



# BETA-1S-150

## SCINTILLATION BETA SPECTROMETER

### INTENDED USE

BETA-1S-150 is designed to measure the specific activity of beta-emitting radionuclides in environmental samples.

The spectrometer allows solving such traditional tasks of spectrometric analysis as certification of food, animal feed, forestry products, radiation monitoring, monitoring of technological processes and radiation contamination, etc.

BETA-1S-150 uses a larger detector, heavier protection shield, and a larger volume of the analyzed sample, which helps to lower the minimum measured activity of a native sample.

### APPLICATION

The spectrometer can be used in laboratory conditions for radiation monitoring of environmental objects and various products during their extraction, processing, and release.

### DESIGN AND OPERATION

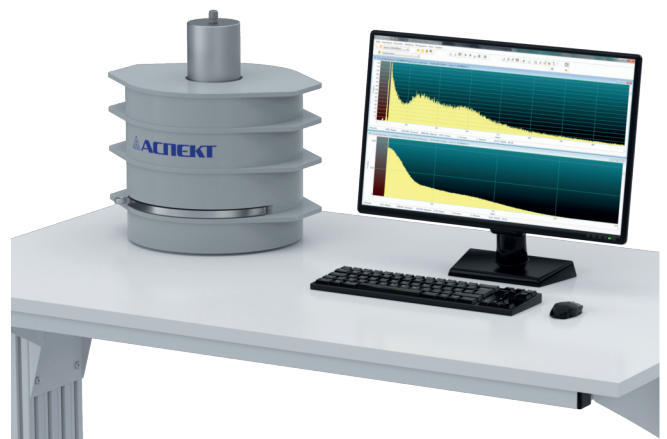
BETA-1S-150 is a UDS-B-150-USB scintillation digital beta detecting device placed inside the lead shield. The lead shield helps decrease gamma background influence and increase accuracy of activity measurement.

The investigated sample is prepared in accordance with the applied sample preparation method and is placed in a standard cuvette, leveled and compacted in it using the supplied sample compacting device.

BETA-1S-150 comes with the Operator's Workstation with the installed specialized software (SpectraLineBG) used to control data accumulation, display, data processing and to output results of data processing to external devices.

### FEATURES

- Integrated gain stabilization system based on the LED reference peak ensures high stability of the detecting device, thus eliminating the need of daily energy calibration of the spectrometer
- The possibility of software, hardware and methodological coupling with the GAMMA-1S Scintillation Gamma Spectrometer
- Wide range of functions to work with spectra and results of their processing: measurement with time exposure (live or real time), automatic accumulation and processing mode, visualization on the monitor screen, storage in database
- Generation of protocols in accordance with regulations in force; reports are issued on the following product categories:
  - food products;
  - forestry products;
  - feed and feed additives.
- Printing out of processing results and spectrum





## BETA-1S-150

### SPECIFICATIONS

Range of registered beta energies	0.2 to 3 MeV
Relative energy resolution for the 624 keV conversion electrons line ( $^{137}\text{Cs}$ ), max	20 %
Range of specific activity measurement for $^{90}\text{Sr}$ radionuclide	(12* to $1\cdot 10^5$ ) Bq/kg – excluding gamma path result (7* to $1\cdot 10^5$ ) Bq/kg – including gamma path result for $^{137}\text{Cs}$ and $^{40}\text{K}$
Confidence limits of $^{90}\text{Sr}$ activity measurement error (P = 0.95)	$\pm(10$ to 50) %
Operating mode setting time, max	30 min
Continuous operation, min	24 hours
Time instability for continuous operation period, max	$\pm 0.1$ %
Power supply	$\sim 220$ V, (50 $\pm 1$ ) Hz, 250 V·A
Environmental	+10 to +35 °C, 75 % at +30 °C and lower temperatures without moisture condensation
Operating geometry	standard cuvette: ( $\text{Ø}150\times 8$ ) mm, volume is 150 ml, sample weight is up to 150 g
Dimensions	( $\text{Ø}185\times 390$ ) mm (UDS-B-150-USB) (364 $\times 300\times 269$ ) mm (Ekran-1SB protective shield)
Weight	2.7 kg (UDS-B-150-USB) 140 kg (Ekran-1SB protective shield)

\* Data is given for the raw material samples, i.e. raw materials without pre-treatment

### CERTIFICATION

- BETA-1S-150 is registered in the State Register of Measuring Instruments under No. 15292-09
- BETA-1S-150 corresponds to the requirements to the products of 4H safety class according to OPB-88/97
- BETA-1S-150 meets the Customs Union Technical Requirements “Safety of Low Voltage Equipment” (CU TR 004/2011) and “Electromagnetic Compatibility of Technical Means” (CU TR 020/2011)

