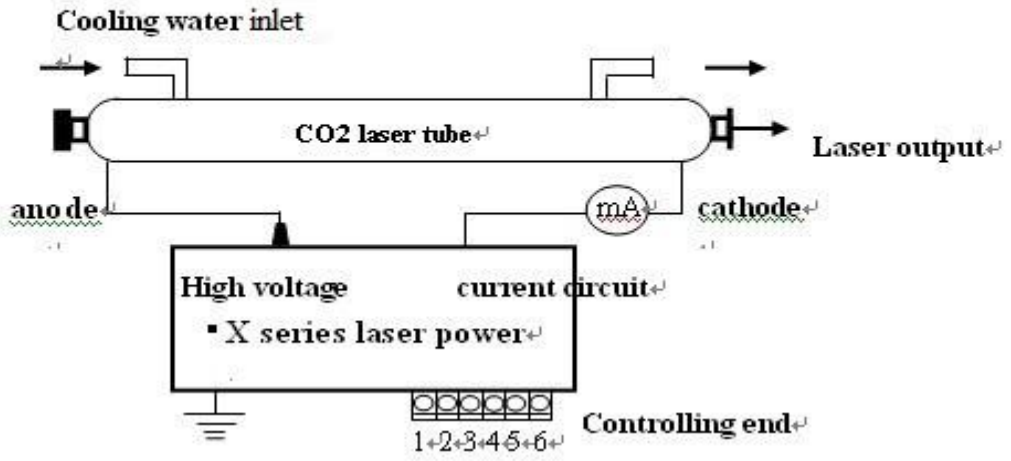
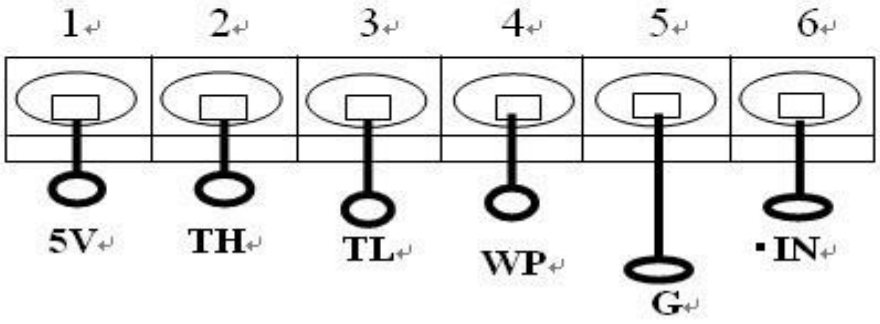
Instruction Manual of the SDZ CO2 Laser Power

Wiring diagram of the power and the laser



Terminals are defined as follows



1. The high-voltage end (HV+) of the power shall be connected with the anode of the CO2 laser tube (total-reflection end).

2. The cathode of the power (current circuit) shall be connected with the cathode of the CO2 laser tube (laser output end).

3. The amperemeter is serially connected to the negative wire.

4. TH–high level; TL–low level; WP- water protection (which can be used to detect whether water exists in the tube and to protect the laser, or provide protection while opening the casing).

5. G- ground; IN – controlling input.

6. 5V- 5 voltages (this terminal remains inactive when connected to the main board, active when regulating power with a potentiometer)

7. When connecting the controlling board, TH light is connected to the socket 2(TL to the socket 3), G to socket 5, Power control analog signal to 6. Socket 5 and 6 are short-circuiting connected with each other.

8. PWM can also be used with socket 6, but the impulse peak shall reach 5V, and its frequency shall be more than 20K.

9. During the testing process, socket3, 4,and 5 are short circuit(or socket4 and 5 are short circuit, 3 and 5 connected to the switch), the center of the potentiometer is connected to socket 6, the remaining two ends of the IN are separately connected to “5V” and “G”(socket 1 and 5)
10. TH is connected with socket 1 and 2, WP is connected with socket 4 and 5.

11. Laser power adjustment: 1) regulating laser’s output current with potentiometer;2) controlling laser’s power with PWM(amplitude is TTL electrical level).

12. Please adjust working current in accordance with the user guide.

Matching and adjusting the linear scale of the input signal to the output current

Various matches would be obtained by adjusting the signal modulation potentiometer at the low side of the power. For example, 0-5V matches output current0-34mA. It is worth noticing that the potentiometer shall not be over adjusted, or the input signal would mismatch with the actual effect as required.

The usage of current

The power is designed to be used under the standard voltage (22V,50Hz). The fluctuation of input voltage and frequency would influence the working current supplied to the laser. And this influence is linearly corresponding. Instability of the input voltage would influence the output power. Only if the working current supplied by the power is controlled within the allowable value, the fluctuation of the input voltage would have little impact on the operating life of the laser.

Notes:

1. While the laser tube is operating, it must be cooled with water!
2. The high-voltage end shall never be an open circuit(both the positive and negative HV ends should be connected correctly with the laser's positive and negative ends)
3. A leak resistance has been installed in the laser power; residual voltages will be released within 2 seconds after the power is off. But you should still be careful of electric shock!(make sure that
4. X series laser power must use three-hole outlets, which connects to the earth for safety. The laser casing also must be connected to the earth in case of electric shock.