

If a green laser module has no markings, you'll need to determine the correct **voltage**, **amperage**, and **wattage** experimentally and safely. Here's a step-by-step guide:

1. Understanding How Laser Modules Work

- Most **green lasers** (532 nm) are **diode-pumped solid-state (DPSS) lasers**, which require precise voltage and current.
- Typical green laser diodes operate at **3V to 5V** and **100mA to 500mA**, but this varies.

2. Identifying the Laser Terminals

- If the laser has **two wires (or two solder points)**:
 - **Red wire / Longer lead** → **Positive (+)**
 - **Black wire / Shorter lead** → **Negative (-)**
 - If there are multiple terminals, one might be for a built-in photodiode (feedback control).

3. Finding the Voltage

(A) Start with Low Voltage & Increase Slowly

- Use a **bench power supply** and set it to **3V DC**.
- Connect the **positive lead** of the power supply to the laser's positive terminal and the negative to the negative terminal.
- Gradually **increase voltage** (in **0.5V steps**) while checking for:
 - **Laser emission** (dim light at first)
 - **No overheating**
- Most green laser diodes work at **3V to 5V**.
- **If the laser doesn't turn on by 5V, stop!** It may require a different voltage or a driver circuit.

4. Finding the Correct Amperage

(A) Measure Current Draw

- Set your **multimeter in series** with the **positive** power line to measure current.
- Increase voltage and watch the **current draw (mA)**.
- **Typical range:** 100mA to 500mA.
- **Warning:** Too much current can **burn out the diode permanently**.
- If the current exceeds **500mA**, **stop** and lower the voltage.

(B) Add a Resistor for Safety

- If unsure, connect a **resistor** (e.g., 100Ω) in series to limit current.

5. Calculating Power (Wattage)

Once you determine **Voltage (V)** and **Current (A)**:

$$Power(W) = Voltage(V) * Current(A)$$

Example:

- **Voltage = 3.7V**
- **Current = 250mA (0.25A)**

$$P = 3.7V * 0.25A = 0.925W$$

Most consumer green laser pointers are **less than 1W**.

6. Checking for a Driver Circuit

- Some green lasers **require a driver circuit** (not direct power).
- If your laser has a **small PCB attached**, it may need **regulated power (e.g., 5V constant current source)**.
- If you removed it from a device, look for **additional components** that were connected.

7. Heat Management

- If the laser gets **hot quickly**, it may need:
 - A **heatsink**
 - **Lower voltage/current**
 - **Duty cycles** (e.g., ON for 10 sec, OFF for 10 sec)

8. Final Test and Safe Operation

- Once the correct **voltage & amperage** are found, connect the laser **directly to a stable power source**.
- Avoid **overdriving** the diode to prevent **burnout**.
- If using for **continuous operation**, check if it needs **active cooling**.

Important Safety Notes

- **Wear Laser Safety Glasses!** Green lasers (especially >5mW) can damage vision.
- **Avoid Direct Eye Exposure.**
- **Don't exceed the safe voltage/amperage** or it may **burn out permanently**.