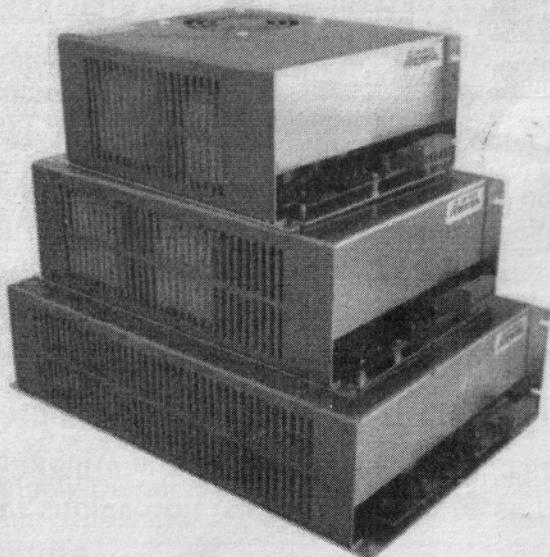


Power Supply Unit for CO₂ Laser Machine

User Manual

Model: DY10/DY13/DY20



Precautions

Please read the manual carefully before using the product, and strictly follow to the instructions and requirements provided. Improper installation or use not in accordance with instructions may result in equipment damage, personal injury or death, which is the responsibility of the user. The manufacturer is not liable in this case.

The input voltage must be within the rated voltage range.

1. Please follow the power rating identification on the laser machine and do not use the machine when the voltage is too high or too low.

Please use the power supply unit only under the permitted

2. operating conditions.

Before checking, installing or replacing the power supply

3. unit:

★ Make sure to switch off the power and discharge the positive and negative poles of the energy storage capacitor completely by using a high resistance receiver.

★ Make sure that the laser machine is well grounded.

It is strictly forbidden to open the power box and touch th

4. e CO₂ laser power supply unit in the working state.

Application

The power supply unit is used for CO₂ laser machine, which are used for cutting, welding, carving, and etching in industrial applications.

Product Feature

1. The power supply unit is characterized by stable power, high adaptability and fast response speed. Therefore, it is suitable for CO₂ laser machine for both cutting and engraving.
2. The power supply unit is easy to control and has high reliability.
 - ★ A laser machine is started or stopped by high and low electric levels, and
 - ★ At the same time, the cooling water is detected by the protection switch.
3. It is easy to adjust laser power. Analog signals between 0-5V as well as digital signal can be used to control the laser power.
4. The power supply unit has an open circuit protection function and is therefore safer. It also prolongs the power supply life.
5. The power supply unit can be equipped with a feedback connector for closed-loop control and for checking the actual working current of the laser machine.
6. The power supply unit is equipped with a manual test button to determine malfunctions on site quickly.

Check before installation

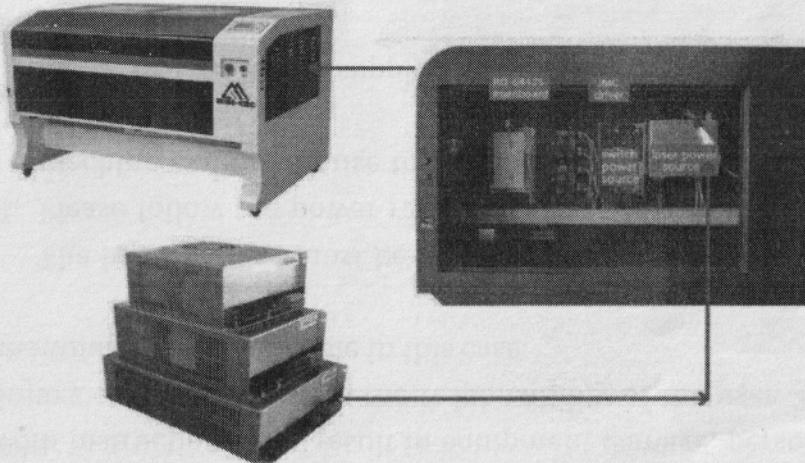
Whether the power supply unit is damaged.

Installation

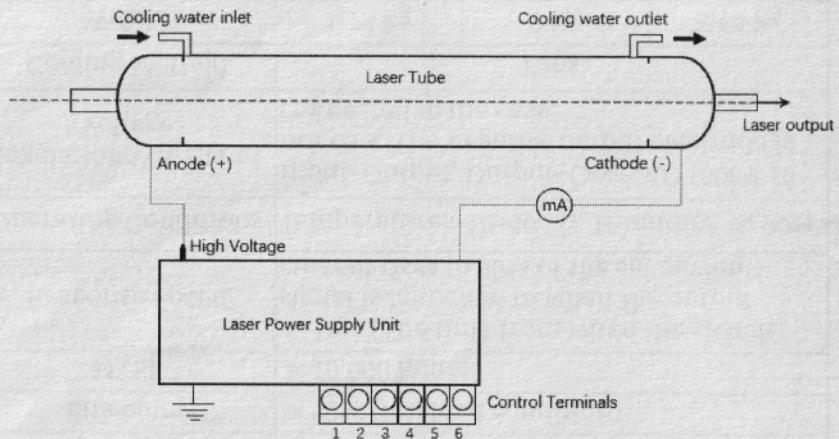
Non-professionals are not permitted to install, check or

replace the power supply unit of a CO₂ laser machine!
The power supply unit must be installed in the settled power box of the for CO₂ laser machine.

1. Check whether the power of the is CO₂ laser machine switched off and the poles of the energy storage capacitor is discharged completely.
2. Open the power box and fix the power supply unit at the position shown picture 1.
3. Connect the power supply unit the laser tube (see. Picture 2).
4. Connect the terminals of power supply unit with the Control board (see. Table 1 and 2).



Picture 1. Install position of power supply unit



Picture 2. Connections between the power supply unit and the laser tube

Terminal Definitions

Each of the 6 terminals of power supply unit is marked with an abbreviation with the following definitions.

TH	Input signal	Light control. Electric level $\geq 3V$: light on; Electric level $\leq 0.3V$: no light;
TL	Input signal	Light control. Electric level $\geq 3V$: no light; Electric level $\leq 0.3V$: light on;
WP	Input signal	Light control. Electric level $\geq 3V$: no light; Electric level $\leq 0.3V$: light on;
G	signal ground	This terminal must be well connected with the housing of the laser machine and the ground of the control board.
IN	Input signal	Terminal for controlling laser power by using 0-5V analog signal or PWM signal with an amplitude of 5V.
5V	Power supply output	Output is 5V and the maximum output current is 20mA.

Table 1. Terminal definition

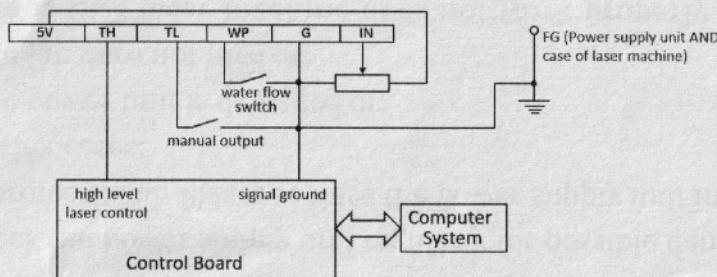
Laser output based on the states of the terminals can be found in the table below.

TH	TL	WP	IN	Laser Output
Unconnected	Low level ($\leq 0.3V$)	Unconnected	0-5V or PWM	Output between Pmin~ Pmax
			Unconnected	Output about 40%
Unconnected	High level ($\geq 3V$)	Low level ($\leq 0.3V$)	Any value	No light
			0-5V or PWM	Output between Pmin~ Pmax
High level ($\geq 3V$)	Unconnected	Unconnected	Unconnected	Output about 40%
Low level ($\leq 0.3V$)			Unconnected	Output about 40%
Low level ($\leq 0.3V$)	Unconnected	Unconnected	Any value	No light

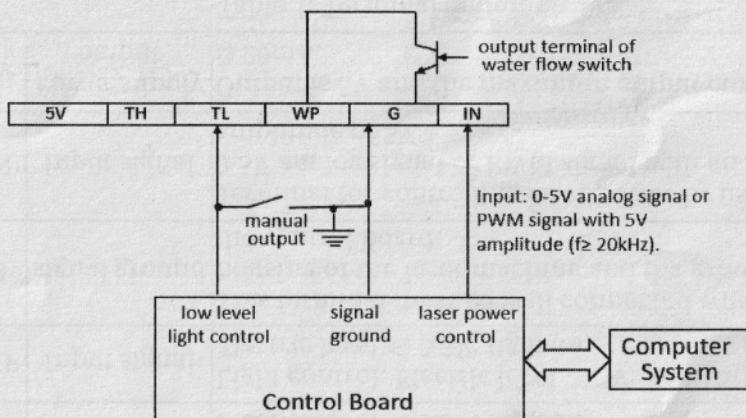
Table 2. Output based on terminal state

Circuit Diagram for Connecting Power Supply Unit with the Control Board

Recommended circuit diagram 1: output based on high level control



Recommended circuit diagram 2: output based on low level control



Parameter

Model		DY10	DY13	DY12
Input	AC Voltage	AC 90-250 V (must be specified by ordering)		
	AC Frequency	47 - 440 Hz		
	Max Power	150 W	550 W	1000 W
	Max Current	3 A	8 A	10 A
Output	Max DC Voltage	35 kV	40 kV	50 kV
	Max DC Current	23 mA	28 mA	35 mA
Efficiency		$\geq 90\%$ (full load condition)		
MTSF		≥ 10.000 hours		
Response Speed		$\leq 1\text{ms}$ (The time from when the switch signal is launched to when the output current rises to 90% of the set current)		
Operating Conditions		Temperature: $-10\text{~}40^{\circ}\text{C}$; Humidity: $\leq 90\%$		
Insulation Withstand Voltage		Input-Output, Output-Case: AC 1500V 10 mA 60 s; The negative output electrode is connected to the case.		
Cooling Method		Fans		
Weight		1.75 kg	2 kg	3.14 kg

Maintenance and Trouble Shooting

The power supply unit is placed in the power box and requires no special maintenance. However, we recommend to check the power supply unit regularly for possible damage by a professional. Please replace the power supply unit in the following cases:

1. The power unit is damaged or;
2. The fan does not turn or;
3. The CO₂ laser machine does not work properly and after a full inspection the power supply unit is declared defective.

Warranty

We provide a two-year warranty for the power supply unit.

Transportation and Storage

Avoid strong collision and drop during transportation and store in a dry environment.

Waste Disposal

Please dispose of the package and defective power supply units according to the local garbage classification. Defective power supply units must be treated as industrial electric waste.

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