

# LIAD SERIES

## Lock-In Amplifier Detectors



The LIAD series Lock-in Amplifier Detectors are ideal detectors for calibrated power measurements of very low level light sources.

- Built-in lock in amplifier to reduce noise and drift
- Broad wavelength range from 0.15 to 12  $\mu\text{m}$
- Power measurement down to 300 fW
- Capable of a pulsed source with 200 Hz or higher frequency
- Chopper included

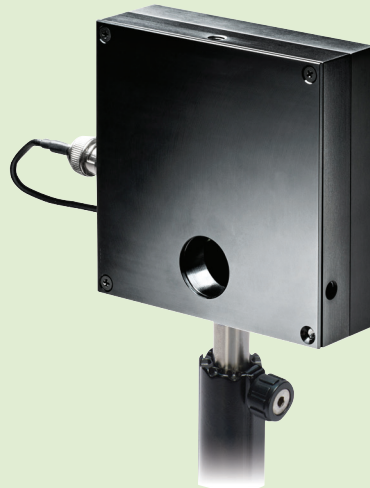
### Built-In Lock in Amplifier to Reduce Noise and Drift

The LIAD series Radiometers use a pyroelectric or photodiode sensor in conjunction with chopped CW or quasi CW radiation, using a digitally synthesized lock-in amplifier to reduce external noise to a minimum. When connected a compatible optical power meter, you can measure a calibrated power at a very low power level.



### Chopper Included

The signal is passed through the 18Hz chopper, included in the products, and the chopped signal is detected by the sensor. All signals not at this 18Hz frequency are suppressed. The chopper must be placed close to the signal source so as to eliminate radiation from an unwanted source.



## Compatible Power Meters

- 843-R Series Handheld Power Meters
- 1919-R Advanced Handheld Power Meter
- 844-PE-USB Virtual USB Power Meter



## Broad Wavelength Range from 0.15 to 12 $\mu\text{m}$

Two models are offered. The photodiode based model LIAD-PD-300N covers between 200 and 1100 nm, while the pyroelectric detector based model LIAD-PY-100M covers between 0.15 and 12  $\mu\text{m}$ .

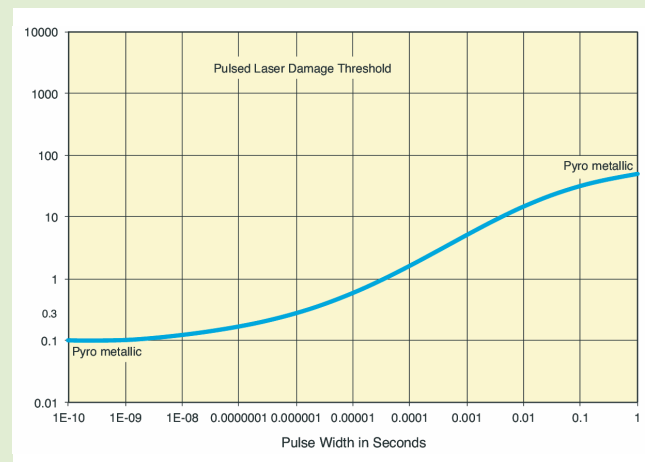
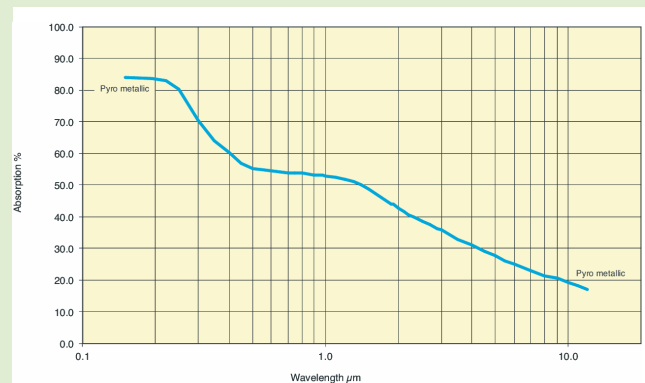


## Power Measurement Down to 300 fW

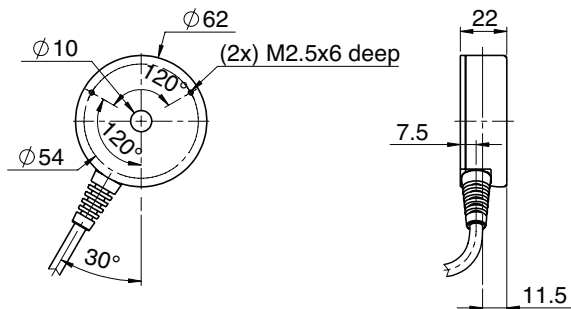
While LIAD-PY-100M can measure down to 100 nW, the minimum measurable power specification of LIAD-PD-300N is as low as 300 fW, lowest calibrated power measurement.

## Capable of a Pulsed Source with 200 hz or Higher Frequency

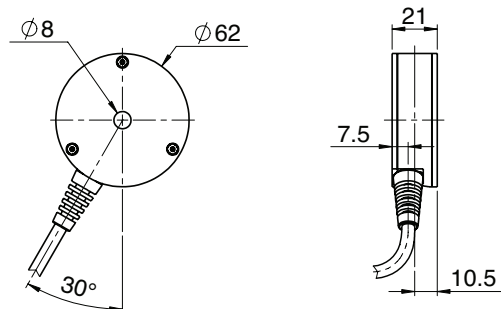
The LIAD series sensor has a response time 0-95% of approximately 3.5 seconds. It will not be able to respond to signals changing faster than this. Pulsed sources can be measured using the LIAD series detectors, and the output will represent the average power of the pulsed source. For reliable readings,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



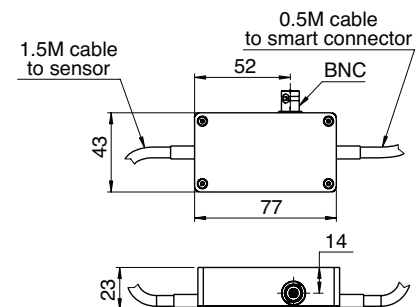
## Dimensional Drawing



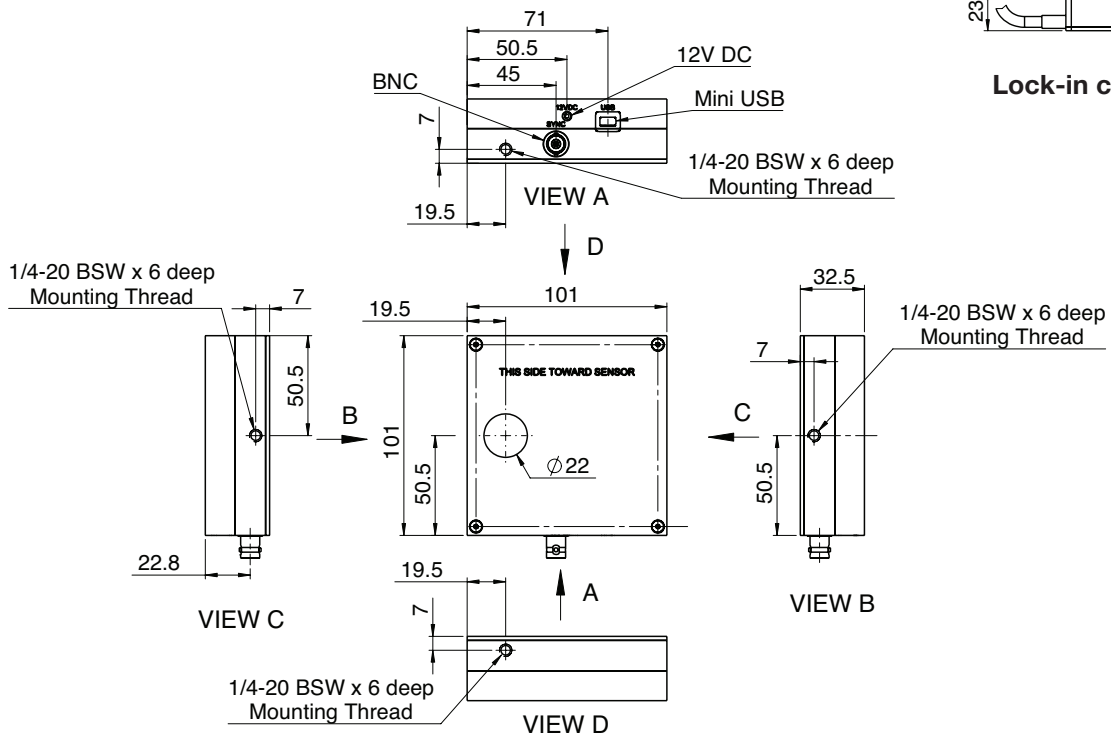
**LIAD-PD-300N sensor head**



**LIAD-PY-100M sensor head**



**Lock-in circuit box**



**Chopper**

## SPECIFICATIONS

	LIAD-PY-100M	LIAD-PD-300N
Absorber Type	Pyroelectric	Si Photodiode
Spectral Range $\mu\text{m}$	0.15 - 12	0.2 - 1.1
Aperture mm	$\varnothing 8$ mm	$\varnothing 8$ mm
Surface Reflectivity % approx	50	50
Power Range	100nW - 100mW	300fW - 300nW
Power Scales	100mW to $3\mu\text{W}$	300nW to $3\text{pW}$
Power Noise Level	$\sim 30\text{nW}$	$30\text{fW}$
Minimum Frequency for Pulsed Sources	200HZ	200Hz
Thermal Drift (20min)	$\sim 30\text{nW}$	N.A.
Power Accuracy	$\pm 5\%$	$\pm 5\%$
Damage Threshold $\text{W}/\text{cm}^2$	5	5
Response Time with Display (0-95%)	3.5	3.5
Linearity with Power	$\pm 2\%$	$\pm 2.5\%$
Cooling	Sensor Body	Sensor Body
Weight kg	0.37	0.37

## Ordering Information

Model	Description
LIAD-PD-300N	Lock-in Amp Detector, Si, 300fW - 300 nW, 8 mm
LIAD-PY-100M	Lock-in Amp Detector, Pyroelectric, 100nW - 100mW, 8 mm