

Compact Photodiode Power Head with Silicon Detector



S121C

Description

The S121C power head is designed for general purpose optical power measurements. The head is optimized for small thickness to fit in tight spaces. The high sensitive photodiode with large active area in combination with a reflective, diffused ND filter enables power measurements up to 500 mW in free-space and fiber-based applications. A removeable annular VIS/IR viewing target allows conveniently centering the measured beam to the active area of the photo-diode. The target absorbs light from 400 to 640nm and 800 to 1700nm.

The S121C housing includes a threaded input in axis with the light input aperture that is compatible with any number of Thorlabs 1" threaded accessories. This allows convenient mounting of external optics, fiber adapters, light filters, and apertures. A #8-32 and M4 threaded mounting hole is provided to accommodate posts and post holders.

The S121C is compatible with all new Thorlabs display units. A non-volatile memory in the sensor connector contains sensor information data and the NIST and PTB traceable calibration data.

Available Accessories

S120-FC	FC fiber adapter
S120-SMA	SMA fiber adapter
S120-SC	SC fiber adapter
S120-LC	LC fiber adapter
S120-ST	ST fiber adapter
SM1CP1	Dust cap (included)

The S121C is also compatible to the Thorlabs imperial and metric post and post-holder series and Thorlabs SM1 mechanics.

Cleaning and Maintenance

There are no serviceable parts in the S121C head. The housing may be cleaned by wiping with a soft damp cloth. When cleaning the aperture filter, treat it as any other fine optic. Gently blow off any debris using compressed air and wipe gently with an optic tissue wetted with propanol. If you suspect a problem with your S121C please call Thorlabs and an engineer will be happy to assist you.

As long as the sensor has not been exposed to excessive optical power (please pay attention to the maximum ratings in the technical specifications), the calibration should be very stable over long periods of time (well over a year). To keep the accuracy and performance of the S121C, Thorlabs recommends a yearly recalibration, starting one year after purchase.

Specifications

Detector Type	Silicon Photodiode
Wavelength Range	400 - 1100 nm
Optical Power Working Range	500 nW - 500 mW
Max Average Power Density	20 W/cm ²
Max Pulse Energy	20 μ J
Linearity	$\pm 0.5\%$
Resolution ¹⁾	10nW
Measurement Uncertainty ²⁾	$\pm 3\%$ 451 - 1000 nm $\pm 5\%$ 400 - 450 nm, 1001 - 1100 nm
Typical Application	Low Power Lasers
Laser Types	Diode, Diode Arrays, He-Ne, Dye, Ion Lasers (Ar+, Kr+)
Coating /Diffuser ³⁾	Reflective ND (OD2)
Cooling	Convection
Head Temperature Measurement	NTC Thermistor 4.7k Ω
Console Compatibility	PM100D, PM100A, PM100USB, PM200, PM320E
Response Time	< 1 μ s
Sensor Dimensions	$\varnothing 30.5$ mm x 12.7 mm
Active Detector Area	9.7 mm x 9.7 mm
Input Aperture	$\varnothing 9.5$ mm
Cable Length	1.5 m
Connector	Sub-D 9p male
Weight	0.07 kg
Post ³⁾	#8-32 & M4 thread
Aperture Thread	SM1, outer thread
Fiber Adapters (optional)	FC, SC, LC, SMA, ST

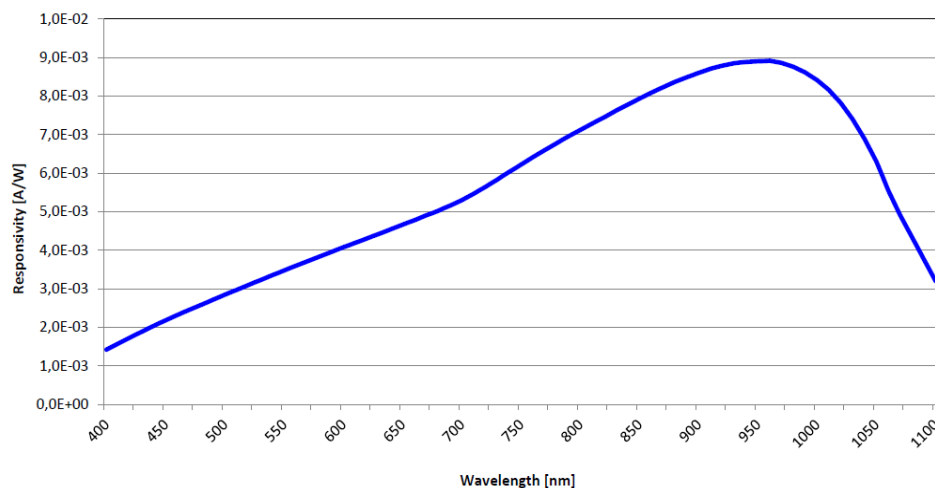
¹⁾ Measured with PM100D console in bandwidth low setting.

²⁾ Beam diameter > 1mm

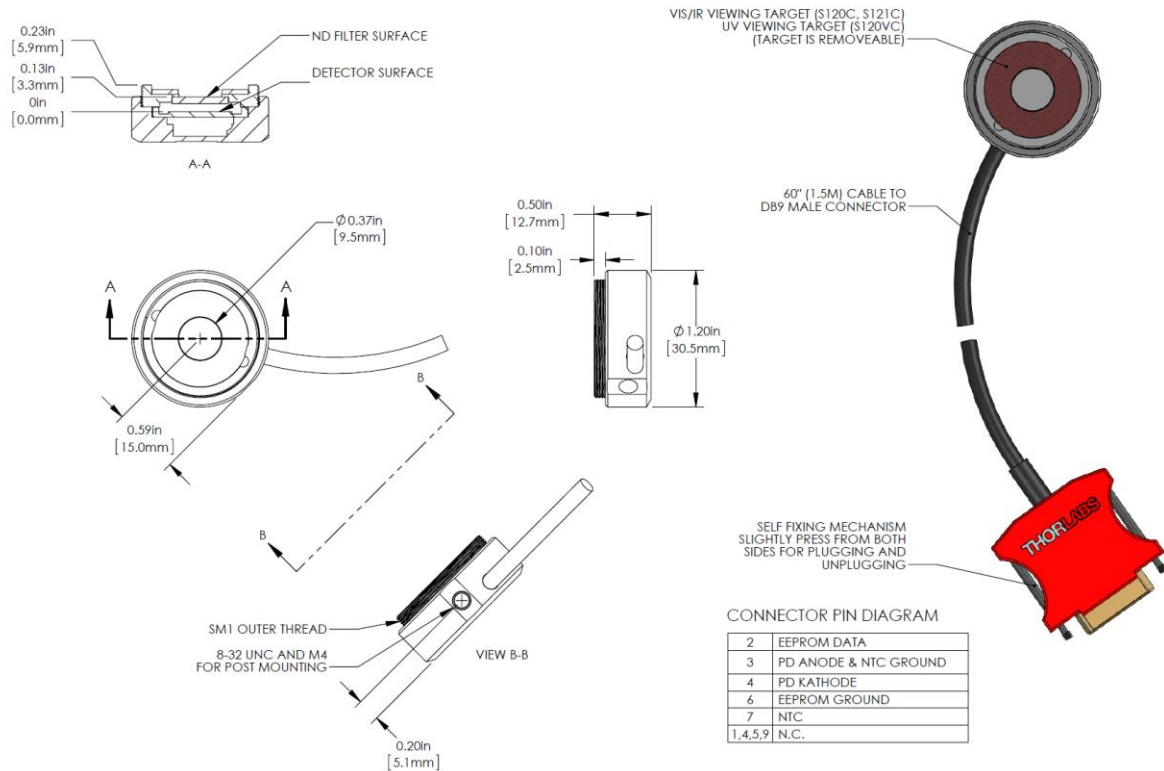
³⁾ This specification is valid for S121C devices from serial number 1203xxx. For older versions, please contact technical support.

Please note that the S121C power meter head is not compatible with the older Thorlabs power meter consoles (PM100, PM30, PM300, PM300E, S100).

Typical Response Graph



Drawings



Precautions and Warranty Information

These products are ESD (electro static discharge) sensitive and as a result are not covered under warranty. In order to ensure the proper functioning of a photodiode care must be given to maintain the highest standards of compliance to the maximum electrical specifications when handling such devices. The photodiodes are particularly sensitive to any value that exceeds the absolute maximum ratings of the product. Any applied voltage in excess of the maximum specification will cause damage and possible complete failure to the product. The user must use handling procedures that prevent any electro static discharges or other voltage surges when handling or using these devices.

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- 2. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system or to affect its safety or effectiveness.*
- 3. The Thorlabs products described in this document are not intended nor warranted for usage in Military Applications.*

