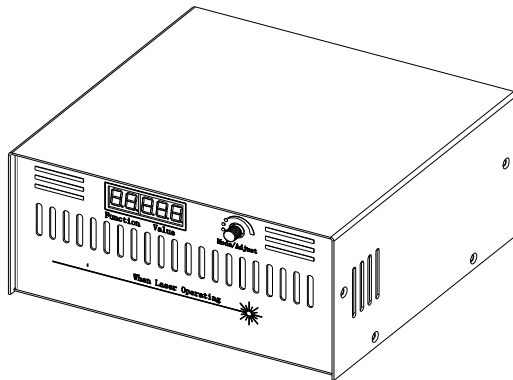


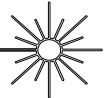
Product Instruction
(Model): GT1+11A

GT1 Laser Power Supply



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Date	<u>2014-03-13</u>

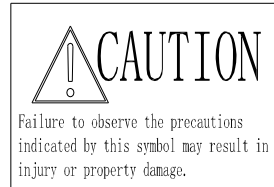
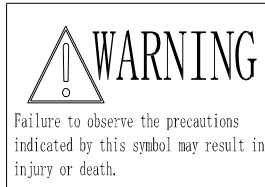
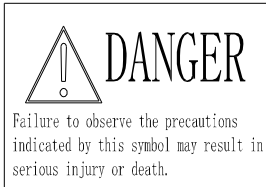
BeamQ Inc. 550 Battery St. Unit 907, CA, USA
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Thank you for using the VD series of laser power supply. Before use, please read this instruction manual to ensure your safety, and keep it handy for future reference.

SAFETY PRECAUTIONS

This instruction manual uses a variety of common symbols and icons to assist you in proper handling and usage of this product properly, and to warn you of potential hazards to yourself and others as well as to property. These symbols and their significance are described below.



- ▲ Do not stare into the laser, because the laser is very strong, may cause injury to the eyes.
- ▲ Do not allow pregnant women or children near the laser.
- ▲ Do not damage the cable, the high-voltage can result in serious injury or death.
- ▲ Do not touch the head and bare wire leads, high-voltage electrical shock may cause human casualties.



- ▲ Do not disassemble or modify the machine.
- ▲ Do not take picture with camera to laser, or damaged by the strong light.
- ▲ Do not block vents behind the machine, it may cause serious body injury and property damage.
- ▲ Do not wipe the lens with something easy to scratch.



- ▲ Handling gently and avoid violent collisions.
- ▲ Be sure to disconnect the power when installing, otherwise it may cause electric shock.
- ▲ Do not aim anybody when debugging laser.
- ▲ If the product fails, please contact your aftermarket companies.

The final interpretation of the company, due to the continuous improvement of the product upgrades, product to prevail in kind.

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1. Product

GT1+11A is a type of laser-driven power supply composed of one-channel small constant current driver, a two-channel TEC temperature control and system monitoring functions. The product uses a high-speed closed-loop constant LD driver, MCU central control and intelligent PWM thermostat control system to provide efficient and reliable temperature control for the driver and LD laser, suitable for driving a variety of low-power air-cooled solid-state lasers or laser module.

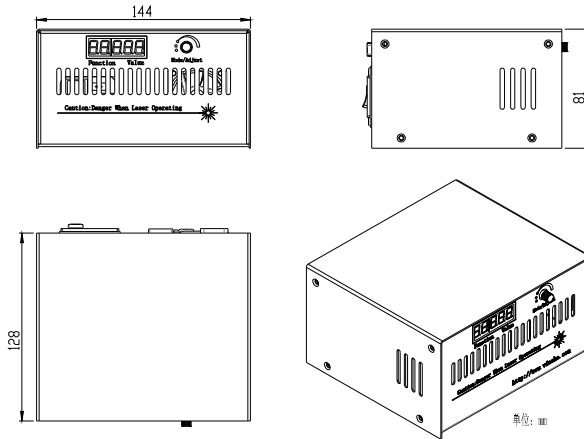
1.1. Feature

- 1 channel efficient, high-speed constant-current drive LD.
- 1 channel PWM bi-TEC driver, heating and cooling.
- Accurate PID temperature control.
- Internal / external control multiple mode selection.
- Laser head type with automatic recognition.
- Overheating, over current, overvoltage, soft start multiple protection.
- User interface is simple and easy to operate.
- Small size, light weight.

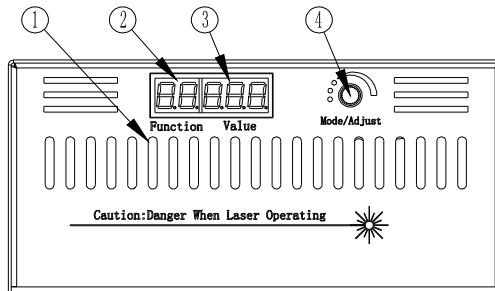
1.2. Specification

Model	GT1+11A
LD maximum drive current	2A ~ 11A (laser head automatic identification)
LD voltage	2V adaptive
Modulation	Continuous / analog (external control) / Digital (external control)
The maximum modulation rate	15kHz (Square wave)
TEC Temperature Range	16.0~28.0℃
TEC maximum drive voltage	11V
TEC maximum drive current	5A
Rated voltage	90~240V AC
Operating ambient temperature	-10~45℃
Dimensions (L × W × H)	128mm×144mm×81mm
Total weight	2.5kg

1.3. Dimensions



1.4. Front view



- ① Vents, for ventilation;
- ② Display options, two green LED digital display, such as C1.
- ③ Values, three red LED digital display, such as 5.58.
- ④ Rotary Switch, you can smooth, counterclockwise rotation of options selected performance parameters change, pressing the mode selection.

LED display mode follow as,

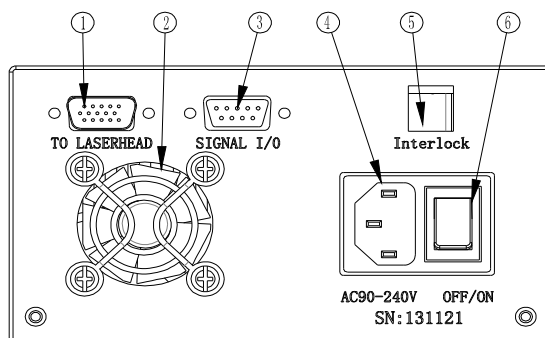
(1) Normal mode, screen never blink, turn counterclockwise options forward flip, back flip clockwise options. Press once to enter the setup mode or exit the setup mode.

(2) Setting mode, the value is blinking, turn counterclockwise or clockwise to reduce or increase property value.

(3) Alarm mode, options flashes and displays the corresponding property value. Rotary switch temporarily lapsed in this state.

Detailed display described later.

1.5. Back view



- ① DB15 (pin) Interface, connect to the laser head.
- ② Cooling fan for ventilation.
- ③ DB15 (hole) interfaces, external control signal input;
- ④ Three-pin power socket (L, N, PE).
- ⑤ Interlock, safety lock protection.
- ⑥ Power switch: on / off external power supply.

Interface definition as follows.

(1) DB15 (Pin) interface definition

No.	Pin Name	Description	No.	Pin Name	Description
1	LD+	Laser positive	9	Tag	Laser Type Identification
2	LD-	Laser negative	10	Fan-	Fans negative
3	LD-	Laser negative	11	Fan+	Fan2 positive
4	TEC-	Cooler negative	12	Rt+	Thermistors positive
5	TEC-	Cooler negative	13	Rt-/GND	Thermistors negative
6	LD+	Laser positive	14	TEC+	Cooler positive
7	LD+	Laser positive	15	TEC+	Cooler positive
8	LD-	Laser negative			

(2) DB15 (Hole) interface definition

No.	Pin Name	Description	No.	Pin Name	Description
1	NC	No connection	9	NC	No connection
2	NC	No connection	10	NC	No connection
3	NC	No connection	11	NC	No connection
4	NC	No connection	12	NC	No connection
5	NC	No connection	13	NC	No connection
6	GND	Signal ground	14	NC	No connection
7	NC	No connection	15	Sin+	Positive modulation signal input
8	NC	No connection			

2. Handling and Storage

- (1) Handling gently to avoid violent collisions. Put the device in the box when long-distance transport.
- (2) Stored in a cool dry place, away from water and corrosive substances.

3. Installation and debugging

- (1) When the floating installation, to ensure that the fixed hanger strong enough. Do not live installation.
- (2) When debugging, check the wiring is correct, the power supply is consistent, then everything is ready on power debugging.

4. How to use

4.1. Wiring

After the power supply using panel wiring, DB15 (pin) interface connected to the laser, DB15 (hole) interface to the external (when the internal time to pick), power outlet power cord.

Note: You must confirm the laser power interface and an interface perfectly matched before using the power, otherwise it may cause permanent damage to the laser or power.

4.2. Power on/off

Slide the power switch can be turned on or off.

Step 1, LED display full brightness and all off three times, the buzzer rang three times. Then start by setting parameters to save power.

Step 2, display Machine Model Vd-3A.

Step 3, display program version number, such as [01120]. The first two LED display the version of the display unit, after three [120] for the control unit version number.

Note: The power supply must be confirmed prior to initial use of the laser power setting parameters and supporting adaptation. LD maximum operating current value must be set correctly, otherwise it may cause permanent damage to the laser or power.

4.3. Display and setting

4.3.1. Display when client mode

Options	Range	Description	Settings
【C1】	【0.00】~【11.0】	LD current, the unit A	Enabled
【A2】	【0.00】~【99.9】	LD actual temperature value, the unit ℃	Disabled
【EI】	【1】 / 【0】	Mode, [O] is the external control mode, [I] for the internal control mode	Enabled
【Pd】	【300】~【400】	If the password is correct, the display [ON] to exit and enter expert mode status; If the password is wrong, after exiting the display [OFF], and in client mode state.	Enabled Password input

4.3.2. Display when expert mode

Options	Range	Description	Settings
【C1】	【0.20】 ~ 【2.00】	LD current, the unit A	Enabled
【U1】	【0.00】 ~ 【12.0】	LD voltage, the unit V	Disabled
【L1】	【0.20】 ~ 【11.0】	LD current limit, the unit A	Enabled when correct password
【b1】	【0.20】 ~ 【3.00】	LD bias current setting (external control mode), the unit A	Enabled when correct password
【A1】	【16.0】 ~ 【28.0】	LD set temperature value, the unit °C	Enabled when correct password
【A2】	【0.00】 ~ 【99.9】	LD actual temperature value, the unit °C	Disabled
【U2】	【-12】 ~ 【12】	TEC voltage value, negative for the heating, the unit V.	Disabled
【EI】	【I】 / 【O】	Mode, [O] for the external control mode, [I] is the internal control mode	Enabled
【U3】	【0.00】 ~ 【5.00】	External modulation signal voltage value, the unit V	Disabled
【IL】	【0】 ~ 【3】	Interlock state units without	Disabled
【Ld】	【0】 ~ 【11.0】	Laser type, the unit A	Disabled
【Pd】	【300】 ~ 【400】	If the password is correct, the display [ON] to exit and enter expert mode status; If the password is wrong, after exiting the display [OFF], and in client mode state.	On when correct password input

The initial state of the power on is client mode.

Note: When you modify LD current limit, it will automatically be transferred to the minimum operating current. Therefore, the revised LD current limit, need to re-set the operating current.

4.3.3. Priority alarm display

When the display control unit receives the alarm signal immediately display the value of options and performance alarms, blinking options. If there are several functions simultaneously warning appears, indicating higher priority options. The priority of each function:

【C1】 > 【U1】 > 【L1】 > 【b1】 > 【A1】 > 【A2】 > 【U4】 > 【EI】

4.3.4. Setting method

Display properly, turn counterclockwise options forward flip, back flip clockwise options.

Press once to enter the setup mode or exit the setup mode.

When you enter the setup mode, the performance value flashes, turn counterclockwise or clockwise to reduce or increase property value.

If rotary switch is turned fast, there is a wide range change of rapid acceleration / deceleration. Items enabled can only be set.

5. Maintenance

- (1) Keep the power to work in a dry, ventilated, dust-free environment.
- (2) When using the rotary switch, do not use too much force, the rotary switch broke.
- (3) Periodically check external wiring connections, whether there is loosening.
- (4) When a fault occurs, disconnect the power supply to the service personnel, not repaired before reuse.

6. Failure Analysis and Troubleshooting

Symptom	Failure Analysis	Troubleshooting
No display	AC power cord is not plugged	Tighten or replace wire power cord
	Power switch is not turned	Slide the panel power switch is ON
You can not set the rotary switch	The display unit is in initialization state	Self-test and initialization state does not allow the state to set
	Is not allowed to set function?	This is not a problem
	Alarm status	Eliminate excessive parameters corresponding
Too often restarting	1, power overload 2, TEC load is too large	Replace
C1 shows 0	No laser current	Check the DB15 (pin) connector and plug tight
C1 flashing alarm	Over current	Power supply is damaged, repair
A2 alarm flashes	Laser thermal protection	Check the laser fan is normal Outlet is blocked
No external modulation output	DB15 (hole) interface connector is not connected	Check the DB15 (hole) connector and plug tight
	Mode setting error	Modify the operating mode

7. Package list

Laser Power Supply	1
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Warranty Card	1
Certificate	1