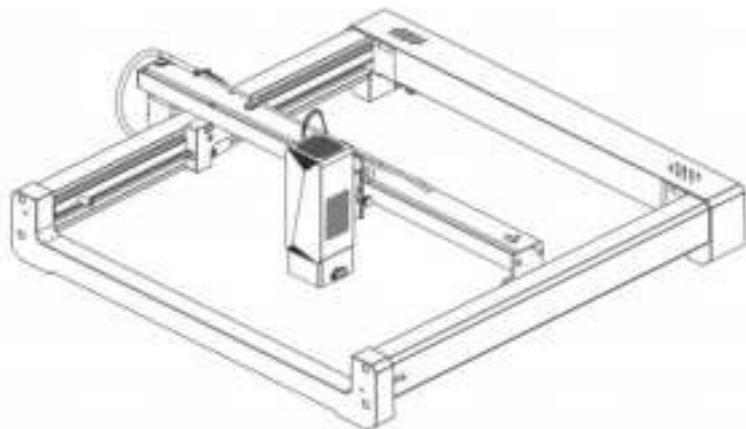


L6
User Manual



L6 Engraving Machine User Manual
Please read this manual carefully before use

Safety Instructions

Thank you for purchasing our company's laser engraving machine, which is a high-tech product integrating light, machine and electricity. In order for you to better use and maintain the equipment, please read the instructions carefully and follow the steps in the instructions.

Hereby Certify!

All losses caused by improper use or failure to follow the steps in the manual shall be borne by the individual. The final interpretation right of the manual belongs to our company, and it has the right to modify all the materials, data, technical details, etc. in this manual.

Safety Instruction

Before using the equipment, the user must read this operating manual carefully and strictly abide by the operating procedures. Laser processing may be risky, users should carefully consider whether the processed object is suitable for laser processing. Processing objects and emissions should comply with local laws and regulations.

*This equipment uses four types of lasers (strong laser radiation), which may cause the following conditions:

- ① It will ignite the surrounding combustibles;
- ② In the laser processing process, other radiation and toxic and harmful gases may be generated due to different processing objects;
- ③ The direct exposure of laser radiation can cause human injuries. The place of use must be equipped with fire-fighting equipment. It is forbidden to stack flammable and explosive materials on the workbench and around the equipment. At the same time, it is necessary to maintain good ventilation.

*The environment where the equipment is located should be dry, free of pollution, vibration, strong electricity, strong magnetism, etc. Working environment temperature 5-30°C, working environment humidity 35-65% (non-condensing water)

★The working voltage of the equipment: AC100-240V.

*Only when the engraving machine and other related equipment have a safety grounding wire can it be turned on and operated.

★When the equipment is turned on, it needs to be on duty throughout the whole process. The operator must cut off all power before leaving to prevent abnormal conditions. If any, please cut off the power immediately!

*It is strictly forbidden to place any irrelevant total reflection or diffuse reflection objects in the equipment to prevent the laser from being reflected on the human body or flammable objects.

Safety Instructions

Pay attention to!



1. After the laser is turned on, it is forbidden to aim at people, animals and flammable materials to avoid skin burns and fire



2. The brightness of the laser is harmful to the eyes, please try not to look directly at the laser

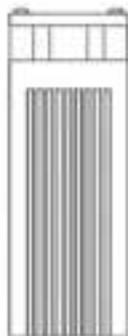


3. Keep your hands away from the machine when the machine is working to avoid injury



4. Turn off the machine switch when the machine is not in use to avoid third-party operations

MACHINE CARE AND MAINTENANCE



LASER MODULES ARE CONSUMABLES, SO IT'S RECOMMENDED AS FOLLOWS:

POWER OFF THE MACHINE FOR 10 MINUTES AFTER 4 HOURS OF ENGRAVING,

POWER OFF THE MACHINE FOR 10 MINUTES AFTER 1 HOUR OF CUTTING.

CONTENTS



01	Product parameters	01
02	Product and Accessories	02
03	Structure and Assembly	03
04	Laser Module Focus	10
05	Function Display	11
06	Software Download and Installation on PC	12
07	Software Download and Installation on Mobile Phone	21
08	Open-Source Program	27
09	FQA	32

01 Product Parameter

Model	L6
Material appearance	High strength aluminum, anodized
Laser module	JG1740B05W(Standard) / JG1845B10W(Optional)
Best focal length	5mm
Focal length height	<63mm
Power input	DC12V/5A
Communication Interface	Dual-mode Bluetooth 5.0 wireless connection, supports IOS and Android applications. USB-Type C interface wired connection, supports MAC and Windows desktop applications.
Heat dissipation method	Air-cooled
Laser life	>10000H
Engraving area	320*350mm
Engraving accuracy	0.05mm
Engraving speed	150mm/S
Cutttable materials	paper, wood, bamboo, fabric, acrylic, plastic, leather, bread, fruit, glass, ceramic, stainless steel
Support System	Windows/MAC/Android/IOS
Image format	JPEG/BMP/GIF/PLT/PNG/DXF
Body size	580*530.5*154mm
Package size	580*235*190mm

Accessories Details

【Standard accessories】



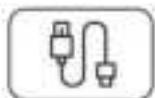
TF card



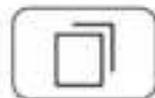
Card reader



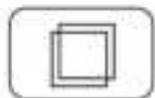
Power



Type-C data cable



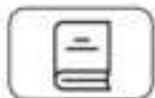
Kraftpaper *2



Board *2



Tool *5



Manual

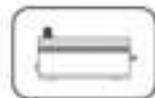


Marker



Brush

【Optional accessories】



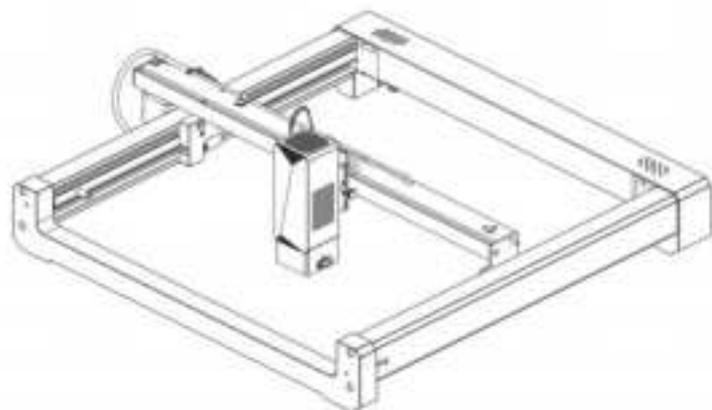
Air pump module



Mini roller

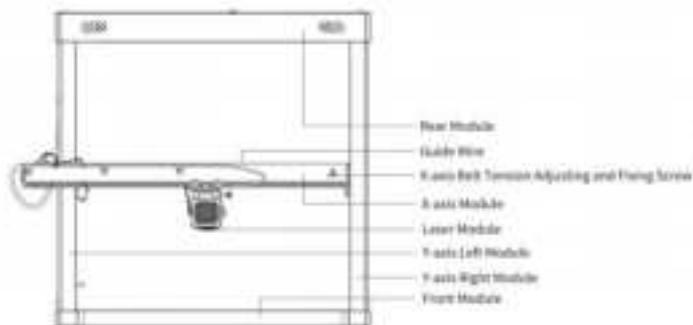


Heightening Module

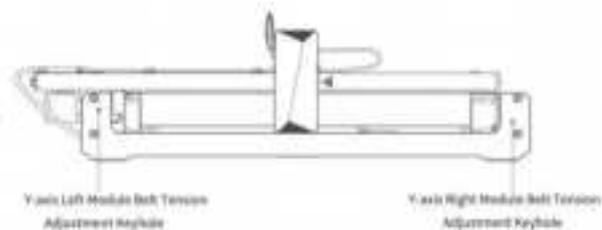


03 Structure and Assembly

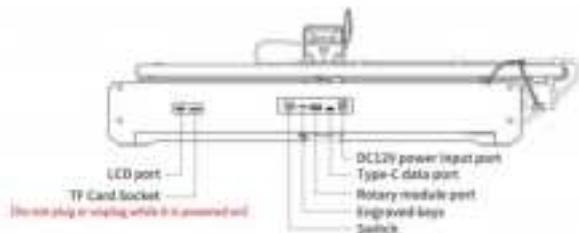
01 Top View



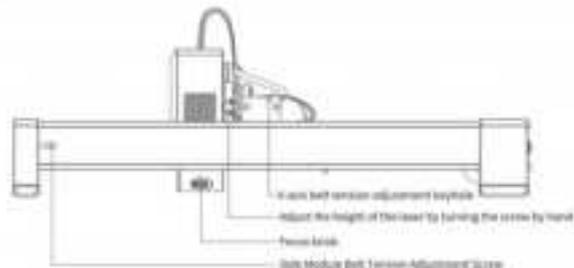
03 Front View



02 Back view



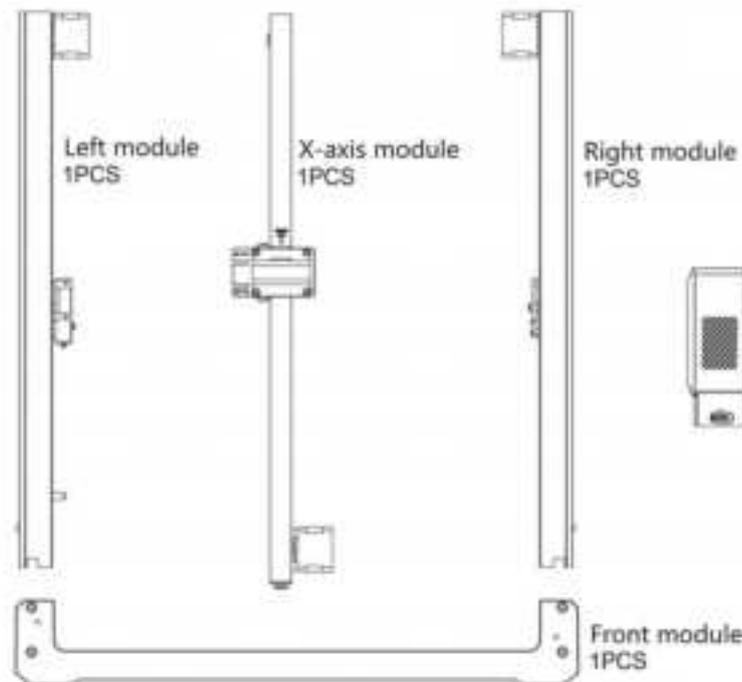
04 Left view



03 Structure and Assembly



For Front, Rear, Left, Right Modules
Assembly, M4x10 round head socket
head cap screws
Tag: S1
16PCS 



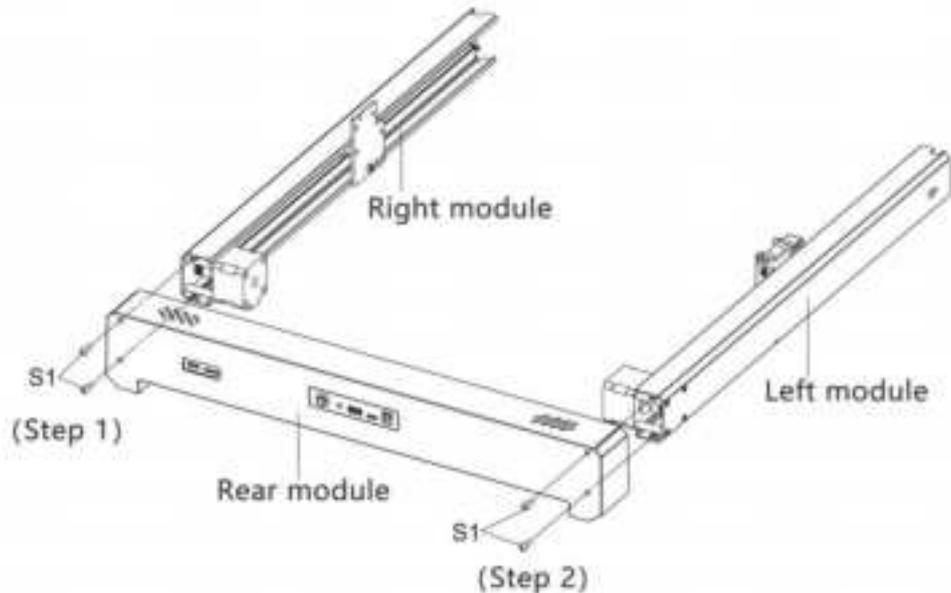
For Guide Wire Assembly
M4x6 round head socket
head cap screws
Tag: S2
5PCS 

For assembly of X-axis module
and left and right modules
M3x10 round head socket
head cap screws
Tag: S2
2PCS 

For Guide Wire Assembly
Large R-Size Clamp
Tag: S4
2PCS 

For Guide Wire Assembly
Small R-Size Clamp
Tag: S5
3PCS 

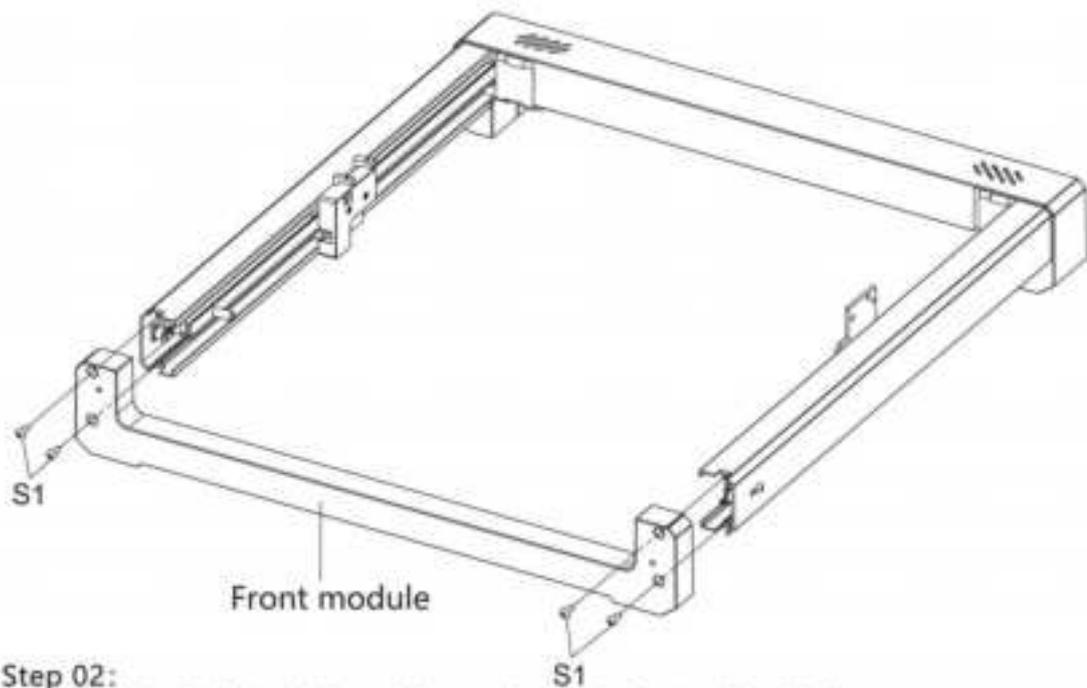
03 Structure and Assembly



Assembly Step 01:

1. Install the left module into the rear module, pass the S1 screw through the rear module, and tighten the screw with a 2.5MM Allen key.
2. Insert the right module into the rear module, pass the S1 screw through the rear module, and tighten the screw with a 2.5MM Allen key.

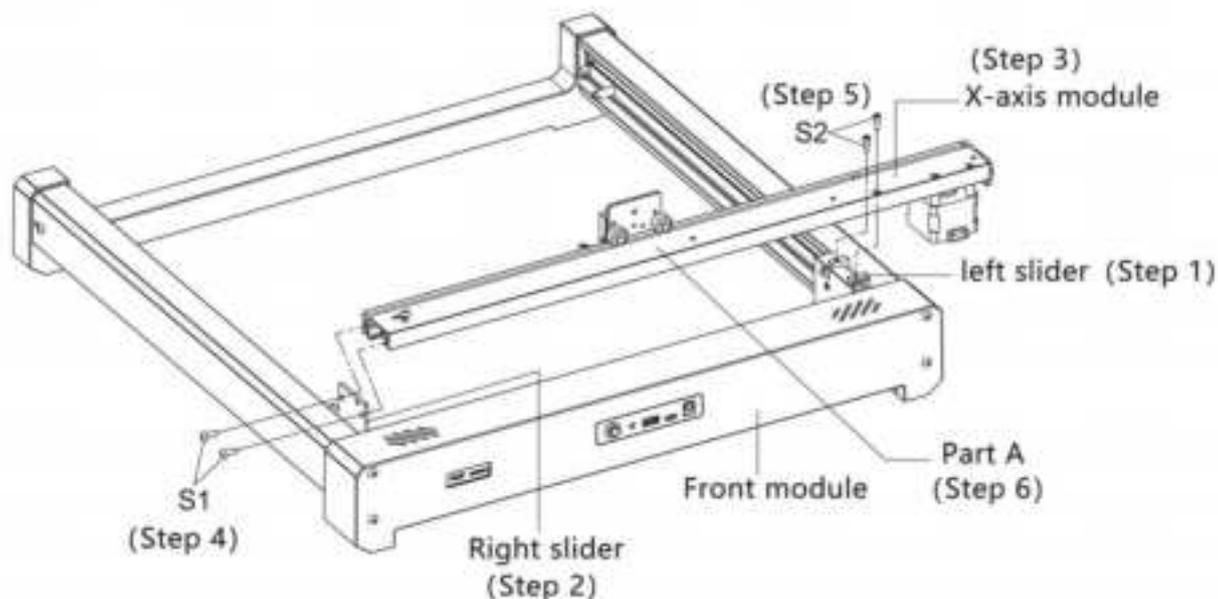
03 Structure and Assembly



Assembly Step 02:

1. Install the front module into the left and right modules, pass through the front module with S1 screws, and tighten the screws with a 2.5mm Allen wrench.

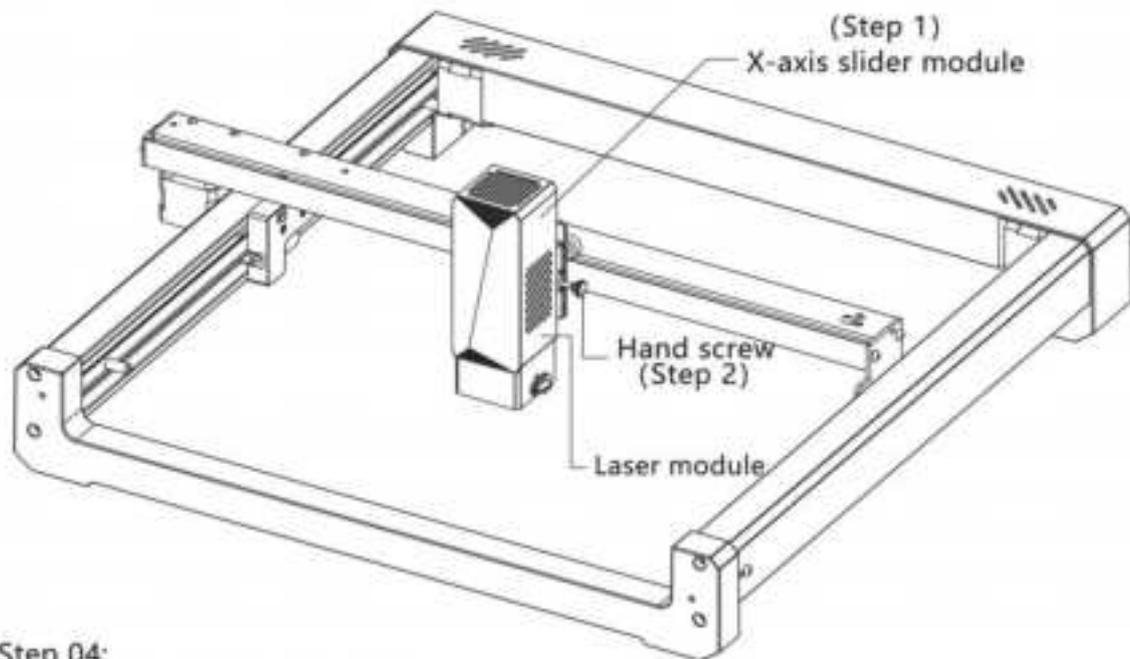
03 Structure and Assembly



Assembly Step 03:

1. Attach the left side of the slider to the front module.
2. Attach the right side of the slider to the front module.
3. Place the X-axis module on the left and right sides of the slider correspondingly.
4. Put the S1 screw through the right screw hole of the slider, and tighten the screw with a 2.5mm inner hexagon wrench.
5. Put the S2 screw through the screw hole of the X-axis module, and tighten the screw with a 2.5mm inner hexagon wrench.
6. After installation, hold the part A of the X-axis module by hand, push it forward and backward, and put it roughly in the middle.

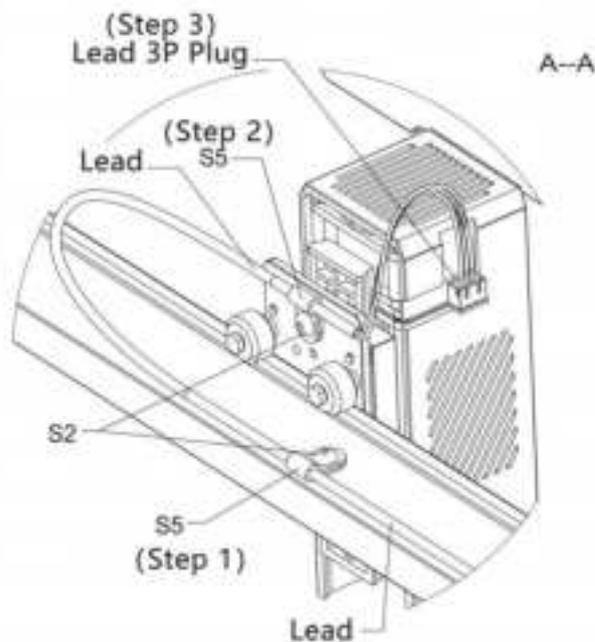
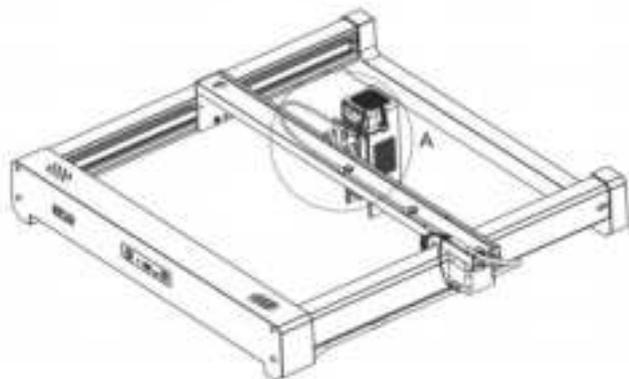
03 Structure and Assembly



Assembly Step 04:

1. Install the laser module into the X-axis slider group.
2. Adjust the thumb screw to fix the laser module.

03 Structure and Assembly



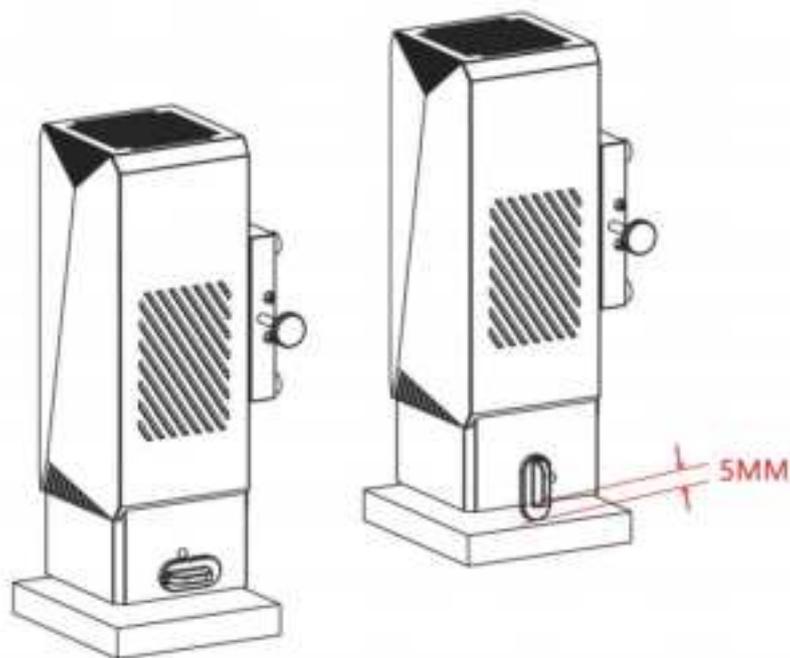
Assembly Step 05:

1. Fix the lead wire on the left module with a cable tie.
2. Fix the lead wire on the X-axis module with a cable tie.
3. Insert the lead wire into the slider clamp.
4. Fix the lead wire on the slider with a cable tie.
5. Insert the 4P plug into the socket of the motor.
6. Insert the 3P plug into the connecting socket at the front end of the X-axis.
7. Insert the 3P plug into the socket of the laser.

04 Laser module focus

Focus:

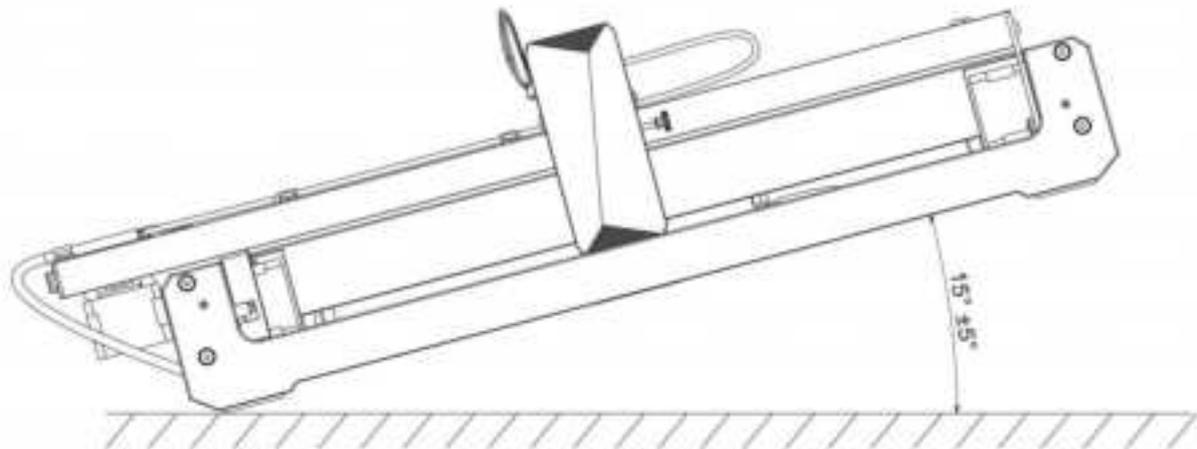
1. Rotate the focus knob so that it faces vertically downward;
2. Loosen the thumb screw so that the focus knob is in contact with the carved object, and then fix the thumb screw and rotate the focus knob.



05 Function Display

1. Inclination Protection;

If the machine inclination is $15 \pm 5^\circ$ than the horizontal plane for over one second, the machine will stop running immediately, the laser module will stop strong laser output and change the laser into weak flickering at 0.5s of interval. The machine must be restarted to resume normal operation in the case of protection state.



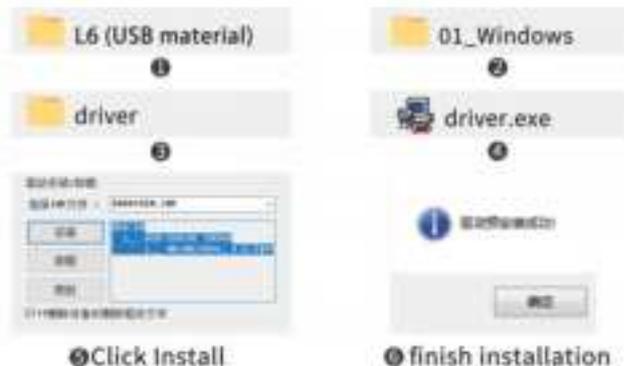
06 Software Download and Installation on PC

Software can be acquired as follows:

Method 1: Acquire the driver, software, photos and other data from the USB flash disc provided (Note: Before the use for the first time, please copy all the data from the USB flash disc to your computer as backup to prevent accidental loss due to improper operation.)

Method 2: Download at the designated website
www.dkjxz.com

Driver installation in Windows



1.Path to Install Driver:

Enter the USB memory disk and double click the folder /01-windows/driver/driver.exe/click Install/ Driver installation completed. Please watch the relevant installation demonstration video in the USB memory disk for detailed installation steps.

 Video of Win driver and software installation

06 Software Download and Installation on PC

2.Path to Install Software:

Enter the USB flash disk and double click the folder:/windows /software/Engraver/ After the progress bar has done,the installation is completed /Laser.



⑤ After the progress bar has done, Laser installation is completed.

Tips:

After clicking Engraver, if anti-virus software or PC Manager prompts to warn the risks. Engraverfile is a win system installation package. If it is misjudged as a suspicious file,Please select "allow all operations" to complete the software installation.

3.Online Operation:

Connect the machine to the computer with data cable
Double click the software icon – click the "connect device" icon – the icon turns blue to complete the online connection



① Double click the software icon



② Click the "connect device" icon



③ The icon turns blue to complete the online connection



06 Software Download and Installation on PC

Mac Driver Installation

L6(USB flash disk)

①

driver

②



③ Click to continue



④ Click to continue the installation



⑤ Complete the installation

02-MAC

②

Mac_OSX_VCP_Driver

③



④ Enter the computer password



⑤ Continue the installation

1.Path to Install Driver:

Path to Install Driver: Enter the USB flash disk and double click the folder: 02_MAC/driver/Mac_OSX_VCP_Driver/Installation introduction/installation type/installation/installation completed

Note: The software can be installed after the driver has been installed, please watch the video for detailed operation.

 Video of MAC driver and software installation

06 Software Download and Installation on PC

Mac software installation and online Introduction

L6(USB flash disk)

1

software

1



4 Double click the software icon



6 Complete installation

02-MAC

2



5 Left click the icon and drag into the Applications folder in the right

2. Path to Install Software:

Enter USB flash disk and double click the folder: 02_MAC /software/Engraver/move software icon to the right/ complete installation

3. Online operation:

Connect the machine to the computer through data cable
Double click the software icon — click "connect device" icon — the icon turns blue to complete the online connection



1 Double click the software icon



2 Click "connect device" icon

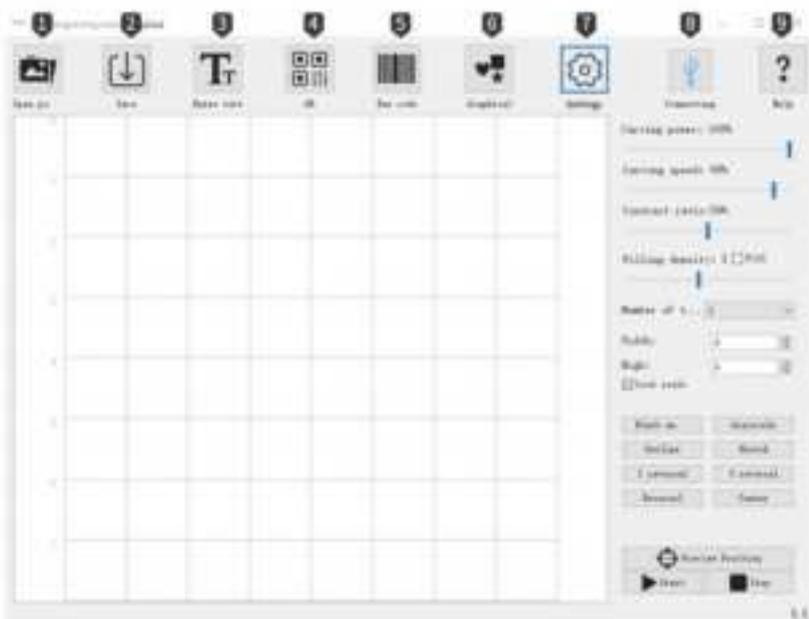


3 The icon turns blue to complete the online connection



06 Software Download and Installation on PC

Introduction to Icon Functions in Software Interface:



- 1 Open**
Load photos from computer
- 2 Save**
Save the edited texts and photos
- 3 Input Text**
Import text, font, size, horizontal, vertical, vectorization Editing function
- 4 QR code**
Create QR code
- 5 Bar Code**
Create Bar code
- 6 Graphics**
Round-square-heart-pentagon, quick creation
- 7 Settings**
Set the parameters of low light power; set whether to activate the roller

- 8 Connect to device**
The icon turns blue after the connection is done 
- 9 Help**
Open the link; watch the demo video and refer to the FAQ

06 Software Download and Installation on PC

Setting of Software Parameters:



1 Engraving Power

Adjust the power level to engrave different materials

2 Engraving Speed

Set the engraving speed, the engraving speed of determines the engraving depth

3 Contrast

Drag the slider to adjust the contrast of text and photo

ABCD ABCD ABCD
Contrast 16 Contrast 50 Contrast 80

4 Filling Density; Filling

The filling effect can only be effective for vector graphics, select vectorization, Click Fill on the text photo, drag the fill slider to adjust the filling density

5 Engraving Times

Set the number of engraving times

6 Width; Height

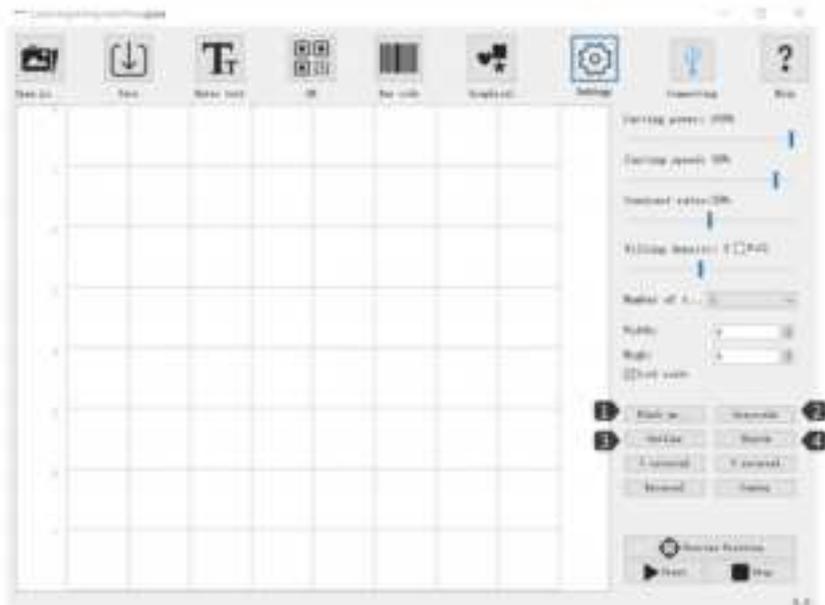
Adjust the width and height of text photo separately as will

7 Proportional Zoom

Lock photo text to proportionally zoom in/out

06 Software Download and Installation on PC

Setting of Software Parameters:



1 Black and White

To process photos to black and white

2 Grayscale

Grayscale mode, adopt the function for engraving photos to adjust photo grayscale

3 Contour

Cutting mode for wireframe cutting of engraving machine

4 Sketch

Sketch mode, enhance the 3D effect of photo outline



Black and White



Grayscale



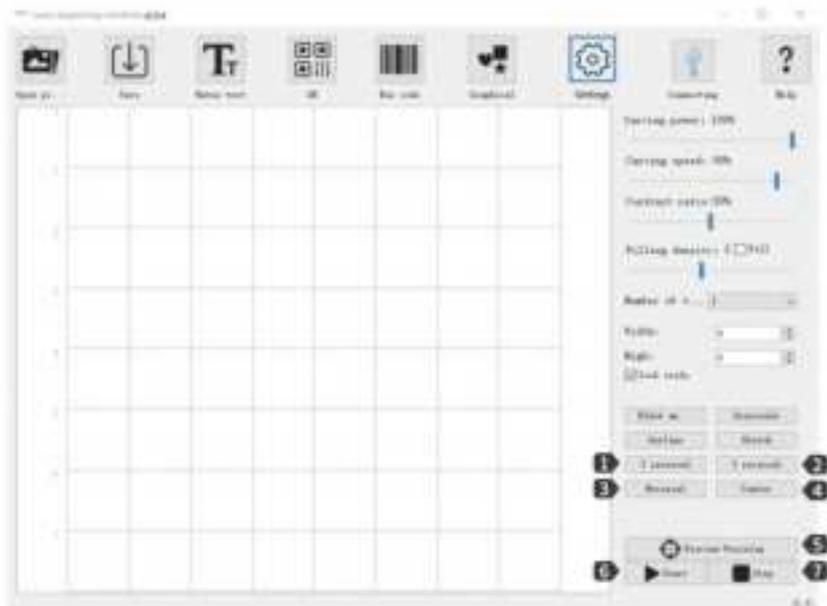
Contour



Sketch

06 Software Download and Installation on PC

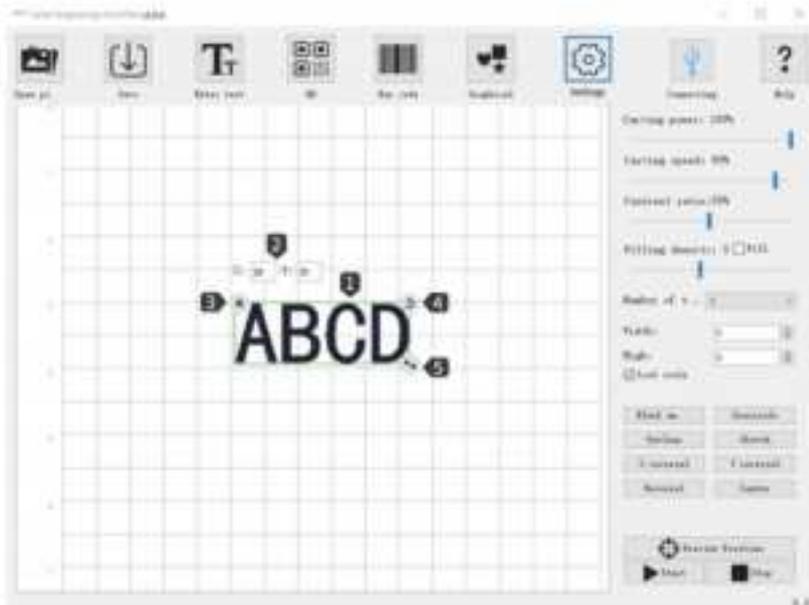
Setting of Software Parameters:



- 1 X Mirror**
Horizontal Rotation Effect
- 2 Y Mirror**
Vertical Rotation Effect
- 3 Reverse Color**
Reverse background color of text and photo
- 4 Center**
One click to center the text and photo in preview area
- 5 Preview Location**
Preview to confirm engraving position
- 6 Start**
Start engraving
- 7 Stop**
Stop engraving

06 Software Download and Installation on PC

Introduction to Interface Loading Content:



- 1 After loading the text and photo, left click the mouse to move the position of the text and photo, right click the mouse to move the drawing board horizontally, roll mouse wheel to zoom in/out the drawing board.
- 2 X:26 Y:30 only indicate the position coordinates where the text and photo stay; when move the text and photo, the coordinates will change based on different positions.
- 3 ✖ Clear the text and photo on the drawing board
- 4 ↻ Left click the mouse to rotate the text and photo 360°
- 5 ↻ Left click the mouse and drag to zoom in/out the text and photo

07 Software Download and Installation on Mobile Phone

1. Software Download and Installation:

Method 1: APP download URL:
www.dkjxz.com

Method 2: Scan the QR code to download.



Google Play

Android

iOS

- Note:**
1. For Android system, open the browser to scan the QR code to download;
 2. Corresponding authority should be permitted after successful installation;

2. Connect APP with Machine

- 1 Connect the machine to power supply;
- 2 Activate Bluetooth function in the mobile phone;
- 3 Open engraving software in the phone, click "No Connection" in the upper right corner to automatically search for the device;
- 4 Then click "Engraver-000###";
Note: "000###" represents the serial number of the machine.
- 5 Wait for 1-2 seconds till "Connected" displayed in the upper right corner, which indicates that the APP has successfully connected to the machine, then continue with the next step.



07 Software Download and Installation on Mobile Phone

Introduction to Software Interface (Load Content):



- 1 Settings**
New User Guide/Feedback/User Agreement and Privacy Clauses/Equipment/Language Setting
- 2 Load Photos for Engraving**
Add photos from Album, Add photos from Gallery
- 3 Take photos via camera**
- 4 Software Built-in Graphics**
- 5 Add Graffiti**
Self-draw Text/Photo
- 6 Edit Text**
- 7 Add QR code**
QR Code, Barcode

Roller Settings



- 1 Standby laser power**
Set the laser power in standby
- 2 Roller mode**
Activate/inactive the roller mode. When it is activated, it can rotate 360° to engrave

07 Software Download and Installation on Mobile Phone

Introduction to Software Interface (Load Content):



① Cutting

- Customized Cutting
- Round Cutting
- Square Cutting

② Photo or Text

(Content can be overlapped)



Input Text



Load Photos
from Album



Shoot via
Camera



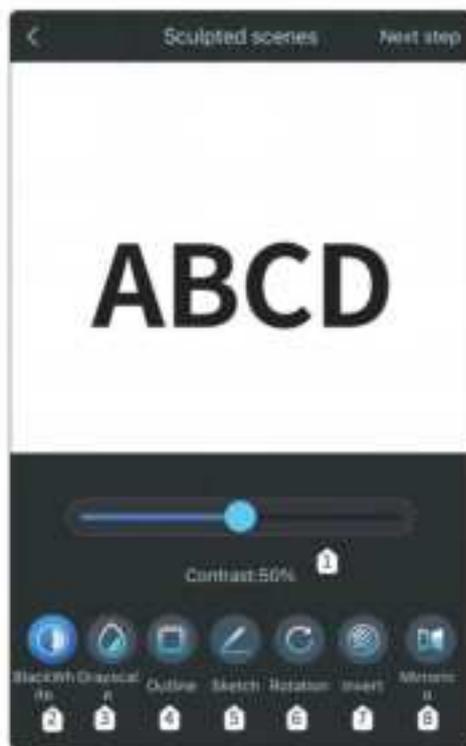
Add Photo from
Material Library

③ Eraser

Modify the photo with erase

07 Software Download and Installation on Mobile Phone

Introduction to software interface (Loading content) :



❶ **Contrast**

Drag the slider to adjust the contrast of text and photo



❷ **Black and White**

To process photos to black and white

❸ **Grayscale**

Grayscale mode, adopt the function for engraving photos to adjust photo grayscale

❹ **Contour**

Cutting mode for wireframe cutting of engraving machine

❺ **Sketch**

Sketch mode, enhance the 3D effect of photo outline



Black and White Grayscale Contour Sketch

❻ **Whirling**

Can rotate 90 degrees, 180 degrees or 360 degrees

❼ **Reverse Color**

Reverse background color of text and photo

❽ **Mirroring**

Horizontal Rotation Effect, Vertical Rotation Effect

07 Software Download and Installation on Mobile Phone

Introduction to Software Interface (Load Content):



- 1 Width**
Set engraving width
- 2 Height**
Set engraving height
- 3 Lock Ratio**
Scale engraving size proportionally
- 4 Region Positioning**
Preview Engraving Position
Determine Engraving Position



1 Material Selection

App built-in materials, which can be directly selected based on the materials to be engraved

2 Add Materials

Add and set materials, material name/laser power/engraving speed

3 Laser Power

Adjust power level to engrave different materials

4 Engraving Speed

Engraving speed setting, engraving speed determines the engraving depth

5 Repetition Times

It represents the number of engraving times

07 Software Download and Installation on Mobile Phone

Introduction to Software Interface (Load Content):



1 Uploading content

When the transfer progress has been 100% completed, the engraving can be started.

2 Carves Progress

Show me the progress of the sculpture

3 Suspend

Suspend engraving

4 Stop

Stop engraving



5 Save

Save the current engraving content and view in the phone album

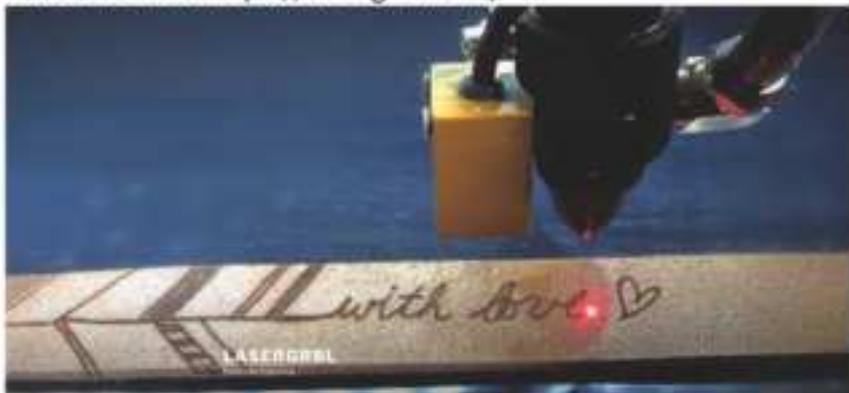
6 Engraving Completed

Current content has been engraved

08 Open-Source Program

Laser GRBL

GRBL website: <https://lasergrbl.com/>



Notice!

The product can support GRBL open source software by updating GRBL firmware. Once GRBL firmware is updated, this product will not support phone software, original PC software and the roller components any longer.

Path to install GRBL:

Double click the USB memory disk to open folder /FirmwareUpdate/L3GRBL_Firmware/For detailed steps, please watch the demo video in USB memory disk.

 GRBL_FirmwareUpdate

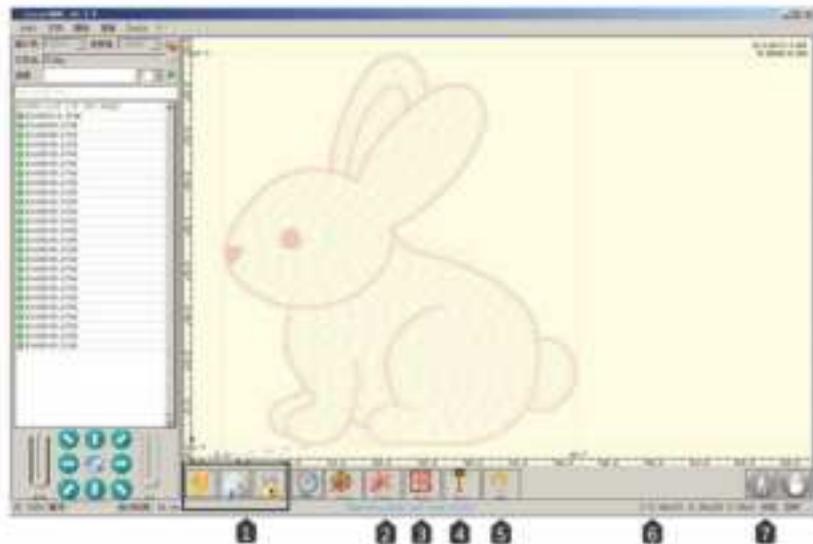
08 Open-Source Program

Introduction to LaserGRBL software interface icon functions:



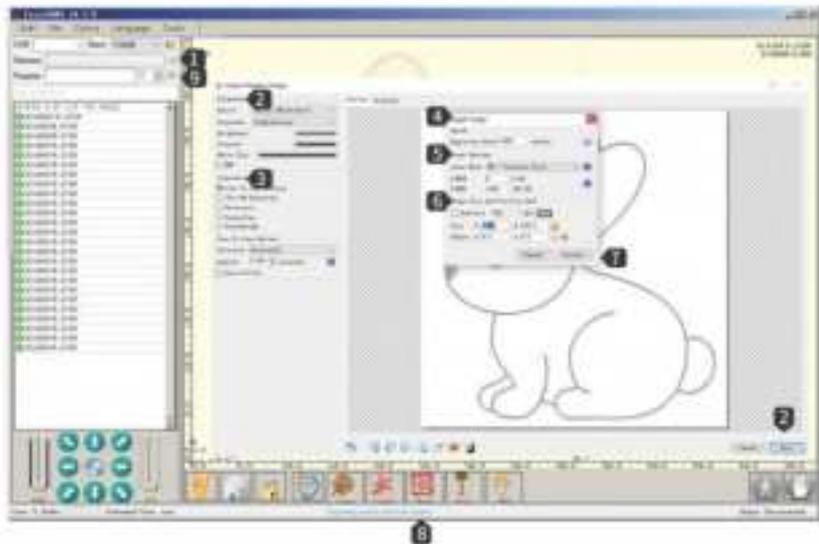
- 1 Connection settings:**
Select serial port and appropriate connection baud rate according to the grbl firmware configuration
- 2 File control:**
Display the loaded file name and the engraving process. Green "Play" button will start to execute the program
- 3 Manual command:**
You can enter any G code line here then press the "input" button, the command will be placed in the queue
- 4 Command log and command return code:**
Display the commands in queue as well as the execution status and errors
- 5 Step control:**
Allow manual laser positioning. The vertical slider on the left can control the speed of movement, while the slider on the right can control the step length
- 6 Prediction of line number and time:**
LaserGRBL can estimate the program execution time based on actual speed and work progress
- 7 Engraving preview:**
The final work will be previewed in this zone. During the engraving process, a small blue cross will display the current laser position during the machine operation

Introduction to LaserGRBL software interface icon functions:



- 1 Grbl reset/home/unlock:**
These buttons submit soft reset, home and unlock commands to the grbl board. On the right side of the unlock button, you can add some user customized buttons
- 2 Move to the lower left corner:**
Move the coordinate to the lower left corner of the frame
- 3 Preview of engraving position:**
After the photo is loaded, click this icon to preview the engraving position
- 4 Activate laser focus:**
Active the laser and focus as required
- 5 Laser:**
Click the button according to actual needs such as laser test
- 6 Coverage status control:**
Display and change the actual speed and power coverage. Overrides is a new feature of grbl v1.1 which cannot be supported in the old version
- 7 Pause and resume:**
Press the button to pause and resume program execution, send Pause or Resume commands to the grbl board.

Introduction to LaserGRBL software interface:



- 1 Open:**
Click the icon "Open" or drag the file directly to the software interface;
- 2 Parameters:**
Adjust engraving parameters
- 3 Conversion tools:**
Select engraving mode: line-to-line tracking, 1bit BW jitter, vectorization, Centerline, Passthrough
- 4 Speed:**
Set the engraving speed
- 5 Laser:**
Set laser parameters
- 6 Image size and position:**
Adjust image size and engraving position.
- 7 Create**
After settings have been completed, click Create.
- 8 Preview**
Click the "Preview" button to confirm the preview location;
- 9 Engraving:**
Click "engraving" button to start engraving.

08 Open-Source Program

LightBurn

LightBurn Website: <https://lightburnsoftware.com/>



LightBurn is a powerful, open-source laser cutting software that allows you to design and control your laser cutter with ease. It features a user-friendly interface and a wide range of tools and features that make it the perfect choice for both hobbyists and professionals. LightBurn is available for Windows, Mac, and Linux, and it can be used to control a wide range of laser cutters, including CO2, fiber, and diode lasers. LightBurn is a free and open-source software, and it is supported by a community of users and developers. For more information, visit our website at <https://lightburnsoftware.com/>.

L6 FAQ

First. No response from the machine when being powered on.

1. No power supply: Please check the socket and switch as well as the machine power socket to ensure that they have been correctly plugged with normal power supply.

Second. It cannot be connected to computer

1. USB cable not connected: Please check the USB data cable interface on the machine and computer to ensure it's correctly plugged. The USB interface on the front panel of some desktop computers is invalid, it's better to connect to the interface on the back.
2. Driver not properly installed: Install the driver according to the instructions. After the installation is done, the computer will recognize the device as a serial port, which means the hardware connection is OK.
3. Other special problems: Pull out the USB data cable and power cable, keep the machine power off for 5 seconds and then try the connection once again.

Third. No response from the phone APP when being connected to the machine.

1. Wrong Bluetooth connection: Make sure it's connected to the Bluetooth released by the machine. Please read "App Connection" in the User Manual for details.
2. Incompatibility: In the case of abnormal connection due to incompatibility of newly-released phone or upgraded system, please contact our customer service with the screenshot of phone configuration so as to get technical support as soon as possible.

Fourth. Shallow engraving effect or no traces.

1. Inaccurate focus: Refer to the "Focus Adjustment" in the User Manual to make the correct focus.
2. Engraving speed: Too fast speed is due to short burning time. Please read the "Engraving Parameters" in the User Manual to readjust the parameters.

3. Photo color is too light: The photo added should be clear. If the line is too thin or the color is too light, the engraving effect will be directly influenced.
4. Position of object to be engraved: If the object is placed obliquely, the focal length of laser is fixed, so the object should be placed horizontally in parallel to the machine; otherwise, the inaccurate focal length will result in bad engraving effect.

Fifth. Offline engraving unexpectedly stops

1. The photo is not completely downloaded when being connected to computer, please download the photo once again.

FCC Warning:

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.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

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.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.