Operation Instruction for CNI Model with PSU-FC

Caution-Use of controls or adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

Note: The laser only can be operated after the case temperature of the laser system return to the room temperature to avoid the damage of the big temperature range. It's necessary to Place the laser head which has the same serial number with the power supply on a stable and better heat-conducting plate, such as metal plate.

1. Product features

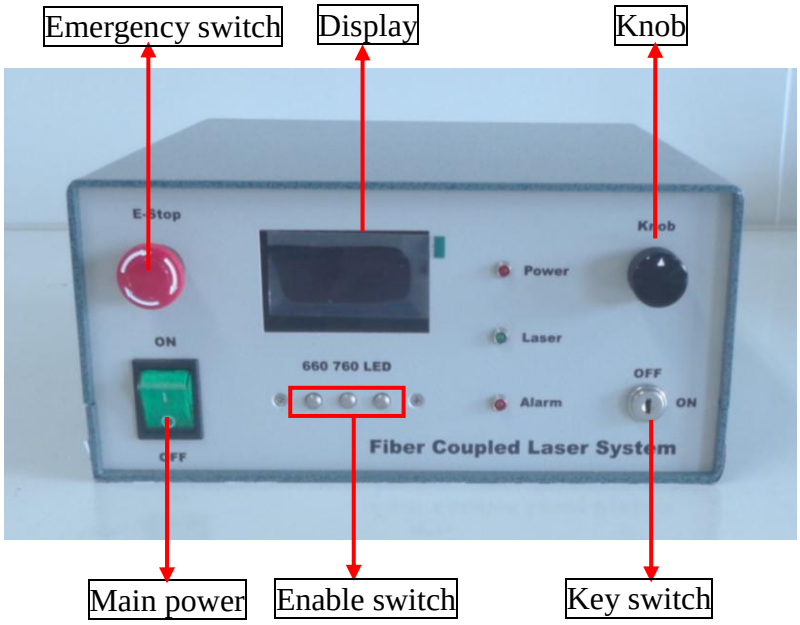
NOTE：

A. CNI suggests that the laser be mounted on a flat, thermally dissipating surface to maintain a high-level of heat dissipation, and reliability.

B. Slowly change between 10℃-35℃. Or else, the laser will not work well. Do not touch any element of the PC board. Or else, the laser will not work well. If the laser is not already mounted on a thermally dissipating surface, it is strongly advised to do so. Failure to comply with this procedure may cause permanent damage to the laser.

C. The air duct should not be blocked, and make sure there is nothing placed within 0.05m-0.1m.

D. If the laser system needs to be installed into equipment, please make sure the airflow clear. If necessary, the extra fans can be used for heat dissipation.



1.1. Check the main power and make sure it is in "OFF" state.

1.2. Check the key switch and make sure it is in "OFF" state.

1.3. Enable switch: to control the laser or LED on/off respectively.

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1.4. Knob:

1.4.1. Long press the knob: Switch over between the first and the second page of the menu.

1.4.2. Short press the knob: Switch the functions in the present menu.

1.4.3. Turn the knob

I1: Adjust current value of 660nm in the first line. Turn the knob clockwise, the current (output power) is increased.

I2: Adjust current value of 760nm in the second line. Turn the knob clockwise, the current (output power) is increased.

LED: Adjust current value of LED. Turn the knob clockwise, the current (output power) is increased.

Step: Switch the step length of the current in the third line of the menu.

The another page of the menu:

Mode: Switch work mode over between MMC and CCS;

f1: Adjust the frequence value of 660nm;

f2: Adjust the frequence value of 760nm;

Step: Switch the step length of the frequence;

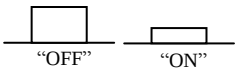
1.5. MMC：manual adjustment with the knob.

CCS：To adjust the parameters of the laser with RS232.

1.6. Display: Display work state.

Push the enable switch you choose, the display shows “ON” state, the corresponding laser starts work.

1.7. Release emergency switch: 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. Before open the laser, please make it in “OFF” state.



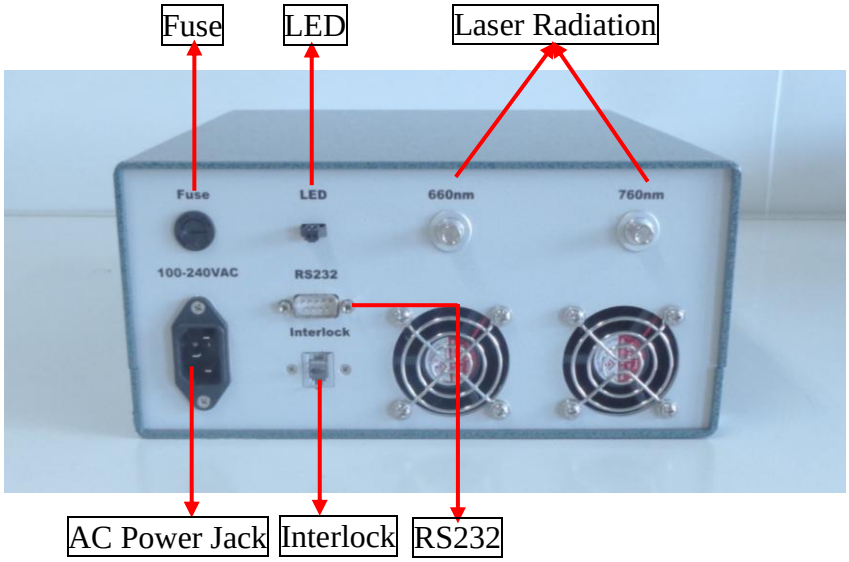
1.8. LED: Please connect a LED to the interface.

1.9. RS232: Through the data lines connected with computer. Control to change the parameters by supporting software. Pin2:RX; Pin3:TX; Pin5:GND

1.10. Interlock: Pull out the crystal plug or disconnect the short wire on the plug(if there are two short wires ,disconnect both of them)，laser system will stop working. At this point you must connect the plug or restore short wires, the laser system return to normal working station.

1.11. Make sure your local voltage is in the range showed at the back panel (100-240VAC).

1.12. Maybe the fuse blew out when the power supply does not work. Please replace the fuse.



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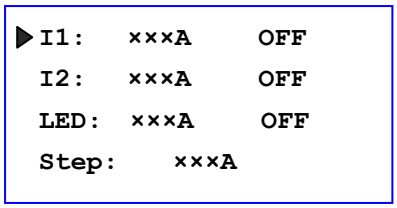
2. Operation

2.1. Connect the power cord of the power supply to AC Power Jack.
2.2. Unscrew the laser output caps and connect the fibers with the lasers, then fixed the fibers.
2.3. Switch on the main power of the power supply. The red LED - “Power” is on.
2.4. Turn on the key switch at “ON” state. The laser starts to work after about 5 seconds delay. The green LED -“Laser” is on.
2.5. Turn on the Enable switch， the laser system start working .The warming up time is about 10minutes.
2.6. 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 mains power. Please reset the mains power and key switch after a few minutes, then to restart the laser system again.
2.7. Closing the laser system: Turn off the Enable switch first, and then turn off the key switch, switch off the mains power of the power supply. Disconnect the driver.
2.8. Unplug the fiber and screw on the caps.

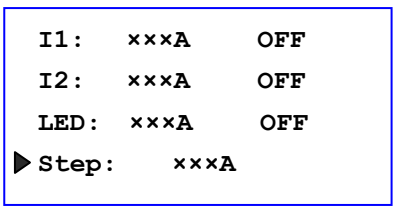
3. Operation procedure instruction of the power supply

Note: Factory default:, 0A, MMC Mode, step length of work current is 0.01A,
f1: 0Hz, f2: 0Hz, step length of frequence is 1Hz.
The adjust range is 0Hz~5kHz, and the laser is in CW mode when the frequence value is 0Hz
When you restart the laser system, the default values will be the value setted last time.

Turn on the main power. The red LED - “Power” is on. Then turn on the key switch. The laser starts to work after about 5 seconds delay. The green LED -“Laser” is on. The display shows as followed:



The laser work in MMC mode, we need adjustment the working parameter with the knob.
At this time, turn the knob to change the current value of 660nm in the first line.
Press the knob to enter into the second line of the menu, turn the knob to change the current value of 760nm.
Then press the knob to enter into the third line of the menu, turn the knob to change the current value of LED.
Turn the knob clockwise/counter-clockwise to increase/decrease the current value with the setted steps.
The optional steps are 0.01A, 0.1A.



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Then long press the knob to enter into the second page of the menu, the display shows as followed:

Turn the knob can switch over between MMC mode and CCS mode.

Note: In CCS mode we need adjust the parameters of the laser with software (RS232).

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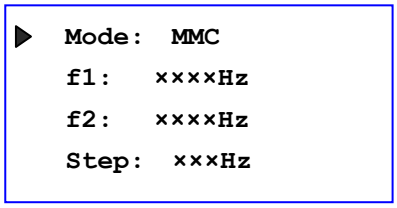
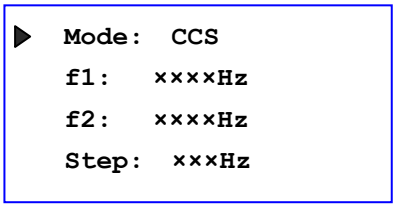


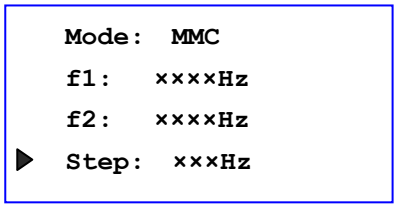


Then press the knob to enter into the second line of the menu, turn the knob to change the frequence of 660nm.

Press the knob to enter into the third line of the menu, turn the knob to change the frequence of 760nm.

Turn the knob clockwise/counter-clockwise to increase/decrease the frequence with the setted steps.

The optional steps are 1Hz, 10Hz, 100Hz, 1000Hz.



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4. Operating Environment

4.1. Temperature: 10-35℃（environment temperature）

25±3℃（bottom plate temperature /recommended temperature）

NOTE：It is not recommended to operate the laser outside of this temperature range for prolonged periods. The unit is designed to shut down if the laser exceeds operating temperature limits. Failure to comply with the environment temperature may cause permanent damage to the laser. All CNI lasers are designed with ESD protection.

4.2. It should also be noted that the CNI laser must be operated in an environment with low vibration to meet the power stability specifications.

4.3. Maximum humidity: 80±10% (RH)

If the air humidity overruns the figure, the working capability of the laser system will be affected indirectly (e.g. intracavity crystal deliquescence, circuit board short etc.). And operate the laser in an environment in which there is normal aeration.

4.4. Rated voltage: （According to the testing report）

Failure to comply with this procedure may cause permanent damage to the laser.

Following is the possibility if the service voltage is unstable:

4.4.1. Integrated circuit will be damaged; crystal cooling exceeds the rated value (crystal cooling circuit invalid), output power decreased, and fan not run, caused by unstable service voltage.

4.4.2. Unstable power supply makes LD damaged by instantaneous peak current passing.

4.4.3. Unstable voltage static electronic makes potentiometer electric capacity resistor integrated circuit TEC circuit PC board damaged.

5. Laser safety

5.1. Optical Safety

5.1.1. Wearing a set of proper laser safety goggles is a good idea. Though laser safety goggles can protect a person's vision, it's always best to remember NEVER to look into a laser beam or bright reflection even when wearing laser safety goggles.

5.1.2. Viewing optics or display screens should be used during operation to make the accessible emission less than Class I, reflected beams can cause serious accident by aiming beam at reflective surfaces, e.g. mirror, glass and bright metal.

5.1.3. Never use your laser in the vicinity of highways and airports. DO NOT target moving vehicles and airplanes.

5.1.4. Never randomly aim a laser out the window

5.1.5. DO NOT use a laser at the place marked “No smoking” “inflammable and explosive” and easily caused the danger.

5.1.6. Use an infrared detector to verify that the laser beam is on or off before working on the laser.

5.1.7. Set up controlled access areas with for laser only in well marked areas with controlled access. Be sure to post appropriate warning signs visible to all.

5.1.8. The operation of lasers should be under the supervision of qualified personnel only. When not in use, lasers should be shut down completely and made off-limit to unauthorized personnel.

5.1.9. Limit access to the laser system to persons required to be present.

5.1.10. Laser should be operated in the ambient of clean and dry and no electric.

5.1.11. Maintain experimental setups at low level to prevent inadvertent eye encounter with beams.

5.2. Electrical Safety Precautions

5.2.1. Disconnect main power lines before working on any electrical equipment when it is not necessary for the equipment to be operating, and maintain the laser head and the same serial number laser power tight junction to prevent electrostatic damage.

5.2.2. Never work on electrical equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment, and who is competent to administer first aid.

5.2.3. When possible, keep one hand away from the equipment to reduce the danger of current flowing through the body if a live circuit is accidentally touched.

5.2.4. Always use approved, insulated tool when working on equipment.

5.2.5. Special measurement techniques are required for this system. Ground references must be selected by a technician who has a complete understanding of the system operation and associated electronics.

6. Warranty and maintenance

6.1. The warranty is one year from the shipping date.

6.2. This warranty will not apply to those products which have been **r**epaired or altered other than in accordance with the terms of this agreement**.**

6.2.1. Abused, misused, improper handling in use, or storage, or used in an unauthorized or improper manner or without following written procedures supplied by manufacturer.

6.2.2. Original identification markings or labels have been removed, defaced or altered.

6.2.3. Any other claims not arising directly from defects in material or workmanship.

6.3. Laser should be operated in the ambient of clean and dry and no electric

6.4. Always use finger cots, latex gloves, or the equivalent when handling optics, and use a clean, cushioned wok surface.

6.5. In case you have any question during operation, contact CNI representative.

6.6. Please do not open the laser head without instructions from manufacturer, which may lead to the danger of exposure of hazardous visible and invisible laser radiation. Exceptional care must be taken when operating the laser with the covers removed. Laser protective eye ware must be worn.

6.7. Please operate the laser according to the operation instructions.

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