

818-MSCOPE SENSOR

Microscope Slide Photodiode Sensor



Measure Power in a Microscope

The 818-MSCOPE is a Microscope Slide power sensor that measures the optical power at the sample plane in a microscopy setup. The silicon photodiode measures from 350 nm to 1100 nm at optical powers ranging from $3\mu\text{W}$ to 1W and is designed to be a microscopy power sensor that answers the needs of fluorescence excitation measurements. The sensor has a footprint of 76.0 mm x 25.2 mm matching that of a standard microscope slide. The sensing area is protected and cleanable sealed so that it can measure with in an immersion medium such as water or glycerol as well as in air.

Low Angular Dependence for high N.A. objectives

There is a particular challenge with these measurements due to the strongly converging light coming through high N.A. objectives. When attempting to use standard photodiode sensors the measurement will be inaccurate since the responsivities of photodiode sensors have angular dependence and a large percentage of light is incident at high angles. When there is a need for accurate absolute measurements the ideal solution would be to use an integrating sphere, however, the physical constraints of microscope setups make integrating spheres measurements cumbersome and sometimes impossible. We designed the sensor so that the angular response of 818-MSCOPE is relatively flat making it insensitive to the high angles of incidence of the incoming light.



Features and Benefits

The 818-MSCOPE sensor is shaped like a microscope slide so that it can measure the optical power of the laser on a microscope

- Ideal for measurement after the microscope objective
- Low angular dependence for high N.A. objectives
- Can be used with air, water or oil immersion objectives

Suitable for air, water or oil immersion objectives

818-MSCOPE has a smooth cleanable active area of the sensor. In addition to working in air, it is easy to use water and oil immersion objectives by directly applying the water/oil to the sensor surface.

Alignment target on the sensor body

The 818-MSCOPE works the best when focused light from the objective is centered on the active area of the sensor. This can be accomplished by first adjusting the system so that light is centered on the target on the backside of the sensor and then flip the sensor around for the measurement.

NIST-traceable Sensor Calibration

Our calibrated photodiode sensors include a full spectral response calibration utilizing NIST-traceable standards calibrated with high-precision equipment maintained in Newport's optical detector calibration facility. Tight calibration facility and process control allows the tightest calibration uncertainty in industry. Each detector is shipped with the calibration data, which is electronically stored inside the detector's EEPROM. A certificate of calibration as well as the calibration data are shipped with each detector. To maintain accuracy and guarantee performance, Newport recommends annual photodiode detector calibration.

Specifications

Detector Type	Microscope Slide Form Factor	Calibration Module	DB15 Connector Pigtail
Detector Input	Free Space	Calibration Uncertainty	±7 % @ 350-399 nm ±5 % @ 400-1100 nm
Detector Material	Silicon with diffuser		
Spectral Range	350-1100 nm	Linearity	±1.0 %
Sensor Size	18 x 18	Rise Time	0.2 sec
Attenuator	None	Connector Type	DB15
Maximum Measurable Power	1 W @ 350-649 nm 600 mW otherwise	Cable Length	1.5 m
Minimum Measurable Power	3 µW		
Maximum Power Density	20 W/cm ²		