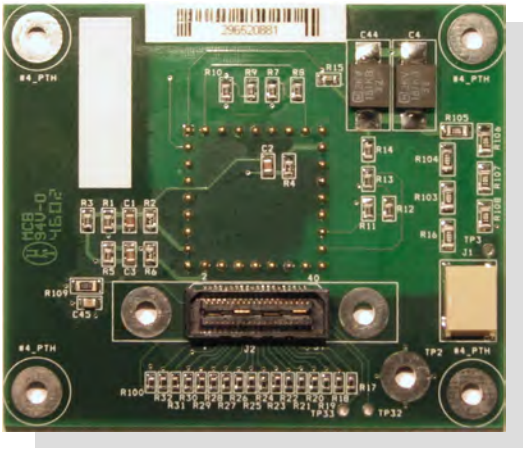
SIB016 PMT Sensor Interface Board R5900U-L16 Series

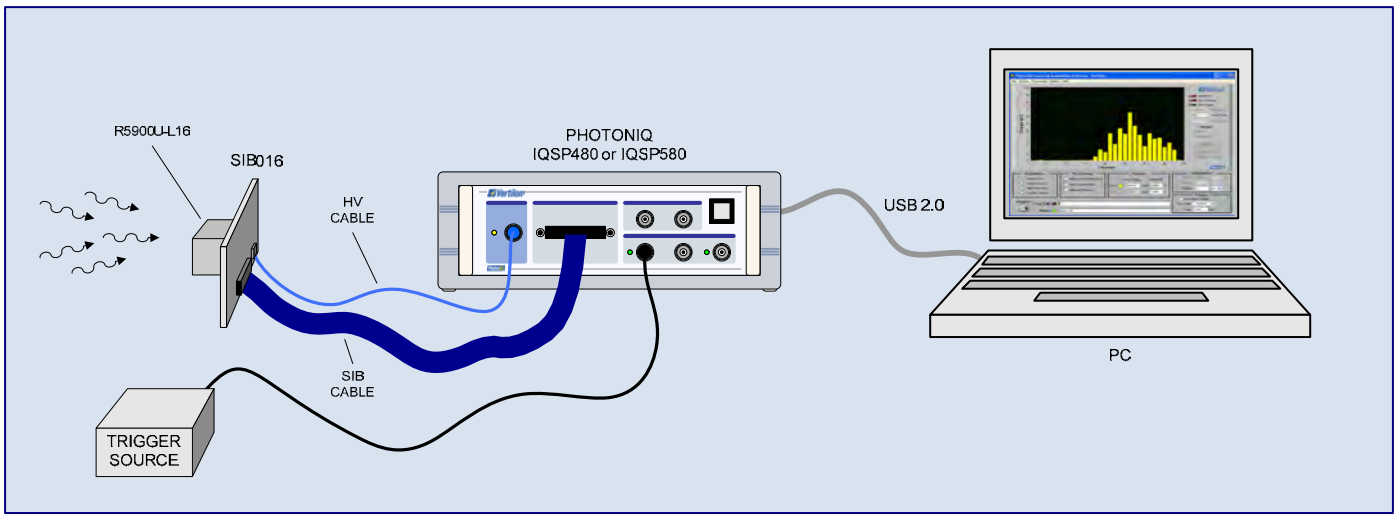
Product Sheet

Description



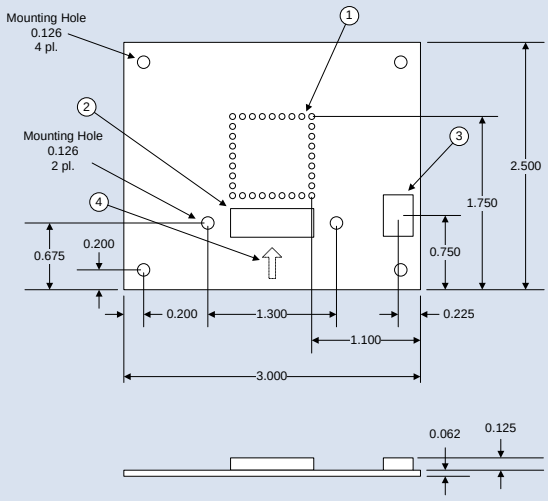
The SIB016 PMT Sensor Interface Board (SIB) provides the electrical and mechanical connectivity between a Hamamatsu R5900U-L16 series 16 channel photomultiplier tube and a Vertilon PhotoniQ multi-channel PMT data acquisition system. The R5900U-L16 mounts directly to the bottom of the SIB016 through 32 socket pins and electrical connections to the 16 PMT outputs are made to the SIB connector located on the top of the board. The SIB connector conforms to Vertilon's standard, low-noise, multi-channel, cable interconnection system. It mates to a micro-coaxial cable assembly that connects the 16 PMT outputs to the PhotoniQ. The high voltage connection to the R5900U-L16 is made through a separate dedicated connector where a high voltage cable connects between it and the high voltage output on the PhotoniQ. A resistor-based PMT dynode biasing chain is also provided on the circuit board.

Typical Setup



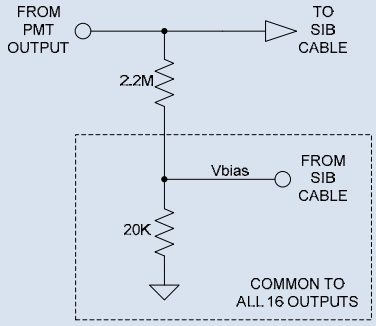
In a typical setup the Hamamatsu R5900U-L16 PMT is plugged into the SIB016 Sensor Interface Board which in turn connects to a Vertilon PhotoniQ IQSP480 or IQSP580 multichannel data acquisition system using a SIB cable. When triggered from an external source, the PhotoniQ integrates and digitizes the 16 charge signals from the R5900U-L16 and outputs a data packet to the PC over a USB connection. The PhotoniQ also supplies the PMT high voltage bias through a specialized high voltage cable.

Mechanical Data

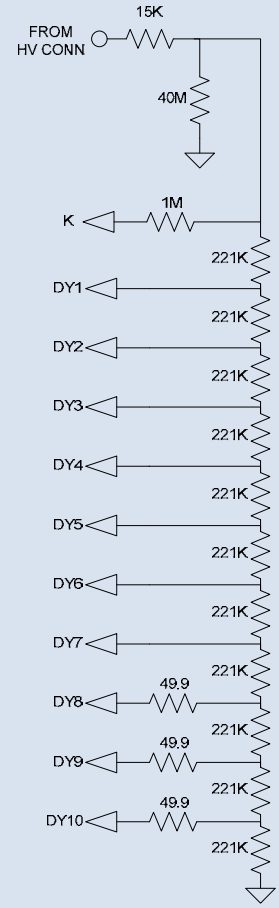


Notes: Item #1 is PMT socket pins. PMT connects to bottom side of PCB.
Item #2 is SIB connector. Height is 0.380" with cable installed.
Item #3 is high voltage cable connector.
Item #4 indicates cable entry direction.
All dimensions in inches.

Electrical Data



PMT OUTPUT CIRCUIT



HIGH VOLTAGE INPUT CIRCUIT

General Safety Precautions

Warning: HIGH VOLTAGES – Voltages can exceed 2000V

Operate device within specified range

Electrostatic discharge sensitive

Do not operate in wet, damp or explosive atmosphere

See R5900U-L16 data sheet for specific handling information

PS2703.2.6 Jan 2010

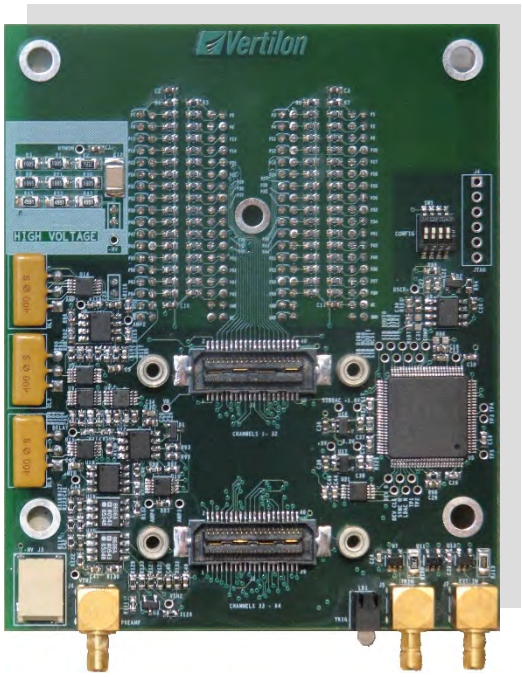
Vertilon Corporation, 66 Tadmuck Road, Westford, MA 01886 / Tel: (978) 692-7070 / Fax: (978) 692-7010 / www.vertilon.com

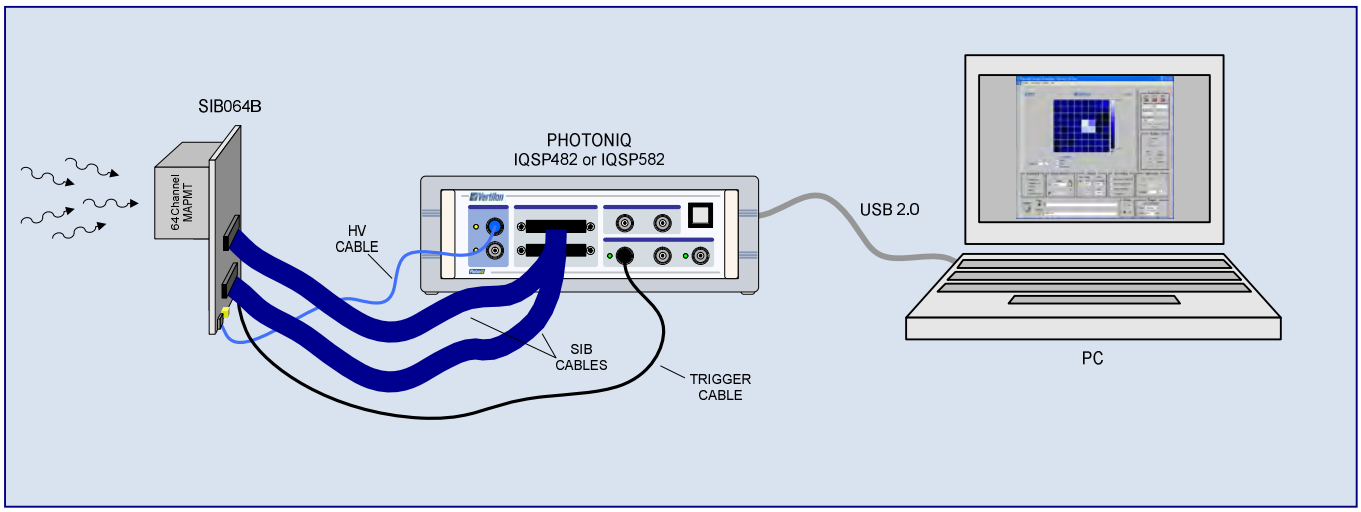
SIB064B Sensor Interface Board for Hamamatsu 64 Channel MAPMTs

Product Sheet

Product Overview

- Interface board for Hamamatsu 64 Channel MAPMTs
- Compatible with Hamamatsu H12700, H10966, and H8500
- Provides 64 channel interface to data acquisition systems
- Separate high voltage input for PMT cathode bias
- High speed preamplifier for last dynode output
- Leading edge and zero slope discriminators
- Adjustable discriminator gain and energy threshold
- 100% compatible with Vertilon's PhotoniQ multichannel DAQs
- No external power supply required
- Simplified control through PhotoniQ graphical user interface





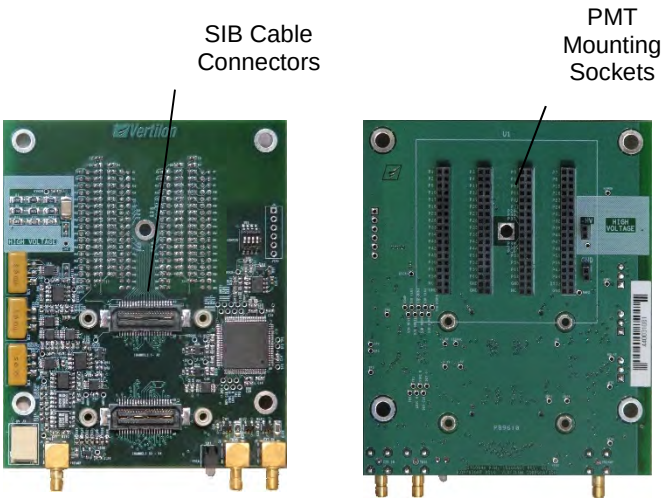
Typical Setup

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

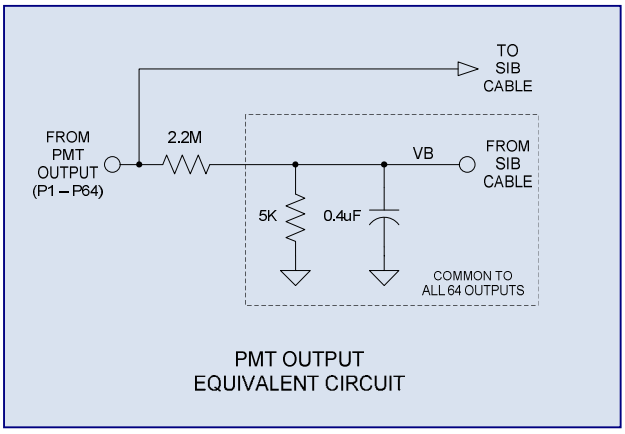
SIB064B Sensor Interface Board for Hamamatsu 64 Channel MAPMTs *Product Sheet*

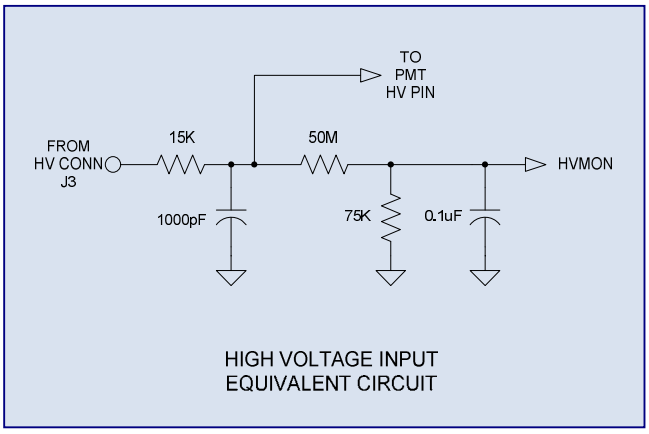
Description

The SIB064B multianode photomultiplier tube interface board provides the mechanical and electrical connectivity between Hamamatsu 64 channel MAPMTs and external signal processing electronics such as Vertilon's PhotoniQ multichannel data acquisition systems. The PMT is mounted to the bottom side of the SIB064B through 148 socket pins that connect the device's 64 anode signals, high voltage input, and last dynode output to the board. The anode signals are routed to two connectors located on the top of the board that each connect to a specialized high density coaxial cable assembly. This arrangement allows the SIB064B to be conveniently mounted directly into the user's optical setup with the PMT facing outward from the bottom of the board and the sensor interface board (SIB) cables exiting from the top. The SIB cables carry the 64 anodes from the PMT to the PhotoniQ where the charge from each is separately integrated, digitized, and sent to a PC for display or further signal processing. The negative high voltage bias to the PMT's cathode is supplied directly from the PhotoniQ on a high voltage cable to a dedicated connector on the SIB064B. For applications utilizing the last dynode output of the MAPMT, the SIB064B includes a two stage high speed preamplifier whose output is available on an SMB connector. When specialized timing and triggering are required, this output can be connected to a separate external discriminator and triggering electronics. Alternatively, for more general purpose applications when the trigger requirements are not as stringent, one of the two on-board discriminators can be used. A leading edge and zero slope discriminator — which respectively generate trigger signals based on a threshold and pulse peak — are available to the user. Several adjustments are included for optimizing preamp gain, discriminator gain, and discriminator energy thresholds. The full functionality and operation of the SIB064B is conveniently controlled through the PhotoniQ's graphical user interface. Intelligent software in the PhotoniQ constantly monitors the status of its SIB connectors to determine the type of sensor interface board attached to them. Once recognized, a dialog box specific to the recognized SIB is made available in the GUI through which the user has complete control over its operation.

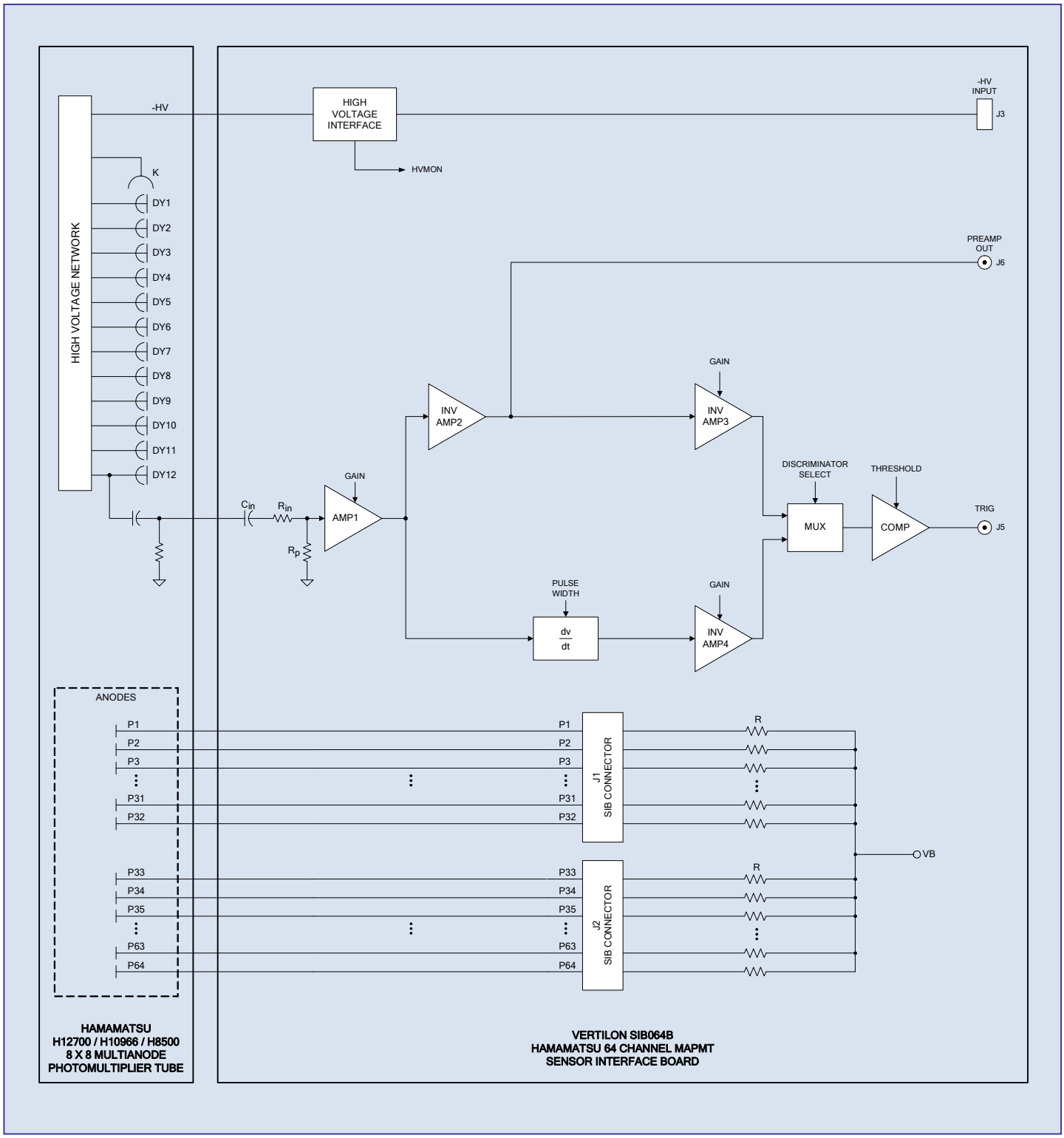


Electrical Interface Circuits



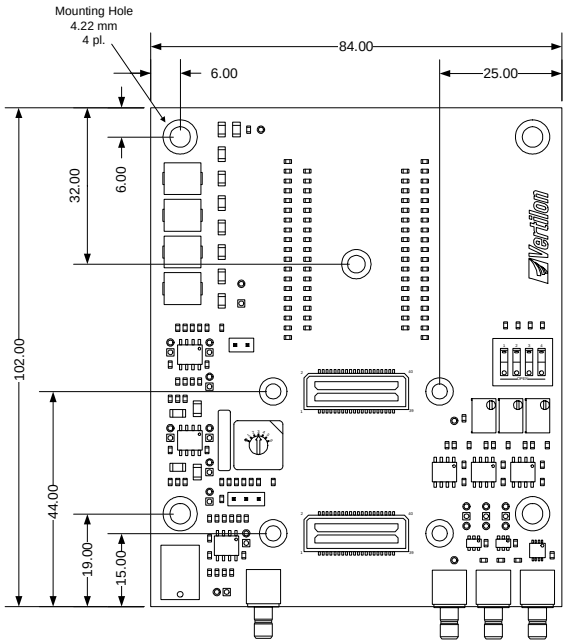


Functional Block Diagram



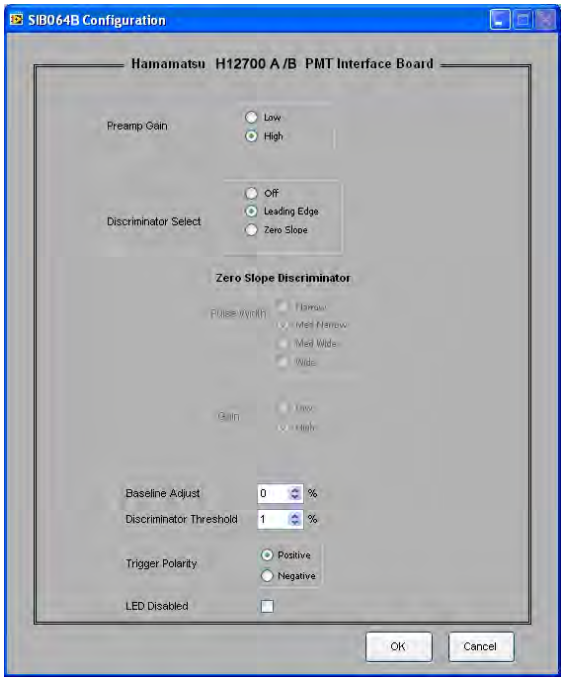
SIB064B Sensor Interface Board for Hamamatsu 64 Channel MAPMTs *Product Sheet*

Mechanical Data



ALL DIMENSIONS IN MILLIMETER

Configuration Dialog Box



Specifications	
Description	**Specification**
Number of Anode Circuits	64
Last Dynode Preamplifier Gain	10 dB, inverting
Leading Edge Discriminator Time Delay	10 nsec
Zero Slope Discriminator Time Delay	35 nsec
Zero Slope Discriminator Time Walk Input Signal Range: 10 - 80mV	8 nsec
Discriminator Jitter	<500 psec
Supply Voltage	+5.0 V
Supply Current	+75 mA
Width	84 mm
Length	102 mm
Height	1.57 mm (PCB thickness only)

Ordering Information

Includes two SMB120 coaxial cables, SMB plug to BNC plug, 120 cm.

Sensor interface board (SIB) cables ordered separately. Specify part number SBCxxx, where “xxx” equals length in centimeter.

Order PhotoniQ data acquisition system separately. SIB064B directly compatible with Vertilon IQSP482 and IQSP582 64 channel data acquisition systems. See PhotoniQ User Manual for performance specifications.

High voltage cable not included with SIB064B. Included with high voltage power supply option HVPS001 or HVPS002 for IQSP482 / IQSP582.

See SIB064B User Guide for complete specification.

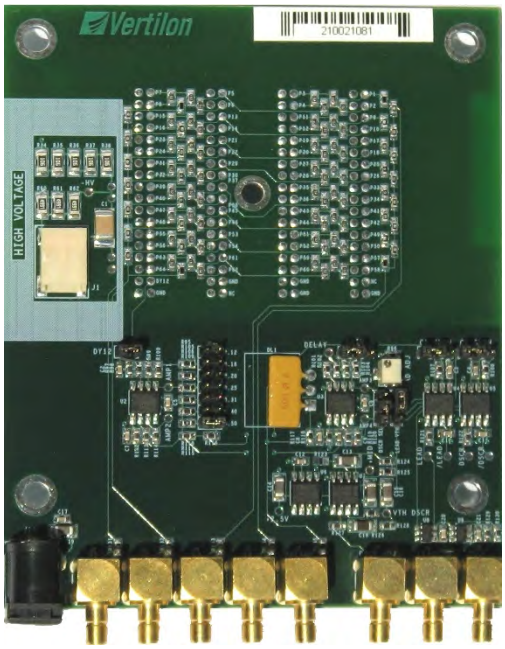
Vertilon

PS2737.1.1 Jul 2018

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

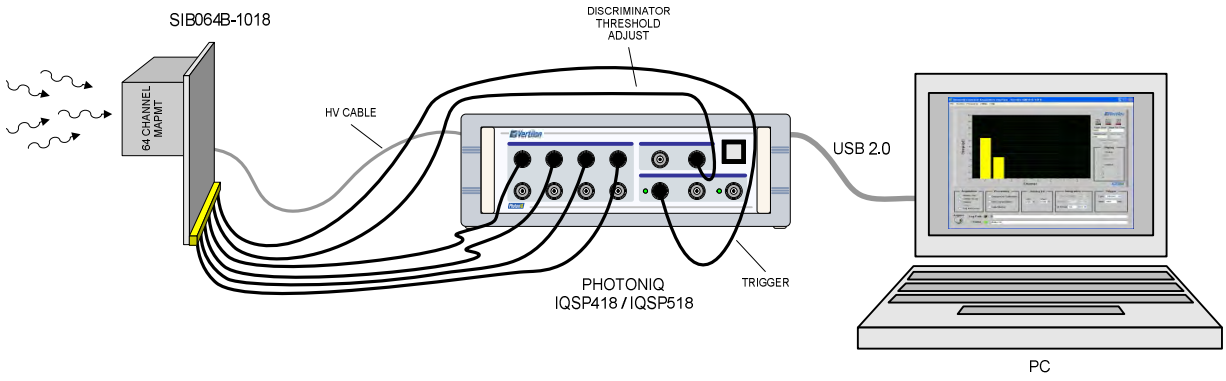
SIB064B-1018 Sensor Interface Board for Hamamatsu 64 Channel MAPMTs Product Sheet

Description

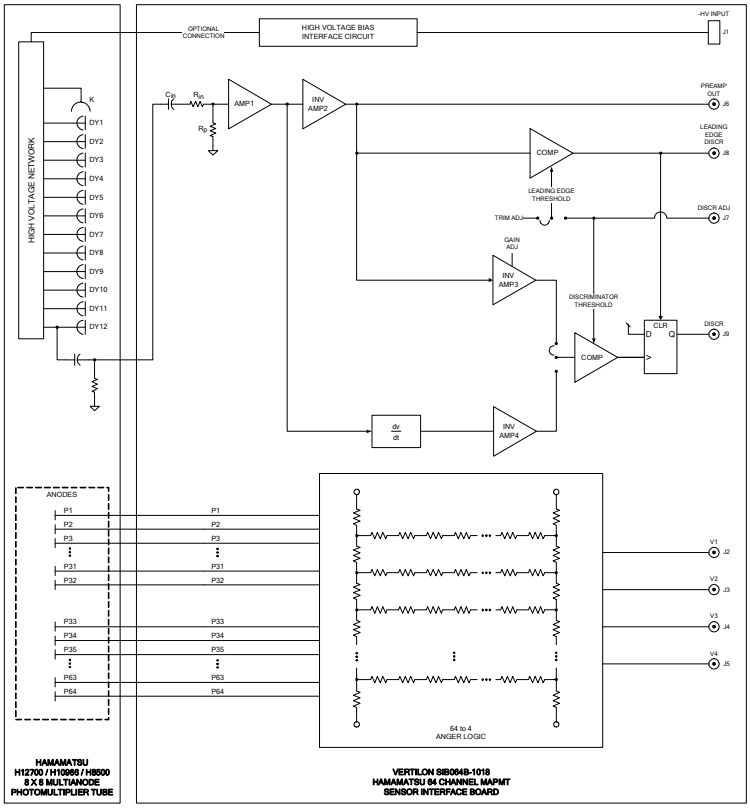


The SIB064B-1018 multianode photomultiplier tube interface board provides the mechanical and electrical connectivity between Hamamatsu's 64 channel MAPMTs and external signal processing electronics such as Vertilon's PhotoniQ multichannel data acquisition systems. The product is fully compatible with the Hamamatsu H12700, H10966, and H8500. The MAPMT is mounted to the bottom side of the SIB064B-1018 through 144 socket pins that connect the PMT's 64 anode signals and last dynode output to the board. The anode signals are routed to an on-board resistive anger logic circuit that generates four anger signal outputs. These outputs connect using four coaxial cables to Vertilon's PhotoniQ IQSP418 or IQSP518 multichannel data acquisition system where the charge from each is separately integrated, digitized, and sent to a PC for display or further signal processing. For applications utilizing the last dynode output of the MAPMT, the SIB064B-1018 includes a two stage high speed preamplifier whose output is available on an SMB connector. One of two on-board discriminators can be used with the last dynode signal to generate a trigger to the data acquisition system or other external electronics. The outputs from a leading edge and zero slope discriminator — which respectively generate trigger signals based on threshold and pulse peak — are available on SMB connectors. Several user adjustments are included for optimizing system gain and trigger thresholds for the discriminators. When using an H12700A, H10966A, or H8500C MAPMT, the negative high voltage bias to the PMT's cathode is supplied through its high voltage cable. This cable is compatible with the high voltage SHV output from the PhotoniQ. Alternatively, when using an H12700B, H10966B, or H8500D` MAPMT, four optional socket pins can be added to the board for direct connection of the PMTs high voltage input. In this case, the high voltage bias is supplied through the SIB064B-1018 on a specialized cable from the PhotoniQ.

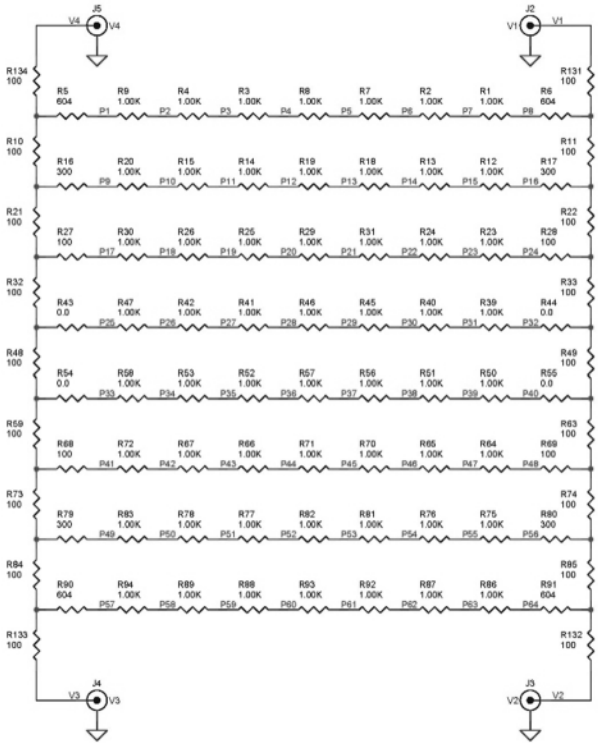
Typical Setup



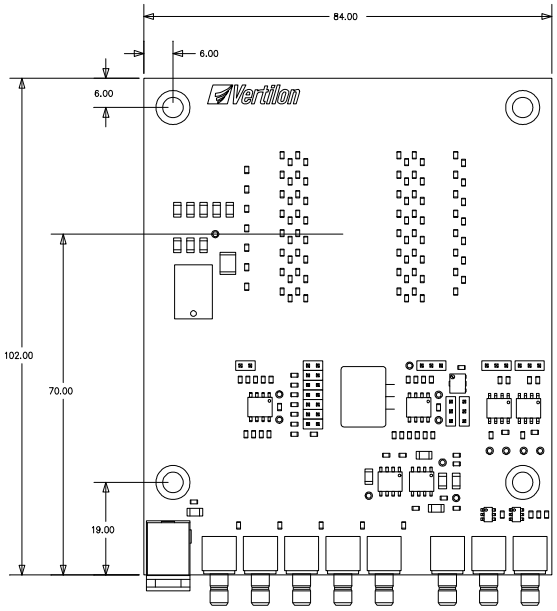
Functional Block Diagram



Anger Logic Circuit



Mechanical Data



ALL DIMENSIONS IN MILLIMETER

Ordering Information

SIB064B-1018 is directly compatible with Vertilon PhotoniQ IQSP418 / IQSP518 expandable charge integrating data acquisition systems. PhotoniQ systems sold separately. See PhotoniQ User Manual for performance specifications.

SIB064B-1018 includes power supply and six SMB120 coaxial cables, SMB plug to BNC plug, 120 cm.

See SIB064B-1018 User Guide for complete specification.

See Hamamatsu H12700, H10966, and H8500 datasheets for specific device information.

Vertilon

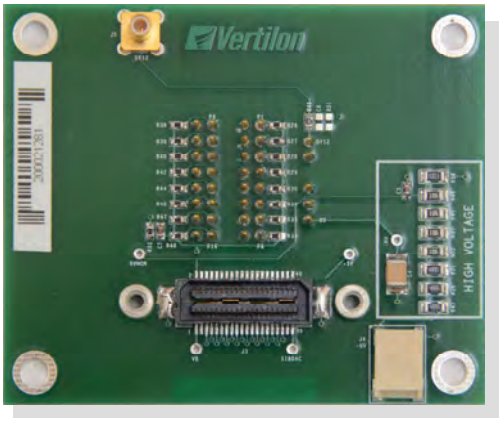
PS2738.1.1 Jul 2018

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

SIB116A PMT Sensor Interface Board H8711 Series

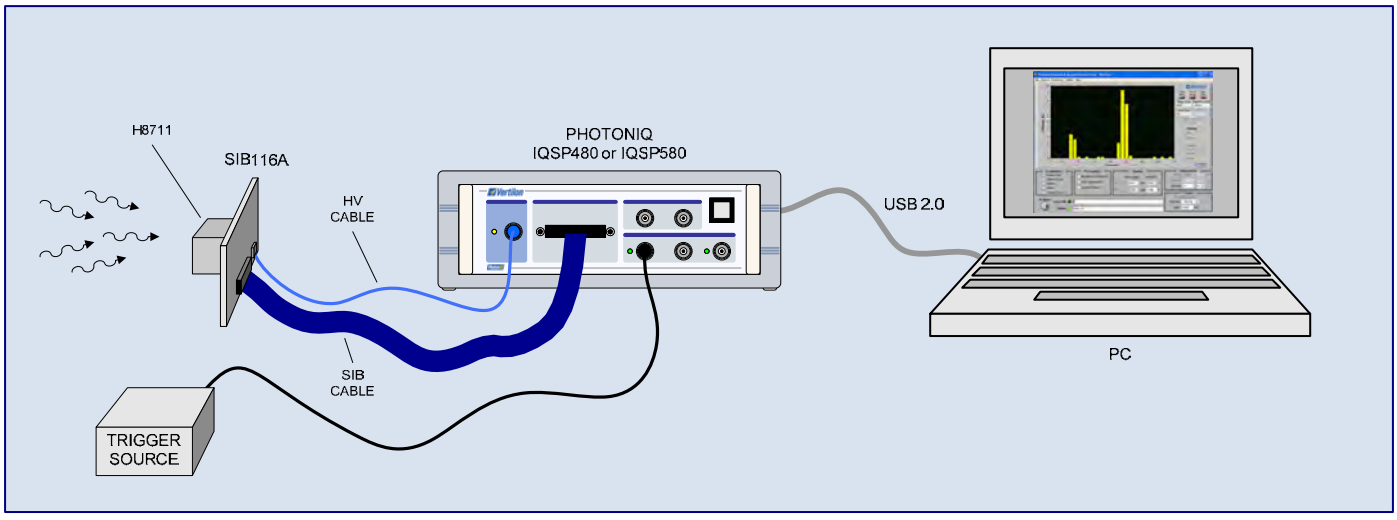
Product Sheet

Description



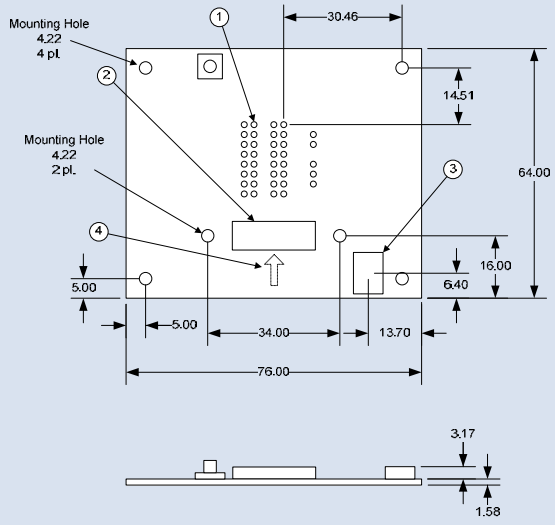
The SIB116A PMT Sensor Interface Board (SIB) provides the electrical and mechanical connectivity between a Hamamatsu H8711 series 16 channel photomultiplier tube and a Vertilon PhotoniQ multi-channel PMT data acquisition system. The H8711 mounts directly to the bottom of the SIB116A through 37 socket pins and electrical connections to the 16 PMT outputs are made to the SIB connector located on the top of the board. The SIB connector conforms to Vertilon's standard, low-noise, multi-channel, cable interconnection system. It mates to a micro-coaxial cable assembly that connects the 16 PMT outputs to the PhotoniQ. The high voltage connection to the H8711 is made through a separate dedicated connector where a high voltage cable connects between it and the high voltage output on the PhotoniQ. For timing applications, a direct connection to the last dynode output from the PMT is available on the SIB116A.

Typical Setup



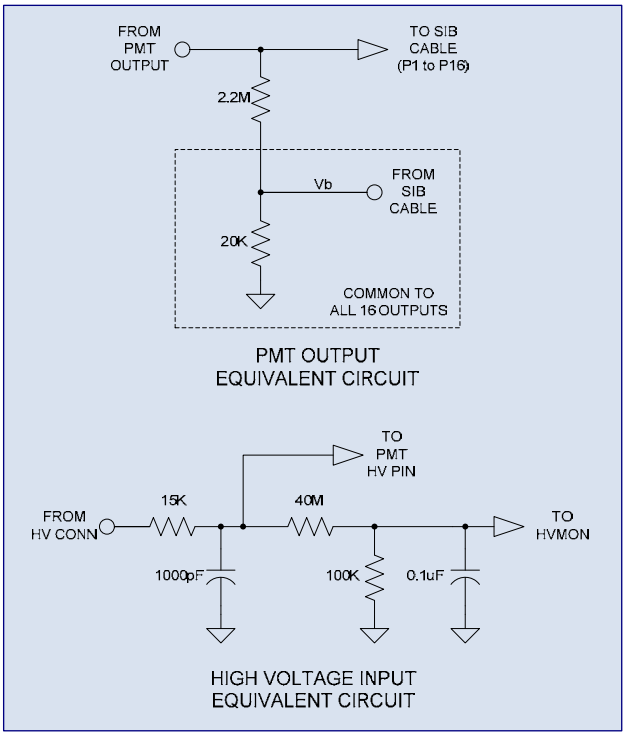
In a typical setup the Hamamatsu H8711 PMT is plugged into the SIB116A Sensor Interface Board which in turn connects to a Vertilon PhotoniQ IQSP480 or IQSP580 multichannel data acquisition system using a SIB cable. When triggered from an external source, the PhotoniQ integrates and digitizes the 16 charge signals from the H8711 and outputs a data packet to the PC over a USB connection. The PhotoniQ also supplies the PMT high voltage bias through a specialized high voltage cable.

Mechanical Data



Notes: Item #1 is PMT socket pins. PMT connects to bottom side of PCB.
Item #2 is SIB connector. Height is 9.7mm with cable installed.
Item #3 is high voltage cable connector.
Item #4 indicates cable entry direction.
All dimensions in millimeters.

Electrical Data



General Safety Precautions

Warning: HIGH VOLTAGES – Voltages can exceed 2000V

Operate device within specified range

Electrostatic discharge sensitive

Do not operate in wet, damp or explosive atmosphere

See Hamamatsu H8711 data sheet for specific handling information

SIB Connector Pinout

#	NAME		#	NAME
1	VB		2	HVMON
3	SIB_DIN		4	SIB_CLK
5	P16		6	N/C
7	P15		8	N/C
9	P14		10	N/C
11	P13		12	N/C
13	P12		14	N/C
15	P11		16	N/C
17	P10		18	N/C
19	P9		20	N/C
21	P8		22	N/C
23	P7		24	N/C
25	P6		26	N/C
27	P5		28	N/C
29	P4		30	N/C
31	P3		32	N/C
33	P2		34	N/C
35	P1		36	N/C
37	SIB_DOUT		38	SIB_NCS
39	SIBDAC		40	+5V

Pins 2, 3, 4, 37, 38, 39 and 40 reserved for PhotoniQ and should be left unconnected if PhotoniQ is not used

Pin 1 grounded when not connected to a PhotoniQ

Ground supplied through SIB cable shielding

Vertilon

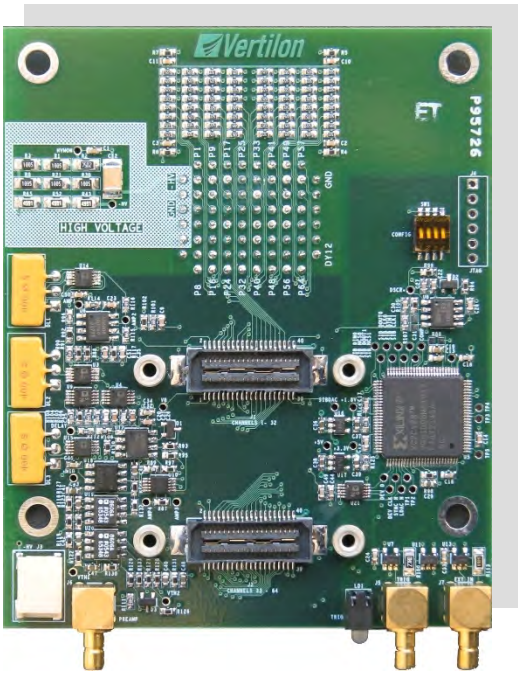
PS2727.1.0 Jun 2012

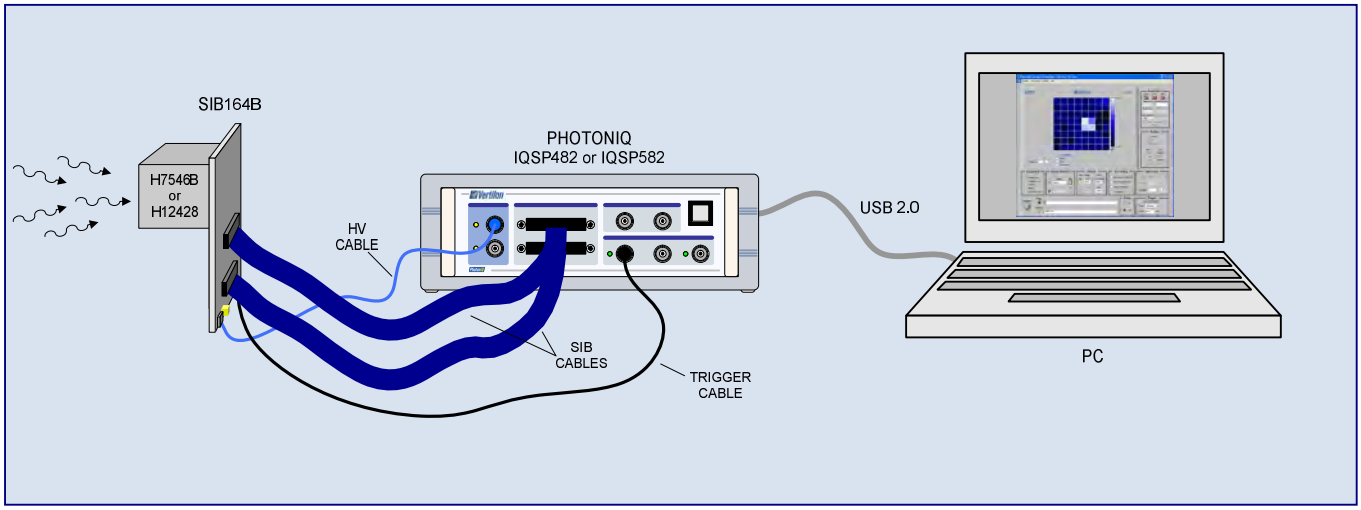
Vertilon Corporation, 66 Tadmuck Road, Westford, MA 01886 / Tel: (978) 692-7070 / Fax: (978) 692-7010 / www.vertilon.com

SIB164B Sensor Interface Board for Hamamatsu H7546B / H12428 Series *Product Sheet*

Product Overview

- Interface board for Hamamatsu H7546B & H12428 MAPMTs
- Provides 64 channel interface to data acquisition systems
- Separate high voltage input for PMT cathode bias
- High speed preamplifier for last dynode output
- Leading edge and zero slope discriminators
- Adjustable discriminator gain and energy threshold
- 100% compatible with Vertilon's PhotoniQ multichannel DAQs
- No external power supply required
- Simplified control through PhotoniQ graphical user interface





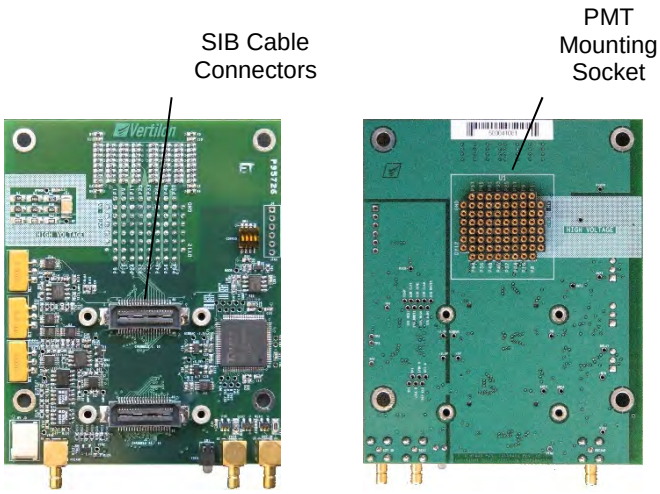
Typical Setup

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

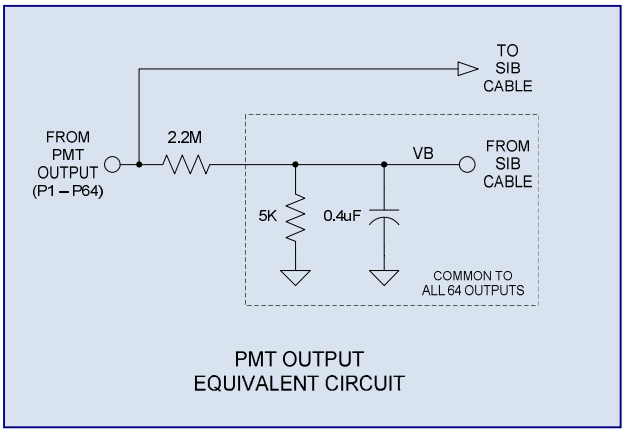
SIB164B Sensor Interface Board for Hamamatsu H7546B / H12428 Series *Product Sheet*

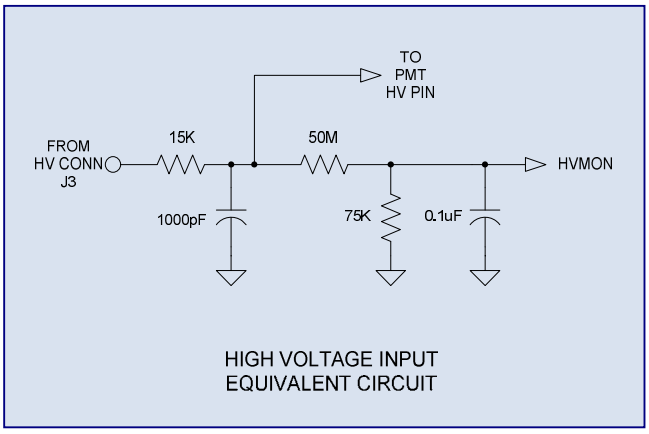
Description

The SIB164B multianode photomultiplier tube interface board provides the mechanical and electrical connectivity between the Hamamatsu H7546B and H12428 64 anode PMTs and external signal processing electronics such as Vertilon's PhotoniQ multichannel data acquisition systems. The PMT is mounted to the bottom side of the SIB164B through 76 socket pins that connect the device's 64 anode signals, high voltage input, and last dynode output to the board. The anode signals are routed to two connectors located on the top of the board that each connect to a specialized high density coaxial cable assembly. This arrangement allows the SIB164B to be conveniently mounted directly into the user's optical setup with the PMT facing outward from the bottom of the board and the sensor interface board (SIB) cables exiting from the top. The SIB cables carry the 64 anodes from the PMT to the PhotoniQ where the charge from each is separately integrated, digitized, and sent to a PC for display or further signal processing. The negative high voltage bias to the PMT's cathode is supplied directly from the PhotoniQ on a high voltage cable to a dedicated connector on the SIB164B. For applications utilizing the last dynode output of the H7546B or H12428, the SIB164B includes a two stage high speed preamplifier whose output is available on an SMB connector. When specialized timing and triggering are required, this output can be connected to a separate external discriminator and triggering electronics. Alternatively, for more general purpose applications when the trigger requirements are not as stringent, one of the two on-board discriminators can be used. A leading edge and zero slope discriminator — which respectively generate trigger signals based on a threshold and pulse peak — are available to the user. Several adjustments are included for optimizing preamp gain, discriminator gain, and discriminator energy thresholds. The full functionality and operation of the SIB164B is conveniently controlled through the PhotoniQ's graphical user interface. Intelligent software in the PhotoniQ constantly monitors the status of its SIB connectors to determine the type of sensor interface board attached to them. Once recognized, a dialog box specific to the recognized SIB is made available in the GUI through which the user has complete control over its operation.

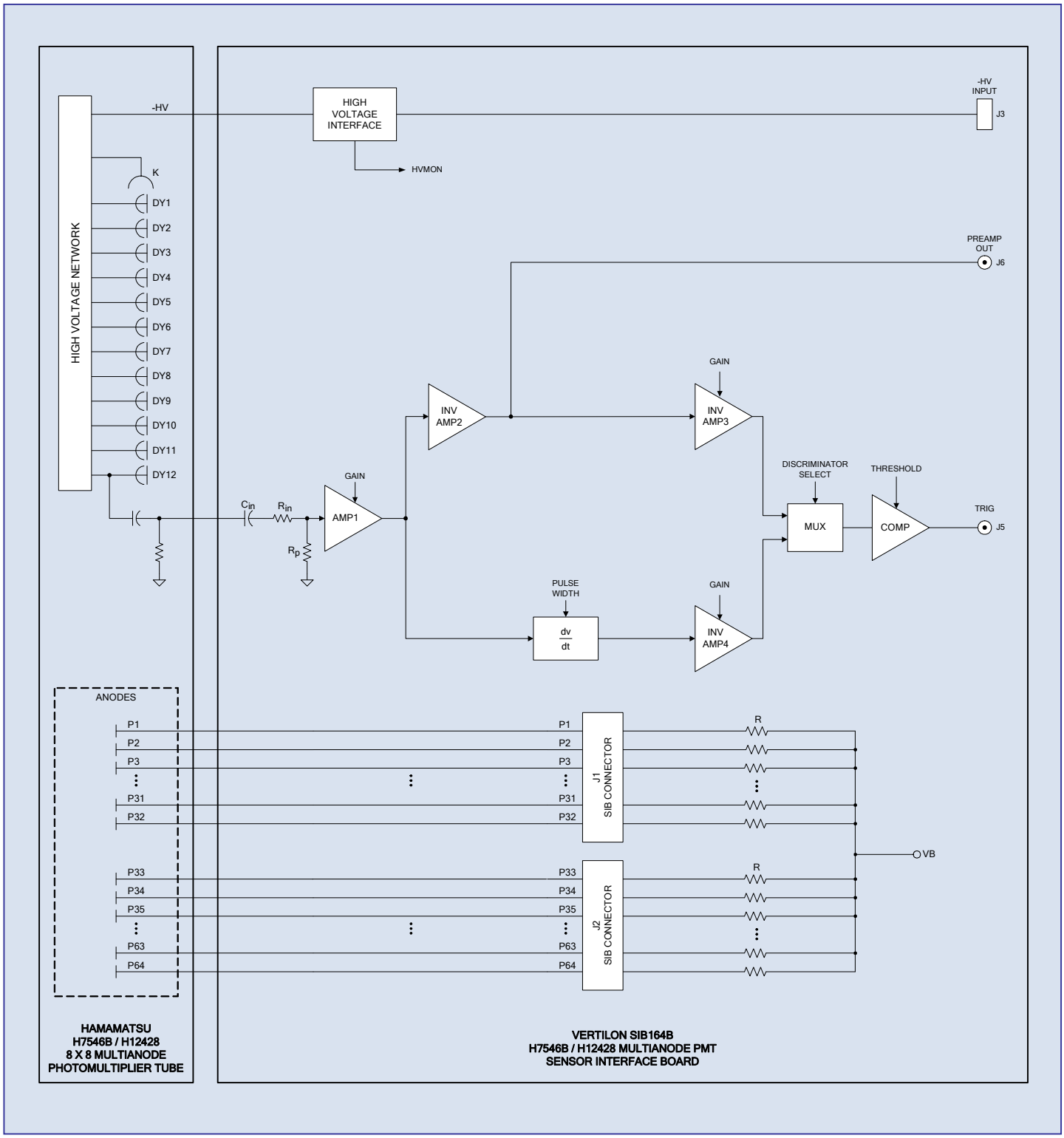


Electrical Interface Circuits



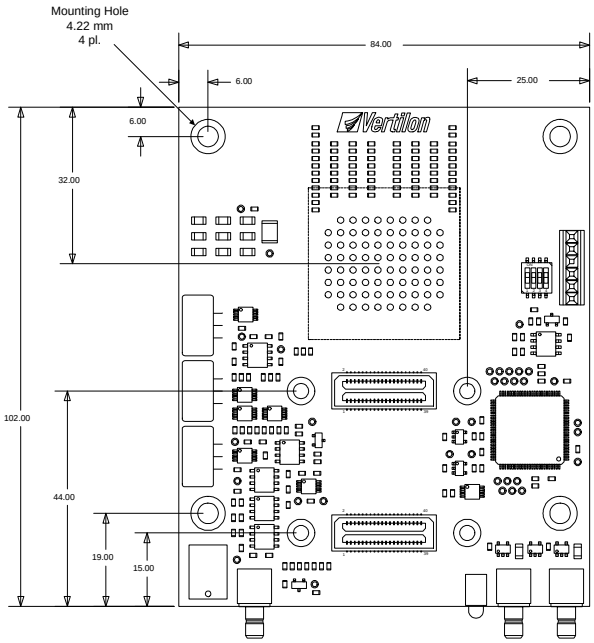


Functional Block Diagram



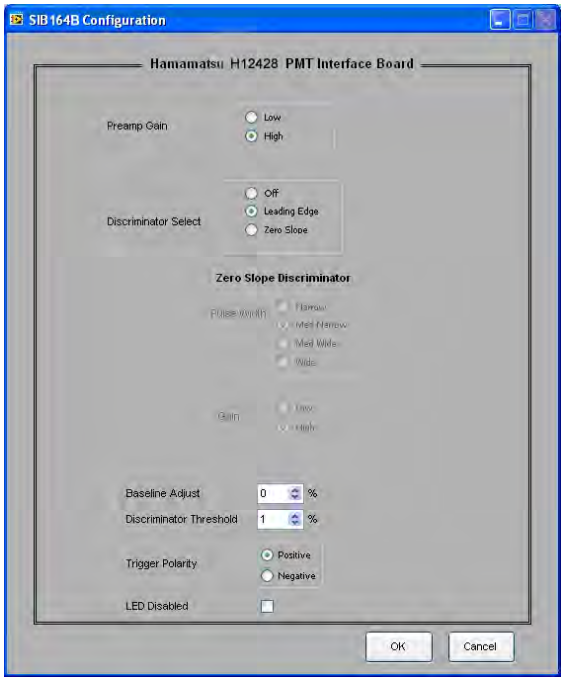
SIB164B Sensor Interface Board for Hamamatsu H7546B / H12428 Series *Product Sheet*

Mechanical Data



ALL DIMENSIONS IN MILLIMETER

Configuration Dialog Box



Specifications	
Description	**Specification**
Number of Anode Circuits	64
Last Dynode Preamplifier Gain	10 dB, inverting
Leading Edge Discriminator Time Delay	10 nsec
Zero Slope Discriminator Time Walk (Input Signal Range: 10 - 80mV)	5 nsec
Discriminator Jitter	<500 psec
Supply Voltage	+5.0 V
Supply Current	+75 mA
Width	84 mm
Length	102 mm
Height	1.57 mm (PCB thickness only)

Ordering Information

Includes two SMB120 coaxial cables, SMB plug to BNC plug, 120 cm.

Sensor interface board (SIB) cables ordered separately. Specify part number SBCxxx, where “xxx” equals length in centimeter.

Order PhotoniQ data acquisition system separately. SIB164B directly compatible with Vertilon IQSP482 and IQSP582 64 channel data acquisition systems. See PhotoniQ User Manual for performance specifications.

High voltage cable not included with SIB164B. Included with high voltage power supply option HVPS001 or HVPS002 for IQSP482 / IQSP582.

See SIB164B User Guide for complete specification.

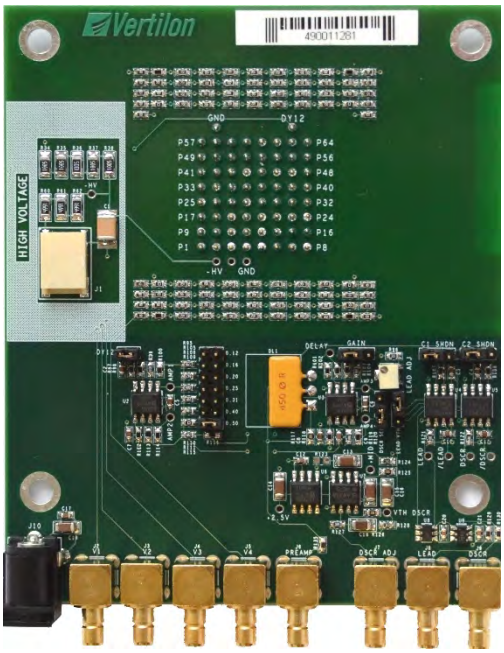
Vertilon

PS2739.1.1. Jul 2018

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

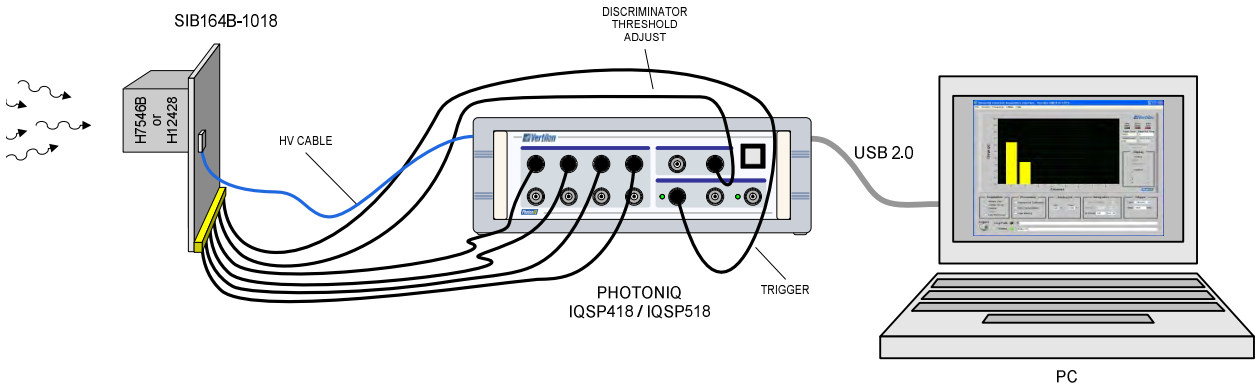
SIB164B-1018 Sensor Interface Board for Hamamatsu H7546B / H12428 MAPMT *Product Sheet*

Description



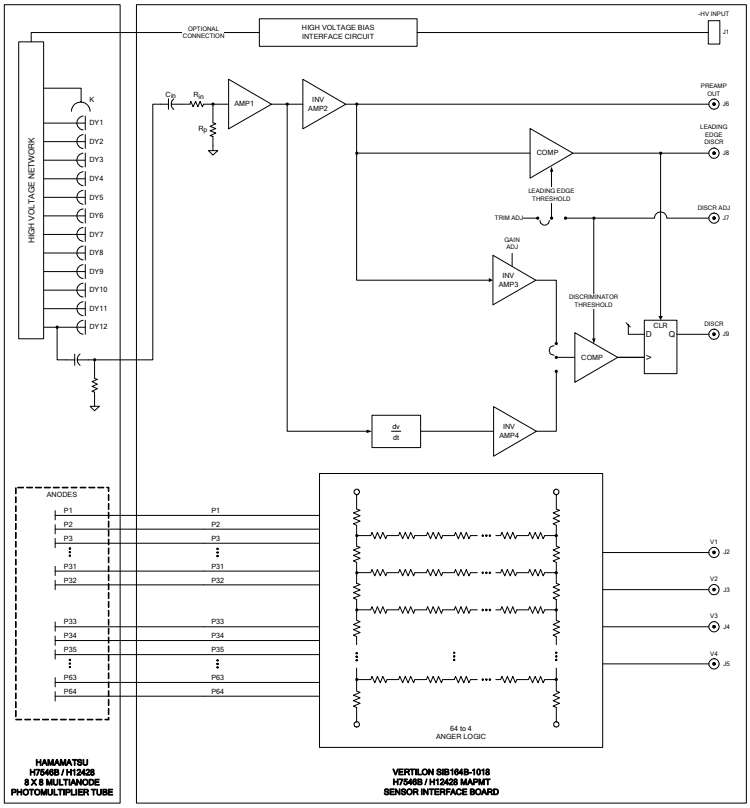
The SIB164B-1018 multianode photomultiplier tube interface board provides the mechanical and electrical connectivity between the Hamamatsu H7546B and H12428 64 anode PMTs and external signal processing electronics such as Vertilon's PhotoniQ multichannel data acquisition systems. The H7546B or H12428 is mounted to the bottom side of the SIB164B-1018 through 66 socket pins that connect the PMT's 64 anode signals, last dynode output, and high voltage input to the board. The high voltage bias to the MAPMT is supplied through the SIB164B-1018 on a specialized cable from the PhotoniQ. The anode signals are routed to an on-board resistive anger logic circuit that generates four anger signal outputs. These outputs connect using four coaxial cables to Vertilon's PhotoniQ IQSP418 or IQSP518 multichannel data acquisition system where the charge from each is separately integrated, digitized, and sent to a PC for display or further signal processing. For applications utilizing the last dynode output of the H7546B or H12428, the SIB164B-1018 includes a two stage high speed preamplifier whose output is available on an SMB connector. One of two on-board discriminators can be used with the last dynode signal to generate a trigger to the data acquisition system or other external electronics. The outputs from a leading edge and zero slope discriminator — which respectively generate trigger signals based on threshold and pulse peak — are available on SMB connectors. Several user adjustments are included for optimizing system gain and trigger thresholds for the discriminators.

Typical Setup

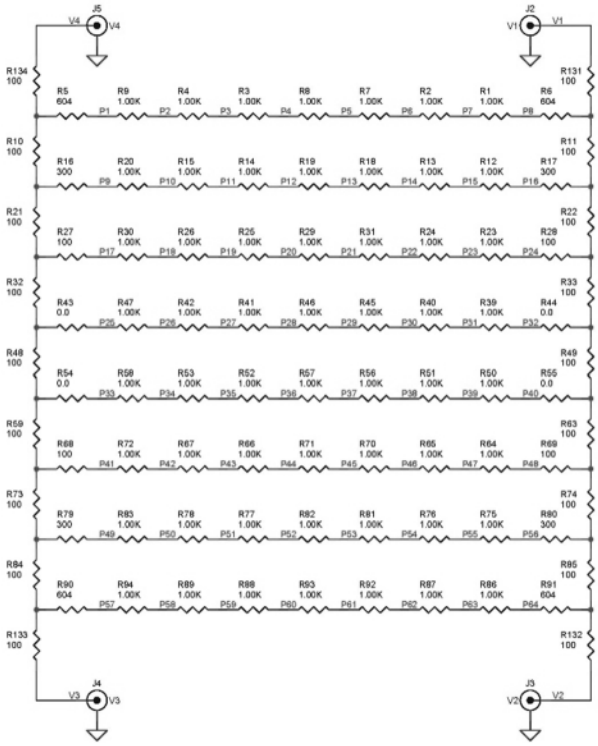


SIB164B-1018 Sensor Interface Board for Hamamatsu H7546B / H12428 MAPMT *Product Sheet*

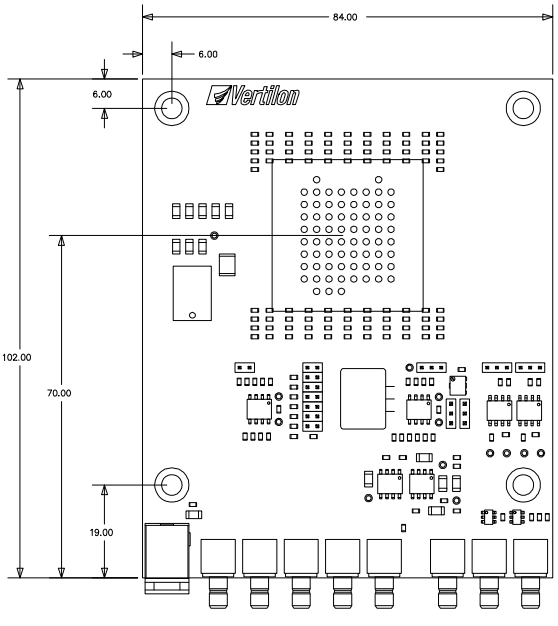
Functional Block Diagram



Anger Logic Circuit



Mechanical Data



ALL DIMENSIONS IN MILLIMETER

Ordering Information

SIB164B-1018 is directly compatible with Vertilon PhotoniQ IQSP418 / IQSP518 expandable charge integrating data acquisition systems. PhotoniQ systems sold separately. See PhotoniQ User Manual for performance specifications.

SIB164B-1018 includes power supply and six SMB120 coaxial cables, SMB plug to BNC plug, 120 cm.

See SIB164B-1018 User Guide for complete specification.

See Hamamatsu H7546B and H12428 datasheets for specific device information

Vertilon

PS2740.1.1 Jul 2018

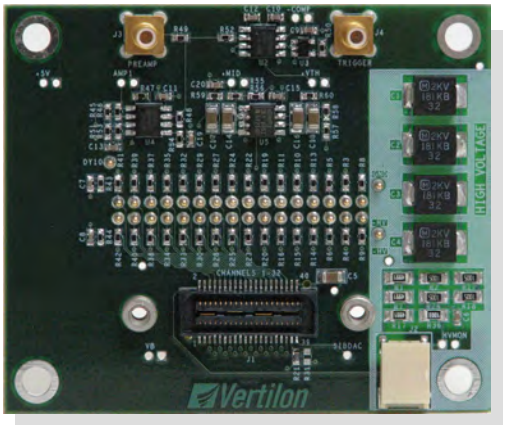
Vertilon Corporation, 66 Tadmuck Road, Westford, MA 01886 / Tel: (978) 692-7070 / Fax: (978) 692-7010 / www.vertilon.com

SIB232 PMT Sensor Interface Board H7260 Series

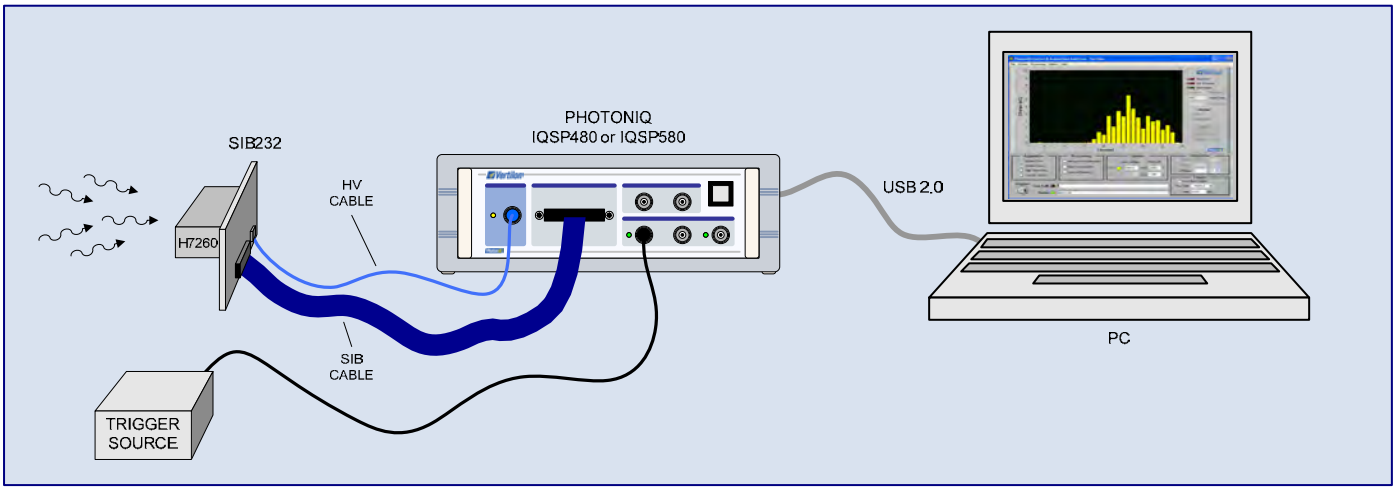
Product Sheet

Description

The SIB232 PMT Sensor Interface Board (SIB) provides the electrical and mechanical connectivity between a Hamamatsu H7260 series linear 32 channel photomultiplier tube and a Vertilon PhotoniQ multi-channel data acquisition system. The H7260 mounts directly to the bottom of the SIB232 through 35 socket pins where electrical connections to the 32 PMT outputs are made to the SIB connector located on the top of the board. The SIB connector conforms to Vertilon's standard, low-noise, multi-channel, cable interconnection system. It mates to a micro-coaxial cable assembly that connects the PMT outputs to the PhotoniQ. The negative bias to the H7260 is supplied from the high voltage output on the PhotoniQ through a high voltage cable to a dedicated connector on the SIB232. Also available on the SIB232 are two outputs that are used in conjunction with the PMT's last dynode signal — an amplified version of the signal and a pulse discriminator trigger output.

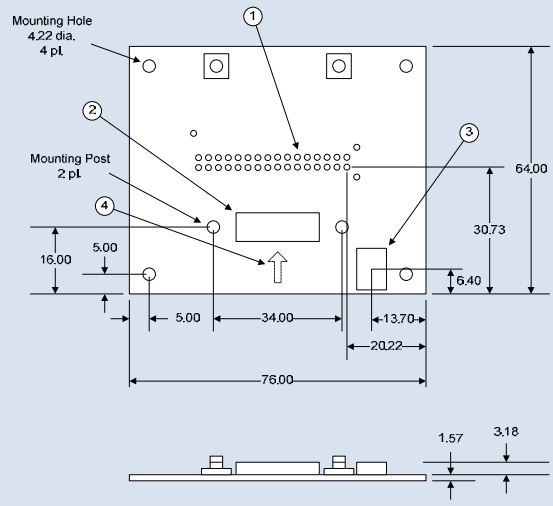


Typical Setup



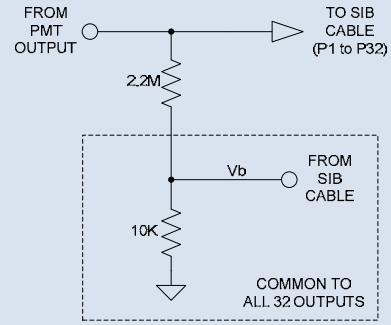
In a typical fluorescence detection setup, the Hamamatsu H7260 PMT is plugged into the SIB232 sensor interface board which in turn connects using a SIB cable to a Vertilon PhotoniQ IQSP480 or IQSP580 multichannel data acquisition system. An optical grating on the front surface of the PMT filters the incoming fluorescence signal such that each of the PMTs 32 outputs is sensitive to a particular ultraviolet band. Events are acquired by the PhotoniQ when triggered by either an external source such as a pulsed laser excitation, or by the SIB232's on-board discriminator connected to the PMT's last dynode output. Each trigger causes the PhotoniQ to integrate and digitize the 32 charge signals from the H7260 and output them in a data packet over a USB connection to the PC. The PhotoniQ also supplies the PMT with a negative high voltage bias of up to -925 volts through a specialized high voltage cable.

Mechanical Data

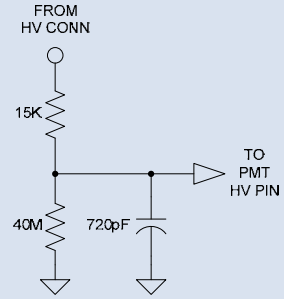


Notes: Item #1 is PMT socket pins. PMT connects to bottom side of PCB.
Item #2 is SIB connector. Height is 9.65mm with cable installed.
Item #3 is high voltage cable connector.
Item #4 indicates cable entry direction.
All dimensions in millimeter.

Electrical Data



PMT OUTPUT
EQUIVALENT CIRCUIT



HIGH VOLTAGE INPUT
EQUIVALENT CIRCUIT

Ordering Information

Sensor interface board (SIB) cable ordered separately. Specify part number SBCxxx, where “xxx” equals length in centimeter.

SIB232 directly compatible with Vertilon PhotoniQ IQSP480 and IQSP580 32 channel data acquisition systems. PhotoniQ systems sold separately. See User Manual for performance specifications.

High voltage cable not included with SIB232. Included with high voltage power supply option HVPS001 or HVPS002 for IQSP480 / IQSP580.

See SIB232 User Guide for complete specification.

Order SIB232D for ultra-low current applications.

See Hamamatsu H7260 datasheet for specific device information

SIB Connector Pinout

#	NAME		#	NAME
1	VB		2	HVMON
3	SIB DIN		4	SIB CLK
5	P16		6	P32
7	P15		8	P31
9	P14		10	P30
11	P13		12	P29
13	P12		14	P28
15	P11		16	P27
17	P10		18	P26
19	P9		20	P25
21	P8		22	P24
23	P7		24	P23
25	P6		26	P22
27	P5		28	P21
29	P4		30	P20
31	P3		32	P19
33	P2		34	P18
35	P1		36	P17
37	SIB DOUT		38	SIB NCS
39	SIBDAC		40	+5V

Pins 2, 3, 4, 37, 38, 39, 40 used by PhotoniQ and should be left unconnected

Pins 1 should be grounded when PhotoniQ not used

Ground supplied through cable shielding

PS2718.1.2 Sep 2010

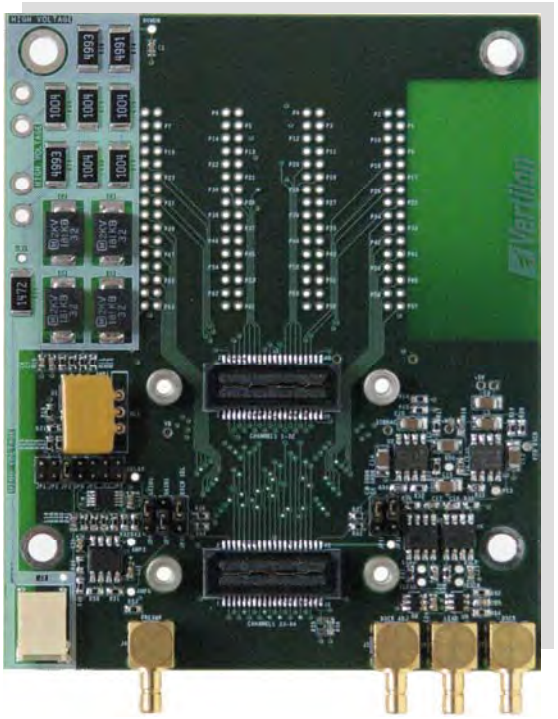
Vertilon Corporation, 66 Tadmuck Road, Westford, MA 01886 / Tel: (978) 692-7070 / Fax: (978) 692-7010 / www.vertilon.com

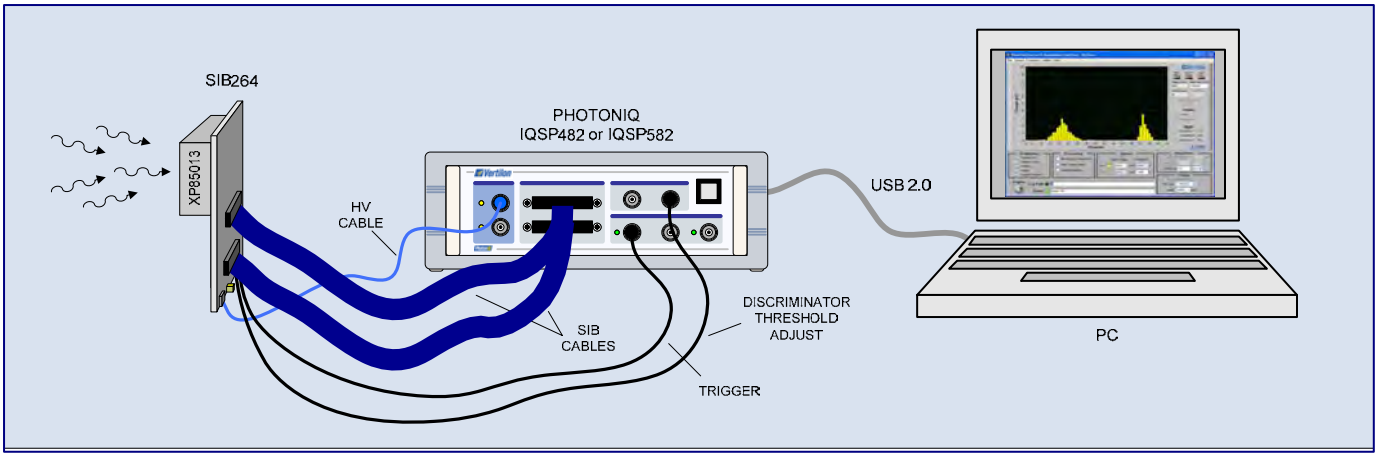
SIB264 MCP-PMT Sensor Interface Board XP85013 Series

Product Sheet

Product Overview

- Mounting board for Photonis XP85013 64 channel MCP-PMT
- Provides 64 channel interface to data acquisition systems
- Separate high voltage input for MCP-PMT cathode bias
- High speed preamplifier for microchannel plate output
- Leading edge, constant fraction, and zero slope discriminators
- Adjustable gain and discriminator thresholds
- 100% compatible with Vertilon's PhotoniQ multichannel DAQs
- No external power supply required

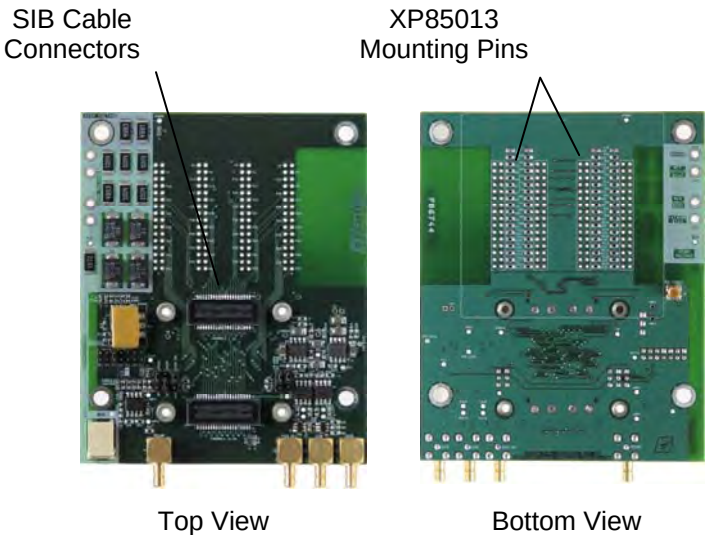




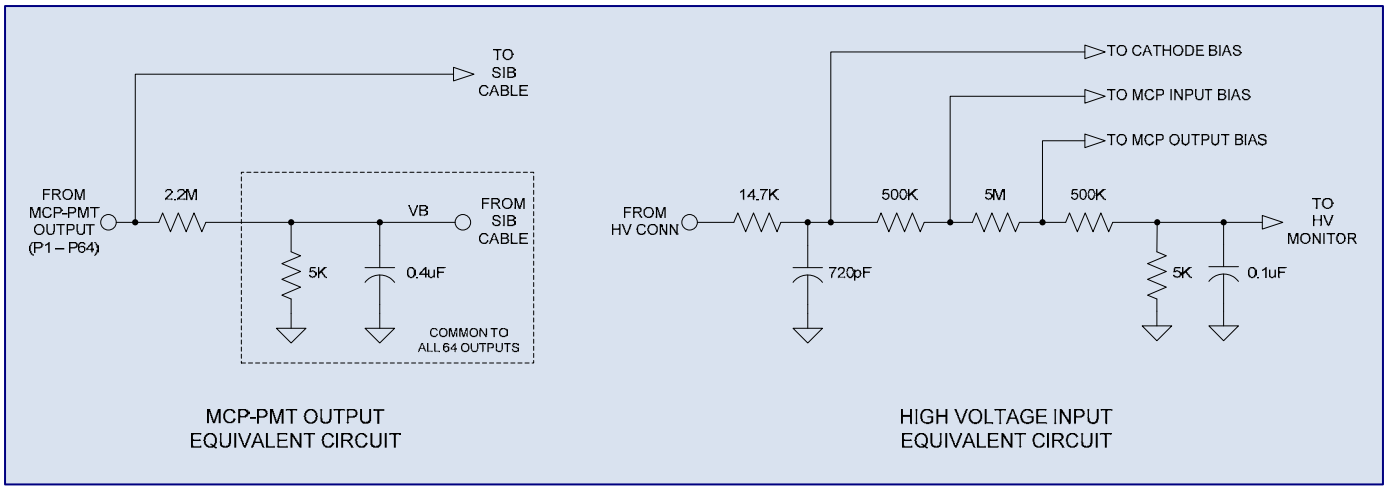
Typical Setup

Description

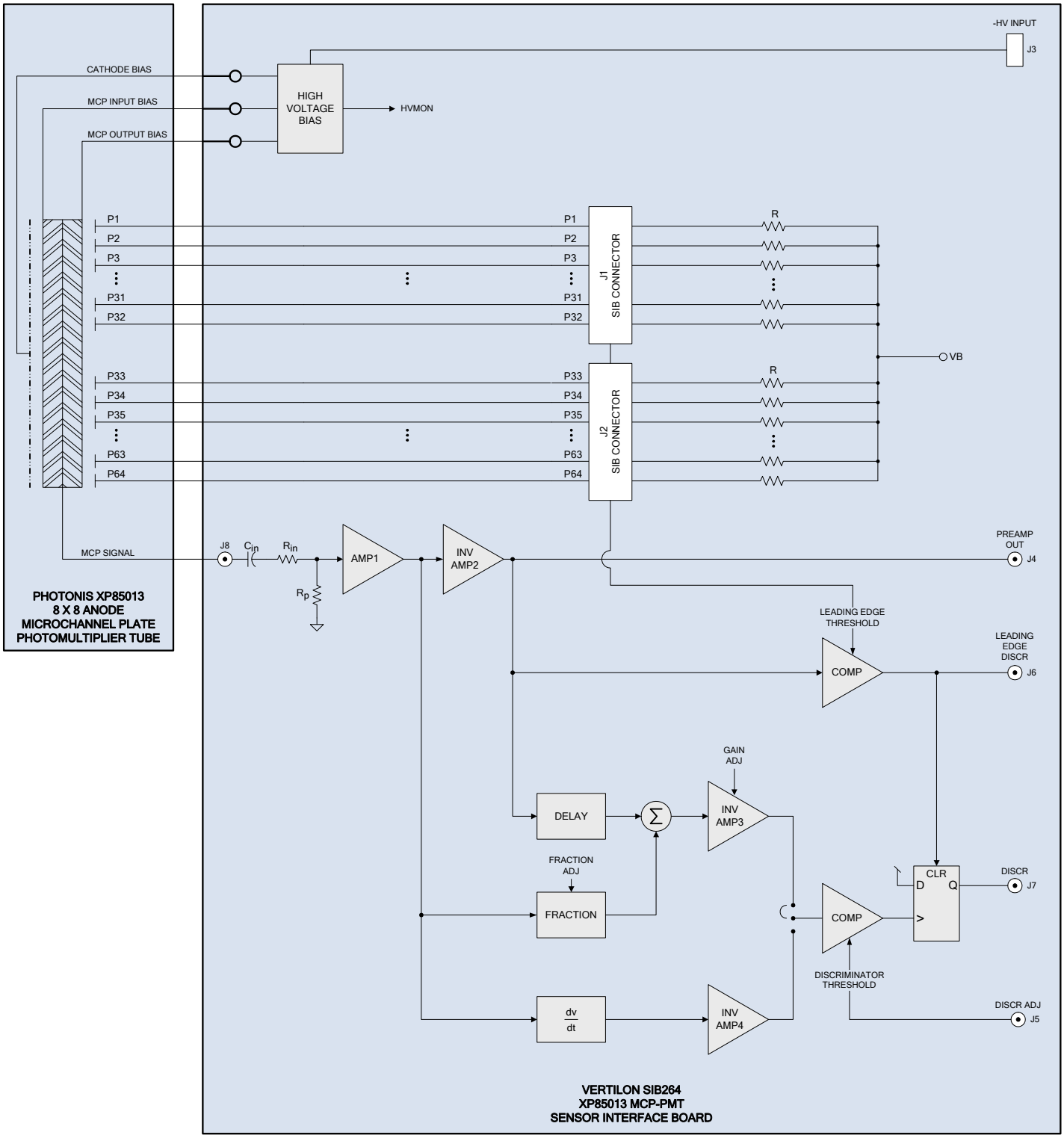
The SIB264 multianode photomultiplier tube interface board provides the mechanical and electrical connectivity between the Photonis XP85013 series 64 anode MCP-PMT and external signal processing electronics such as Vertilon's PhotoniQ multichannel data acquisition systems. The XP85013 is mounted to the bottom side of the SIB264 through 128 socket pins that connect the MCP-PMT's 64 anode signals to the board. The anode signals are routed to two connectors located on the top of the board that each connect to a specialized high density coaxial cable assembly. This arrangement allows the SIB264 to be conveniently mounted directly into the user's optical setup with the MCP-PMT facing outward from the bottom of the board and the sensor interface board (SIB) cables exiting from the top. The SIB cables carry the 64 anodes from the XP85013 to the PhotoniQ where the charge from each is separately integrated, digitized, and sent to a PC for display or further signal processing. The negative high voltage bias to the MCP-PMT's cathode is supplied directly from the PhotoniQ on a high voltage cable to a dedicated connector on the SIB264. This voltage is used by an on-board bias generator circuit to derive the required high voltages for the XP85013's microchannel plate. For applications requiring timing pickoff from the XP85013, the SIB264 includes a two stage high speed preamplifier for the microchannel plate output and three types of pulse discriminators. The outputs from a leading edge, constant fraction, and zero slope discriminator respectively generate trigger signals based on a threshold, percentage of pulse height, and pulse peak. These outputs as well as the preamplifier output are available to the user for connection to the PhotoniQ or other external electronics. Several user adjustments are included for optimizing system gain and trigger thresholds for the discriminators.



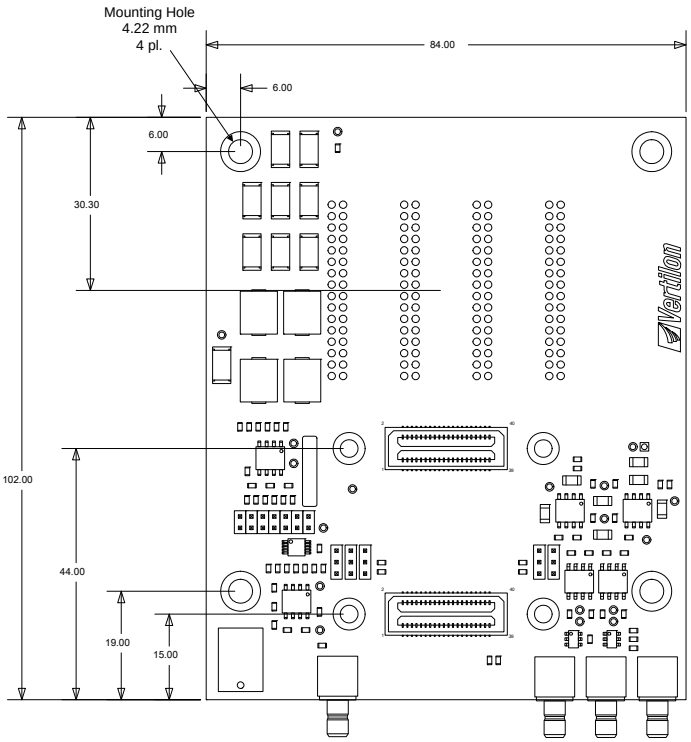
Electrical Interface Circuits



Functional Block Diagram



Mechanical Data



ALL DIMENSIONS IN MILLIMETER

Specifications	
Description	Specification
Number of Anode Circuits	64
MCP Preamplifier Gain	18.6 dB, inverting
Leading Edge Discriminator Time Delay	5 nsec
Leading Edge Discriminator Time Walk Input Signal Range: 30 - 150mV	3 nsec
Constant Fraction Discriminator Time Delay	5 nsec
Constant Fraction Discriminator Time Walk Input Signal Range: 20 - 100mV	2 nsec
Zero Slope Discriminator Time Delay	5 nsec
Zero Slope Discriminator Time Walk Input Signal Range: 20 - 150mV	3 nsec
Discriminator Jitter	<500 psec
Supply Voltage	+5.0 V
Supply Current	+60 mA
Width	84 mm
Length	102 mm
Height	2.5 mm (PCB thickness only)

General Safety Precautions

Warning: HIGH VOLTAGES – Voltages can exceed 2500V

Operate device within specified range

Electrostatic discharge sensitive

Do not operate in wet, damp or explosive atmosphere

See XP85013 data sheet for specific handling information

Ordering Information

Includes two SMB120 coaxial cables, SMB plug to BNC plug, 120 cm.

Sensor interface board (SIB) cables ordered separately. Specify part number SBCxxx, where “xxx” equals length in centimeter.

Order PhotoniQ data acquisition system separately. SIB264 directly compatible with Vertilon IQSP482 and IQSP582 64 channel data acquisition systems. See PhotoniQ User Manual for performance specifications.

High voltage cable not included with SIB264. Included with high voltage power supply option HVPS001 or HVPS002 for IQSP482 / IQSP582.

See SIB264 User Guide for complete specification.

Vertilon

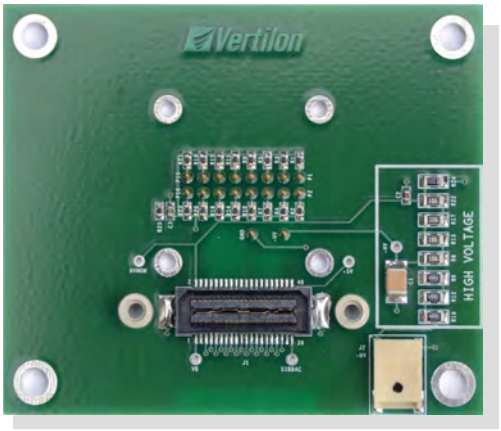
PS2719.1.1 Oct 2009

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

SIB516 PMT Sensor Interface Board H10515B Series

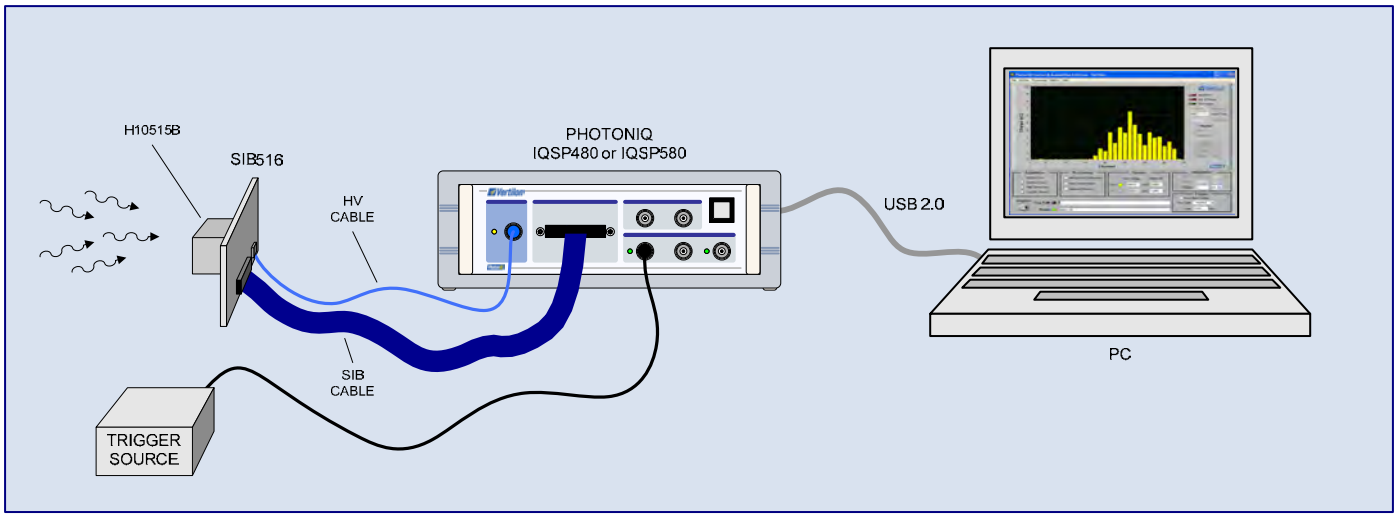
Product Sheet

Description



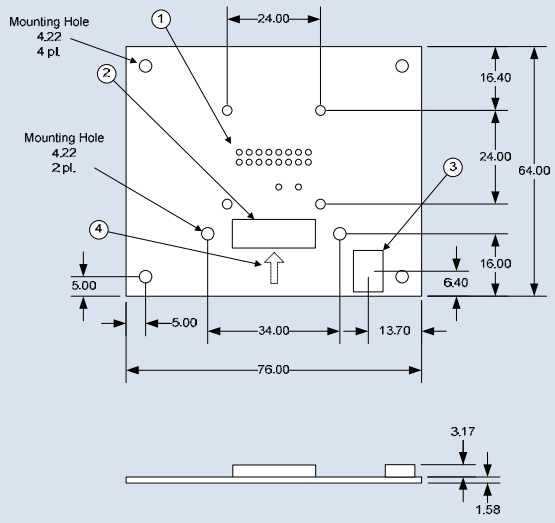
The SIB516 PMT Sensor Interface Board (SIB) provides the electrical and mechanical connectivity between a Hamamatsu H10515B series 16 channel photomultiplier tube and a Vertilon PhotoniQ multi-channel PMT data acquisition system. The H10515B mounts directly to the bottom of the SIB516 through 18 socket pins and electrical connections to the 16 PMT outputs are made to the SIB connector located on the top of the board. The SIB connector conforms to Vertilon's standard, low-noise, multi-channel, cable interconnection system. It mates to a micro-coaxial cable assembly that connects the 16 PMT outputs to the PhotoniQ. The high voltage connection to the H10515B is made through a separate dedicated connector where a high voltage cable connects between it and the high voltage output on the PhotoniQ.

Typical Setup



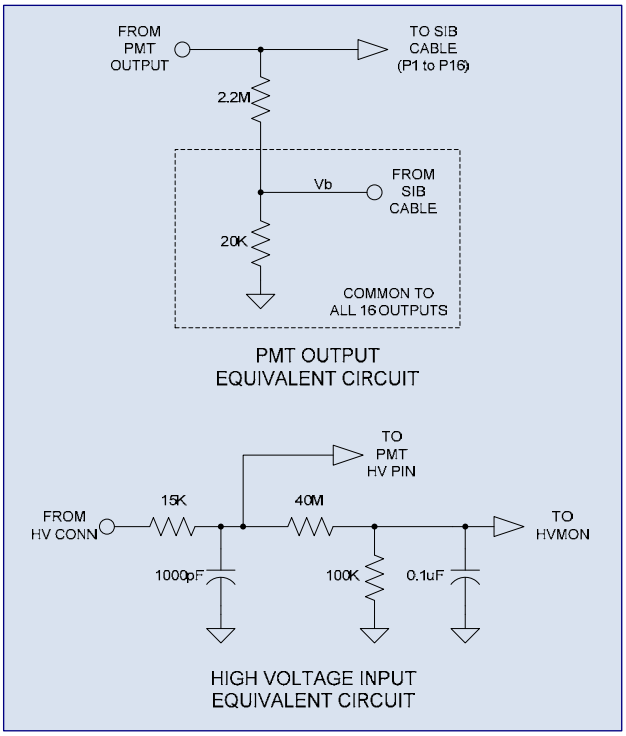
In a typical setup the Hamamatsu H10515B PMT is plugged into the SIB516 Sensor Interface Board which in turn connects to a Vertilon PhotoniQ IQSP480 or IQSP580 multichannel data acquisition system using a SIB cable. When triggered from an external source, the PhotoniQ integrates and digitizes the 16 charge signals from the H10515B and outputs a data packet to the PC over a USB connection. The PhotoniQ also supplies the PMT high voltage bias through a specialized high voltage cable.

Mechanical Data



Notes: Item #1 is PMT socket pins. PMT connects to bottom side of PCB.
Item #2 is SIB connector. Height is 9.7mm with cable installed.
Item #3 is high voltage cable connector.
Item #4 indicates cable entry direction.
All dimensions in millimeters.

Electrical Data



General Safety Precautions

Warning: HIGH VOLTAGES – Voltages can exceed 2000V

Operate device within specified range

Electrostatic discharge sensitive

Do not operate in wet, damp or explosive atmosphere

See Hamamatsu H10515B data sheet for specific handling information

SIB Connector Pinout

#	NAME		#	NAME
1	VB		2	HVMON
3	SIB_DIN		4	SIB_CLK
5	P16		6	N/C
7	P15		8	N/C
9	P14		10	N/C
11	P13		12	N/C
13	P12		14	N/C
15	P11		16	N/C
17	P10		18	N/C
19	P9		20	N/C
21	P8		22	N/C
23	P7		24	N/C
25	P6		26	N/C
27	P5		28	N/C
29	P4		30	N/C
31	P3		32	N/C
33	P2		34	N/C
35	P1		36	N/C
37	SIB_DOUT		38	SIB_NCS
39	SIBDAC		40	+5V

Pins 2, 3, 4, 37, 38, 39 and 40 reserved for PhotoniQ and should be left unconnected if PhotoniQ is not used

Pin 1 grounded when not connected to a PhotoniQ

Ground supplied through SIB cable shielding

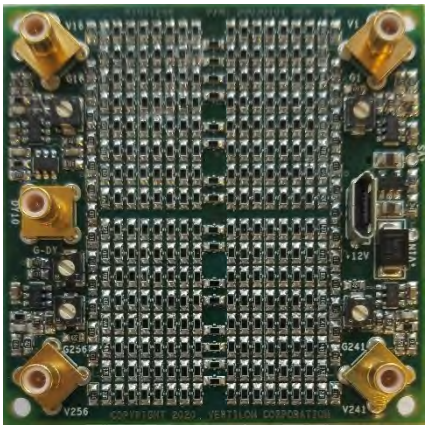
PS2726.1.0 May 2012

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

SIB71256 Sensor Interface Board for Hamamatsu H13700 MAPMT

Product Sheet

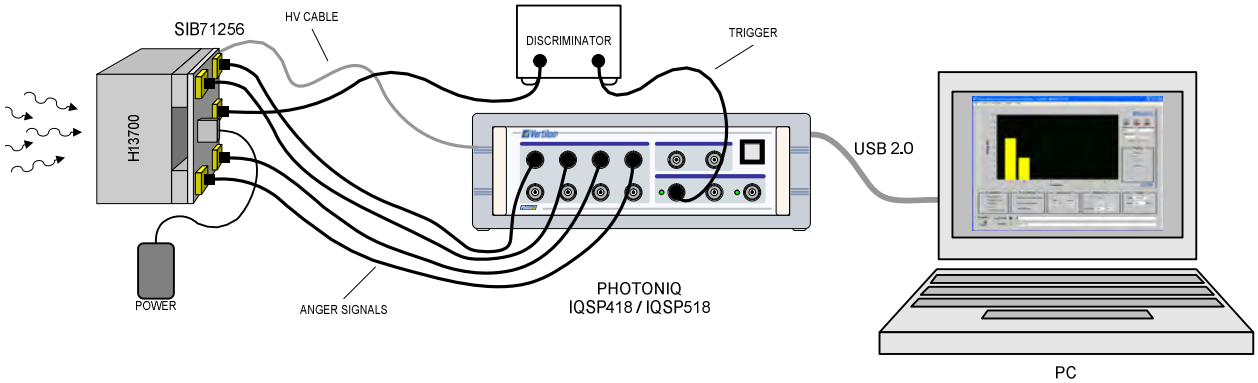
Description



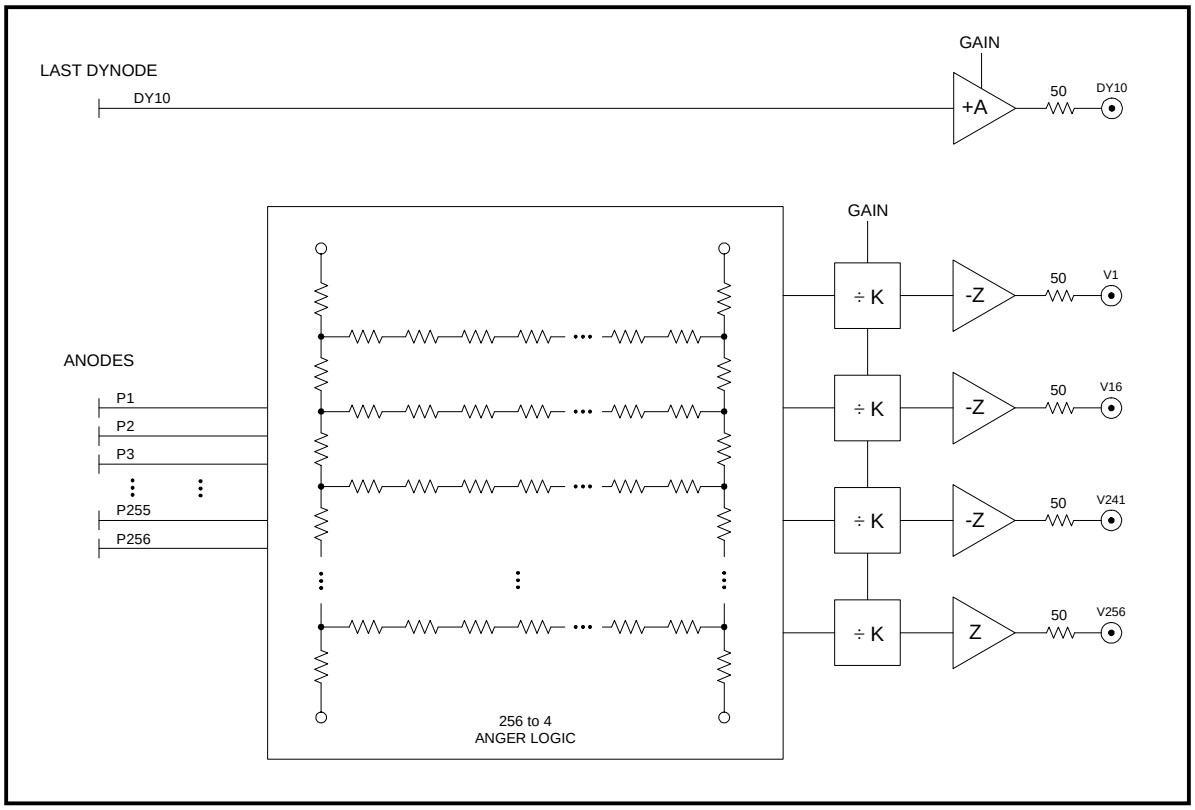
The SIB71256 multianode photomultiplier tube interface board provides the mechanical and electrical connectivity between the Hamamatsu H13700 256 anode PMT and external signal processing electronics such as Vertilon's PhotoniQ multichannel data acquisition systems. The MAPMT is mounted to the bottom side of the SIB71256 through a pair of socket connectors that route the PMT's 256 anode signals and last dynode output to the board. The high voltage bias to the PMT is supplied separately on its own cable and thus never reaches the SIB71256. The anode signals are routed to an on-board resistive anger logic circuit that generates four anger signal outputs. Each output is fed to an inverting amplifier and made available to the user on an SMB connector. Event position and energy information can be determined by connecting the four anger signal outputs to customer-supplied electronics. For timing applications utilizing the last dynode output of the PMT, the SIB71256 includes a high speed non-inverting preamplifier whose output is also available on an SMB connector. The polarity of the preamplifiers is such that the four anger and last dynode outputs produce all positive going signals.

Typical Setup

A typical setup using a SIB71256 is shown below. The Hamamatsu H13700 MAPMT is mounted to the SIB71256 and positioned to detect incoming light from a scintillator crystal or optical assembly. The four anger logic outputs from the SIB71256 connect to four inputs on a PhotoniQ IQSP418 / IQSP518 multichannel PMT data acquisition system. Digitized output data from the PhotoniQ is sent through a USB 2.0 connection to a PC for display, logging, or real time processing. The amplified last dynode signal from the SIB71256 connects to an external discriminator that generates a trigger to the PhotoniQ. A high voltage bias of up to negative 1200 volts is sent directly to the PMT from an SHV connector located on the rear of the PhotoniQ. Note that the high voltage output is an optional configuration on the IQSP418 / IQSP518.



Functional Block Diagram



Ordering Information

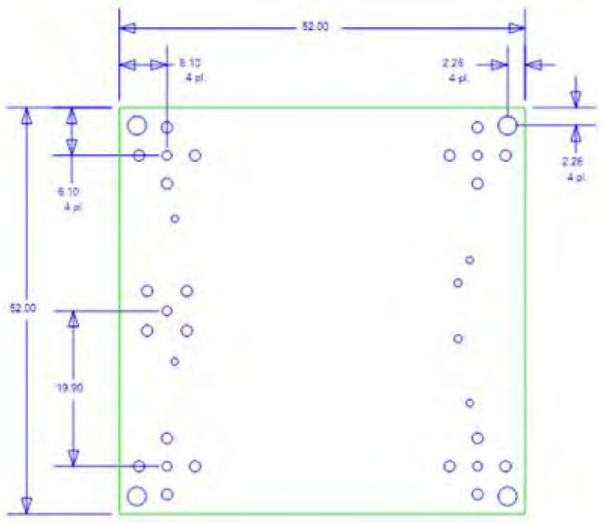
SIB71256 is directly compatible with Vertilon PhotoniQ IQSP418 / IQSP518 expandable charge integrating data acquisition systems. PhotoniQ systems sold separately. See PhotoniQ User Manual for performance specifications.

SIB71256 includes a 12V power supply and five SMB120 coaxial cables, SMB plug to BNC plug, 120 cm.

See SIB71256 User Guide for complete specification.

See Hamamatsu H13700 datasheet for specific device information

Mechanical Data



PS2747.1.1 Aug 2020