



Digital Multi Channel Analyzer DigiSpectrum

Application

The Digital Spectrometric Device is a high - precision, ultra-fast all - digital spectrometer, comprising a single processing channel, a preamplifier power supply and a detector bias supply in a compact package. The Digital Spectrometric Device can accept signals from practically any radiation detector. The Digital Spectrometric Device has built-in support for HPGe detectors with a Compton shield.

Features

- Pulse heights measured with up to 16 bits accuracy (i.e. 32K spectrum length).
- Programmable gain, input offset, and peaking times between 0.25 and 40 microseconds.
- Programmable pileup inspection criteria include trigger filter parameters, threshold, and rejection criteria.
- Peak stability with rate: 0.05% up to highest ICR.
- Integral Nonlinearity of Energy: = 0.1% of full scale.

Functionalities

- Automatic peaks search with the required sensitivity level,
- Energy, FWHM and peak pattern calibrations,
- Peaks parameters determination - position, FWHM, area; calculation results can be saved to a text file,
- Efficiency "curves" can be obtain with the efficiency calibration,
- Activity calculation by various methods,
- Use the true-coincident factors to correct the gamma-emission intensity,
- Measured spectra and processing results saving to database for the analysis of the specified criterions convergence of the repeated measurements,
- Simultaneous processing of any spectra number; the peak pattern calibration with several spectrum peaks in different energy ranges,
- Numeric and visual control of the calibrations results,
- Any measurement tracts number,
- Independent control of all channels - start, stop, etc.

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Specification

Signal Input (Analog) - Works with common reset or resistor feedback preamps of either polarity.

- Impedance: 50 Ohms, 90 Ohms, 250 Ohms, and 1k Ohms - jumper selectable.
- Attenuation: 1:21, 1:12, 1:5 and 1:1- jumper selectable.
- Voltage Range: +10.0 V to -10.0 V standard.

Inputs (Digital)

- Gate Input: Analog input for Compton suppression. Can alternatively be configured as digital I/O.
- HV Inhibit: TTL logic input. BNC connector, jumper set active HI or LO.

Interface:

- USB: Universal Serial Bus.

Digital Controls:

- Gain: 50X coarse gain (2% accuracy), fine gain controlled by 16 bit DAC.
- Shaping: Triangular/Trapezoidal. Peaking time and dwell set independently : 50ns - 45 microseconds in small steps. Adjustable dwell time may be used to eliminate ballistic deficit effects.
- Pileup: Set fast channel filter time, pulse detection threshold, and fast channel pileup inspection test limits to achieve best results in each situation.
- Spectrum: 1K-32K bins, 32 bits deep (4.3 billion counts per bin)

Collection:

- Livetime; Realtime; input/output count rates; Compton coincidence rate.

Power Outputs:

- Detector Supply: High Voltage +/- 5kV, SHV connector, push-button on/off, front panel adjust, 60 sec. on/off ramp standard.
- Preamp Supply: standard preamp power voltages +/- 24V and +/- 12V, each to 100 mA.
- Power Requirements: 110 V at 0.2 A 50/60 Hz or 220 V at 0.1 A 50/60 Hz, specify at

Software package

SpectraLineGP spectra processing includes calibration, peaks parameters determination, nuclides identification, activities calculation and using the true-coincident factors for the gamma-emission intensity correction. Non-parametric model for pattern of the full energy peak provides a correct model for a line in any energy range. Adjustment of the DigiSpectrum parameters.

