

Description

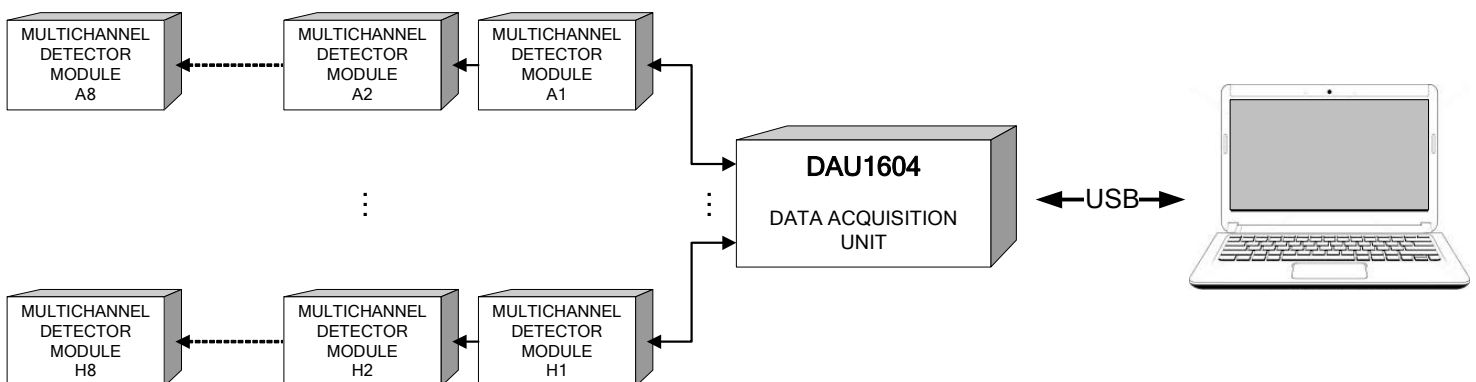
- High Speed Digital Data Acquisition System
- Optimized for Charge & Timing from SiPMs & PMTs
- Acquisition from over 1000 Data Channels
- USB Interface to Computer
- Configurable by a Graphical User Interface
- Real-Time Display and Logging
- Log File Playback



Applications

- X-ray Inspection Systems
- Muon Tomography Imaging
- Non-Destructive Testing & Analysis
- PET Imaging Systems
- Fast Neutron Counting / Integration
- High Energy Physics Experiments

Typical System Configuration

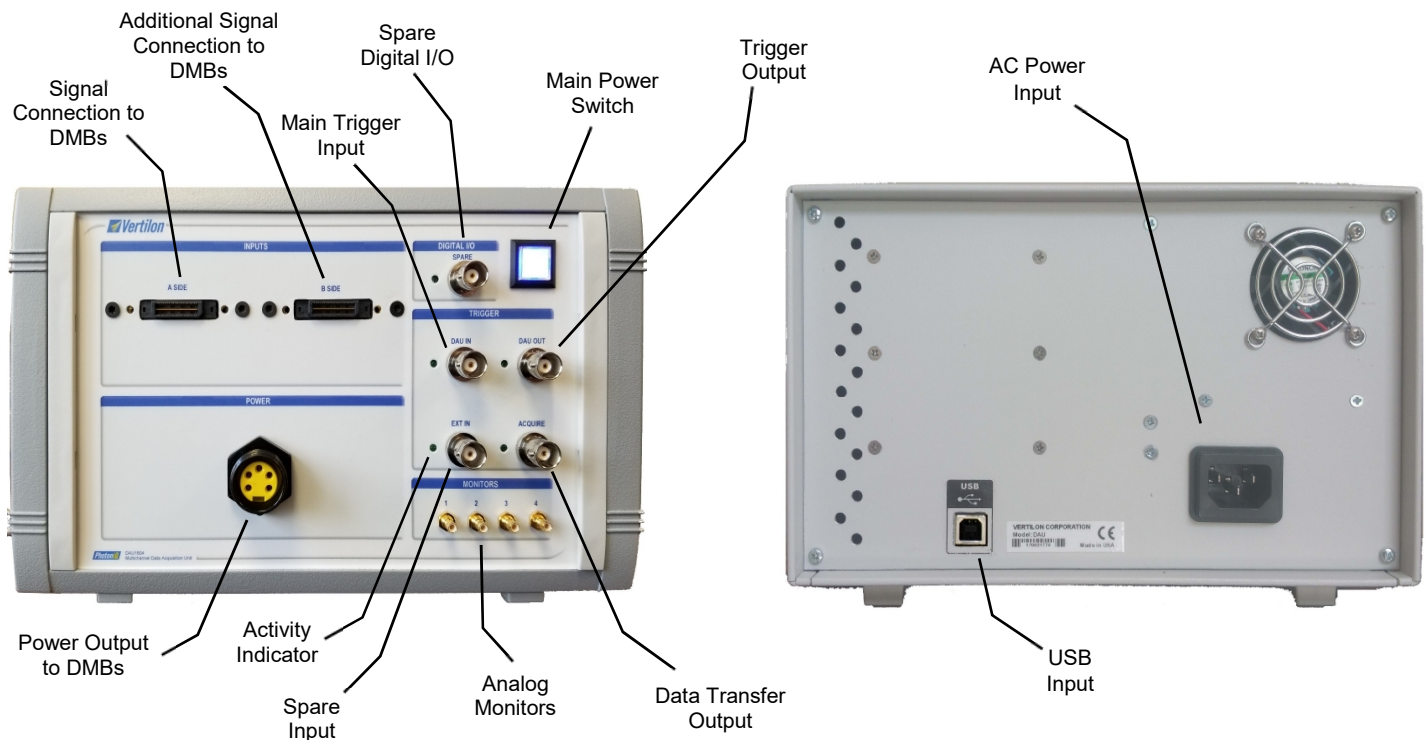


Description

The Vertilon Model DAU1604 is a special purpose digital data acquisition system designed for use with large numbers of SiPMs and photomultiplier tubes. The unit connects to remotely located detector module boards (DMBs) that are specifically designed by Vertilon for the customer's application. A typical configuration example for the DAU1604 consists of several detector module boards, each containing dozens of SiPMs in a specific arrangement. By serially connecting the DMBs with short, specialized data cables, systems with hundreds or even thousands of channels can be built. The DMBs contain the signal processing hardware for the SiPM channels and often include preamplifiers, integrators, discriminators, delaying circuits, time-to-digital converters, digitizers, and high-speed data buffering. Control of the detector module boards is done through the DAU1604 by way of its graphical user interface. Additionally, all data from the DMBs passes through a high-speed data cable to the DAU1604 where it is processed for display and logging on the attached computer.

Vertilon customizes the DAU1604 to meet the user's specific requirements. This includes the DAU1604 front panel configuration as well as the features and functionality of its graphical user interface. The detector module boards are designed to interface with the DAU1604's standard control and data transfer protocols. Vertilon works closely with the customer to define the system level specifications, power constraints, and mechanical requirements for the DMBs. The DMBs are then designed and developed by Vertilon utilizing our proven library of signal processing modules, circuit functions, and firmware from our standard products for SiPMs and PMTs. Vertilon handles all development including circuit and software design, DMB assembly, and system testing. The result is a fully operational application specific DAQ system developed in the most cost effective and timely manner.

Front & Rear Views



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Description

The PhotoniQ Model IQSP418 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 IQSP418 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 IQSP418 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.

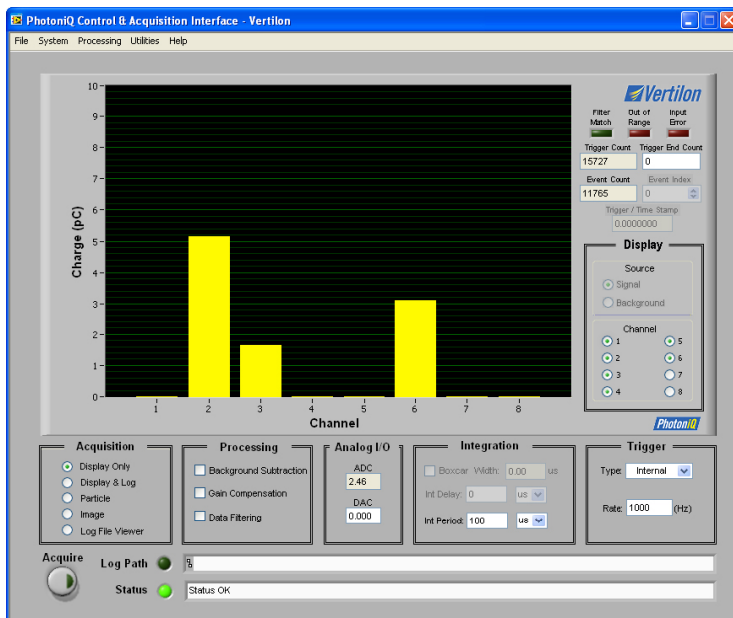
Applications

- 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
- 96 dB dynamic range (16-bit resolution)
- Particle analysis with 6.0 usec event pair resolution, image acquisition at rates up to 150,000 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
- Optional 2,000,000 or 4,000,000 pixel 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
- On board user-programmable general purpose DAC and ADC for detector bias control and monitoring



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
- 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

Included Accessories and Software

The IQSP418 comes enclosed in a rugged, EMI-shielded, instrument case and is shipped with the following standard components and software:

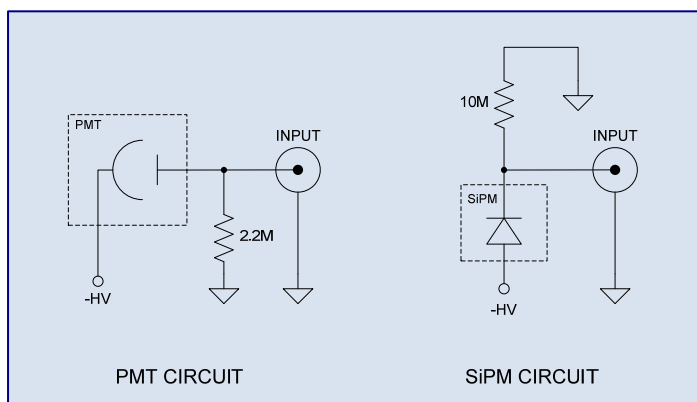
- PhotoniQ Control and Acquisition Interface Software CD-ROM
- DC power supply (+5V, 2A) with power cord
- USB 2.0 cable

Options

The IQSP418 can be ordered with the following hardware options:

- XCH401: 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



Specifications*	
Description	Specification
Number of Channels	2, expandable to 8
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 Bias Current	±40 pA typical, ±150 pA max.
Minimum Event Pair Resolution (MEPR)	6.0 usec max.
Maximum Trigger Rate (MTR)	150 KHz
8 Channel Sustained Average Event Rate (SAER)	150,000 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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PS2716.1.2 Nov 2010

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

Description

The PhotoniQ Model IQSP480 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, 32 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.

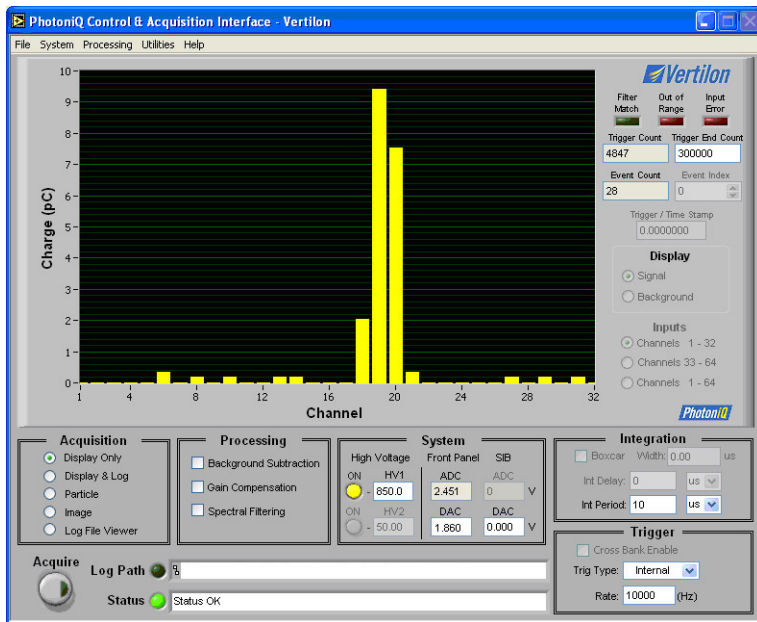
Applications

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



Features

- 32 gated integrator/data acquisition channels
- 96 dB dynamic range (16-bit resolution)
- Particle analysis with 6.0 usec event pair resolution, image acquisition at rates up to 150,000 pixels/sec
- 65,000 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 500,000 or 1,000,000 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 negative 1000V or 1500V high voltage bias supply for PMTs, or negative 100V bias supply for SPMs or APDs



Included Accessories and Software

The IQSP480 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 IQSP480 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 - 500,000 event image buffer
- MEM064: Memory upgrade - 1,000,000 event image buffer

Supported Sensors

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

- Hamamatsu 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

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	32
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)	6.0 usec max.
Maximum Trigger Rate (MTR)	150 KHz
32 Channel Sustained Average Event Rate (SAER)	65,000 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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PS2707.2.9 Mar 2014

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

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.

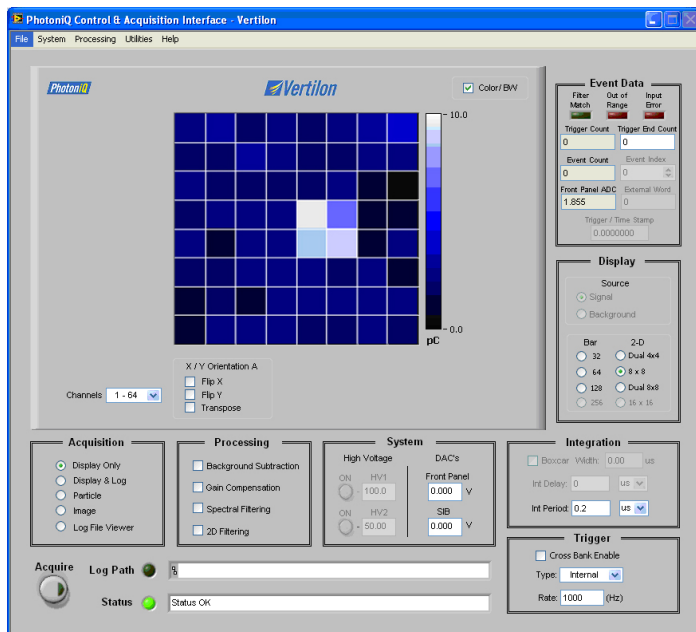
Applications

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

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.

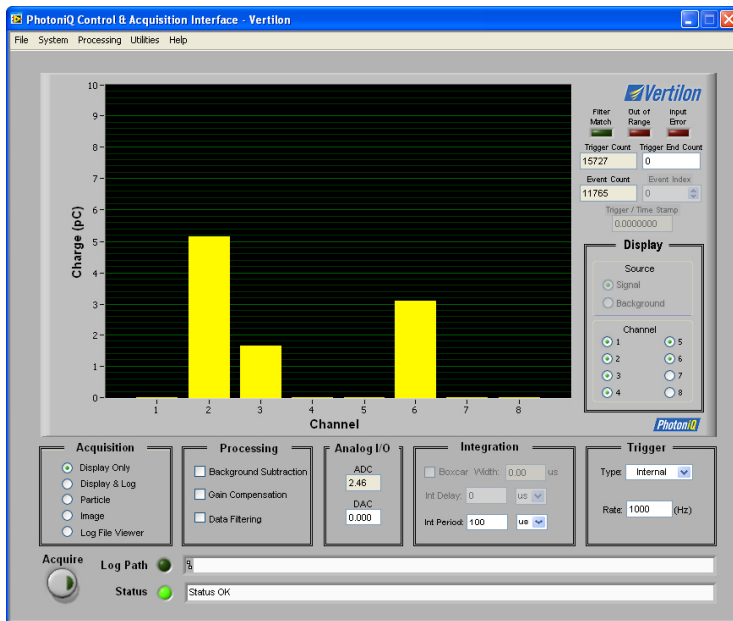
Applications

- 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
- Optional 2,000,000 or 4,000,000 pixel 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
- On board user-programmable general purpose DAC and ADC for detector bias control and monitoring



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
- 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

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:

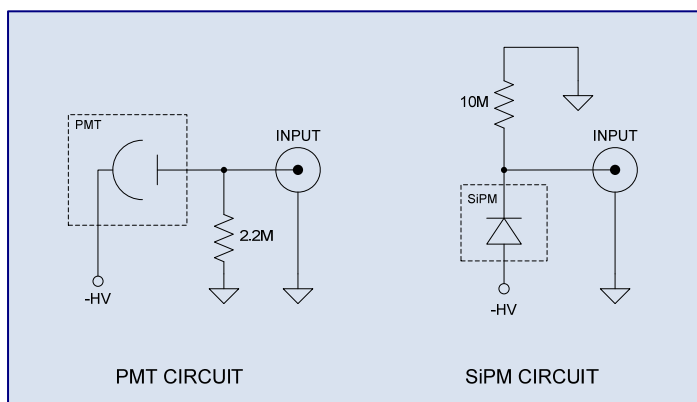
- PhotoniQ Control and Acquisition Interface Software CD-ROM
- DC power supply (+5V, 2A) with power cord
- USB 2.0 cable

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



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

Description

The PhotoniQ Model IQSP580 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, 32 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.

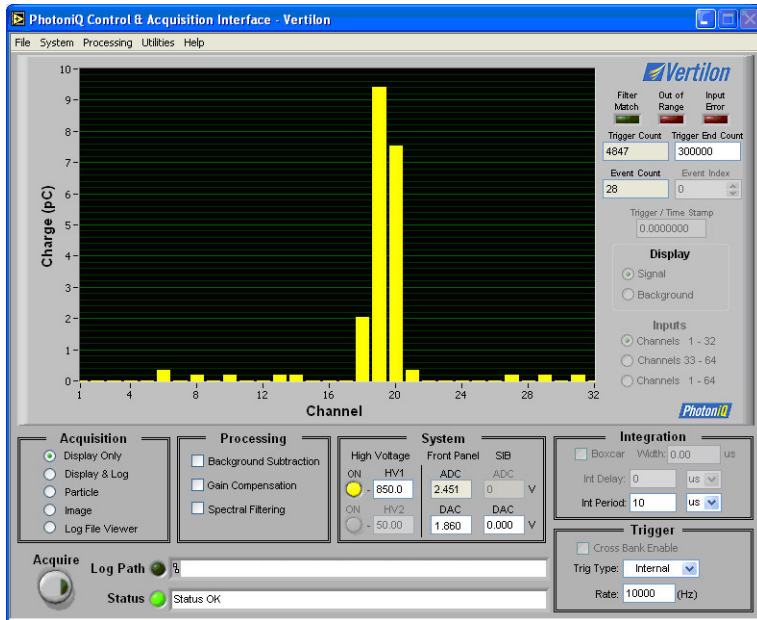
Applications

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



Features

- 32 gated integrator/data acquisition channels
- 84 dB dynamic range (14-bit resolution)
- Particle analysis with 2.5 usec event pair resolution, image acquisition at rates up to 390,000 pixels/sec
- 65,000 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 500,000 or 1,000,000 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 negative 1000V or 1500V high voltage bias supply for PMTs, or negative 100V bias supply 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 DLLs for interface to custom user applications

Included Accessories and Software

The IQSP580 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 IQSP580 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 - 500,000 event image buffer
- MEM064: Memory upgrade - 1,000,000 event image buffer

Supported Sensors

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

- Hamamatsu 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	32
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 Current Range	1 pA to 2 A
Input Bias Current	±40 pA typical, ±150 pA max.
Minimum Event Pair Resolution (MEPR)	2.5 usec max.
Maximum Trigger Rate (MTR)	390 KHz
32 Channel Sustained Average Event Rate (SAER)	65,000 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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PS2708.2.9 Mar 2014

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

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.

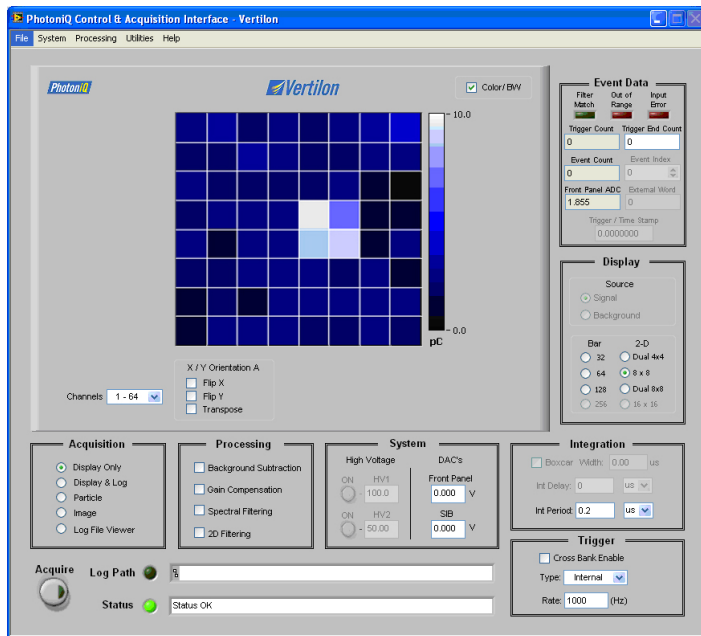
Applications

- 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
- 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 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 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

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
- 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	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 Current Range	1 pA to 2 A
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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Vertilon Corporation, 66 Tadmuck Road, Westford, MA 01886 / Tel: (978) 692-7070 / Fax: (978) 692-7010 / www.vertilon.com

Description

The PhotoniQ Model IQSP584 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, 128 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.

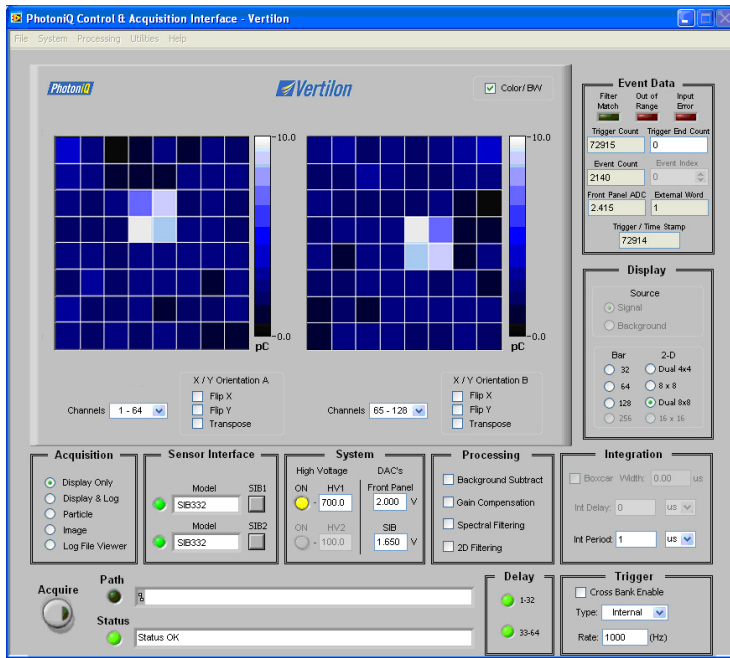
Applications

- 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

- 128 gated integrator/data acquisition channels
- 84 dB dynamic range (14-bit resolution)
- Particle analysis with 6.5 usec event pair resolution, image acquisition at rates up to 140,000 pixels/sec
- 22,000 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 125,000 or 250,000 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 & 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 IQSP584 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 IQSP584 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 - 125,000 event image buffer
- MEM064: Memory upgrade - 250,000 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	128
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)	6.5 usec max.
Maximum Trigger Rate (MTR)	140 KHz
128 Channel Sustained Average Event Rate (SAER)	22,000 events/sec
8 Channel Sustained Average Event Rate (SAER)	240,000 events/sec
Power Consumption	10 Watts typ., 12 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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