV

**Beta radiation detection with maximum energies**
BDPB-01 from 155 keV ($^{14}$C ) to 3.5 MeV ($^{106}$Ru+$^{106}$Rh )

**Integral non-linearity** ..... not more than 1%

**Relative energy resolution** on $^{137}$Cs
BDKG-05 ..... not more than 9 %
BDKG-11 ..... not more than 9.5 %

**Maximum input statistical load** ..... not less than $5 \cdot 10^4$ $s^{-1}$

**Number of channels** ..... 512

**Continuous operation time**
with built-in accumulator unit ..... not less than 12 h

**Energy scale instability** for
continuous operation of 12 h ..... not more than 1 %

**Gamma radiation ambient dose equivalent rate measuring range**
BDKG-05 ..... 0.01 - 300 Sv/h
BDKG-11 ..... 0.01 - 100 Sv/h
PU ..... 1 Sv/h - 10 mSv/h

**Energy sensitivity response respect** to $^{137}$Cs:
BDKG-05, BDKG-11 (50 - 3000 keV) ..... ±20%
PU (60 - 3000 keV) ..... -25 +35%

**Alpha radiation flux density**
BDPA-01 ..... 0.5 - $10^5$ part/(min·cm$^2$)

**Beta radiation flux density**
BDPB-01 ..... 3 - $5 \cdot 10^5$ part/(min·cm$^2$)

**Intrinsic measurement error**
dose rate ..... not more than ±20%
flux density ..... not more than ±20%

**Detection time** of a $^{137}$Cs source, 50 kBq
at 20 cm ..... less than 2 s

**Sensitivity on**
$^{241}$Am
BDKG-05 ..... 5600 cps/ Sv·h$^{-1}$
BDKG-11 ..... 12700 cps/ Sv·h$^{-1}$
$^{137}$Cs
BDKG-05 ..... 670 cps/ Sv·h$^{-1}$
BDKG-11 ..... 1960 cps/ Sv·h$^{-1}$
$^{60}$Co
BDKG-05 ..... 330 cps/ Sv·h$^{-1}$
BDKG-11 ..... 1030 cps/ Sv·h$^{-1}$
radiation background 0,08 Sv/h
BDKG-05 ..... 100 cps
BDKG-11 ..... 270 cps

**Operating temperature range** .....-20 +50 °C

**Relative air humidity at** 35°C ..... 95%

**Operation mode**
**setup time** ..... not more than 1 min

**Protection class** ..... IP54

**Radio disturbance**
EN 55022:2006

**Electromagnetic compatibility**
EN 61000-4-2:1995
EN 61000-4-3:2002

**Weight**
BDKG-05 ..... 1.2 kg
BDKG-11 ..... 1.9 kg
BDPA-01 ..... 0.55 kg
BDPB-01 ..... 0.65 kg
PU ..... 0.8 kg

**Dimensions**
BDKG-05 ..... 62x320 mm
BDKG-11 ..... 80x345 mm
PU ..... 110x230x38 mm
BDPA-01 ..... 87x205 mm
BDPB-01 ..... 87x205 mm

**Complete set:** spectrometric gamma radiation smart probe, processing unit, AC adapter, check sample, shoulder strap, Manual, packing case and package.
External alpha and beta radiation smart probes, telescopic bar, 1.1 m, hermetic enclosure, kit of accessories to connect to PC and applied software to acquire and process spectra on PC are options and they are supplied **on additional order.**

The spectrometers AT6101 and AT6101B have pattern approval certificates of Republic of Belarus and Russian Federation.
They complies with IEC 62327 International standard requirements. They also conform with the 89/336/EEC directive complying with EN 61000-6-3 and EN 61000-6-2 standard requirements.

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