All-in-one Gamma Spectrometer
(based on HPGe detector)

Features

- It is really easy and fast to connect All-in-one Gamma Spectrometer to the computer using Plug&Play method. You will need not more than 120 seconds to start operating the device.
- Power supply for all parts of the spectrometer is provided by only one USB cable (USB-2 port). Maximum current less than 300 mA, voltage +5V.
- All basic technical parameters of All-in-one Gamma Spectrometer are identical to any regular laboratory device produced by BSI.
- Cryostat geometries and modifications are available.

Description

All-in-one Gamma Spectrometer with digital signal processing is applicable for HPGe detector spectrometric pulses registration, amplification, digital filtration and Gamma-ray spectra registration.
All-in-one Gamma Spectrometer is designed as one integrated monoblock being identical to standard laboratory detection unit with inbuilt preamplifier, however it has inbuilt MCA, HV supply, etc.

Complete set (standard)

- Charge sensitive preamplifier with resistive feedback and cooled FET;
- Amplifier with intermediate differentiation;
- Digital MCA;
- HV supply +/-5000 V (two options) for positive and negative polarity;
- Detector temperature sensor;
- LED indicating detector operating temperature;
- Energy registration range switch between 40 keV - 3.0 MeV and 3 keV - 300 keV;
- USB cable for connection with computer.

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Gamma-rays

Specification

ADC	14bit, 10 Msps
Integral Nonlinearity	<0.04%
Temperature stability	TK = 50 ppm
Digital signal processing	
Automated and manual adjustment of trigger threshold.	
Fine gain adjustment (in steps of <0.05%)	0.5 to 6.5
Shaping time (Integration time / rise time of filter multiplied by 2) adjustable in the range (flat top adjustable 0 ... 15µs)	0.1... 25.5µs
Channel splitting	128, 256, 512, 1k, 2k, 4k, 8k, 16k
Differential nonlinearity (for 8k channels and 6µs shaping time)	<1%
Automated PZC adjustment, detector decay time constants from 40µs to 1ms can be compensated	
Double differential trigger filter	
Modes of operation	
- PHA (pulse height analysis), result is a histogram of pulse height.	
- MCS (multi channel scaling): registers number of counts in subsequent time intervals.	
- MCS mode allows to acquire an integral PHA spectrum in parallel to the MCS acquisition.	
- LLD / ULD settings are supported in both PHA and MCS mode.	
Energy resolution for HPGe detector with efficiency of 7%:	
	1,76 keV at 1,33 MeV
Throughput >100kcps in memory at 150kcps input rate and 0.2µs shaping time and 1.4µs flattop.	0,820 keV at 122 keV
High Voltage Supply (programmable)	
Power supply: USB, 4.5 V ... 5.25 V 280mA at full operation and high voltage 4500 V .	
Computer Interface / Connector	+/- 4500V, 0.1mA max
	USB

The System is available with Coaxial, Planar and Well-type HPGe detectors

+ **=** Completely Digital Gamma and X-ray All-In-One Spectrometer based on HPGe detector.