

User Notes for Newport LIAD-PD-300N

1. General description and setup:

The LIAD-PD-300N with a host meter such as 843-R, 1919-R or 841-PE-USB, form a system capable of measuring CW power in the region of ~300fW up to 300nW. In order for the system to work correctly, connect up as follows:

- Connect LIAD-PD-300N DB15 connector from electronics box to host meter or USB interface device
- Connect the BNC cable (included with LIAD-PD-300N) between electronics box and chopper
- Connect 12v power supply (included with chopper) to 12VDC input socket on chopper

For convenience, the chopper is provided with screw threads on all four sides, to allow it to be mounted in the most convenient orientation as possible relative to the light source and sensor.

2. Tips and best practice when using the sensor:

The sensor is sensitive to any signal chopped at 18Hz and is insensitive to any other stray light that may enter. When measuring close to the lowest power capability of the sensor (in the region of a few nW or lower) it is recommended that the chopper be placed as close as possible to the light source, and as far away as possible from the sensor. This ensures that as little stray light as possible will be able to pass through the chopper and onto the sensor. It also ensures that thermal changes in the chopper blade will not affect the measurement.

Note that the LIAD-PD-300N sensor has a response time 0-95% of approximately 3.5 seconds. It will not be able to respond to signals changing faster than this. Pulsed sources can be measured using the LIAD-PD-300N, and the output will represent the average power of the pulsed source. For reliable pulsed source measurements, the pulse rate should exceed about 200Hz.

The noise for the LIAD-PD-300N sensor is specified using a 10s moving average. The host meter or interface measures at a rate of 15Hz but for best performance, it is recommended that averaging is performed. This can be done either by engaging averaging on the meter itself, or as a post-processing stage after logging the data into a PC.

3. Zeroing the sensor against the host meter or interface device:

In order to get the best possible performance from the sensor, it is recommended to zero the sensor against the host meter or interface device before using the sensor. This can be done as follows:

- Disconnect the BNC cable between the electronics box and chopper (or power off the chopper) – the sensor output will drop to zero
- Perform regular zeroing function (refer to your power meter or USB interface device “User Manual” for instructions)

For sensitive measurements, it is also recommended to block or turn off the measured source before measurement and then activate the offset button on the meter or PC to eliminate a measurement offset due to a background offset reading that can be either positive or negative.

4. Compatibility of the LIAD-PD-300N with power meters and USB interface devices:

The following power meters and USB interface devices provide full support for the LIAD-PD-300N sensor, when using the latest firmware upgrade available:

- 843-R – firmware version 1.26 or above
- 841-PE-USB – firmware version 1.11 or above
- 1919-R – firmware version 1.30 or above