

beaver DAVCARVE L1 Multi Module Laser Engraver



# beaver DAVCARVE L1 Multi Module Laser Engraver User Manual

[Home](#) » [beaver](#) » beaver DAVCARVE L1 Multi Module Laser Engraver User Manual 

## Contents

- 1 beaver DAVCARVE L1 Multi Module Laser Engraver
- 2 Introduction
- 3 FCC
- 4 Safety
- 5 First use
- 6 Parts List
- 7 Function introduction
- 8 Interactive introduction
- 9 The main interface of the control panel
- 10 Movement interface
- 11 Setting Interface
- 12 Off-line process
- 13 WIFI connection
- 14 Maintenance and upgrade
- 15 Common problems and solutions
- 16 Quality Guarantee
- 17 Documents / Resources
  - 17.1 References

**beaver**

beaver DAVCARVE L1 Multi Module Laser Engraver



## Introduction

### Dear user Hello!

Thank you for choosing Davcarvell, I hope that in the design and creation of new works, Davcarvell 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!

### Davcarvell

- Welcome to the Davcarvell user manual. To give you a better user experience, please read this manual carefully before operating Davcarve LI for the first time, and use the device strictly following 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

### 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, under 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 by 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 the receiver.
- Connect the equipment to 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 a 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**

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 supplies;

### **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, or twisted, it is recommended to use the consumables flat, or replace the new consumables processing;
- Materials can not be folded, or 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.)

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AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION

**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.)

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AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION

**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.)

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AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION

**Beaverlab**

Mode: Brush head  
Blade Dia: 2mm  
Max Cutting Thickness: 1.5mm  
Input Voltage/Current: 24V==0.2A  
Total Power: 4.8W

	Avoid hurting your hand with the tip of the Blade

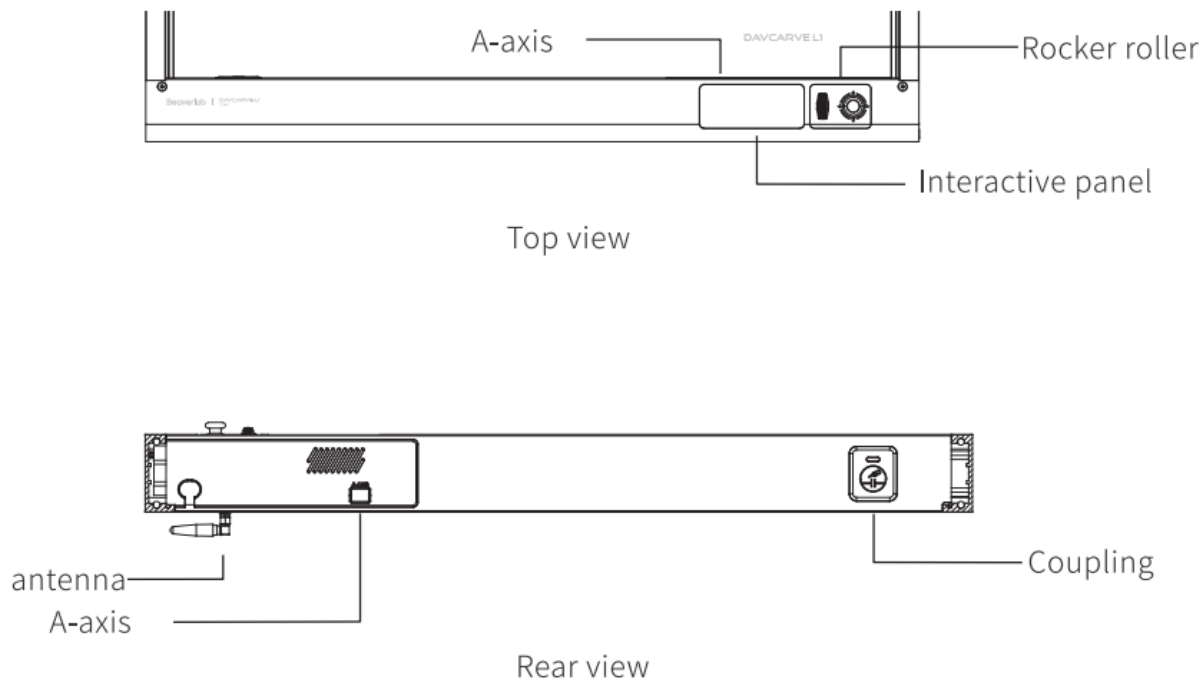
**Beaverlab**

Mode: Brush head  
Hold Dia: 5-20mm  
Hold Length: 80-190mm  
Input Voltage/Current: 24V==0.2A  
Total Power: 4.8W

	Avoid hurting your hand with the tip of the Pen

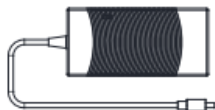
First use

Product structure



Parts List

Accessories of pack



Power adapter×1



Goggles×1



TF card×1



Head×n

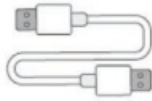


Material pack×1



aluminum plate×1

Accessories of box



Type-C cable × 1



Hex key × 1



Screwdriver × 1

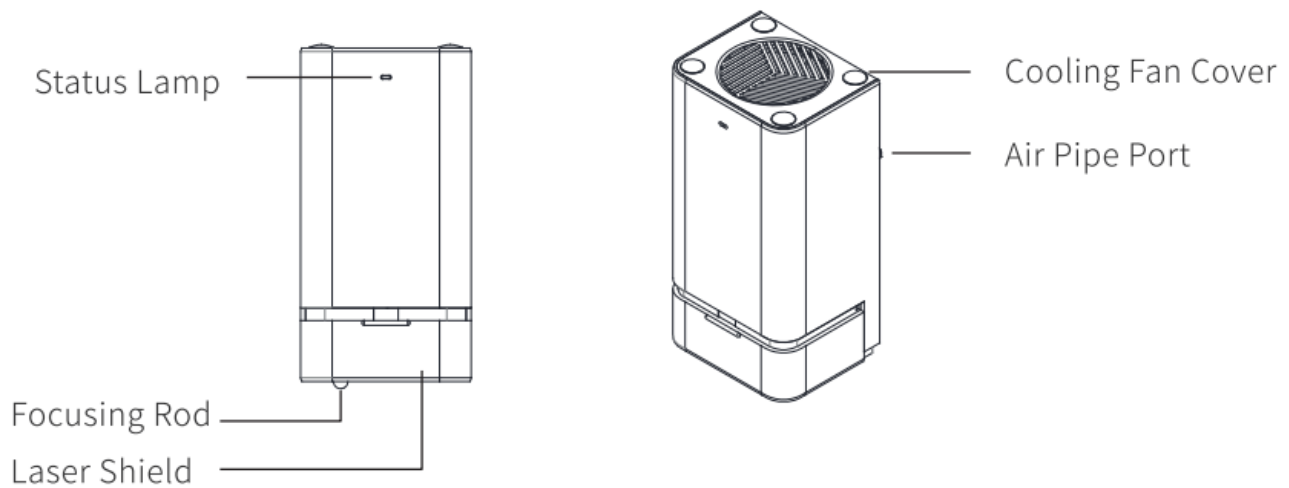


GREASE × 1

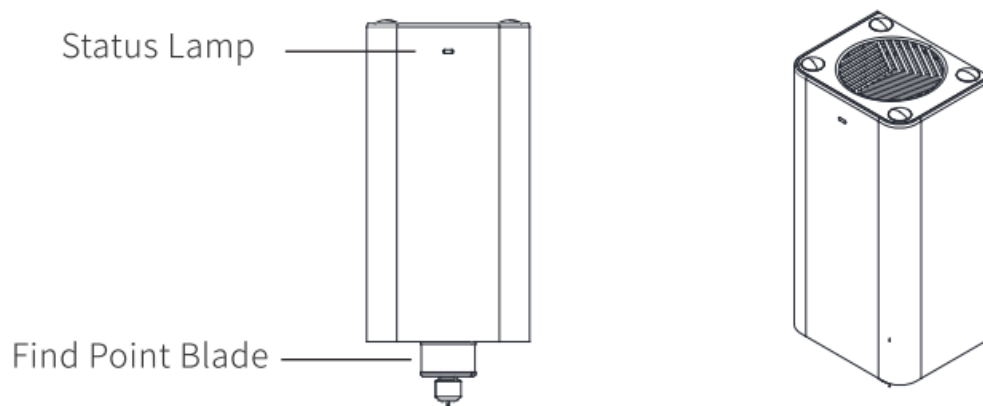


Number of screws

### Laser Module



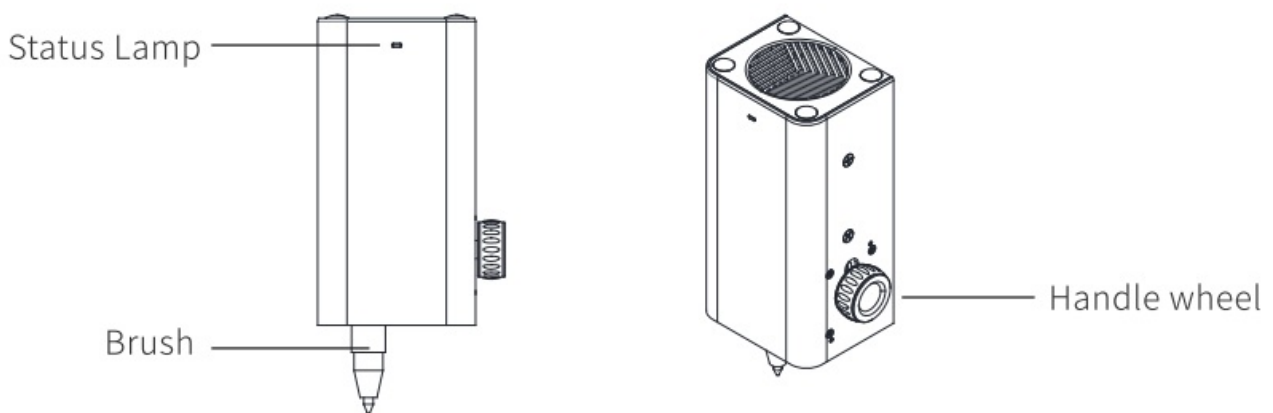
### Find Point Blade Module



- **Laser Module contains low 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, a blue light is displayed; It shows a green light during processing. A red light is displayed when the 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

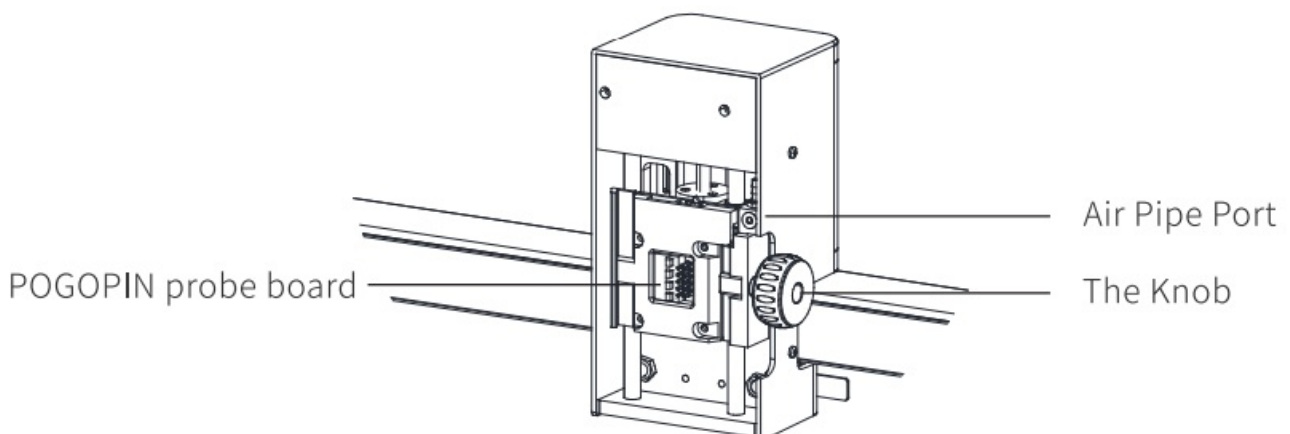


### Artistic Drawing Module includes a clamping unit

- **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 modules can be quickly disassembled and installed without wiring.

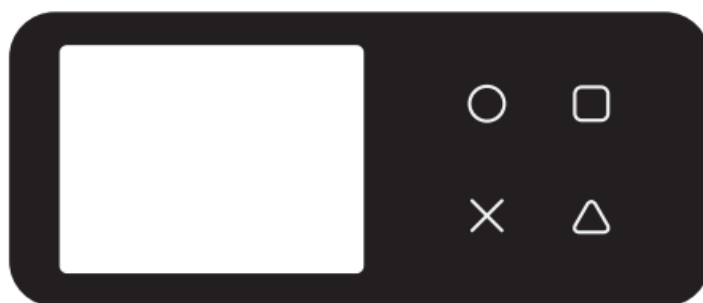
## Safety protection

- **Blue laser protection:** The laser spindle anti-blue light window always protects the eye, and the whole machine's 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

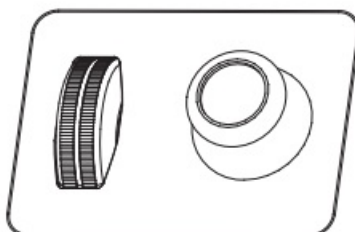
The front side of the machine is equipped with an LCD screen and key roller rocker system to support multiple interactive controls.

### Touch button



- Button O: OK;
- Button X: Back;
- Button ? : Frame;
- Button Δ: Fine/Fast (Step) ;

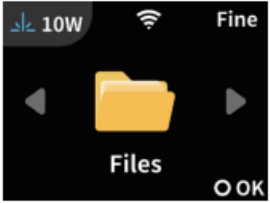

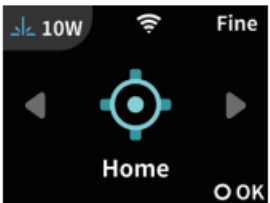

### Roller rocker




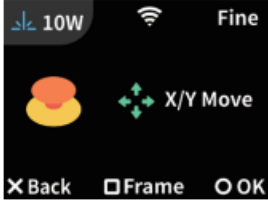

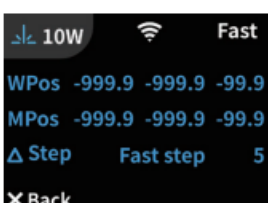
- **Roller rolling:** Z-axis moves up and down;
- **Roller press:** Z-axis autofocus;
- **Rocker around:** X-axis direction movement, switching interface;
- **Rocker up and down:** move in the Y-axis direction, move up and down to select processing files;

## The main interface of the control panel

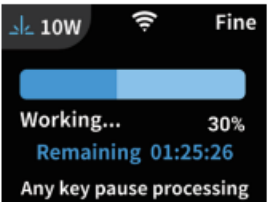
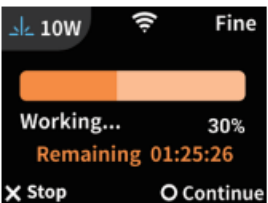


Interface	Interface introduction
	<p><b>File selection page</b></p> <p>After the SD card is inserted into the device, confirm on the current screen and select a file to process</p>
	<p><b>Movement interface</b></p> <p>After confirming the current interface, you can move the control spindle according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





## Movement interface

Interface	Interface introduction
	<b>Operation wizard page</b> 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
	<b>Rocker control guide interface</b> Move the spindle X/Y axis by moving the rocker up and down, and the button <input type="checkbox"/> starts to test the frame.
	<b>Wheel control guide interface</b> The roller rolls up and down to control Z-axis movement. In laser mode, the roller presses down to complete the focusing operation
	<b>Data interface</b> Do the movement control of the module, the page world coordinate/mechanical coordinate data will change in real time

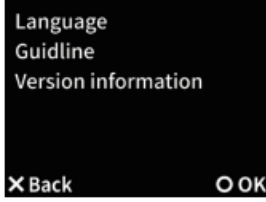
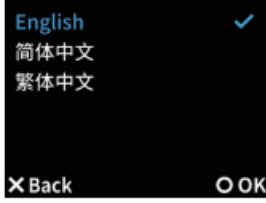

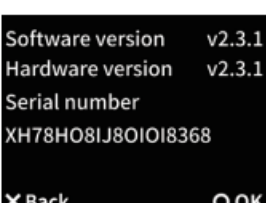
### Off-line process interface

Interface	Interface introduction
	<b>Processing pages in progress</b> After the processing starts, the interface is displayed in blue, and the interface feeds back the processing progress and processing time in real time. Any operation of the equipment can suspend the processing
	<b>Pause interface</b> After the processing is paused, the interface is displayed in blue, and the processing can be continued by the button <input type="radio"/> , or the button X can stop the processing

### On-line process interface

Interface	Interface introduction
 <p>The interface shows a blue 'X' icon and the text 'Processing...'. At the top, it displays '10W', a Wi-Fi icon, and 'Fine'. At the bottom, it says 'Any key pause processing'.</p>	<p><b>Processing pages in progress</b></p> <p>The processing of the equipment can be suspended by any operation of the equipment during processing</p>
 <p>The interface shows an orange 'X' icon and the text 'Processing pause'. At the top, it displays '10W', a Wi-Fi icon, and 'Fine'. At the bottom, there are two buttons: 'X Stop' and 'O Continue'.</p>	<p><b>Pause interface</b></p> <p>After the processing is paused, the processing can be continued through the button , or the button  stops the processing</p>

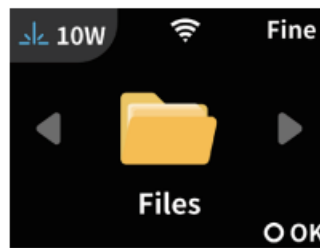
## Setting Interface


Interface	Interface introduction
 <p>The interface shows a list of settings: 'Language', 'Guideline', and 'Version information'. At the bottom, there are two buttons: 'X Back' and 'O OK'.</p>	<p><b>Setup list page</b></p> <p>Select from the Settings list to access the submenu of the corresponding Settings</p>
 <p>The interface shows a list of languages: 'English', '简体中文', and '繁体中文'. 'English' is selected with a blue checkmark. At the bottom, there are two buttons: 'X Back' and 'O OK'.</p>	<p><b>Language setting interface</b></p> <p>Language Settings allow you to switch languages</p>
 <p>The interface shows a 'Guideline' section with a list of symbols and their meanings: 'O:OK', 'X:Back', '□:Frame', and '△:Step'. At the top, it displays '10W', a Wi-Fi icon, and 'Fast'. At the bottom, there are two buttons: 'X Back' and 'O OK'.</p>	<p><b>Operation wizard page</b></p> <p>When using the device for the first time, an operation wizard appears in the movement control</p>
 <p>The interface shows version information: 'Software version v2.3.1', 'Hardware version v2.3.1', and 'Serial number XH78HO8IJ8OIOI8368'. At the bottom, there are two buttons: 'X Back' and 'O OK'.</p>	<p><b>Version information interface</b></p> <p>You can view the current device version information on the version information page</p>

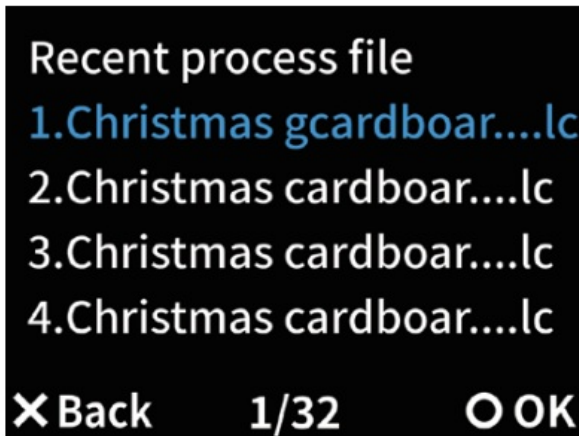
## Off-line process




### File selection process


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

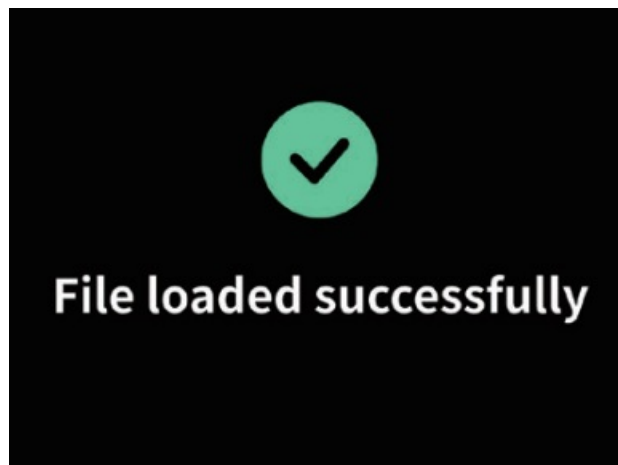


- After the file is stored in the SD card of the device, switch to the file selection page from the menu and press button  to confirm the selection to enter the file selection process.



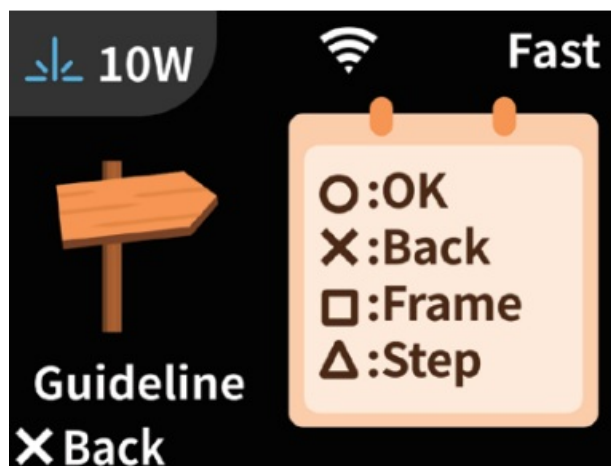
Button  : OK;  
 Button X : Back ;  
 Button  : Frame ;  
 Button  : Fine/Fast (Step) ;

- 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



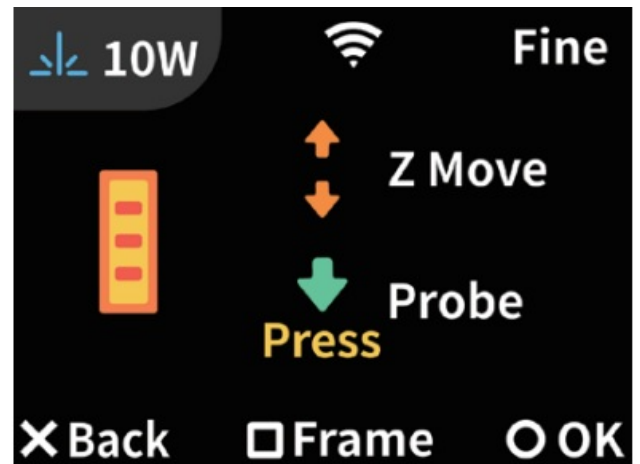
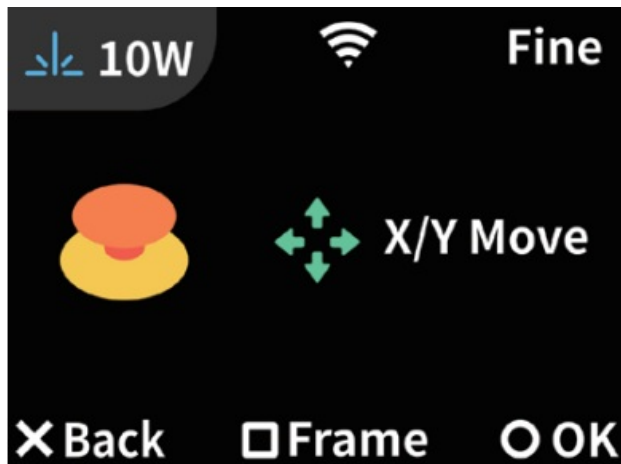
- After the file is successfully loaded, it enters the processing process. o

## Setting process for offline

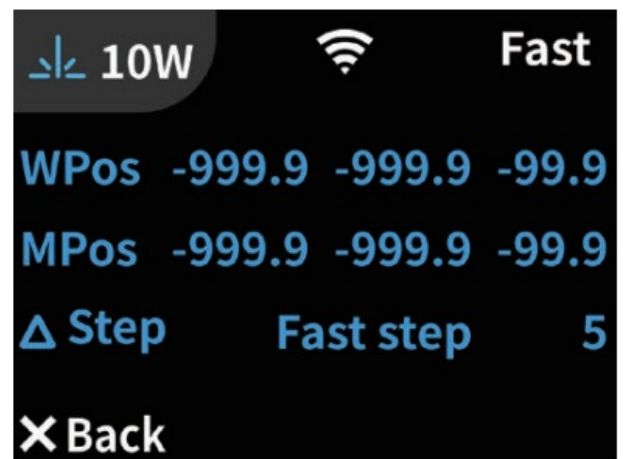
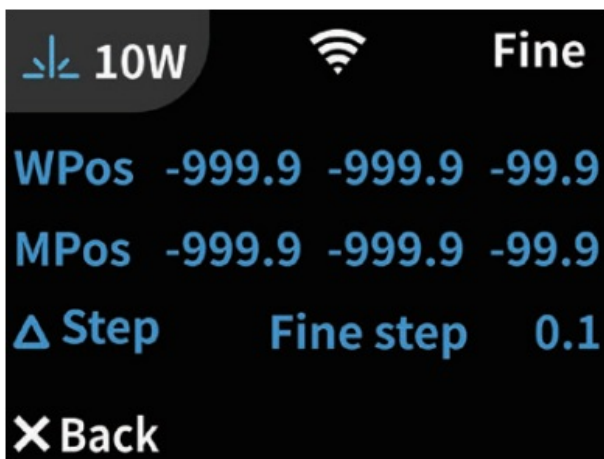


The four keys of the wizard are the four keys of the touch panel, corresponding to:

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



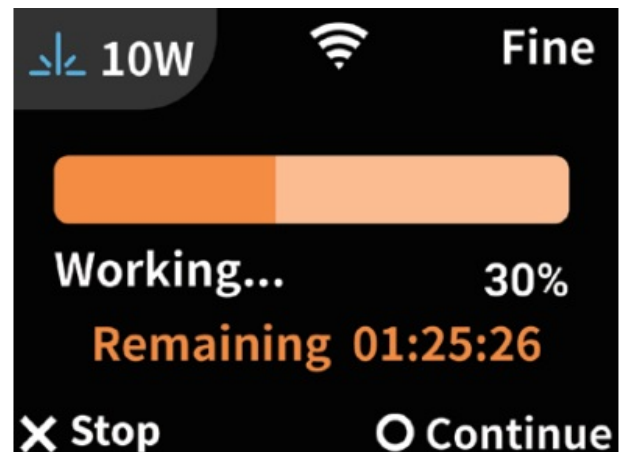
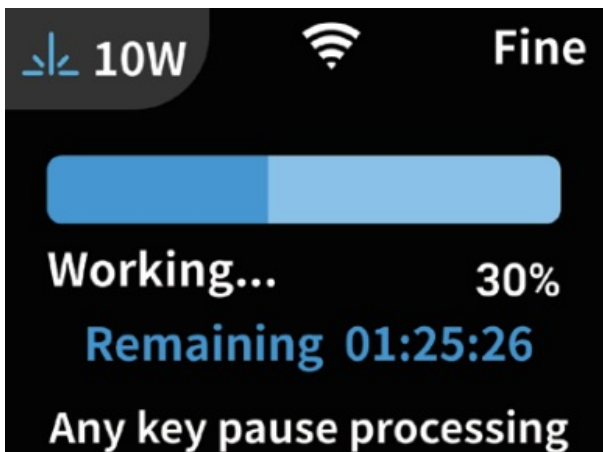
- Press down the middle key of the roller for focusing operation.
- If the joystick and roller are operated, the screen will automatically switch to the dynamic data display interface.
- The step can be changed to Fast/Fine mode by the key, and the spindle can be moved in XYZ direction by the rocker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



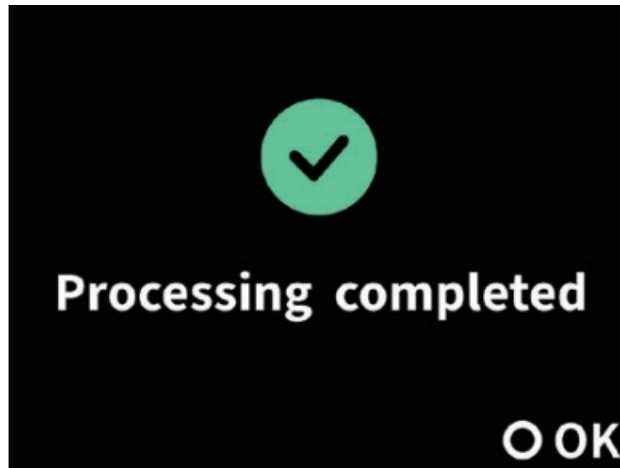
- Press the key to confirm the start of processing and enter the processing process.

### Processing flow

- After the equipment starts offline processing, the processing progress and remainWhen any key, rocker and roller of the equipment are operated, the equipment will.

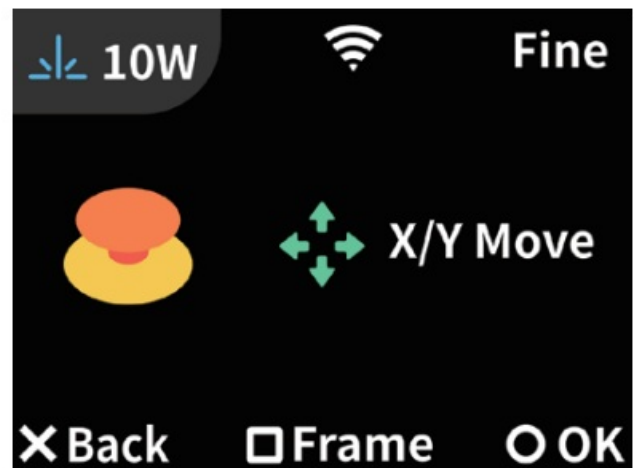
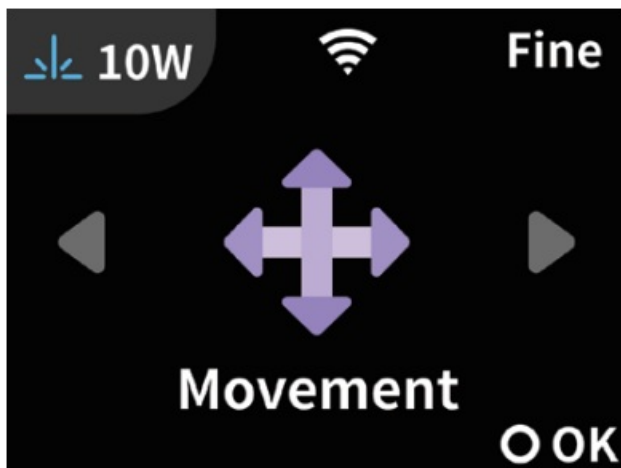


- After processing, press the key to confirm the end of processing and return to the.

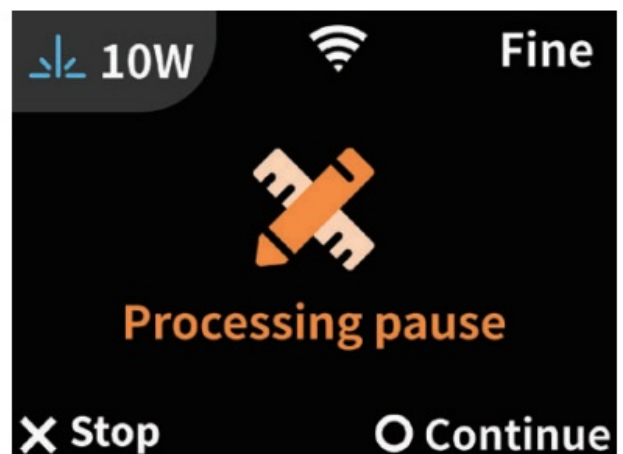
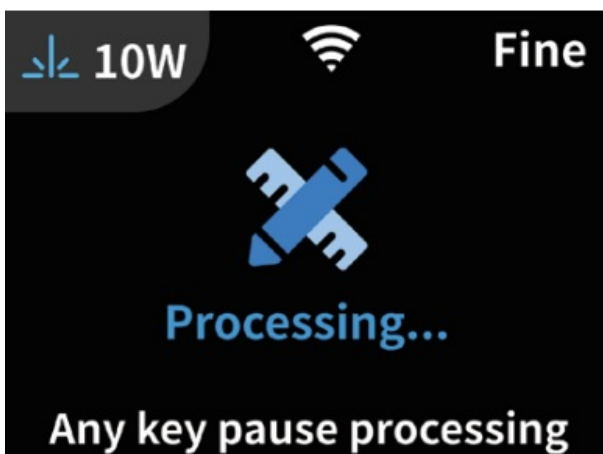


#### On-line processing flow

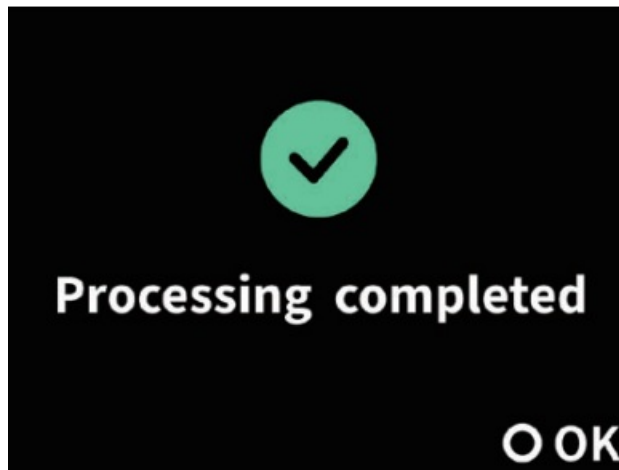
- Click the moving interface to enter the shaking machine operation interface
- **Note:** The upper computer software can connect to the device only after entering the mobile interface



- 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 tutorials 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 a 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

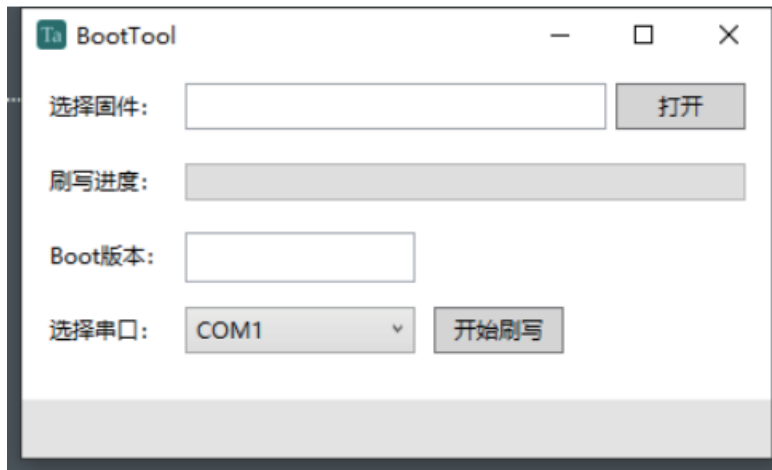
### **Firmware upgrade**

- 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 6mm, and the cutting of paulownia board can support 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 they are used for a long time, there may be light decay, and 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?**
  - **A 1:** If the corresponding driver is not installed, reinstall the serial port driver and connect it again.



- **A 2:** The lower machine may not switch to the processing interface, you can switch the lower machine to the operating interface;

**A 3:** 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

- Davcarvell 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.
- For all questions related to product technology, or have to consult the content can contact local agents or the official website directly with our manufacturers to communicate, we will provide detailed services and content resources 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.

## Documents / Resources

	<a href="#">beaver DAVCARVE L1 Multi Module Laser Engraver</a> [pdf] User Manual DAVCARVE L1, DAVCARVE L1 Multi Module Laser Engraver, Multi Module Laser Engraver, Module Laser Engraver, Laser Engraver, Engraver
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## References

- [User Manual](#)