

Operation Instruction for LW-Laser

The laser had about 6 second time-lapse after plug the power. Anytime don't look through the laser output pinhole.

This Instruction is for 12 pin PCB and laserhead connector.



Pic 1:12 pin connector

To ensure trouble free operation and long life of the laser please observe the following safety points and operating instructions at all times.

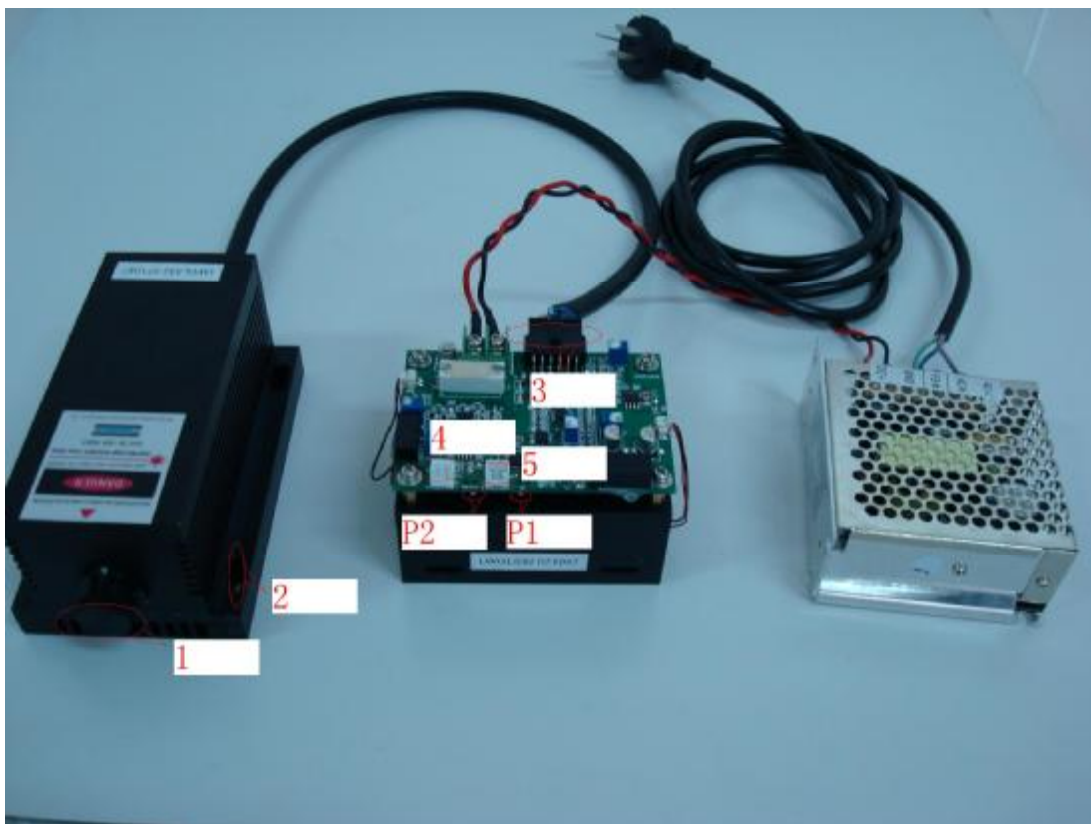
Laser Safety

- 1) Laser light is harmful to eyes and skin, therefore avoid direct exposure and never point the laser beam at people's eyes.
- 2) The laser head should be placed on a stable surface. Do not place objects on top of the laser head, control board or power supply and ensure cooling vents are not obstructed.
- 3) If you need to move any part of the laser system do not let any single component hang by its wires, always support the laser head, control board and switching power supply properly, to avoid straining that will damage the connections.
- 4) Always keep the laser head, control board and the switching power supply matched to the original one supplied. Changing the control board between two lasers will damage the laser head and invalidate the warranty. The serial numbers on the control board label should always match the number on the laser head label.
- 5) This laser is designed to operate at a temperature of 0-35 degrees Celsius. It is recommended to maintain the temperature of the laser head as close to 25 degrees as possible as this is the optimum. Good ventilation of the laser head, control board and switching power supply is essential, failure to provide adequate cooling will result in overheating leading to failure of the device especially if the laser is being operated in CW mode.

- 6) If the laser head, control board or switching power supply become too hot, turn off the laser, allow to cool and check the fans on the control board and laser head are operating correctly. If a fan is not working it must be replaced before the laser is used again or damage to the laser may occur.
- 7) The laser head control board and switching power supply contain no user serviceable parts and repair should not be attempted by anyone other than qualified personnel of Laserwave. Laserwave will not be responsible for any damage occurring due to tampering with any of the parts of the laser or adjustment of the control board or switching power supply.

Electrical Safety.

- 1) High Voltages are present on the mains input terminals of the switching power supply. Ensure the mains plug is removed from the socket before making or adjusting mains connections and that suitable measures are taken to protect these connections during normal operation..
- 2) Always ensure correct polarity of the 5V connections between the laser control board and the switching power supply.
- 3) Always ensure that the laser is operated in the correct mode to match the application, and use the correct modulation switch selection and modulation input accordingly. (see below for instructions)
- 4) To prevent short circuits and incorrect operation take care when handling the control board. Avoid touching the board when power is applied.
- 5) Use of a different power supply other than the one supplied will invalidate the warranty.



Pic 2 Connector and building hole

Pic 1 laser head and PCB connect

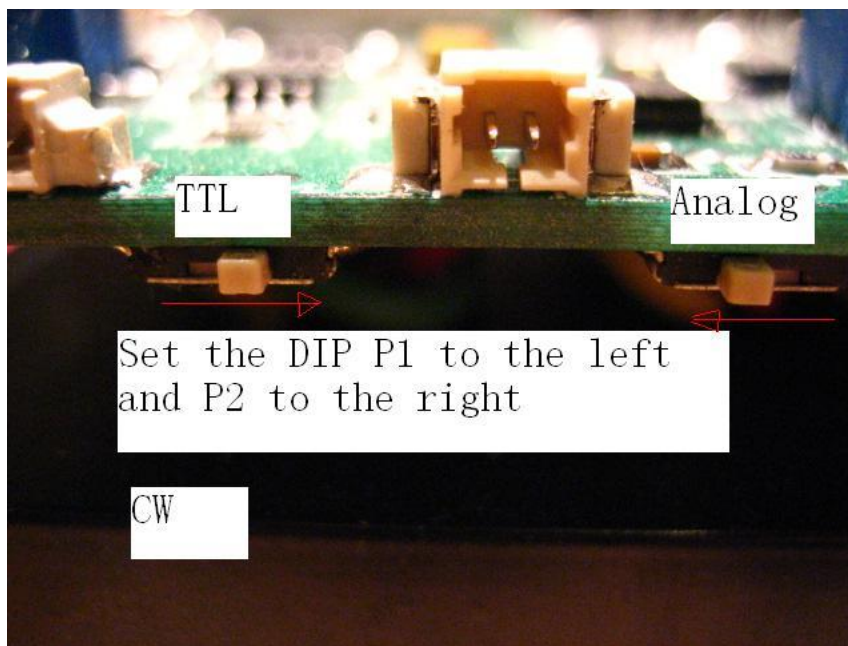
Key to diagram 1

- 1) Beam aperture
 - 2) Laser head mounting holes
 - 3) 12 core connector to laser head. To insert or release this connector press down firmly on the catch lever – DO NOT FORCE
 - 4) TTL Modulation Input connection – please use the wire & connector provided
 - 5) Analogue Modulation Input connection – please use the wire & connector provided
- P1) Analogue Modulation selection switch (located on the underside of the PCB)
P2) TTL Modulation mode selection switch (located on the underside of the PCB)

Introduction to laser Operation

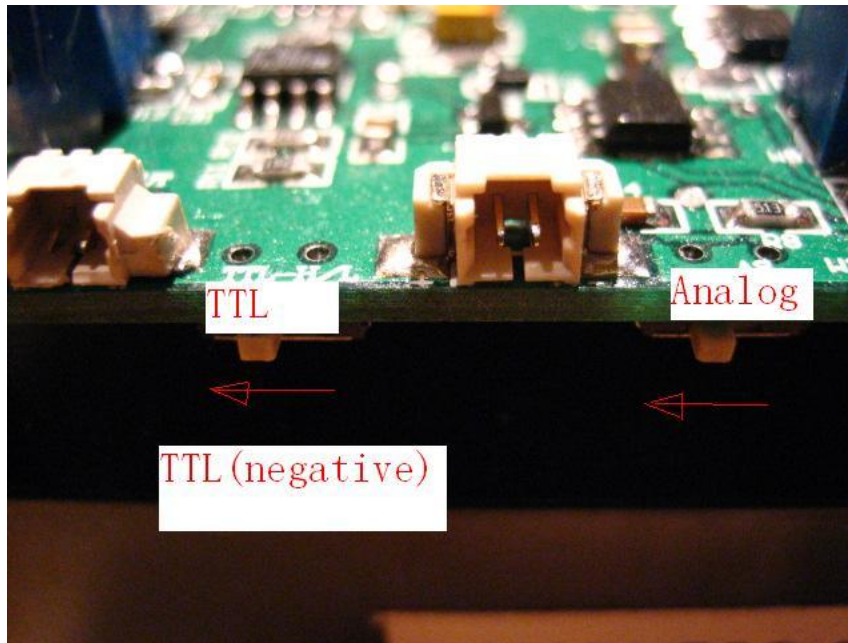
Before power up, please Connect the laser head with the PCB board at the “3 “ connector, after connect just the pic1 shows.

This laser is able to operate in three output modes, which are continual working (CW), TTL modulation and Analogue modulation. The user may choose which mode is employed by the use of the modulation selection switches (P1&P2 above).



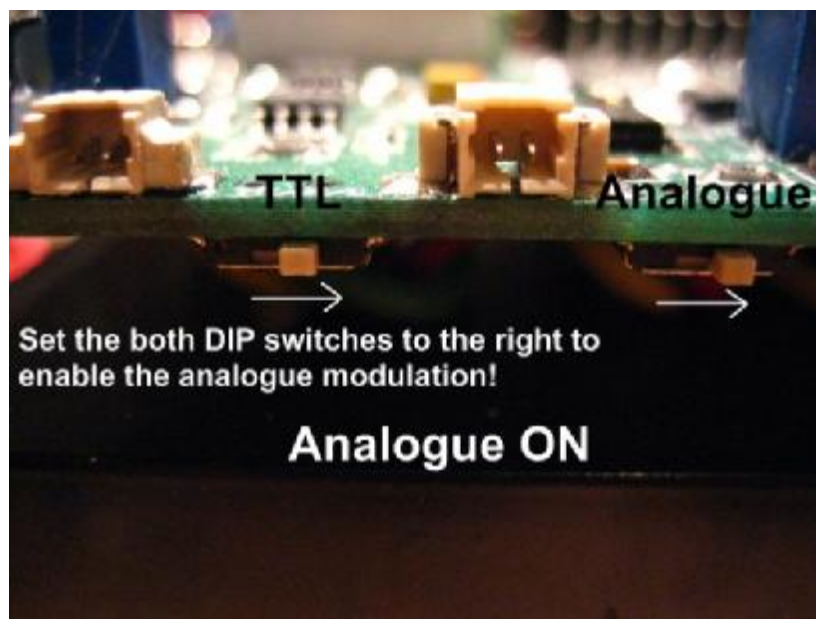
- P1) Analogue Modulation selection switch (located on the underside of the PCB)
P2) TTL Modulation mode selection switch (located on the underside of the PCB)

- A. CW mode can be achieved (no modulation) by moving P1 & P2 switches towards the analogue modulation connector.
- B. TTL Positive Modulation mode(+5v on, 0V off) can be achieved by plug the TTL modulation line in 4 (The TTL input), no change of P1 and P2 position, keep it the CW working situation. With P2 switch moved away from right to left ,keep P1 no change, the modulation will operate in negative mode (+5v, off , 0v, on).



C. Analogue Modulation mode can be achieved by placing P1 & P2 switches towards the analogue modulation connector and connecting the analogue modulation connector & cable to a modulation source in the range 0-5V

The control board of the laser simultaneously supports TTL modulation and Analogue modulation function at frequencies of up to 10kHz.



To power the laser up

- 1) Check to ensure that the connections between the switching power supply and control board, are firmly in place and all connections are tight.
- 2) Check to ensure that the connections between the laser head and the control board (the 12 core connection) are firmly in place.

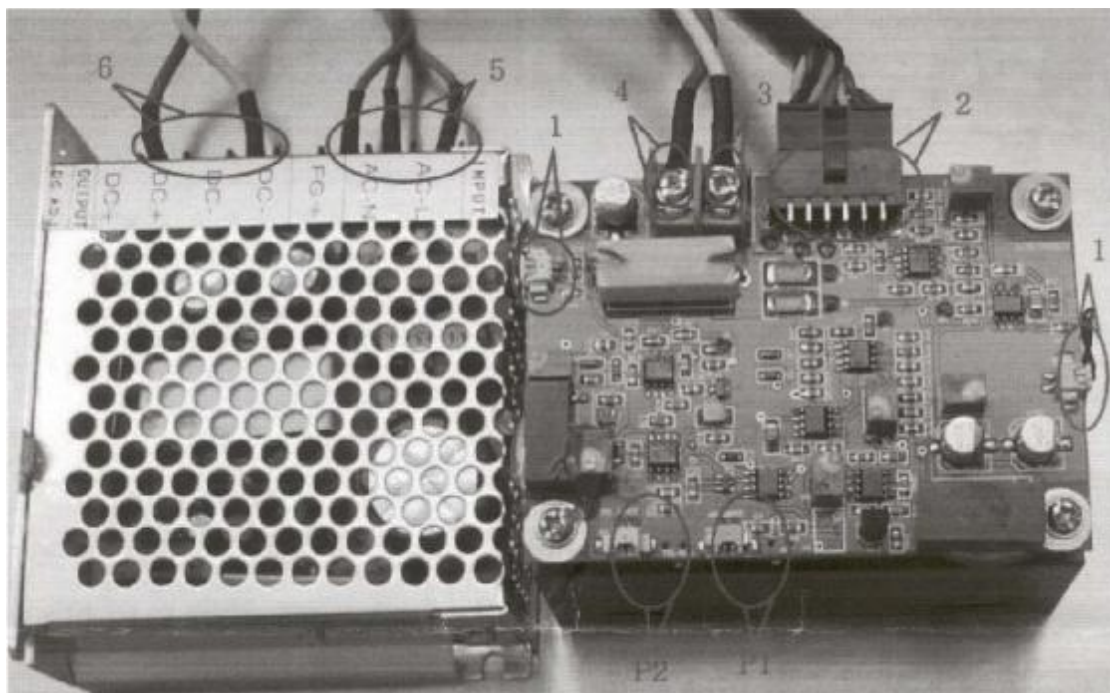
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- 3) Ensure the operation mode you require is correctly set using the switches P1 & P2
 - 4) Connect the mains input cable to the connections on the switching power supply observing the correct connections for L, N, & E.
 - 5) Remove the protective label or screw-on end cap from the beam aperture of the laser head.
 - 6) Apply mains power by connecting the mains input to the wall outlet.
- The laser will now operate.
- 7). The laser had about 6 second time-lapse after plug the power. Anytime don't look through the laser output pinhole



Key to diagram 2

- 1) Control board 5V cooling fan connections.
- 2) 12 core connection to laser head.
- 3) 5V supply ground connection
- 4) 5V supply positive connection
- 5) Mains supply input connection to switching power supply (range 85~265VAC)
- 6) 5V 8A DC output from switching power supply
- P1) Analogue Modulation selection switch (located on the underside of the PCB)
- P2) TTL Modulation mode selection switch (located on the underside of the PCB)

Power supply description

This laser power source is composed two parts which are a switching power supply and a control board. The switching power supply is designed to operate over a wide input range of 85-265VAC to allow for universal operation worldwide. The switching power supply provides an output of 5VDC at 8A Max current. Correct polarity of the wires between the switching power supply and the control board must be observed. The connections of the

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switching power supply are clearly marked. The ground connection to the control board should be made to the connection nearest to the 12 way connector to the laser head. The positive connection (+5V) is made to the connection furthest away from the 12 way connector to the laser head. (see diagram above). Adjustment pots on the control board are factory set and should not be tampered with or adjusted by the user. Failure to observe this will invalidate the warranty.

Warranty

The laser head the power supply are guaranteed for a period of one year from date of shipment from Laserwave Company in Beijing.

Please note that LW does not assume liability for its laser products if any of the following circumstances has occurred:

- 1) The laser head, control board or switching power supply has been disassembled or adjusted by the user.
- 2) Correct laser operation has been compromised as a result of physical impact, damage or other mistreatment of the laser head.
- 3) The original labels with serial numbers and LW's model name have been removed.
- 4) The laser head control board or switching power supply have been overheated due to poor cooling or ventilation.
- 5) The warranty period has expired