PD300-MS Sensor

Ophir P/N 7Z02482

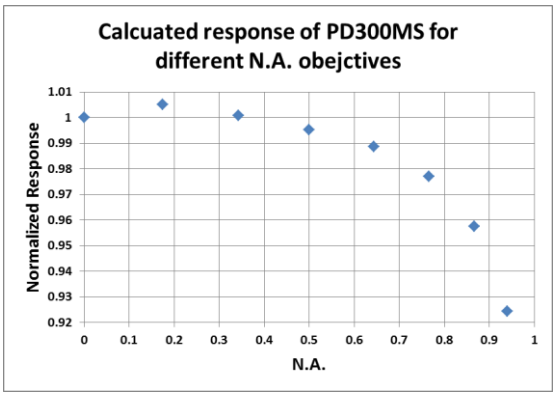
User Notes

The PD300-MS is designed to measure the optical power coming through microscope objectives. The main application for this is in fluorescence microscopy.

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.

The PD300-MS was developed in order to enable accurate power readings with a sensor that fits in the physical constraints of a microscope system.

The angular response for the PD300-MS is relatively flat making it insensitive to the high angles of incidence of the incoming light. Below is a graph showing the calculated response of the PD300-MS for light incident from different N.A. objectives – uniform intensity was assumed for all angles.



In practice the PD300-MS will work best when the 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.

Another feature of the PD300-MS is the 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.

The PD300-MS accuracy and power levels are wavelength dependent – please see the spec for more information.