

新型字脉冲处理器

DP5-X

更多的参考讯息

- 成峰，多道处理器和供电模块

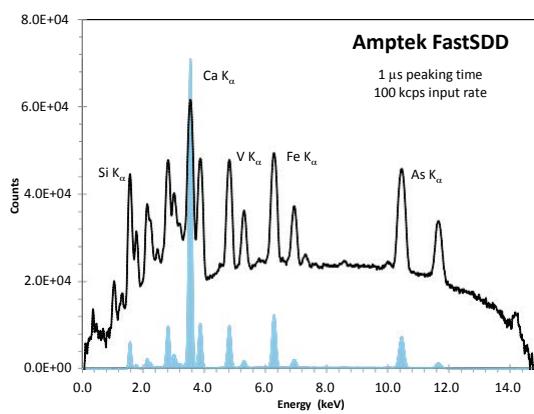
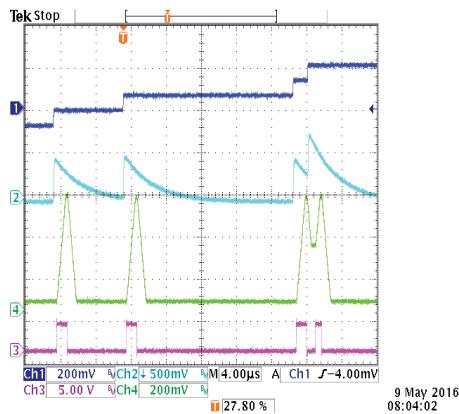
- 设计用于 **AMPTEK Si-PIN, SDD 和 FAST SDD®**

序言

DP5-X是一个高度集成，高性能数字脉冲处理器(DPP)和电源板，设计可用于 Amptek 电制冷的X射线探测器，包括 FAST SDD®，SDD和Si-PIN。尺寸只有1.5" x 2.5" (3.8 x 6.4 cm) 和总功耗为 2.5 W (包括给制冷片的功耗)，DP5-X 能够把分辨率减低到 124 eV FWHM at 5.89 keV，输出计数率超过 1 Mcps。电源模块包括一个高效率开关式稳压器，制冷片冷却和高压电源均由其提供，供电为 5V 的直流电。DP5-X 使用和 DP5 完全一样的处理内核，提供一样的性能指标；提供 USB 和 RS232 通讯接口，且使用和 AMPTEK DP5 系列产品 (FW6) 一样的通讯协议，所以可以兼容AMPTEK 其它类型的产品，无须单独开发软件。

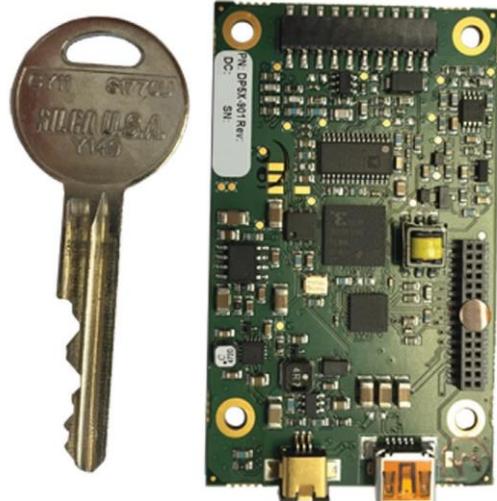
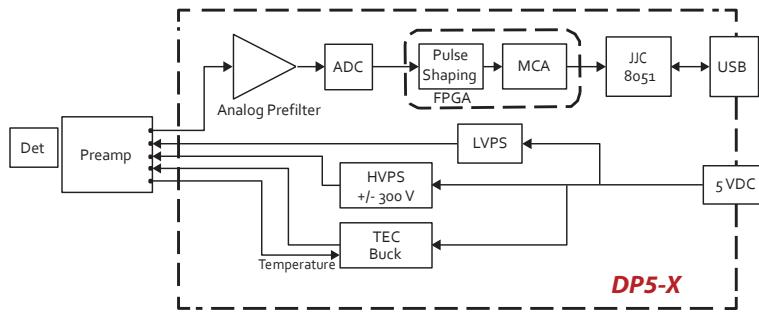
Amptek's DP5 或 X-123 可以用来做前期的开发，两者使用相同的软件和性能。

典型用法



Trace 1 above shows the input to the DP5-X, which is the output from a reset-type charge sensitive preamplifier. This is processed by the analog prefilter producing the prefilter output shown in Trace 2. This is digitized and then processed digitally, producing the DP5-X's shaped output shown in Trace 3. Finally, the DP5-X creates a multichannel analyzer (MCA) type output spectrum shown in Graph 4.

方块和实物图



DP5-X 实际尺寸
Dimensions: 3.8 x 6.4 cm (1.5 x 2.5 in)

参 数

关键的信号处理，多道分析器和通讯参数大部分和 AMPTEK 其它 DP5 产品一样
请参考“DP5 产品使用手册”了解进一步的产品使用特性

脉冲处理器		通讯	
Full Scale (满量程)	10 to 80 keV full scale energy for Amptek detectors	USB 2.0 full speed (12 Mbps)	
Gain (增益)	Coarse gains of 4 and 14, fine gain with 13 bit resolution, software selectable	RS-232 at 115.2k or 57.6k baud	
Pulse Shape	Trapezoidal (梯形)	Hardware	
Peaking Time	Software selectable between 0.05 and 102 μ s, e to semi-Gaussian (高斯) shaping times of 0.02 to 45 μ s.	Microprocessor	Silicon Labs 8051F340 (8051-compatible core)
Flat Top	63 software selectable values for each peaking time, (depends on the peaking time), > 0.05 μ s.	ADC	12 bit, 80 MHz
Baseline Restoration (基线复位)	Asymmetric (不对称), 16 software selectable slew rate settings	Firmware	Signal processing is programmed via firmware which can be upgraded in the field.
Fast Channel Peaking Time	0.05, 0.1, 0.2, 0.4, 0.8 μ s (80 MHz) and 4x at 20 MHz	Physical	
Fast Channel Pulse Resolving Time	t_{fast} plus pulse risetime	Dimensions	3.8 x 6.4 cm (1.5 x 2.5 in)
Dead Time Per Pulse	1.05 times the t_{peak} + t_{flat} . No conversion (转换) time.	Weight	30 g
Maximum Count Rate	8×10^6 sec $^{-1}$ (periodic). Output count rate of 1.4 x 10^6 , sec $^{-1}$ for a random input of 3.8×10^6 sec $^{-1}$ (80 MHz)	Power	
Pulse Selection Options	Pile-up rejection, risetime discrimination (筛选器), gate	Nominal Input	@ +5 VDC: 700 mA (3.5 W) typical at full cooling 500 mA (2.5 W) typical with lighter cooling loads
Multichannel Analyzer		Input Voltage Range	4 V to 9 V
Channels	256, 512, 1024, 2048, 4096, or 8192 channels.	Typical Input	4 V (@ 0.9 A) to 9 V (@ 0.4 A)
Bytes per channel	3 bytes (24 bits) - 16.7M counts	Regulator	All but HVPS > 1 MHz; HVPS: 60 kHz
Acquisition Time	10 ms to 466 days (收集时间)	Power Source	External supply
Conversion Time	None	Connectors	
Presets	Time, total counts, counts in ROI, counts in	J1	Power in (5 VDC)
MCS Timebase	10 ms/channel to 300 s/channel	J2	Preamplifier interface (10 pin flat flex, mates with Amptek PA210/PA230)
External MCA Controls	Gate input: Pulses accepted only when gated on by external logic. Input can be active high or active low. Software controlled.	J3	Preamplifier interface (alternate 10 pin, 2 MM)
Operating Modes		J4	Mini-USB
MCA mode	Most common operating mode. The DPP acquires a pulse height spectrum, using the MCA in the FPGA, and reads this to the computer, over one of the interfaces, one software request. Readout intervals usually range from 0.1 s to a few seconds.	J5	AUX to interface with customer circuit board. Includes power in, USB, RS232, and auxiliaries
Counting mode	By reading only the status packet over one of the interfaces, one can obtain the input and output count rates at much shorter intervals than the entire spectrum can be read. Requires custom software.	Mechanical Dimensions	
Other modes	Supports List Mode and SCA Mode.		