

AT6102 AT6102A

SPECTROMETERS

Multifunctional small-sized scintillation spectrometers are used to detect, locate and identify gamma radiation radionuclides, detect neutron radiation sources, measure gamma radiation energy distribution and ambient dose equivalent rate $H^*(10)$ 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 (Am-241, Ba-133, Co-57, Co-60, Cs-137, Eu-152, Ir-192, Mn-54, Na-22, Np-237, Se-75, Th-228, Cr-51, Ga-67, I-123, I-125, I-131, In-111, Tc-99m, Tl-201, Xe-133, K-40, Ra-226, Th-232, U-238, U-233, U-235, RGPu-239, WGPu-239, bremsstrahlung etc.)
- Gamma, neutron (AT6102 only), 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



γ, n

**BDPA-01
BDPB-01**



$\alpha \beta$

Application

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



ATOMTEX

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

Specification

Detectors

basic unit:

integral spectrometric scintillation

detector NaI(Tl) Ø40x40 mm

integral Geiger-Muller gas-discharge counter

integral neutron ³He-proportional counters in polyethylene moderator (only for AT6102A)

external smart probes:

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

beta radiation BDPB-01: Ø60 mm, plastic

Detection

gamma radiation in energy

ranges 20 - 1500 keV and 40 - 3000 keV

neutron radiation in energy range 0.025 eV - 14 MeV

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)

Integral nonlinearity not more than 1%

Relative energy resolution on ¹³⁷Cs not more than 9%

Maximum input statistical load not less than 5·10⁴ s⁻¹

Number of channels 512

Continuous operation time

from built-in accumulator unit not less than 15 h

Energy scale instability not more than 1 %

Ambient gamma radiation dose equivalent rate

measuring range

NaI(Tl) 0.01 - 300 µSv/h

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

Energy sensitivity response

NaI(Tl) ±20%

Geiger-Muller counter - 25 ÷ + 45 %

Ambient neutron radiation dose equivalent rate

measuring range for ²⁵²Cf source

AT6102 0.1 µSv/h - 10 mSv/h

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/(µSv·h⁻¹)

¹³⁷Cs 670 cps/(µSv·h⁻¹)

⁸⁰Co 330 cps/(µSv·h⁻¹)

background 0.08 µSv/h 100 cps

Gamma source ¹³⁷Cs with activity 50 kBq acquisition time on distance 20 cm not more than 2 s

Neutron detector sensitivity on ²⁵²Cf

AT6102 not less than 0.67 cps/(µSv·h⁻¹)

Neutron source ²⁵²Cf (2·10⁴ neutron/s) acquisition time on distance 25 cm

AT6102 not more than 5 s

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

EN 55022

Electromagnetic compatibility

IEC 61000-4-2

IEC 61000-4-3

Weight

AT6102 2.6 kg

AT6102A 1.9 kg

BDPA-01, BDPB-01 0.55 kg

Dimensions

AT6102 222x108x206 mm

AT6102A 222x108x171 mm

BDPA-01, BDPB-01 Ø87x205 mm

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

External smart probes alpha and beta radiation BDPA-01, BDPB-01, telescopic bar 1.1 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**.

Spectrometers complies with IEC 62327 International standard requirements.

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