



Laser instruction manual

— PSU-Z-LED

MGL-V-532-10W
DA12202

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I. Product components and accessories list

| | |
|--|---|
| <p>1. Laser head</p>  | <p>2. Power supply</p>  |
| <p>3. Main power supply cable</p>  | <p>4. BNC</p>  |

II. Use of symbols

| | |
|---|--|
|  | <p>Warning: This symbol is used to warn operators of hazards easily caused by visible and invisible laser radiation!</p> |
|  | <p>Note: Remind operators to prevent danger, pay attention to whether the operation is correct, the wrong operation and connection may lead to personnel injury or damage of goods.</p> |
|  | <p>Danger: Beware of electric shock, high voltage danger!</p> |

III. Safety precautions and instructions

| | |
|--|---|
|  | <p>Warning: Laser radiation can cause damage to eyes and skin. The safety precautions and instructions mentioned in this manual must be followed in the process of installing or operating this laser system.</p> <p>All laser safety rules and standards are applicable. The safety precautions and instructions mentioned in this manual cannot replace the safety standards applicable with other countries.</p> |
|--|---|

Optical safety

| | |
|---|--|
|  | <p>Please pay extra attention to laser products which wavelength range is greater than 700nm (invisible infrared light) or less than 400nm (invisible ultraviolet light). Because this invisible laser is very dangerous.</p> |
|---|--|

- 1.1. Do not observe laser or scattered laser radiation directly or indirectly.
- 1.2. Monitor should also be used even when the Laser level below Class I, it cannot observe directly with naked eyes.
- 1.3. Wear appropriate laser goggles. Even though laser goggles can protect a person's vision, make sure that never look into the laser beam or highly reflective surface.
- 1.4. Laser beam on highly reflective surfaces can cause serious injury, such as mirrors, glass, metal, etc.

Reflected scattered lasers are also dangerous.

- 1.5. Do not aim at targets with a laser randomly.
- 1.6. Do not use the laser at the places marked "No Smoking" or "Flammable and Explosive", which may cause danger.
- 1.7. For invisible lasers, use an infrared detector or infrared display card to verify if the laser is working before operating the laser.
- 1.8. Always use clean finger cots, latex gloves and other insulation equipment when handling optic problems.
- 1.9. Post warning signs in notable location of laser operation area. Set up reminder signs when the laser is operating and impose restrictions on non-operating personnel to the laser working area.
- 1.10. If the laser is not in use or unattended, the laser should be turned off completely.
- 1.11. Make sure the beam height is not near eye level to avoid inadvertent eye encounter with beam.



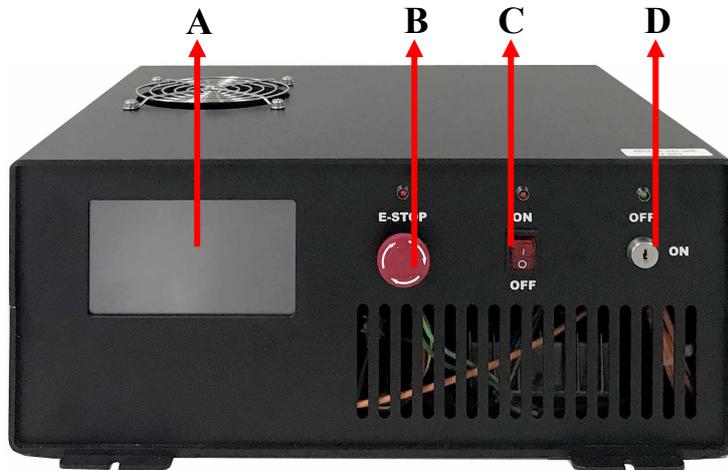
Electrical safety



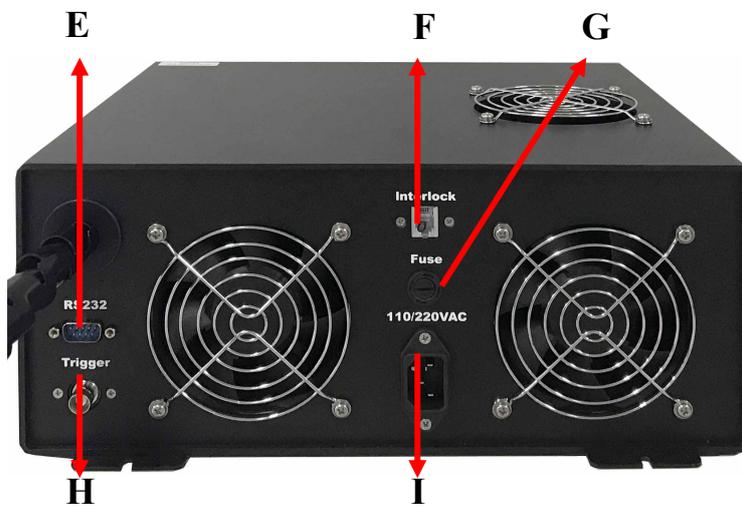
Unauthorized repair is not recommended and the risks arising therefrom shall be borne by the user. The non-tear tag fails will lose the warranty any unauthorized repair may invalidate the warranty.

- 2.1. Unplug the main power cord immediately when the equipment is not in use. And keep the laser head connected with the power supply tightly to prevent static damage.
- 2.2. Any operations to disconnect and connect the laser head to the power supply need to ensure that the power is turned off.
- 2.3. If conditions permit, please keep enough distance from the device to reduce the risk of electric shock
- 2.4. Do not touch exposed wiring and components when power is on.
- 2.5. Ensure that insulated tools are used when maintaining or repairing electrical equipment.
- 2.6. In order to avoid damage to the laser system caused by lightning strike, static electricity, electrical interference, etc., it is necessary to ensure that the laser system is properly connected to the ground.
- 2.7. Follow all ratings on the product instructions to avoid fire disaster or electric shock. Please refer to the product instruction for detailed information about the rating before connecting the product.

IV. Power supply description and function introduction



Power supply front panel function illustration



Power supply back panel function illustration

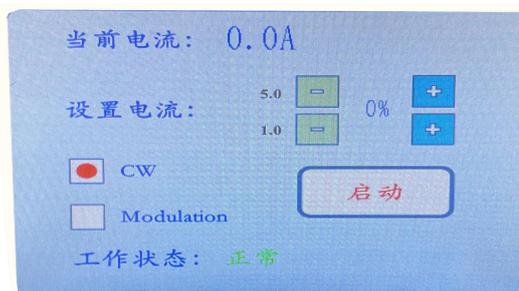
Laser power supply function description

| | Name of each part | Function introduction |
|----------|------------------------------|---|
| A | Control Screen | The control screen is used to control the power supply and show the set state of parameters. |
| B | Emergency stop button | When unexpected accident occurs, please press it down to switch off the laser. To restart the laser, please firstly rotate it according to arrows to release it, and then reset the main power and key switch to achieve restarting the laser. |
| C | Power switch | Power switch is the main power unit of the power supply. It is switched between “on” and “off”. The power supply will turn off when the power switch is set to "off". |
| D | Key switch | The power supply will turn off when the key switch set to “off”. |
| E | RS232 | This function is selected according to the product model. If you need this function, please contact our company. |
| F | Interlock | Unplug the RJ11 plug, or cut off the shorting stub on the plug (you must cut off both of the shorting stubs unless there is only one shorting stub). The laser system will stop working. The laser system can restore to normal working status by plug in the RJ11 plug or resuming shorting stub at this time. |
| G | Fuse | If the power supply has no function (fan in the driver doesn't work or the red LED-“power” is off), the most possible problem is the fuse broken. Please note to replace the fuse after switching off the key switch and mains power. (Using 8A fuse under 110V and 220V respectively) |
| H | Signal interface | It is used to input the external signal. You should connect BNC when use it (The white wire is anode (+), and the black wire is for cathode (-)). |
| I | AC Power Jack | Make sure your local voltage is in the range showed at the back panel. |

Introduction of Control Screen

1. LD SETTING

LD SETTING shows out the current and working state. You can set the working current, Run/Stop mode.



| | Abbreviation | Function |
|----------|-------------------------|--|
| A | Current Feedback | It shows the laser working current. |
| B | Current | The current can be adjusted between 0~100%. 5.0 and 1.0 are field adjustment coefficient. The first line of the “+” “-” to adjust step length is 5%. The second line of the “+” “-” to adjust step length is 1%. 100% means full power output. |
| C | CW | It works under standard TTL (0/5V) function. The laser is on when input high level, and the laser is off when input low level. |
| D | Modulation | The laser doesn't emit. |
| E | Run/ Stop | 启动/停止 the laser output. Click “启动”, the laser start to emit light. Click “停止” to stop output. |
| F | Working State | It Shows the working state of the laser. When the working state is “Normal”, the laser works normally. When the working state is “Alarm”, it is necessary to turn off the power switch and restart the laser. |

V. Operating environment



Harmful laser radiation may occur if the control, adjustment and operation methods specified by CivilLaser are not followed.



It's not allowed to turn on the laser until the temperature of the laser shell close to the operating temperature, to avoid the device damage caused by excessive temperature differentials.



In order to extend the lifetime of the laser, it is recommended that: do not use it over the given temperature range by CivilLaser. If it exceeds its limit temperature, the entire system will turn to protective state and cannot output laser. Failure to operate follow this specification may cause fatal damage to the laser.

The operating environment conditions of the laser system are as follows:

1. Temperature: 10-35 ° C (ambient temperature)
2. Maximum relative humidity: <80%
3. Main power voltage: less than $\pm 10\%$ of the nominal voltage.

VI. Preparing for operation

1. Check out if the power switch is set to "off".
2. Provide voltage to power supply as indicated on its back panel.

VII. Installation and operating instructions



Make sure read all the safety instructions mentioned in the previous parts carefully and well understand



Note: The laser system must be installed and operated by a professional who is well knowledged in all laser safety terms and equipment safety. The customer should take all necessary measures to ensure the safety of the laser system.

CiviiLaser is not responsible for any damage to the laser or personal injury caused by improper installation and operation. Please contact us if there is any question.



- **We strongly recommend that place the machine on a well cooling platform to maintain the laser temperature within limits. Otherwise it will cause fatal damage to the laser.**
- **The temperature is required to change slowly within 10 °C -35 °C , otherwise the laser will not keep working well.**
- **Do not paste anything under the laser.**
- **Make sure there are no obstructions at 0.05m-0.1m from the ventilation opening and ensure a good heat dissipation environment.**
- **If the laser system needs to be installed inside other equipment, please ensure well ventilation. Additional fans could be used for heat dissipation if necessary. The direction of the cooling air flow should be the same as the laser fan.**

1. Connect the power cord of the power supply to AC Power Jack.
2. Connect the BNC with external signal interface on rear panel. And connect external frequency modulation according to the correct connection way.
3. Remove the label at aperture.
4. Due to the high power of the laser, a black metal receiving screen which is non-flammable is recommended in front of the aperture, to avoid the skin burning and fire accident.
5. Turn on the Main Power Switch, and the red signal light “power” will be on. Turn on the Key Switch and the green signal light “Laser” will be on after about 1 minute. You can control the power supply though control screen.

-
6. If set control screen is to “CW” mode, it works under standard TTL (0/5V) function.
 7. Click “启动” to start the laser. The warming up time is about 15minutes.

Note:

- A. It controls the laser on and off. On the precondition of turning on the main power switch and key switch, and then click “启动”, the laser starts to emit; click “停止”, the laser stop emitting.
 - B. Because the current is on “0” mode with factory default.
8. Notes for TTL(0/5V) Modulation.
 - a) Without signal input (or the leads open), the laser is in CW operation.
 - b) With signal low level ($<0.7V$) input, the laser is in the off state.
 - c) With signal high level ($>2.3V$) input, the laser is in the on state.
 - d) Signal input does not exceed 5.2V.
 9. Only for unexpected accident occurs, the red LED-“Alarm” will be on. That means the laser system works in abnormal state. Please switch off the Main Power. Please reset the Main Power and Key Switch after a few minutes, then to restart the laser system again.
 10. Turn off the laser system: Turn off the Key Switch and the Main Power Switch, and finally disconnect the attaching plug.
 11. To prevent optic path from dust, you should replace aperture label.

VIII. Warranty and maintenance



Warning: Do not open or remove the cover of the laser and the shell of the laser power supply without authorization please, otherwise there will be risk of personnel injury by the laser and invalidating the warranty at the same time. It is recommended to return the laser to Civillaser for repair if necessary.

1. The warranty period of this product is one year from the shipping date.
2. Any of the following cases will not count as warranty object.
 - 2.1 Misused, improper operation, improper storage or unauthorized operation, and some processing operations supplemented by agency;
 - 2.2 Remove or damage or change the initial identification number or label;
 - 2.3 Any other claims not arising directly from defects in materials or workmanship.
3. The laser should be used in a clean, dry, dust-free and static-free environment.
4. When there is no machining task, the laser should be energized regularly. It is best to run for one hour every two weeks. The heat output of the laser itself is used to reduce the humidity, protect electronic components from moisture. To maintain the best product performance, extend product service life.
5. If there are any questions during operation, please contact Civillaser representative.
6. Please do not turn on the laser before reading the instructions to avoid danger. Must wear laser goggles and take special protective measures when removing the laser cover.
7. Please follow the instruction manual to operate the laser.

IX. Appendix

| | Accessories name | Included | Obiter dicta |
|----------|-----------------------------|-----------------|---------------------|
| A | Optical fiber | / | / |
| B | Optical fiber bracket | / | / |
| C | End collimator | / | / |
| D | Linear prism | / | / |
| E | Optical fiber coupler | / | / |
| F | Polarization attenuator | / | / |
| G | Beam expander | / | / |
| H | Optical fiber oscillator | / | / |
| I | RS232 driver CD | / | / |
| J | USB to RS232 cable | / | / |
| K | Round adjustable attenuator | / | / |
| L | Optical filter | / | / |
| M | 1/2 wave plate | / | / |
| N | Planoconvex lens | / | / |
| O | Cooling equipment | / | / |
| P | Heat sink | / | / |
| Q | Fan | / | / |
| R | Infrared card | / | / |
| S | Laser goggle | / | / |
| T | Connection plate | / | / |
| U | Extension cable | / | / |
| V | Chiller | / | / |