Microscope Slide High Resolution Silicon Power Head



S170C

Description

The S170C Microscope Power Sensor Head is designed to measure the illumination power in microscopes. The housing shares dimensions with a microscope slide and fits standard microscope objective stages in both upright and inverted setups. The sensor can handle a wide power range from less than 10 nW to 150 mW in the specified wavelength range.

The sensor features a large area silicon photodiode behind a reflective neutral density filter with an optical density (OD) of 1.5. The gap between the photodiode and filter is filled with a special index matching gel to prevent total internal reflection that would result in dramatic measurement errors when using high NA objectives in combination with oil or water.

When using water or oil objectives, the appropriate immersion medium may be placed directly on the surface of the ND filter as it is sealed to the housing. Alternatively, a microscope cover glass may be placed in the depression above the ND filter before adding the immersion medium to simplify clean up. Any liquid used for focusing can be easily cleaned from the even glass surface and the top area of the stainless-steel housing using the procedure outlined in the Additional Info section.

To align and focus the beam, the bottom of the sensor housing has a laser-engraved grid. Alternatively, it is possible to focus the beam on the surface of the ND filter. To avoid damaging the sensor, we recommend positioning it in the light path at a location where the beam is not focused. It is important not to exceed the max average power density over the beam's spot size.

A #8-32 and M4 threaded mounting hole is provided to accommodate posts and post holders. Non-volatile memory in the sensor connector contains sensor information data and the NIST and PTB traceable calibration data.

Specifications

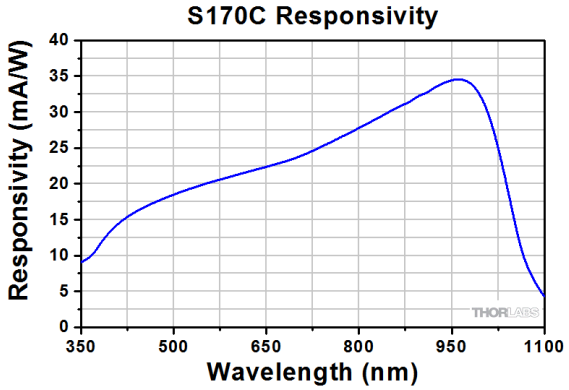
Specification	Value
Detector Type	Silicon Photodiode
Wavelength Range	350 - 1100 nm
Optical Power Working Range	10 nW – 150 mW
Max Average Power Density	20 W/cm²
Linearity	±0.5%
Resolution[1]	1 nW
Measurement Uncertainty[2]	±3% 440 – 980 nm ±5% 400 – 439 nm ±7% 981 – 1100 nm
Coating / Diffuser	Reflective ND OD 1.5
Cooling	Convection
Response Time	<1 µs
Sensor Dimensions	76 mm x 25.2 mm x 5 mm

Active Detector Area	18 mm x 18 mm
Input Aperture	20 mm x 20 mm
Cable Length	1.5 m
Connector	Sub-D 9-Pin Male
Weight	0.07 kg
Post Mounting	Combi Thread #8-32 & M4
Console Compatibility	PM100D, PM100A, PM100USB, PM400, PM101x, PM103x, PM5020

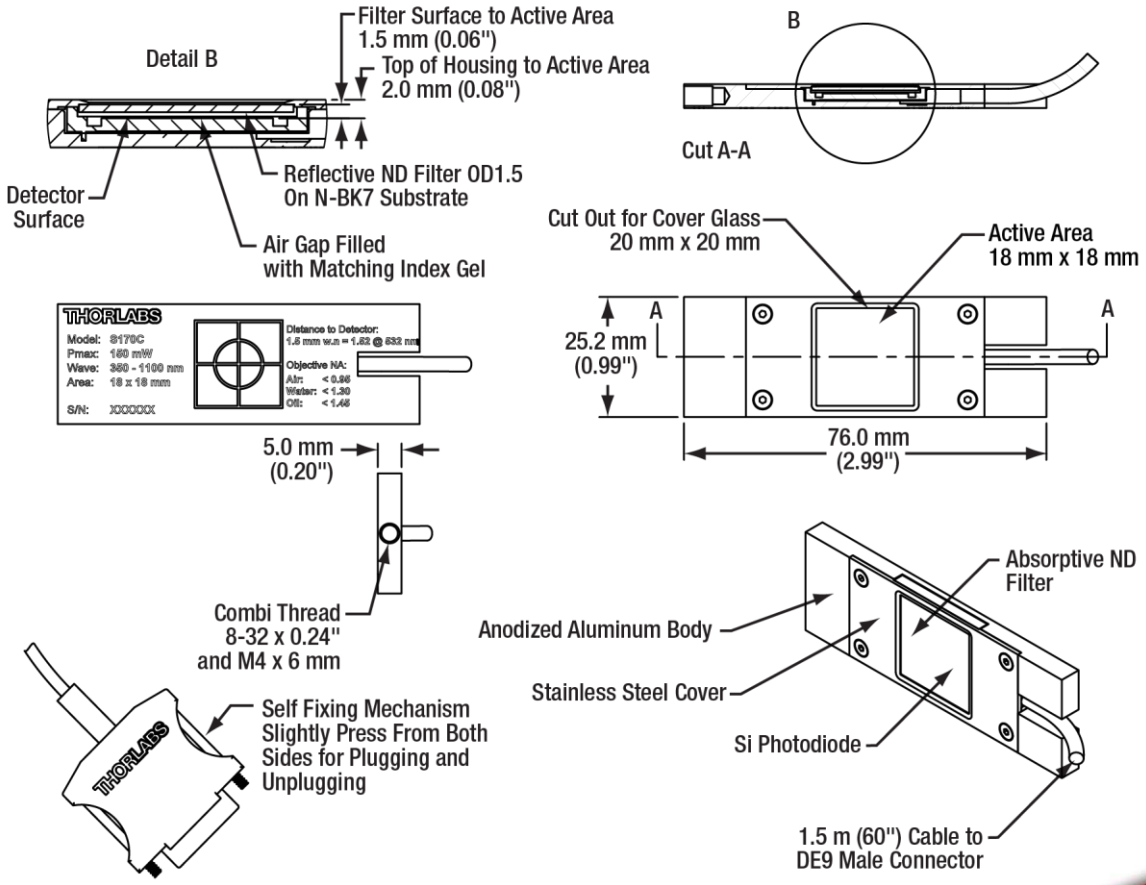
[1] Measured with PM100D console in low bandwidth setting.

[2] Beam Diameter >1 mm, Valid for (24 ± 2) °C

Typical Performance Plots



Drawings



Additional Info

There are no serviceable parts in the S170C 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 there is a problem with your S170C, please contact Thorlabs and an engineer will be happy to assist you.

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

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.

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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.

