IQSP518 PhotoniQ Expandable Data Acquisition System

Product Sheet

Description

The PhotoniQ Model IQSP518 is an economical multi-channel data acquisition system designed to offer scientists, engineers, and developers an off-the-shelf solution for data collection from multiple charge-based sensors. Implemented as a stand-alone laboratory instrument with a PC interface, the PhotoniQ is used for charge integration and data acquisition from individual photomultiplier tubes, avalanche photodiodes, and silicon photomultipliers (SiPM). Available in a standard configuration of two input channels, the IQSP518 can be expanded in the factory or field to up to eight parallel channels. Flexible, intelligent triggering and acquisition modes allow the unit to reliably capture event or image data using sophisticated data acquisition techniques. The IQSP518 is fully configurable over 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**
- **PET and SPECT**
- **Confocal Microscopy**
- **Flow Cytometry**
- **Fluorescence Spectroscopy**
- **Spatial Radiation Detection**
- **Analytical Chemistry**
- **Particle Physics**
- **Piezoelectric Sensor Array Readout**
- **DNA Sequencing**
- **Silicon Photomultipliers (SiPM)**

Features

- Two synchronously gated integrator/data acquisition channels optionally expandable to up to eight integrator/acquisition channels
- 84 dB dynamic range (14-bit resolution)
- Particle analysis with 2.6 usec event pair resolution, image acquisition at rates up to 390,000 pixels/sec
- Single photon sensitivity when used with typical PMTs and SiPMs detectors
- 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
- Real-time display of signal data
- Programmable filtering for real time detection of predefined energy levels or spectrums
- General purpose output linked to filter function
- Real-time data discrimination, channel gain normalization, and background subtraction
- Compatible with commonly available multi-anode PMTs, silicon photomultipliers, and avalanche photodiode arrays
- On board user-programmable general purpose DAC and ADC for detector bias control and monitoring

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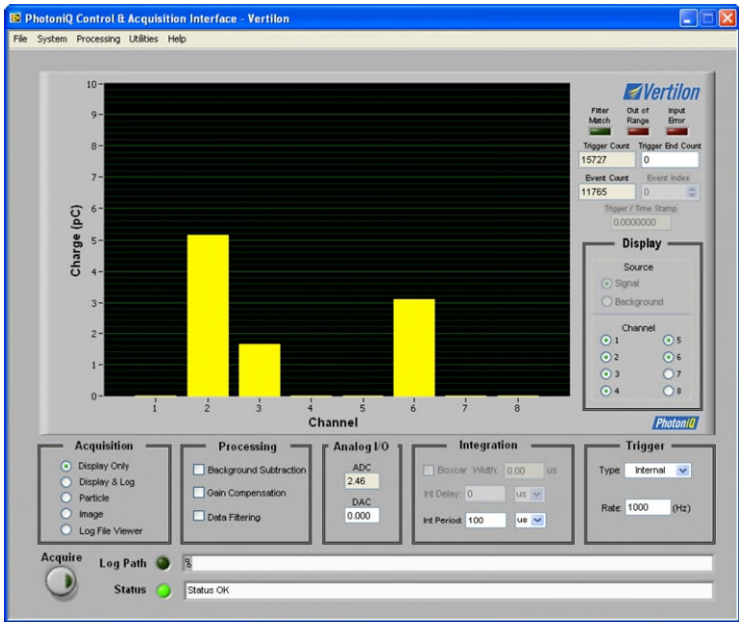


Included Accessories and Software

The IQSP518 comes enclosed in a rugged, EMI-shielded, instrument case and is shipped with the following standard components and software:

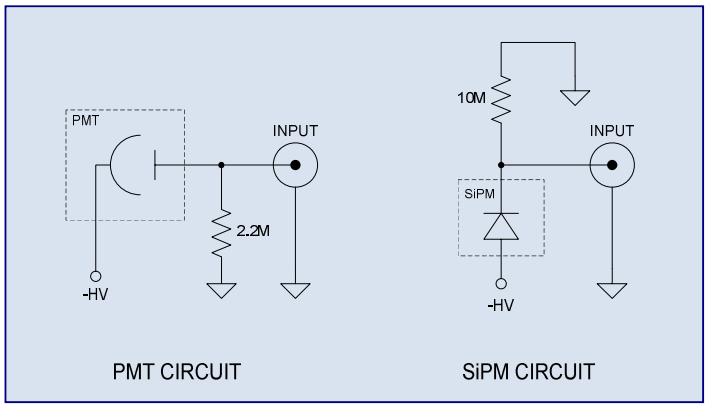
- PhotoniQ Control and Acquisition Interface Software CD-ROM
- DC power supply (+5V, 2A) with power cord
- USB 2.0 cable

Options

The IQSP518 can be ordered with the following hardware options:

- XCH501: Extra input channel - Up to six can be added
- MEM032: Memory upgrade - 2,000,000 event image buffer
- MEM064: Memory upgrade - 4,000,000 event image buffer

Recommended Sensor Interface Circuits



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
- Includes oscilloscope-like rolling time display
- 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
- Trigger stamping and event time stamping with 100 nsec resolution
- USB 2.0 interface supports high transfer rates
- General purpose programmable digital output to control external devices
- Included Microsoft Windows DLLs for interface to custom user applications

Specifications*

Description	Specification
Number of Channels	2, expandable to 8
Resolution	14 bits
Dynamic Range	84 dB
Equivalent Input Noise Charge	100 fC RMS typ.
Maximum Input Signal	877 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)	2.5 usec max.
Maximum Trigger Rate (MTR)	390 KHz
8 Channel Sustained Average Event Rate (SAER)	250,000 events/sec
Power Consumption	4.5 Watts
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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Vertilon Corporation, 66 Tadmuck Road, Westford, MA 01886 / Tel: (978) 692-7070 / Fax: (978) 692-7010 / www.vertilon.com