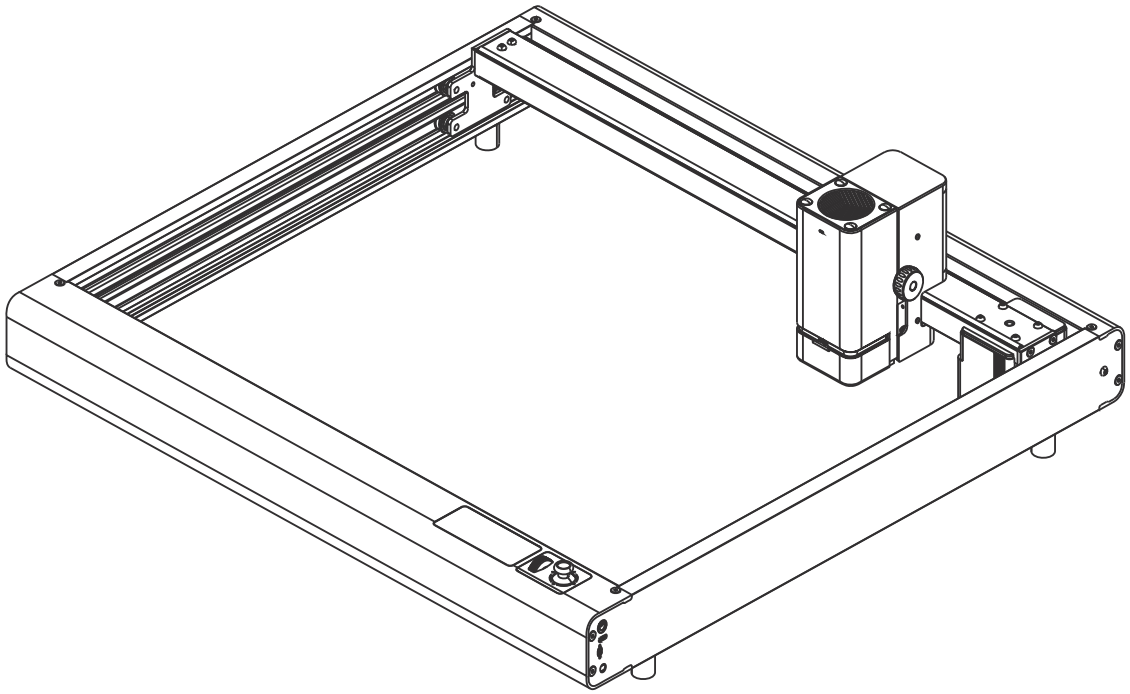
DAVCARVE L1

PRODUCT MANUAL



Introduction

Dear user

Hello! Thank you for choosing DavcarveL1, I hope that in the design and creation of new works, DavcarveL1 can become your effective invention assistant, so that you can feel the infinite joy brought by laser technology, let us start the journey of invention and creation together!

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DavcarveL1

Welcome to read the DavcarveL1 user manual. In order to give you a better user experience, please read this manual carefully before operating Davcarve L1 for the first time, and use the device strictly in accordance with the operating specifications.
In line with the product concept of people-oriented and continuous improvement, the company may revise and change the user manual without notifying the user in advance.

FCC rules

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.
However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception,
which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
-- Reorient or relocate the receiving antenna.
-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-- Consult the dealer or an experienced radio/TV technician for help.
To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum 20cm distance between the radiator and your body: Use only the supplied antenna.

Safety

Please read and familiarize yourself with all safety

- In the process of using the device, all processes should follow the use process;
- Ensure that the product is properly assembled and in working order
- Children under the age of 10 should be accompanied by adults at all times when using the device.

Electricity safety

In order to reduce the electricity problem in the process of using the equipment, we need to pay attention to the following points:

- Do not repair or change the product without the guidance of professional personnel;
- 24V power supply for the equipment, do not connect to other unofficial power supply;

Fire safety

The laser cutting machine will produce a high temperature on the surface of the material during processing, and the consumables may be ignited during processing.

- In machine laser processing, especially when cutting new materials or when it is used for the first time, ensure that personnel are present.
- Clean up processing debris regularly to prevent burning caused by debris residues;
- Low speed cutting (speed less than 3mm/s), try to use fast, multiple cutting rather than slow, single cutting;

  Keep the area around the machine clean and free of flammable materials, explosives or volatile solvents;

Smoke safety

In the process of laser processing, smoke will be produced.

- Ensure that the working space is well ventilated, it is recommended to exhaust the smoke
- Some materials will produce toxic gases during laser processing (avoid engraving and cutting materials containing chlorine or chloride);
- Low speed cutting (speed less than 3mm/s), try to use fast, multiple cutting rather than slow, single cutting;

Laser safety

Materials attention

- When processing unknown materials, pay attention to parameter Settings from small to large, and test in turn to avoid burning consumables or large-area engraving failure;
- If the material has been bent, twisted, it is recommended to use the consumables flat, or replace the new consumables processing;
- Materials can not be folded, stacked processing;
- The material cutting and engraving parameters are detailed in the software Material Cutting and engraving parameters table.

Laser attention

- Do not observe the laser for a long time, and it is recommended to wear safety goggles when observing.
- The laser will burn the skin, do not expose the skin directly to the laser.

Labels and Warnings

The following labels are on the side of the nose

Beaverlab

Mode: 10W Blue Laser
Wavelength: 450nm
Light Path: Focused Beam
Input Voltage/Current: 24V ⎓ 1.5A
Total Power: 36W

This product complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, dated (Insert date of this guidance.)

Beaverlab

Mode: 20W Blue Laser
Wavelength: 450nm
Light Path: Focused Beam
Input Voltage/Current: 24V ⎓ 3.0A
Total Power: 72W

This product complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, dated (Insert date of this guidance.)

Beaverlab

Mode: 2W Infrared Laser
Wavelength: 1064nm
Frequency: 20000HZ
Input Voltage/Current: 24V 1.0A
Total Power: 24W

This product complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, dated (Insert date of this guidance.)

Beaverlab

Mode: Brush head

Blade Dia: 2mm

Max Cutting Thickness: 1.5mm

Input Voltage/Current: 24V ⎓ 0.2A

Total Power: 4.8W

Beaverlab

Mode: Brush head

Hold Dia: 5-20mm

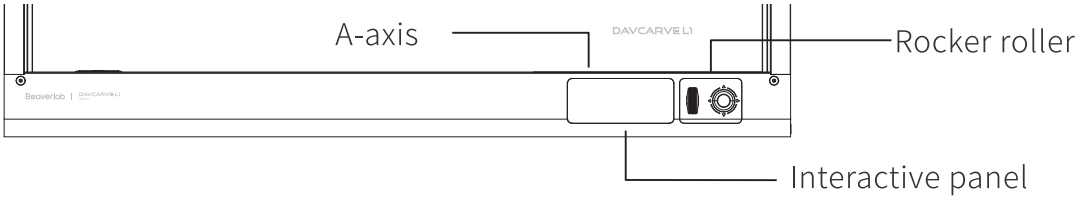
Hold Length: 80-190mm

Input Voltage/Current: 24V ⎓ 0.2A

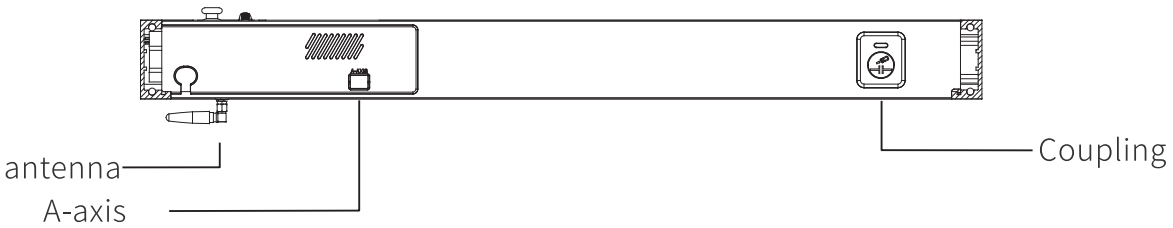
Total Power: 4.8W

First use

Product structure



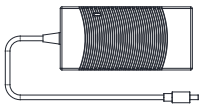
Top view



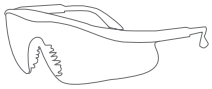
Rear view

Parts List

Accessories of pack

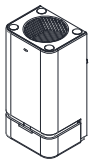


Power adapter×1



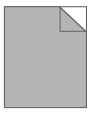
Goggles×1

TF card×1



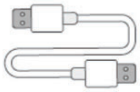
Head×n

Material pack×1

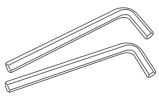


aluminum plate×1

Accessories of box



Tpye-C cable×1



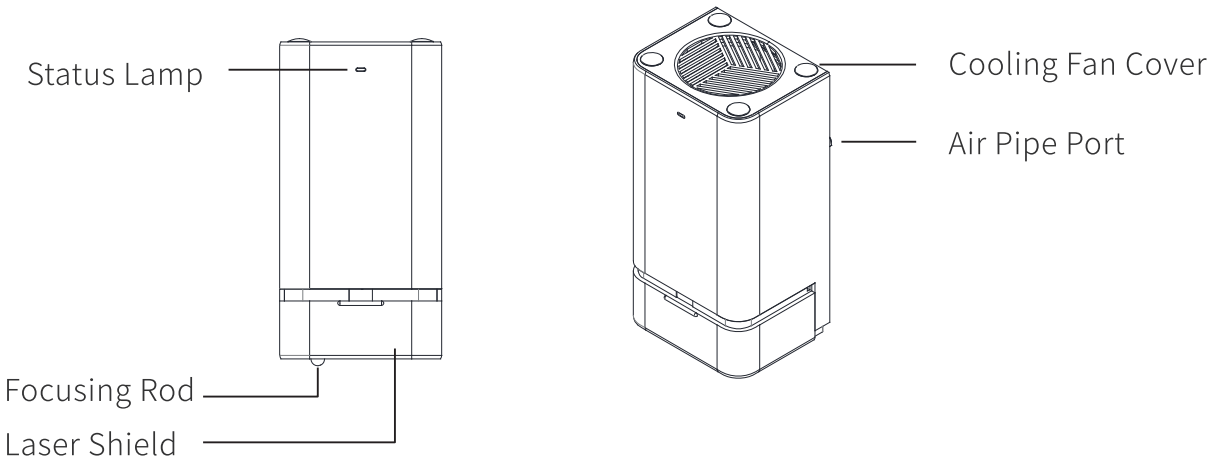
Hex key×1

Screwdriver×1

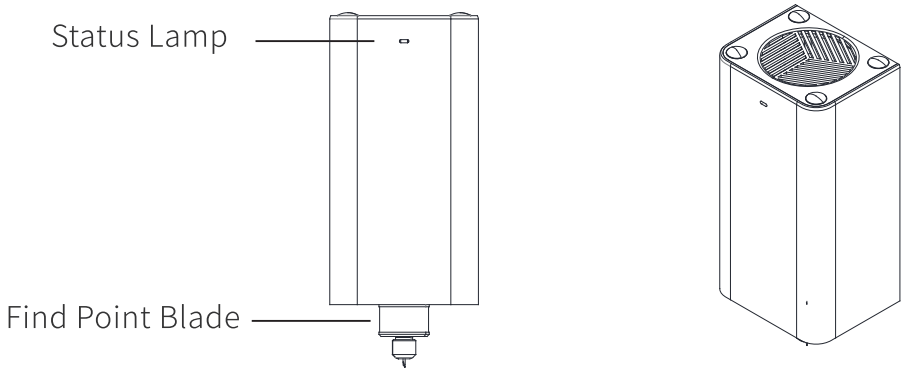
GREASE×1

Number of screws

Laser Module



Find Point Blade Module



Laser Module contains 10W blue light, 20W blue light and so on. Each module contains a laser unit, a cross red dot unit, a focusing unit, a status light, a heat dissipation unit, a gas pipe unit, a protective cover, etc

Laser unit: can emit the corresponding power of the laser beam;

Cross red dot unit: After moving the module, the cross red dot ray will be emitted to assist observation;

Focus unit: Click autofocus, and the nose probe will trigger the focusing module to realize autofocus;

Status light: indicates the running status of the machining head; When idle, blue light is displayed; It shows green light during processing. Red light is displayed when alarm is given;

Heat dissipation unit: A heat dissipation fan is arranged above the laser head to meet the heat dissipation during laser processing;

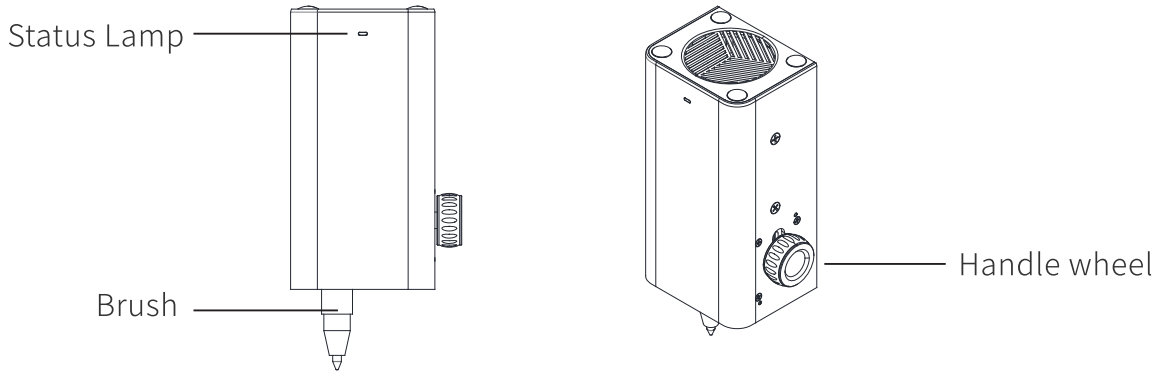
Gas pipe unit: After the installation of the laser processing head, the gas pipe is automatically sealed.

Find Point Blade Module comprises a cutting tool head unit and a limiting position for the tool;

Cutting head unit: magnetic two-stage spring cutting unit, can be removed independently, easy to replace the cutting tool;

Tool limit: support automatic tool lifting to a reasonable processing height;

Artistic Drawing Module

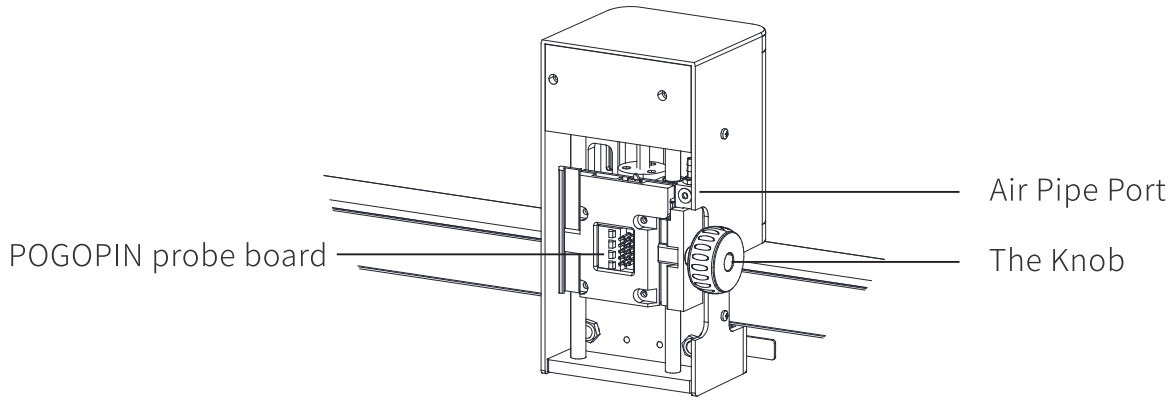


Artistic Drawing Module includes a clamping unit

Clamping unit: supports the clamping of 5-20mm brush, and the clamping brush can be tightened by turning the knob;

Function introduction

Quick head removal function



A large current gold-plated POGOPIN probe scheme is arranged on the slide block of the head unit. After the right knob of the head unit is loosened, all module can be quickly disassembled and installed without wiring.

Safety protection

Blue laser protection: laser spindle anti-blue light window always protect the eye, the whole machine dark yellow plexiglass cover can effectively protect blue light.

Security door detection: built-in status door intelligent detection, can identify the open state of the door cover;

Combustion detection: flame sensor intelligent detection of items burning state, beware of fire;

Equipment overturning detection: three-axis acceleration sensor intelligent collision detection;

Emergency stop: during processing, support rocker, touch instant stop;

Interactive introduction

The front side of the machine is equipped with LCD screen and key roller rocker system to support multiple interactive control.

Touch button

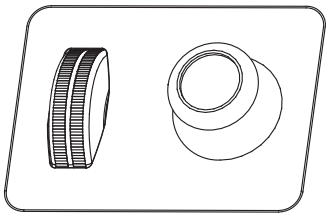
Button○：OK；

Button X：Back ；

Button□：Frame ；

Button△：Fine/Fast（Step）；

Roller rocker



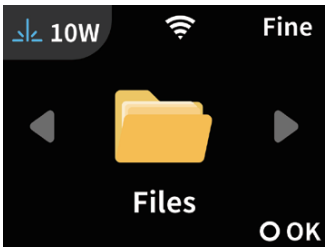
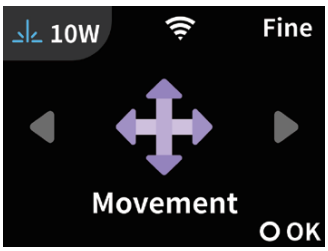
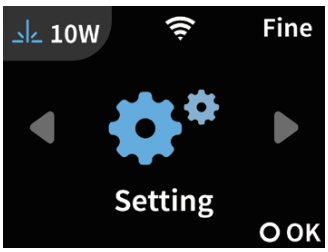
Roller rolling：Z-axis moves up and down；

Roller press: Z-axis auto focus;

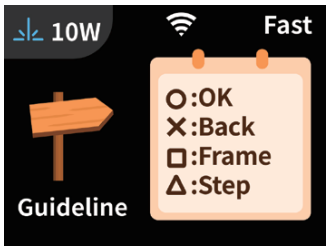
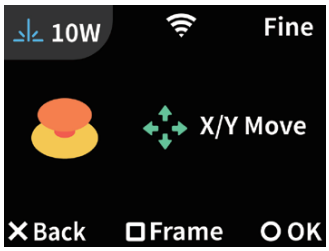
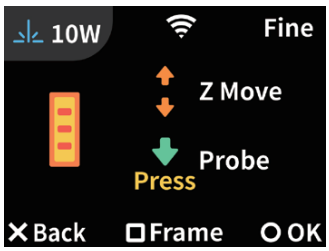
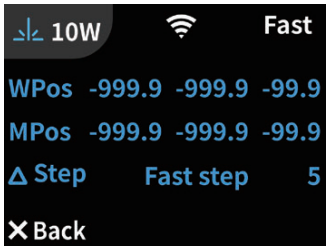
Rocker around: X axis direction movement, switching interface;

Rocker up and down: move in the Y-axis direction, move up and down to select processing files;

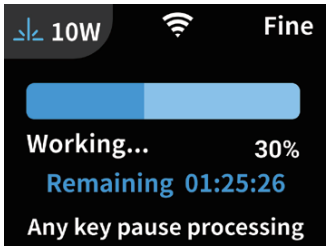
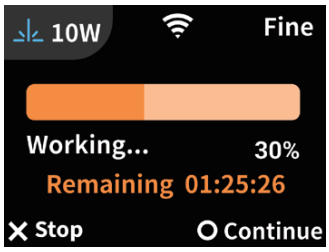
Main interface of the control panel

Interface	Interface introduction
	**File selection page** After the SD card is inserted into the device, confirm on the current screen and select a file to process
	**Movement interface** After confirming the current interface, you can move the control spindle according to the screen prompt
	Reset interface After confirmation on the current screen, you can reset the device
	**Setting interface** After confirming the current screen, you can enter the Settings menu

Movement interface

Interface	Interface introduction
	**Operation wizard page** When using the device for the first time, an operation wizard appears in the movement control flow. You can also view the wizard in Settings
	**Rocker control guide interface** Move the spindle X/Y axis by moving the rocker up and down, and the button □ starts to test the frame.
	**Wheel control guide interface** The roller rolls up and down to control Z-axis movement. In laser mode, the roller presses down to complete the focusing operation
	**Data interface** Do the movement control of the module, the page world coordinate/mechanical coordinate data will change in real time

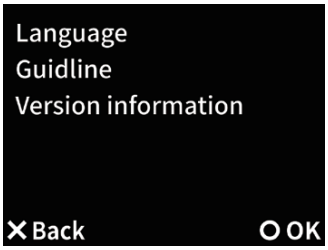
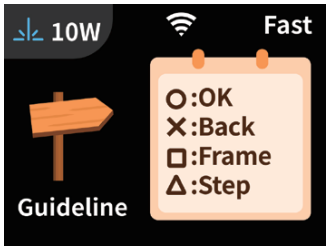
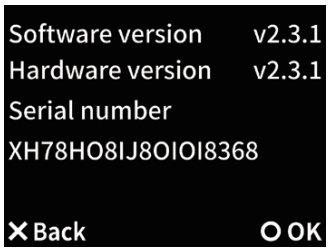
Off-line iprocess interface

Interface	Interface introduction
	**Processing pages in progress** After the processing starts, the interface is displayed in blue, and the interface feedbacks the processing progress and processing time in real time. Any operation of the equipment can suspend the processing
	**Pause interface** After the processing is paused, the interface is displayed in blue, and the processing can be continued by the button◯, or the button X can stop the processing

On-line process interface

Interface	Interface introduction
	Processing pages in progress The processing of the equipment can be suspend-ed by any operation of the equipment during processing
	Pause interface After the processing is paused, the processing can be continued through the button ◯, or the button X stops the processing

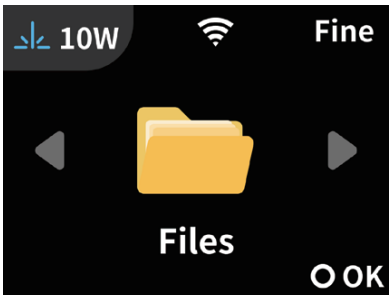
Setting Interface

Interface	Interface introduction
	**Setup list page** Select from the Settings list to access the submenu of the corresponding Settings
	Language setting interface Language Settings allow you to switch languages
	**Operation wizard page** When using the device for the first time, an operation wizard appears in the movement control
	**Version information interface** You can view the current device version information on the version information page

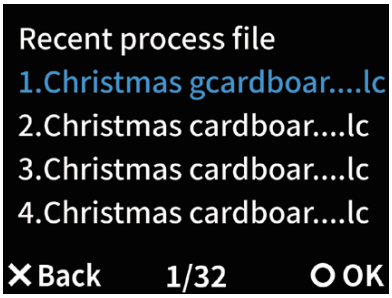
Off-line process

File selection process

After the system is powered on, "File" is displayed on the page, and the interface is



After the file is stored in the SD card of the device, switch to the file selection page from the menu and press button ○ to confirm the selection to enter the file selection process.



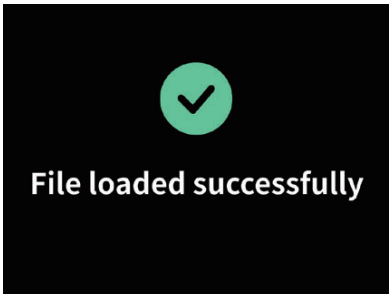
Button○:OK;

ButtonX:Back ;

Button□:Frame ;

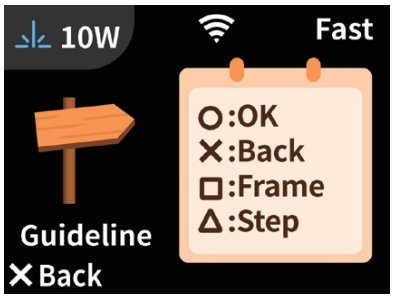
Button△:Fine/Fast (Step) ;

Move the control file list up and down through the joystick, press the Button○ confirm the selection of the processing file, and start loading the processing file



After the file is successfully loaded, it enters the processing process. 。

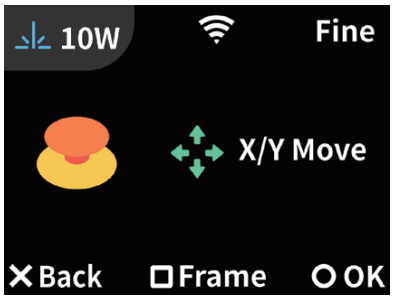
Setting process for offline

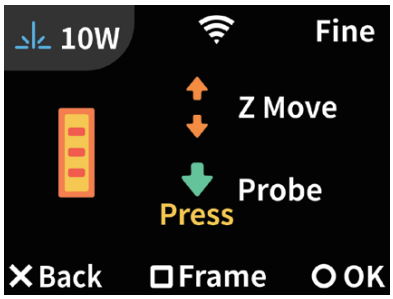


The four keys of the wizard are the four keys of the touch panel, corresponding to:

○:确认　　×:返回　　□:试走边框　　△:步距

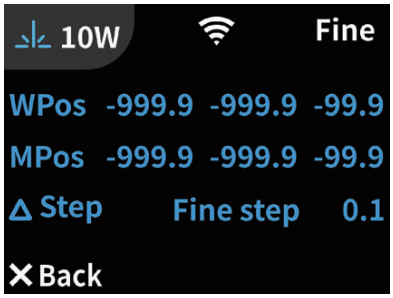
If the joystick and roller are not operated, the joystick and roller operation prompt screen will appear.

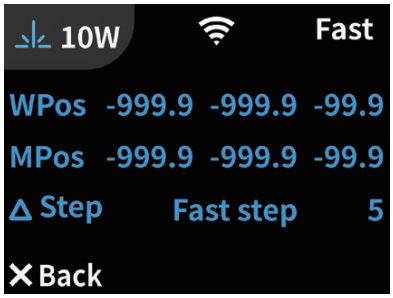




Press down the middle key of the roller for focusing operation.

If the joystick and roller are operated, the screen will automatically switch to the dynamic data display interface. The step can be changed to Fast/Fine mode by the key, and the spindle can be moved in XYZ direction by the rocker and roller opera-



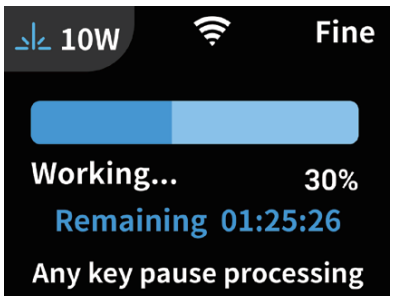


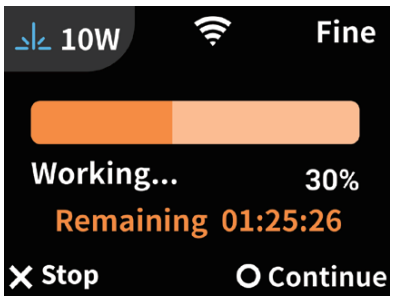
Press the key to confirm the start of processing and enter the processing process.

Processing flow

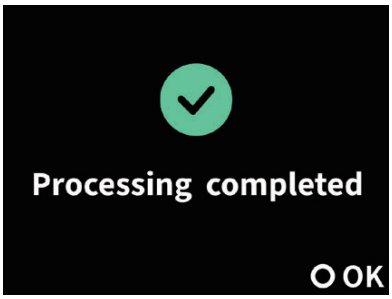
After the equipment starts offline processing, the processing progress and remain-

When any key, rocker and roller of the equipment are operated, the equipment will





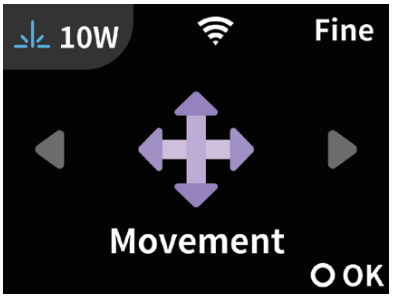
After processing, press the key to confirm the end of processing and return to the

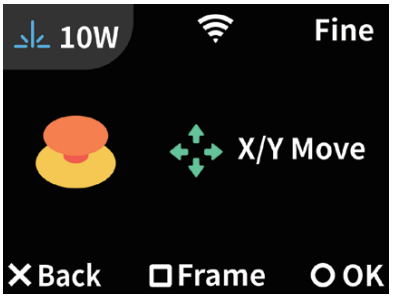


On-line processing flow

Click the moving interface to enter the shaking machine operation interface

Note: The upper computer software can connect to the device only after entering the mobile interface

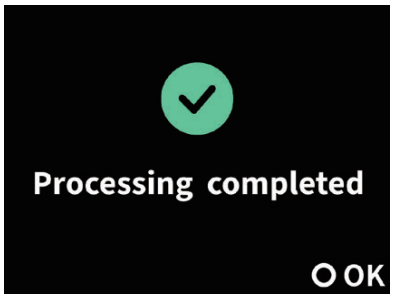




When the host software connects to the device through the serial port, a successful connection is displayed on the software console.

After setting the processing file on the upper computer and clicking Start processing, the device starts processing immediately, while the lower computer displays

After processing, press the key to confirm the end of processing and return to the first-level menu.



PC software

Devices can be connected through Lightburn software or Lasercreate software, Lightburn software use and Lasercreate software use tutorial can be detailed in the software manual or related video tutorials

WIFI connection

1. In the Settings menu, click Network and click Connect
2. Click on the mobile APP to add device and search the network
3. Tap the device you want to connect to in the search list
4. Enter the wifi password of the network where the mobile terminal is located and click OK
5. Wait for the connection to complete

Maintenance and upgrade

About maintenance

Rail maintenance

The track needs regular maintenance, oil the guide rail, can ensure the accuracy of the guide rail, but also to prevent rust, but also to better ensure the processing accuracy of the equipment.

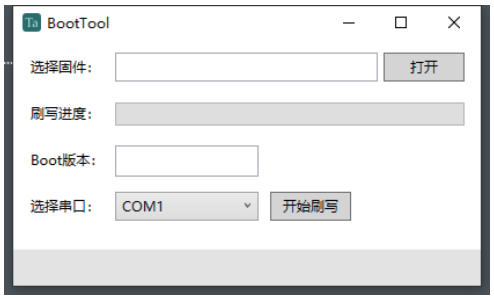
Move the guide rail to the central position of the equipment, apply the lubricating oil and grease on the X\Y\Z guide rail, and move the machine left and right before and after, move the head up and down, so that the grease is evenly applied on the

Firmware upgrade

The product is constantly optimized and upgraded, and users can obtain the latest firmware from the manufacturer and upgrade the product firmware.

How to upgrade firmware:

- Open the BootTool software
- Select the correct serial port and connect the device
- Select the corresponding firmware and click Firmware Upgrade



Common problems and solutions

The following are some common problems in the use of the product.

Q: What is the maximum thickness of the plate engraving?

A: The performance of different materials is different, generally the cutting of common consumables such as Tilia wood, plexiglass, and Aosong board can support to 6mm, and the cutting of paulownia board can support to 15mm.

Q: Can you carve metal?

A: When the blue laser processes the metal, the metal material must have a certain oxide layer, and the red laser engraving does not have too many restrictions;

Q: No material cut according to the application parameters?

A: Blue laser and red laser are solid lasers, if the use of a long time, there may be light decay, the actual output power decreased, in the use of the process if there is no cutting through the material, you can consider reducing the processing speed, increase the processing power;

Q: The material is not smooth, can it still be used for cutting?

A: If the bending degree of the material is more than 5mm, it is best not to use directly, it is recommended to use after cutting. If the degree of bending is small, it is recommended to use a strong magnet to adsorb the plate in the processing bin, at this time the processing effect is better; If the processing material is soft material such as leather, you can also use strong magnets to adsorb.

Q: How to set the material processing parameters

A: General materials can refer to the parameters in the material parameter table, and common materials can be tested to determine the specific processing parameters of the material.

Q: How do the processing parameters affect the processing effect
A: The slower the speed, the greater the power, the deeper the processing effect (cutting completely); On the contrary, the faster the speed and the smaller the power, the shallower the processing effect (incomplete cutting or uncut). Filling line spacing affects the density of engraving, the smaller the line spacing, the more dense the engraving, the larger the line spacing, the more sparse the engraving.

Q: The console reports an error and the device cannot be used
A: You can view all error numbers in the error number table and operate the device according to the actual error number feedback. In general, you can reset the device and start the operation again

Q: Can't the software connect to the device?

A1：If the corresponding driver is not installed, reinstall the serial port driver and connect it again.

A2: The lower machine may not switch to the processing interface, you can switch the lower machine to the operating interface;

A3: It may be that the USB port of the computer is old, you can replace the USB port and test it again.

Q: Does the software click to start processing have no response?

A: When the serial port is occupied by other software, the laser software cannot be controlled.

Quality guarantee

The warranty period of the whole machine (except for some consumable parts) is one year, and some consumable parts are guaranteed according to the following table. Within the warranty period, the manufacturer provides free maintenance services in the case of non-human damage, and outside the warranty period, the manufacturer provides paid on-site maintenance services.

Unit	Warranty period	Remark
Laser module	6 months	Please contact the original manufacturer/after-sales service for replacement after warranty period

Promise

DavcarveL1 is an excellent laser product, but all products can not avoid problems, we will provide each user with the most convenient and fast after-sales way.

All questions related to product technology, or have to consult the content can contact local agents or official website directly with our manufacturers to communicate, we will provide detailed services and content resources in the first time.

Actual product features may not conform to the specifications due to technical upgrades or firmware updates.
For the latest function introduction and safety guidelines, please visit our official website or official website forum to communicate with other users.