

Digital Pulse Processor, MCA and Power Supply for HPGe

PX5-HPGe

Features

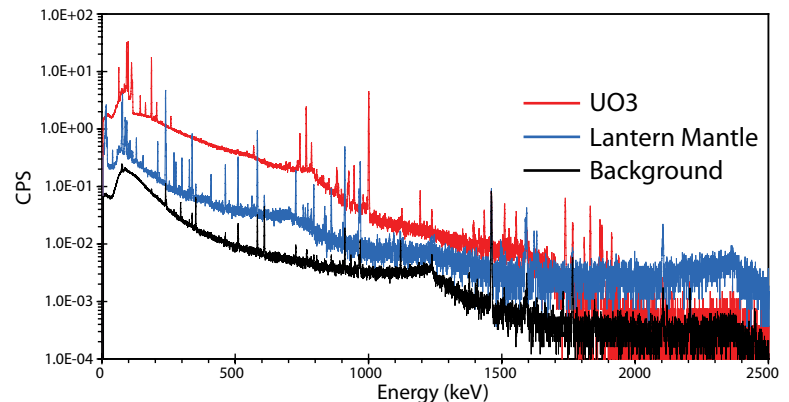
- Includes digital pulse shaping amplifier, MCA, and power supplies
- Compatible with standard HPGe detectors
- Trapezoidal shaping with wide range of peaking times to optimize performance
- High count rate capability with excellent baseline stability, throughput, and pile-up rejection
- Up to 8k output MCA channels
- Oscilloscope mode - DAC output for pulse monitoring and adjustment

Communications

- Interfaces: RS-232, USB, Ethernet, I²C, auxiliary
- Software for PC data acquisition and control
- Software Developer's Kit included (SDK)

Power

- High voltage bias adjustable ± 5 kV
- Preamp power ± 12 V, ± 24 V
- Operates from +5 V DC supply (AC power adapter included)



Spectra of low intensity material obtained with HPGe detector and a PX5-HPGe signal processor.

Overview

The PX5-HPGe is a modified version of Amptek's PX5 signal processor and power supply. A custom power supply board is installed in a standard PX5, providing the higher bias voltages needed by an HPGe detector along with the higher preamp power voltages and currents required by most HPGe preamplifiers. A custom front panel is also installed, which mates with industry-standard connectors on HPGe detector/preamp modules. The signal processing circuitry is unchanged from a standard PX5.

Amptek's PX5-HPGe combines a high performance digital pulse processor with the power supplies needed for standard cryogenic HPGe detectors. It replaces a conventional shaping amplifier and multichannel analyzer, providing very high performance signal processing in a single compact, low power module, replacing multiple bulky NIM modules in a traditional solution. The digital signal processing provides several advantages over analog solutions: lower electronic noise, reduced ballistic deficit, higher throughput, enhanced stability, and more configuration options to better optimize the system for particular applications. It supports USB, Ethernet, and RS232 communications protocols and has numerous auxiliary I/O options (MCS mode, 8 SCAs, a gate input for Compton suppression, etc).

The HPGe PWR board provides a bias voltage up to ± 5 kV, with a hardware plug to change polarity. It includes an HV inhibit line (to turn off the HV supply if the detector is too warm). The HPGe PWR board also provides low voltages of ± 12 VDC and ± 24 VDC, at 80 and 40 mA respectively, using a standard 9 pin preamp power connector.

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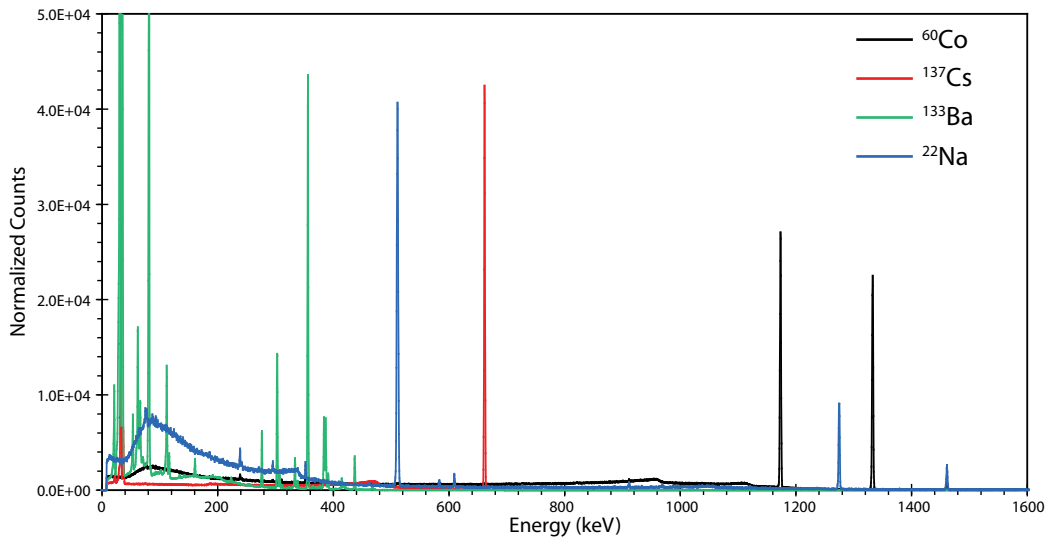
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Preliminary Specifications

Please refer to the PX5 specification sheet for the pulse processing performance, MCA performance, and other key specifications. This sheet only lists those specifications which are changed for the PX5-HPGe.

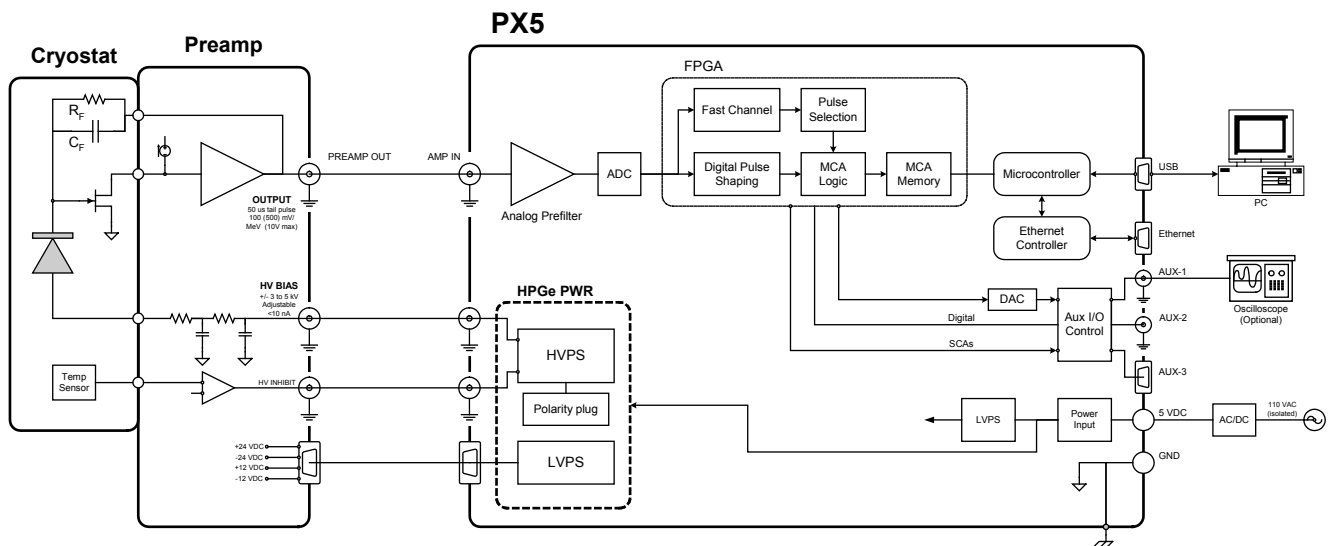
HV Bias	
Voltage	100 to 5,000 VDC
Polarity	+/-, selected by plug
Current	20 μ A
HV Inhibit	Active High or Low, set by internal switch

Preamp Power	
+/- 12 VDC	\pm 10%, 80 mA (max)
+/- 24 VDC	\pm 10%, 40 mA (max)
Power	
+5 V	+5 VDC at 220 mA (1.1 W) typical
Input Range	
	+4.5 to +5.5 VDC



Spectra of laboratory radioisotopes obtained with an HPGe detector and a PX5-HPGe signal processor.

Block Diagram



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