

AT6102

SPECTROMETER

Multifunctional small-sized scintillation spectrometer to detect and identify gamma radiation radionuclides, search neutron radiation sources, measure gamma radiation energy distribution and ambient gamma radiation dose rate $\dot{H}^*(10)$ and alpha and beta radiation flux density

**Detection and identification
gamma radionuclides.
Detection
neutron radiation sources**

Features

- Multifunctionality
- Standalone unit
- Effective search mode and radionuclide identification in real time
Basic radionuclide library:
industrial - ^{241}Am , ^{133}Ba , ^{57}Co , ^{60}Co , ^{137}Cs , ^{192}Ir ,
 ^{232}Th , ^{22}Na , ^{54}Mn , ^{152}Eu , ^{75}Se
natural - ^{40}K , ^{226}Ra , ^{232}Th , ^{238}U
medical - ^{51}Cr , ^{18}F , ^{67}Ga , ^{123}I , ^{125}I , ^{131}I , $^{99\text{m}}\text{Tc}$, ^{201}Tl , ^{133}Xe
Basic library may be formed by consumer request taking into account spectrometer's technical capacity
- Gamma, neutron, deceleration, alpha and beta radiation source search and detection
- Standard and expert operation modes
- Built-in continuous automatic LED stabilization of the energy scale and its periodic calibration using a KCl check sample
- Digital temperature compensation of the measuring path by an internal temperature sensor
- Audible and visual alarm at identifying gamma radiation radionuclides, at dose rate and flux density threshold exceeding
- Spectrometric data readout on a backlit LCD 128x64
- Logging up to 400 spectra
- Wide-temperature operation under field conditions
- Data transfer to PC
- Alpha and beta radiation flux density measurement by an external smart probes BDPA-01 or BDPB-01



Application

- Environmental monitoring
- Radioactive waste monitoring
- Illicit trafficking of radiation sources and materials monitoring
- Nuclear industry
- Geological survey
- Nuclear medicine
- Scientific research
- Emergency

**BDPA-01
BDPB-01**



α | β



ATOMTEX

**INSTRUMENTS AND TECHNOLOGIES FOR
NUCLEAR MEASUREMENTS AND RADIATION MONITORING**

Specification

Detectors

spectrometer scintillation NaI(Tl) Ø40x40 mm
Geiger-Muller gas-discharge counter
Neutron ³He-proportional counter in
polyethylene moderator

external smart probes:

alpha radiation BDPA-01 Ø60 mm, ZnS(Ag)

beta radiation BDPB-01 Ø60 mm, plastic

Gamma radiation detection

in energy ranges 20 - 1500 keV and 40 - 3000 keV

Neutron radiation detection

in energy range 0.025 eV - 14 MeV

Integral nonlinearity not more than 1%

Relative energy resolution on ¹³⁷Cs not more than 9%

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

Number of channels 512

Detection

alpha radiation (BDPA-01) in the energy range . 4 - 7 MeV

beta radiation (BDPB-01) with the maximum energy

form 155 keV (¹⁴C) to 3,5 MeV (¹⁰⁶Ru+¹⁰⁶Rh)

Continuous operation time from built-in

accumulator unit not less than 12 h

Energy scale instability for 12 h not more than 1 %

Ambient gamma radiation dose rate measuring range

NaI(Tl) 0,01 - 300 µSv/h

Geiger-Muller counter 10 µSv/h - 100 mSv/h

Energy sensitivity response respect to ¹³⁷Cs

NaI(Tl) ±20%

Geiger-Muller counter + 35 ÷ - 25 %

Neutron flux density measuring

range 0.1 - 10⁴ neutron/(cm²·s)

Neutron source ²⁵²Cf (1,4·10 neutron/s⁻¹)

acquisition time on distance 20 cm 5 s

Flux density measuring range

alpha radiation (BDPA-01) 0.5 - 10⁵ part./(min·cm²)

beta radiation (BDPB-01) 3 - 5·10⁵ part./(min·cm²)

NaI(Tl) sensitivity

²⁴¹Am 5600 cps/(mSv/h⁻¹)

¹³⁷Cs 670 cps/(mSv/h⁻¹)

⁸⁰Co 330 cps/(mSv/h⁻¹)

background 0.08 mSv/h 100 cps

Neutron detector sensitivity

²⁵²Cf not less than 2 cps/(neutron/s⁻¹·cm⁻²)

Intrinsic measurement error

gamma radiation dose rate ± 20%

alpha and beta radiation flux density ± 20%

Spectrum acquiring time

(in increment of 1 s) from 1 to 64800 s

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

CEI/IEC CISPR 22:1997

Electromagnetic compatibility

CEI/IEC 61000-4-2:1995

IEC 61000-4-3:1995

Weight

spectrometer 2.6 kg

BDPS-03 0.55 kg

Dimensions

spectrometer 222x108x206 mm

BDPS-03 Ø87x205 mm

Complete set: spectrometer, AC adapter, check sample, Manual, packing case for spectrometer and its accessories.

External alpha and beta radiation smart probes BDPA-01 and BDPB-01, telescopic bar 1,6 m, cable for DC supply, kit of accessories to connect to PC and applied software to acquire and process spectra on PC and notebook are options and they are supplied on **additional order**.

The spectrometer AT6102 complies with IEC 62327 International standard requirements.

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