

Modular, USB powered Digital Detector Instruments.

We have developed a USB powered, modular, digital product line that brings together a variety of state of the art detectors, high performance trans-impedance amplifiers and a powerful microprocessor for incredible performance and versatility. This family of products include **Pyroelectric (SPI-D)**, **Silicon (SSI-D)** and **Germanium (SGI-D)** detectors in a variety of sizes.

Powerful Single and Dual Channel Labview Applications Software provides instrument control, data acquisition and analysis. Measure Radiant Flux (Watts) and Irradiance (W/cm²) with our Pyroelectric probe, and Optical Power (Watts) with our Silicon and Germanium probes. Acquire and display these measurements with our software and view live readings, full statistics and many graphical displays (see software features). Need to customize your measurement and data analysis? No problem ... you can use our SXI-D USB Drivers.

For the SPI-D series the Radiometric performance is optimized for a chopping frequency of 10 Hz (+/- 1 Hz). The SSI-D and SGI-D are designed for excellent DC performance for continuous optical sources.

We've packaged these Instruments in a unique shielded metal housing that is composed of 3 basic parts:

Detector Module: Houses the detector and current mode electronics in what is essentially a faraday cage for excellent EMI immunity and low noise performance. The pyroelectric models include an analog output BNC that is useful during optical set-up.

USB Power Supply/Processor: Includes the powerful digital circuit and USB connection to your PC computer.

Optical Front End: Designed to provide added EMI shielding and a versatile way of adding filters, windows, lenses, fiber optic connectors and apertures to our instrument. We've include a 1.035-40 threaded front bezel which makes it compatible with many of the Thor Labs SM1 opto-mechanical components.

The Optical Front End and USB Power Supply can be used with any of the Detector Modules: Pyroelectric, Silicon or Germanium.



SPI-D-50 Series Pyroelectric Instrument

This series of instruments is based on our LiTaO₃ Pyroelectric detectors which feature relatively flat spectral response from Deep UV to Far IR (0.1 to 1000 μm). They are designed for use with a source that is modulated or chopped at 10 Hz (+/- 1 Hz) and 50% duty cycle. Our SPI-D Radiometric Instrument automatically triggers on the leading edge of the voltage square wave, samples the baseline and peak voltage and subtracts the two to accurately determine the output voltage or radiant power. Measure from 50 nanowatts to 200 milliwatts. Select a SPI-D-52, SPI-D-55 or SPI-D-59 with pyroelectric detector elements that are 2 mm, 5 mm or 9 mm diameter respectively.

SSI-D-55 Silicon Instrument

This silicon detector instrument is based on a 5.8 mm square, UV enhanced Silicon Photodiode manufactured by Hamamatsu Corporation. These are shallow diffused PIN photodiodes used in the Photovoltaic mode for optimum performance in the 200 to 1100 nm spectral range. They're well suited for low level optical power measurements of continuous sources like lasers, lamps, LEDs, Laser Diodes and the like. Measure from picowatts to milliwatts with our SSI-D-55.

SGI-D-55 Germanium Instrument

This germanium detector instrument is based on a 5 mm diameter, state of the art Germanium Photodiode supplied by Judson Technologies. The detectors are used at room temperature in a current mode circuit at essentially zero reverse bias for optimum performance in the 600 to 1800 nm range. They are designed for optical power measurements of LED's, Laser Diodes and Fiber Optics. Measure from picowatts to milliwatts with our SGI-D-55.

SXI-D-50 Series Digital USB Detector Instruments

	SPI-D-52	SPI-D-55	SPI-D-59	SSI-D-55	SGI-D-55	Units
Specification (@25°C)						
Detector Type	Pyroelectric	Pyroelectric	Pyroelectric	Silicon	Germanium	
Wavelength Range	0.1 to 100	0.1 to 100	0.1 to 100	0.2 to 1.1	0.6 to 1.8	μm
d, Diameter	2	5	9	5.8 square	5	mm
f _e , Electronic 3db Frequency	35	35	35	10	10	Hz
f _t , Thermal 3db Frequency	1.6	0.5	0.25	n/a	n/a	Hz
Chopping Frequency Suggested	9-11	9-11	9-11	n/a*	n/a*	
Decades Range	6	5	5	6	6	
Power Range	2 μW - 200 mW	20 μW - 200 mW	20 μW - 200 mW	2 nW - 2 mW	2 nW - 2mW	
Minimum Power	40 nW	400 nW	400 nW	5 pW	10 pW	
Resolution	2 nW	20 nW	20 nW	1 pW	2 pW	
Maximum Power Density	50 mW/cm ²	50 mW/cm ²	50 mW/cm ²	1 mW/cm ²	1 mW/cm ²	
Analog Output	0-2	0-2	0-2	n/a	n/a	volts
Price in USD	\$1,770	\$1,830	\$1,960	\$1,650	\$1,800	

SSI-D-55 and SGI-D-55 are designed for use with continuous optical sources.

Features:

- ✓ USB Powered, Digital electronics
- ✓ LabView Applications Software
- ✓ Pyroelectric, Silicon and Germanium detectors
- ✓ High Sensitivity, Low Noise performance
- ✓ Versatile optical front end compatible with Thor Labs SM1 accessories
- ✓ NIST traceable calibration

Applications:

- ✓ Broadband Radiometry
- ✓ Optical Power measurements UV, VIS, Far IR
- ✓ Multi-channel optics test set
- ✓ Spectral calibration standard
- ✓ Laser power measurement
- ✓ Optical calibration transfer standard

Accessories and Options:

- ✓ IR windows and filters
- ✓ Neutral density filters
- ✓ Fiber optic connectors
- ✓ Organic black coating (pyro only)

LabView Applications Software

Our intuitive single and dual channel software, included in the purchase of our instruments was developed in LV 7.1 to take full advantage of our powerful Digital USB Detector Probe technology.

The SXI-D probes communicate with the host PC via a USB port. We've created a Virtual Com Port so that the user can easily develop custom applications with existing terminal emulators.

Features common to both single and dual channel Application Software:

- ✓ Live display in W or W/cm²
- ✓ Statistics; min, max and standard deviation
- ✓ Graphic displays; strip chart, histogram and tuning
- ✓ Wavelength correction
- ✓ Window transmission correction (attenuation)
- ✓ Background Null (offset)
- ✓ Controls include range, trigger level
- ✓ Data file and analysis mode (stats and graphs)

Dual Channel Features:

- ✓ Display A, B and Ratio simultaneously
- ✓ Ratio A/B or B/A in decimal or percentage
- ✓ 2CH data collection with time stamp
- ✓ Full data analysis and graphics for A, B and Ratio

Due to the variable costs of components, published prices are subject to change without notice.