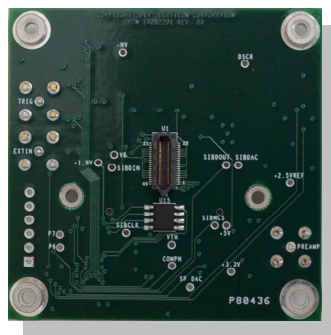


## SIB716 Sensor Interface Board Hamamatsu S12642-0404PB-50

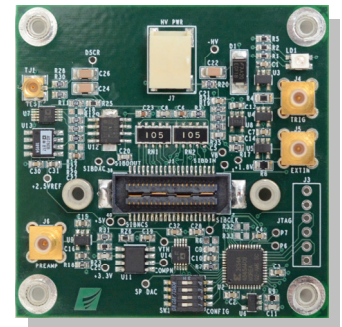
## Product Sheet

### Description

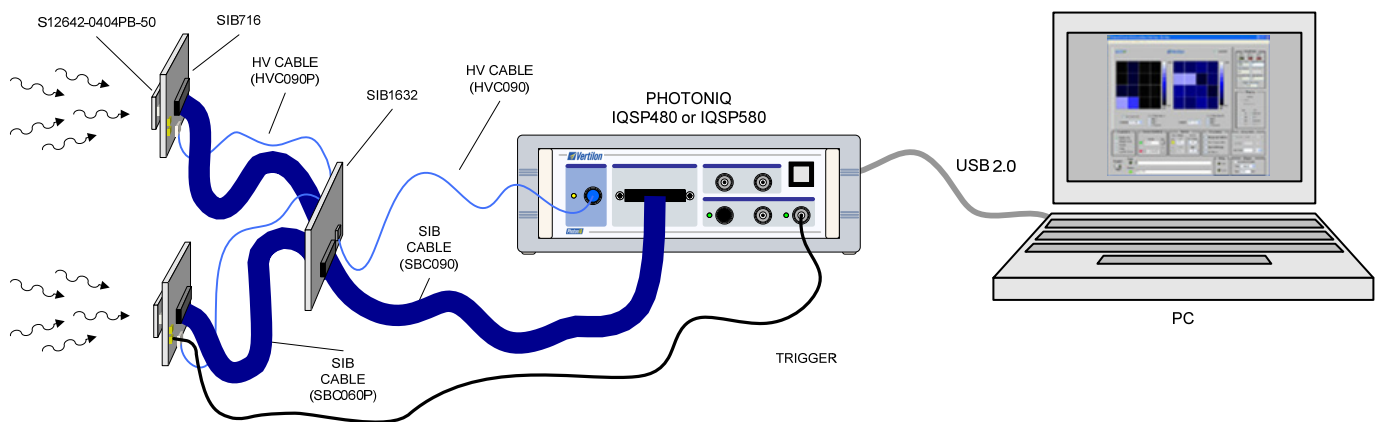
The SIB716 sensor interface board allows for a Hamamatsu S12642-0404PB-50 4 x 4 multi-pixel photon counter (MPPC) array to easily interface to a Vertilon PhotoniQ multichannel data acquisition system. The MPPC array is inserted into the bottom side of the printed circuit board where its cathode output signals are routed directly to a sensor interface board (SIB) connector. The SIB connector mates to a micro-coaxial cable assembly that connects the 16 device outputs to the PhotoniQ.



Bias to MPPC array is provided on a high voltage cable by the PhotoniQ where it can be enabled and configured through the PhotoniQ graphical user interface. A special current-sense tap from the bias interface circuitry is sent to a variable gain preamplifier that outputs the total charge signal measured on all 16 elements in the MPPC array. This signal is fed into a user-programmable leading edge discriminator that generates a trigger signal when an event exceeding a preset energy threshold is detected on the S12642-0404PB-50 device. The trigger output is typically connected to the trigger input on the PhotoniQ data acquisition system where it is used to initiate the collection of the energy signals from the MPPC array connected to the DAQ system's inputs.

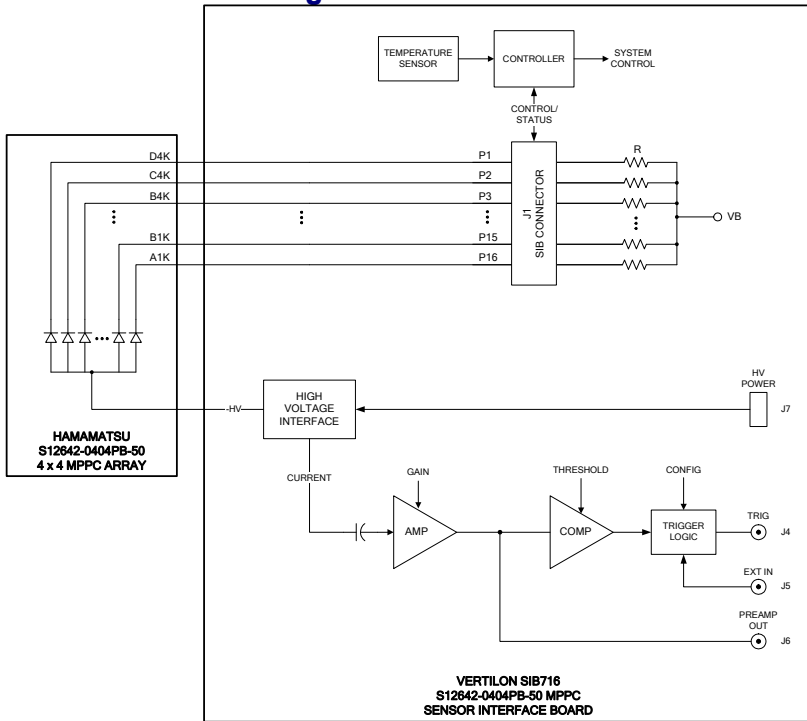


### Typical Dual Sensor Setup

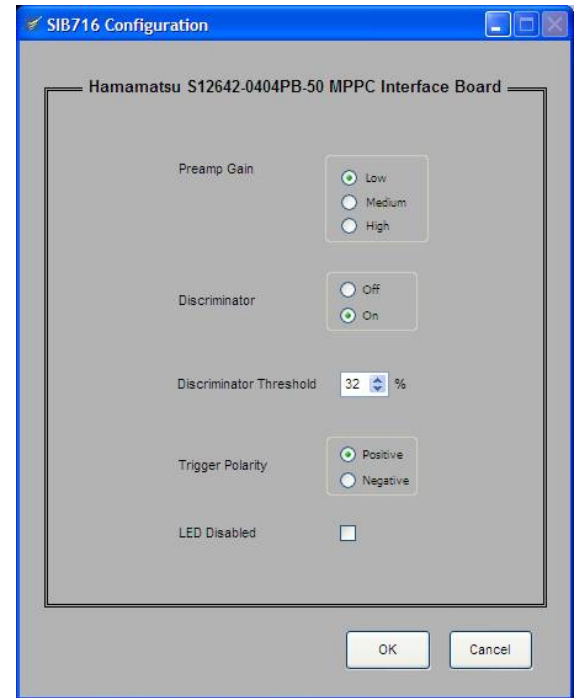


The Hamamatsu S12642-0404PB-50 multi-pixel photon counters are inserted into the SIB716s which are positioned in an optical assembly to detect incoming radiation. The SIB cables from each SIB716 connect to a Vertilon SIB1632 where the 16 outputs from each MPPC array are combined into one SIB cable (SBC090) that connects to a PhotoniQ IQSP480 or IQSP580 multichannel data acquisition system. The discriminator channel from one SIB716 produces a trigger to the PhotoniQ whenever a radiation event is detected on the MPPC. The energy level threshold for the radiation event is set by the user through the PhotoniQ graphical user interface. Charge signals from the 32 cathodes from the two S12642 devices are acquired by the PhotoniQ for each trigger produced by the SIB716. Digitized output data from the PhotoniQ is sent through a USB 2.0 connection to a PC for display, logging, or real time processing. In the figure above, the PhotoniQ GUI is set to display a dual 4 x 4 image of the energy levels for each event captured.

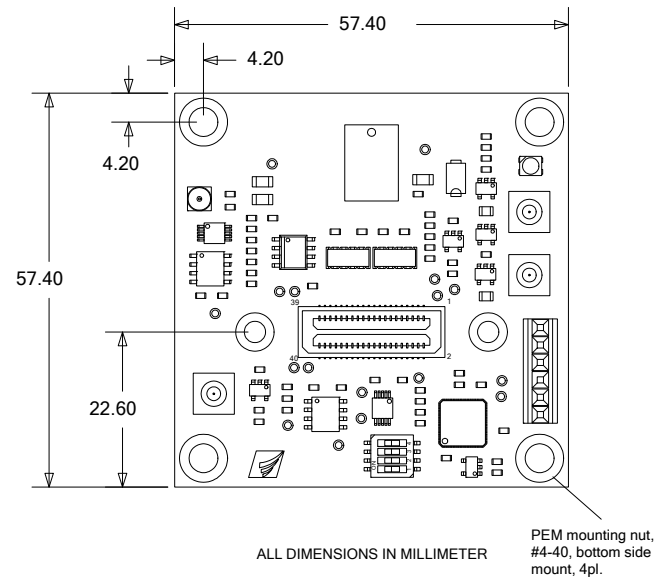
Functional Block Diagram



Configuration Dialog Box



Mechanical Data



Ordering Information

SIB716 is directly compatible with Vertilon PhotoniQ IQSP480 / IQSP580 32 channel data acquisition systems. PhotoniQ systems sold separately. See User Manual for performance specifications.

SIB716 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.

See SIB716 User Guide for complete specification.

The Vertilon SIB1632 is an optional product that allows two SIB716 sensor interface boards to be used with one Vertilon 32 channel data acquisition system. See SIB1632 product sheet for details.

See Hamamatsu S12642-0404PB-50 datasheet for specific device information



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