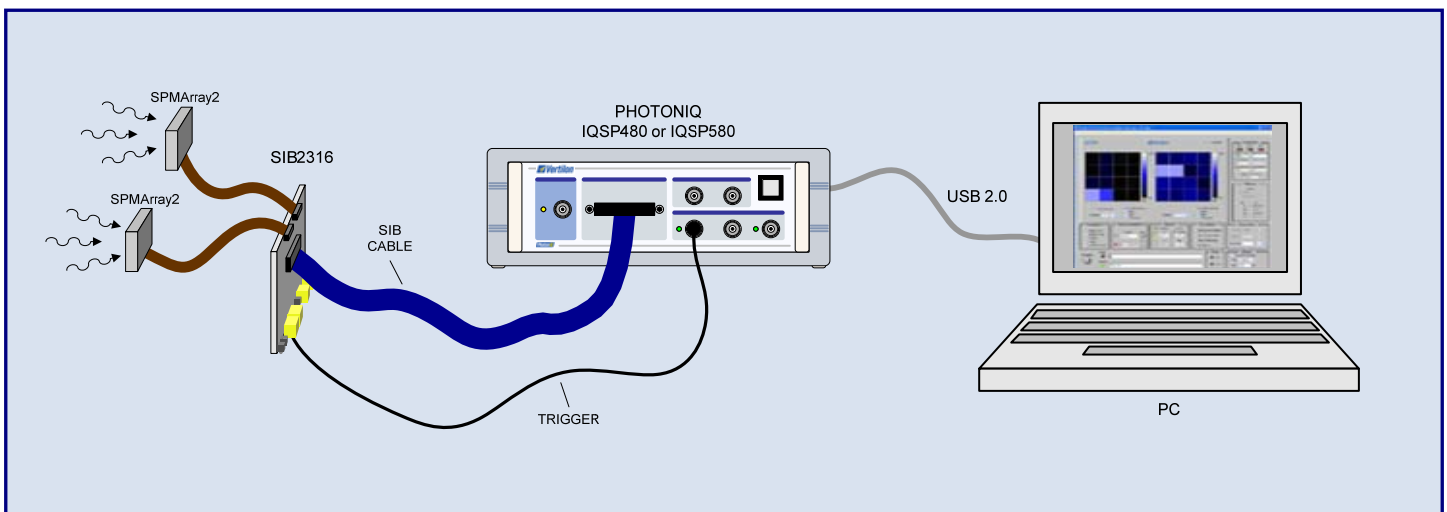
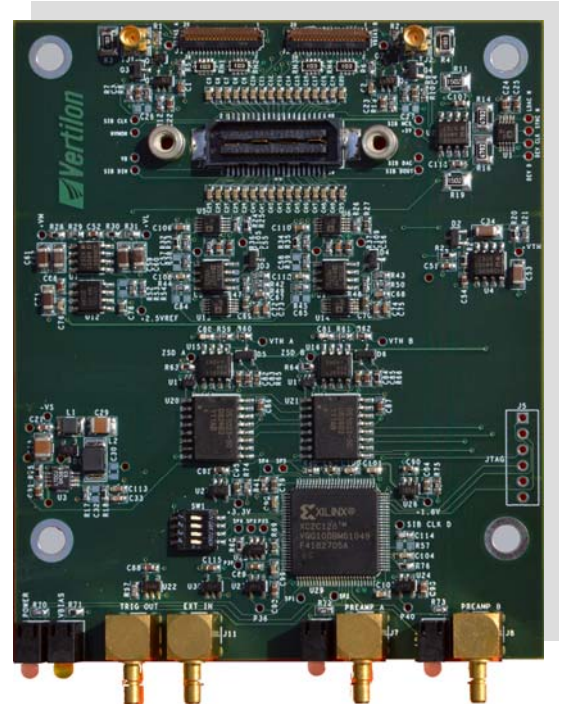


Product Overview

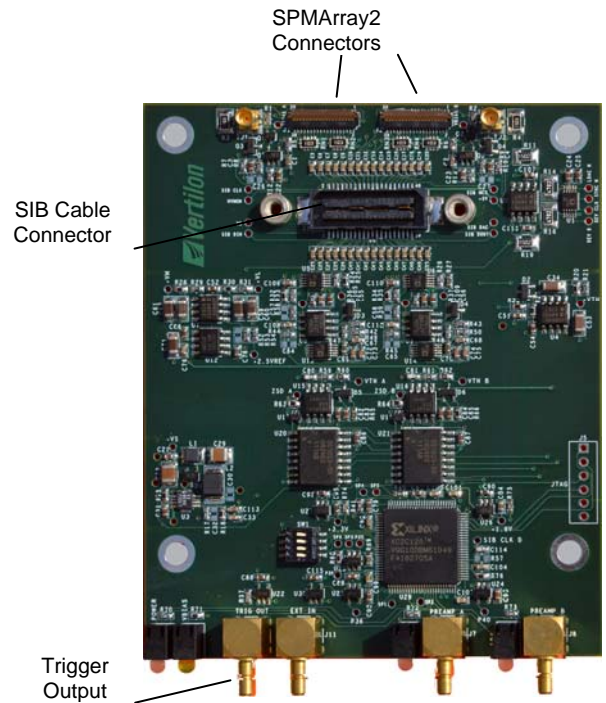
- Interface board for two SensL SPMArray2 4 x 4 silicon photomultipliers
- Provides 32 channel interface to data acquisition systems
- High speed preamplifiers & discriminators for pulse detection
- Adjustable discriminator gain and energy threshold
- Programmable coincidence detection to less than 5 nsec
- Threshold crossing and coincidence indicator LEDs
- On-board negative high voltage supply for SiPM bias
- 100% compatible with Vertilon's PhotoniQ multichannel DAQs
- No external power supply required
- Simplified control through PhotoniQ graphical user interface



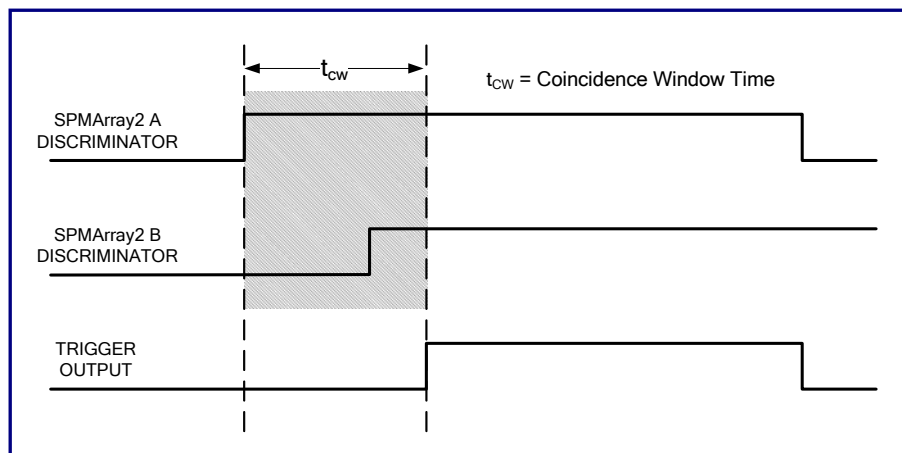
Typical Setup

Description

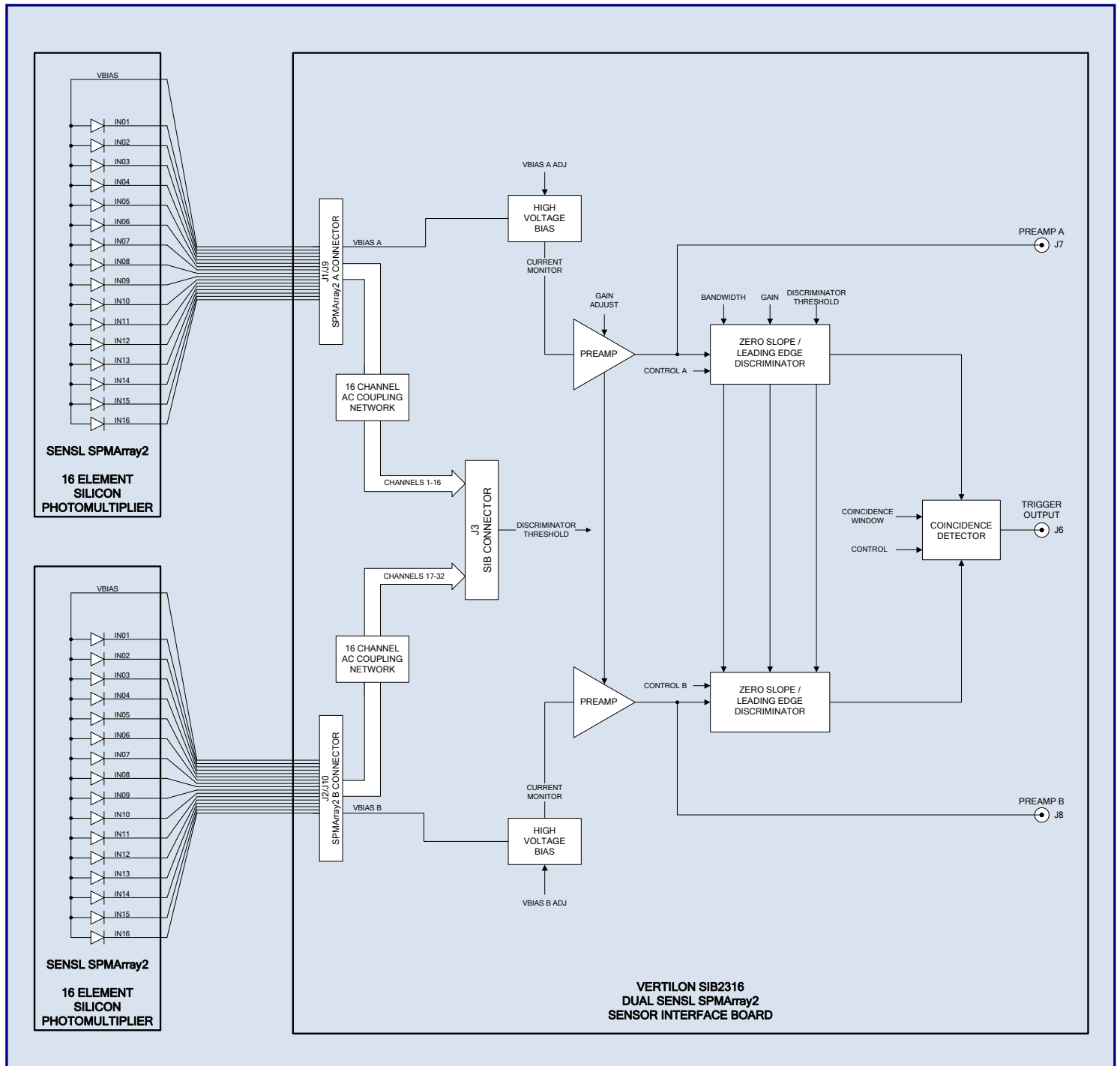
The SIB2316 silicon photomultiplier (SiPM) interface board provides the mechanical and electrical connectivity between two SensL 16 element SPMArray2s and external signal processing electronics such as a Vertilon PhotoniQ multichannel data acquisition system. Each SPMArray2 connects to the SIB2316 through a 39 pin FPC cable connector that carries the 16 SiPM detector channels and the common anode negative high voltage bias. Two additional FPC cable connectors on the backside of the board allow the user to reverse-mount the SPMArray2s if necessary. The 32 detector signals from the SiPM arrays are routed to a connector on the top of the board that connects to a specialized high density coaxial cable assembly (SIB cable). This arrangement allows the SIB2316 to be conveniently mounted into the user's optical setup with the FPC cables connecting to the SPMArray2s and the SIB cable connecting to the data acquisition system. The SIB cable carries the detector signals from the silicon photomultipliers 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 SPMArray2s is generated on the SIB2316 and can be trimmed for matching the two arrays. For applications such as PET imaging that require pulse timing pickoff, circuitry included within the high voltage bias generator monitors the total current delivered to the 16 elements of each SPMArray2. A preamplifier and discriminator on each array process the current signals and feed the results to coincidence detection logic where a trigger signal is output when a pulse from each discriminator is detected within a user-programmable time-coincidence window. Several user adjustments are included for optimizing system gain, energy level thresholds, and the coincidence detection window width. The full functionality and operation of the SIB2316 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.



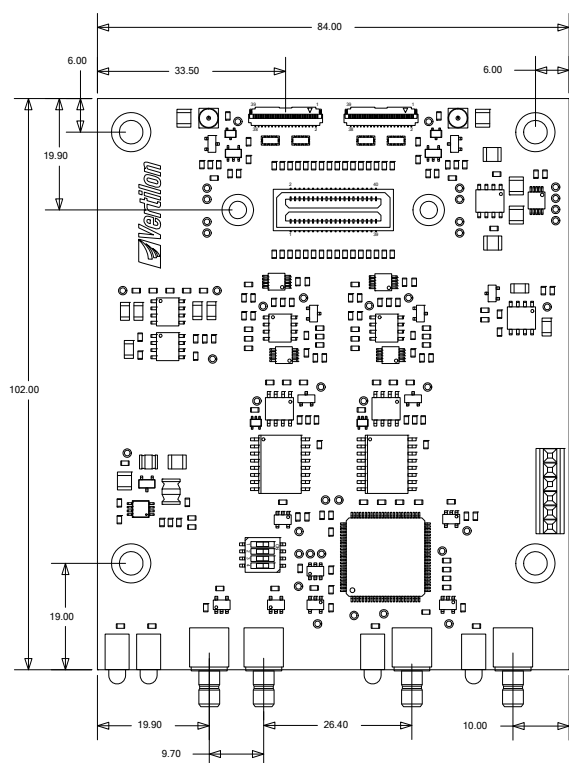
Coincidence Timing



Functional Block Diagram

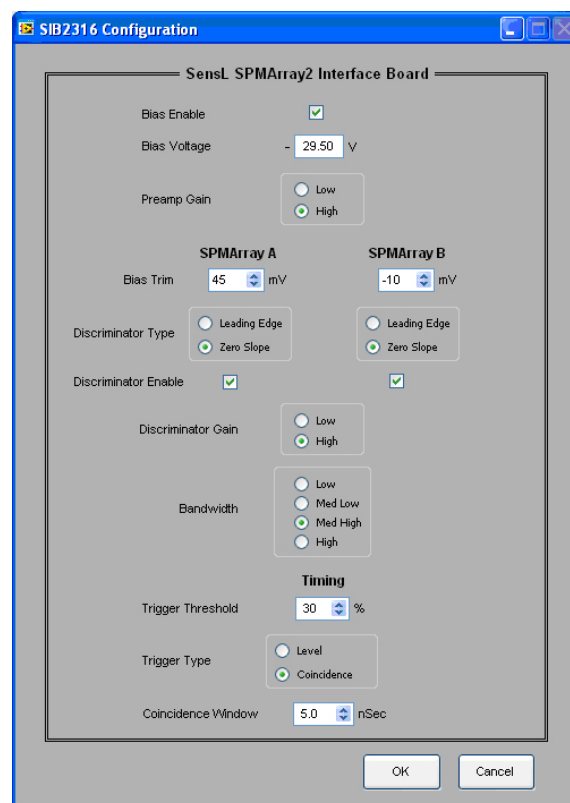


Mechanical Data



ALL DIMENSIONS IN MILLIMETER

Configuration Dialog Box



Ordering Information

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

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

SIB2316 directly compatible with Vertilon IQSP480
and IQSP580 32 channel data acquisition systems.
Order PhotoniQ data acquisition system separately.
See PhotoniQ User Manual for performance
specifications.

See SIB2316 User Guide for complete specification.

Specifications

Description	Specification
Number of SPMArray2 Devices Supported	
Number of Detector Outputs	32
Detector Bias Nominal Range	-25.5 V to -32.0 V
Detector Bias Trim Range	-500 mV to +500 mV
Detector Common Preamplifier Gain	0.37 V/mA to 0.75 V/mA
Discriminator Bandwidth Adjustment Range	5 to 1
Energy Threshold Adjustment Range	0 to 100% of pulse height
Number of Time Coincidence Channels	2
Coincidence Time Window Range	5.0 nsec to 128.0 nsec
Coincidence Time Window Resolution	0.5 nsec
Supply Voltage	+5.0 V
Supply Current	+220 mA
Width	84.0 mm
Length	102.0 mm
Height	1.6 mm (PCB thickness only)



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