
Product: HY-HVC02/X CO₂ power supply for laser device.

Model: HY-HVC02/X, "HY-HV" means family of high voltage power supply of Hongyuan Electric; "CO₂" means it is for CO₂ laser device; "X" means the length of laser lamp, X=1.2 means the length of laser lamp is 1.2 meter, X=1.6 means 1.6 meter, X=2.0 means 2.0 meter, etc.

Features: The family of HY-HVC0₂/X high frequency CO₂ laser power supply is developed by our company, dedicated for CO₂ laser device, with high efficiency, high frequency and short response time. The compact and handy power supply has excellent compatibility with laser device and can be directly connected. With this power supply, laser device will be easily started up and well operated with higher conversion efficiency and longer expectation of life. Used with some specific laser device, peak output power of the laser would be up to HY-HVC02/0.8 50W HY-HVC02/1.2 70W, HY-HVC02/1.6 90W, HY-HVC02/2.0 150W and average output power is HY-HVC02/0.8 40W HY-HVC02/1.2 60W HY-HVC02/1.6 80W, HY-HVC02/2.0 130W.

Major technical parameters:

1. **Input voltage:** AC220V or AC110V (to be specified when placing order).
2. **Maximum output voltage:** DC28KV (HY-HVC02/1.2), DC35KV (HY-HVC02/1.6), DC 40KV (HY-HVC02/2.0).
3. **Maximum output current:** DC 23mA (HY-HVC02/1.2), DC 28mA (HY-HVC02/1.6), DC 38mA (HY-HVC02/2.0).
4. **Isolation Withstand voltage:** Input-output, input-enclosure: AC2000V-10mA-60s; negative pole of output connected to enclosure.
5. **Protection:** with well-grounded enclosure, output circuit of power supply can be open for short time (but arc between positive pole and enclosure should be avoided).
6. **Response time** (from time of input being available to the output current being up to nominal value): ≤1ms.
7. **TTL voltage level control:** effective voltage level can be high or low through setting.
8. **Protection switch:** for detection of cooling water, to protect laser device; or activate with enclosure is opened.
9. **Laser power adjustment:** (1) by adjusting the output current of power supply through resistor; (2) through PWM control (magnitude being TTL voltage level).
10. **Environmental requirements:** temperature (-10~40°C), relative humidity ≤85%.
11. **Dimension:** HY-HVC02/0.8 168*144*9 (mm) HY-HVC02/1.2 207*144*97 (mm)
HY-HVC02/1.6 280*173*97 (mm) HY-HVC02/2.0 325*240*95 (mm)

Instructions:

1) Connection to laser lamp

High voltage terminal (HV+) of HY-HVC02/X power supply should be connected to the positive pole of CO₂ laser device. Current circuit of the power supply shall be connected to negative pole (laser output terminal) of laser device, through an ampere meter or directly.

2) Connection of control signal

Referring to figure 1 (or figure 2), control signal shall be reliably connected to control terminal of the power supply.

3) **Input of control signal:**

Referring to figure 3, after connecting the DAC output signal and TTL signal of external computer with the power supply, the laser device shall work as expected.

4) **Voltage of power input:**

Generally, power input of the power supply shall be 220VAC/50Hz. If 110VAC is needed, please specify when placing order.

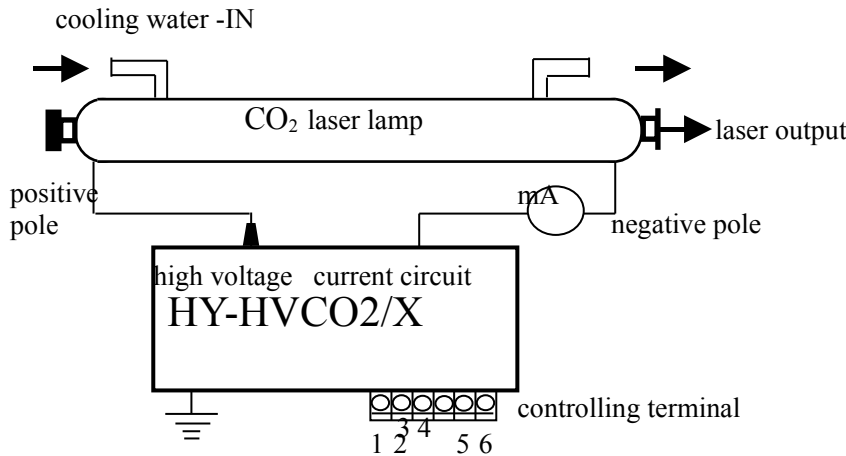
5) **Others:**

A group of protection switches is reserved for detection of cooling water, open-enclosure protection and so on.

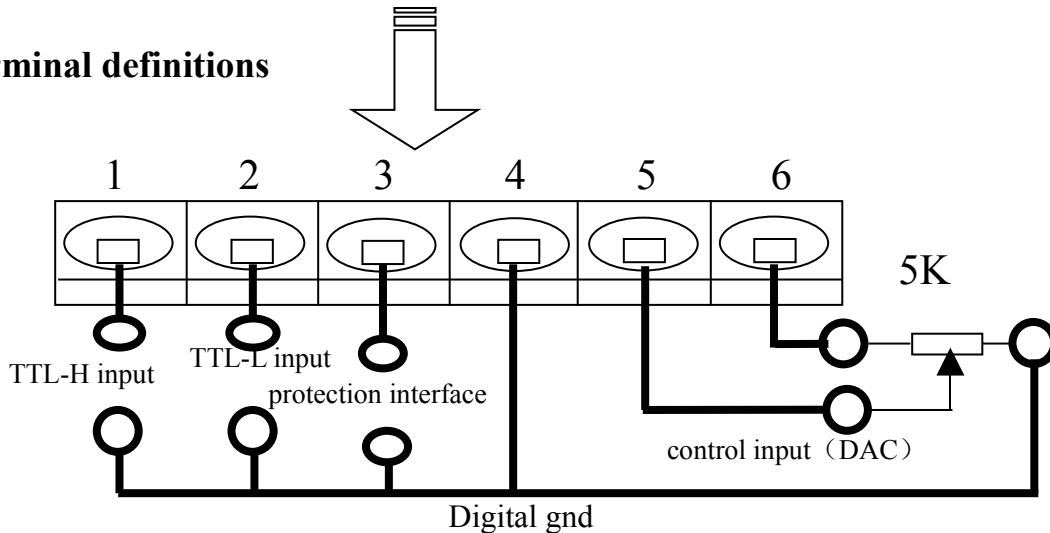
Caution:

1. Water cooling system should be working properly when switching on laser device.
2. Circuit of high voltage output should not be open! (High voltage output terminals (positive and negative poles) shall be properly connected to positive and negative poles of laser device, respectively.)
3. Attentions should be given to avoid any electric shock after the power supply being switched off.
4. Well-grounded three-pole receptacle should be used to supply power to HY-HVCO2/X power supply. The enclosure should be well grounded to avoid electric shock.

Connection between power supply and laser device



Terminal definitions

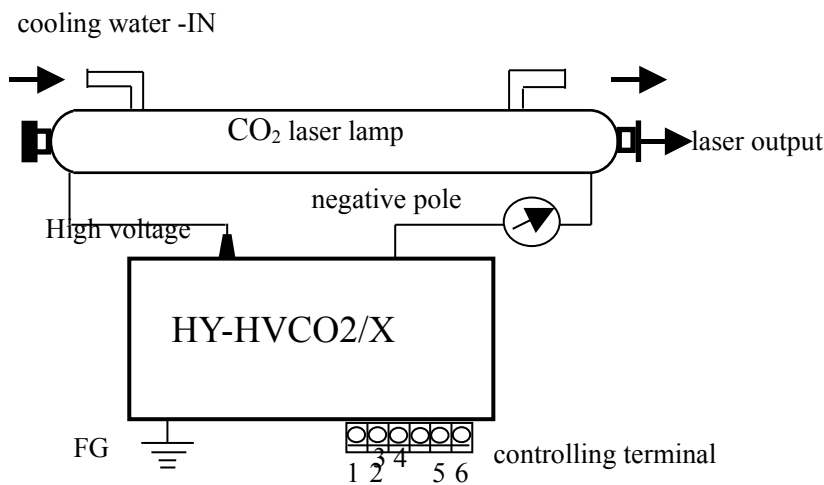


Function of controlling terminal:

| TTL-H input | TTL-L input | control input (DAC) | Power of laser output |
|-------------------------------------|--------------------|---------------------|-----------------------|
| unconnected | low ($<0.3V$) | 0-5V | Pmin - Pmax |
| | high ($>3V$) | 0-5V | 0 |
| low ($<0.3V$) | unconnected | 0-5V | 0 |
| high ($>3V$) | | 0-5V | Pmin - Pmax |
| Protection interface – open circuit | | 0-5V | 0 |

figure 3

Connection between power supply and laser device:



Terminal definitions:

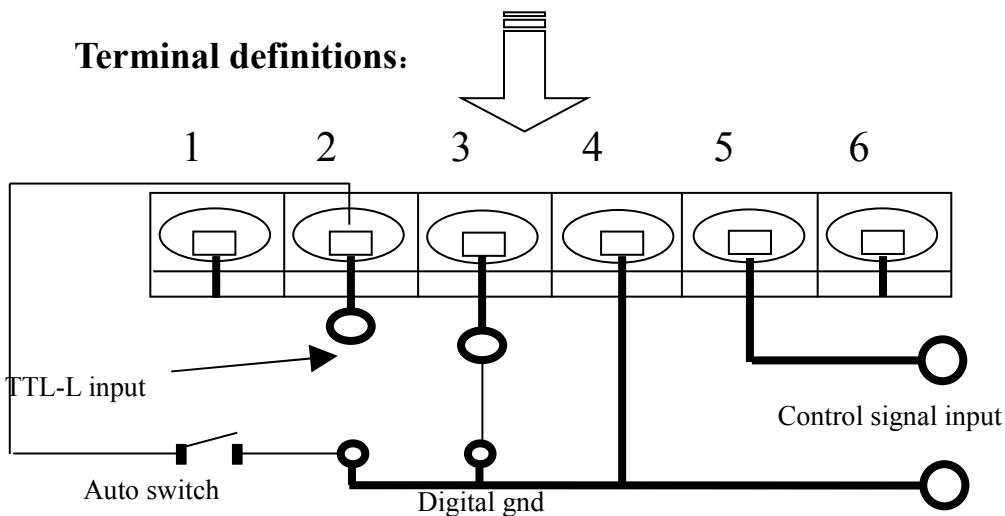


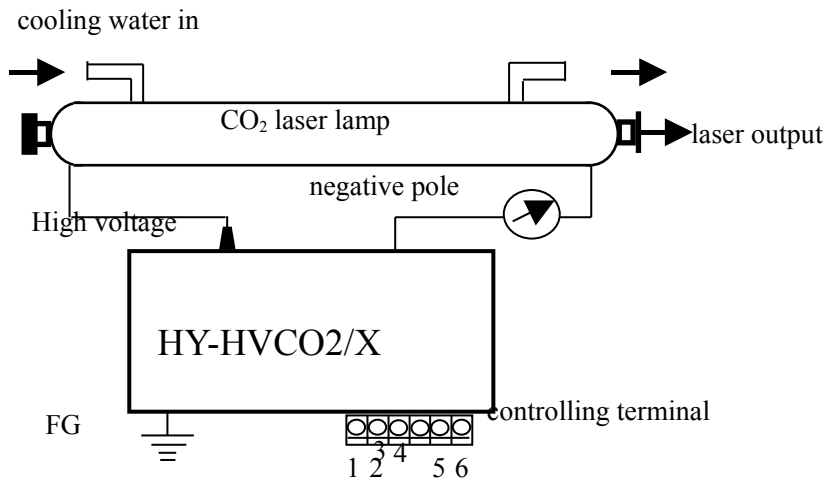
FIG.4 TTL-L control of laser output

Remark: two options for laser energy output control signal

A : digital control(PWM control): frequency: from 20kHz to 50kHz, magnitude :5V or 3.3V(to be specified when placing order)

B: Analogue signal control: 0-5V analogue signal

Connection between power supply and laser device:



Terminal definitions:

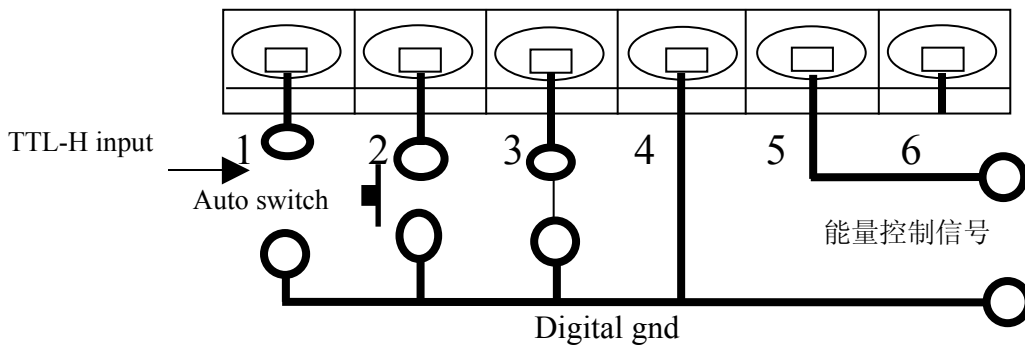
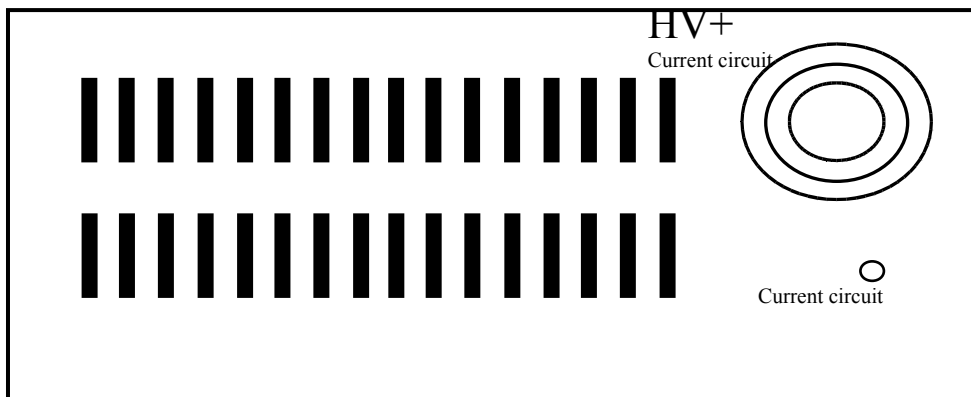
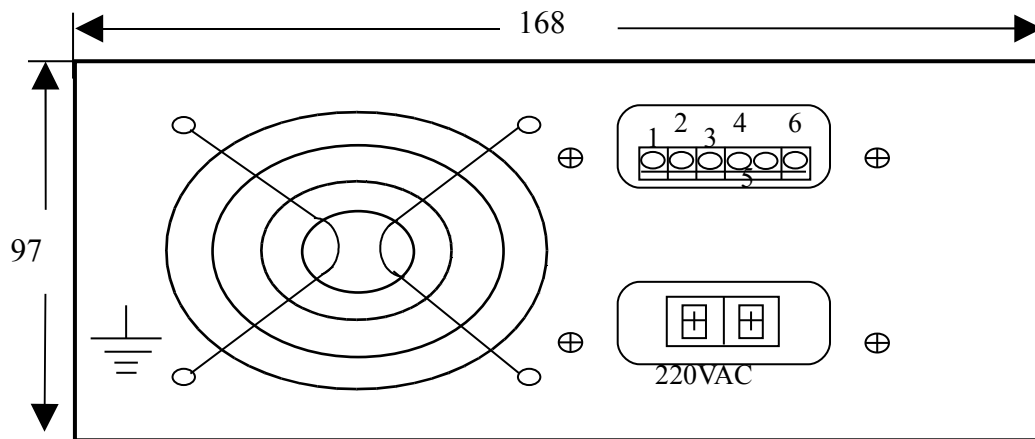


FIG.5 TTL-H control of laser output

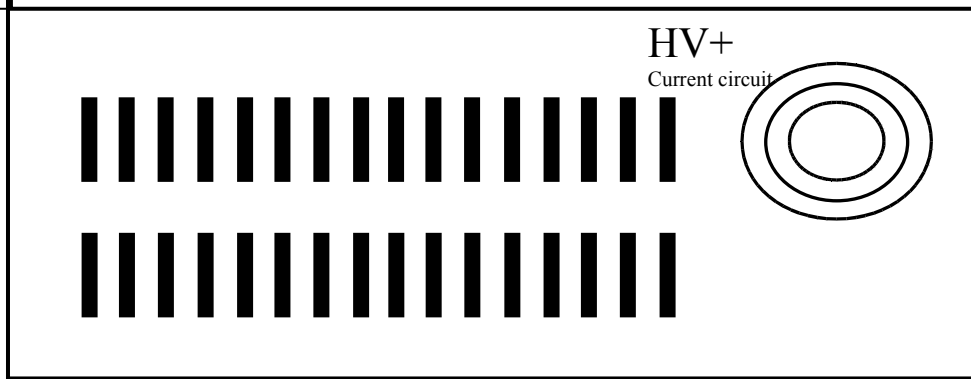
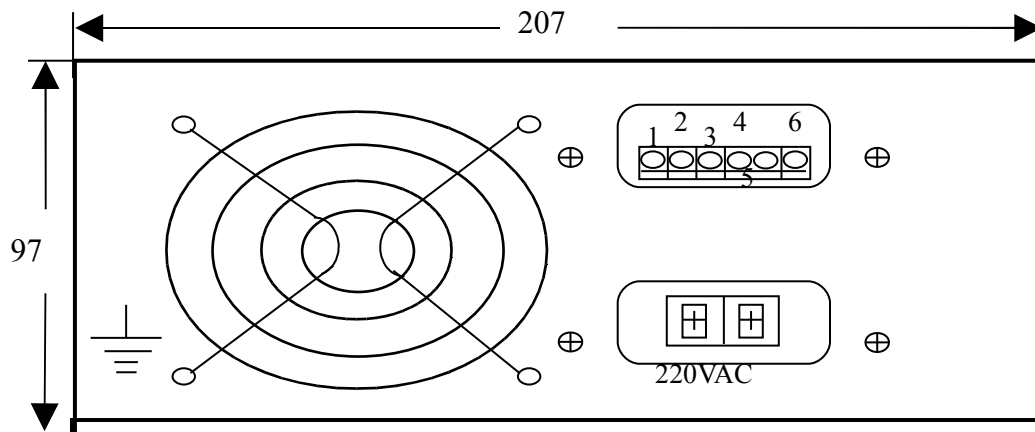
Remark: two options for laser energy output control signal:

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B: Analogue signal control: 0-5V analogue signal



HY-HVCO2/0.8



○
Current circuit

HY-HVCO2/1.2

