



INTEGRATED LASER CLEANING MACHINE







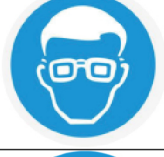



SLC-1525/2030/3040
OPERATION MANUAL



LUOYANG XINCHENG PRECISION MACHINERY CO., LTD.

Notice

Before using this product, please ensure that the following items are in compliance with the product safety operation requirements. Otherwise, it is forbidden to turn on the system and perform cleaning operations.

	It is prohibited to use this product in places with flammable and explosive materials.
	When cleaning highly reflective materials (copper, aluminum, etc.), it is forbidden to have people stand around to avoid damage caused by reflected light.
	It is forbidden to aim the cleaning head at the human body to avoid injury.
	It is forbidden to make the tip of the cleaning head upward. Pay attention to the dustproof of the lens.
	Make sure that the equipment is reliably grounded.
	Clean combustible items carefully and equip with fire-fighting equipment.
	This product is a Class IV radiation laser. Goggles must be worn.
	Ensure that the dust-proof air blower works normally to keep the lens clean.
	The minimum bending radius of the integrated cable should be more than 200mm.
	Laser-specific antifreeze must be used when the temperature is below 2°C. If the laser freezes, it will cause high maintenance fees.

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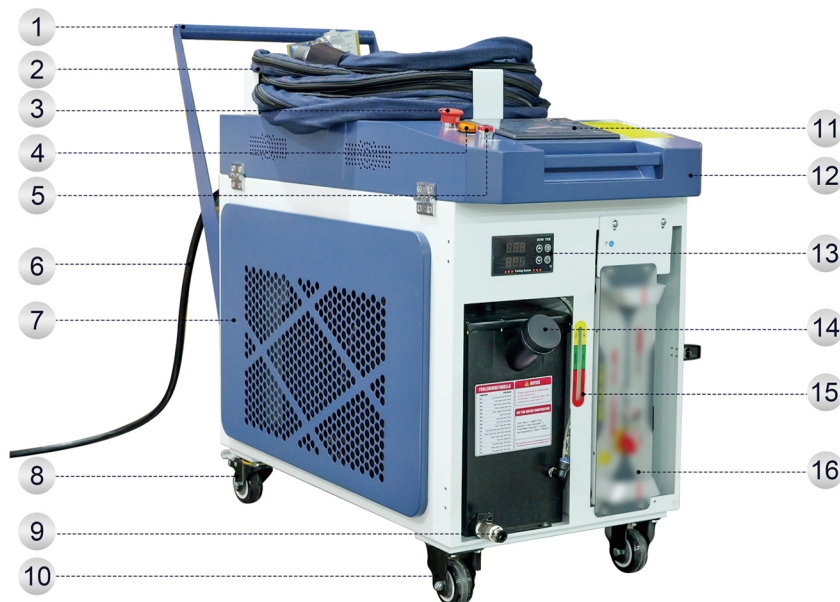
I Scope of application

This product can be used to remove attachments or coatings on the surface of objects, including rust, paint, oil stains, coatings, etc. (High-reflective materials need to be tested and verified). It has the advantages of non-contact, no chemical damage, mobility and no consumables, etc.

II Product Description

2.1. Equipment structure diagram

SLC-1525/2030



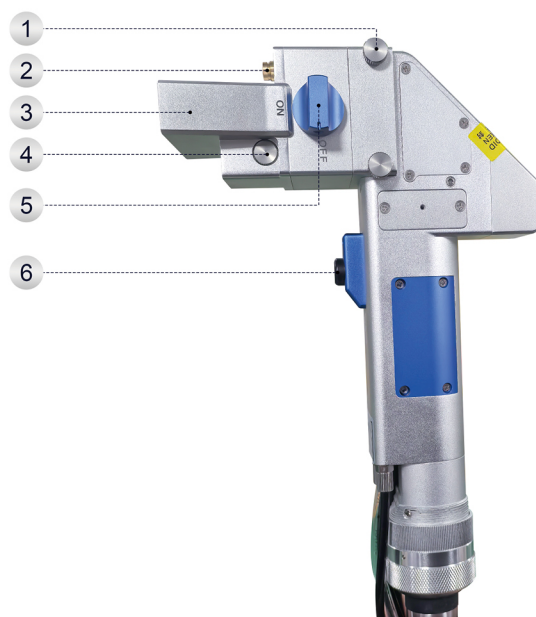
- 1.Handle 2. Integrated Cable 3. Emergency Stop 4. Power Indicator 5. Start 6. Power Cord
7. Side Cover 8. Caster 9. Chiller Drain Outlet 10. Steering Wheel 11. Control Panel 12. Top cover
13. Chiller Display 14. Chiller Water Inlet 15. Liquid Level Display 16. Laser Source

SLC-3040



1. Storage Box Cover 2. 3-phase transformer(only available for 3*220V equipment) 3. Nameplate
4. Side Cover 5. Laser Source 6. Power Cord 7. Caster 8. Steering Wheel 9. Storage Compartment
10. Control Panel 11. Front Handle 12. Start 13. Emergency Stop 14. Chiller Water Inlet
15. Chiller Display 16. Liquid Level Display 17. Front Door 18. Chiller Drain Outlet

Cleaning head



1. Protective lens drawer 2. Focus indicator 3. Air outlet 4. Airflow adjustment valve 5. Dust protection knob 6. Laser output button

2.2. Main technical parameters

Model	SLC-1525	SLC-2030	SLC-3040	SLC-3040
Laser Power	1500W	2000W	3000W	
Laser Wavelength	1080±10nm			
Operating Mode	Continuous/Modulation			
Maximum Modulation Frequency	20KHz			
Integrated Cable Length	10m(Customizable 15m)		20m	
Scanning Width	10-250mm	10-300mm	10-400mm	
Power Configuration	AC220V±10%		3-phase 220V	3-phase 380V±7%
Input Power	8KW	10KW	13KW	
Cooling Method	Water cooling (distilled water , deionized water or pure water as medium)			
Water Tank Capacity	16L (14-15L water needs to be added)		18L (14-15L water needs to be added)	
Return Flow	13L/min		25L/min	
Machine Size	900*490*662mm		1230*650*1070mm	1050*650*1070mm
Package Size	1120*565*1050mm		1430*720*1250mm	1220*720*1250mm
Net Weight	115kg	118kg	232kg	206kg
Gross Weight	145kg	150kg	262kg	241kg

III Installation and use instructions

3.1. Installation and use requirements

Item	Requirements
Environment Temperature	4°C ~ 35°C
Environment Humidity	40%-80%
Power Configuration	Refer to II 2.2 technical parameters
Cooling Medium	Deionized, distilled or pure water
Grid Ground	Comply with the national standard

3.1.1. Ensure that the equipment is installed and used steadily to avoid damage caused by falling or tipping.

3.1.2. Ensure good ventilation and keep at least 60cm of space around the equipment for heat dissipation to avoid affecting performance due to poor heat dissipation.

3.1.3. During use, please pay attention to air blowing to avoid damage to the lens caused by dust.

3.1.4. Check the protective lens before use. If it is dirty, please clean in time. (Use a lint-free cotton swab or swab dipped in absolute or isopropyl alcohol and scrub the protective lens counterclockwise from center to edge) When cleaning, pay attention to lens protection and avoid scratches.

3.1.5. The hand-held cleaning head should be handled with care. Keep the dust cover closed when storing. Please put the tip of the cleaning head downward or lay flat when stored.

3.2. Operation precautions

3.2.1. Please refer to the main technical parameter table for the operating voltage. If it does not meet the requirements, transformer is needed.

3.2.2. In the cold environment, please ensure that the cooling medium is not frozen. Please use special laser antifreeze when the temperature is below 2°C to avoid the abnormality of the cooling system.

3.2.3. Protect it from rain and water when outdoor use.

3.2.4. When the temperature of the water chiller is lower than 22°C, the laser low temperature alarm will occur, and it needs to be preheated. When the temperature reaches 22°C, please turn it off and then turn it on again to clear the alarm.

3.2.5. The laser has safety protection. If the cleaning is suspended for more than 2 minutes, please click "Laser" on the touch screen again to activate it and then it will emit light.

3.3. Protective lens replacement

3.3.1. Remove the protective lens drawer.

3.3.2. Unscrew the clamping ring counterclockwise.

3.3.3. Replace the protective lens and wipe off the dust.

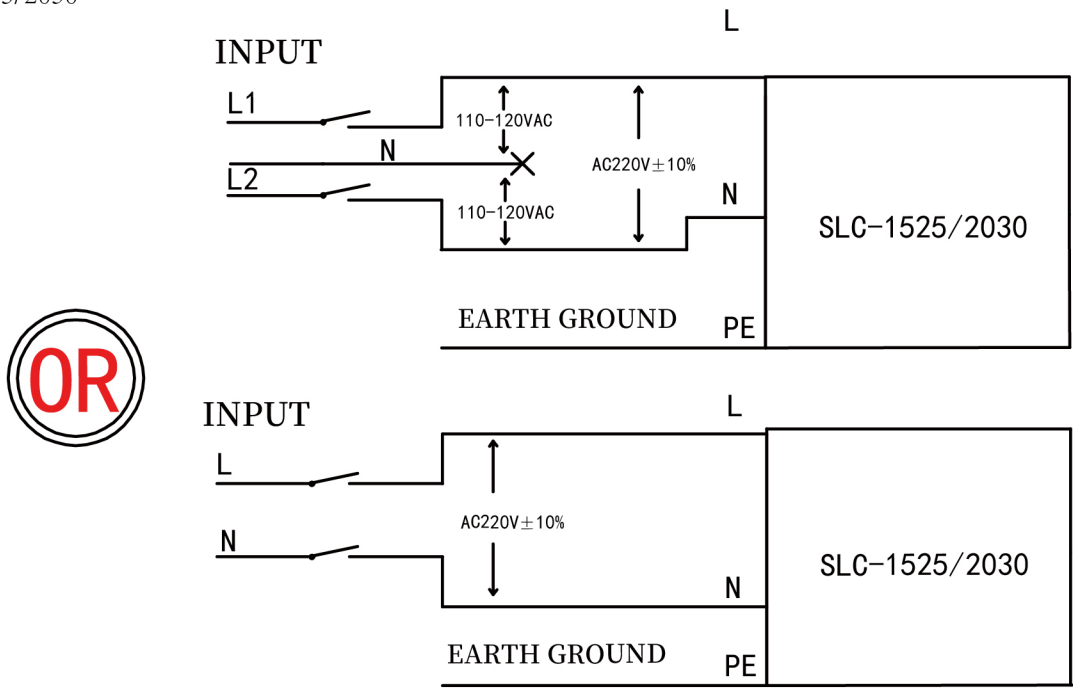
IV Operation Process

4.1. Start-up and preparation

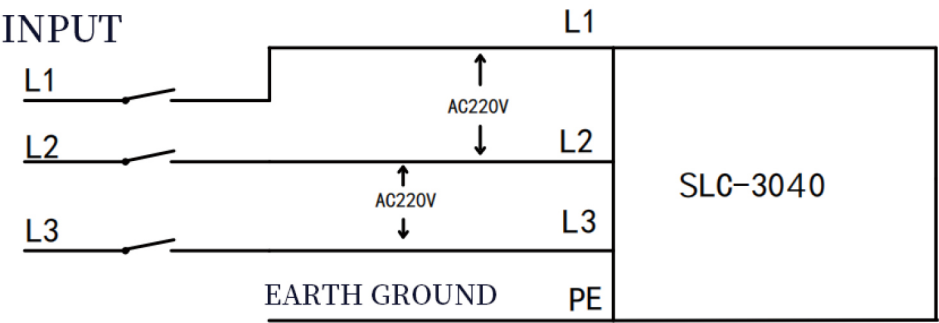
4.1.1. Check the water level of the chiller to ensure that the water level is within the standard range.

4.1.2. Connect the power cord (pay attention to grounding). Connect the power wire L (220V live wire; 380V L1, L2 and L3 live wires), N (neutral wire) and PE (ground wire) to the corresponding terminals of the main power supply respectively. (For the first use, open the machine's upper cover and ensure the electrical protector is closed.)

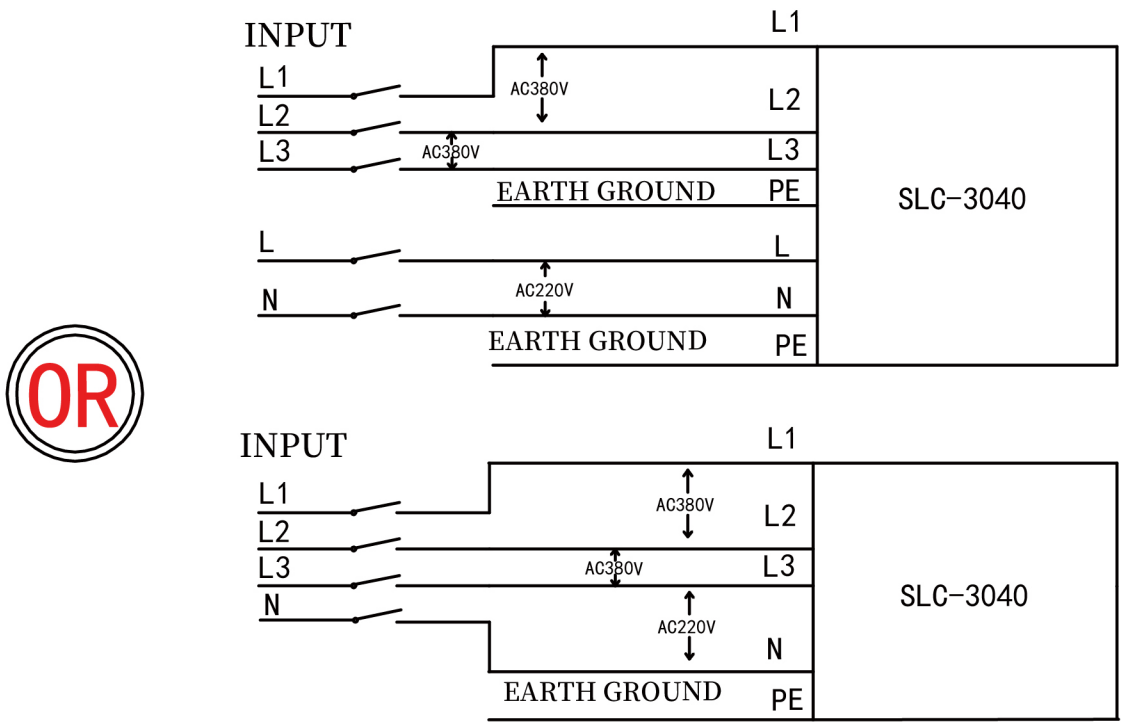
SLC-1525/2030



SLC-3040: 3-phase 220V



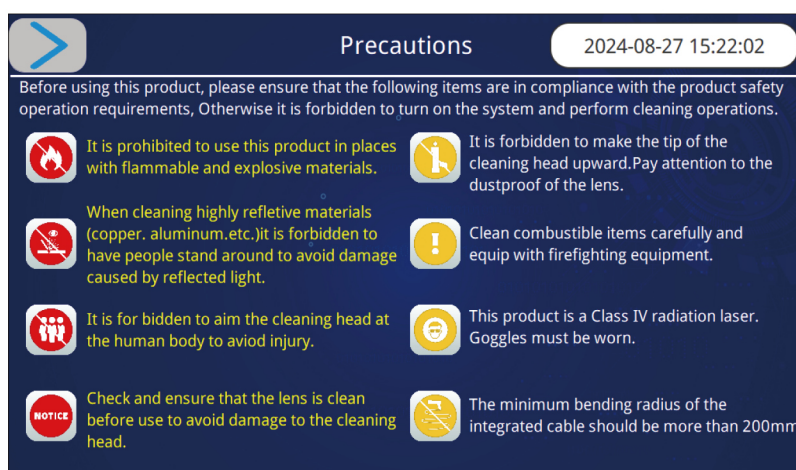
SLC-3040: 3-phase 380V



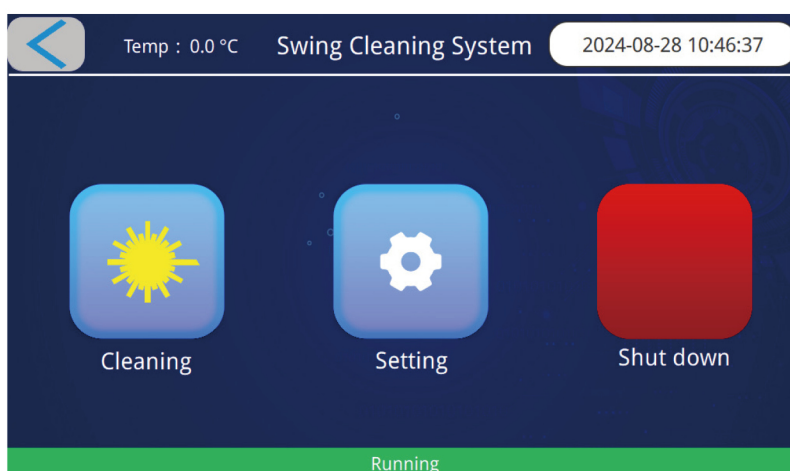
- 4.1.3. Press the "Start" button, the device starts, and the screen powers on.
- 4.2. Set the swing parameters and laser parameters according to the target requirements;
- 4.3. Click "Swing". "Laser". and "Start", Take out the hand-held cleaning head and ensure that the minimum bending radius of the integrated cable is more than 200mm. Turn the dust protection knob on the cleaning head to the "On" position.
- 4.4. Aim the hand-held cleaning head to the target with an interval of 600-650mm (F500 focal lens) for SLC-1525/2030 and 750-800mm (F800 focal lens) for SLC-3040. Double-click the cleaning head switch to start working.
- 4.5. Shutdown operation: Turn off "Swing" ➡, click "Return" ➡ and "Shutdown" to execute the shutdown procedure. (If the ambient temperature is below 15°C, the device will activate the antifreeze function. The shutdown time is about 20 seconds.)
- 4.6. Disconnect the machine from the power supply if it will not be used for an extended period.
- For detailed steps, please watch the video tutorial.

V Laser controller interface description

After powering on, the control screen performs a self-test, which takes approximately 20 seconds. Then the system will display the "Prompt Interface." Please read the prompt content carefully, then click ➡ to proceed to the "User Management" interface.



5.1. User management

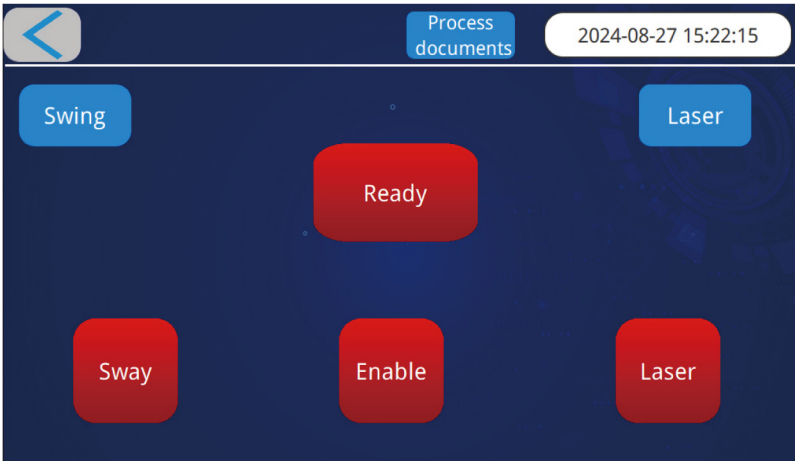


Click "Cleaning " to access the cleaning parameter settings interface. (Default Password: 1)

Click "Setting" to access the system settings interface. (Default Password: 6)

Click "Shutdown" to initiate the shutdown process. If the ambient temperature is below 15°C, the device will activate the anti-freeze function, extending the shutdown time to approximately 20 seconds

5.2. Cleaning Management



Click "Cleaning" to enter the cleaning management interface (refer to the diagram above). Set the "Swing Parameters" and "Laser Parameters" as needed. Click the following buttons in sequence: "Swing" (the red dot on the cleaning head will follow the set trajectory), "Laser" and "Enable". The device will enter the cleaning preparation state.

Aim the cleaning head at the cleaning area. Double-click the trigger button (hold down the button on the second click) to activate the laser and start cleaning.

For Swing Parameters settings, refer to section 5.4. For Laser Parameters settings, refer to section 5.5.

5.3. Function description for swing parameter and laser parameter:

Item	Name	Function	Note
Swing Par.	Size（mm）	Set the laser width when cleaning	SLC-1525:10-250mm SLC-2030:10-300mm SLC-3040:10-400mm
	Speed（mm/s）	Set the laser cleaning speed	1-25000
Laser Par.	Power（%）	Set laser power percentage	10-100%
	Duty（%）	Sets the duty cycle of the modulation signal period	0-100%
	Frequency（KHz）	Set the frequency of the modulating signal	0.001-20
	AirOn Delay（ms）	Set the air blowing time in advance before cleaning starts	
	AirOff Delay（ms）	Set the time to keep blowing after cleaning	

5.4. Swing parameter reference table:

Scanning Width(mm)	Scanning Speed(mm/s)
20	2500
30	3500
40	5000
50	6000

Scanning Width(mm)	Scanning Speed(mm/s)
60	7500
70	8500
80	10000
90	11000
100	12500
110	13500
120	15000
130	16000
150	17500
200	18500
300	20000
400	25000

Note: The scan width is proportional to the scan speed. The narrower the scan width, the lower the corresponding scan speed. At this time, the cleaning intensity will increase. It is recommended to adjust the scanning width and scanning speed according to the above table, otherwise it may cause the whistle of the galvanometer motor and even cause damage.

5.5. Laser parameter setting instructions:

5.5.1. Power: Adjust the laser output power. The higher the power, the higher the output energy.

5.5.2 Duty cycle: The larger the percentage, the higher the output energy, and vice versa.

5.5.3 Frequency: the higher the frequency, the lower the energy of the fixed area per unit time. When the duty cycle is 100%, the frequency adjustment has no effect.

5.5.4 Generally the duty cycle is 100% and the frequency is 20KHZ. You only need to adjust the power. For thin materials, it is easy to deform due to the heat caused by cleaning. You can decrease the duty cycle and increase the frequency if the power reduction cannot meet the demand.

5.6. Process File Management

Click "Process Documents" in the "Cleaning Settings" interface to open the process preset interface. There are 6 preset cleaning processes designed for common cleaning conditions. These presets can be applied but not modified.

"Current parameters" reflect the equipment's parameters when it is currently emitting laser. These values can be modified directly in the "Cleaning Settings" interface.

"Setting parameters" show the parameter settings for the selected process file. Clicking "Apply" transfers these settings to the "Current parameters."

The "Setting parameters" for presets (e.g., 123) can be modified and saved as needed.

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Customized Process

2024-08-27 15:22:47

Current parameters

Size X0.00 mm

Speed0 mm/s

Power0

Frequency0.000

Duty cycle0

Thin paint

Thick paint

Light rust

Heavy rust

Weld seam

Oil stain

Preset 1

Preset 2

Preset 3

Apply

Setting parameters

Size X0.00 mm

Speed0 mm/s

Power0

Frequency0.000









Duty cycle0

Save

Process	Function	Description
Thin Paint	Cleaning thin paint on metal surface (such as self-spray paint)	1.Avoid cleaning with the gun head pointing vertically upward, as falling dust can dirty the protective lens. 2.If excessive smoke and dust are produced during cleaning, ensure proper ventilation to optimize the working environment and extend equipment life. 3.Pay attention to the movement speed of the cleaning head: Moving too quickly may result in incomplete cleaning. Moving too slowly may cause substrate discoloration or deformation due to heat.
Thick Paint	Cleaning thick paint on metal surface (such as anti-corrosion paint)	
Light Rust	Cleaning light rust on metal surface (easily brushed off)	
Heavy Rust	Cleaning heavy rust on metal surface (with peeling)	
Weld Seam	Cleaning Oxidation layer and thermal discoloration from metal welding	
Oil Stain	Cleaning oil stains on metal surfaces (e.g., engine exteriors)	
Preset 1	Custom settings as per customer requirements	
Preset 2		
Preset 3		

5.7. System Settings

To access the system settings, click "Setting" in the "User Management" interface.

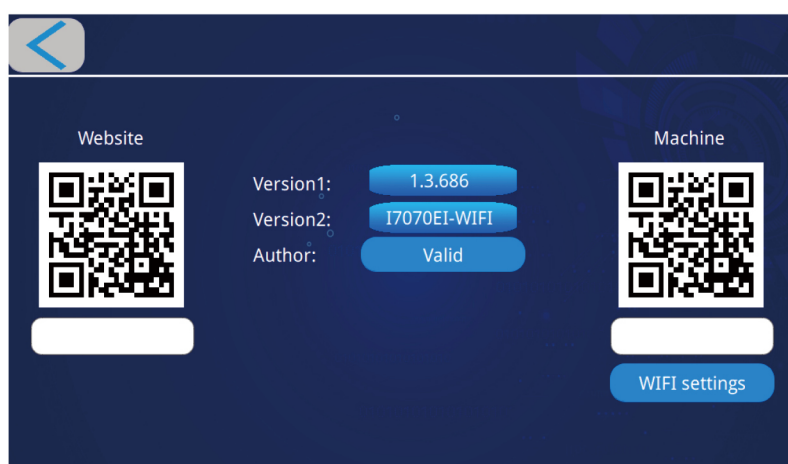
Item	Description	Description	Description
	Calibrate	Correction of scan width	Operation should be performed under the guidance of the manufacturer.
	IO	Set IO input and output signals	
	Temp.	Monitor cleaning head temperature	
	User	Create users and modify user passwords	
	Others	Adjust screen language type	
	Versions	Display device version, expiration time and WIFI settings.	
	PwrRamp.	Optimize the strong light area on both sides of the laser.	
	Chiller	Turn on or of the antifreeze function of the device.	

5.8. WIFI Settings

WIFI settings Start the device to connect to a network. Customers can download the relevant app to remotely monitor and control device operations (remote laser output control is not available).

After powering on the device, go to:

Settings → Versions → WIFI Settings→Scan for available WIFI networks (ensure the network is on the 2.4GHz frequency band). Enter the WIFI password to connect the device to the network.



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WiFi Configuration
2024-09-02 14:01:04

WiFi switch: ☒ open ☐ close

WiFi mode: ☒ STA ☐ AP

WiFi encryption mode: psk2

WiFi name: scanning

WiFi password:

Status: not configured

set up

IOT serial number:

CPU usage rate: 0 %

Memory usage rate: 0 %

Running time: 0 Minute

Connection status: Connection failed!

Signal strength: 0

WiFi mode: 0

1 represents AP mode: HMI serves as a hotspot for other devices to connect;
0 represents STA mode: capable of connecting to WiFi hotspots for internet access.

Scan the QR code below to download the app, then contact the manufacturer to obtain your account and password.



VI Fault analysis and troubleshooting

Fault phenomenon	Cause Analysis	Troubleshooting method
The spot does not swing	1. The control cable connector of the cleaning head is loose. 2. The motor or control card is damaged.	1. Tighten loose joints 2. Please contact us
Cleaning power gets weak or cleaning head gets hot	1. There are foreign objects or damage to the optical lens. 2. Optical path deflection	1. Check the optical path, clean the lens or replace it. 2. Please contact us.
The cleaning head motor whistles	1. The scanning width is narrow and the scanning speed is too fast. 2. The galvanometer motor is damaged	1. Refer to 2.2 parameter table to set the parameters. 2. Please contact us.
Chiller Alarm	Refer to the chiller code to determine the cause	1. Solve the problem accordingly. 2. Please contact us.
Red light is normal but no laser	1. The Start switch of the operation panel or the switch of the cleaning head is damaged. 2. Laser damage	1. Click the switch repeatedly to observe the response of the laser or controller. 2. Install the laser detection software on the computer to check the cause of the failure. 3. Please contact us.

VII Maintenance

Note: In order to avoid personal injury and man-made damage, the maintenance of the handheld laser cleaning machine must be carried out by professionals.

7.1. Handheld cleaning head

7.1.1. Daily inspection: Check the protective lens. If there is foreign matter, clean with a lint-free cotton swab or wiper dipped in absolute alcohol or isopropyl alcohol. If there is coating damage or lens damage, please replace the protective lens in time to avoid other optical lenses being burned.

7.1.2. Regular inspection: When the machine is used or not used for some time (every week is recommended), first check the laser module, and make sure that each optical component is free from dust pollution, mildew, and other abnormal phenomena before turning it on.

7.1.3. Observing the light spot: The operator can check the laser output light spot with black image paper. Once the spot is found to be uneven or skewed, it should be repaired in time.

7.2. Water chiller

7.2.1. The dust on the condenser and the dust filter needs to be cleaned regularly.

7.2.2. When the machine is transported or not used for a long time, the coolant should be drained.

7.2.3. When the temperature is lower than 2°C, please check and ensure that the chiller is working properly before using the machine to avoid damaging the laser tube, output head, and water chiller due to the solidification of the coolant.

7.2.4. The coolant must be replaced in the following cases

7.2.4.1. The filter element has been replaced.

7.2.4.2. After 3 months of use.

7.2.4.3. Use again after long-term non-use (3 months is recommended)

VIII Transportation and storage

8.1. Before moving the equipment, please remove the power cord and drain the coolant inside the system. Do not move or transport it with liquid inside.

8.2. When transporting or handling the equipment, please do not bump it up and down or excessively tilt it (not more than 45°) to avoid bumping, impacting and overturning.

8.3. When storing the equipment, drain the cooling liquid in the chiller, and drain the remaining cooling liquid in the water pump, filter, and pipeline. Wipe off the water and oil stains, pack the equipment with a wrapping film to prevent dust and water, and place it in a cool and ventilated place without direct sunlight and dust accumulation.

IX Warranty terms

9.1. The warranty for the entire machine is 1 year, and the warranty for the laser is 2 years.

9.1.1. From the date of purchase, we offer a one-year free warranty (excluding non-warranty items). If it is required to return to the factory, the user is responsible for round-trip transportation costs.

9.1.2. The product is repaired for free lifetime, with users only responsible for the cost of spare parts and round-trip transportation.

Note: The purchase date is based on the invoice date or the product delivery date.

Exclusions: The warranty for the entire machine does not cover optical accessories, including laser fiber cable, output head, collimator, galvanometer, lens, etc.

9.2. The following are not covered under the warranty and may require paid repair:

9.2.1. Damage caused by improper installation, use, storage, or self-transportation.

9.2.2. Damage from external factors such as abnormal voltage, fire, etc.

9.2.3. Unauthorized disassembly, replacement of electrical components, or modification of electrical circuits.

9.2.4. Damage to laser sources, chillers, or other accessories due to frostbite (e.g., water leakage).

9.2.5. Optical accessories and consumables (including laser fiber cable, output head, collimator,

galvanometer, lens, etc.) are not covered by the warranty.

9.2.6. Failure due to improper use contrary to instructions, labels, or precautions.

9.2.7. Force majeure events (e.g., earthquakes, floods, typhoons) causing product damage.

9.2.8. If a product fails due to user error or requires repair after the warranty has expired, Party B will repair it free of charge, while Party A will bear the cost of spare parts and round-trip transportation.



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