IQSP582 PhotoniQ 64 Channel Data Acquisition System

Product Sheet

Description

The PhotoniQ Model IQSP582 is designed to offer scientists, engineers, and developers an off-the-shelf solution for their multi-channel electro-optic sensor needs. Implemented as a stand-alone laboratory instrument with a PC interface, the PhotoniQ is used for charge integration and data acquisition from photomultiplier tubes, avalanche photodiodes, silicon photomultipliers, and other multi-element charge-based sensors. It is a precision, high speed, 64 channel parallel system capable of providing real-time DSP-based signal processing on input events. Flexible, intelligent triggering and acquisition modes allow the unit to reliably capture event or image data using sophisticated data acquisition techniques. Through the PC, the PhotoniQ is fully configurable via its USB 2.0 port using an included graphical user interface. Continuous high speed data transfers to the PC are handled through this interface, or for custom applications through the provided Windows DLL set.

Applications

- Bioaerosol Detection and Discrimination
- Confocal Microscopy
- Flow Cytometry
- Fluorescence Spectroscopy
- PET and SPECT
- Spatial Radiation Detection
- Analytical Chemistry
- Particle Physics
- Piezoelectric Sensor Array Readout
- High Speed Spectroscopy
- Silicon Photomultipliers (SPM)

Features

- 64 gated integrator/data acquisition channels
- 84 dB dynamic range (14-bit resolution)
- Particle analysis with 3.2 usec event pair resolution, image acquisition at rates up to 250,000 pixels/sec
- 35,000 events per second sustained average event rate (SAER)
- Single photon sensitivity when used with typical multi-anode PMTs and SPMs
- Intelligent triggering supports edge, internal, level, and boxcar modes
- Advanced triggering capability supports pre-triggering, event based, and cross bank
- Flexible control of integration parameters such as delay, period, or external boxcar
- Two data acquisition modes optimized for particle analysis and scanned imaging applications
- Optional 250,000 or 500,000 pixel image buffer available for high speed imaging applications
- Real-time data discrimination, channel gain normalization, and background subtraction
- Programmable spectral filtering function for real time detection of predefined spectrums
- General purpose digital output linked to spectral filter function
- Compatible with commonly available multi-anode PMTs and avalanche photodiode arrays
- Available with optional dual negative 1000V or negative 1500V high voltage bias supplies

Vertilon Corporation, 66 Tadmuck Road, Westford, MA 01886 / Tel: (978) 692-7070 / Fax: (978) 692-7010 / www.vertilon.com

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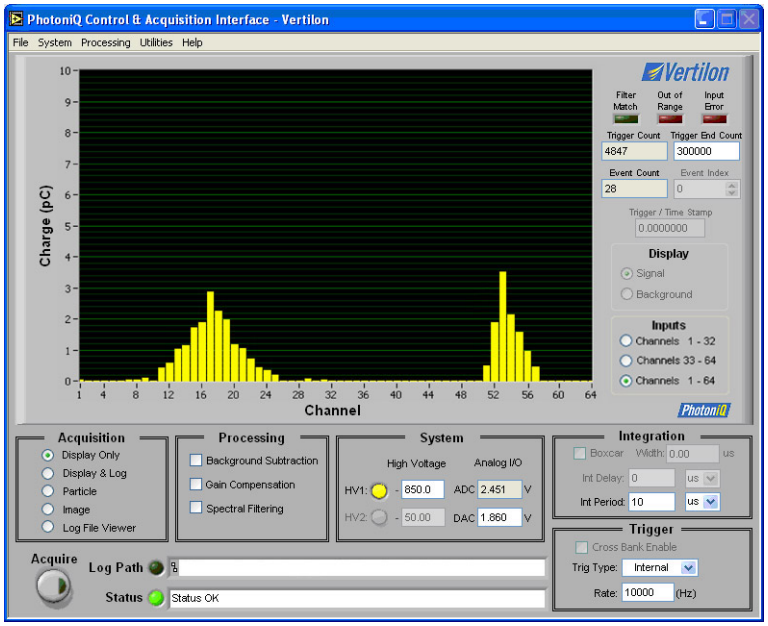

Included Accessories and Software

The IQSP582 comes enclosed in a rugged, EMI-shielded, instrument case and is shipped with the following standard components and software:

- PhotoniQ Control and Acquisition Interface Software CD-ROM
- DC power supply (+5V, 2A) with power cord
- USB 2.0 cable (15')

Hardware Options

The IQSP582 can be ordered with the following hardware options:

- HVPS001: Negative 1000V on-board high voltage bias supply
- HVPS002: Negative 1500V on-board high voltage bias supply
- MEM032: Memory upgrade - 250,000 event image buffer
- MEM064: Memory upgrade - 500,000 event image buffer

Supported Sensors

The sensors below are supported using separately ordered Vertilon sensor interface boards (SIBs). Custom SIBs are also available.

- Hamamatsu H8500D, 64 element 8 x 8 multianode PMT
- Hamamatsu H7260, 32 element linear multianode PMT
- Hamamatsu H8711, 16 element 4 x 4 multianode PMT
- Hamamatsu R5900U-L16, 16 element linear multianode PMT
- Pacific Silicon Sensor AD-LA-16-9-DIL18, avalanche photodiode array

Software Features & Functions

- Graphical User Interface (GUI) for menu driven data acquisition, configuration, and status
- Real time display shows total integrated charge level across all channels for each captured event or pixel
- Integrated log file viewer permits on-screen viewing of logged event data
- High speed event counter
- Image acquisition can be programmed to acquire for a preset number of pixels
- Event time stamping with 100 nsec resolution
- Trigger stamping feature numbers each pixel to facilitate scanned image reconstruction
- USB 2.0 interface supports high transfer rates
- Included Microsoft Windows DLLs for interface to custom user applications

Specifications*	
Description	**Specification**
Number of Channels	64
Resolution	14 bits
Dynamic Range	84 dB
Equivalent Input Noise Charge	55 fC RMS typ.
Maximum Input Signal	500 pC
Channel-to-Channel Crosstalk	-84 dB typical, -80 dB max.
Input Bias Current	±40 pA typical, ±150 pA max.
Minimum Event Pair Resolution (MEPR)	3.2 usec max.
Maximum Trigger Rate (MTR)	250 KHz
64 Channel Sustained Average Event Rate (SAER)	35,000 events/sec
8 Channel Sustained Average Event Rate (SAER)	240,000 events/sec
Power Consumption	4.5 Watts typ., 5.5 Watts max.
Width	9.843 in. (250 mm)
Height	3.346 in. (85 mm)
Length	10.236 in. (260 mm)

* See PhotoniQ User Manual for details

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