

# User Manual for LIBS kit



## Warnings

- This laser contains precise optical equipment. The shock absorbing package provided must be used during transport. Otherwise, the laser system may get out of adjustment, affecting the laser output.
- After turning on, please unscrew the water injection cover to observe the water circulation. If there's no water circulation, the laser could overheat and suffer damage.
- During operation, pay attention for overheating of the laser cavity. If the operation time is too long, the gun body will feel warm to the touch. Please stop the equipment to give time for it to cool down.
- The laser cavity, with all its fragile equipment, it is located in the laser cavity handle. Please manage the handle with care.

## Chapter 1. Introduction

### 1. Safety Notice

#### 1.1 Electrical safety

The laser uses a single-phase 110 V power supply with a maximum output current of 3A.

The grid power supply connected to the laser must use a single-phase three-wire socket with grounding,

The grid power supply connected to the remover must use a single-phase three-wire battery socket that meets the national standard and has good grounding, with 10A capability.

Even after turning the power off, there might be residual high voltage in the device. If the protective cover is removed, there is still danger off electric shock.

#### 1.2 Handling safety

This laser equipment is a portable device, but the user must consider that the device includes a precision laser optical system. During the handling process, the original shock absorber package must be used and the water from the cooling system must be drained. Otherwise, it may cause the laser system to be out of adjustment, affecting the laser output energy.

#### 1.3 Security features

To ensure safe use, the laser is designed with the following safety devices:

Standby/preparation control: laser output is disabled during standby.

Water flow protection: if the water level in the tank is low, or the water flow is interrupted, the laser will suspend operation and the activate and alarm.

## **2. Installation and Operation Notice**

### **2.1 Product Description**

The laser is composed of the optical path system, a power supply system, a computer control system, and a cooling system. The optical path system is located in the laser cavity handle housing, and all the other systems are installed in the power supply chassis.

### **2.2 Main technical parameter**

Laser type: Picosecond laser

Laser output wavelength: 1064nm/532nm

Energy density: 480-2000mJ/cm<sup>2</sup>

Repeat frequency: 10Hz

Cooling method: air cooling + water cooling

Power supply: single phase 220V/10A

Power: 500W

Chassis dimensions: 42cm x 52cm x 60 cm

Net weight: 23 kg

### **2.3 Configurations and functions**

Emergency stop switch: in case of unexpected emergency, press hard. The switch will power off the machine.

Display HMI: Press use the tactile HMI to adjust the pulse energy and frequency.

Foot switch interface: the foot controls the output of the laser.

Insurance socket: install 10A, D5 x 20 fuse.

Power input socket: AC 110 V voltage input jack, plug in the power cord here.

## 2.4 Operating conditions

Normal working conditions:

Ambient temperature 15°C-30°C

Relative humidity 70%

Atmospheric pressure 860-1060h Pa

Use the power supply single phase 110 V + 10%, 10A

Mode of operation:

It is recommended highly recommended to work for 10 minutes and make pauses of 5 minutes before continuing.

## 2.5 Power distribution

Power supply: single phase 110V ± 10% 50Hz ± 2% 10A

Note: The power cord of the laser is equipped with a standard three-core GB plug to confirm that your grid power outlet has a protective grounding wire and that it is reliably grounded.

Note: The laser can adapt to a power supply range of 200V~240V, please use a voltage regulator with a power of power of 800 V-A.

## 2.6 Installation

Install the foot switch: Insert the foot switch plug into the socket at the rear of the chassis and tighten it.

Unscrew the water tank plug and add water (**purified water or distilled water**).

## **Chapter 2 Safety Precautions**

### **1. Laser safety**

1.1 The laser's output can change between infrared light (1064nm) or visible green light (532nm). The operator should wear special protective glasses for a wavelength range of 200-1080nm!

1.2 The laser opening is located at the end of the laser head, use caution when aiming.

1.3 Never look directly at the end of the laser head or any reflected laser beams.

1.4 Any combustible substances should be kept away from the area where the laser is being used.

1.5 Some metal instruments can reflect the laser beam; the operator should avoid using the laser with reflective materials.

1.6 Avoid wearing watches, necklaces, bracelets and other reflective jewelry.

1.7 It is recommended to use the laser in a designated room, with the appropriate laser radiation warning signs, and limited access during active use. Ideally, this room should be free of reflective surfaces, and should be equipped with air conditioning.

1.8 Please turn off the instrument when performing any adjustments.

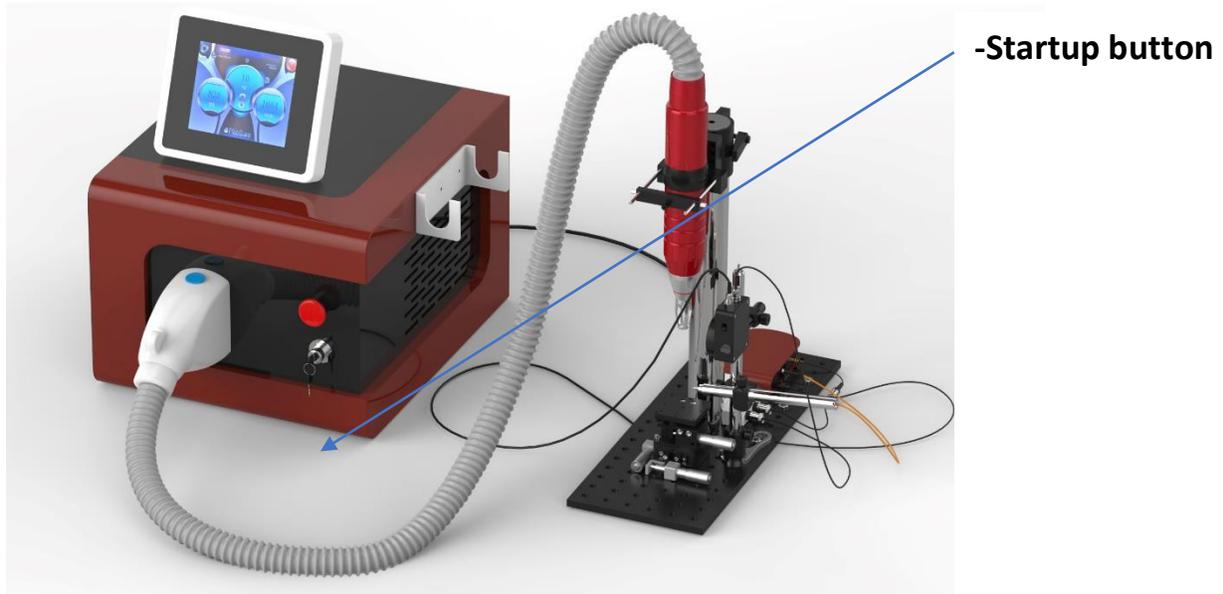
## Chapter 3 Operation

### 1. Operation steps

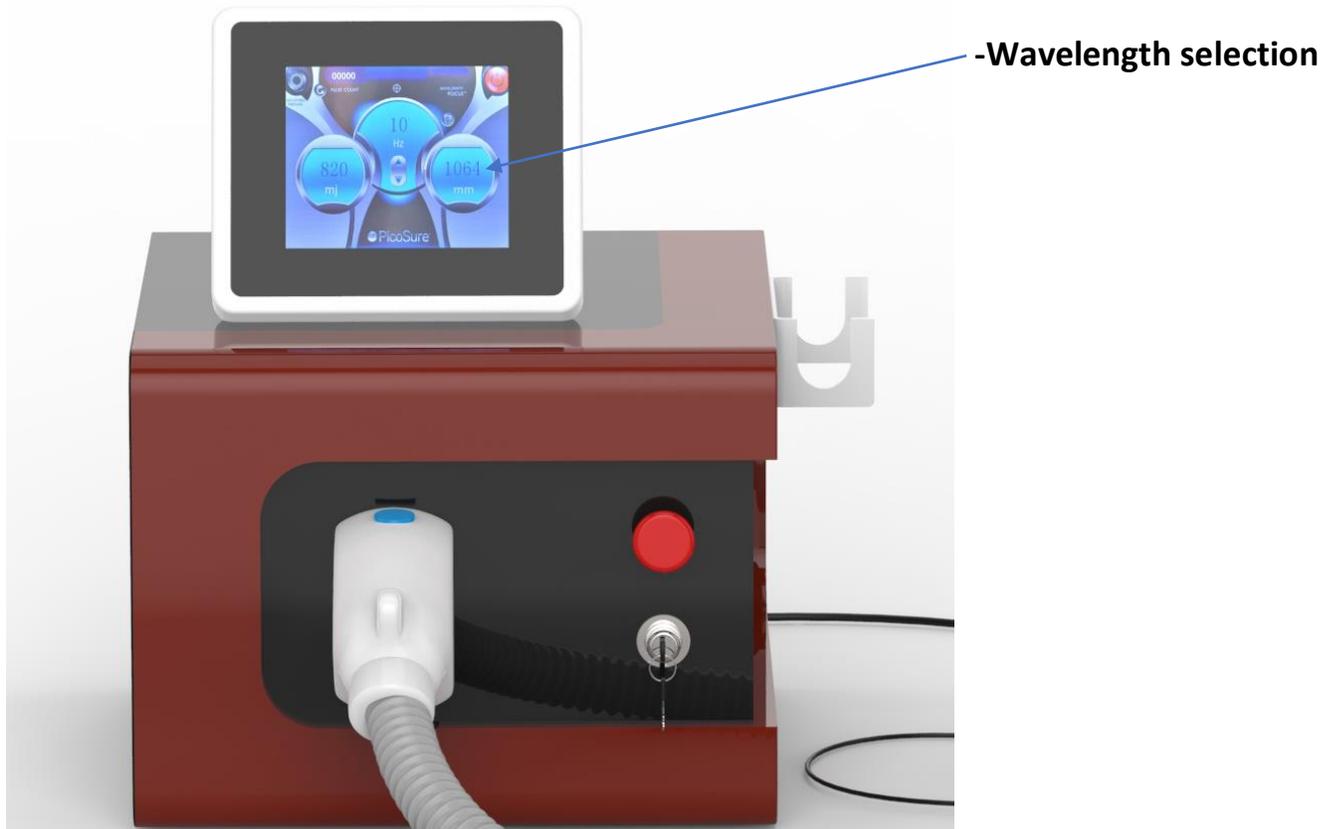
1. First use a small funnel (included) connected to the Water Hole to fill the water tank with distilled water or purified Water. **Do not** use mineral water. When adding water, be careful not to overflow the cabinet.
2. Before adding water, unscrew the Overflow hole. When water starts flowing out of the Overflow hole, the water tank is full. After turning On the Laser, the sound of water circulation should be heard. If you hear the drip alarm, you should turn off the power immediately.
3. Select the proper laser head according to the desired wavelength.



4. Turn on the power switch (at the power outlet) and press the work switch (red button in the panel) to enter the system.



5. Click the default 1064nm or 532 nm mode or other mode as the picture shows below.



#### Notes:

If the temperature is too high, please let the machine stand by for 30 minutes.

Use of 532nm converter: when the 532nm converter is toggled; the other methods of operation are the same.

#### **2. Operation notes**

1. Before starting the machine, observe the water level to ensure that there is sufficient water inside the tank.
2. After opening the key switch, the water in the cooling system will start circulating.
3. If the water is not circulating properly, please turn restart the device using the key and lower the gun height. Repeat several times until the water is circulating properly.

4. When refilling the water, be careful not to overflow the tank, as the water could cause malfunction of the electrical elements of the power supply.
5. In normal use of this instrument, please replace the distilled water completely in 7-10 days.
6. Clean the output lens: It is recommended to periodically check whether there is spatter on the surface of the lens. If so, please turn the handle head up vertically, unscrew the sight, and use a cotton swab or lens paper. Gently wipe the lens with pure ethanol.

## **Warranty**

1. The instrument warranty period is one year.
2. Warranty card is required to guarantee the instrument.
3. If the machine needs to be returned to the factory during the warranty period, the round-trip cost will be borne by the buyer.
5. If the instrument needs to be replaced with other parts or upgrade after the warranty period, it can be charged according to the relevant accessory price.