User Manual

Mini Laser Engraver

Note:The picture is for reference only,the actual product shall prevail

CONTENTS

1. Safety Guide ----------2
2. Introduction and main parameters ----------4
3. Software installation and use ----------7
4. Using Tips ----------32
5. Recommended parameters for common materials----------36
6. Meanings and solutions for common Alarm--39
7. Frequently asked questions ----------40

1.Safety Guide

Before using the laser engraver, please read this safety guide carefully, which mentions situations that require special attention and includes warnings about unsafe operations that may result in property damage or even endanger personal safety.

Laser Safety

- Our laser engravers are equipped with a Class 4 laser, which is extremely powerful and can cause serious eye injury or skin burns.
- A protective shield has been installed on the laser module to effectively filter out most of the diffuse light from the laser spot. However, for added safety, it is strongly recommended to wear laser safety goggles when operating the engraver.
- Avoid direct skin exposure to the Class 4 laser beam, particularly at close range.
- This product is not intended for use by children under the age of 14. Teenagers over 14 should operate the device under adult supervision.
- Do not touch the laser module while it is active, as it may cause burns to the skin.

Fire safety

- **The high-intensity laser beam generates significant heat as it burns through the substrate, creating elevated temperatures.Certain materials may ignite and produce smoke during the cutting process.**
- **When the laser beam interacts with the material, a small flame may briefly appear. This flame moves along with the laser and typically extinguishes once the laser passes.**
- **Do not leave the machine unattended while the laser is in operation.**
- **Be mindful of flammable materials in the working environment, and always ensure a fire extinguisher is readily accessible.**

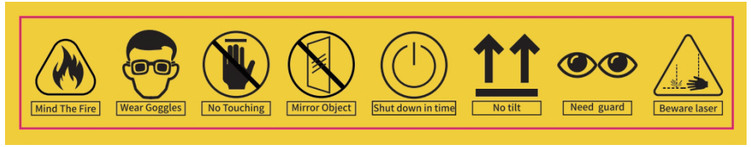
- The fumes and irritating gases produced when the laser interacts with the material can be harmful to health. Therefore, it is essential to use the machine in a well-ventilated area. Some of the gases may even be hazardous, so proper ventilation is crucial.

Material Safety

- Do not engrave or cut materials with unknown properties.
- Materials Recommended: plywood, solid wood, bamboo, leather, plastic, fabric, (kraft) paper, acrylic, cork, cobblestone, black alumina, non-reflective stainless steel, ceramic, etc.
- Materials not recommended: reflective metal, precious stones, transparent materials, reflective materials, etc.

Usage Safety

Always operate the laser engraver in a horizontal position, ensuring it is securely fixed to prevent the risk of fire if accidentally moved or dropped from the workbench during operation.Under no circumstances should the laser be pointed at people or animals.We are not responsible for any damage resulting from improper use of this equipment. The operator is solely responsible for using the laser engraver in accordance with its intended purpose, the instructions in the user manual, and all relevant safety guidelines and regulations.



2. Introduction and main parameters

·The maximum engraving area of the mini laser engraving machine is 130*130MM. It can be used for engraving or cutting (3.5W only) with the 2.5W or 3.5W laser module .

·The machine and the laser modules use fixed-focus lasers, and only a 2mm- Focal length measurement sheet is needed for measurement to obtain the optimal engraving focal length.

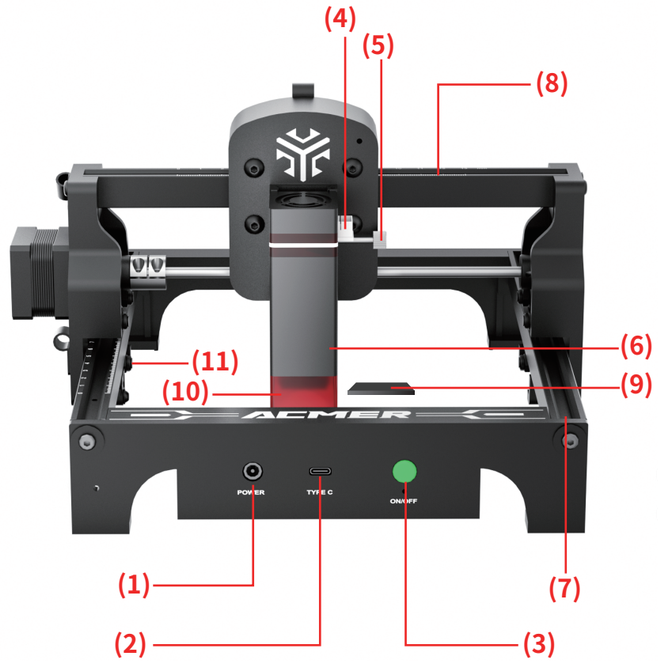
·The laser protection cover can help us block most of the strong light. If you look directly at the strong light, first of all, the retina will be damaged and the vision will decrease. Secondly, it will cause visual fatigue and reduce production and learning efficiency. Third, strong light will inhibit the production of melatonin and affect sleep quality. The laser protection cover can help you avoid this harm.

·Right-angle measuring ruler: Both the X-axis and the Y-axis have precise scale lines, which are convenient for you to quickly measure the size of the engraved object.

·Safety design: The machine is equipped with a power switch for emergency power off.

·Save installation time: You only need to install the laser module and software to use the machine

Engraving Size	130*130MM
Laser Wavelength	445±5 nm
Software Support System	Mac, Windows
Materia	Aluminum Profile + Plastic Parts
Electrical Requirement	S1-2.5W 12V2A DC/ S1-3.5W 12V3A DC
File Format	NC,BMP,JPG,PNG,DXF,etc,
Supported Software	LaserGRBL (Windows), Lightburn (Common)



(1) Power interface
(2) Data cable interface
(3) Switch (long press to turn off)
(4) Laser module interface
(5) Laser module height knob
(6) Laser module
(7) Y-axis belt
(8) X-axis belt
(9) 2mm-Focal length measurement sheet
(10) Laser protection cover
(11) Eccentric nut

Take out the laser module and insert the module into the sliding slot. When the red protective cover touches the surface of the focal length measurement block, tighten the side knob to fix it and complete the focusing.

Focusing principle.

1. The focal length of the laser module is fixed and cannot be changed.
2. The specific position of the laser focus is 2mm directly below the edge of the laser module protective cover.
3. We provide a 2mm thick measuring sheet to help find the laser focus.
4. When the laser is focused on the surface of the engraved object, it will exert its maximum engraving effect.

3. Software installation and use

· The laser engraver supports the most popular program LaserGRBL. LaserGRBL is an open-source, easy- to-use program, but LaserGRBL only supports Windows System (Win XP / Win 7 / Win 8 /Win 10 / Win

· MacOS users can choose LightBurn, a professional laser program for windows and macOS. LightBurn has a one-month trial period, after which you need to pay to use it.

· The laser engraver receives commands from the computer. It needs to stay connected to the computer, and do not shut the engraving program down (LaserGRBL or LightBurn),during the engraving process. since the calculations are done on the computer, the performance of the computer will affect the speed and even the quality of the engraving.

· The following section will focus on the installation and use of LaserGRBL. For LightBurn, installation and configuration process will be briefly explained. Their official websites have program operation tutorials, which are very helpful for beginners.

PC software introduction

Mac OS: LightBurn
Linux: LightBurn
Windows: LightBurn & LaserGRBL

LightBurn:
https://lightburnsoftware.com/pages/download-trial

software Forum:
https:/forum.lightburnsoftware.com

LaserGRBL
https://lasergrbl.com/download/

Since the GRBL software will be upgraded continuously, it may be the latest version when you download it, and the operation interface may be different from the manual, but the function is roughly the same, and the actual operation does not affect the use.

1. Instructions of LaserGRBL

1.1 Download

LaserGRBL is one of the most popular DIY laser engraving software in the world , the download website of https://lasergrbl.com/download/

1.2 Installation

· Double-click the exe format file you downloaded to start the software installation, and keep clicking < Next> until the installation is complete.

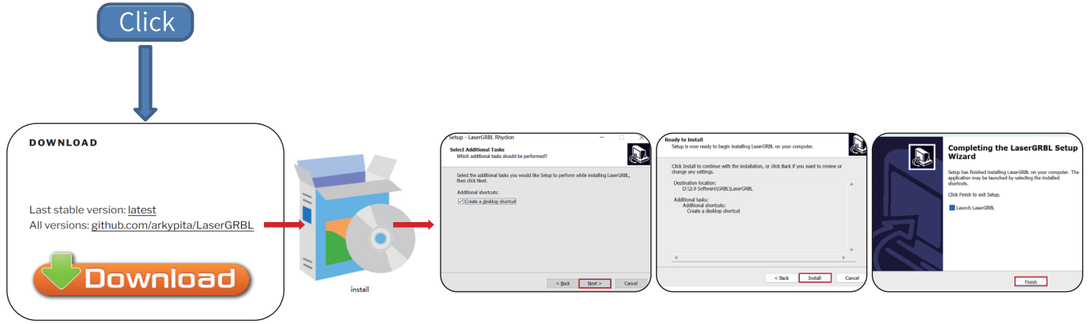


Figure 1 LaserGRBL Installation

·The installed software is shown as the figure 2.

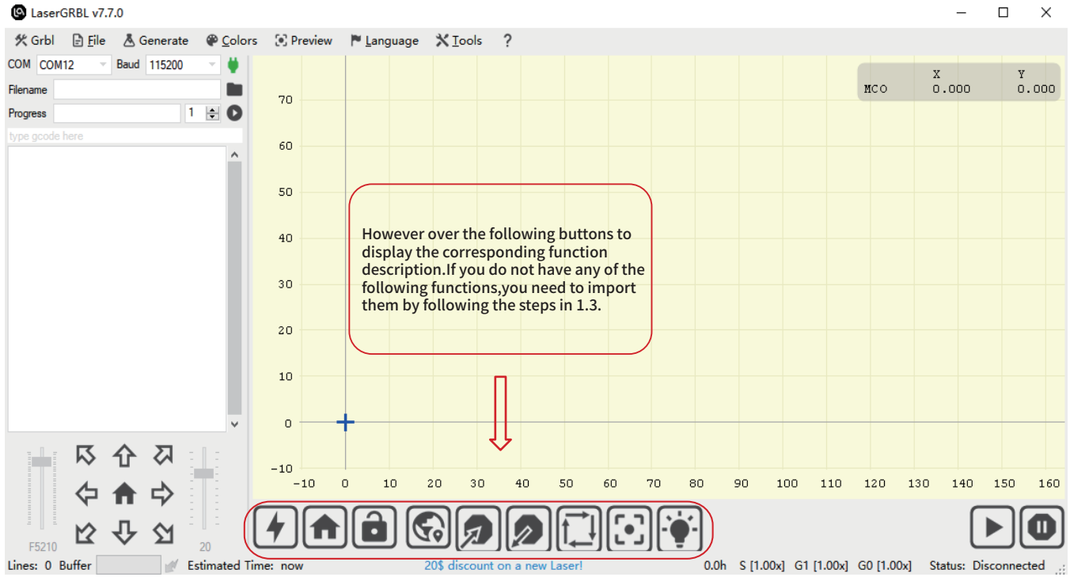


Figure 2 Interface of LaserGRBL

1.3 Custom buttons

· **The software supports users to import custom buttons, you can import custom buttons in the software** according to your usage. We recommend the official custom buttons from LaserGRBL. The download url for the **custom button is** https://lasergrbl.com/usage/custom.buttons/

(The downloaded file of custom Buttons is shown as below)

Figure 3 Custom Buttons

· **Next, we will import the custom buttons into LaserGRBL. Open the LaserGRBL program,right-click in the blank area next to the button at the bottom (as shown in Figure 4),then choose <Import custom button>, and** select the custom button zip file downloaded before to import, keep clicking Yes (Y) until there is no popup.

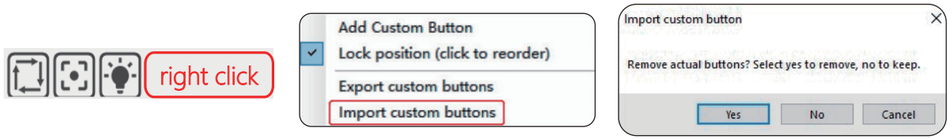


Figure 4 Import custom buttons

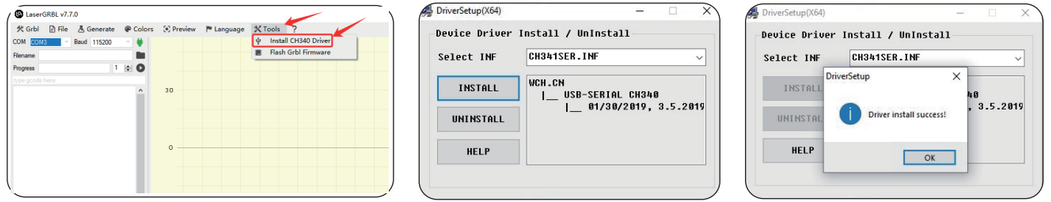
1.4 Operating instructions

· **Connect the laser engraver to a computer with USB cable.**

· **Plug in the power adapter of the laser engraving machine.**

· **Open LaserGRBL.**

· **Install CH340 Driver. In LaserGRBL , click < Tools > < install CH340 Driver > to install the driver, and restart the computer after installation.**



If the driver fails to be installed, open the driver again, click Uninstall, and then open the driver again and click Install, as shown in the figure.

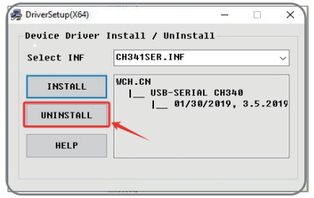


Figure 5 Driver installation

· COM ports can be viewed in your computer's Device Manager

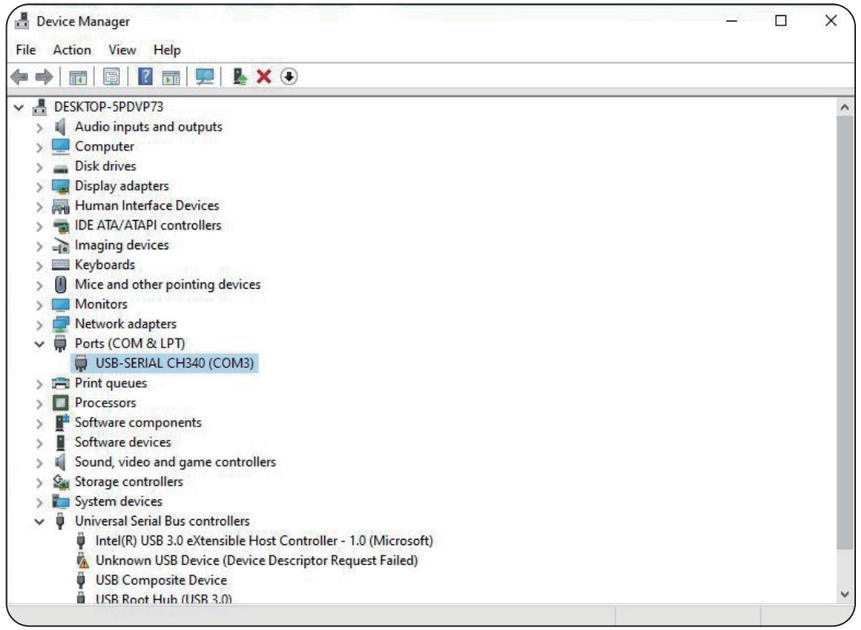


Figure 6 Check of COM ports

· Select the correct port number and baud in the software - 115200 (In general, COM ports do not need to be selected manually, but if you have more than one serial device connected to the computer, it needs to do so, you can find the port of the laser engraving machine in the device manager of the windows system, or you can simply try the port numbers displayed one by one).

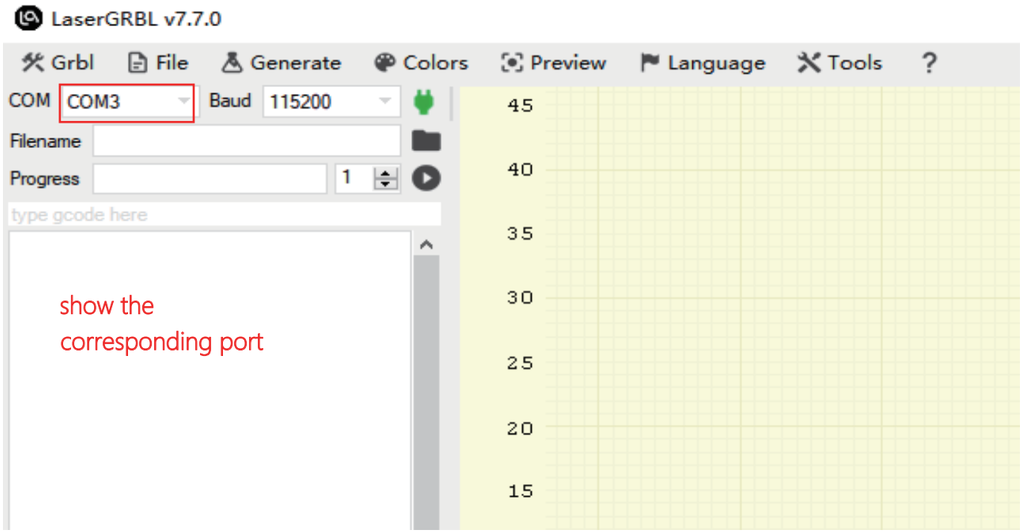


Figure 7 COM Ports after connection

·Click the connect button in the software. When the lightning icon button turns orange, it means the connection is successful. You can see "status: Idle" in the lower right corner of the LaserGRBL interface.

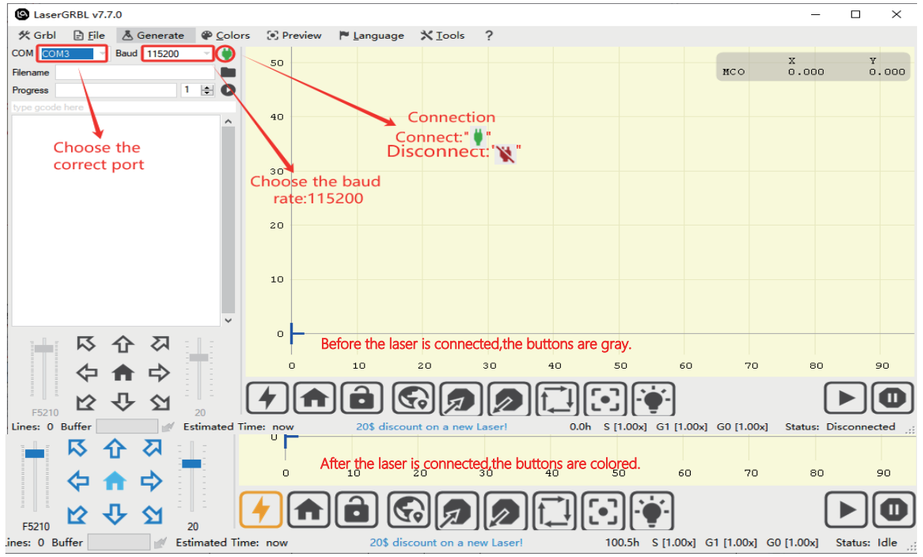


Figure 8 Connection of laser engraving machine

· If you see "Disconnected" or "Connecting" but no messages from the engraver, you should change the COM port.
· If you see "Status: Alarm", your board is in alarm. The machine is connected.

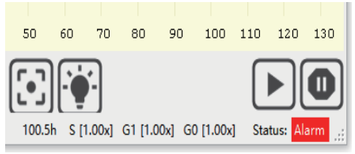


Figure 9 status: Alarm

· Usually when the machine is in Alarm status it is necessary to execute the homing procedure (Click the HOME button）or simply press the Unlock button to acknowledge the alarm（or enter “ $X" in the command box).

Figure 10 Unlock button

· Instructions of buttons

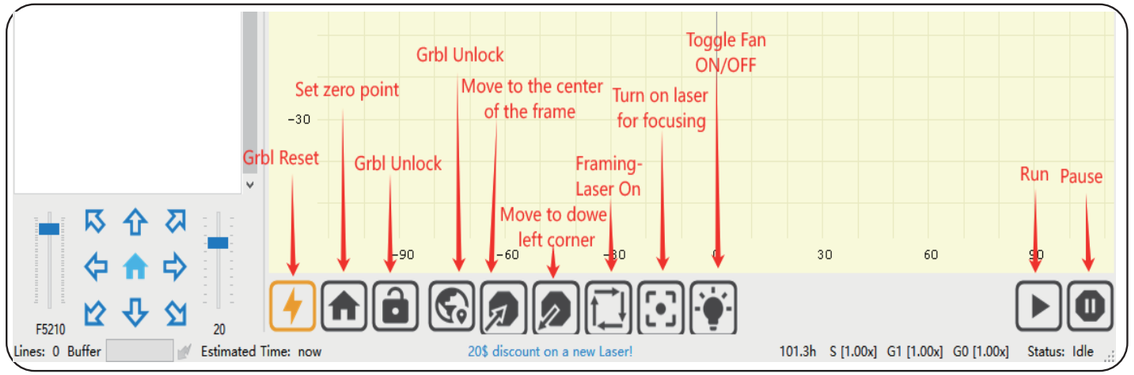


Figure 11 Instructions of buttons in LaserGRBL

1.5 Parameter settings

· Selecting the engraving file. Open LaserGRBL, click <File> <Open File>, then select the images or file. LaserGRBL supports NC, BMP, JPG, PNG, DXF and other formats.

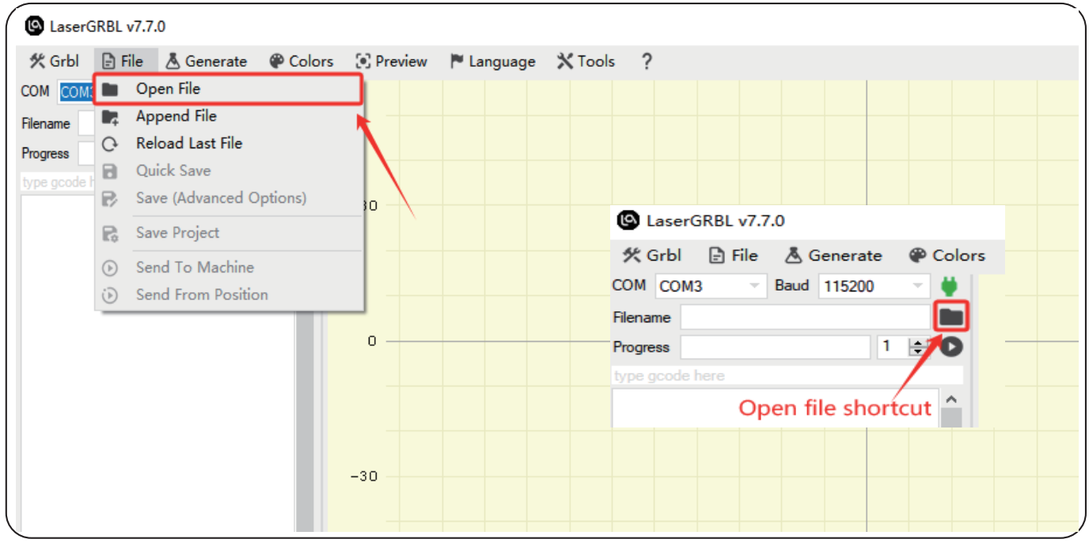


Figure12 Open file

·Engraving parameter settings

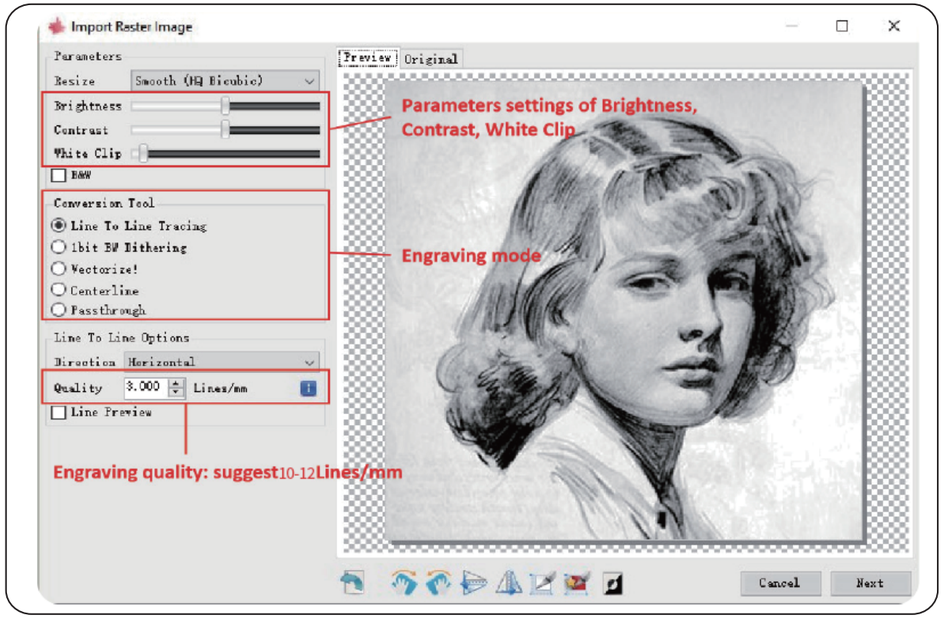


Figure13 Introduction of parameter settings

a)LaserGRBL can adjust the brightness, contrast, white clip and other attributes of the target image. When adjusting the parameters of the image, the factual effect will be shown in the right preview window, and adjust it to your satisfaction.

b)It usually chooses "Line To Line Tracking" and "1bit BW Dithering" as engraving mode. "1bit BW Dithering" is more suitable for engraving grayscale images;

If you are going to cut, please select the "Vectorize" or "Centerline" mode so it will cut along thin line.

The red trace in the preview box represents the laser engraving path.

c) Engraving quality essentially refers to the line width of laser scanning, this parameter mainly depends on the size of the laser spot of the laser engraving machine. our laser engraving machine uses rectangular compressed spot of 0.06 x 0.06mm, so it is recommended to use the engraving quality range of 10-12 lines/mm. Different materials respond differently to the laser, so the exact value depends on the specific engraving material.

The core spot of the laser is a rectangular spot of 0.06 x 0.06mm with a width of 0.06mm in the horizontal direction and a length of 0.06mm in the vertical direction, it is recommended to use the vertical orientation for delicately engraved models.

d)At the bottom of the preview window, the image can also be rotated, mirrored, cut, etc.

e)After completing the above settings, click <next> button to the settings of engraving speed, laser power and engraving size.

· Engraving speed, power and size setting

a)Choose different speeds and engraving power according to the hardness of different materials. We have attached engraving and cutting parameters of common materials in the manual for your reference.

b)There are two laser modes in the laser options, M3 and M4. M3-Constant power mode simply keeps the laser power as programmed, regardless if the machine is moving, accelerating, or stopped. This can lead to more consistent cuts in more difficult materials. M4-Dynamic power mode will automatically adjust laser power based on the current speed relative to the programmed rate. It essentially ensures the amount of laser energy along a cut is consistent even though the machine may be stopped or actively accelerating.

Note: If your M4 laser mode is not available, please check your GRBL configuration to make $32=1.

c)Set a suitable size according to the size of your engraving material.

d)Finally, click on the <create> button to complete the setting of all engraving parameters.

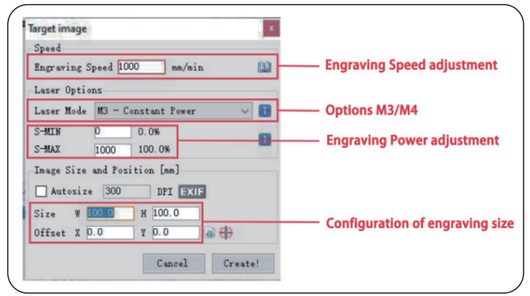


Figure14 Setting of engraving speed, power and engraving size

1.6 Positioning

· Home laser. Click the HOME button, the laser will move forward to the front left. After homing, the default engraving origin is from the front left, and the engraving object needs to be placed along the origin.

· Note: If the laser is not homed, it may cause the laser to exceed the working area.

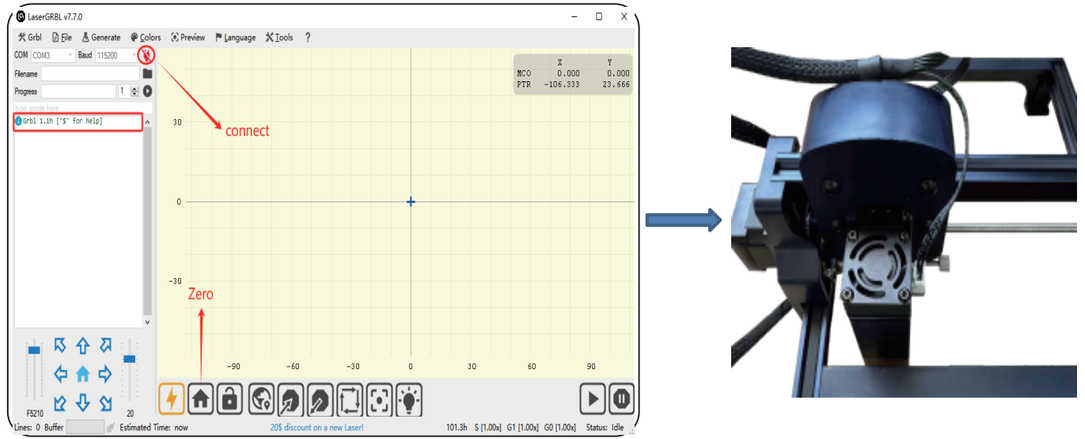
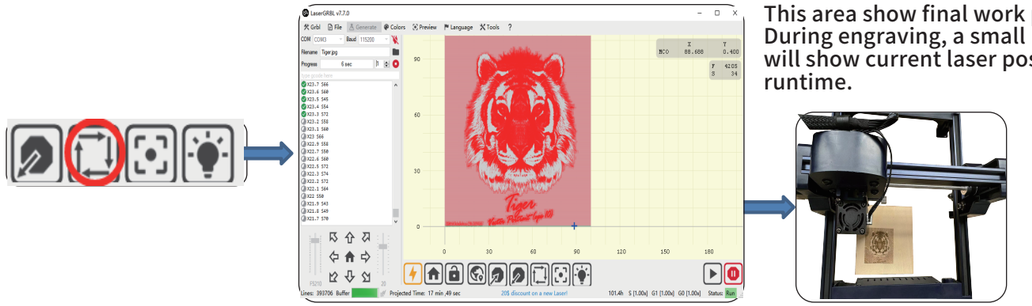


Figure 15 Home the laser

·Click the <Frame> button, the laser will start to scan the outer frame of the image.You can adjust the position of the engraving object according to the scanned frame area.



This area show final work preview. During engraving, a small blue cross will show current laser position at runtime.

Figure 16 Preview of laser engraving area

·Tips for accurately positioning images and engraving objects

a) Move the laser to the left front of the frame.

b) Use a ruder and pencil to draw a center point on the engraved object.

c) Click on the following two buttons one after the other to move the laser so that the laser point moves to the center of the engraving, which will makes a more accurate positioning.

d) If you re-edit and set the image engraving parameters, you can click Ctrl+R to enter the editing interface.

Figure 17 Centering

1.7 Start and stop engraving/cutting

· Start engraving/cutting

· After completing all the above settings, click the green button as shown in the Figure 18 to start

· engraving/cutting. There is an editable number next to the start button, and this number is the

· times of engraving /cutting. LaserGRBL allows multiple consecutive operations on the same image. This function is especially useful for cutting.

· Stop engraving/cutting

· If you want to stop engraving/cutting while the machine is running, you can click the stop button as shown in the Figure 19 to stop engraving/cutting.

· Feed hold and resume

· If you just want to pause while the laser is running and will resume unfinished work, you can click the feed hold and resume button as shown in Figure 20.

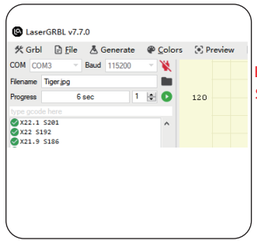


Figure 18 Start engraving/cutting

Figure 19 Stop engraving/cutting

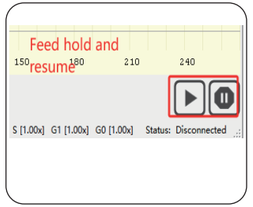


Figure 20 Feed hold and resume

2.Instructions of LightBurn

· User can download the software from the LightBurn official website:

https://lightburnsoftware.com/pages/download-trial

Figure 21 LightBurn installation file

· Double-click the program installation file to install, and click <Next> in the pop-up window.

(Note: LightBurn is a paid software. For a better experience, we recommend that you buy the original version. We will demonstrate the installation of the trial version here)

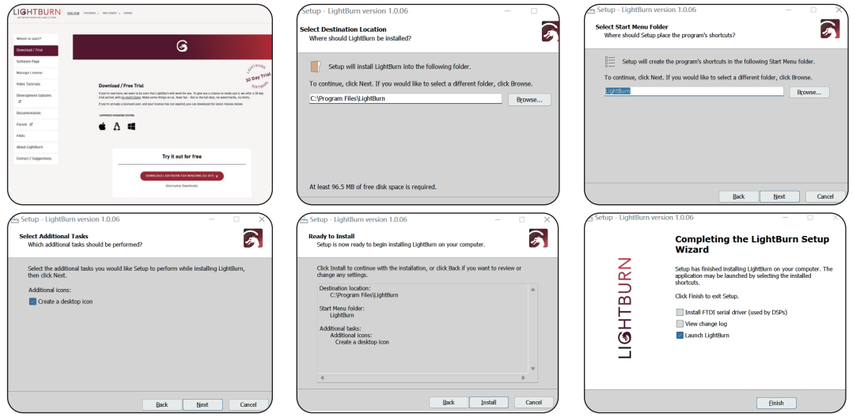


Figure 22 Installation of LightBurn

· Click <Start Your Free Trial>. Then click <Devices> at the bottom right of the software, <Find My Laser>.

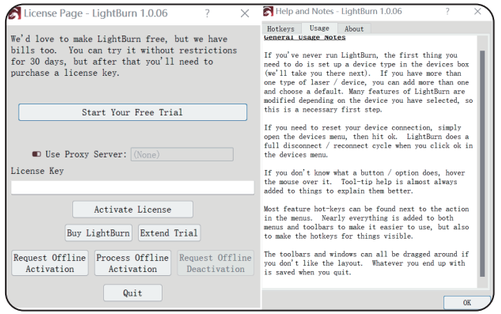


Figure 23 start a free trial

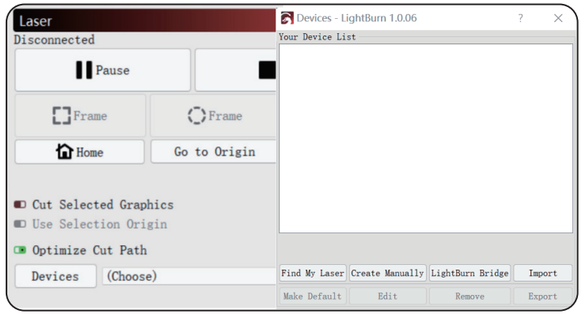


Figure 24 Find my laser

· Click <Add Device>. If there are two types of DSP and GCode, please choose the GCode type.

Figure 25 Add device

· Usually set the origin at the front let, then the installation is complete.

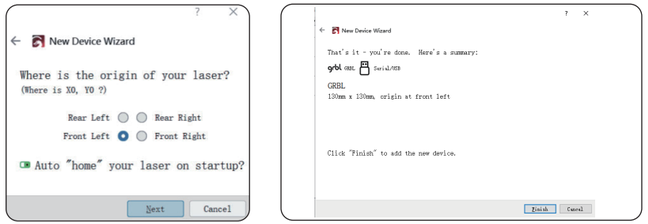


Figure 26 Installation of LightBurn

· Click <GRBL>.When the window appears "GRBL-Serial/USB...", click <OK>.

· If the software does not automatically connect to the laser engraver, you need to choose the port of the laser engraving machine as shown in the figure 28.

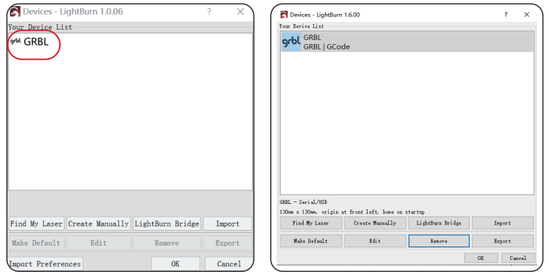


Figure 27 Choose GRBL

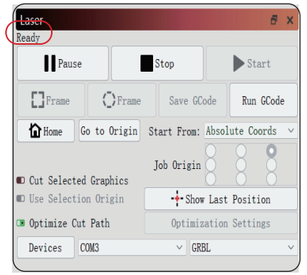


Figure 28 Select port

· If you do not find the laser, please add the laser manually.

a) Click <Create Manually>.Choose one of the <GRBL>.

b) Choose <Serial/USB>. Name your laser, and set the X and Y axis to 130 mm.

c) Set the laser to the Front left and finish.

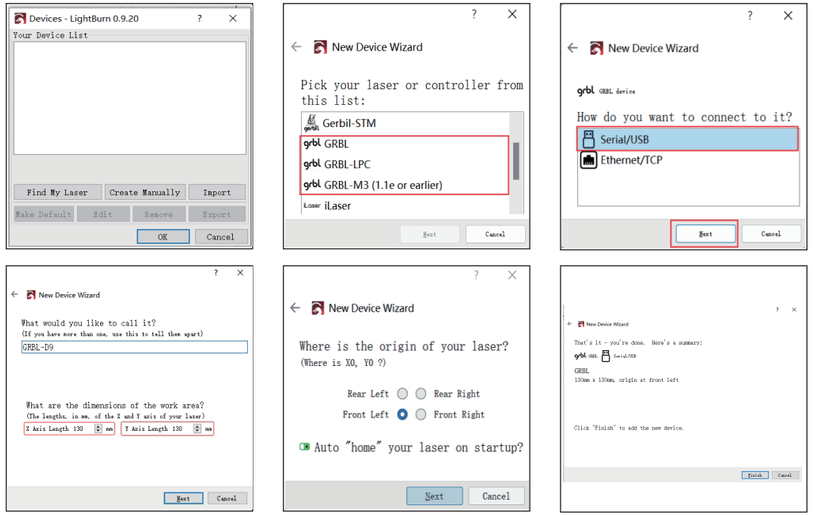


Figure 29 Create laser manually

3.Lightburn interface Introduction

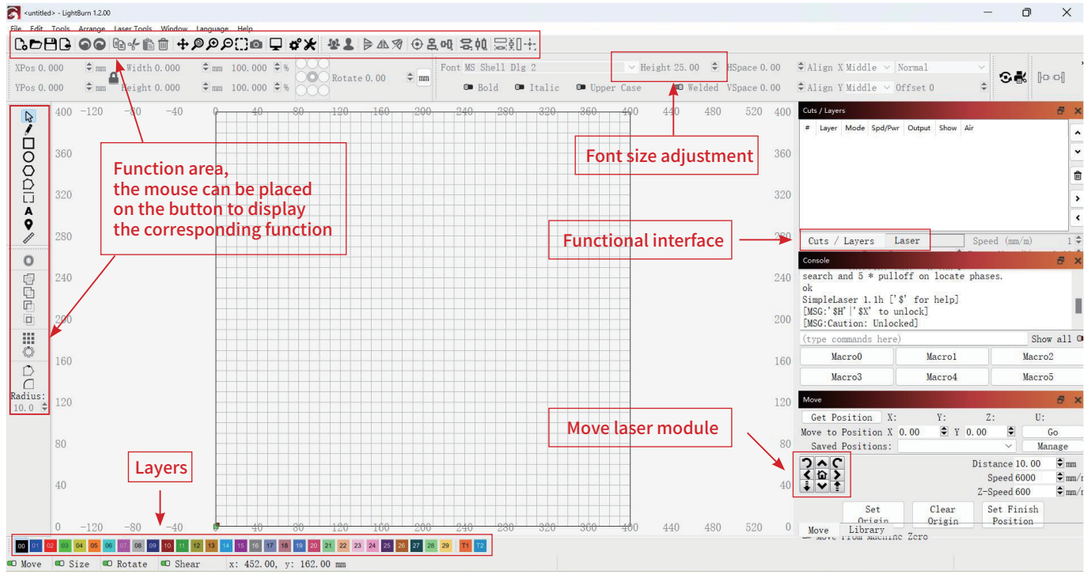


Figure 30 Lightburn Interface

Instructions for engraving/cutting operation

Import Image: Click the Open button, select supported format, select and import an image

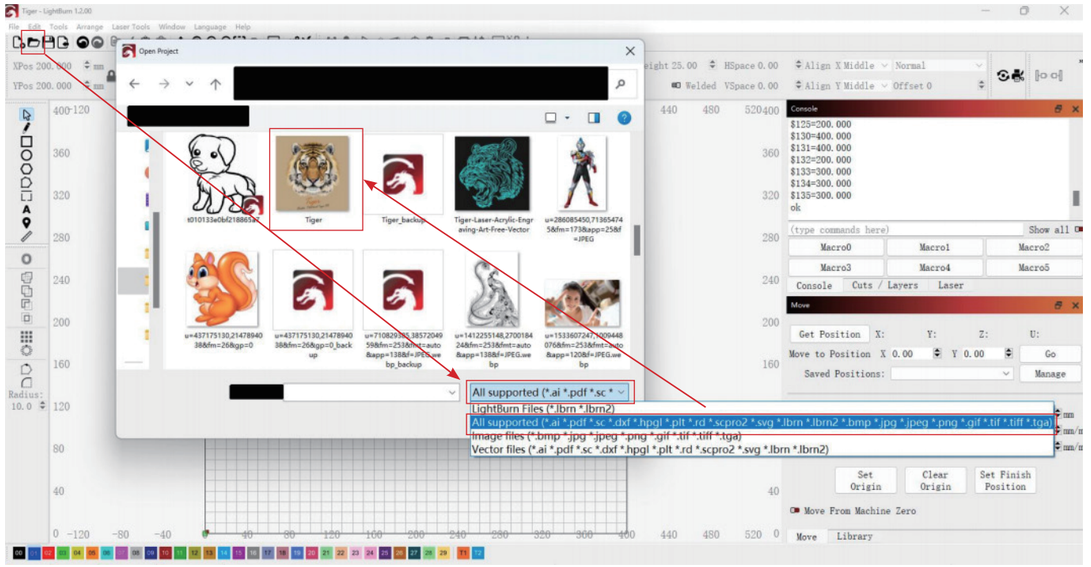


Figure 31 Import Image

Size adjustment: Adjust the image size in ①. When in the locked state, adjust either the Width or Height number, and the other number will change synchronously compared to the same column.

Drawing: Use the square drawing tool in ② to draw a square, adjust the size of the drawing in ①.

Create layer: In ③, select the drawn square, click on the blue bottom left corner to create layer C01.

Layer parameter setting: Click on layer C00 to enter the parameter setting interface, and refer to the attached parameter table to set .

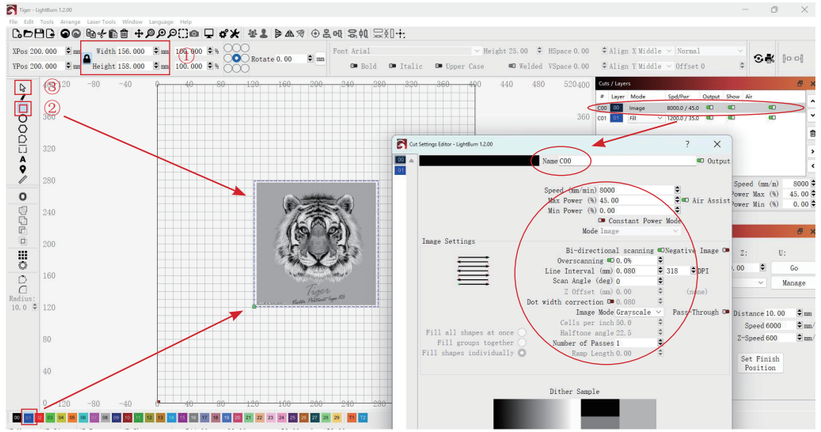
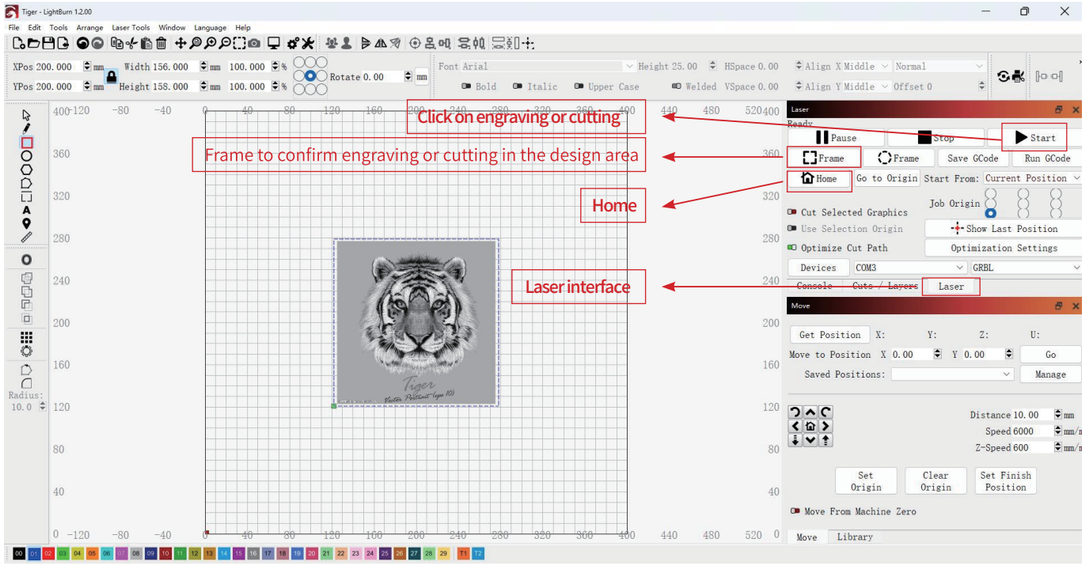


Figure 32 Layer Parameter Setting



Enter the Laser interface, Home engraver, Frame to make sure that engraver are working in the design area,Start to Engraving or Cutting

Figure 33 Engraving or Cutting

4.Using Tips

Focus before engraving: Focusing is required before engraving, and the focus must be on the surface Focal length of the engraved object.You can use a 2mm - Focal length measurement sheet to assist in the adjustment. When the red protective cover touches the surface of the focal length measurement block, tighten the side knob to fix it and complete the focusing. Improper focus setting will result in poor engraving or engraving failure.

The edge of the red laser protective cover must be parallel to the engraving object.

The cutting effect varies depending on the raw material. If you cannot successfully engrave or cut our recommended parameters with the following materials, try to increase the number of passes or reduce the speed.

If you feel that the laser energy is not strong enough, first check the laser lens to see if dust has contaminated the lens. Simply clean the lens to increase the laser power again.The laser lens and goggles cover should be cleaned regularly.

The tightness of the belt and pulley needs to be checked regularly.If the belt is loose: it can be reinstalled and tightened; the pulley can be adjusted with the eccentric nut.

1. Laser Module Use and Maintenance Instructions

1.1.Before engraving or cutting, please adjust the focal length according to the instructions, and do not work at full power (100% power) for a long time;

1.2. After large-area engraving or long-term cutting, please clean the dust in the red protective cover;

1.3. After long-term work, the laser lens can be removed. It is recommended to use a round-headed cotton swab to directly rotate and wipe the lens. The dust on the laser lens will be cleaned up, which will help restore the laser power. (The dust on the lens will block the laser and affect the laser power) It is recommended to clean the lens when you feel the laser is weakened. When wiping with a cotton swab, you can dip it in alcohol for better results;

1.4. The green light and blue light will flash on the top driver board of the laser module when it is working;

1.5. Please pay attention to whether the laser lens has cracks. If damaged, replace it in time. Before replacement, do not continue to use the module, otherwise the module will be scrapped.

1.6. After the module has been used for a period of time, the power decay begins to occur, which is a normal performance decay and a normal situation. The module itself is a **consumable part, please replace it regularly as needed.**

1.7. Please pay attention to the label on the side of the module;

2.Laser module installation video

3.The maximum working size of the mini laser engraving machine is 130*130mm. Please reset before use. Before engraving or cutting, it is recommended to set the border.

3.1. Light up and click Start in the setting parameters, and the interface will appear with a super interface prompt. Please confirm that there is no super engraving interface and click "Yes". If the interface is super, please adjust the working range.

3.2. If the motor beeps in the Y right/X back position, please do not panic. This noise is caused by engraving or cutting exceeding the maximum working size. It will not cause any damage to the machine itself. It is recommended to adjust the engraving or cutting range.

4.When the engraving machine is working, please make sure that your computer screen is always on to protect the setting. When the computer screen is turned off, it will affect the data transmission between the engraving machine and the computer, which may cause the engraving or cutting to stop working. Therefore, it is recommended that you set the display to always on.

5. Firmware refresh (if you need to update the firmware, you can download it from dimifun.net. Generally, no update is required)

5.1 The firmware can be obtained from the following locations

5.2 Do not connect the adapter , press the red switch as shown as[pic1-5.2]and hold on .

5.3 then insert the data cable from type C as [pic1-5.1]and wait for the computer to pop up the USB drive as [pic2](Please note that different computer settings may result in different icons)

5.4 Open the USB drive, drag the firmware to it, you can see the firmware refresh progress as[pic3], wait until the USB drive disappears, and the firmware refresh is complete.

5.5 If the operation fails, please follow steps 1-3 to try again.

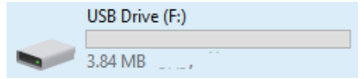
(Double click the red button engraving machine and automatically go back to the origin)

pic1-5.1

pic1-5.2

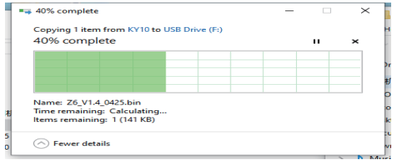
pic1

(PC)



(NOTEBOOK)

pic2



pic3

5. Recommended parameters for common materials

2.5W output laser common materials and recommended engraving parameters

	2.5W Compressed Spot						
	Material	Engraved	Power	Speed (mm/min)	Times /Pass count	Laser options	Quality (lines/mm)
1	Kraft paper	YES	80%	3000	1	M4	10
2	Plywood	YES	90%	1500	1	M4	10
3	Solid wood	YES	90%	1000	1	M4	10
4	Bamboo	YES	90%	1000	1	M4	10
5	Alluminum foil	YES	80%	1500	1	M4	10
6	Cork	YES	90%	1000	1	M4	10
7	Leather	YES	60%	1500	1	M4	10
8	Silica gel	YES	80%	1000	1	M4	10
9	Dark Felt	YES	60%	1500	1	M4	10
10	Tin plate	YES	80%	2500	1	M4	10

3.5W output laser common materials and recommended engraving parameters

	3.5 W Compressed Spot						
	Material	Engraved	Power	Speed (mm/min)	Times /Pass count	Laser options	Quality (lines/mm)
1	Kraft paper	YES	60%	7000	1	M4	10
2	Plywood	YES	60%	3500	1	M4	10
3	Solid wood	YES	80%	3500	1	M4	10
4	Bamboo	YES	60%	7000	1	M4	10
5	Cork	YES	60%	5000	1	M4	10
6	Transparent Acrylic (need blacking)	YES	90%	1000	1	M4	10
7	Glass(need blacking)	YES	90%	500	1	M4	10
8	Light-colored Felt	YES	70%	3000	1	M4	10
9	Dark Felt	YES	60%	4000	1	M4	10
10	Leather	YES	60%	4500	1	M4	10
11	Silica gel	YES	50%	2000	1	M4	10
12	Cobblestone	YES	90%	50	1	M4	10
13	Ceramics	YES	90%	190	1	M4	10
14	Black alumina	YES	90%	1000	1	M4	10
15	Tin plate	YES	90%	3000	1	M4	10
16	Non-reflective Stainless steel(Matte suiface)	YES	90%	150	2	M4	10
17	Non-reflective Stainless steel(smooth suiface)	YES	90%	100	3	M4	10

output laser common materials and recommended cutting parameters

3.5W Compressed Spot						
	Material	Cut	Power	Speed (mm/min)	Times /Pass count	Laser options
1	Kraft paper(0.5mm)	YES	95%	300	1	M3
2	Kraft paper(1.0mm)	YES	95%	150	1	M3
3	Kraft paper(2.0mm)	YES	95%	80	1	M3
4	Plywood(2.0mm)	YES	95%	110	1	M3
5	Solid wood(2.0mm)	YES	95%	100	2	M3
6	Bamboo(2.0mm)	YES	95%	80	1	M3
7	Red Acrylic(1.0mm)	YES	95%	100	1	M3
8	Red Acrylic(2.0mm)	YES	95%	80	1	M3
9	Black Acrylic(1.0mm)	YES	95%	100	1	M3
10	Black Acrylic(2.0mm)	YES	95%	80	1	M3
11	Light-colored Felt(1mm)	YES	80%	300	1	M3

6. Meanings and solutions for common Alarm

Alarm Code	Alarm Message	Alarm Description
1	Hard limit	Hard limit has been triggered. Machine position is likely lost due to sudden halt. Re-homing is highly recommended.
2	Soft limit	Soft limit alarm. G-code motion target exceeds machine travel. Machine position retained. Alarm may be safely unlocked.
3	Abort during cycle	Reset while in motion. Machine position is likely lost due to sudden halt. Re- homing is highly recommended.
4	Probe fail	Probe fail. Probe is not in the expected initial state before starting probe cycle when G38.2 and G38.3 is not triggered and G38.4 and G38.5 is triggered.
5	Probe fail	Probe fail. Probe did not contact the workpiece within the programmed travel for G38.2 and G38.4.
6	Homing fail	Homing fail. The active homing cycle was reset.
7	Homing fail	Homing fail. Safety door was opened during homing cycle.
8	Homing fail	Homing fail. Pull off travel failed to clear limit switch. Try increasing pull-off setting or check wiring.
9	Homing fail	Homing fail. Could not find limit switch within search distances. Try increasing max travel, decreasing pull-off distance, or check wiring.
10	Homing fail	Homing fail. Second dual axis limit switch failed to trigger within configured search distance after first. Try increasing trigger fail distance or check wiring.

7. Frequently asked questions

FAQ	Possible Causes	Solution
The engraving machine cannot connect to LaserGRBL	Driver is missing, connection failed.	In LaserGRBL, click < Tools > <install CH340 Driver > to install the driver, Then restart the computer to connect .
	Multiple laser programs run simultaneously.	Quit other laser software.
	Incorrect port number	Please choose the correct port number
	Incorrect baud rate	Please select the correct baud rate in the software - 115200 .
	Data cable is not connected.	Please check whether the data cable is connected correctly
	computer USB Port problem	Please try another USB Port.
Can I engrave on curved objects?		Yes, you can engrave on a regular cylinder, but it needs to be used with a laser rotary roller. It is not recommended to engrave on irregular surfaces, as it is difficult to achieve good effects.
Why can't engrave the image / Why the image is not clear?		Please engrave with the parameters at the end of the manual as a reference
		Please adjust the parameters gradually according to different materials to achieve the best results

FAQ	Possible Causes	Solution
The engraving is not straight	Belt is not tight.	Please tighten the belt.
	Both ends ofthe belt screws are not locked.	Please tighten the positioning screws at both ends of the belt.
	The pulley is not locked and the laser head is shaking	Please adjust the eccentric spacer under the bracket, and lock the eccentric spacer so that the bracket does not shake.
	Too much extension of the laser support causes the laser head to shake	Raise the laser head as close to the top as possible to reduce the shake of the laser head.
How to improve the quality of engraving?	Laser focus is not adjusted properly	Please adjust the laser focus.
	Engraving power is too low or engraving speed is too fast.	Please refer to the material reference table at the end of the manual to set engraving and cutting parameters.
	The imported image is not clear or the image processing is not ideal.	Please confirm whether the imported image is clear or the image processing is ideal.
	The engraving machine is not leveled and tilted.	Please check whether the engraving machine is leveled.
	There is dust or debris on the laser lens.	Please check whether there is dust or debris on the laser lens.
When drawing a straight line, it turns into a curved line.	Parts of the machine are too loose.	1.Check whether the pulleys of X-axis and Y-axis are loose, and can be fine-tuned by the eccentric nut near the pulley. Not to be too tight between the pulley and the track. 2.Check the belt for looseness, tighten the belt. 3.Check if the laser head shakes, you need to tighten the screws to keep it vertical.

FAQ	Solution
Why the image engraved is mirrored or backwards? /Why does the laser move in the opposite direction?	If you use Lightburn software, you can troubleshoot by: 1 . The ' Device Origin' setting , found in the menus under Edit => Device Settings , select the Bottom left corner for the origin. If your original position is incorrect, please adjust it here. 2 . In the lower right corner of the software interface , change the " user origin " to "absolute coords" so that the origin is in the lower left corner. If you use LaserGRBL software, you need to change the parameters in the configuration. Please contact customer service to obtain the latest GRBL Parameter configuration.
Why is my laser exceeds range for engraving? / Why does my laser rattle when moving to the border?	The laser is not homing before engraving or the picture size exceeds 130·130mm. Please click the home button on the program interface, and then the laser will be move to the lower left corner. If the size of the image is too large, please modify the size of the image when setting the parameters.
Why is my engraved images ghosting? Why does it appear double lines?	When you choose "Vectorize" it may appear ghosted or double lines. We recommend that you choose " Line to Line" or "Centerline" for engraving or cutting.
Why can't my Lightburn software find / connect to the laser?	Make sure you are physically connected to the laser, and have chosen the correct type of laser or controller in LightBurn, and the right connection method. Some systems don' t automatically connect. you need to choose the correct port for the first time. If you can't find the laser, you can add lasers by "Create Manually". If your macOS device cannot connect to the laser engraving machine, please contact customer service, and we will assist you to flash the firmware.

FAQ	Solution
Why is my software running propery but the laser stops?	The cable on the laser is disconnected or the laser is not homing before engraving, causing the laser exceed the working area and be forced to stop. Please reconnect the cable and home the laser.
Why is the moving distance of the laser different from the Software?	The moving distance of the laser depends on the parameters. Please check that your parameters match the movement of the laser. The setting size of the picture should be equal to or smaller than the size of the engraving material.
Why is my laser moving so slowly?	The speed setting in the program is too slow. Please adjust the moving speed and working speed of the laser in the software to achieve your desired speed.
Which version of lightburn software should be buy?	Our lasers are diode lasers, you should buy the G-CODE version.
I change the speed but the movement speed stays the same, why?	You may have only adjusted the movement speed , but not the working speed Please adjust the working speed of engraving/cutting on the "Cuts/Layers" page.
How to solve Over-burned edges?	Laser head need to decelerate each time a direction change is needed. This results in a higher persistence of the laser spot on the edge areas.Using M4 dynamic power mode to compensate this issue. Enabled configuration parameter s32, make $32=1.
How to change the engraving size?	If you use LaserGRBL , you need to confirm the size of the engraved item first, then change the size of the engraving manually when adding the image. If you use Lightburn , you can drag the image directy to match the size of the object you are engraving.

FAQ	Solution
How far should the laser be from the engraved object?	Please keep a distance of 2mm between the lase module and the object to be engraved. You can use the 2mm plastic plate from our accessories to adjust the distance.
Why is my Lightburn "busy and the machine doesn t move?	Most likely you have not actually connected to the machine yet. Make sure you are actually connected to the controller and chosen a communication port in the laser window at the bottom right of the Software.
Why the corners of the image l engraved are burnt or too dark?	If the Min power setting is too high , the power value may not be reduced enough when the laser slows for corners , and can leave burn marks at corner points or the start / stop points of the design. Please reduce the Min power setting.
Why is the back of the plank l cut badly charred?	Make sure you have raised the planks. If it is placed directly on the flat steel plate, the gap between the wood board and the flat steel plate is very small.When the laser passes through the wood board, the flat steel plate cannot absorb all the laser energy, and the remaining laser reflection will burn the wood board. please use honeycomb laser bed or raise the board to keep the cutting position and the board hollow.
Why is the laser power getting weaker?	Some dust accumulate in the laser, which will affect the laser output. Please use cleaning cotton or blowing tools to clean the inside of the laser. In addition, using the laser continuously for a long time and at full power can lead to premature damage. We suggest the maximum power at 90%.

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