Radiation detection

NUCARE

HSGP-DAQ64

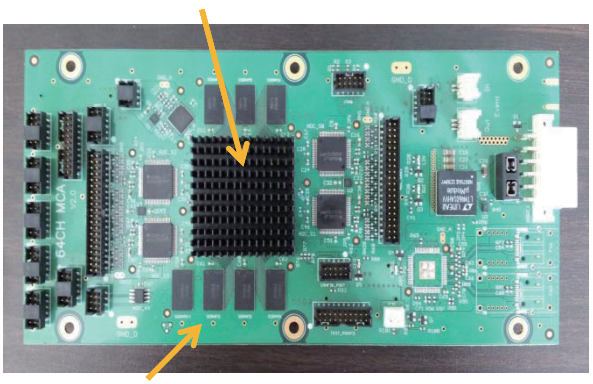
Data Acquisition Electronics System

High speed general purpose data acquisition solution!

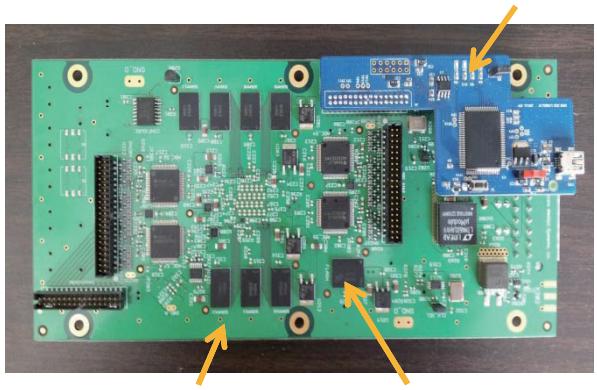
The HSGP-DAQ64 data acquisition electronics system is design to support data acquisition and process of either analog or digital signal of up to 64 inputs. The system includes 64 channels of fast free-running 65 MSPS ADC, 1 channel of 300 MSPS ADC for timing pickoff and Altera Stratix III FPGA with external memory of up to 384 Mbytes of static RAM and up to 128 Mbytes of flash RAM.

The high performance FPGA enables on board analog pulse processing including pulse integration/shaping, pileup correction, baseline restoration and timing. In addition, the HSGP-DAQ64 can implement many FPGA pulse processing algorithms including, but not limited to: coincidence processing, statistical position estimation, energy qualification and geometry masks for PET (positron emission tomography) application.

Nucare provides the complete system including the necessary library, auxiliary circuit boards, enclosures and accessories.



Front



Back

Key features

- High performance Altera Stratix series FPGA (III, IV or V).
- High speed ADC: 64 channels of 65 MSPS and 1 channel of 300 MSPS.
- Diverse communication interface: SPI, JTAG, IDE, IEEE1394, USB2.0 and serial.
- External memory: up to 384 Mbytes of static RAM and up to 128 Mbytes of flash RAM
- Onboard analog processing with FPGA and external memory

Key Specifications

Dimension	225×102×50 mm	ADC channel	64 channels
Supply power	5 ± 0.3 V (10A)	Digital analog supply	3.3 V
ADC dynamic range	± 1.1 V	Output interface	Serialized LVDS
ADC sample rate	65 MSPS (64ch), 300 MSPS (1ch)	ADC package	TQFP-80 PowerPAD
Communication	USB 2.0	Operating Temperature	-15℃(5℉)~50℃(122℉)
FPGA	Altera Stratix III	Memory	384 Mbytes SRAM 128 Mbytes flash RAM

Supported Sensors

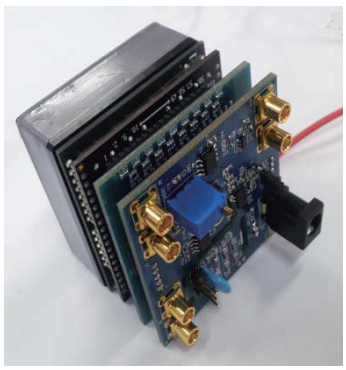
- Any types of PMT, PS-PMT or PMT array
- Solid-state sensors: SiPM, APD, PIN, CZT or CdTe

Note : depend on sensor type and/or implementation specification, standard or customized interface signal processing board (product model: DAQ-ISPB-xx) may be ordered separately.

Interface Boards

The interface board provides the electrical connectivity between sensor(s) and the HSGP-DAQ64 system. The right side picture is an example of DAQ-ISPB-H8500D interface board that is designed for a Hamamatsu H8500 PS-PMT.

The DAQ-ISPB-H8500D consists of two boards that includes HV distributor, Anger circuit, high speed preamp and discriminator logics. The form factor matched with PMT size enables convenient integration of multiple modules.



Enclosure with interface boards

The HSGP-DAQ 64 and its interface boards can be provided with an enclosure options. The system with an enclosure can equip optional high voltage supplier, SMPS and/or supplementary boards.

Three different size of enclosures are available and its dimension is 324(W)×268(D)×101/147/194 (H) mm 12.8(W)×10.6(D)×4/5.8/7.6(H) in.

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