

# [ Power Meter ]

**ONELIGHT**  
CONTROL MADE SIMPLE

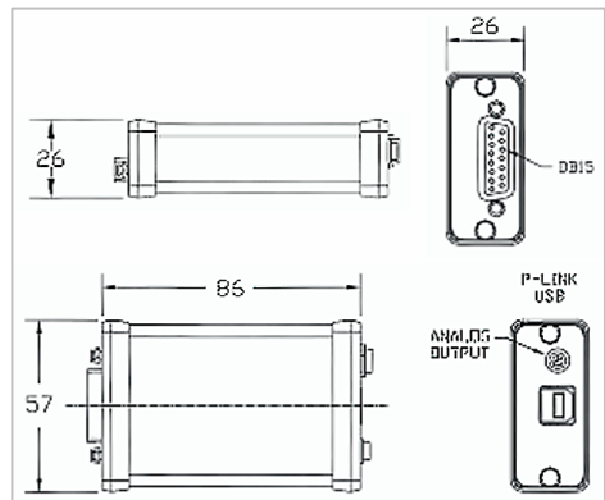
## POWER METER SPECIFICATIONS

One of the most powerful tools to use with the OneLight™ Spectra is the OneLight Power Meter System. This enables the user to accurately calibrate the output power of the OneLight Spectra so that the user's application software can provide controlled illumination of known intensity and wavelength. This calibration can be applied in two modes: an open-loop calibration mode or, for those who wish to avoid frequent recalibration, a closed-loop feedback spectrometer calibration mode.

The System features a USB Power Meter and stand, a thermopile-based detector, an adapter to connect the meter to the OneLight Liquid Light Guide, and OneLight's Power Meter Auto-Calibration Software. The Power Meter comes with a USB cable to give power to and transfer data from the meter. The calibration software also works with the USB spectrometer to directly calibrate the spectrometer feedback system to the actual measured optical output of the system at each wavelength.

Sensor Head Specifications	
Dimensions	73 mm x 73 mm x 72 mm
Weight	0.312 kg
Effective Aperture Diameter	12 mm Ø
Max. Measurable Power	1 W
Noise Equivalent Power	± 0.5 µW
Thermal Drift	12 µW/°C
Rise Time (nominal)	2.5 sec
Calibration Uncertainty	± 2.5%

Power Meter Specifications	
Dimensions	86 mm x 57 mm x 26 mm
Weight	0.106 kg
Power Range	300 pW to 3W
Monitor Accuracy	± 0.5%
Response Time (accelerated)	1 sec
Software	PC-LINK Software



Power Meter Specifications  
All measurements in (mm)

The OneLight Power Meter and Monitor system is compact, easy-to-use and provides users with computer-based control of its measurements. This facilitates accurate data acquisition by the meter, which can then be manipulated in software to produce an intensity calibration for the Spectra system.

**POWER METER CALIBRATION METHODS**

This USB-based power meter works in conjunction with the OneLight Calibration Software to provide two types of intensity calibration for the OneLight Spectra:

Standard Calibration:

The standard calibration mode measures the power of the light emitted from the OneLight Liquid Light Guide. The OneLight software will sequentially turn on groups of mirrors and measure the optical power of the light emitted for this group. This power will be associated with the two-dimensional co-ordinates of the mirror group. From the resulting array of measurements, the software will calculate a two-dimensional intensity map of the mirror array in  $\mu\text{W}/\text{mirror}$ . This can be associated with the wavelength calibration to create a two-dimensional intensity and wavelength map of the DLP array. This map can then be used by the customer's application software to define patterns or create look-up tables that application programs can use to produce desired illumination. Because the standard calibration is based on the measured output of the system at a particular point in time, it will not reflect the effects of lamp fluctuations, warm-up times or ageing of the lamp. The user will have to determine how often calibration needs to be repeated according to their application.

Feedback Calibration:

The feedback calibration mode is designed to work in conjunction with a wavelength calibrated feedback spectrometer. The goal of this calibration mode is to provide an intensity calibration for the feedback spectrometer that takes into account both the spectral response of the spectrometer itself and the difference between the optical transfer function of the optical path to the spectrometer and the optical path to the output of the OneLight Liquid Light Guide. The OneLight software will sequentially turn on groups of mirrors and measure the optical power of the light emitted for this group. This power will be associated with the two-dimensional co-ordinates of the mirror group, and the measured spectral output as recorded by the feedback spectrometer. A calibrated response function will then be applied to feedback measurements from the spectrometer to correctly represent the actual output from the liquid light guide. This mode of calibration will automatically provide real-time illumination power and wavelength information to application programs, which can then compensate for lamp output variation due to warm up or ageing.

**The thermopile-based detector****The OneLight Power Meter**