Vertilon

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IQSP482 PhotoniQ 64 Channel Data Acquisition System   *Product Sheet*

Description

The PhotoniQ Model IQSP482 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

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

Features

- 64 gated integrator/data acquisition channels

- 96 dB dynamic range (16-bit resolution)

- Particle analysis with 7.0 usec event pair resolution, image acquisition at rates up to 120,000 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 filtering for real time detection of predefined energy levels or spectrums

- General purpose output linked to filter function

- Compatible with commonly available multi-anode PMTs, silicon photomultipliers, and avalanche photodiode arrays

- Available with optional dual negative 1000V or 1500V high voltage bias supplies for PMTs, or negative 100V bias supplies for SPMs or APDs
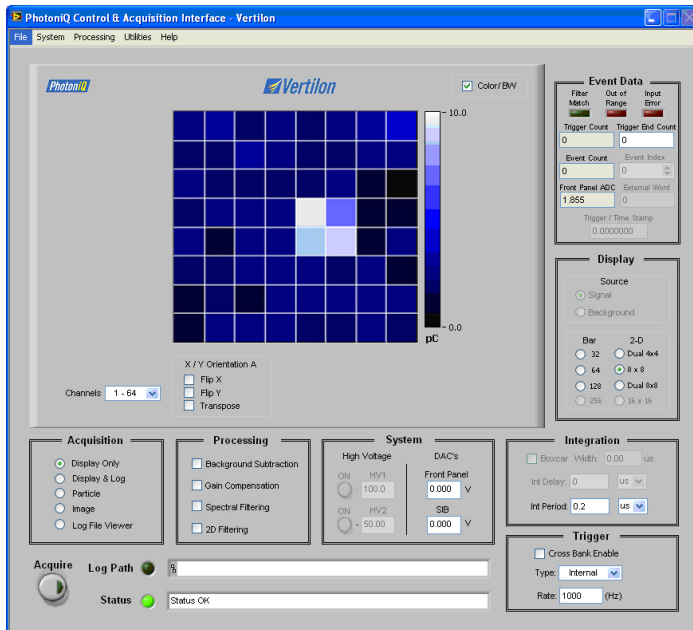
Software Features & Functions

- 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 DLL for interface to custom user applications

Included Accessories and Software

The IQSP482 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

Hardware Options

The IQSP482 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
- HVPS701: Negative 100V on-board high voltage bias supply
- MEM032: Memory upgrade - 250,000 event image buffer
- MEM064: Memory upgrade - 500,000 event image buffer

Supported Sensors

Standard & custom sensor interface boards (SIBs) ordered separately.

- Hamamatsu H8500D, 64 element 8 x 8 multianode PMT
- Hamamatsu H7546B, 64 element 8 x 8 multianode PMT
- Photonis XP85013, 64 element 8 x 8 multianode MCP-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
- SensL SPMArray, 16 element 4 x 4 silicon photomultiplier array
- Pacific Silicon Sensor AD-LA-16-9-DIL18, avalanche photodiode array

Specifications*	
Description	**Specification**
Number of Channels	64
Resolution	16 bits
Dynamic Range	96 dB
Equivalent Input Noise Charge	30 fC RMS typ.
Maximum Input Signal	1462 pC
Channel-to-Channel Crosstalk	-84 dB typical, -80 dB max.
Input Current Range	1 pA to 2 A
Input Bias Current	±40 pA typical, ±150 pA max.
Minimum Event Pair Resolution (MEPR)	7.0 usec max.
Maximum Trigger Rate (MTR)	120 KHz
64 Channel Sustained Average Event Rate (SAER)	35,000 events/sec
8 Channel Sustained Average Event Rate (SAER)	130,000 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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