

Features

Supports the Hamamatsu S13361-3050AE-04
4x4 array of 3mm MPPCs

“HFN” variant: Horizontal signal connector located on the front, array located on the front, narrow format

Wideband amplifier per SiPM

DC-coupled signal path

Low power consumption

Precision temperature sensor

Mounting holes for #4 or M3 hardware

Specifications

SiPM Signal Amplifiers

| | |
|------------------|--------------------------|
| Gain | 750Ω transimpedance gain |
| Output voltage | 0 → -1V into 100Ω |
| Output impedance | 100Ω |
| Output current | 50mA maximum |

Temperature Sensor

| | |
|------------------|---------------------|
| Output voltage | 500mV + 10mV per °C |
| Output current | 10mA |
| Output impedance | 100Ω |
| Accuracy | ±0.5°C |

Bias Voltage

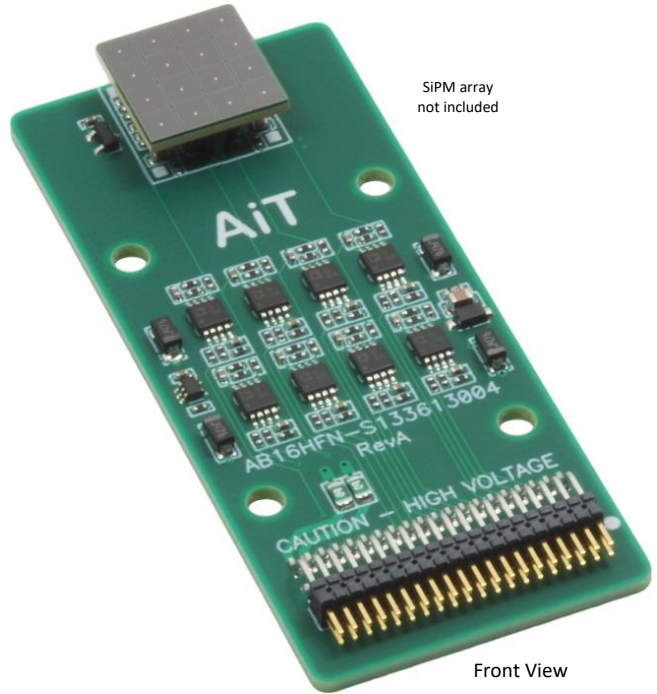
| | |
|---------------|---|
| Voltage clamp | +55V typical (refer to SiPM data) 68V Zener diode 375mW maximum |
|---------------|---|

Amplifier Power (±VA)

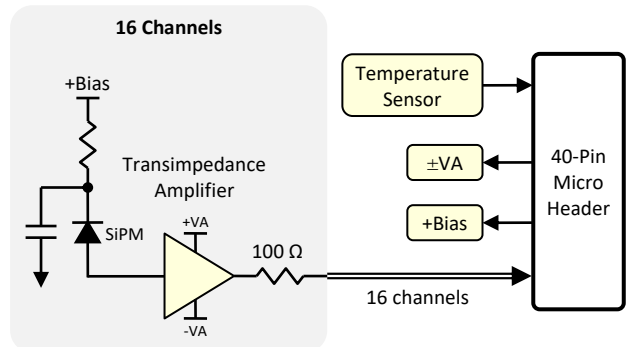
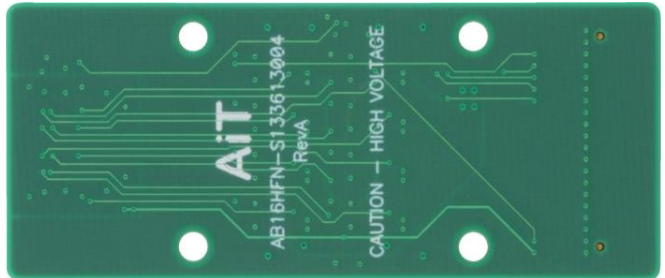
| | |
|---------|--|
| Current | ±2.8V → ±5.5V maximum ±30mA typical (Iq, no signal, no load) |
|---------|--|

Signal Connector

| | |
|-----------------|---|
| Mating assembly | Horizontal 40-pin 2-row header with 0.050” pin pitch Samtec FFSD-20-D-XX.XX-01-N (XX.XX = length in inches) |
|-----------------|---|

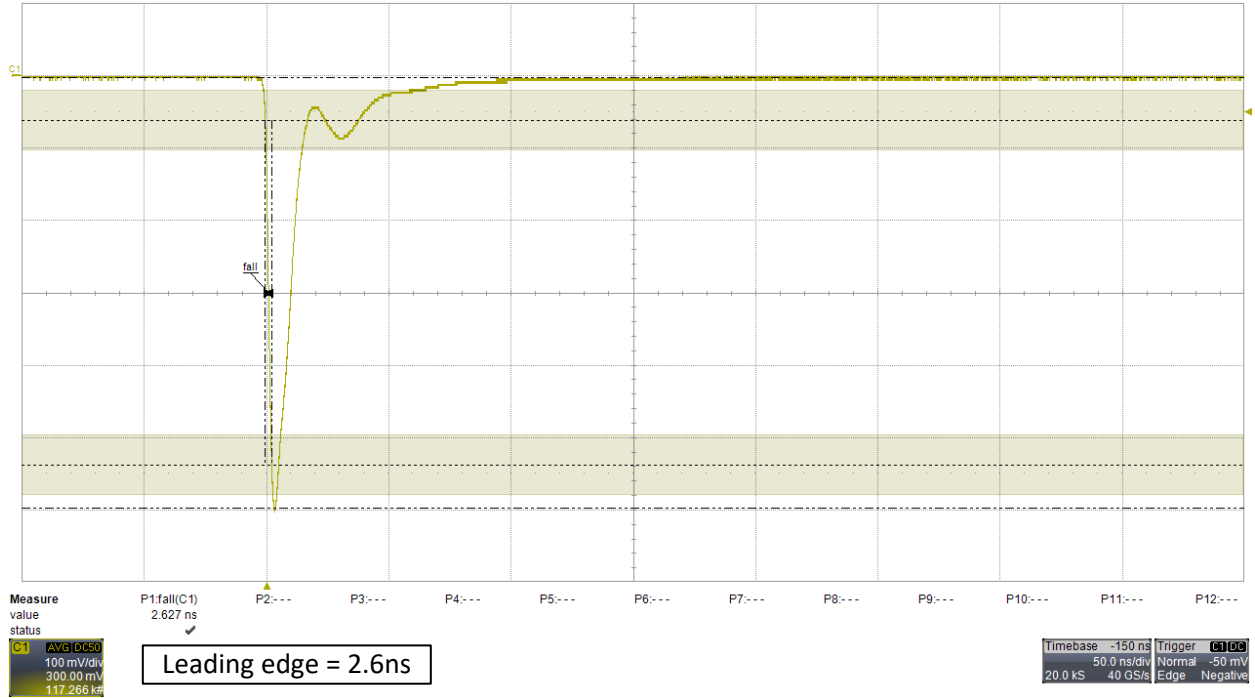


Back View

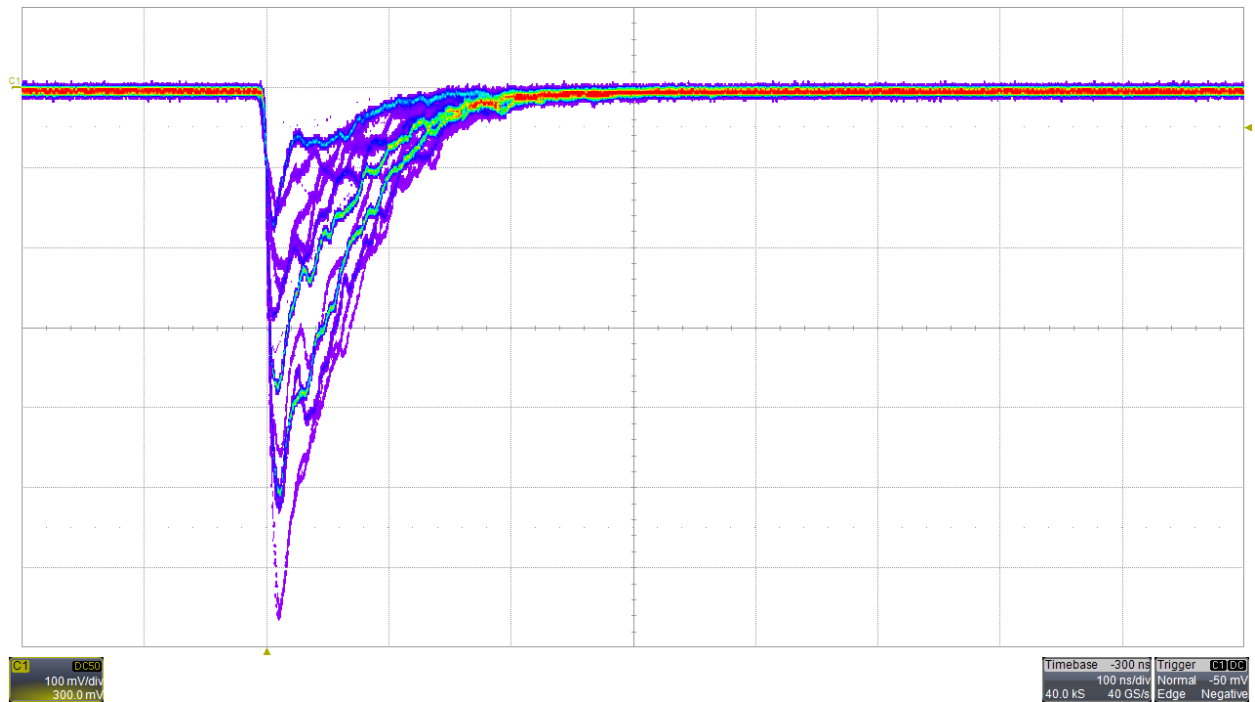


Typical Signals

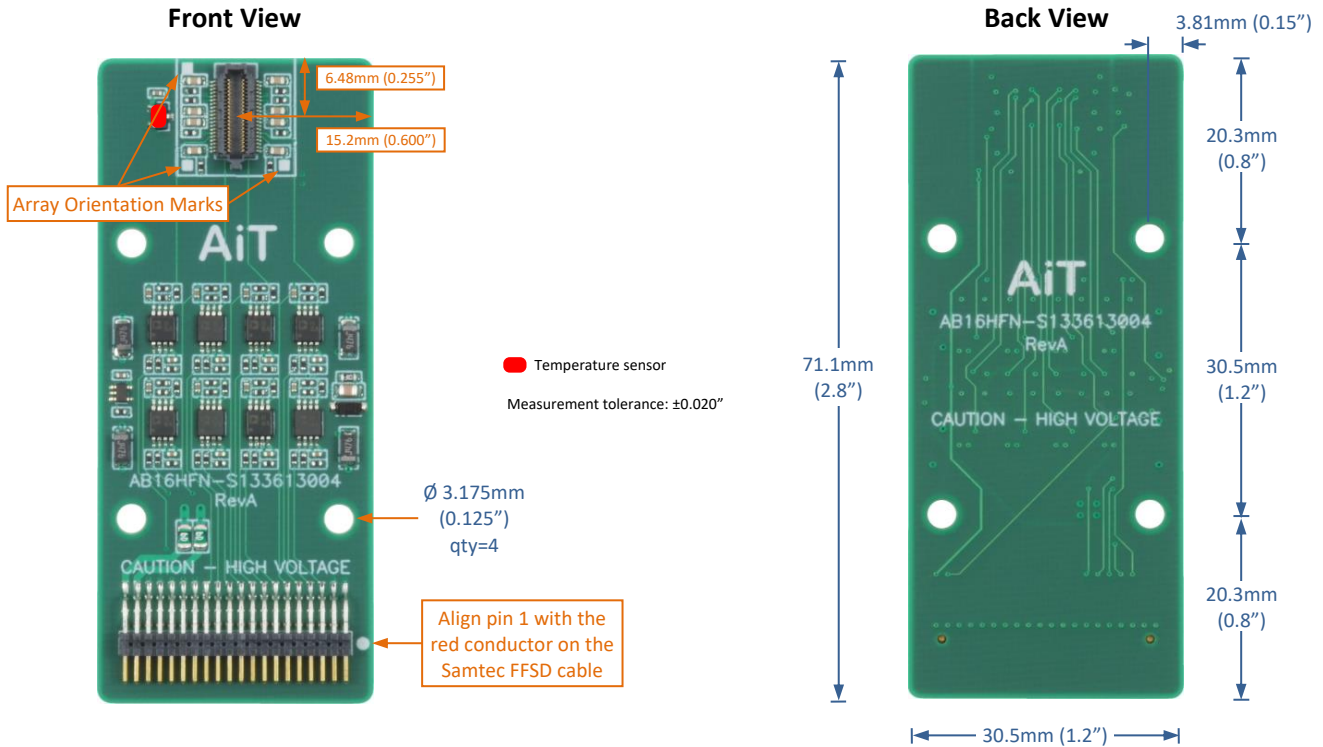
Source = Laser; Receiver = ABR16, channel 6, minimum gain; Bias = +55V; FFSD cable = 36" (914mm)



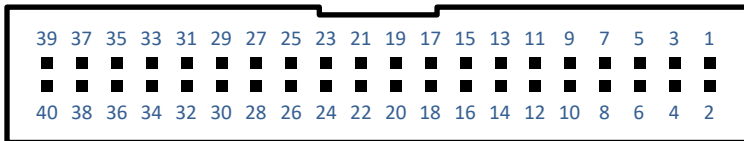
Source = LYSO emission; Receiver = ABR16, channel 6, minimum gain; Bias = +55V; FFSD cable = 36", persistence display



Mechanical

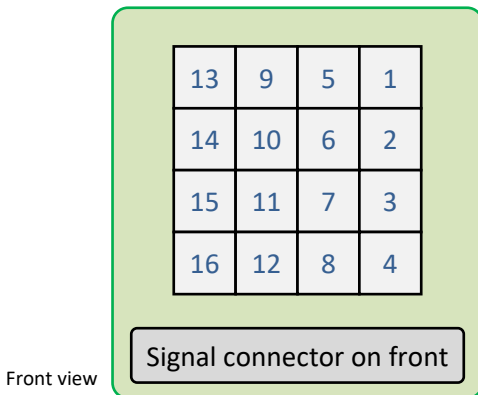


Signal Connector



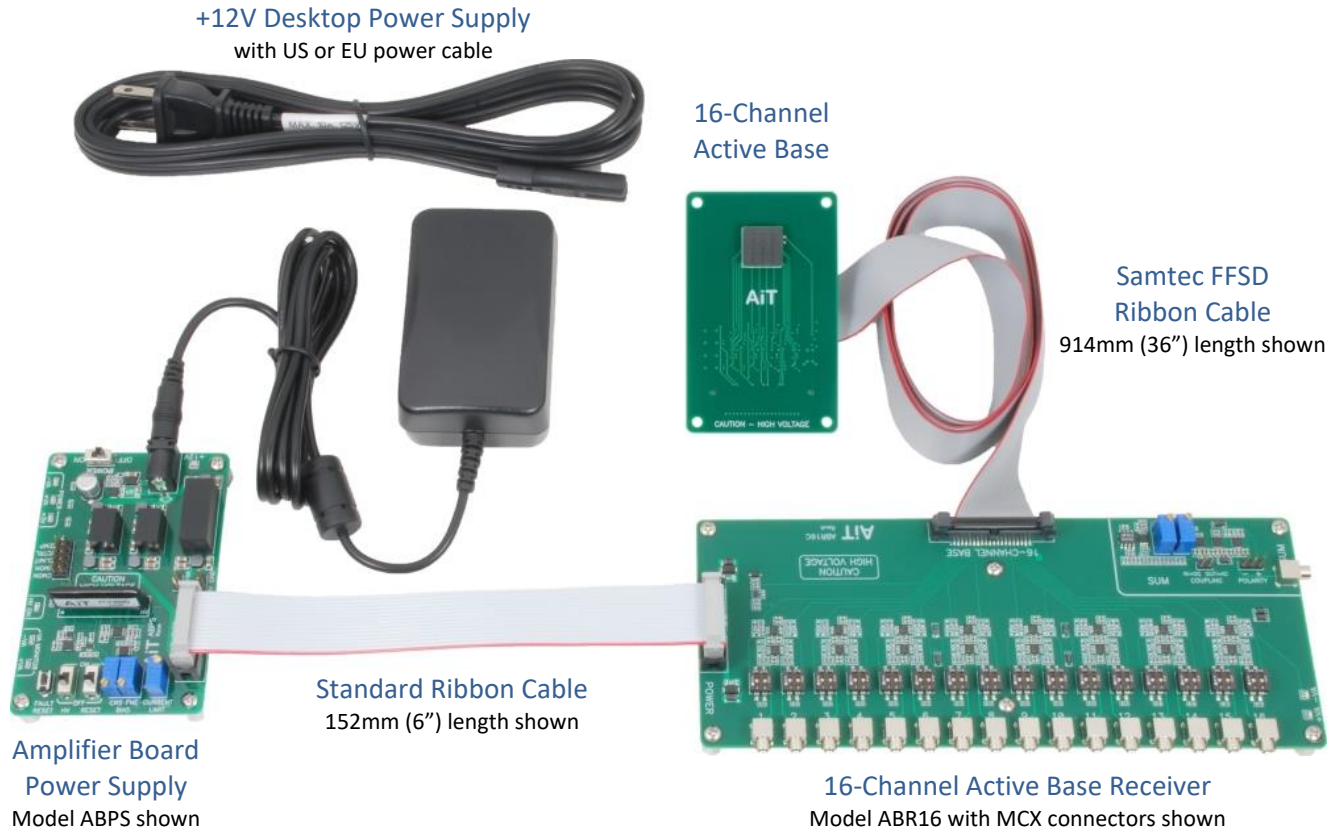
40-pin 0.050" horizontal header

Channel Map



| Pin | Function | Pin | Function |
|-----|-------------|-----|----------|
| 1 | Bias | 2 | Ground |
| 3 | Temperature | 4 | Ground |
| 5 | Channel 1 | 6 | Ground |
| 7 | Channel 2 | 8 | Ground |
| 9 | Channel 3 | 10 | Ground |
| 11 | Channel 4 | 12 | Ground |
| 13 | Channel 5 | 14 | Ground |
| 15 | Channel 6 | 16 | Ground |
| 17 | Channel 7 | 18 | Ground |
| 19 | Channel 8 | 20 | Ground |
| 21 | Channel 9 | 22 | Ground |
| 23 | Channel 10 | 24 | Ground |
| 25 | Channel 11 | 26 | Ground |
| 27 | Channel 12 | 28 | Ground |
| 29 | Channel 13 | 30 | Ground |
| 31 | Channel 14 | 32 | Ground |
| 33 | Channel 15 | 34 | Ground |
| 35 | Channel 16 | 36 | Ground |
| 37 | -VA | 38 | Ground |
| 39 | +VA | 40 | Ground |

16-Channel Active Base Readout Kit



Components

Each component is available separately. Refer to each datasheet for details.

The Active Base includes a 914mm (36") Samtec FFSD micro-pitch ribbon cable.

The Amplifier Board Power Supply includes a 12V desktop power supply and a HV80 bias voltage power supply.

The 16-channel Active Base Receiver includes a 152mm (6") power supply ribbon cable and a breakout board to connect any external power supply.

Safety Information



WARNING – High Voltage

- High voltage may be present during operation
- High voltage stored on capacitors may be present after power is removed
- Improper handling may result in personnel injury or equipment damage

This high-voltage device must be used only by personnel trained and qualified in safe handling, installation, and operation of high-voltage equipment.



CAUTION – Electrostatic Discharge (ESD) Sensitivity

The circuit board can be damaged by electrostatic discharge. Observe precautions for handling electrostatic sensitive devices. Handle only at static-safe workstations.

High-Gain Photodetectors

High-gain photodetectors such as silicon photomultipliers may conduct damaging currents if exposed to high optical signal levels while the bias voltage is applied, or if the bias voltage exceeds the recommended operating range. These devices must be operated only in low-light conditions, and only within the manufacturer's recommended bias voltage range.

Handling and Disassembly

This product may be provided with a protective enclosure. Disassembled enclosure components and circuit boards may contain sharp edges. Take appropriate safety precautions while assembling or disassembling the enclosure and handling disassembled components.

Indoor Use Only

Do not operate this product in a wet or damp environment. Do not operate in an explosive atmosphere.

Use of this product, and AiT Instruments' liability related to use of this product, is further governed by AiT Instruments' standard terms and conditions of sale, which were provided upon purchase of this product.