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LPLDD-5A-12V

Operating Manual

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Product Description

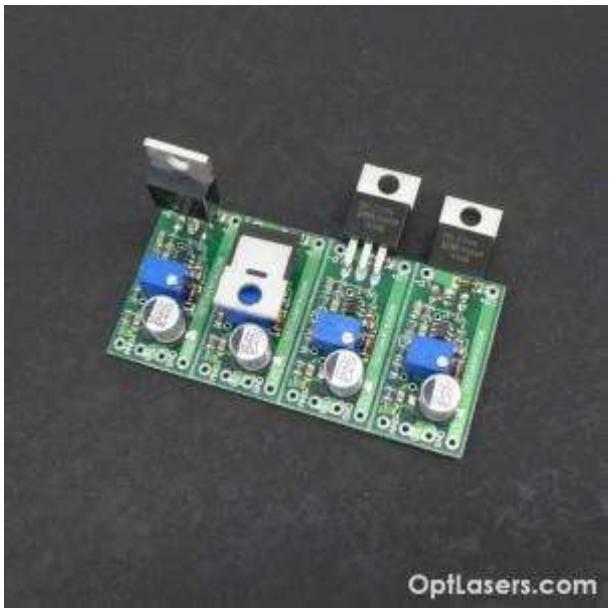
Basic driver for powering laser diodes with the option to adjust maximum output current in the range of 0-5 A, and to modulate the current flowing through the diode with the frequency up to 100kHz.

Since it is a lite version of the driver it does not have protection against polarity change. Be sure you connect it accordingly to the labels on the PCB.

By selecting an appropriate PSU for the driver in question, it is possible to power literally every laser diode available on the market up to 5W - 405 nm, 445 nm, 520 nm, 638 nm, 650 nm, 808 nm, 980 nm. The examples of diodes are: 1 W 445 nm, 3,5 W 445 nm, 6 W 445nm, 700 mW 635 nm, 200 mW 808 nm, 1 W 808 nm, 5 W 808 nm, 1W 520nm.

Features:

- Added LED diode showing that driver is connected.
- Added softstart to protect against switch-on effects
- Added labels on the board - more intuitive and easier to set
- Small size - only 15mm x 30mm and capable of driving 5A!
- Added large surface of copper which cools the sense resistor.

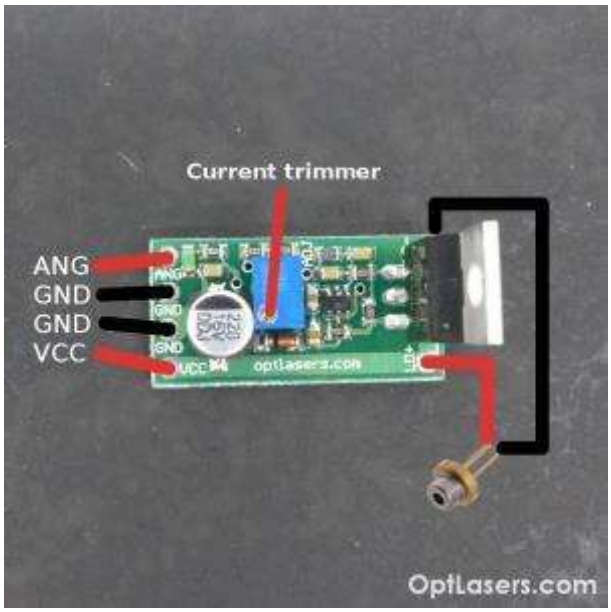


Technical Data

Dimensions (LxW mm)	35 x 20
Current set by default (mA)	2000
Modulation frequency (kHz)	0 - 100
Modulation voltage range (V)	0 - 5
Modulation type	Analog
Reverse polarity protection	No
ESD protection	Schottky diode
Softstart (ms)	50
Maximum diode current (A)	5
Input Voltage (V)	3,3 - 12

Over 5V modulation input protection	YES (5V1 Zener diode)
Transistor type	N-MOSFET
Included	Silicon pad, plastic sleeve

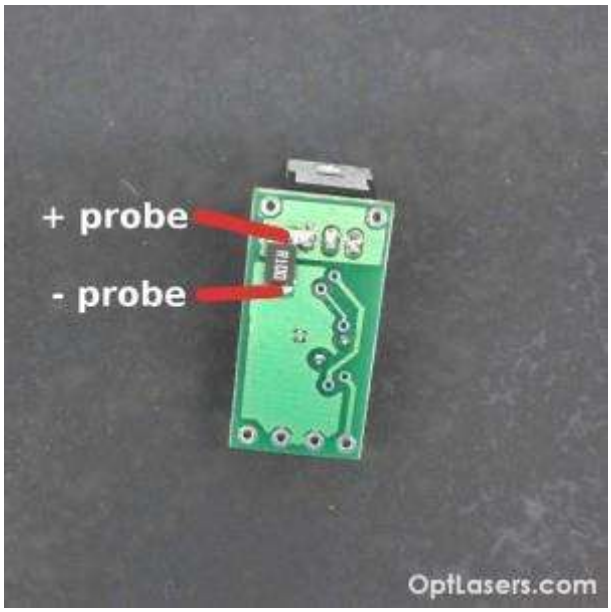
How to connect the LPLDD 5A



Note! When power supply is turned on or turned off, the signal ANG must be low.

Checking the current set on the driver

Safe test of the current can be made without using a laser diode. Instead of a laser diode, use a test load resistor (0,5-1Ω 5W) in series with the amperemeter. Connect 5V to ANG input and read the current from the amperemeter. One can regulate the current with "Current trimmer". When the diode is already connected we can measure the voltage on the resistor placed on the bottom of the driver. When the current is flowing each 0,1V corresponds to 1A current. Oscilloscope should be connected this way in order to check waveforms.



We recommend to check/set the current using a test load resistor because it is much safer and will limit the possibilities of mistake.

Recommendations and requirements

The supply voltage should be always higher than or equal to 3,3V. The minimum supply voltage for other situations is given by the formula:
Vin = 0,2* I + Vd
Vin is input voltage
Vd is diode working voltage
I - desired maximum current

Modulation input can be used as TTL input with its logic levels of 0V and 5V or as an analog input. Analog modulation means that by using 2,5 V on ANG input you get 50% of the output power, analogically by using 4 V you get 80% of the output power, etc.

We recommend the use of power cables with cross-section of at least 0.35 mm2.

Depending on a laser diode and PSU used, you should monitor and assure proper cooling for the MOSFET transistor.

You should be very careful not to cause short circuit between the + (VCC) of the power supply and - (GND) of the analog input, as a thin GND analog path can be irreparably damaged.

The MOSFET/MOSFETS must be isolated from the heatsink/plate with a silicon pad as well as a plastic sleeve. Short circuit between MOSFET and heatsink/plate can damage the driver and can be dangerous for the Laser Diode.

Protection

Modulation input of the driver is protected by 5V1 Zener diode. Nevertheless, one should not use modulation voltage higher than 5V.
The output of the driver is protected by a Schottky diode which doesn't allow the reverse voltage to appear.