

中国长春新产业光电技术有限公司

Changchun New Industries Optoelectronics Tech. Co., Ltd

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Testing Reports

All CNI testing is based on the required specifications in the purchase order.

Model: MPL-N-266nm-40mW-20012345(PO#EG9123118-CNI-1)

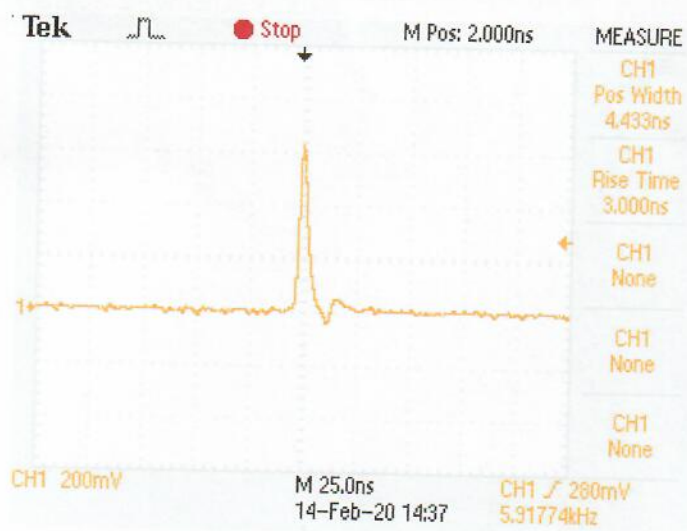
Inspection reports

Items of specs	Testing	Attachments
Output Power	52mW	/
Power Stability over 4 hours	<5%	/
Repetition Rate	5.91kHz	Graph 1
Pulse Duration	4.43ns	Graph 1
Transverse Mode	Near TEM ₀₀	/
Beam parameters	0.5*2mm	/
Duty@ 3kHz	70%	/
Duty @ 4kHz	79%	/
Duty @ 5kHz	90%	/
Spectrum	266.02nm	Graph 2
Beam height from base	68mm	/
Warm-up Time	< 10mins	/
Dimensions of Laser Head	415×99×94mm ³	/
Weight of Laser Head	3.35kg	/
Power Supply	220V	/
Integrated Driver	PSU-N-LED	/
Dimensions of Driver	307×150×106mm ³	/
Weight of Driver	2.9kg	/

Inspector: 

Date:2020/2/17

Graph 1:

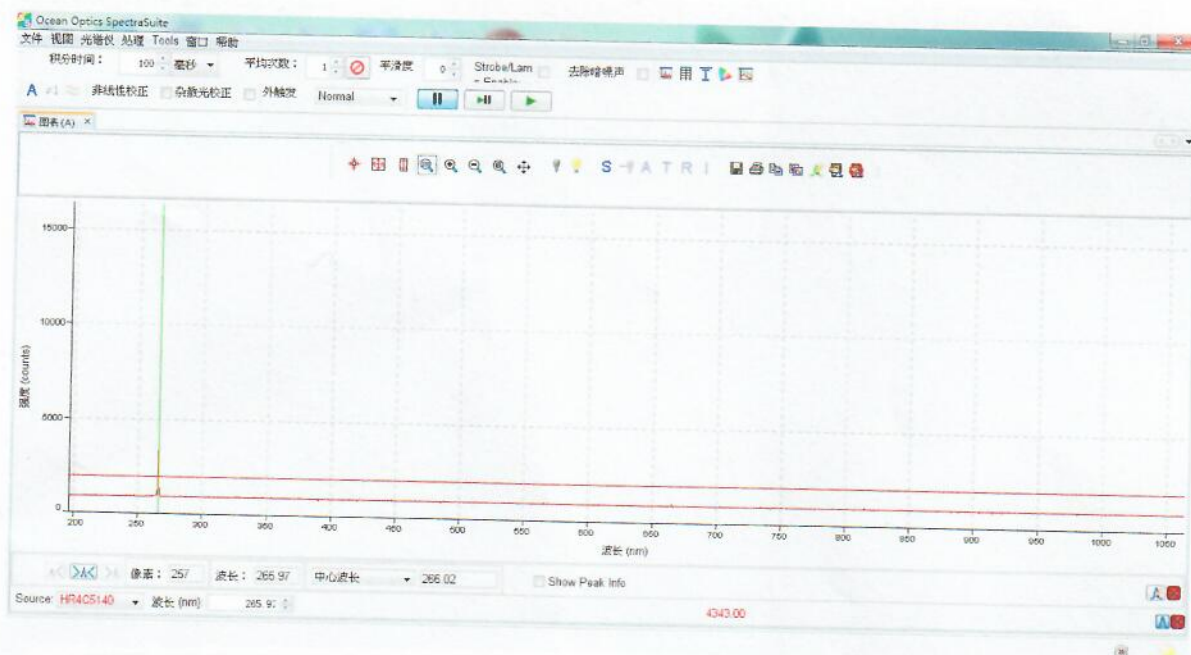


Repetition Rate: 5.91kHz

Electric Pulse Width: 4.43ns

Output power: 52mW

Graph 2: Spectrum



Operation Instruction for CNI Model with PSU-N-LED



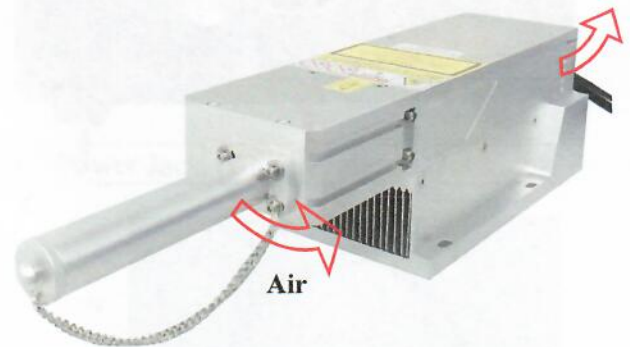
Caution-Use of controls or adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

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.

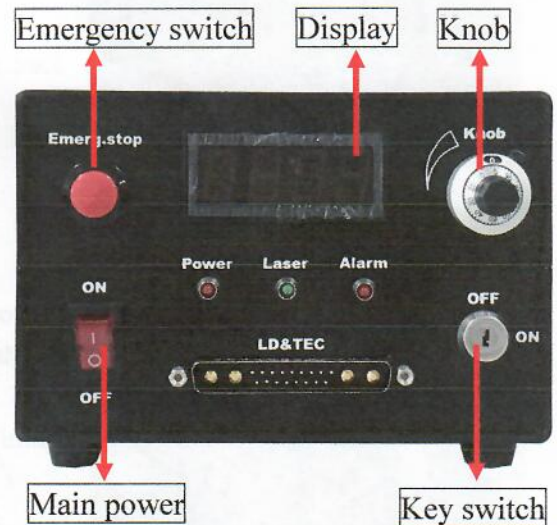
1. Product features

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°C-35°C. 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. Emergency switch: When unexpected accident occurs, you can press it down to switch off the laser. You need to reset the main power and key switch to restart the laser.
- 1.4. Lock: It is the lock of the power control knob. Unlock position see figure.
Knob: The knob is fixed on the minimum current position as factory default. Please unlock it before adjusting the knob. Turn the knob clockwise, the output power is increased.
- 1.5. Display: it shows the current as factory default.



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1.6. Signal interface: TTL external control signal interface. You should connect modulation cord when use it. There are two leads (The red wire is anode (+), and the black wire is for cathode (-)).

1.7. 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, turn off the electronic lock, and then open it, the laser system return to normal working station.

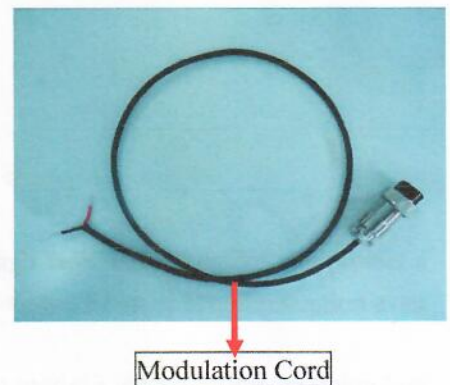
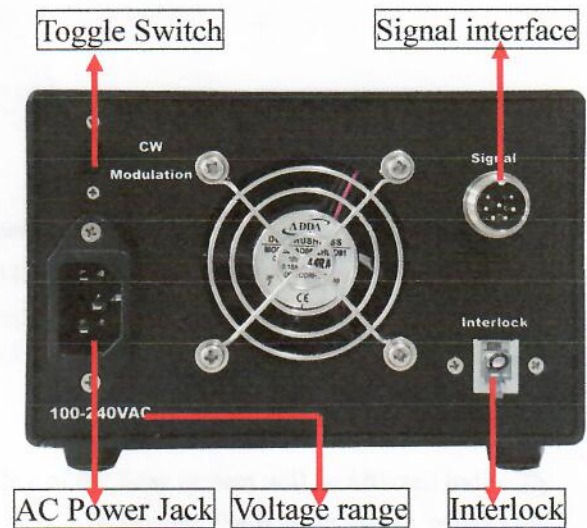
1.8. Toggle switch:

1.8.1. Push it to “CW” position, the laser works as QCW, external signal is not available.

1.8.2. Push it to “Modulation” position, the laser doesn’t emit, 0/5V external voltage is necessary to make it work. The external signal could be added on the laser.

Note: Make sure the key switch is on “off” state before changing the toggle switch.

1.9. Make sure your local voltage is in the range showed at the back panel.



2. Operation

2.1. The connector is with the function of protecting. Please remove it when using the laser. (When the laser is not connected with the power supply, please cover it to avoid the damage of the laser).

2.2. Attach the laser head to the connector of power supply firmly. Please make sure to fasten the screws on the connector.

2.3. Connect the power cord of the power supply to AC Power Jack.

2.4. Open the shutter.

2.5. Switch on the main power of the power supply. The red LED - “Power” will be on.

2.6. Turn on the key switch at “ON” state. The laser starts to work after about 10 seconds delay. The green LED -“Laser” is on. Moreover, you must wait 15 minutes after the laser is turned ON before obtaining stable power output.

2.7. Turn the knob to max, the laser outputs maximum value.

Note: The knob is fixed on the minimum current position as factory default, so the laser is no power output.

2.8. 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.

2.9. Closing the laser system: switch off the mains power of the power supply.

2.10. To prevent optic path from dust, you should close the shutter.

3. Operating Environment

3.1. Temperature: 10-35°C (environment temperature)

25±3°C (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.

3.2. Humidity: 50±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. Laser safety



4.1. Optical Safety

- 4.1.1. 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.
- 4.1.2. 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.
- 4.1.3. Never use your laser in the vicinity of highways and airports. DO NOT target moving vehicles and airplanes.
- 4.1.4. Never randomly aim a laser out the window.
- 4.1.5. DO NOT use a laser at the place marked "No smoking" "flammable and explosive" and easily caused the danger.
- 4.1.6. Use an infrared detector to verify that the laser beam is on or off before working on the laser.
- 4.1.7. 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.
- 4.1.8. 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.
- 4.1.9. Limit access to the laser system to persons required to be present.
- 4.1.10. Laser should be operated in the ambient of clean and dry and no electric.
- 4.1.11. Maintain experimental setups at low level to prevent inadvertent eye encounter with beams.



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4.2. Electrical Safety Precautions

- 4.2.1. Disconnect main power lines before working on any electrical equipment when it is not necessary for the equipment to be operating.
- 4.2.2. 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.
- 4.2.3. 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.
- 4.2.4. Always use approved, insulated tool when working on equipment.
- 4.2.5. 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.

5. Warranty and maintenance

- 5.1. The warranty is one year from the shipping date.
- 5.2. This warranty will not apply to those products which have been repaired or altered other than in accordance with the terms of this agreement.
 - 5.2.1. Abused, misused, improper handling in use, or storage, or used in an unauthorized or improper manner or without following written procedures supplied by manufacturer.
 - 5.2.2. Original identification markings or labels have been removed, defaced or altered.
 - 5.2.3. Any other claims not arising directly from defects in material or workmanship.
- 5.3. Laser should be operated in the ambient of clean and dry and no electric.
- 5.4. Always use finger cots, latex gloves, or the equivalent when handling optics, and use a clean, cushioned work surface.
- 5.5. In case you have any question during operation, contact CNI representative.
- 5.6. 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.
- 5.7. Please operate the laser according to the operation instructions.

Instruction for Signal Modulator

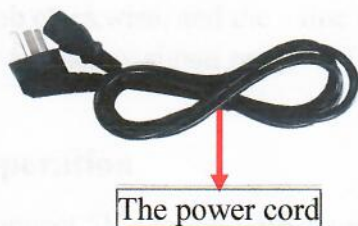


1. Product features

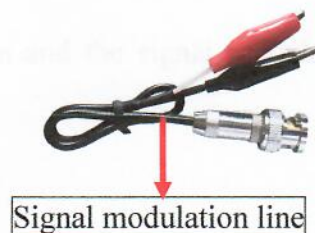
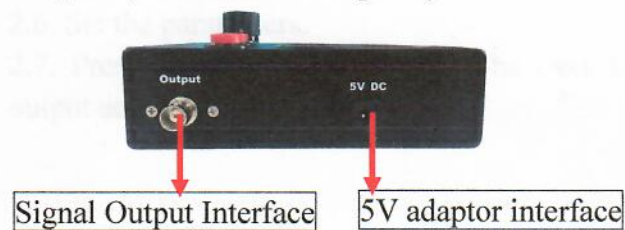
1.1. 5V adaptor: The power source module provides the 5V DC power supply for the signal modulator.



1.2. The power cord: Connect 5V adaptor with AC Power (85-264V) through the power cord.

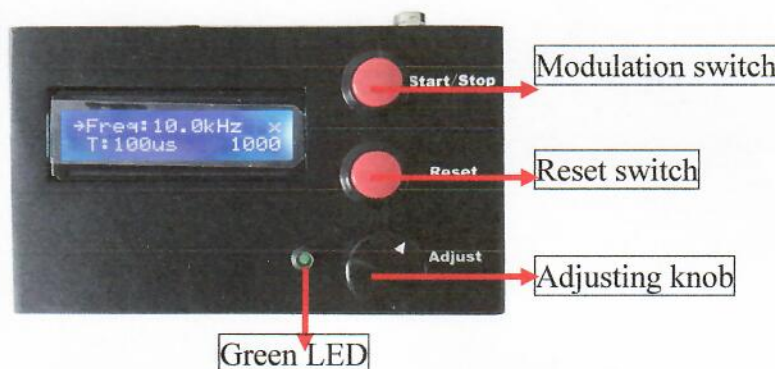


1.3. Signal Output Interface: It is used to provide modulation signals for the laser. The signal output interface is connected to the signal interface of the laser by signal modulation line on the modulator and modulation cord on the laser. Red is Frequency+, Black is Frequency-.



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1.4. Modulation switch: When the signal modulator is turned on for the first time, there is no signal output. Press the switch, the green LED is on and the signal modulator is output according to the set value. Press the switch again, the green LED is off and the modulator stops the output.



1.5. Reset switch: The modulation signal reverts to factory Settings.

1.6. Adjusting knob:

- 1) Press the adjustment knob for short to switch the menu:
 - Frequency
 - Duty
 - V high
 - V low

The arrow indicates the current option.

- 2) Press the adjustment knob for long to switch the digital position.

Frequency (Hz): $\times 0.1$, $\times 1$, $\times 10$, $\times 100$, $\times 1000$

V high/low (V): $\times 0.01$, $\times 0.1$, $\times 1$

- 3) Turn the adjustment knob clockwise or counterclockwise to adjust the value. Turn the knob clockwise, and the value will increase.

Note: frequency signal range: 0.1Hz-100kHz; duty: 1-99%

2. Operation

- 2.1. Connect 5V adaptor with signal modulator.
- 2.2. Connect 5V adaptor with AC Power (85-264V) through the power cord.
- 2.3. The signal modulator starts to work.
- 2.4. Connect signal modulator with the laser through signal modulation line.
- 2.5. Turn on the laser.
- 2.6. Set the parameters.
- 2.7. Press the modulation switch. The green LED is on and the signal modulator is output according to the set value.