Compact Photodiode Power Head with Silicon Detector



S120VC

Description

The S120VC power head is designed for general purpose optical power measurements. The head is optimized for small thickness to fit in tight spaces. The highly sensitive photodiode with large active area in combination with an absorptive ND filter enables power measurements up to 50 mW in free-space and fiber-based applications. A removable annular UV/VIS viewing target allows conveniently centering the measured beam to the active area of the photodiode. The target absorbs light from 200 to 525 nm.

The S120VC housing includes a threaded input on 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. An 8-32 and M4 threaded mounting hole is provided to accommodate posts and post holders.

For sensor readout, the S120VC is compatible with any Thorlabs consoles and interfaces equipped with a DB9 connection, and rated for photodiode power measurement. 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 S120VC power head is also compatible with Thorlabs' imperial and metric post and post holder series, as well as SM1-threaded mechanics.

Cleaning and Maintenance

There are no serviceable parts in the S120VC 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 S120VC please contact Thorlabs Tech Support.

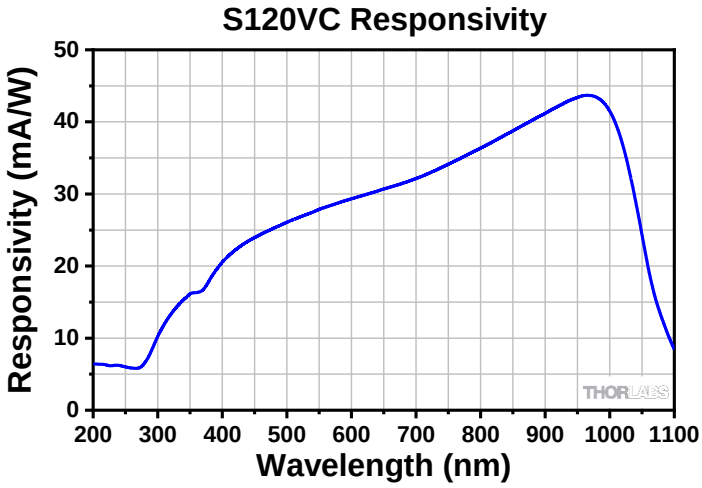
As long as the sensor has not been exposed to excessive optical power (please pay attention to the maximum ratings in the technical specifications), the calibration should be very stable over long periods of time (well over a year). To keep the accuracy and performance of the S120VC, Thorlabs recommends a yearly recalibration, starting one year after purchase.

Specifications

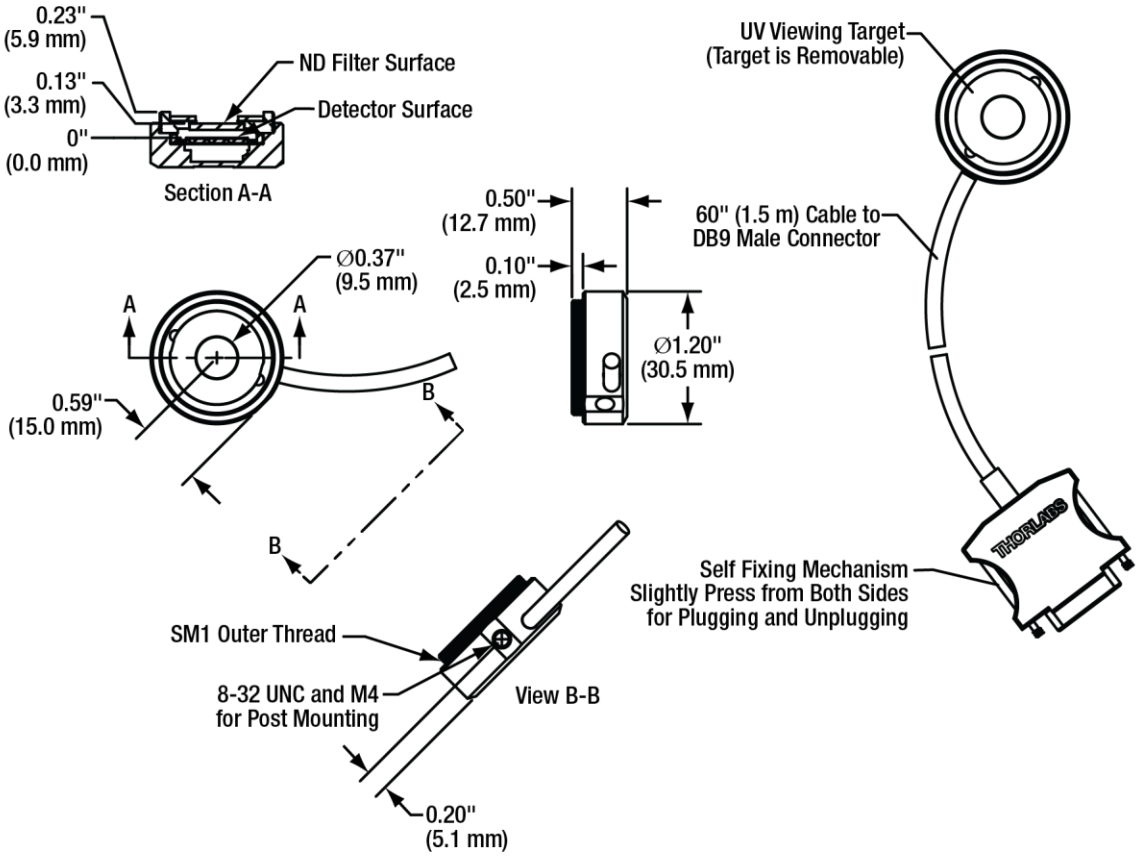
Specification	Value
Detector Type	Silicon Photodiode (UV extended)
Wavelength Range	200 - 1100 nm
Optical Power Working Range	50 nW – 50 mW (200 – 450 nm) 50 nW – 20 mW (450 – 1100 nm)
Average Power Density (Max)[a]	20 W/cm^2
Pulse Energy (Max)	20 µJ
Linearity	±0.5%
Resolution[b]	1 nW
Measurement Uncertainty[c]	±3% (440 – 980 nm) ±5% (280 – 439 nm) ±7% (200 - 279 nm, 981 – 1100 nm)
Typical Application	Low-Power Lasers
Laser Types	Diode, Diode Arrays, He-Ne, Dye, Ion Lasers (Ar+, Kr+)
Coating/Diffuser[d]	Reflective ND (OD 1.5)
Cooling	Convection
Head Temperature Measurement	NTC Themistor, 4.7 kΩ
Response Time	<1 µs
Sensor Dimensions	Ø30.5 mm x 12.7 mm
Active Detector Area	9.7 mm x 9.7 mm
Input Aperture	Ø9.5 mm
Cable Length	1.5 m
Connector	Sub-D 9p Male
Weight	0.07 kg
Mounting Thread	8-32 and M4
Aperture Thread	External SM1
Fiber Adapters (optional)	FC, SC, LC, SMA, ST®[f]

a. For continuous wave (CW) sources, this value is equivalent to the peak power density, while for pulsed laser sources this value is calculated from the time-averaged power and beam profile. The maximum average power density is determined by the total energy deposited, so the instantaneous power can be higher, as long as the maximum pulse energy is not exceeded.
b. Measured Using a PM100D Console in Low Bandwidth Setting
c. Beam Diameter >1 mm
d. This specification is valid for S120VC devices starting from serial number 1203xxx. For older units, please contact techsupport@thorlabs.com.
e. Please note that the S120VC power meter head is not compatible with the previous-generation power meter consoles PM100, PM30, PM300, PM300E, and S100.
f. ST® is a registered trademark of Lucent Technologies, Inc.

Typical Response Graph



Drawings



Precautions and Warranty Information

These products are ESD (electrostatic 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 electrostatic discharges or other voltage surges when handling or using these devices.

Thorlabs, Inc. Life Support and Military Use Application Policy is stated below:

THORLABS' PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS OR IN ANY MILITARY APPLICATION WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF THORLABS, INC. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.

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.

