# Operation Instruction for LW-Laser

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.

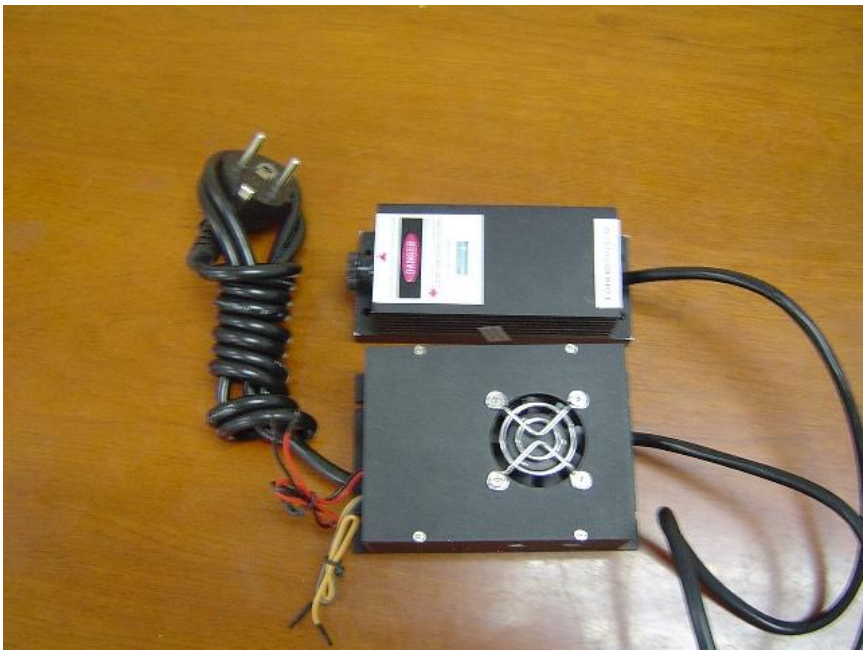
7) The laser head control board and switching power supply contain no user serviceable parts and repair should not be attempted by anyone other than qualified personnel of Laserwave. Laserwave will not be responsible for any damage occurring due to tampering with any of the parts of the laser or adjustment 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.

**Including:**
The lasers including as below picture shows.

(1) laser head
(2) power supply (85-265V)



**Working mode choice:**
(1) continue working


Keep P1 pot left, P2 pot right, don't contact anything,the laser is working at CW mode

(2) TTL+ mode


Keep P1 and P2 the same as CW working, and input TTL signal to red and black line, the red is connect with TTL+ signal, and black is TTL- signal, the laser will working at TTL+ mode

(3) TTL- mode

Change P1 pot right, P2 pot also right place, input TTL signal to red and black line, the red is connect with TTL+ signal, and black is TTL- signal, the laser will working at TTL+ mode

(4) Analog mode


Keep P1 pot and P2 pot both left, input Analog signal to the yellow and white line, the yellow is conect with Analog+ signal, and white is contact with Analog- signal, the laser will working at Analog mode

**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) Plug the power supply in 110V or 220V AC connector
3) Input Analog signal or TTL signal as you want

**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