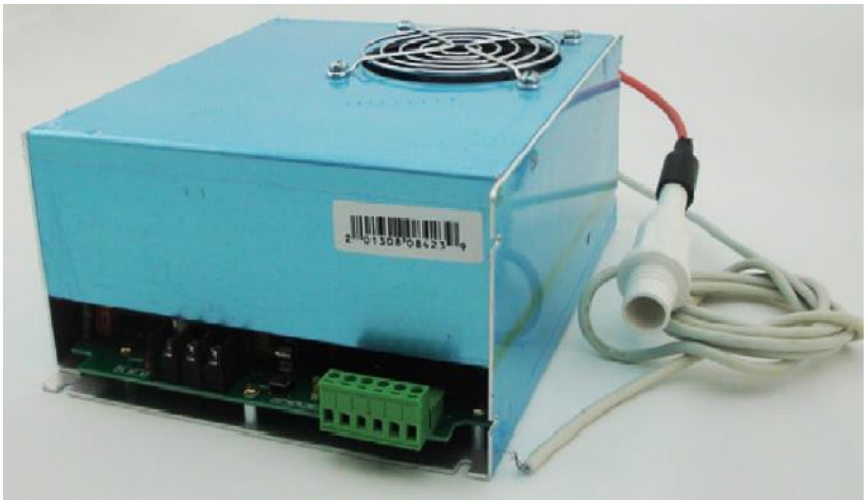
DY10 Power Supply for CO_2 Laser Tubes

Model:HY-DY10



I. Specification:

Input	Input Voltage	AC220V or AC110V（Please specify when placing order）
	AC frequency	47—440HZ
	Max Input Power	450W
	Max Input Current	5A
Output	Max Output Voltage	DC 35KV
	Max Output Current	DC 24mA
Efficiency	≥90％（Full Load）	
MTBF	≥10000H	
Response Speed	≤1ms（From the switch Signal is given to the output current up to 90% of the setting current）	
Withstand Voltage	Input-Output, Input-Enclosure: AC1500V 10mA 60S; Output (negative pole) is connected with machine Enclosure.	
Weight	1.75kg	
Environment	Working Temperature：(-10~40℃)， Relative Humidity (RH)≤90％	
Cooling Way	Force-Air Cooling (FAC)	
Dimension	L xW x H=(198*159*84)mm	

II.Operation Instruction:

1)Laser Tube connection: (Referring to Power supply and laser device's connection diagram)

High voltage terminal (HV+) of HY-DY10 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

The control signal shall be reliably connected to control terminal of the power supply HY-DY10,after connecting the DAC output signal and TTL signal of external computer with the power supply, the laser device shall work as

expected. If the laser lamp can not work properly, should check the control signal is correct or not(include check the voltage specification and logic),if use PWM control as power control,make sure f≥20KHz,Amplitude (peak value) ≤5V,Check and make sure protection switch WP connection is correct at same time.

3)Voltage of power input:

HY-DY10 's power input of the power supply shall be 220VAC/50Hz. If 110VAC is needed, please specify when placing order.

4)Others:

A group of protection switches are also reserved for detection of water switch, fan switch, open-enclosure protection and so on.

Caution:

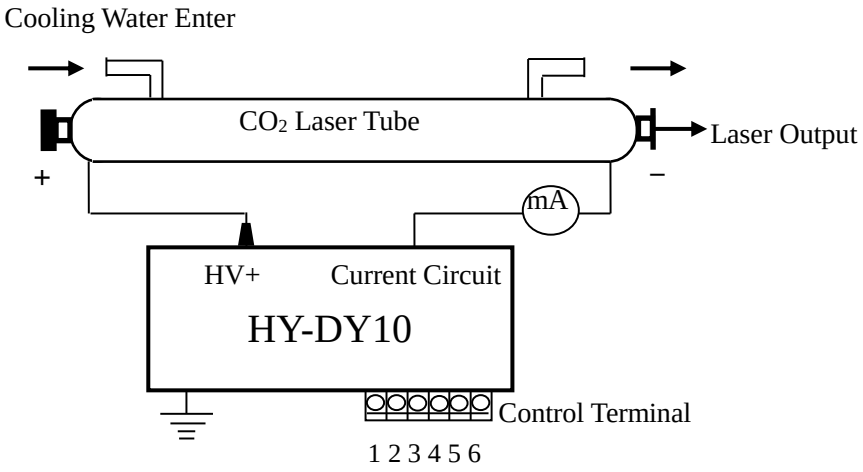
1.Water cooling system should be working properly when switching on laser device.

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.(The **Insulation safety requirements** should be 40KV between the terminal of output and "G")

4. Well-grounded three-pole receptacle should be used to supply power to HY-DY10 power supply. The enclosure should be well grounded to avoid electric shock.

III.The instruction of Power supply and laser wiring diagram and terminal



Terminal Definition

1	2	3	4	5	6
5V	TH	TL	WP	G	IN

Terminal Definition as follows:

5V	Output Power	Output 5V, the maximum output current is 20mA.
TH	Input Signal	On-Off laser control， TH≥3V, emitting laser; TL≤0.3V, no laser.

TL	Input Signal	On-Off laser control， TH≥3V, no laser; TL≤0.3V, emitting laser
WP	Input Signal	On-Off laser control， TH≥3V, no laser; TL≤0.3V, emitting laser
G	GND	This foot must be connected well with the laser machine shell and the ground of control board.
IN	Input Signal	The control of laser power: Both 0-5V analog signal and 5V PWM signal can control the laser power.

Caution :

Figure 1

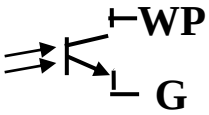


Figure 2

1)WP input terminal can use water switch or fan switch's test terminal, Please pay attention that WP is through optocoupler connected with ground (G) as (figure2) , not as (figure 1).

2)(PWM control): Requirements of the PWM frequency f≥20kHz, amplitude(peak value)≤5V

Function of control interface:

TH	TL	WP	IN	Laser Output
unconnected	Low(≤0.3V)	Low(≤0.3V)	0－5V or PWM	Output laser Power: Pmin~Pmax
	Low(≤0.3V)		unconnected	Output about 40% laser
	High(≥3V)		Any value (ok)	No laser
High(≥3V)	Unconnected		0－5 or PWM	Output laser, Pmin~Pmax
Low(≤0.3V)			Unconnected	Output about 40% laser
Low(≤0.3V)			Any value (ok)	No laser
Any value (ok)	Any value (ok)	High(≥3V)		No laser

IV. Check the power supply worked properly or not manually

Make sure the power supply and laser tube wiring correct firstly, offline the control line and then press the red button" TEST" to test laser tube out light or not, this method can be simple judgment power supply is working correctly.

V. Common Fault Detection and Ruled Out

Problem	Cause	Estimation	Solution
Trip after power on	1.External wiring: AC and FG reverse connection	Check if AC and FC misplaced	Connected correctly according to Instruction
	2. External wiring: short circuit between AC and AC	Use multimeter to check if short circuit between AC and AC.	Rewiring, and avoid short circuit
	3. Internal wiring: short circuit between AC and AC or AC and FG		Send back factory for maintenance
	4.Other causes		
AC power on but Fan of power supply does not work	1.Fan socket is loose.	Laser emission when manual test.	Open enclosure and tighten socket.
	2.Fan damaged	Laser emission when manual test.	Change fan or send back factory for maintenance
	3.Fuse is burned.	No laser emission when manual test.	Contact with us for repair.

AC power on but no laser emission	1.Control wire connected wrong	Check if wire is connected correctly according to **Operation Instruction**	Rewiring correctly
	2. Internal connector is loose.	Open outside case and check	Tighten connector.
	3.Protection switch on but on water through or water through switch is broken.	Voltage>0.5V between “WP”and”G”	Water through or change water through switch.
	4.Wrong output laser signal	Voltage between”TH ” and “G” should<3V when When laser-open controlled by high level	Replace CNC card or change GND.
		Voltage between"TL" and “G” should>3V when laser-open controlled by low level.	
	5. Power control signal is 0.	Voltage between “IN”and “G” is 0.	Increase voltage between “IN”and “G”.
	6.Fuse is burned.	Fan does not work	Send back factory for maintenance
	7.Others		Send back factory for maintenance
Laser emission at all times	1.When “TL” control laser: short circuit between”TL ”and “G”.	Voltage between”TL ” and “G” =0	disconnected between”TL ”and “G”.
	2. Circuit is broken.		Send back factory for maintenance
	3. Switch of manual test laser emission is broken.		Change switch of manual test laser emission.
	4. Other causes.		Send back factory for maintenance
Current is not increased	1.AC voltage is too low	Output current is always at 5mA around.	Use AC voltage regulator.
	2.Power supply and laser Device is not connected very well		Send back factory for maintenance
	3. Power control signal from CNC card is not connected very well with “IN”.	Output current is always at 10mA around.	Re-connected
	4.Potentiometer of power is broken.	Output current is not stable.	Change potentiometer.
	5.PWM frequency or amplitude is not suitable.		Change PWM frequency or amplitude.
	6.Internal Transformer is broken.	Output current is always at 5mA around	Send back factory for maintenance
	6. One circuit does not work.		
	7.Others		
Laser head is not stable during working.	GND is not connected well.		Connect earth wire of CNC card,enclosure of power supply, with enclosure of laser machine.
Laser emission is not stable during			
When two laser head works, action abnormal.			