

## **J.BAUER Electronics**

### ***2 Watt LaserBee™ A (Analog)*** **2 Watt HOBBYIST LASER POWER METER**

The **2W (2000mW) LaserBee™ A** Laser Power Meter was designed to enable the hobbyist technician to test higher power lasers and laser diodes. It was designed for people like ourselves that needed to know the output power of the numerous lasers we had in the shop. It needed to check a wide range of lasers up to 2000mW.

We didn't want to spend \$1000.00 to \$3,000.00 to get a commercial Laser Power Meter. We just wanted to know which laser was stronger than another and needed to know approximately how many milliwatts of output power each laser had.

With the emergence of the Green DPSS Modules/Lasers and the newer Blu-Ray and high output power 445nm Laser Diodes, in the past few years, we needed to check these as well.

We also needed a way of testing different Laser Wavelengths without needing to use an Optical Correction chart for different wavelength corrections.

The 2W LaserBee™ A LPM uses a Thermopile Sensor and precision electronics that are pre-calibrated against a recently calibrated Newport Model 1825-C LPM using a Newport 818T-10 Thermopile sensor head. The output of the 2W LaserBee™ A is shown on its bright LED Display.

Just install a standard 9Volt Battery and you are ready to test your Lasers.

The readings of the 2W LaserBee™ A LPM starts at 1mW and goes to 2000mW. There is a Zero Knob on the front of the enclosure to Zero in the LPM before taking a Reading

For consistent readings, make sure that all measurements are taken at the same distance between the Sensor and the Laser being tested. (6" to 12") and that the entire Laser beam falls on the center of the Sensor of the 2W LaserBee™ A LPM.

The LaserBee™ A was calibrated with a Laser Beam at the exact center of the Thermopile Sensor. For the most accurate readings your Laser's beam should always be centered on the Sensor.

**It is very important NOT to collimate the laser beam to a pin point as this will damage the Thermopile coating using higher powered Lasers.** We have tested these Thermopile sensors to 2700mW with a beam diameter of 3.0mm and the sensor's coating showed no sign of degradation or damage.

It is also important to note that the entire laser beam should fall on the Sensor and the Laser's beam should be adjusted accordingly (an acceptable/usable beam diameter would be **3.0mm to 10.0mm**, the larger, the better).

**DO NOT USE A BEAM DIAMETER OF LESS THAN 3.0mm** with high powered Lasers

## **User Instructions**

The 2W LaserBee™ A LPM is very easy to use. Plug the Thermopile Sensor cable into the LaserBee A enclosure jack.

Install a fresh standard 9Volt battery in the Battery compartment and turn 'ON' the LPM by the rocker switch on the front of the enclosure.

Let the 2W LaserBee™ A and Thermopile Head acclimate to the temperature of the test area. This may take ~15 to 60 minutes depending on the temperature differentials.

**After you have taken a Laser reading and removed the Beam from the Sensor you should not take another reading before the on screen display drops to Zero on its own and you Zero the reading using the Zero Control found on the face of the enclosure.**

## **NOTE:**

**DO NOT TOUCH THE SENSOR SURFACE AT ANY TIME FOR ANY REASON!!!**

The Thermopile Sensor detects heat on its surface. Since it requires time to heat and cool the Sensor... when taking a power reading you must wait for the reading on the computer's screen to stabilize. Once stabilized a reading can be taken. At 1000mW the stabilized reading time is approx.35-45 seconds.

The Thermopile Sensor is very sensitive to heat. It can pickup the heat of your hands. The testing area should be free of high intensity lights giving off heat. The testing area should also be free of air currents that may be detected by the Sensor. Just gently blowing on the sensor will change its temperature and therefore its output.

For the most accurate readings let the Thermopile Sensor acclimate to the test area's ambient temperature before taking any readings.

After taking a high power reading the sensors reading will go back down to zero. If a high powered Laser was used the display may go below Zero.

You can use the Zero Control to re-Zero the Meter display just before taking another reading to ensure accurate readings.

**DO NOT** mount the Thermopile Sensor into an enclosure... doing so will not allow the Thermopile radiator to dissipate the laser beam's heat properly. We are dealing with very small heat differential values.

When physically adjusting the position of the Thermopile Sensor, care must be taken to **NOT touch the Thermopile's Heat Sink directly with your fingers** as this will transfer your finger's heat to the Heatsink and create variations and errors in the readings.

Use a non heat conducting tool, when/if changing the Thermopile's position. Plastic or wooden tools are a good choice.

The actual Sensor surface (the small 15mm x 15mm block) should **NEVER EVER be touched with your fingers or any chemicals**. The oil from your fingers will cause the sensor to reflect more of the lasers beam and re-coating and/or re-calibration may become necessary. Cleaning of the Sensor should only be done by gently blowing **dry** air over its surface. Remember, your breath is *very moist*...

Store your Thermopile in a safe dust free environment when not in use...

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**NOTE/Warning-**

*It is not advised or recommended to use any unapproved 3<sup>rd</sup> Party Firmware or any unapproved 3<sup>rd</sup> Party Software with your LaserBee™ LPM product that has not been tested or endorsed by J.BAUER Electronics. Doing so may unconditionally Void any outstanding warranty and any future Customer Service for your LaserBee™ product.*

## **Specifications**

Power Supply:	9V Standard or Rechargeable Battery
Sensor Type:	Thermopile (J.BAUER Electronics)
Sensor Area:	15.0mm x 15.0mm (225 square mm)
Response Time	35-45 Seconds (0-100%)
Sensor Cable Length:	18"
Thermopile Dimensions:	1.65" x 1.50" x 1.00"
Power Range:	1mW to 2500mW
Power consumption:	18 milliamps @ 9V
Total Dimensions:	3.10" x 2.60" x 1.50"

## **Calibration**

The LaserBee 2.5W USB only LPM comes shop calibrated to the Thermopile Sensor included.

You must contact us if you feel that you need re-calibration. You can not calibrate this LPM yourself.

Recoating of the Thermopile Sensor ..... \$35.00  
Re-Calibration of the Laserbee A ..... \$45.00

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