Large Aperture Integrating Sphere with Si Photodiode Sensor

S142CL



Description

The S142CL Integrating Sphere Power Sensor Head features a silicon detector and a large aperture (Ø22 mm) and 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 10 µW to 5 W and a wavelength range of 400 nm to 1100 nm.

A baffle within the sphere shades the detector port to prevent direct light from hitting the photodiode. This arrangement and the large aperture enable measurements of large and divergent beams such as those emitted from LED or VCSEL light sources. Insertion of a second and third port in the S142CL sensor head is possible on request. Please contact Tech Support.

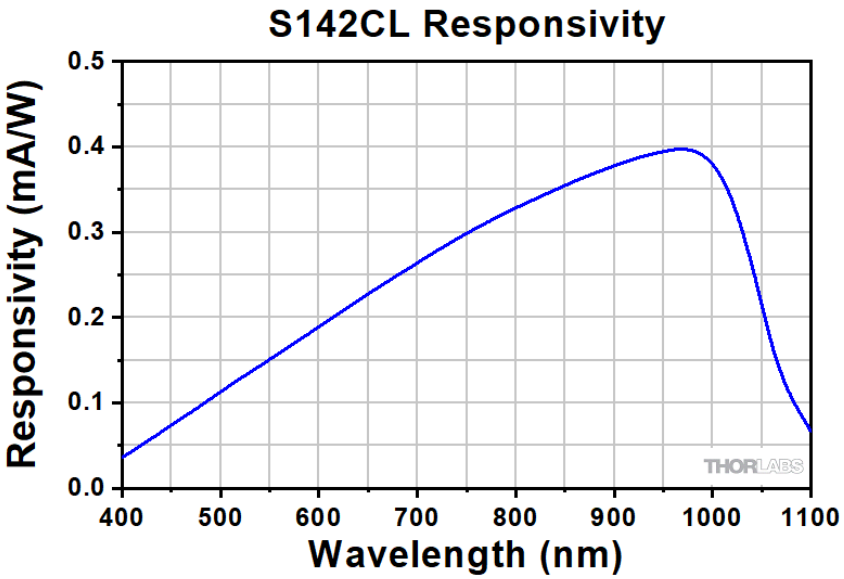
For mounting, the S142CL has a tapped combi thread mounting hole with 8-32 and M4 threads on the bottom of the device which accommodates metric or imperial Ø1/2" posts and post holders. The light input side has four 4-40 threads for mounting of 30 mm cage system components. A non-volatile memory in the sensor connector contains sensor information data and the NIST and PTB traceable calibration data.

Specifications

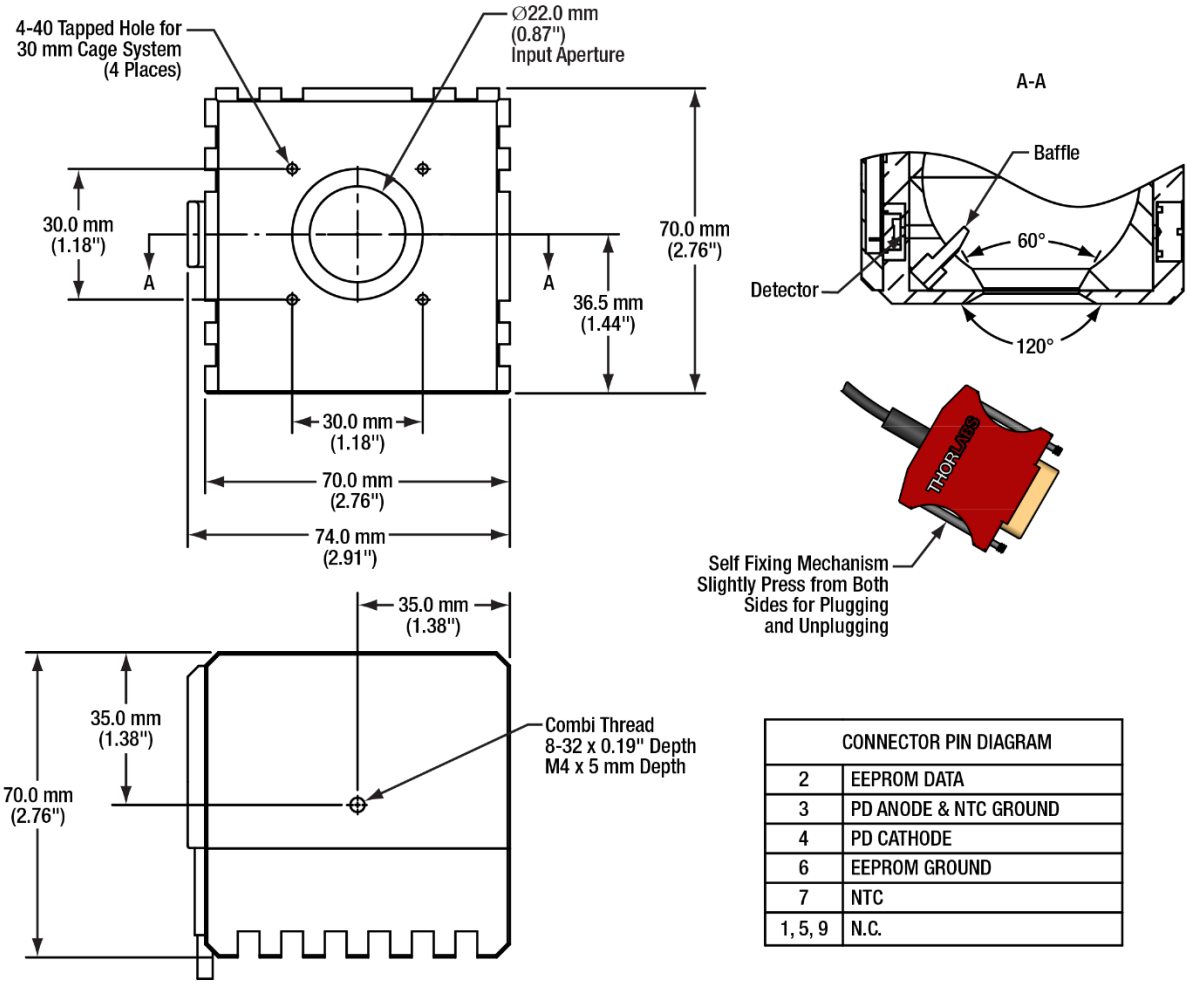
Specification	Value
Detector Type	Silicon Photodiode
Wavelength Range	400 - 1100 nm
Optical Power Working Range	10 µW - 5 W
Max Average Power Density	2 kW/cm²
Max Pulse Energy Density	7 J/cm²
Linearity	±0.5%
Resolution	10 nW
Measurement Uncertainty[a]	±3% 440 - 980 nm, ±5% 400 - 439 nm, ±7% 981 - 1100 nm
Coating / Diffuser	Zenith® PTFE Integrating Sphere (Ø2")
Cooling	Convection
Head Temperature Measurement	NTC Thermistor 4.7 kΩ
Response Time	<1 µs
Sensor Dimensions	70 mm x 74 mm x 70 mm
Active Detector Area	3.6 mm x 3.6 mm
Input Aperture	Ø22 mm
Cable Length	1.5 m
Connector	Sub-D 9-Pin Male
Weight	58 g
Post Mounting	Combi Thread 8-32 & M4
Cage System Mounting	4x4-40 Tapped Holes
Console and Interface Compatibility	PM100D, PM100A, PM100USB, PM101x, PM103x, PM400, PM5020

a. Beam Diameter > 1 mm, valid for (24 ± 2) °C

Typical Performance Plots



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.

Additional Info

There are no serviceable parts in the S142CL 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 S142CL, please contact Thorlabs and an engineer will be happy to assist you.

As long as the sensor is not exposed to excessive optical power (see specifications), the calibration should be very stable over long periods of time). However, the detector should be calibrated once a year to ensure accuracy.

Precautions and Warranty Information

These products are covered under a two-year warranty. To ensure the proper functioning of a sensor care must be given to maintain the highest standards of compliance to the maximum optical specifications when handling the device. The photodiodes are particularly sensitive to any value that exceeds the absolute maximum ratings of the product. Any applied optical power in excess of the maximum specification will cause damage and possible complete failure to the product.

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.

