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J.BAUER Electronics

User Instructions

3.1 Watt LaserBee™ AX (Analog)

3.1 Watt HOBBYIST LASER POWER METER

The **3.1W (3100mW) LaserBee™ AX** 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 3100mW.

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 3.1W LaserBee™ AX 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 3.1W LaserBee™ AX is shown on its bright 4 digit LED Display.

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

The readings of the 3.1W LaserBee™ AX LPM starts at 1mW and goes to 3100mW. 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 18") and that the entire Laser beam falls on the active area of the 3.1W LaserBee™ AX LPM's Thermopile Sensor.

The LaserBee™ AX was calibrated with a Laser Beam at the exact center of the Thermopile Sensor @ 23C test area temperature. 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 3200mW 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 3.1W LaserBee™ AX LPM is very easy to use. Plug the Thermopile Sensor cable into the LaserBee AX enclosure's jack.

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

Let the 3.1W LaserBee™ AX 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 as described next.

The correct way to zero the reading before a test without thermal input to the Thermopile Sensor is to increase the reading to above Zero with the control then gradually decrease the reading until it is just under 1mW and reading 0.000.

NOTE:

The 4 digit Digital Display can read slightly over 3100 mW but it is not recommended. The precision error increases over 5% above 3100mW.

You will also risk damaging the Thermopile Sensor's coating by exceeding the stated Maximum allowable power of 3.1Watts at 3mm Minimum diameter Laser Beam directed onto the sensor.

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 LED Display to stabilize. Once stabilized a reading can be taken. The 100% stabilized reading time is aprox.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.
You can use the Zero Control to re-Zero the Meter display just before taking another reading to ensure accurate readings.

After taking a high power reading the sensor's reading will go back down to zero. If a high powered Laser was used follow the Zeroing Instructions on page #2 of these User Instructions.

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

When physically adjusting the physical position of the Thermopile Sensor Head, 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 3rd Party Firmware or any unapproved 3rd 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:	9 Volt standard or rechargeable Battery
Sensor Type:	Thermopile (J.BAUER Electronics)
Sensor Area:	15.0mm x 15.0mm (225 square mm)
Response Time 0-100%	35-45 Seconds
Response Time 0-90%	15-16 Seconds
Sensor Cable Length:	18”
Thermopile Dimensions:	1.65” x 1.50” x 1.00”
Power Range:	1mW to 3100mW
Power consumption:	18 milliamps @ 9V
Total Dimensions:	4.10” x 2.60” x 1.50”

Calibration

The 3.1W LaserBee AX LPM comes shop calibrated to the Thermopile Sensor included.

You may contact us if you feel that you need re-coating and/or re-calibration.

Recoating of the Thermopile Sensor ……. $35.00
Re-Calibration of the Laserbee AX ……..… $45.00

The customer assumes the total cost of shipping to and from J.BAUER Electronics for any repairs under warranty or not.

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