Integrating Sphere Power Sensor Head with Silicon Detector

S140C

Description

The S140C Integrating Sphere Power Sensor Head with Silicon Detector is designed to measure the optical power of an incoming beam independent of the divergence and beam shape. This power meter sensor head has an optical power working range from 1 µW to 500 mW and a wavelength range of 350 nm to 1100 nm. It is designed for fiber-coupled and free space applications. The S140C is compatible with all current Thorlabs power meter display units. A non-volatile memory in the sensor connector contains sensor information data and the NIST and PTB traceable calibration data.

A SM1 (1.035"-40) thread adapter and FC fiber adapter are included with the S140C; other fiber adapters for SMA, LC, ST and SC connectors can be purchased separately as accessories. 8-32- and M4-threaded tapped holes are provided for mounting to Ø1/2" posts and post holders.

Specifications

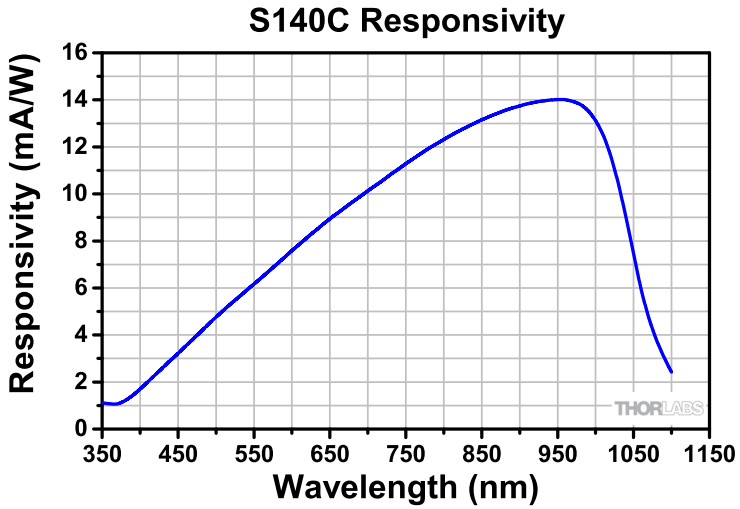
S140C	
Detector Type	Silicon Photodiode
Wavelength Range	350 - 1100 nm
Optical Power Working Range	1 µW – 500 mW
Max Average Power Density	1 kW/cm²
Max Pulse Energy Density	1 J/cm²
Linearity	±0.5%
Resolution[a]	1 nW
Measurement Uncertainty[b]	±3% 440 – 980 nm ±5% 350 – 439 nm, ±7% 981 – 1100 nm
Typical Application	Fiber Lasers / Low and Mid Power Lasers
Laser Types	Diode, Ti-Sapphire, He-Cd, Argon Ion, Krypton Ion, Dye
Coating / Diffuser	Zenith® PTFE Integrating Sphere (Ø1")
Cooling	Convection
Head Temperature Measurement	NTC Thermistor 4.7kΩ
Console Compatibility	PM100D, PM100A, PM100USB, PM200, PM320E
Response Time	<1 µs
Sensor Dimensions	Ø45 x 30.5 mm
Active Detector Area	3.6 mm x 3.6 mm
Input Aperture	Ø5 mm
Cable Length	1.5 m
Connector	Sub-D 9-Pin male
Weight	0.2 kg
Post Mounting	8-32 & M4 Tapped Holes
Aperture Thread	External SM1-Threaded (1.035"-40) Removable Adapter
Fiber Adapters (Optional)	FC (Included), SC, LC, SMA, ST

a. Measured with PM100D console in a low bandwidth setting.

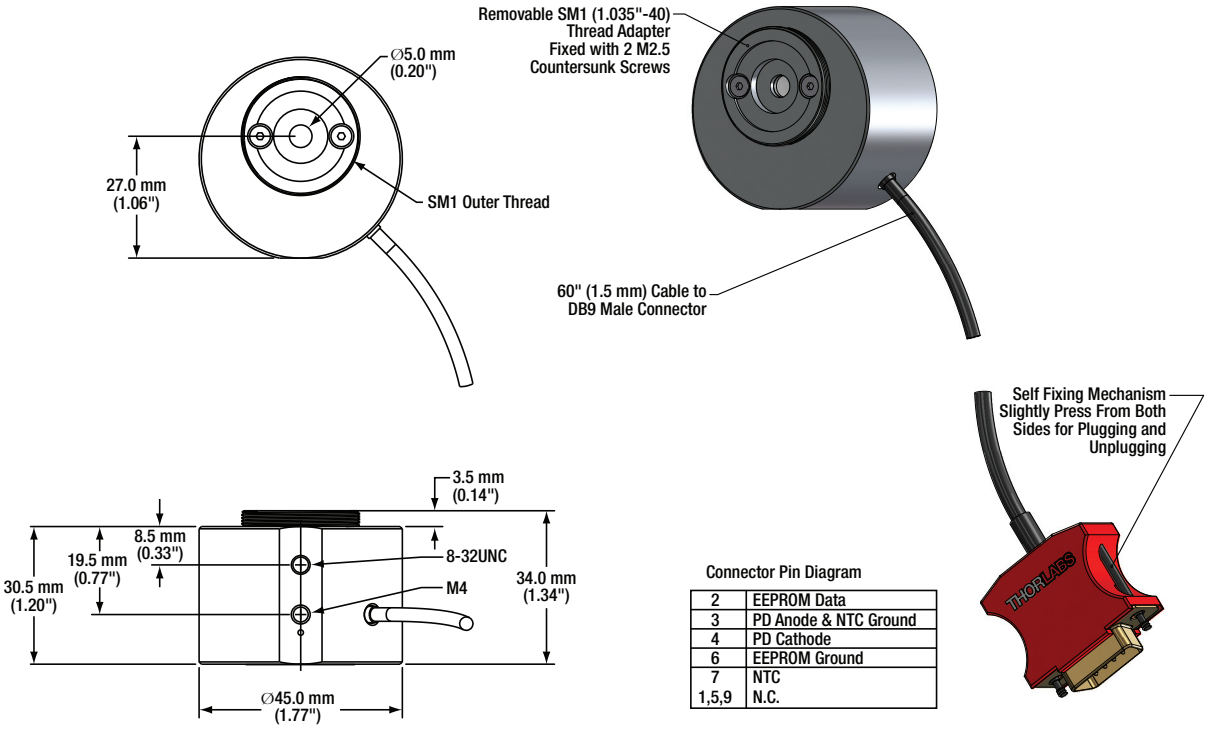
b. Beam diameter > 1 mm

Please note that the S140C power meter head is not compatible with the older Thorlabs power meter consoles (PM100, PM30, PM300, PM300E, S100).

Typical Response Graph



Drawings



Connector Pin Diagram

2	EEPROM Data
3	PD Anode & NTC Ground
4	PD Cathode
6	EEPROM Ground
7	NTC
1,5,9	N.C.

Available Accessories

S120-SMA	SMA fiber adapter
S120-SC	SC fiber adapter
S120-LC	LC fiber adpter
S120-ST	ST fiber adapter
S120-FC	FC fiber adapter (included)
SM1A20	SM1 thread adapter (included)

The S140C is also compatible to the Thorlabs imperial and metric post and post-holder series and with the optional thread adapter to Thorlabs SM1 mechanics.

Cleaning and Maintenance

There are no serviceable parts in the S140C head. The housing may be cleaned by wiping with a soft damp cloth. The integrating sphere inner surface cannot be cleaned, do not touch this surface. Gently blow off any debris using compressed air. If you suspect there is a problem with your S140C, please contact 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 S140C, Thorlabs recommends a yearly recalibration, starting one year after purchase.

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.

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.