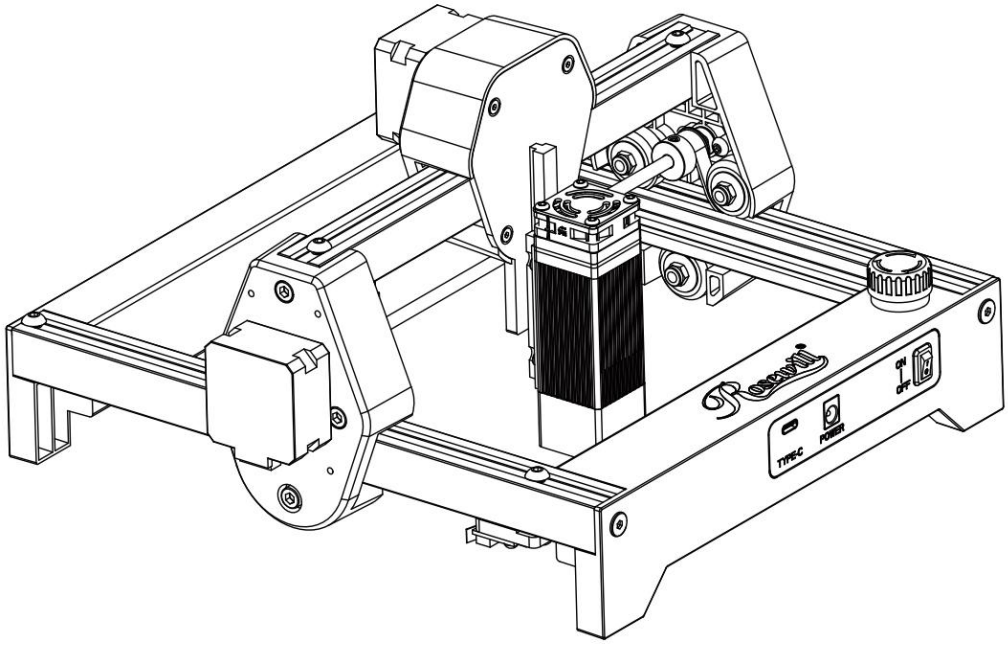
RAY6mini Laser Engraver User Manual V1.0



Rosewill Inc.

Dear customer:

Thank you for choosing the Rosewill **Ray6mini** Laser Engraver! Whether you're experienced with engraving machines or purchasing one for the first time, we highly recommend reading this manual carefully. The installation steps and safety precautions outlined here will help you avoid unnecessary damage or frustration.

For more information, please refer to:

1. Email: techsupport@rosewill.com
2. Technical Support: 1-800-575-9885
3. Facebook ID : Rosewill
4. YouTube Channel: RosewillUSA

Contents

Safety Precautions

(1) The **Ray6mini** engraves and cuts materials using a high-energy diode laser beam. Hazards associated with this include the risk of fire, the generation of hazardous and/or irritating toxic fumes, and most importantly, potential damage to eyes and skin.

(2) Laser engravers are classified into several internationally recognized classes based on their power and risk of injury. The **Ray6mini** falls under Class IV (Class 4 according to IEC standards, which align with the U.S. FDA classification).

Laser Class	Class Definition
Class I	Class I laser radiation is not considered hazardous.
Class IIa	Class IIa laser radiation is not considered hazardous if viewed for periods less than or equal to $1x10^3$ seconds, but may pose a chronic viewing hazard if viewed for periods longer than $1x10^3$ seconds.
Class II	Class II laser radiation is considered to be a chronic viewing hazard.
Class IIIa	Class IIIa laser radiation is considered to be, depending on the irradiance, either an acute intrabeam viewing hazard or a chronic viewing hazard, and poses an acute hazard if viewed directly with optical instruments.
Class IIIb	Class IIIb laser radiation is considered to be an acute hazard to the eyes and skin from direct exposure.

Class IV	Class IV laser radiation is considered to be an acute hazard to the skin and eyes from both direct and scattered exposure.

The high-energy laser beam can cause severe eye injuries, including blindness, and serious skin burns.

Improper use of controls or modification of safety features may result in serious eye injuries and burns.

Please wear Personal Protective Equipment (PPE). Safety glasses are designed to filter specific ranges of laser wavelengths. The **Ray6mini** comes with safety glasses specifically designed for the Rosewill Laser Module.

- DO NOT look directly into the laser beam.
- DO NOT aim the laser beam at reflective surfaces.
- DO NOT operate the laser without PPE for all individuals in the vicinity of the **Ray6mini**.
- DO NOT allow unsupervised access to the **Ray6mini** by children.
- DO NOT allow pets near the **Ray6mini**.
- DO NOT modify or disable any safety features of the laser system.

DO NOT touch the high-energy laser beam.

(3) We strongly recommend placing the machine in a well-ventilated room. Ensure that the door seals properly and the windows have curtains to effectively prevent direct exposure to the laser beam, smoke, vapors, particles, and other potentially toxic substances. Additionally, you can consider Rosewill's protective covers for added safety in the future.

(4) The high-energy diode laser beam can generate extremely high temperatures as it burns away material during engraving and cutting. Some materials are flammable and may catch fire, producing flames, fumes, and smoke.

(5) It is strongly recommended that a fire extinguisher be located near the **Ray6mini**. The extinguisher should be halogen or multi-purpose dry chemical. Additionally, it is advised to place a 'fire extinguisher ball' beside the **Ray6mini**, either as an alternative or in conjunction with the fire extinguisher.

- DO NOT use materials that are highly flammable, explosive or produce toxic by-products.
- DO NOT remove the material from the cutting bed before it has cooled.
- **DO NOT leave the Ray6mini operating unattended.**

- ALWAYS clean up clutter, debris, and flammable materials with the laser **Ray6mini** bed after use.

(6) During the engraving process of the **Ray6mini** laser engraving machine, different materials may produce different pungent odors. Always use the **Ray6mini** laser engravers in open and well-ventilated areas.

(7) Environmental requirements

The **Ray6mini** laser engraver operates best within a temperature range of 10° C to 30° C and a humidity range of 20% to 50%. Outside of these conditions, the engraver may not deliver optimal engraving results.

(8) Below is a list of some of the most well-known hazardous materials that SHOULD NOT be engraved or cut. If a material is not listed, do not assume it is safe to use. Always obtain the Safety Data Sheet (SDS) from the material's manufacturer when handling unknown materials.

Material	Reason to avoid engraving / cutting it
PVC (Polyvinyl Chloride)	PVC emits chlorine gas when laser cut or engraved. This toxic gas can damage the optics and motion control system of the laser engraver. Engraving or cutting PVC will void the warranty of your laser engraver.

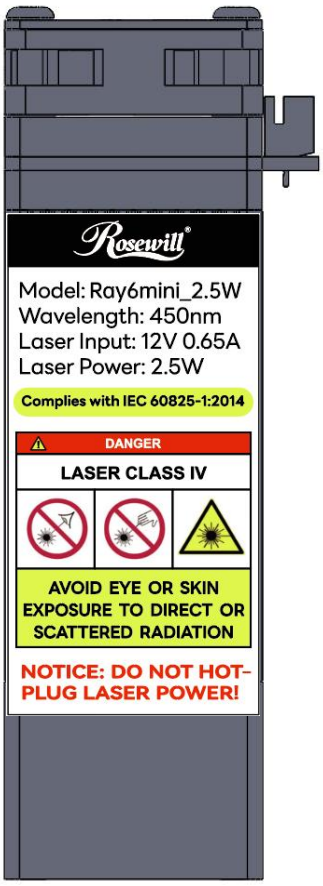
Lexan / Thick Poly-carbonate	Polycarbonate is often used in the laser engraver's window because it effectively absorbs infrared radiation—the same light frequency used by the engraver for cutting and engraving. This makes the laser cutter ineffective at cutting polycarbonate materials.
ABS	ABS melts when exposed to a laser beam instead of vaporizing, which is the ideal reaction for laser engraving. As a result, ABS doesn't leave a crisp image but instead creates a gooey deposit on the surface.
HDPE	HDPE melts easily and is highly flammable when exposed to a laser beam.
Polystyrene Foam	Polystyrene melts and catches fire easily when exposed to a laser beam, and only very thin pieces can be cut.
Fiberglass	Fiberglass consists of glass and epoxy resin. Etching is the best method for marking glass, while epoxy resin emits toxic fumes during laser engraving, making fiberglass unsuitable for laser engraving.
Polypropylene	Polypropylene melts and catches fire easily, with the melted material continuing to burn and forming pebble-like drips that harden on the surface.
Coated Carbon Fiber	Coated carbon fiber emits noxious fumes. While carbon fiber can be cut with some fraying, this is not the case when it is coated.

(9) The **Ray6mini** has built-in technology and algorithms to ensure

the safety of its users and the surrounding environment. That said, it is important to understand that the **Ray6mini** is not a toy and should be operated with care and respect.

(10) The labels on the laser module are shown as below:

LASER APERTURE



DANGER − LASER RADIATION

AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED

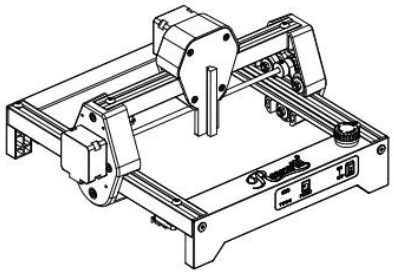
RADIATION CLASS 4 LASER PRODUCT

A. Product Information

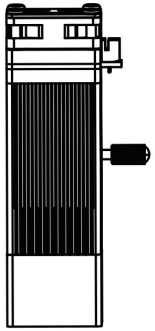
1. Product Specifications

Features		Features	
Model	**Ray6mini**	Laser Power	2.5W/3.5W
Laser Source	Single diode laser with FAC	Laser Wavelength	450nm
Working Area	130*140mm	Cutting Depth	12mm
Engraving Speed	12,000mm/min	Engraving Precision	0.04mm
Support Formats	jpg, bmp, png, dxf, svg, ai, tiff, etc.	Lifespan	10000+hours
Warranty Period	One year	Material of Machine	Aluminum alloy
Connection	WI-FI, USB, APP	Safety Certifications	CE; FCC; FDA; RoHS
Supported Systems	Windows; MacOS; Linux;Android;iOS	Product Dimensions	286mm*292mm*165mm
Gross Weight	2.32kg	Net Weight	1.47kg
Power Adapter	AC Input 100-240V 50/60Hz 1.5A, DC Output 12V-2A 24W or 12V-3A 36W		
Applicable Materials	engraving or cutting on Wood, acrylic, leather, cloth, metal, ceramics, etc.		

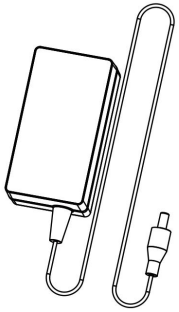
2. Product Accessories List



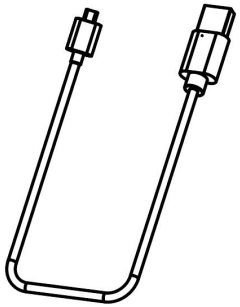
Machine Frame



Laser Module



Power Adapter



Data Cable

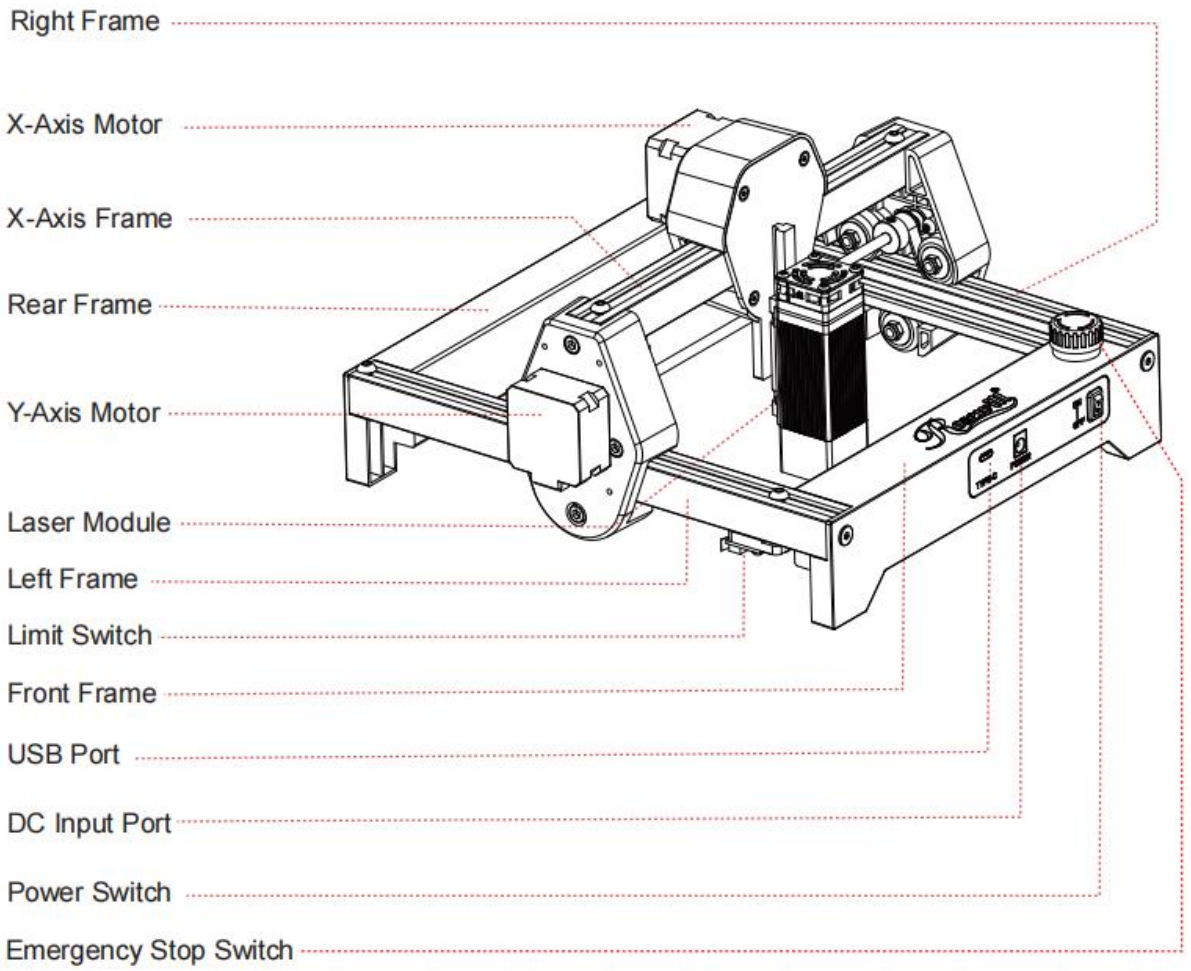
Protective Goggles

Focus Block

Wrench

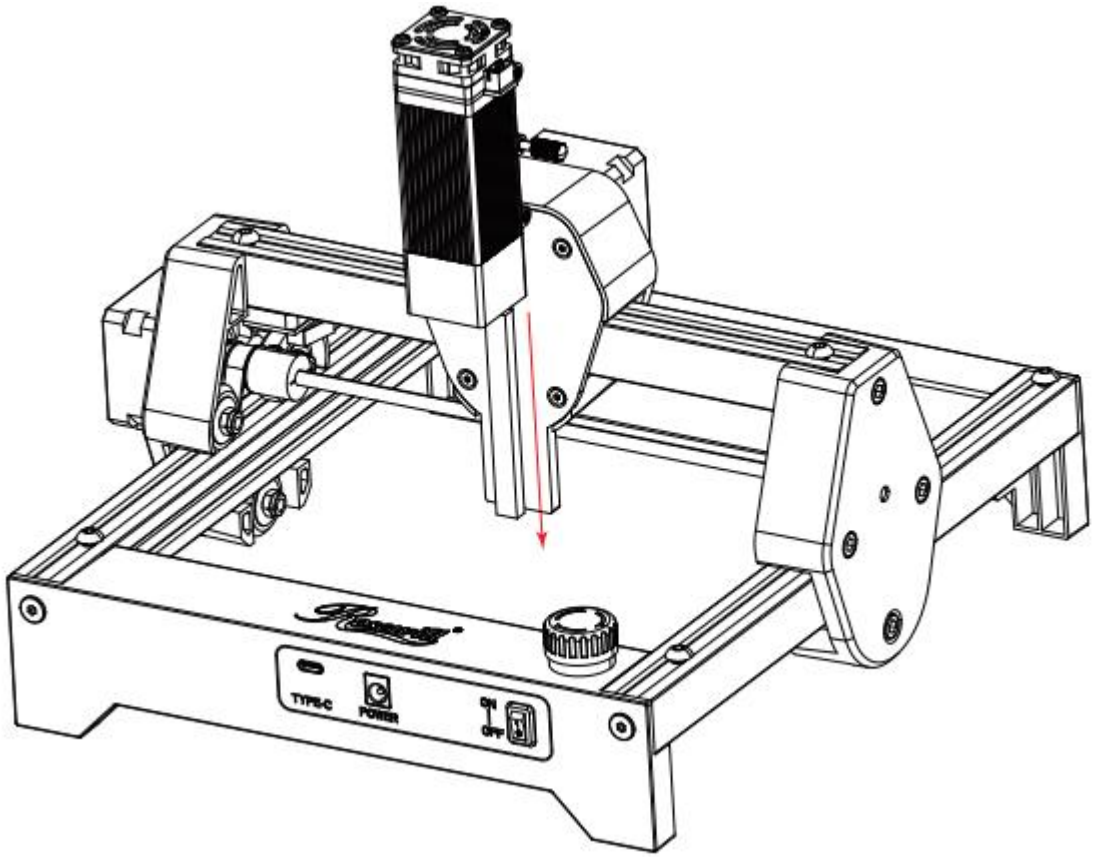
Wooden Brush

3. Product Parts Overview

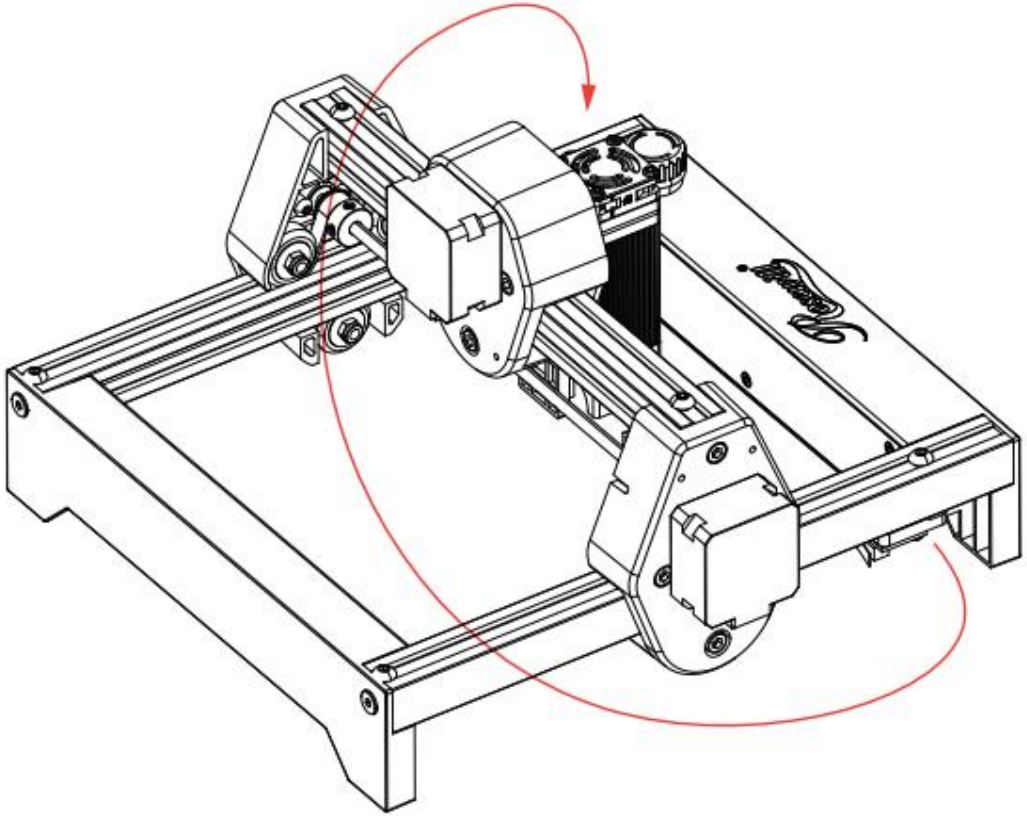


B. Quick Installation

1. Install the Laser Module onto the X-axis Frame



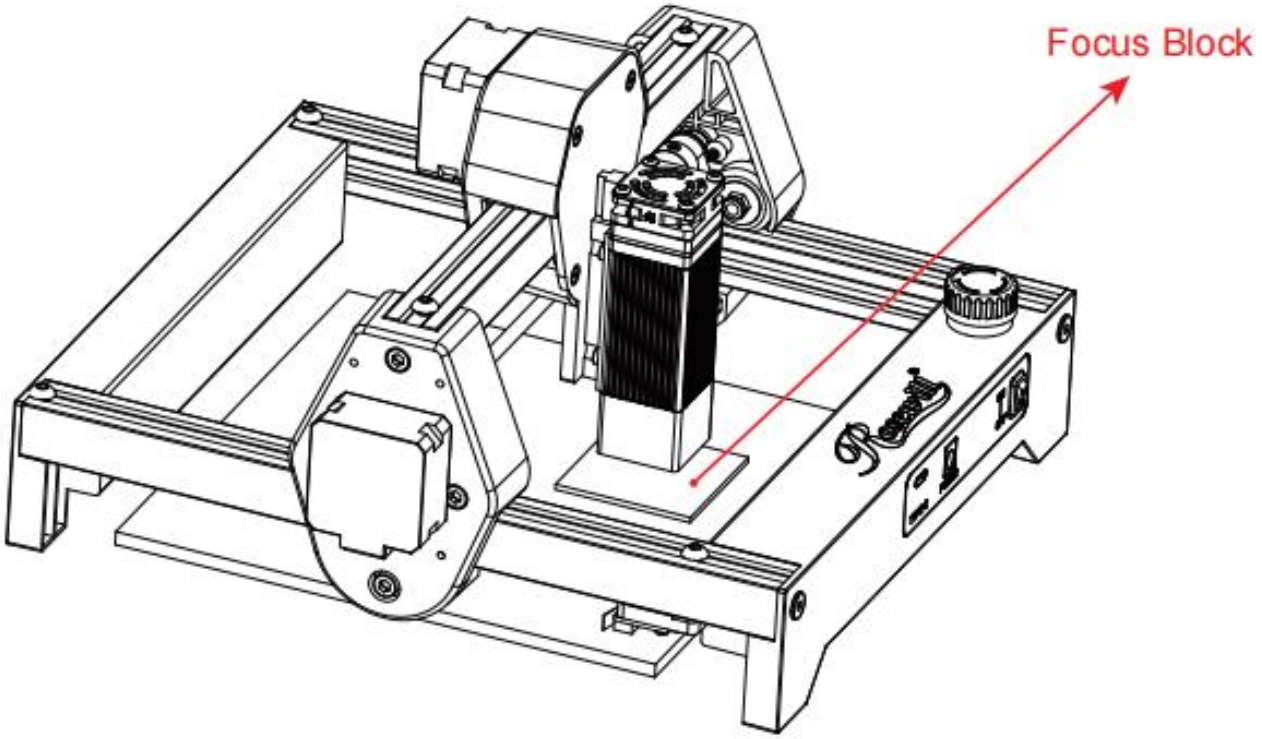
（1） First install the laser module onto the X-axis frame, then tighten the M3*14 handle screw to secure it in place.



（2）Connect the cable to the laser module as shown in the figure.

2. Adjust the Focus

Loosen the M3*14 handle screw. Place the 2mm focus block on the engraving surface. Move the laser module downward until the bottom of the light shield touches the surface of the focus block. Then, tighten the M3*14 handle screw.

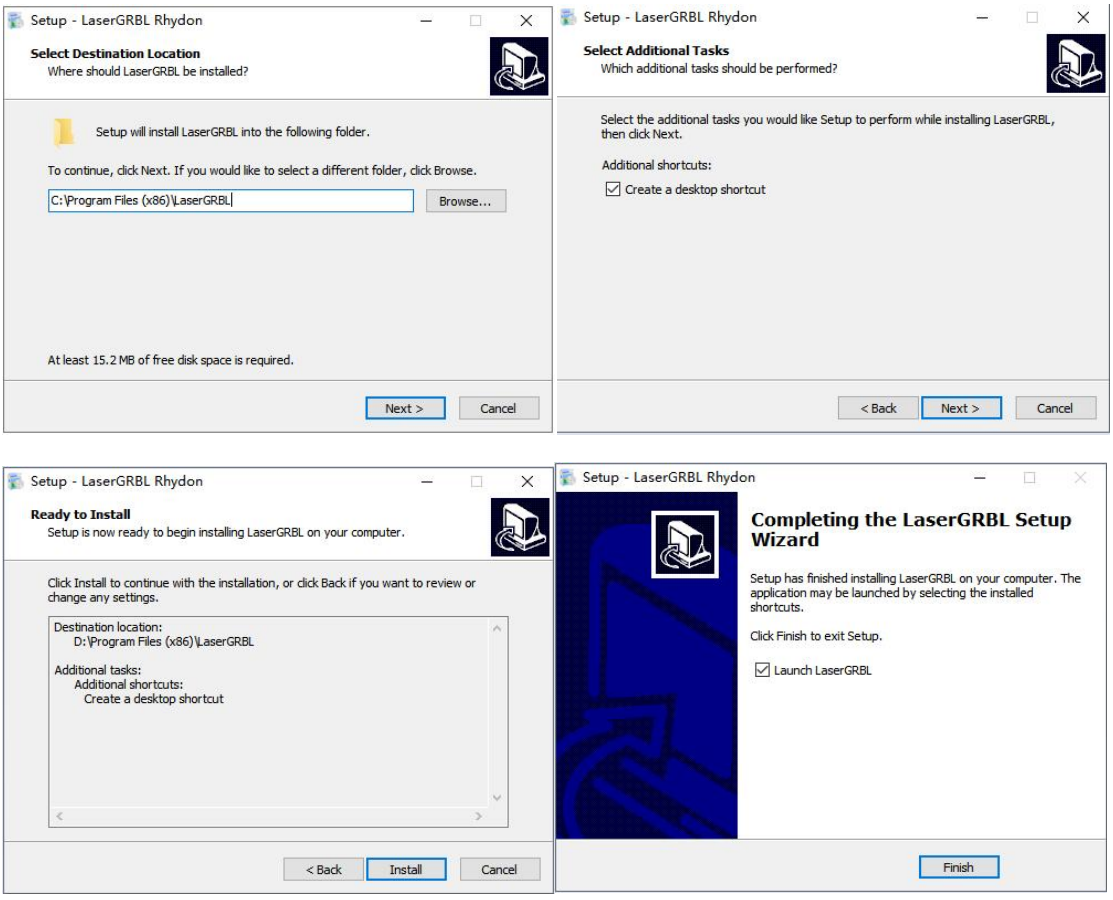


C. LaserGRBL Software Operation

LaserGRBL is an easy-to-use, fully free software designed specifically for laser engravers, and it runs only on Windows. Please ensure to save or back up your data regularly during use to avoid data loss. However, Rosewill is not responsible for any data loss caused by third-party software.

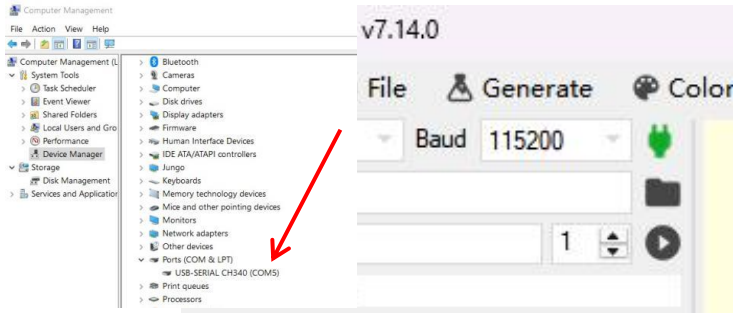
1. Software Download and Installation

Download LaserGRBL from the following link: https://lasergrbl.com/download/. Then, click Next > Next > Install > Finish to complete the installation.



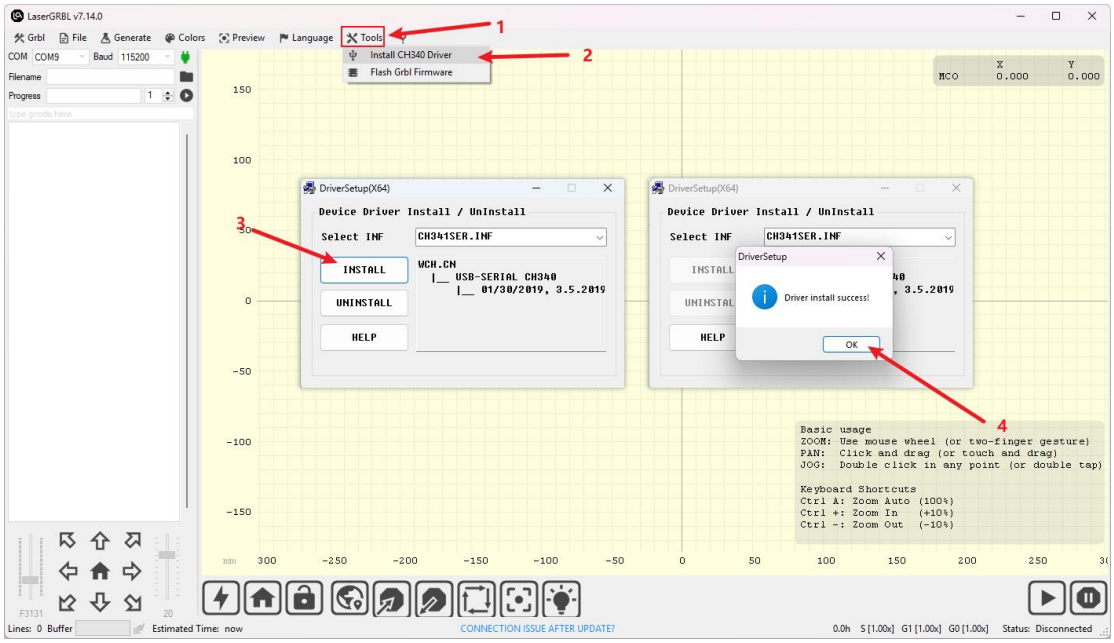
2. Connect Ray6mini to LaserGRBL

You need to connect the engraver to LaserGRBL software first. For Windows, right-click This PC and select Manage, then click Device Manager. Expand Ports (COM & LPT), find the port corresponding to the CH340 driver, and select it from the COM port list. Set the baud rate to 115200 baud rate, and click  to connect.

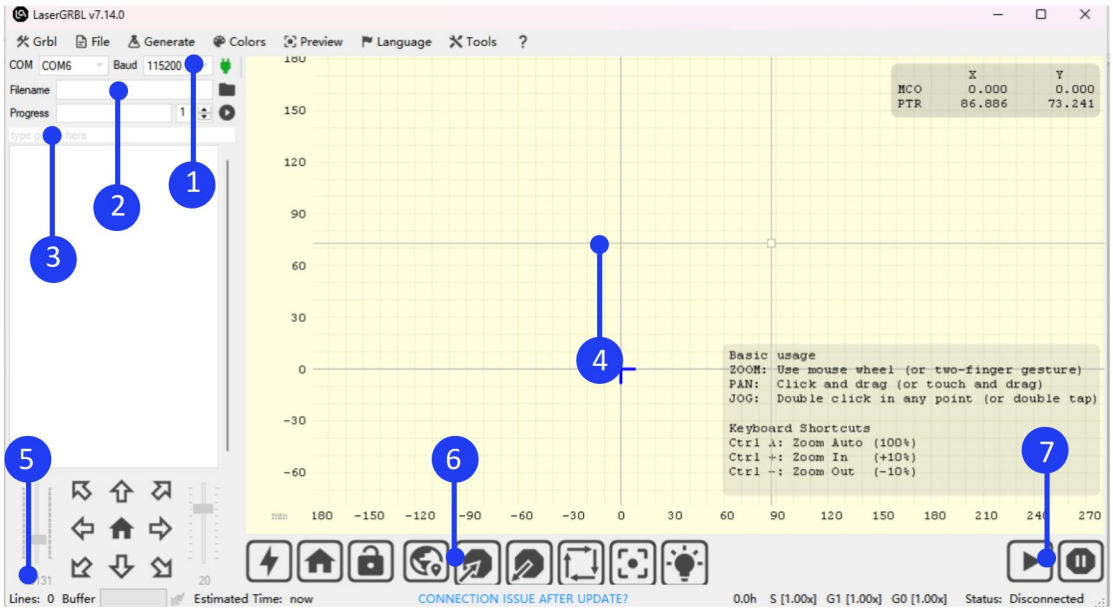


When connected to the correct port, GRBL will reply with a “welcome message” showing the GRBL firmware version. On the bottom-right of the LaserGRBL interface, it will show “Status: Idle”.

If no ports are listed in the drop-down, it means no engraver was found, which could indicate it's not plugged in correctly, is not powered, or the PC is missing a driver. In that case, click the Tools menu to install the CH340 Driver from LaserGRBL software.



3. Main Interface of LaserGRBL



①Connection Control: Here you can select the serial port and set the proper baud rate for the connection.

②File Control: This shows the loaded filename and the engraving process progress. The green "Play" button starts program execution.

③Manual Commands: You can type any G-Code line here and press "Enter." The commands will be added to the command queue.

④Engraving Preview: This area shows a preview of the final work. During engraving, a small blue cross will indicate the current laser position in real time.

⑤Jogging Control: Allows manual positioning of the laser. The left vertical slider controls movement speed, while the right slider controls step size.

⑥ Grbl Reset/Homing/Unlock: These buttons send the soft-reset, homing, and unlock commands to the GRBL board. To the right of the unlock button, you can add custom user-defined buttons.

⑦ Pause and Resume: These buttons allow you to suspend and resume the engraving process.

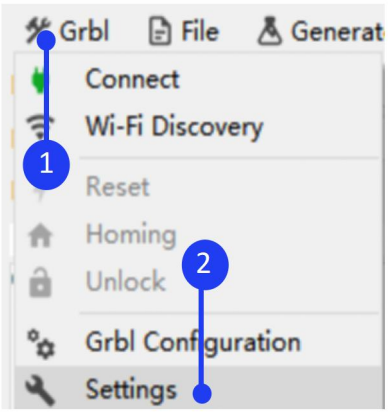
4. Connect Ray6mini to LaserGRBL via Wi-Fi

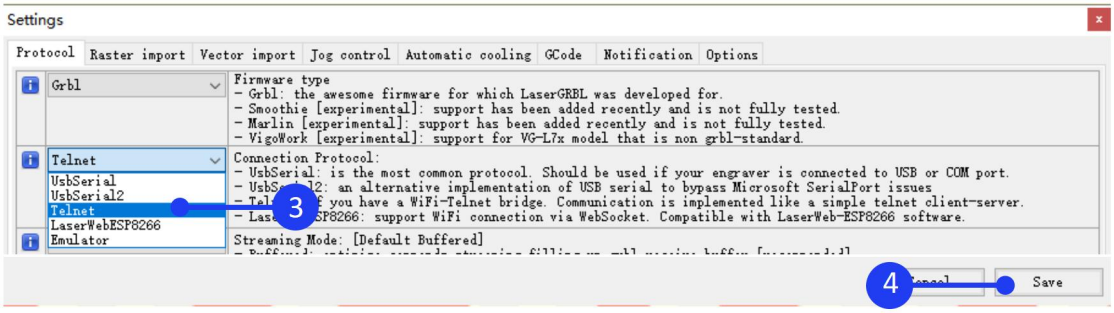
There are two modes for connecting the **Ray6mini** to LaserGRBL via Wi-Fi: STA and AP mode. The difference is that in AP mode, the computer has no network connection, while in STA mode, the computer can maintain its network connection.

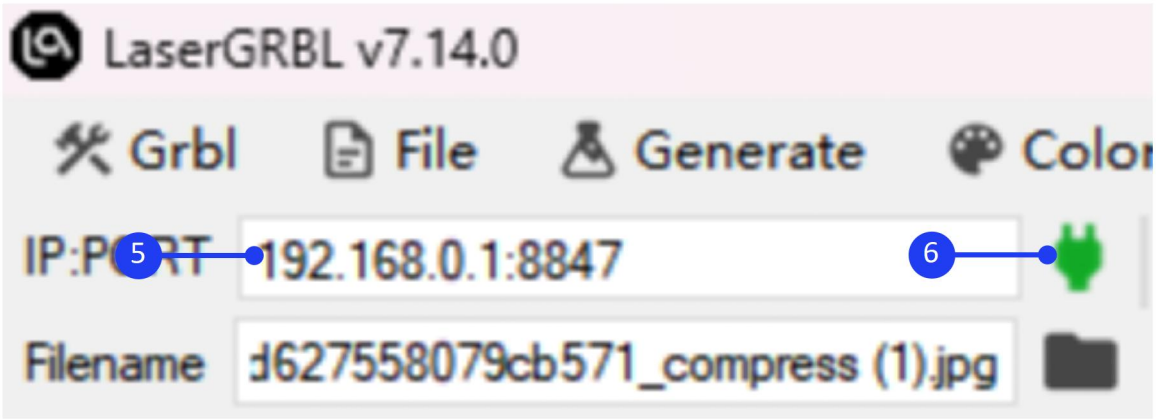
1) Connect **Ray6mini** to LaserGRBL via Wi-Fi

Run LaserGRBL, click Grbl > Settings, select Telnet for the

Connection Protocol，_and click Save. Connect the computer to the Wi-Fi network starting with LongerLaser_XXXX, input password 12345678, input the 192.168.0.1:8847 in IP:PORT, click to connect.







2) Connect **Ray6mini** to LaserGRBL via Wi-Fi in STA Mode

Run LaserGRBL, click Grbl > Settings, select Telnet for the Connection Protocol , and click Save. Enter the following commands

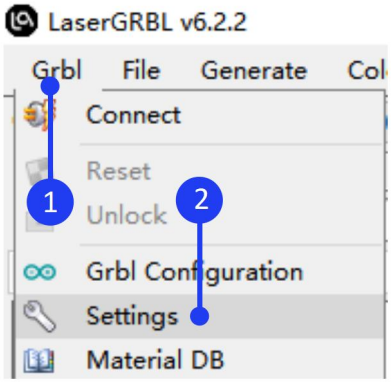
in the console: $radio/mode=sta

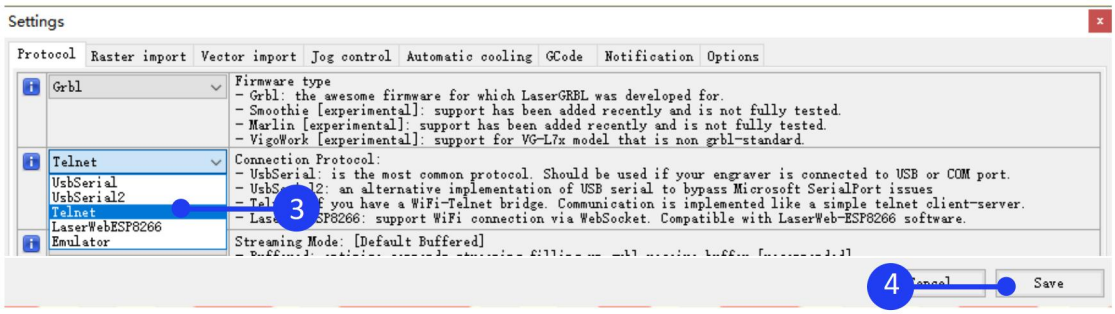
$sta/ssid=Your_SSID

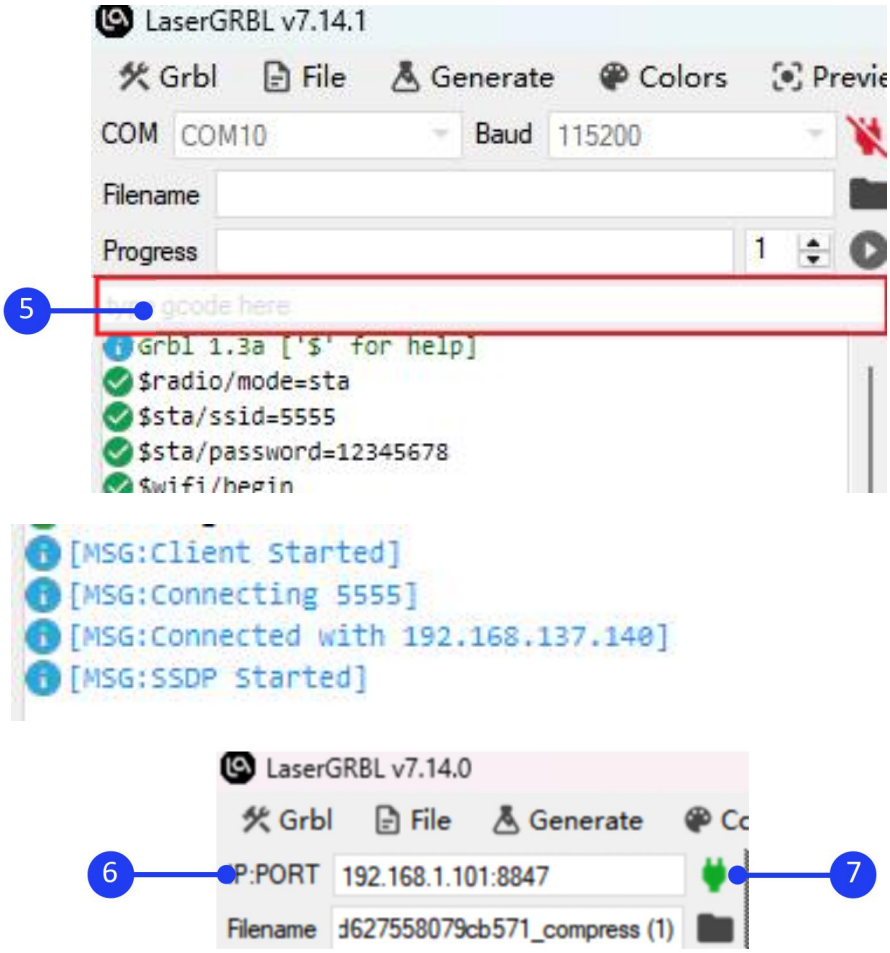
$sta/password=Your_PassWord

$wifi/begin

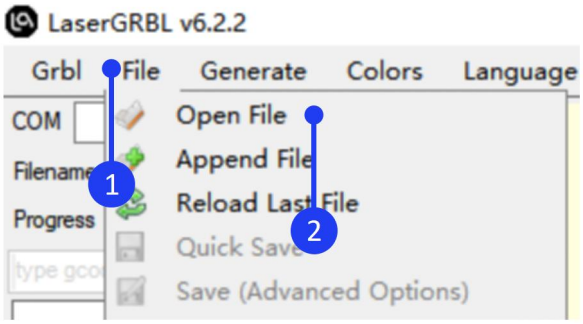
change Your_SSID and Your_PassWord to your WIFI account and password in $sta/ssid and $sta/password command,Press Enter after each command. Now you switch to STA mode. After the connection is successful, the console prompts the the IP address. Please note that the computer network and WIFI must be in the same LAN (local area network). Input IP and port such as 192.168.1.101:8847 in IP:PORT, click  to connect







5. Create a Project in LaserGRBL

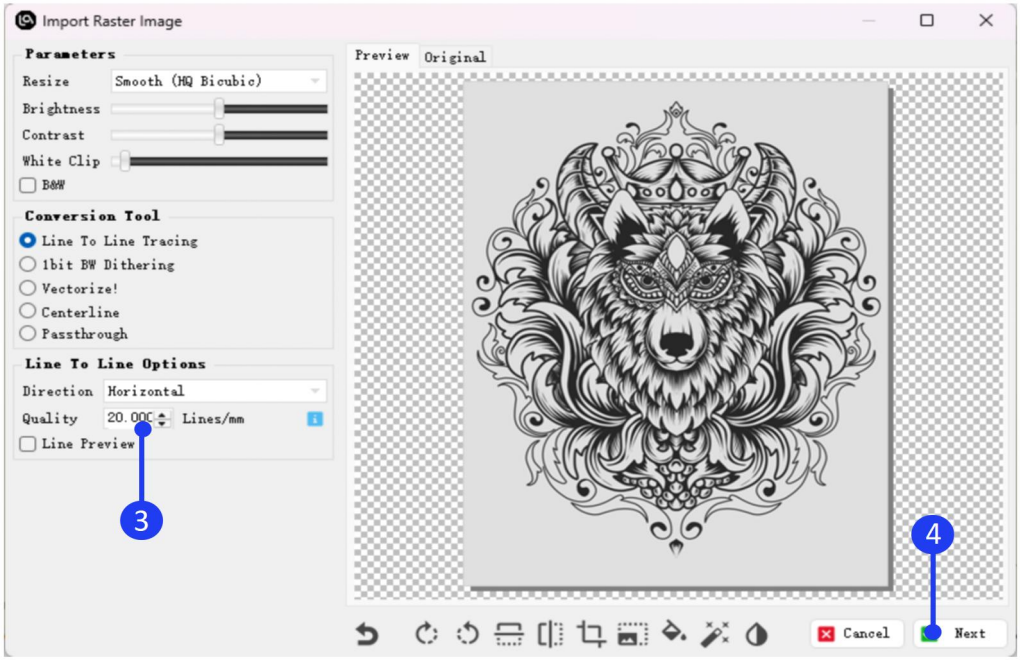


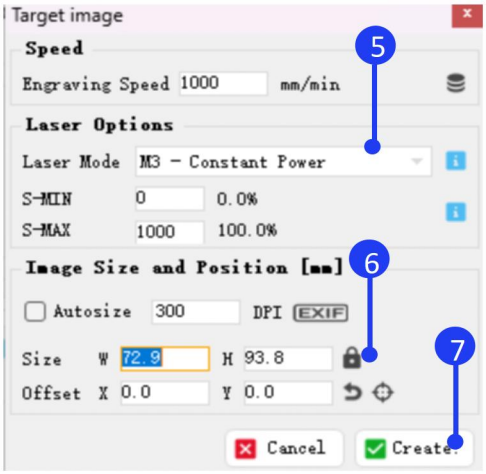
Click File > Open File to add the design you want to engrave. Set the Quality to 20 Lines/mm (quality has two values options, 20Lines/mm or 10Lines/mm. For those who require high precision, it can choose 20Lines/mm. For those who require high efficiency, it can choose 10Lines/mm). Click Next then refer to the parameter

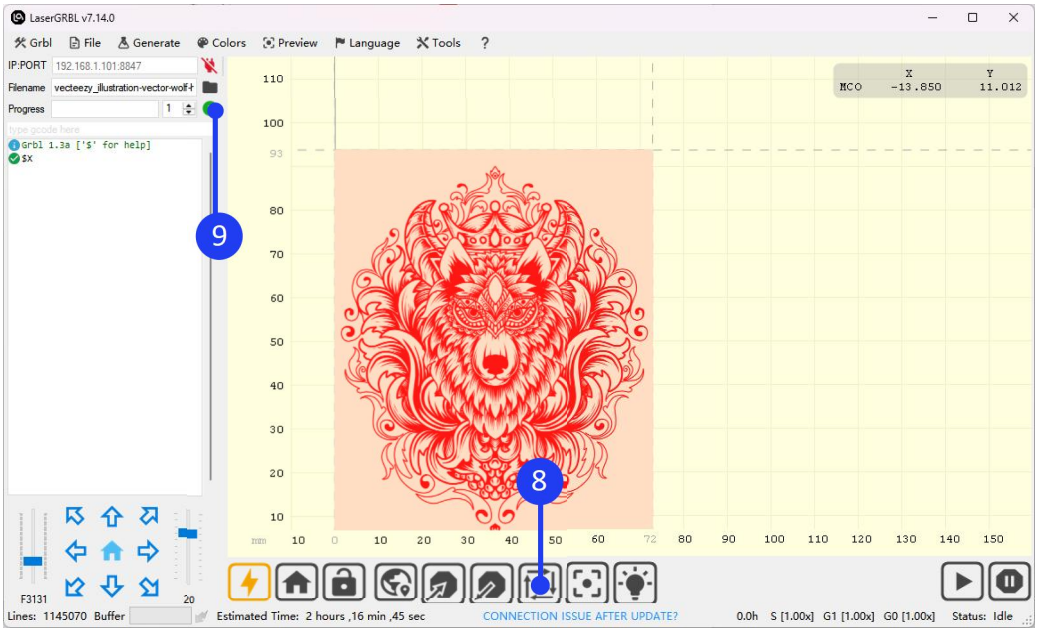
table to set the appropriate engraving power (S-MAX) and speed. Please note that the laser mode should be selected as **M4-Dynamic Power**, and the value of S-MAX should be 10 times the target laser power. For example, if the laser power is set to 100%, S-MAX should be set to 1000%; if the laser power is 60%, set S-MAX to 600%. Next, adjust the size of the image to scale the design. If the design position falls outside the working area, you can set the XY axis offset to adjust the graphic's position.

After successfully importing the graphics and setting the parameters, it needs to set the focus of **Ray6mini**, focusing with the focus block, then click  Frame button to determine the material placement, and finally click  Start button to start engraving.

For more detailed information on LaserGRBL software operations, https://lasergrbl.com/usage/.

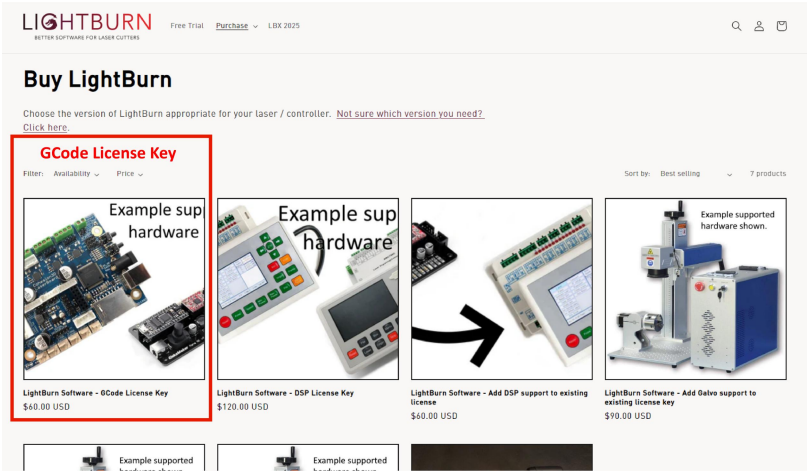

Import Raster Image
Parameters
Resize
Smooth (HQ Bicubic)
Brightness
Contrast
White Clip
B&W
Conversion Tool
Line To Line Tracing
1bit BW Dithering
Vectorize!
Centerline
Passthrough
Line To Line Options
Direction
Horizontal
Quality
20.000
Lines/mm
Line Preview
Preview
Original
Cancel
Next
3
4


Target image
Speed
Engraving Speed
1000
mm/min
Laser Options
Laser Mode
M3 - Constant Power
S-MIN
0
0.0%
S-MAX
1000
100.0%
Image Size and Position [mm]
Autosize
300
DPI
EXIF
Size
W
72.9
H
93.8
Offset
X
0.0
Y
0.0
Cancel
Create
5
6
7


LaserGRBL v7.14.0
Grbl
File
Generate
Colors
Preview
Language
Tools
IP:PORT
192.168.1.101:8847
Filename
vecteezy_illustration-vector-wolf-h
Progress
Grbl 1.3a ['$' for help]
$X
MCO
X
-13.850
Y
11.012
F3131
Lines: 1145070 Buffer
Estimated Time: 2 hours ,16 min ,45 sec
CONNECTION ISSUE AFTER UPDATE?
0.0h S [1.00x] G1 [1.00x] G0 [1.00x]
Status: Idle
8
9

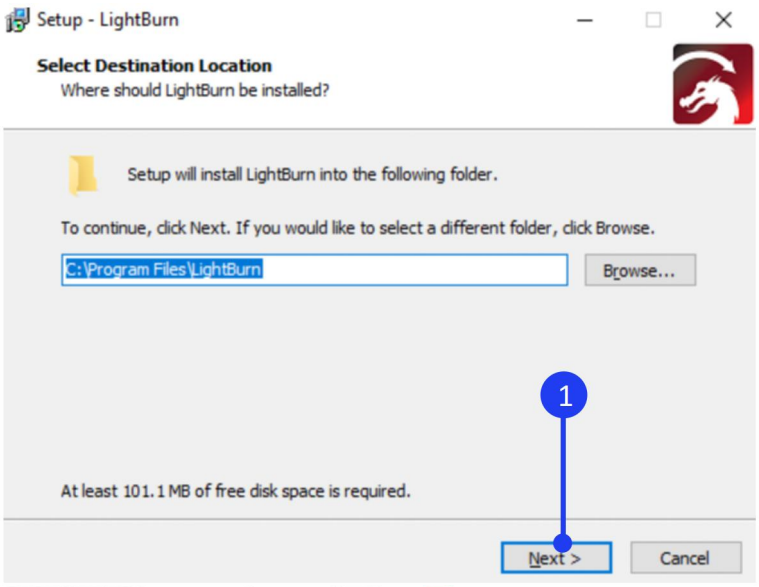
D. LightBurn Software Operation

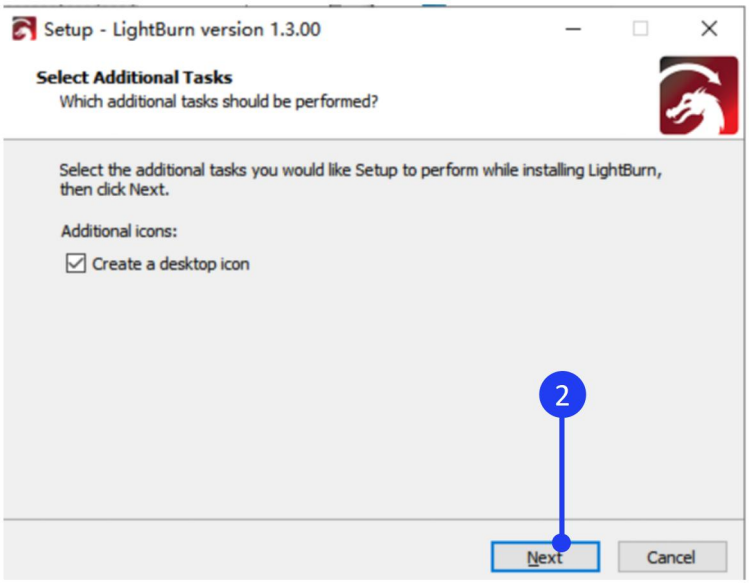
LightBurn is a professional layout, editing, control, and paid software for engravers, compatible with Windows, MacOS, and Linux. It offers a 30-day free trial period. Please remember to save or back up your data regularly to avoid data loss; however, Rosewill is not responsible for any data loss caused by third-party software. If the software has been installed previously, or if the 30-day trial period has expired, you will need to purchase a license key to continue using it, according to LightBurn's trial policy. To purchase a license and obtain your key code, please visit the LightBurn online store and select the "GCode License Key".

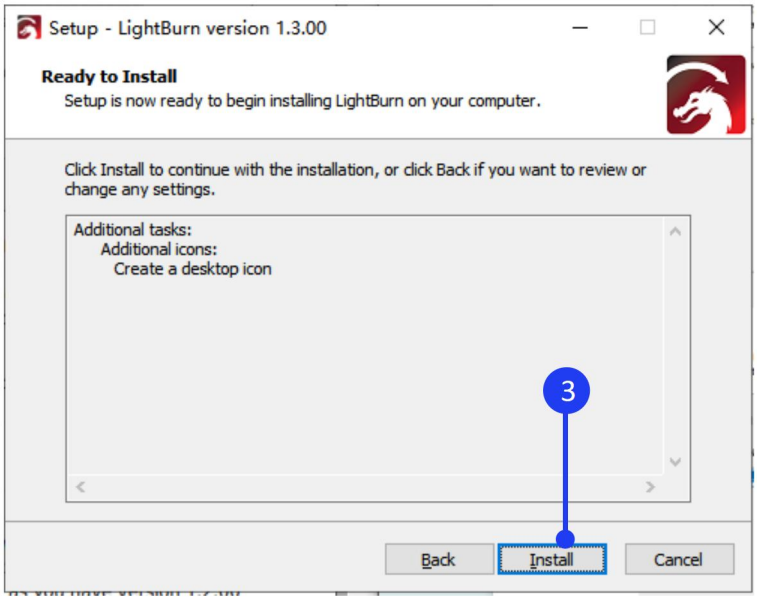


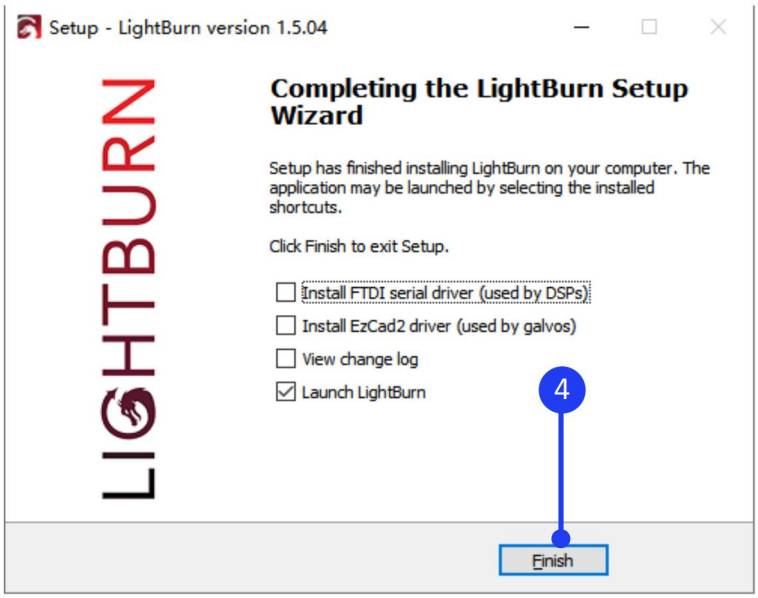
1. Software Download and Installation

Download LightBurn from the following link: https://LightBurnsoftware.com/pages/download-trial to install the trial version of LightBurn.


Setup - LightBurn
Select Destination Location
Where should LightBurn be installed?
Setup will install LightBurn into the following folder.
To continue, click Next. If you would like to select a different folder, click Browse.
C:\Program Files\LightBurn
Browse...
1
At least 101.1 MB of free disk space is required.
Next >
Cancel


Setup - LightBurn version 1.3.00
Select Additional Tasks
Which additional tasks should be performed?
Select the additional tasks you would like Setup to perform while installing LightBurn, then click Next.
Additional icons:
Create a desktop icon
2
Next
Cancel


Setup - LightBurn version 1.3.00
Ready to Install
Setup is now ready to begin installing LightBurn on your computer.
Click Install to continue with the installation, or click Back if you want to review or change any settings.
Additional tasks:
Additional icons:
Create a desktop icon
3
Back
Install
Cancel

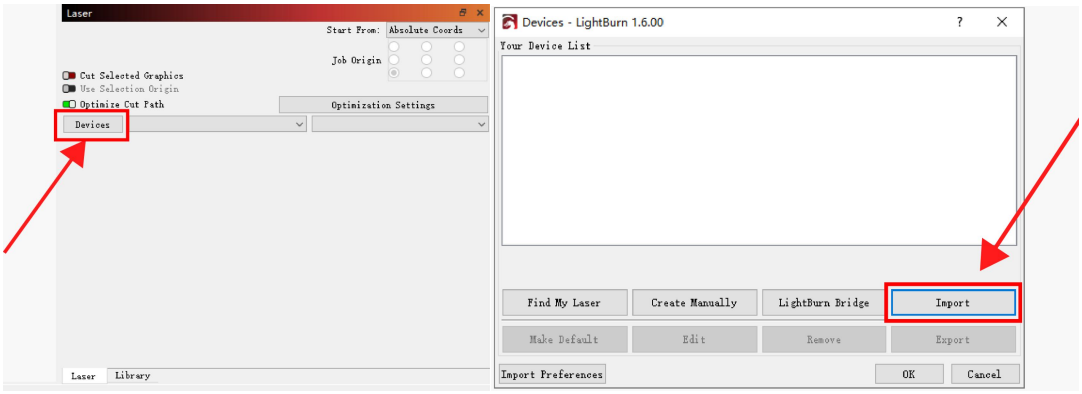


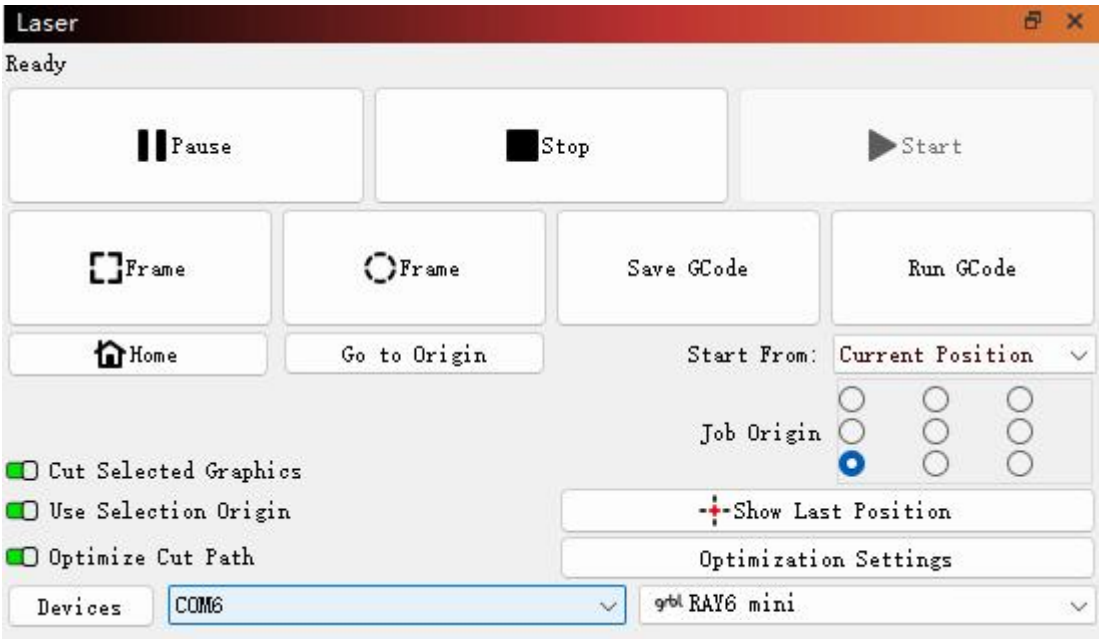
For Mac users, after downloading the .DMG file, double-click it and drag LightBurn into the Applications folder. When launching LightBurn for the first time, open a Finder window, navigate to the Applications folder, hold the Control key, and click the LightBurn icon. From the menu, select 'Open' . When MacOS prompts you to confirm if you want to open the program, click Yes. It will then be listed as an exception in your launcher, and you can launch the application normally from there.

2. Import Configuration File

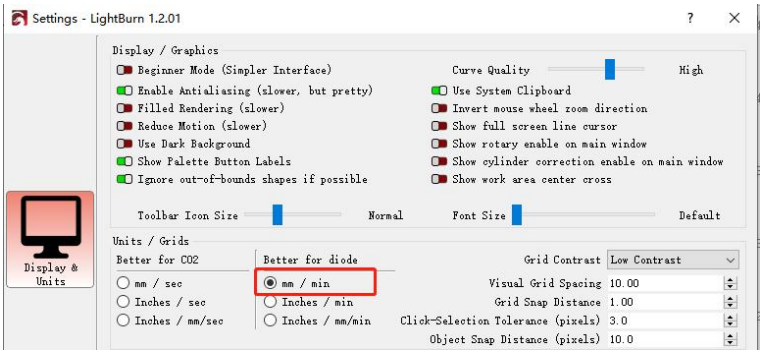
Before using LightBurn with **Ray6mini** for the first time, you need to import the **Ray6mini**.**lbdev** configuration file.

When launching LightBurn for the first time, the 'New Device Wizard' will appear. If not, click Devices in the Laser control module to manually import the engraver. Click Import, select the **Ray6mini**.lbdev file, and click OK to add the configuration to LightBurn. Once successfully imported, the macro commands will appear in the Console window, and **Ray6mini** will be listed under Devices in the Laser window.





After adding the device, it is recommended to set the speed unit to mm/min. To do this, go to Edit in the taskbar, select Settings, choose mm/min as the unit, and click OK.

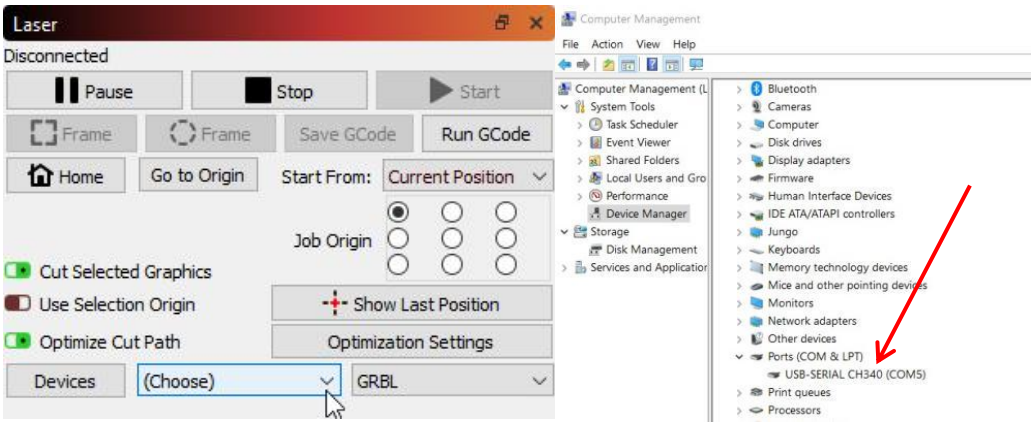


3. Connect the Ray6mini to LightBurn

To use LightBurn, the engraver must be connected to the software first.

For Windows, right-click This PC and select Manage, then click Device Manager. Expand Ports (COM & LPT), find the port

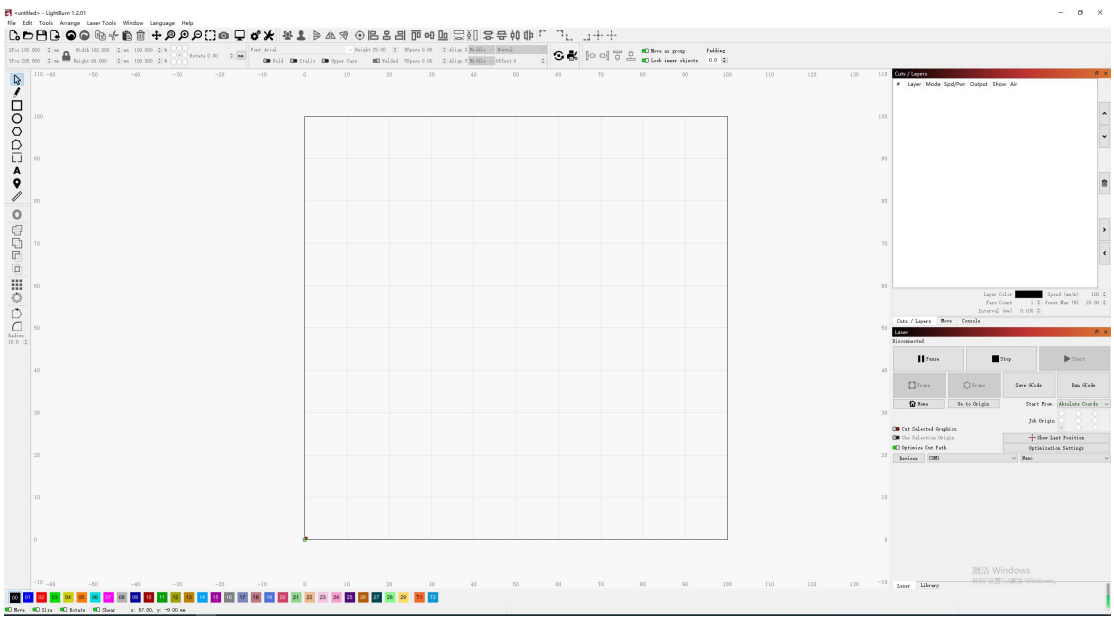
corresponding to the CH340 driver, and manually select it in LightBurn by clicking (Choose) in the Laser window.



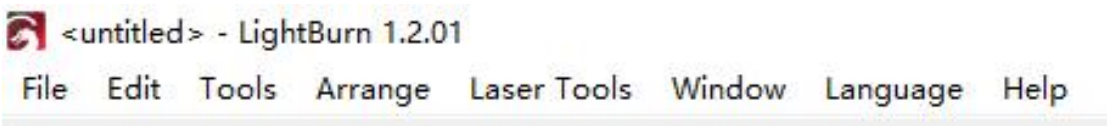
For MacOS, go to About This Mac > Overview > System Report, then select USB under Hardware. If the driver is installed automatically, USB Serial will appear. In LightBurn, select cu.wchusbserial by clicking (Choose) in the Laser window.

4. The Main Window of LightBurn

The default layout of the LightBurn main window includes several key sections: Menus, Main Toolbar, Creation & Modifier Tools, Color Palette, Cuts/Layers, Laser Window, Move Window, and more.

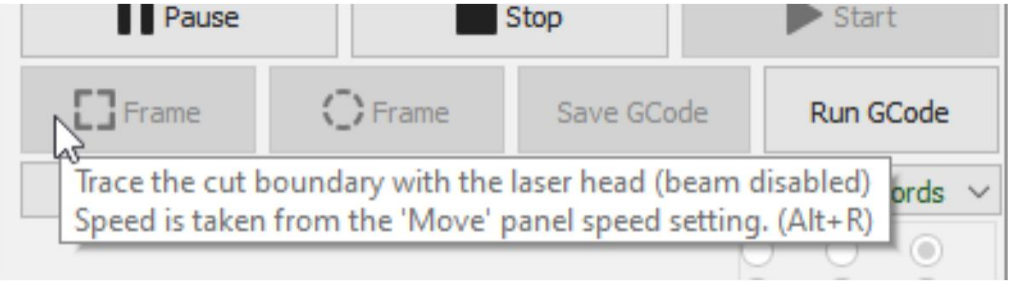


Menus: The menu bar at the top of the main window provides access to almost every feature available in LightBurn, like File, Edit, Tools, etc.



Main Toolbar: The main toolbar in LightBurn provides quick access to commonly used functions, such as opening or importing files, saving, using the clipboard (copy & paste), and moving or zooming the view. Right beside it is the Arrangement toolbar, which contains frequently used tools for arranging and aligning shapes.

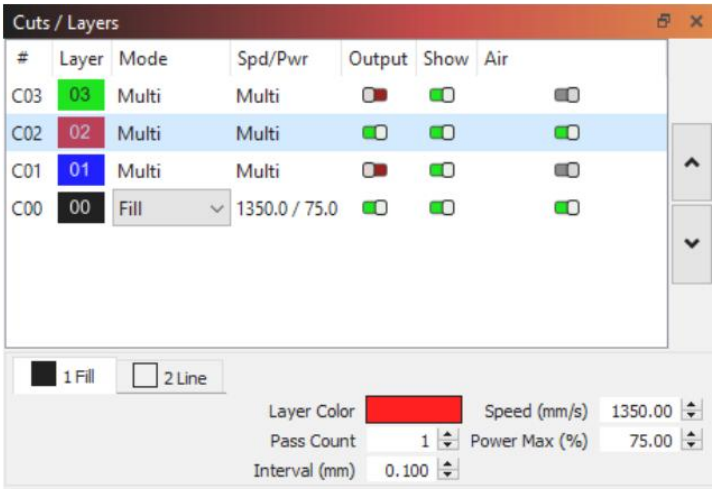
Tooltips: If you hover the mouse over a control, a small bit of text will pop up to describe that button or feature. For example, in the

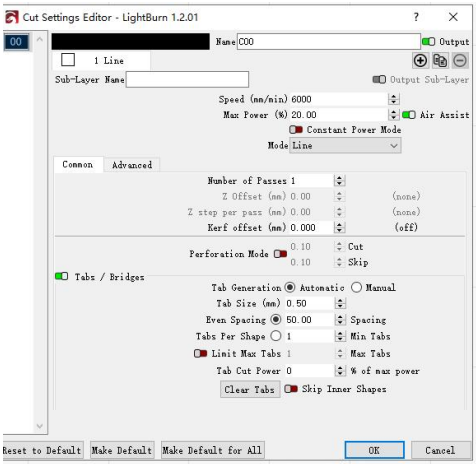


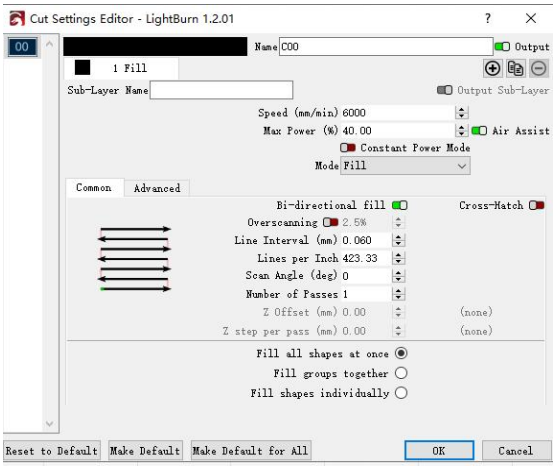
Creation & Modifier Tools,

and Color Palette, these colors are used to assign different parameters to the shapes in your design. If a design is selected, clicking a color entry will apply that color to the shapes in your selection. The colors currently in use in your design will also appear as entries in the Cuts / Layers window, where you can choose the operations each color will represent.

Cuts / Layers: The first column shows the name you've assigned to this layer, followed by the color, Mode (Line, Fill, both, or Image), and then the speed and power settings. It also shows the options to enable or disable sending this layer to the laser or displaying it in the workspace. Below the layer list, you can see and change the basic settings for the currently selected layer. Double-clicking an entry in the layer list will bring up a larger Cut Settings Editor with a more complete set of options.







Line mode Fill mode

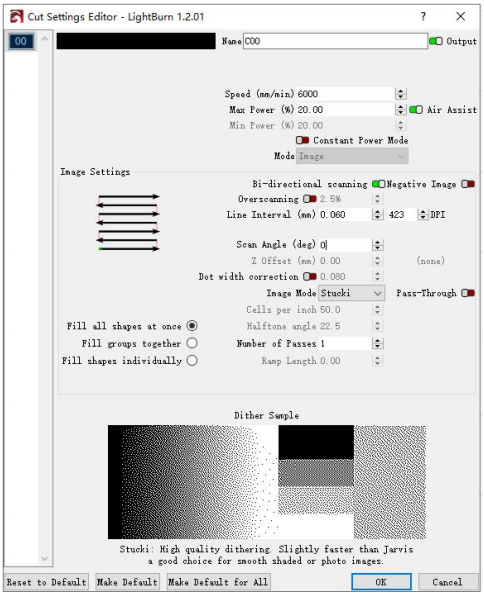
Double-clicking an entry in the layer list will bring up the full Cut Settings window, allowing you to edit all the settings. There are three modes commonly used: Line, Fill, and Image.

In Line mode, the laser follows the exact path of the selected design, tracing the lines with the beam enabled at the set power and speed. If the laser moves quickly or with low power, it will likely etch the surface. If it moves slowly and with high power, it will cut through the material. The difference between surface marking and cutting is

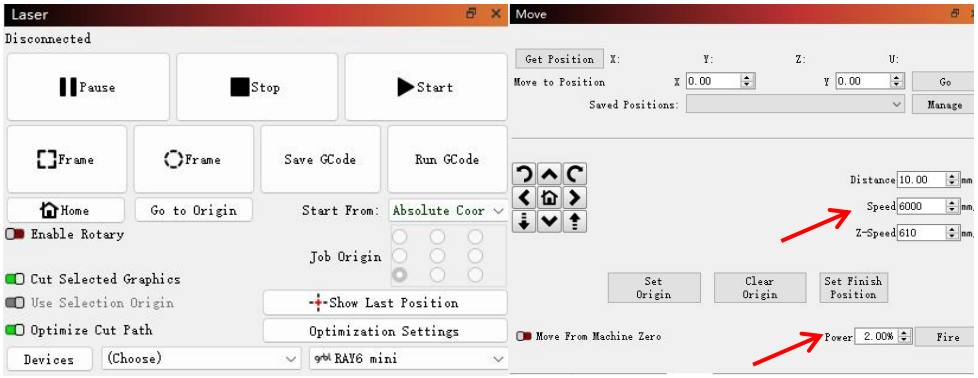
primarily in the power and speed settings.

Fill mode allows the laser to scan line by line to fill in the selected shape. This mode fills closed shapes but not open ones.

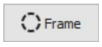
Image mode is specifically for images and controls how LightBurn renders the image data on the laser. There are three commonly chosen image modes: Atkinson, Stucki, and Jarvis.



Laser Window: The Laser Window is used to select the active machine, test the framing (the artwork's outer bounds), run and stop the machine, and choose the file processing, order, and artwork positioning within the workspace.

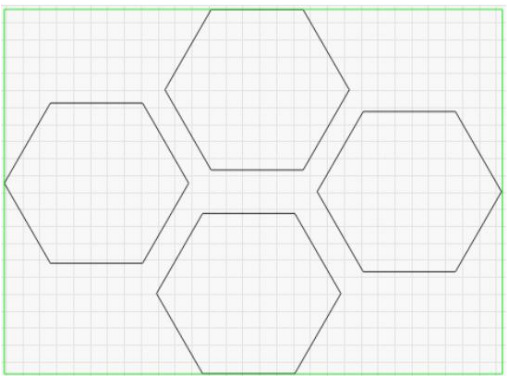


There are two Frame buttons used to preview the position of the job on the laser. 

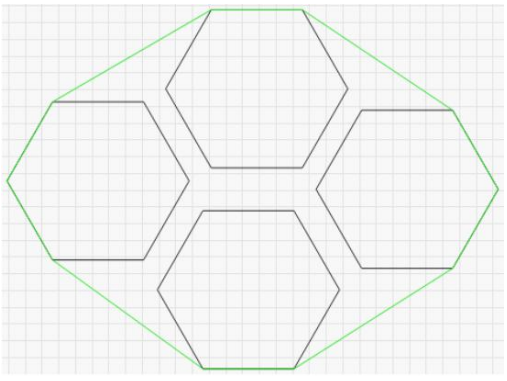
The first is a standard rectangular frame, also called a 'Bounding Box'. This is the smallest rectangle that will fully contain the selected shapes. The second is 

O-Frame button, also known as the ‘Rubber Band Frame,’ which traces a path around the selected design, similar to a rubber band stretched around it. The speed and laser power during framing can be adjusted in the MOVE window. Due to software limitations, the maximum speed during framing is 12,000 mm/min.

These two different frame effects are illustrated in the following figure:

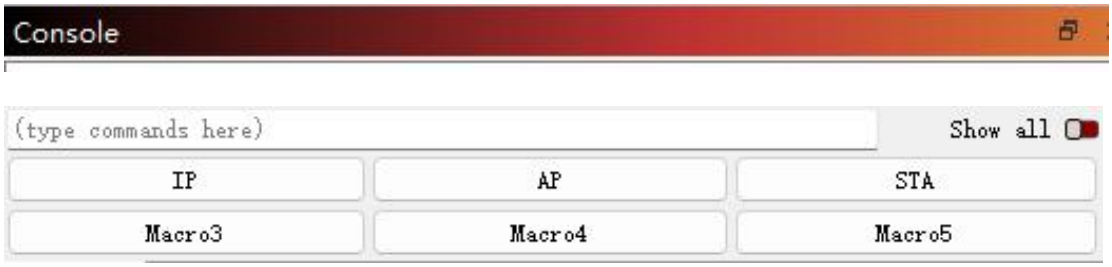


Rectangular frame



O-Frame

Console Window: The Console window displays messages from the controller and commands sent to it by LightBurn, and some macro commands designed for **Ray6mini** engraver. You can also input direct commands to the engraver through this window, such as $$ to display GRBL settings, or $X to unlock the machine if it has been locked due to an alarm or error. The Console window will also display alarm or error messages sent by the laser's controller, indicating any issues with the machine's operation.

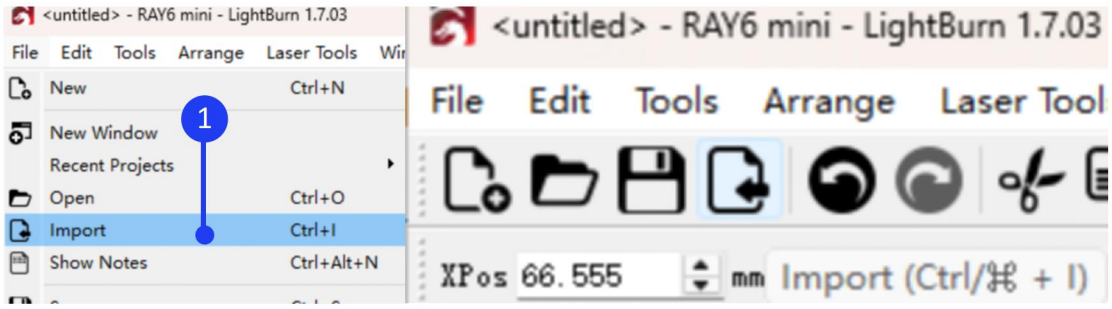


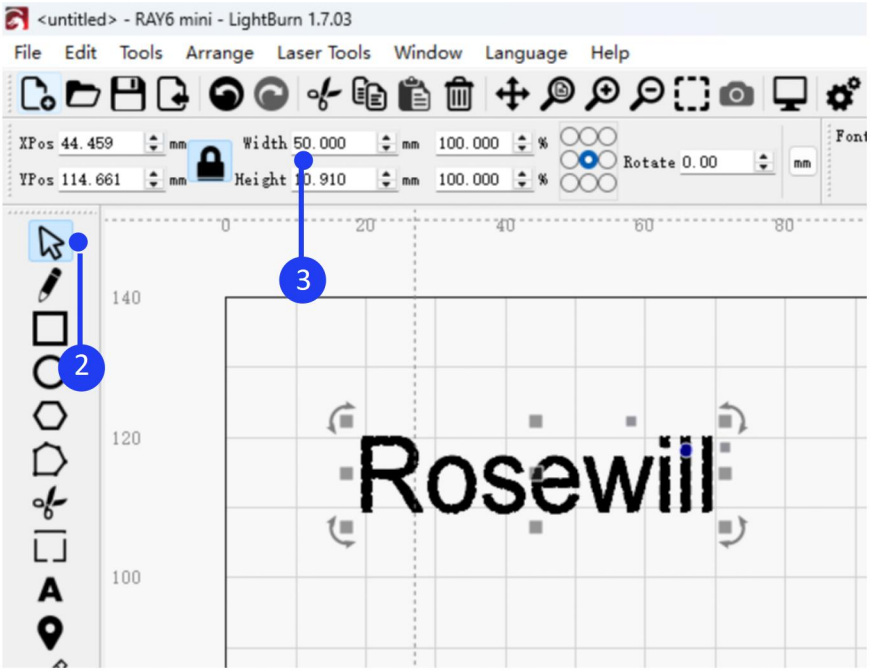
5. Create a Project in LightBurn

Generally, creating an engraving task involves importing graphics, editing them, setting parameters, previewing, framing, and engraving. For example, to engrave the Rosewill LOGO and cut after engraving:

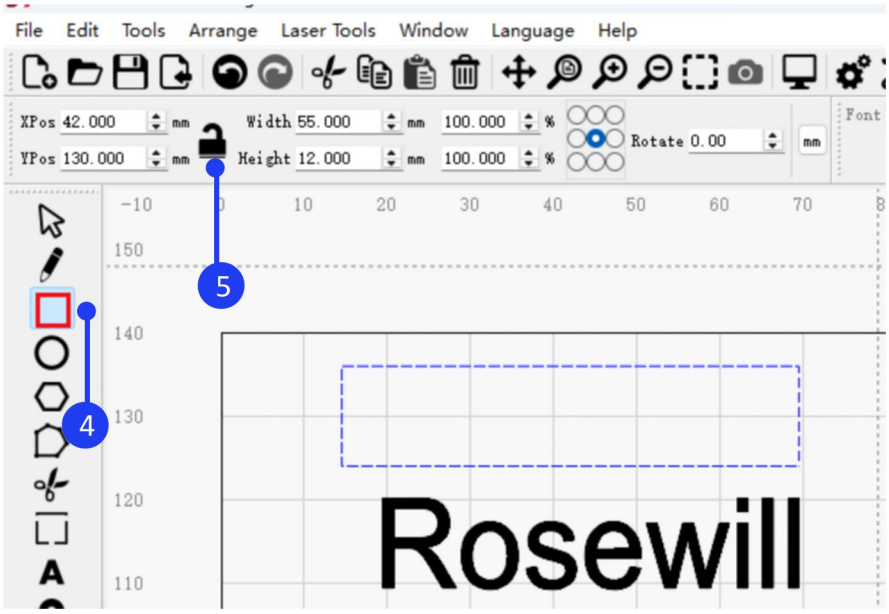
Click File > Import or click  import icon in the Toolbar to add the image to LightBurn. Select the image by clicking  select icon, then adjust the image width to 50.00mm. The height will

automatically adjust in proportion to the width.

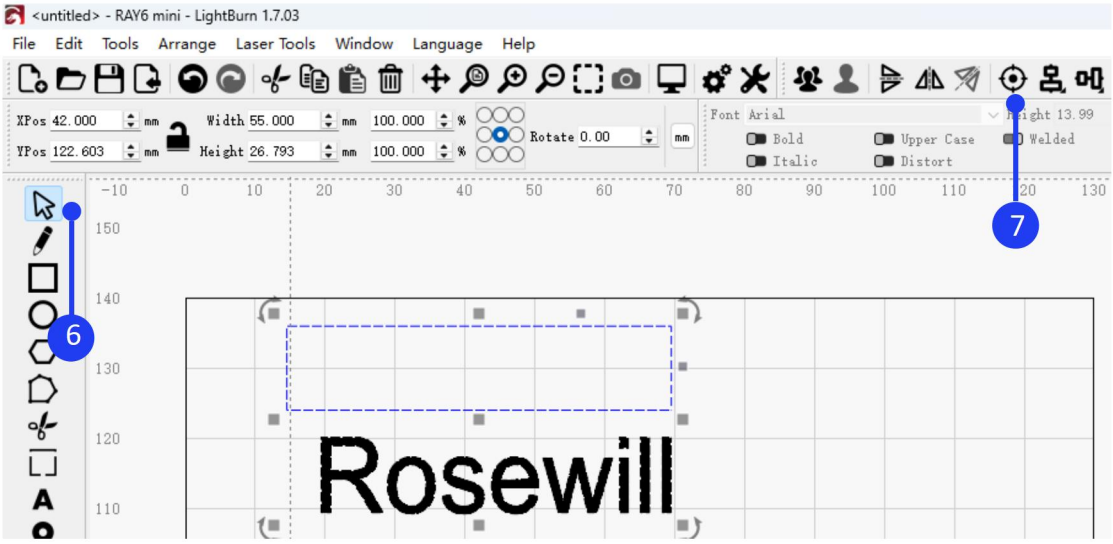




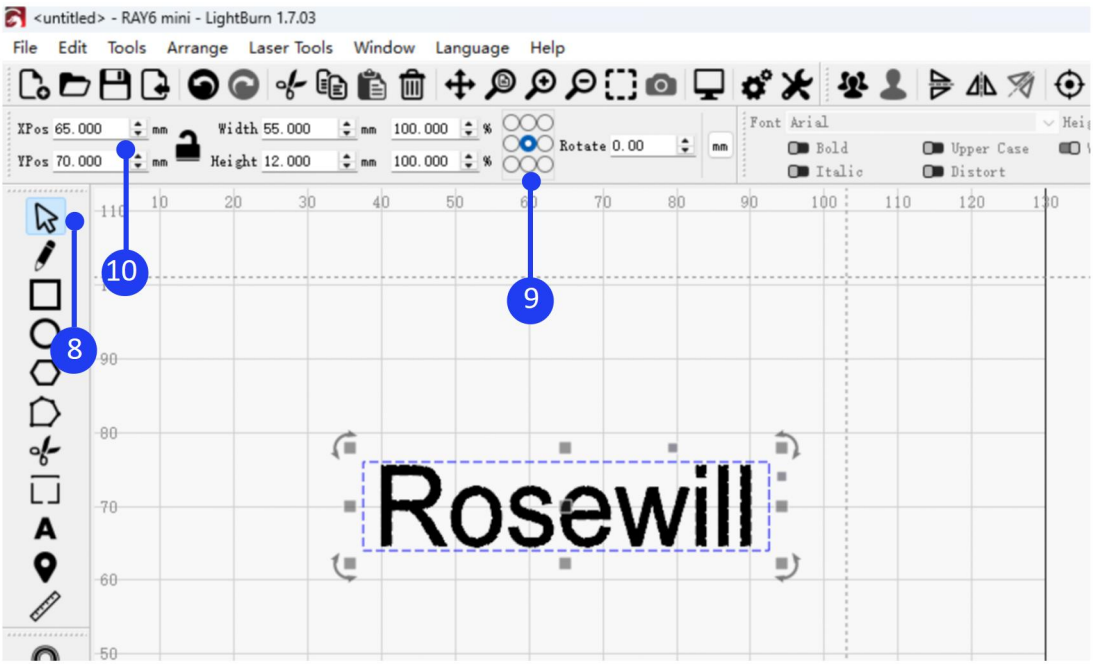
Click  Create rectangle. Then, click  to unlock and set the rectangle's width to 55.00mm and height to 12.00mm.



Click  Select button, hold down the Shift key on the keyboard, select both the rectangle and image, and click  Align Center button on the toolbar to center-align the image and rectangle.



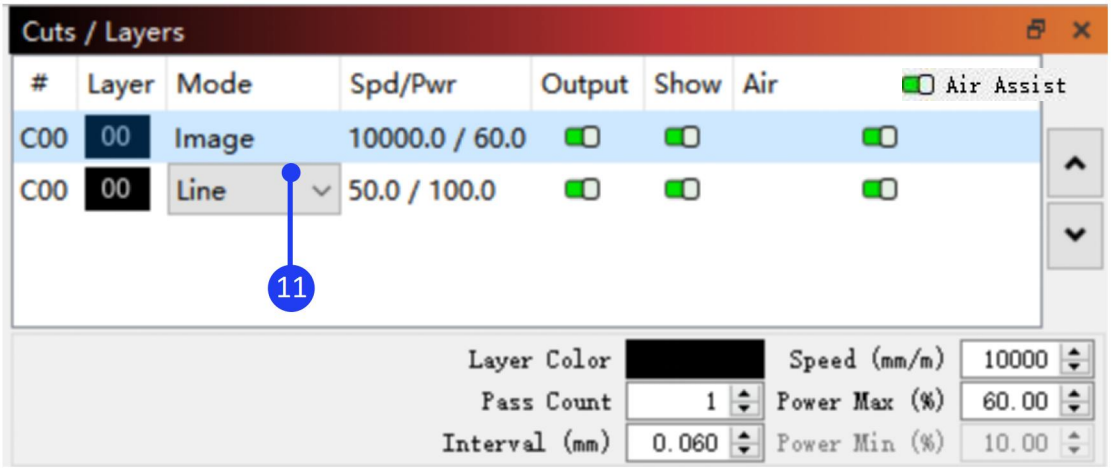
Set the coordinate point to the center of the image and enter the XY position coordinates as 65, 70 to move the design to the center of the working area.



Click on different layers in the Cuts and Layers window to set the corresponding parameters, and **disable Constant Power Mode** (Please note : For image or fill engraving, the Y interval is 0.05mm The Y interval has two options: 0.05mm for high precision or 0.10mm for high efficiency.) Adjust the specific parameters according to the actual materials and parameter table. Then, adjust the focus of the **Ray6mini** and click Frame button 

to confirm the engraving placement. Finally, click Start 

.



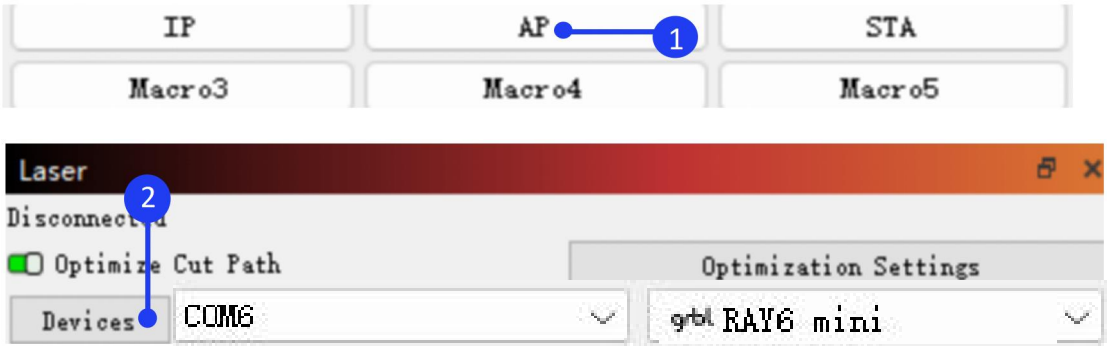
6. Connect Ray6mini to LightBurn via Wi-Fi

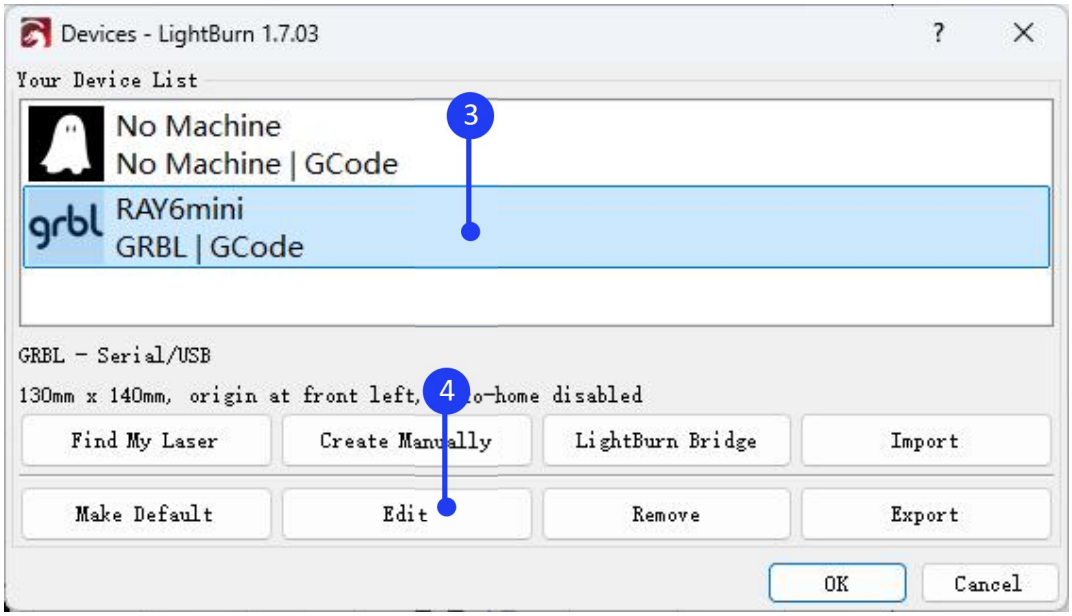
There are two modes available for connecting the **Ray6mini** to LightBurn via Wi-Fi: STA mode and AP mode. The main difference is that in AP mode, the computer does not have network access, while in STA mode, the computer can maintain its network connection.

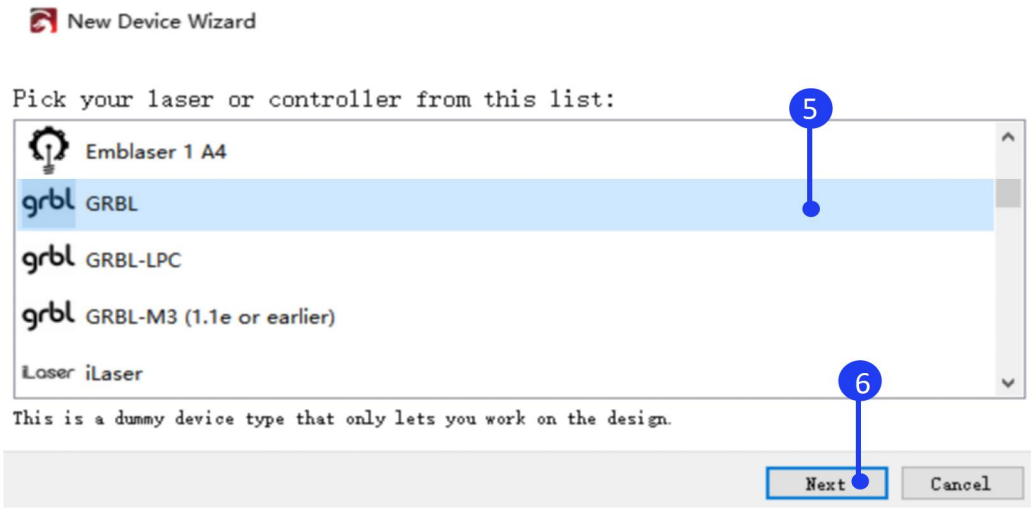
1) Connect **Ray6mini** to LightBurn via Wi-Fi in AP Mode

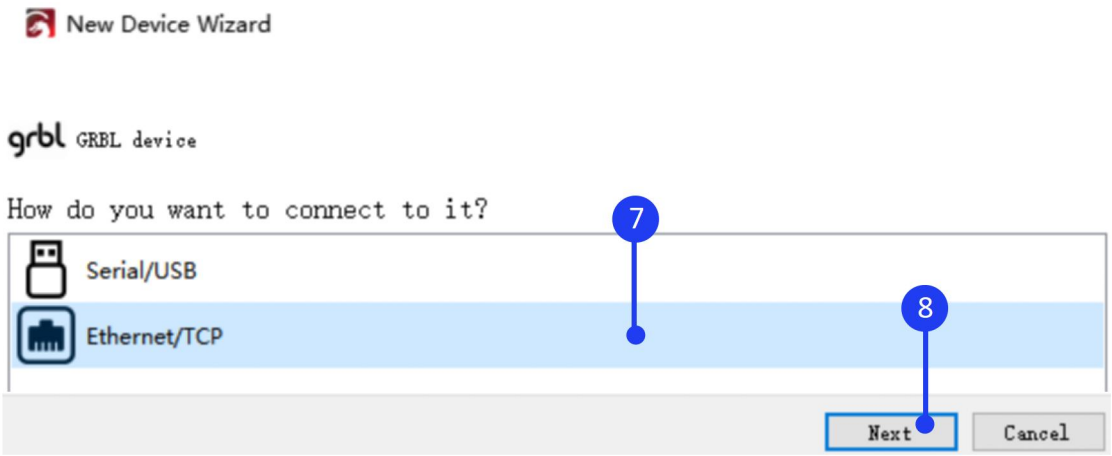
Run LightBurn and connect your PC to **Ray6mini.** In the Console window, click 'AP' to set the Wi-Fi to AP mode. Next, connect your computer to the Wi-Fi network that starts with LongerLaser_XXXX and enter the password 12345678.In the Laser window, click Devices, select **Ray6mini**, then click Edit > GRBL > Next > Ethernet/TCP > Next, then input 192.168.0.1 > Next > Next > Next > Finish > OK. Click Device Settings , enter 8847 in the Network Port field, and click OK

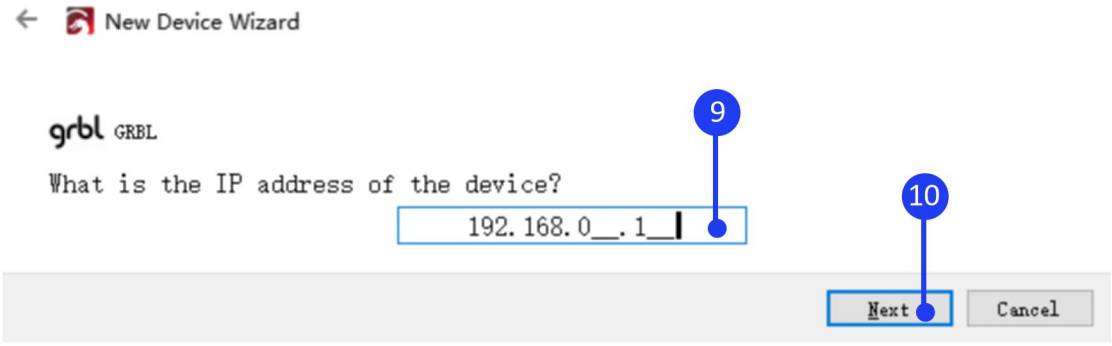
OK.

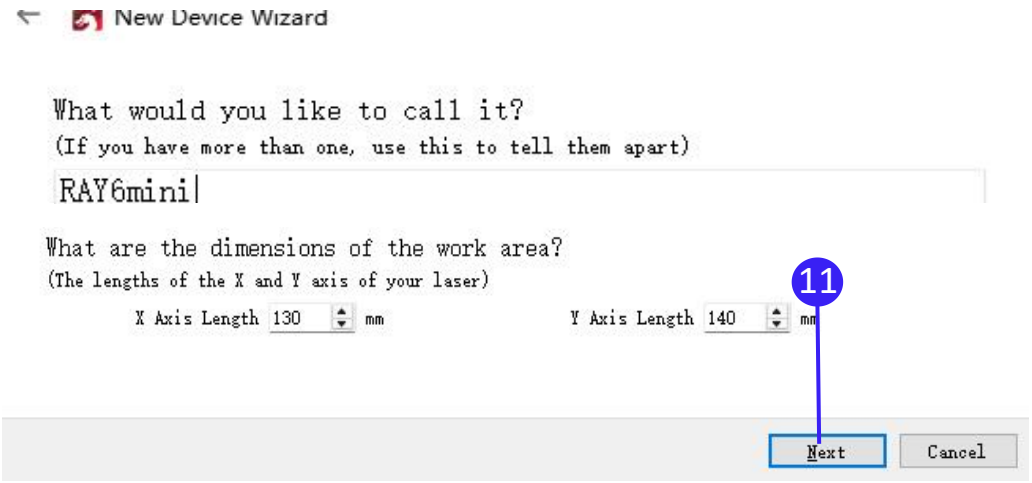


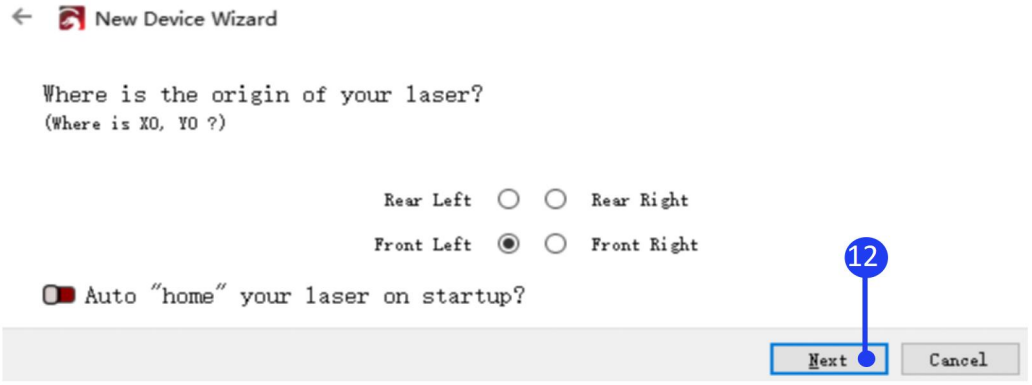

Devices - LightBurn 1.7.03
Your Device List
No Machine
No Machine | GCode
RAY6mini
GRBL | GCode
3
GRBL – Serial/USB
130mm x 140mm, origin at front left, go-home disabled
4
Find My Laser
Create Manually
LightBurn Bridge
Import
Make Default
Edit
Remove
Export
OK
Cancel


New Device Wizard
Pick your laser or controller from this list:
5
Emblaser 1 A4
GRBL
GRBL-LPC
GRBL-M3 (1.1e or earlier)
iLaser
This is a dummy device type that only lets you work on the design.
6
Next
Cancel

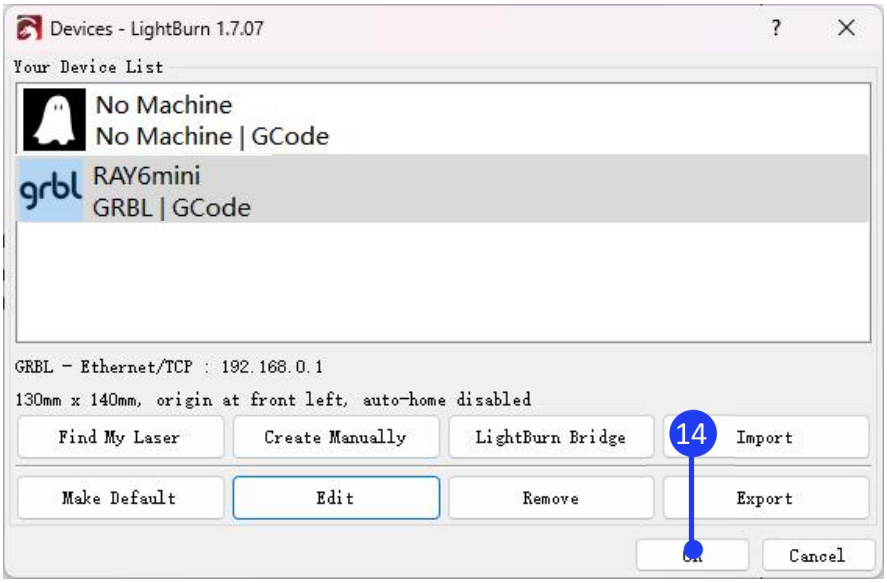

New Device Wizard
GRBL device
How do you want to connect to it?
7
Serial/USB
Ethernet/TCP
8
Next
Cancel

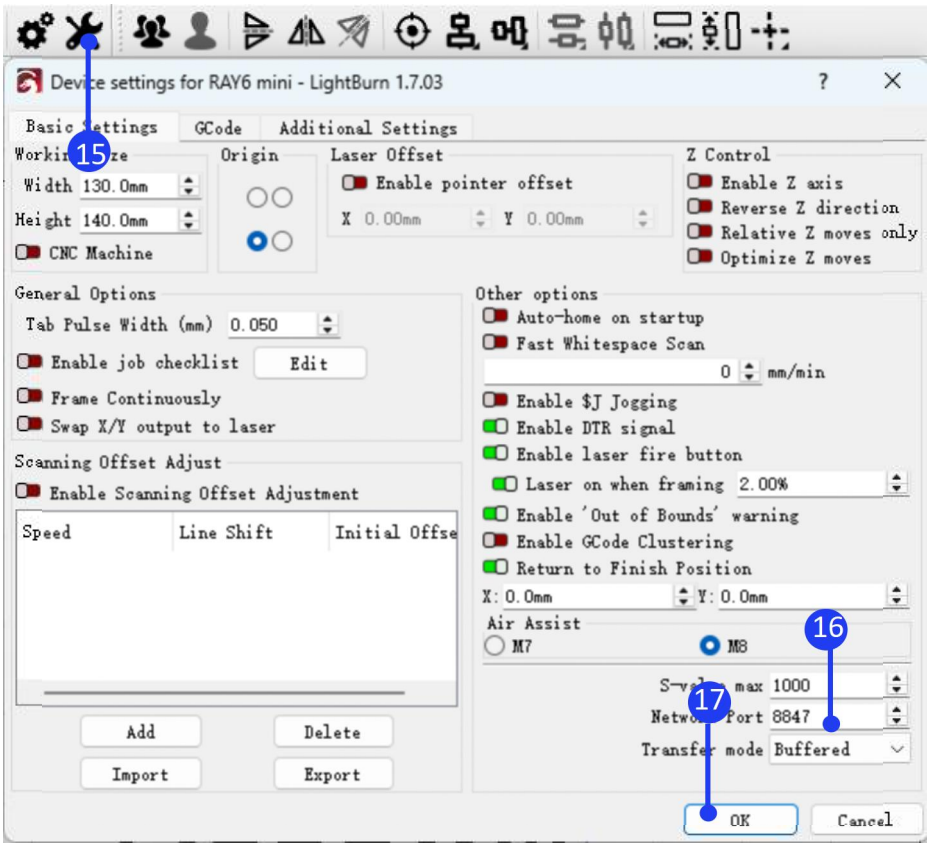

New Device Wizard
grbl GRBL
What is the IP address of the device?
192. 168. 0__. 1__
9
10
Next
Cancel


New Device Wizard
What would you like to call it?
(If you have more than one, use this to tell them apart)
RAY6mini
What are the dimensions of the work area?
(The lengths of the X and Y axis of your laser)
X Axis Length 130 mm
Y Axis Length 140 mm
11
Next
Cancel


New Device Wizard
Where is the origin of your laser?
(Where is XO, YO ?)
Rear Left
Rear Right
Front Left
Front Right
Auto "home" your laser on startup?
12
Next
Cancel


New Device Wizard
That's it - you're done. Here's a summary:
grbl GRBL
Serial/USB
RAY6mini
130mm x 140mm, origin at front left
Click "Finish" to add the new device.
13
Finish
Cancel

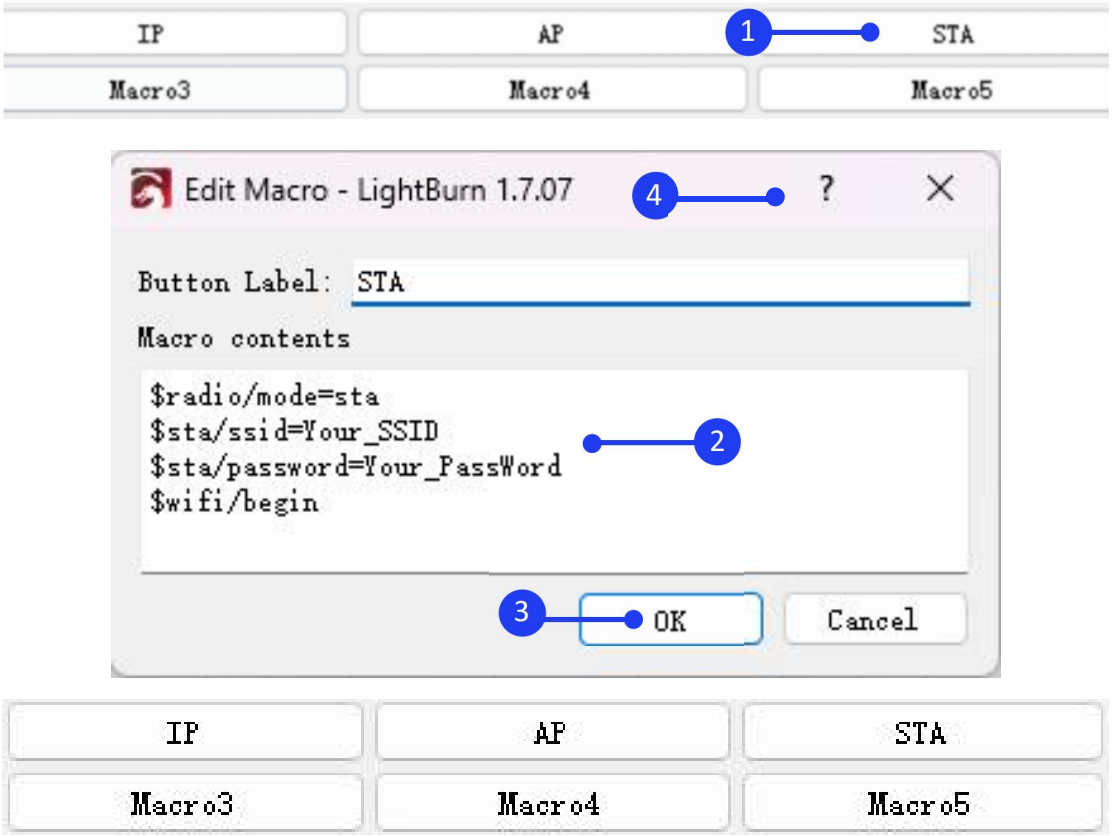


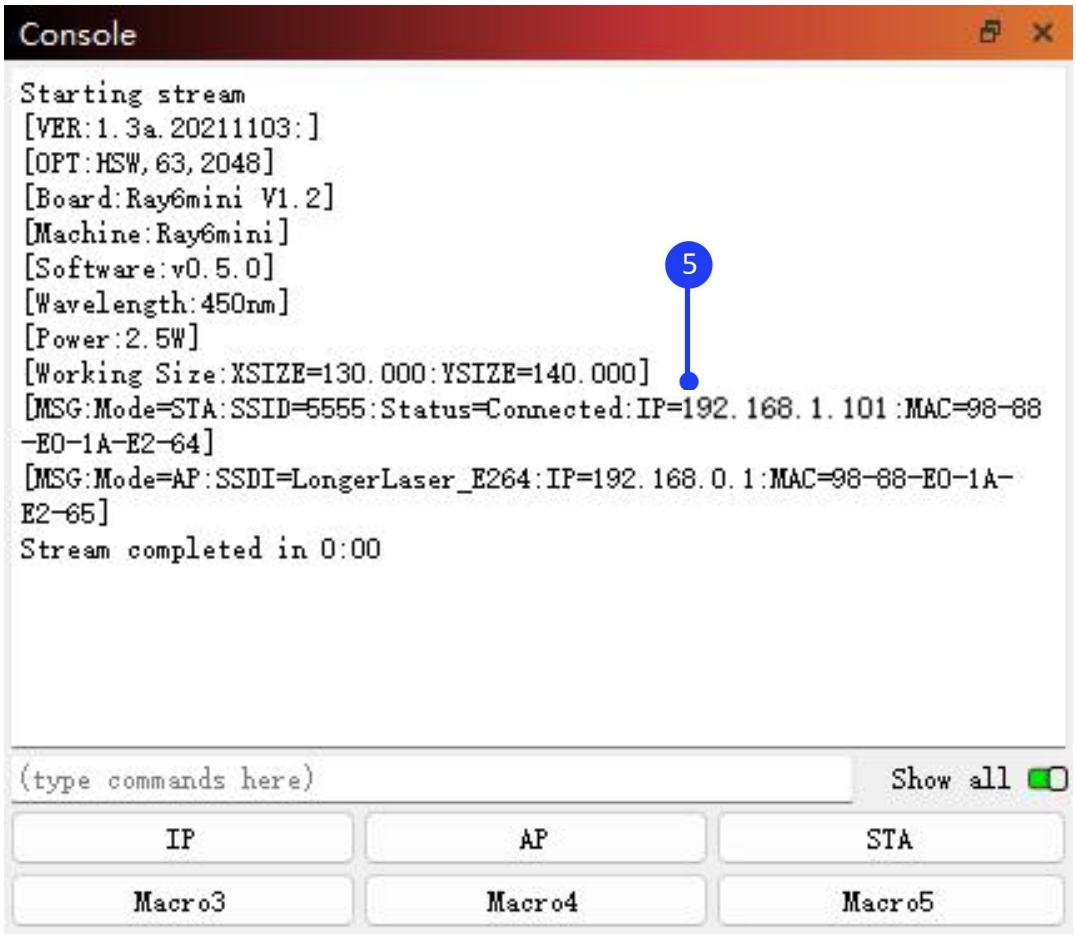


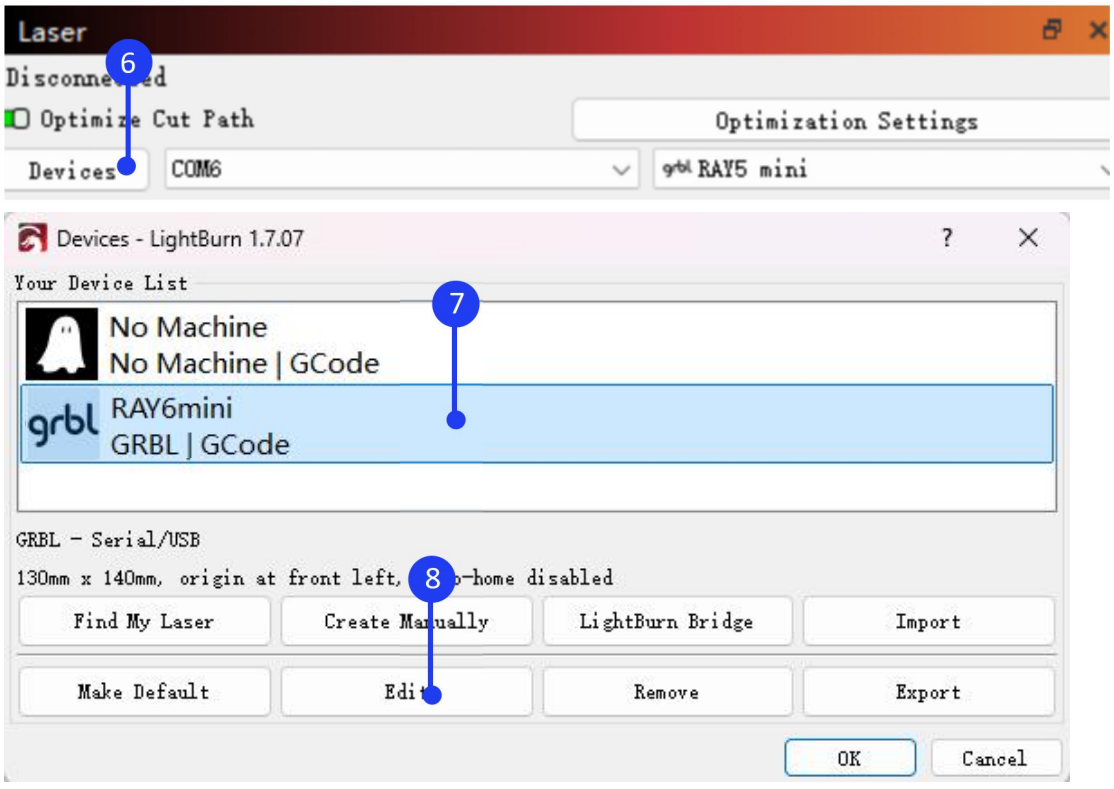
2) Connect **Ray6mini** to LightBurn via Wi-Fi in STA Mode

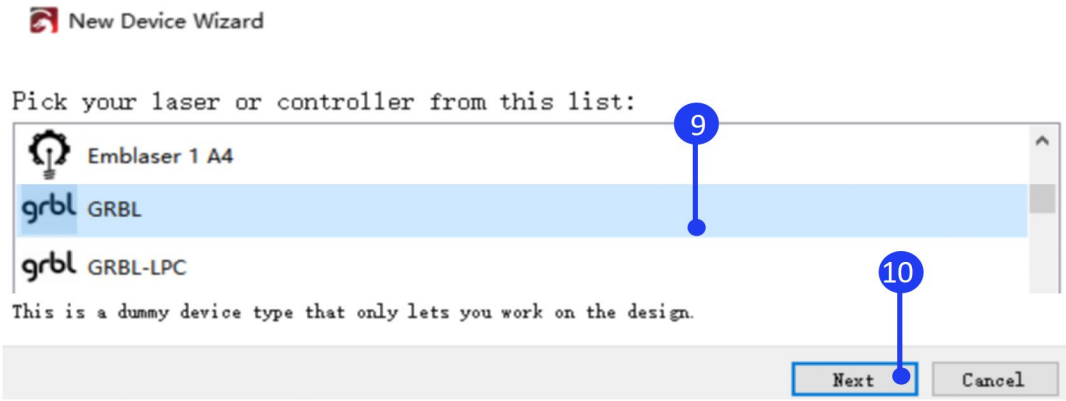
Run LightBurn and connect your PC to the **Ray6mini.** In the Console window, right-click 'STA' to set the Wi-Fi information, and change Your_SSID and Your_PassWord to your WIFI account and password

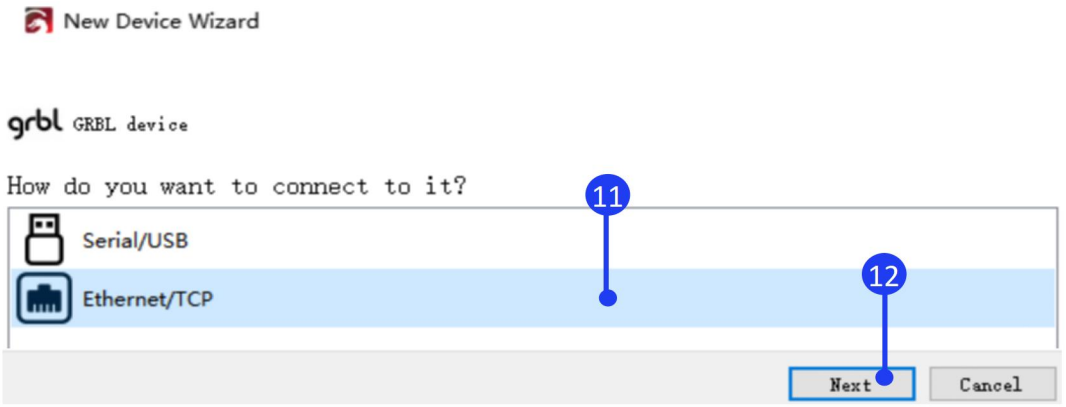
in $sta/ssid and $sta/password command. Click OK, then left-click 'STA' to switch to STA mode. Once the connection is successful, the console will prompt 'status = connected' along with the IP address. Please note that both your computer network and Wi-Fi must be on the same Local Area Network (LAN). In the Laser window, click Devices, select **Ray6mini** then click Edit > GRBL > Next > Ethernet/TCP > Next , then input the IP address > Next > Next > Next > Finish > OK. Click Device Settings, enter 8847 in Network Port field, and click OK.

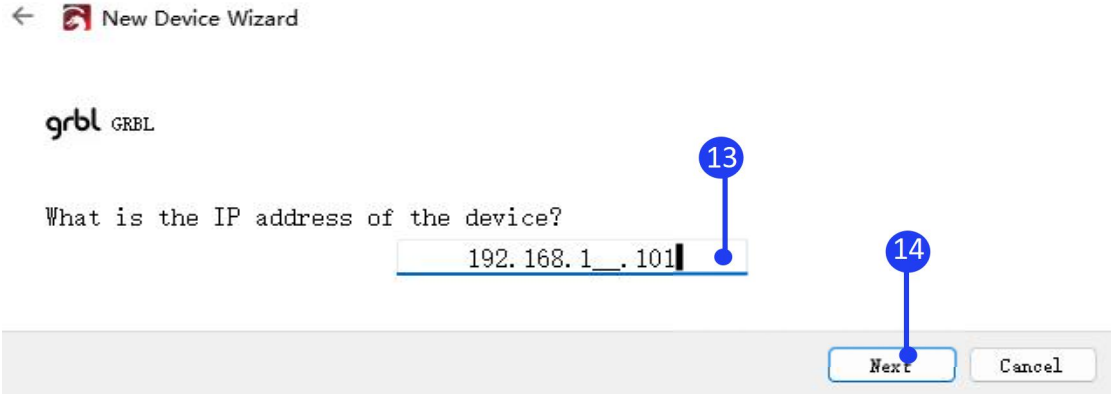


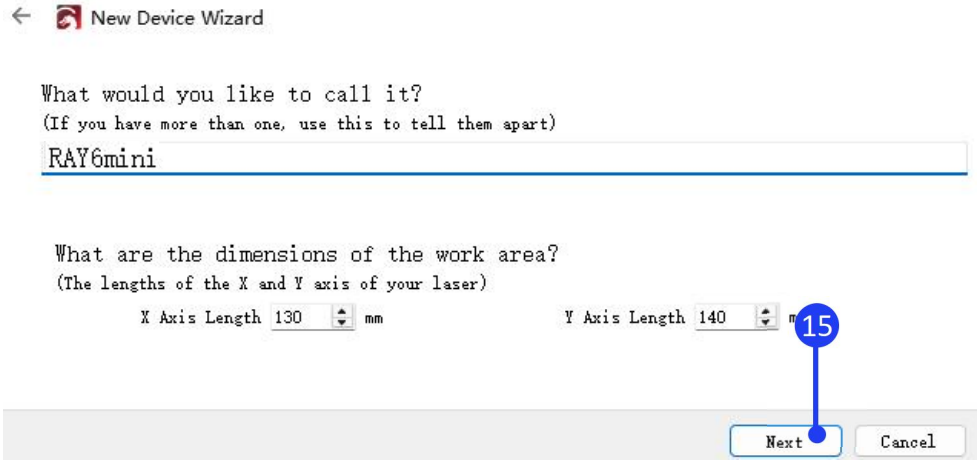

Console
Starting stream
[VER:1.3a.20211103:]
[OPT:HSW,63,2048]
[Board:Ray6mini V1.2]
[Machine:Ray6mini]
[Software:v0.5.0]
[Wavelength:450nm]
[Power:2.5W]
[Working Size:XSIZE=130.000:YSIZE=140.000]
[MSG:Mode=STA:SSID=5555:Status=Connected:IP=192.168.1.101:MAC=98-88-E0-1A-E2-64]
[MSG:Mode=AP:SSDI=LongerLaser_E264:IP=192.168.0.1:MAC=98-88-E0-1A-E2-65]
Stream completed in 0:00
5
(type commands here)
Show all
IP
AP
STA
Macro3
Macro4
Macro5

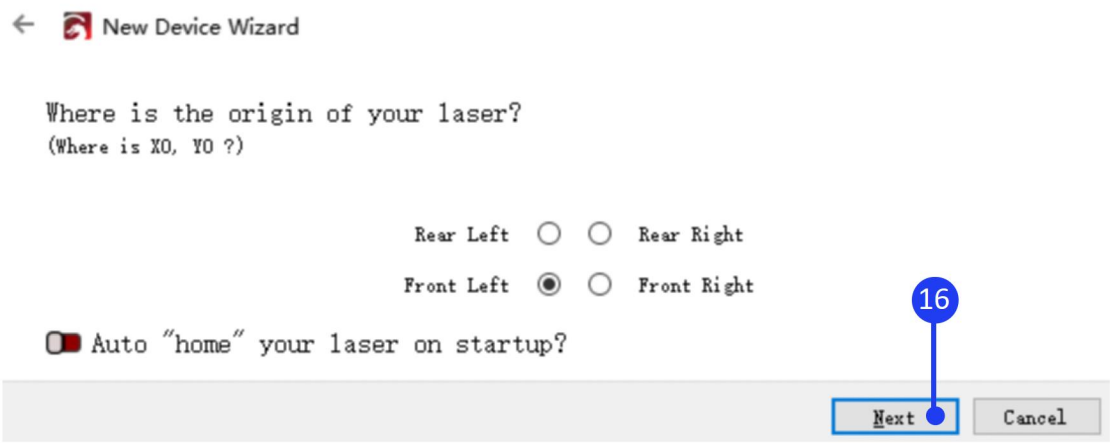

Laser
6
Optimize Cut Path
Optimization Settings
Devices
COM6
RAY5 mini
Devices - LightBurn 1.7.07
Your Device List
7
No Machine
No Machine | GCode
RAY6mini
GRBL | GCode
GRBL - Serial/USB
130mm x 140mm, origin at front left,
-home disabled
8
Find My Laser
Create Manually
LightBurn Bridge
Import
Make Default
Edit
Remove
Export
OK
Cancel

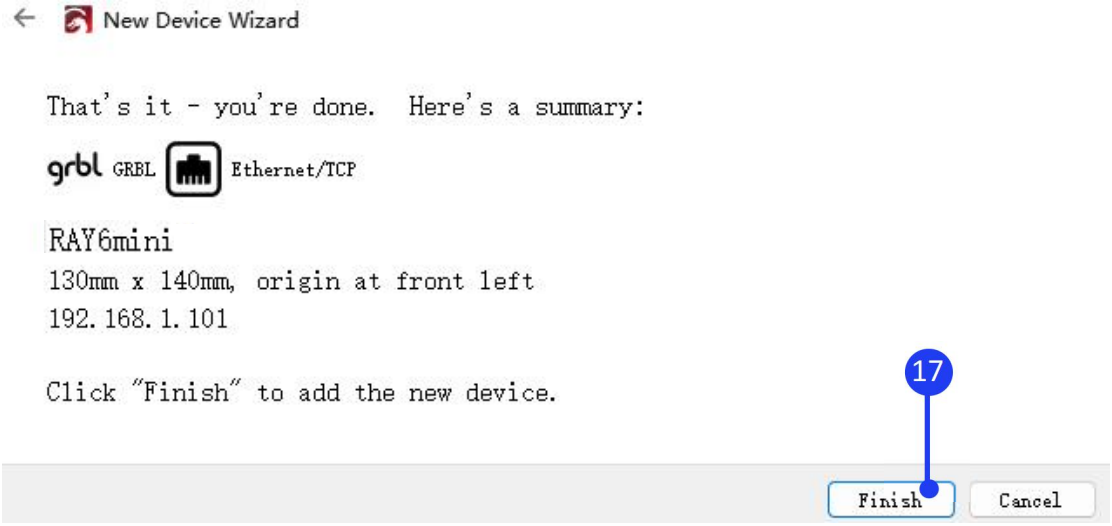

New Device Wizard
Pick your laser or controller from this list:
Emblaser 1 A4
GRBL
GRBL-LPC
This is a dummy device type that only lets you work on the design.
9
10
Next
Cancel

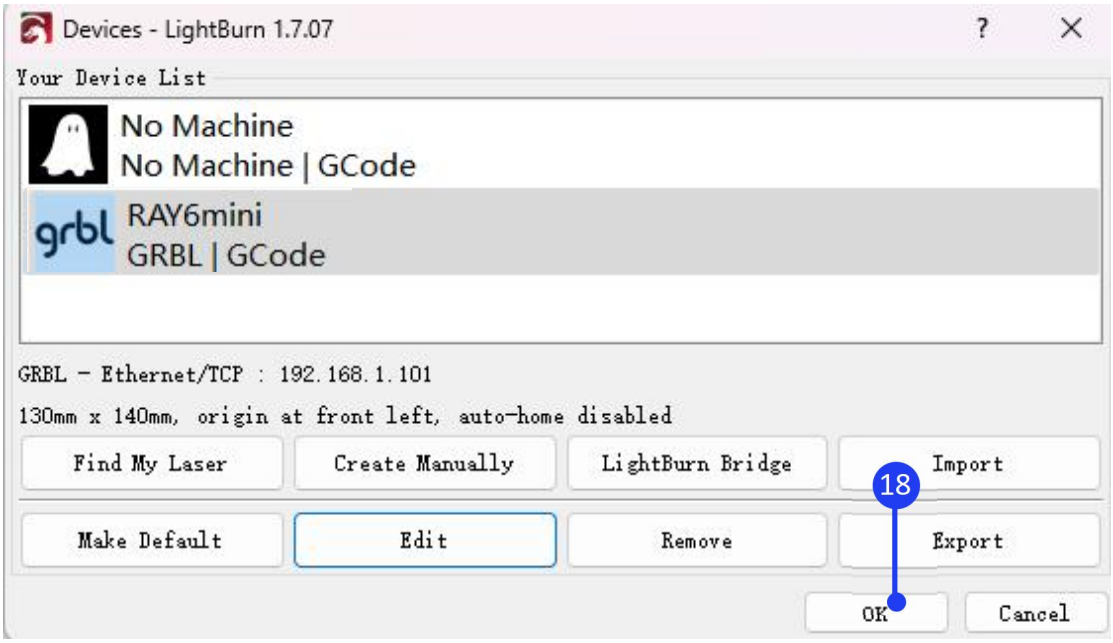

New Device Wizard
GRBL device
How do you want to connect to it?
Serial/USB
Ethernet/TCP
11
12
Next
Cancel

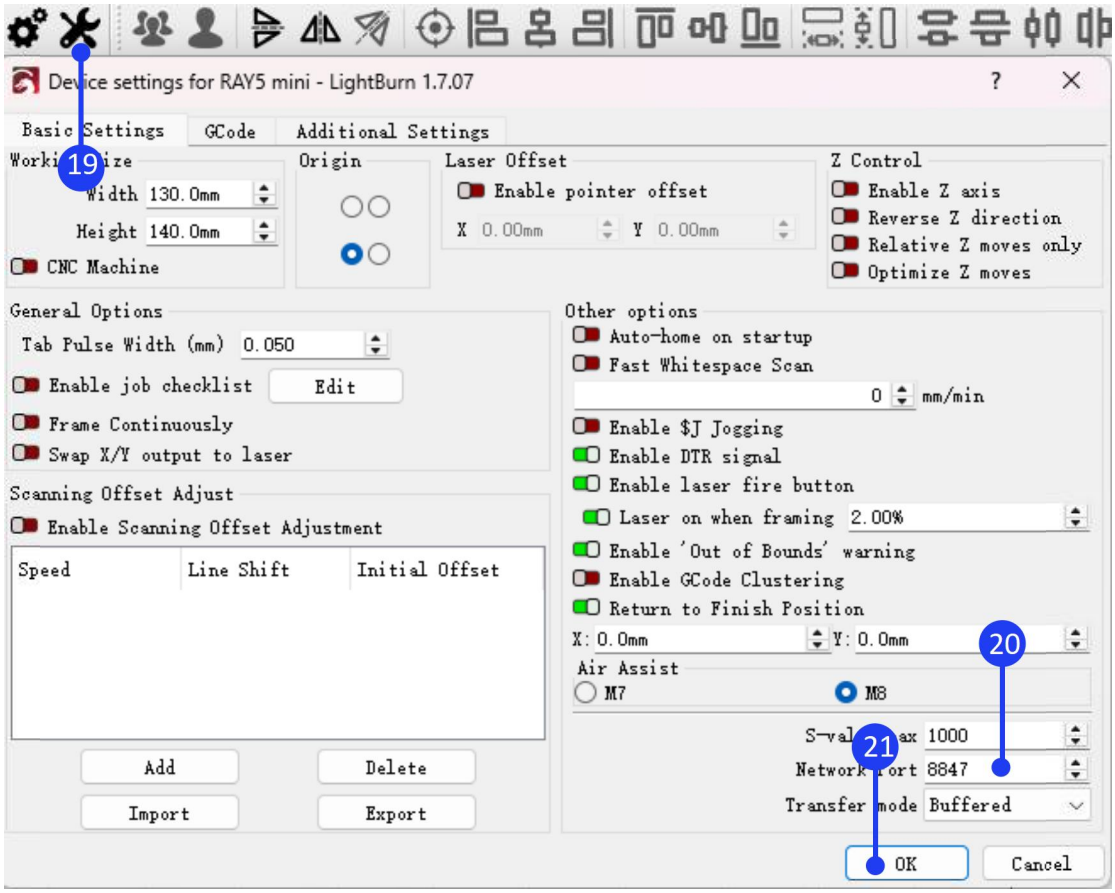

New Device Wizard
GRBL
What is the IP address of the device?
192.168.1__.101
13
14
Next
Cancel


New Device Wizard
What would you like to call it?
(If you have more than one, use this to tell them apart)
RAY6mini
What are the dimensions of the work area?
(The lengths of the X and Y axis of your laser)
X Axis Length 130 mm
Y Axis Length 140
15
Next
Cancel


New Device Wizard
Where is the origin of your laser?
(Where is XO, YO ?)
Rear Left
Rear Right
Front Left
Front Right
Auto "home" your laser on startup?
16
Next
Cancel


New Device Wizard
That's it - you're done. Here's a summary:
grbl GRBL
Ethernet/TCP
RAY6mini
130mm x 140mm, origin at front left
192.168.1.101
Click "Finish" to add the new device.
17
Finish
Cancel


Devices - LightBurn 1.7.07
Your Device List
No Machine
No Machine | GCode
grbl
RAY6mini
GRBL | GCode
GRBL - Ethernet/TCP : 192.168.1.101
130mm x 140mm, origin at front left, auto-home disabled
Find My Laser
Create Manually
LightBurn Bridge
Import
18
Make Default
Edit
Remove
Export
OK
Cancel



E. LaserBurn Software Operation

LaserBurn is a powerful laser engraving host computer software designed for laser engraving enthusiasts and professional users.The software provides an intuitive user interface, including comprehensive drawing tools and layer management system, which can meet various complex engraving needs.

LaserBurn supports a variety of laser device connection methods, including USB serial port and network IP connection, and has complete device control functions such as laser focus, height control, frame preview, etc.In terms of engraving operations, the software

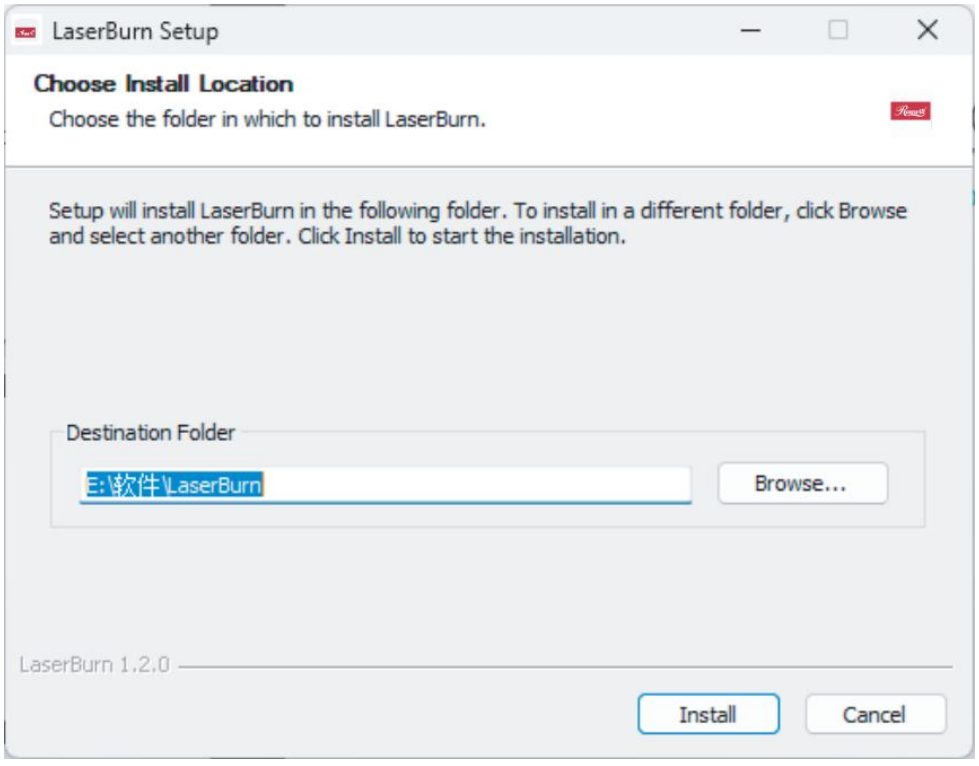
provides real-time preview, progress monitoring and time estimation functions, and supports pause and continue operations during the engraving process.

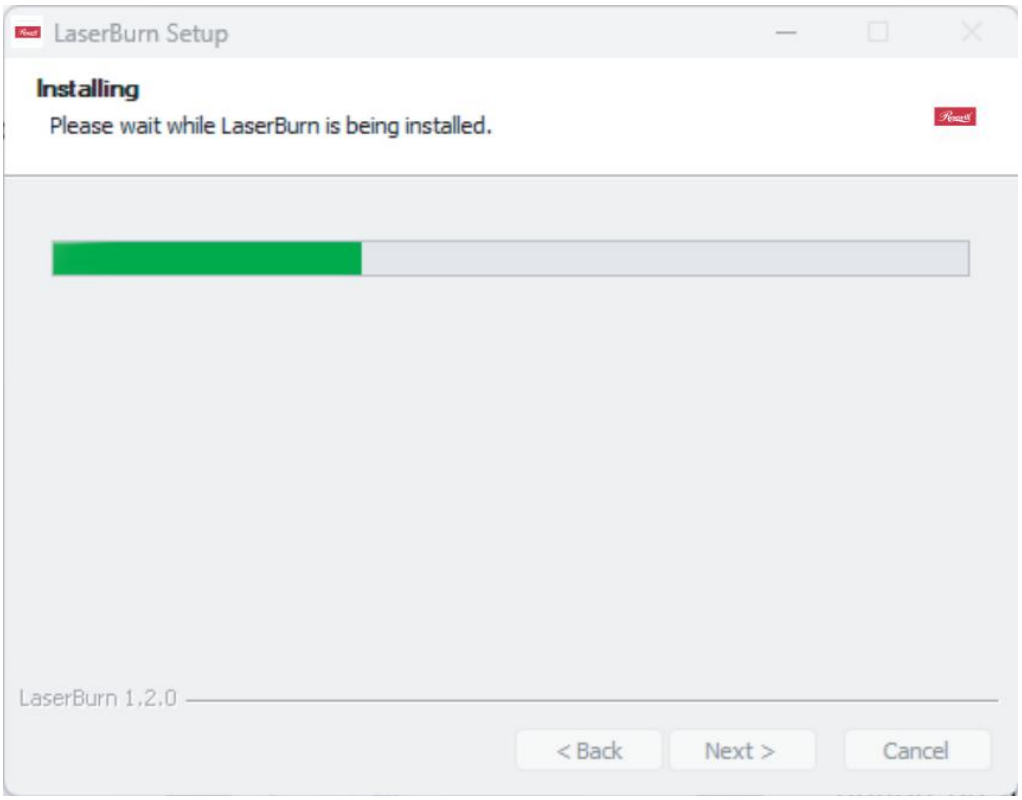
LaserBurn is committed to providing users with efficient and precise laser engraving solutions, making it easy for both beginners and professional users to get started and unleash their creativity.

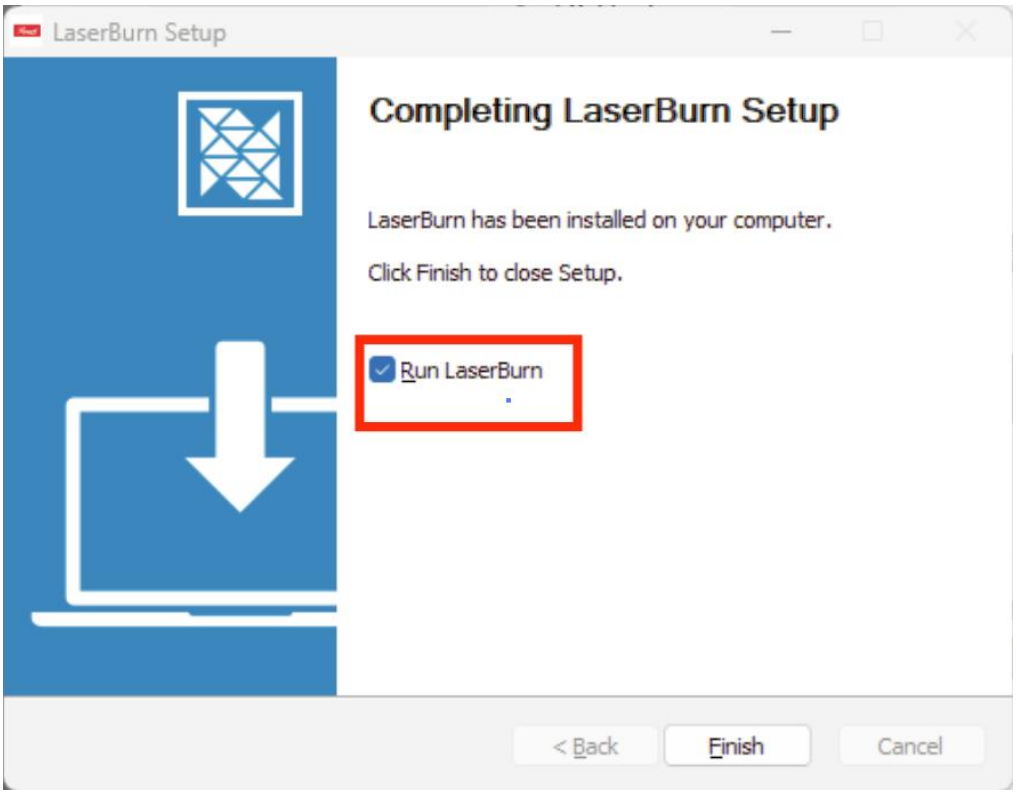
1. Software Download and Installation

Download LaserBurn from the following link: https://www.

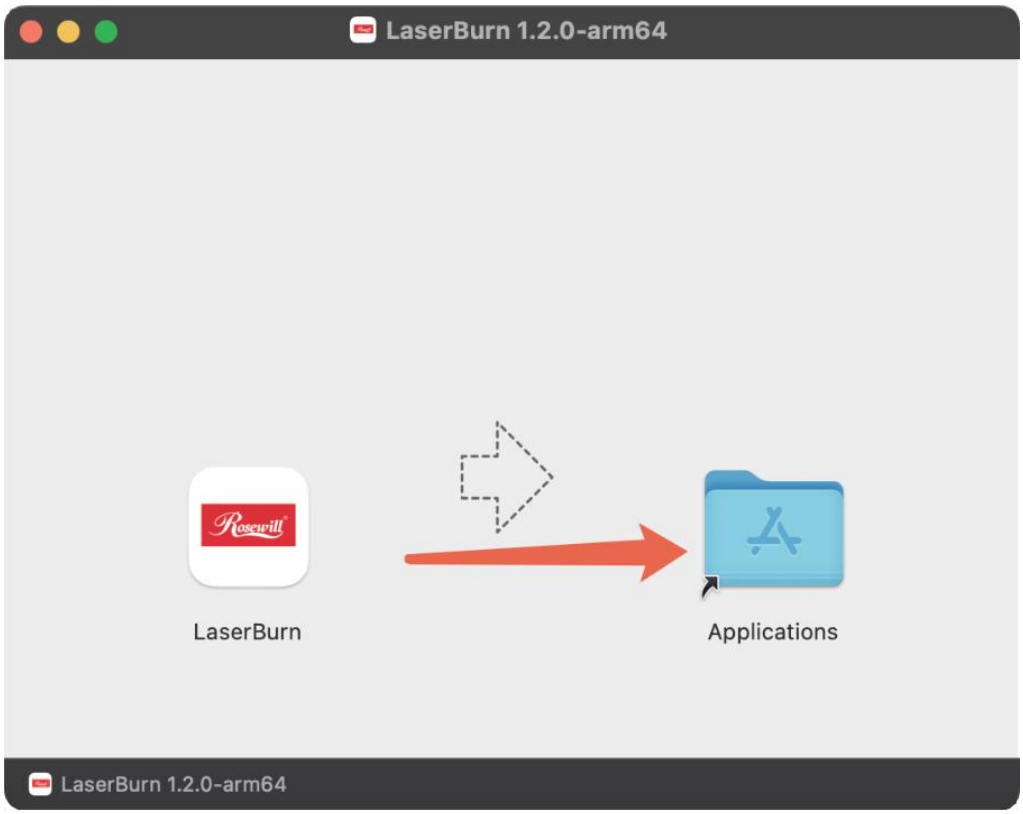
For Windows :



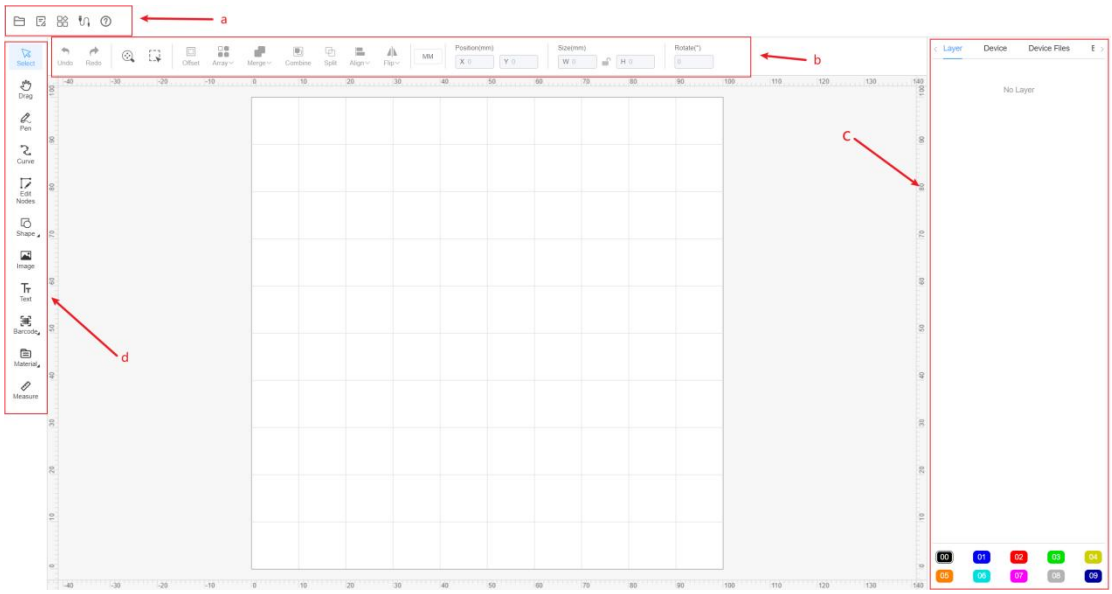

LaserBurn Setup
Installing
Please wait while LaserBurn is being installed.
LaserBurn 1.2.0
< Back
Next >
Cancel


LaserBurn Setup
Completing LaserBurn Setup
LaserBurn has been installed on your computer.
Click Finish to close Setup.
Run LaserBurn
< Back
Finish
Cancel

For MacOS :



2. The Main Window of LaserBurn



a) menu bar

Functional Overview：supports project operations (create, delete projects, etc.), file management (import and export) and software settings

- File
  - New：create a new sculpting project
  - Open：open an existing engraving file
  - Save：save current project
  - Save as：save the project as a new file
  - Firmware Upgrade：supports flashing the latest firmware
  - Import：import external files (supports multiple formats)
  - Export：export current project
  - Exit：close software
- Edit
  - Undo：undo the last operation
  - Redo：redo an undone action
  - Select All：select all elements
  - Inverse Selection：invert selected element
  - Cut：cut selected elements
  - Copy：copy selected elements
  - Paste：paste the copied element
  - Delete：delete selected elements
  - Vectorization：vectorize the selected image
- Settings
  - Software Settings：adjust basic software parameters
  - Machine Settings：configure laser engraving machine parameters

- Unit Settings：switch between mm/inch
- Language Settings：switch interface language

- Serial Port Tool
  - Serial Port Debugging：send debug command
  - Serial Port Logs：view communication records
- Info
  - About Software：view software version information
  - Local Logs：view the operation log
  - Feedback：submit usage feedback

b) Top Toolbar

Functional Overview：provides commonly used editing functions for elements and quick switching of units

- Basic Operations
  - Undo/Redo：quickly undo or redo an action
  -  Zoom To Fit The Page/Selected Area：quickly locate the selected element or the entire canvas
- Element Operations
  - Offset：adjust element position
  - Array：creating an array of elements
  - Merge：merge multiple elements
  - Combine：combine multiple elements into one element
  - Split：split composite elements

- Align：aligning multiple elements
- Flip：flip element horizontally/vertically

- Unit Quick Switch
  - Millimeters(mm)：use millimeters
  - Inch(inch)：use inches
- Modifying Element Properties
  - Position：adjust the coordinate position of the element
  - Size：resize elements
  - Rotate：rotate element angle
  - Corner Radius：adjust the size of the corners of rectangular elements

c) Right Toolbar

Functional Overview：main area for managing layers, devices, engraving tasks, etc.

- Layer
  - Layer Management：create, delete, and sort layers
  - Layer Properties：set engraving parameters
  - Layer Lock：lock/unlock layer
  - Layer Hide：hide the engraving layer,the hidden layer does not participate in engraving.
- Device
  - Device Connection：connect/disconnect device

- Device Management：storage management of connected devices
- Device Status：check the device operation status
- Device Control：control device movement

- Device Files
  - File Management：deleting files
  - File Execution：start carving task
- Engraving History
  - History：view engraving records
  - Re-carving：repeat historical tasks
  - Records Management：delete history

d) Drawing tools Bar

Functional Overview：provides the drawing tools you need to create and edit engraving content

- Select
  - Frame Selection：select multiple elements
  - Click：select a single element
- Drag
  - Drag：drag the canvas position
- Pen
  - Free Drawing：draw freehand lines

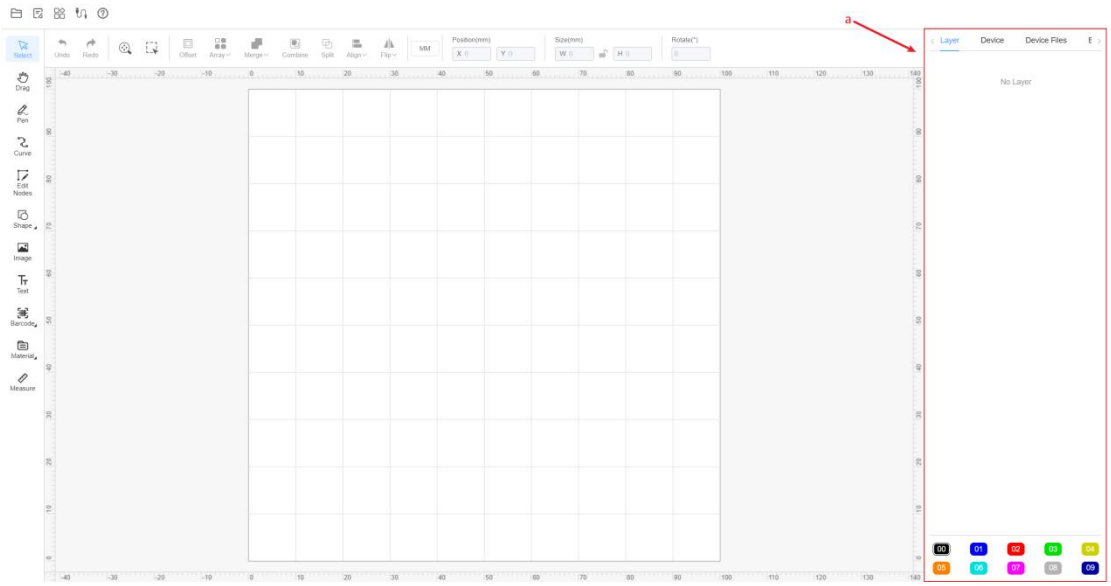
- Line Drawing：draw a straight line

- Curve
  - Bezier Curve：draw smooth curves
- Edit Nodes
  - Adjusting Nodes：adjust the curve shape
- Shape
  - Rectangle：draw a rectangle
  - Ellipse：draw a circle
  - Polygon：draw a polygon
  - Triangle：draw a triangle
- Image
  - Importing Images：import external images
  - Image Editing：adjust image properties
  - Image Vectorization：convert images to vector graphics
- Text
  - Add Text：enter text content
  - Text Attributes：set font, size, etc.
  - Text Layout：adjust text layout

- Barcode
  - QR Code：generate QR code
  - Barcode：generate barcode
- Material
  - Material Library：manage engraving materials
  - Add Materials：importing new materials
  - Material Application：using material elements

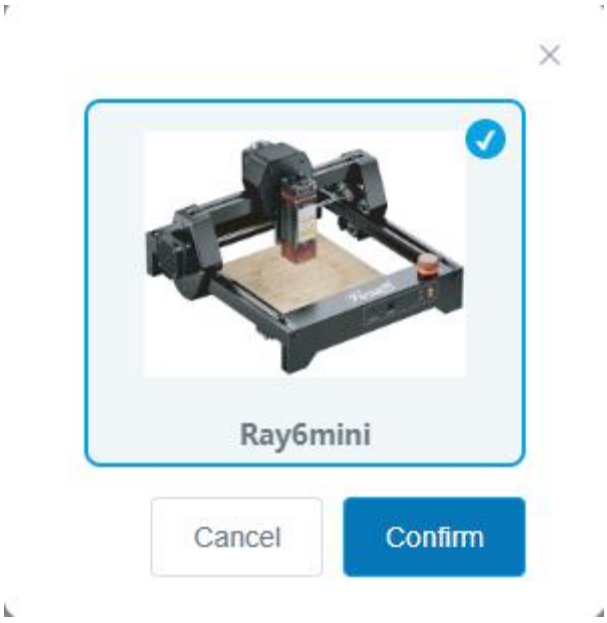
3. Connect the Ray6mini to LaserBurn

a) Focus on device toolbar

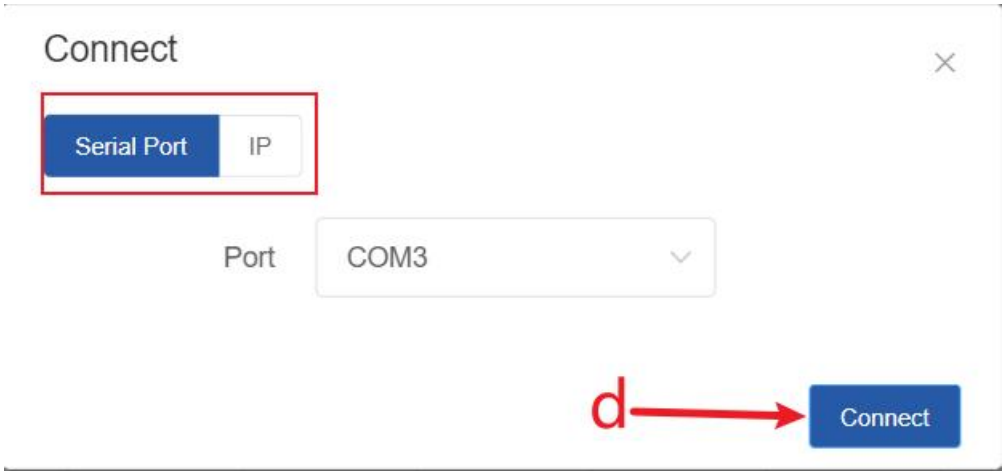


b) Click on the ‘device’ in the device toolbar

c) Select the Ray6mini image and click Confirm



d) Click the 'Connect' to open the device connection page

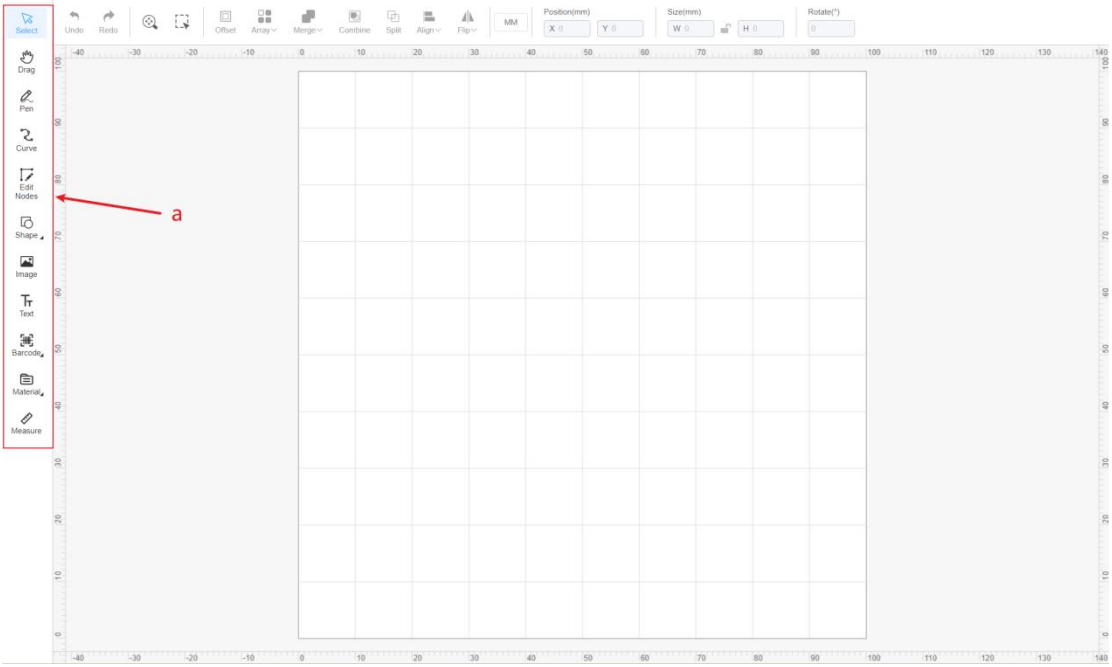


e) After selecting the serial port or IP mode, Click the ‘Connect’ to connect the device

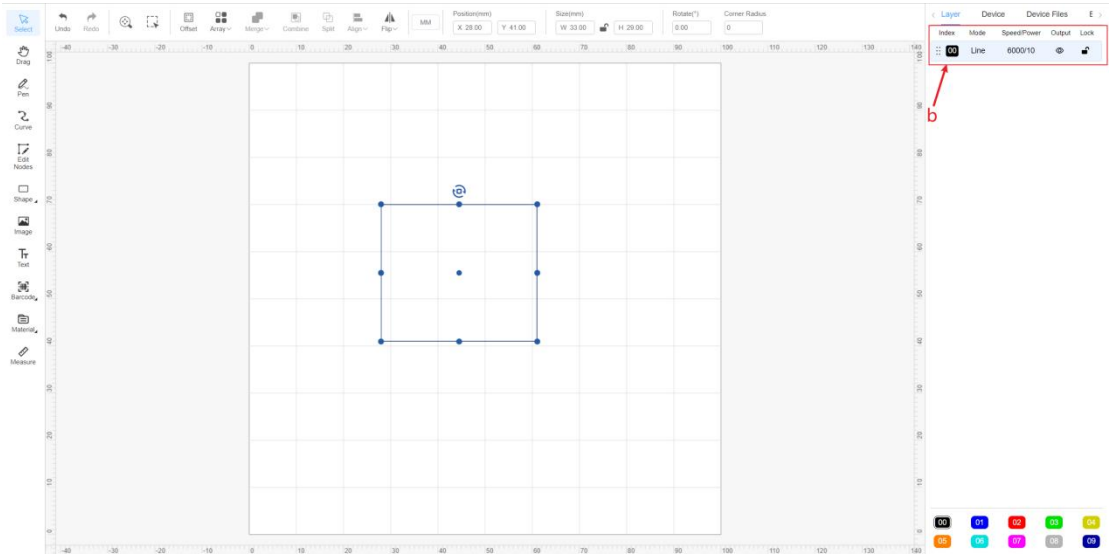
- Port：the system will automatically select the first engraving machine found
- Baud Rate：the default baud rate of the engraving machine is 921600, which can be changed in the settings
- IP：before network configuration, the default IP address of the machine is 192.168.0.1

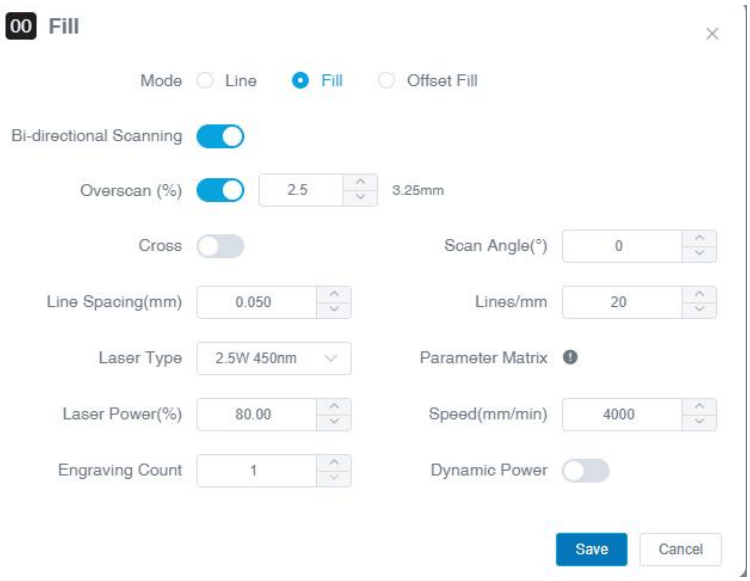
4. Create a Project in LBurn

a) Select drawing tools to create graphics on canvas

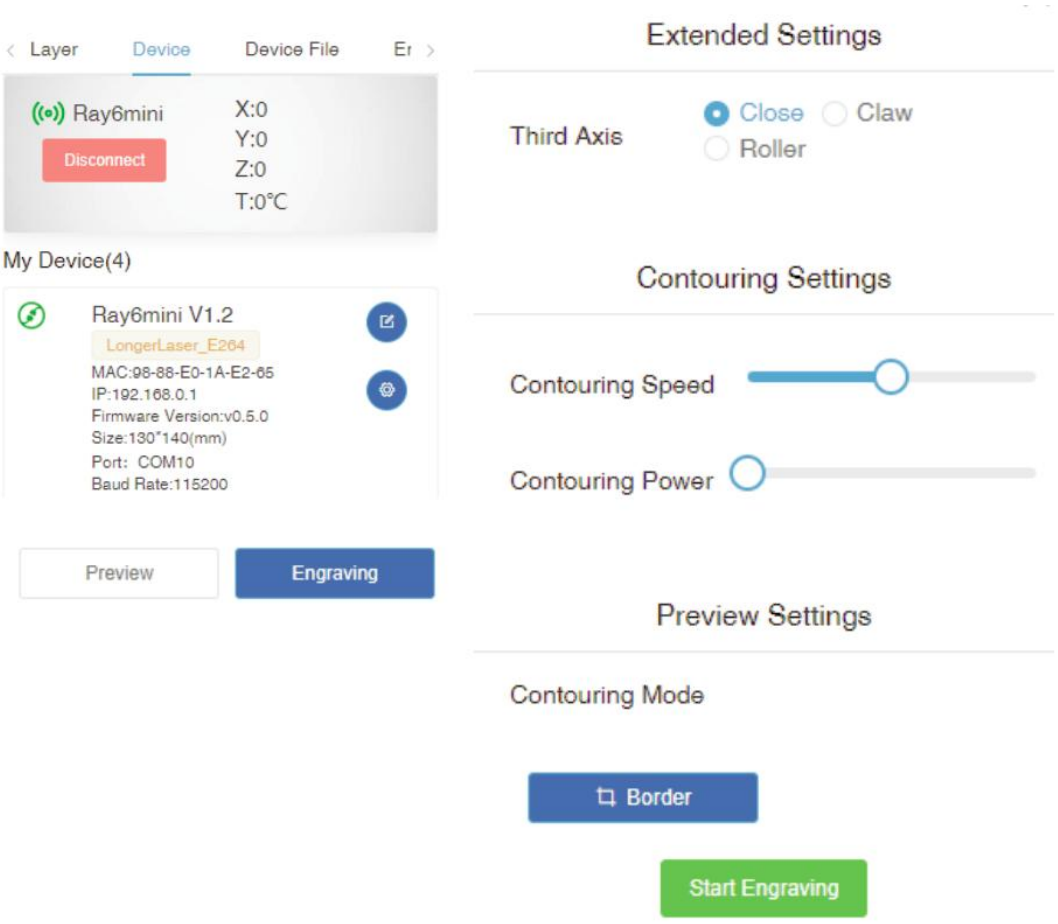


b) Click the selection area to set basic parameters such as speed, power and laser type switching.





c) After setting, you can start engraving



F. APP Operation

1. Download and Installation

To download the LaserBurn app for Android, search for "LaserBurn" in Google Play or visit the following link:

https://play.google.com/store/apps/details?id=com.longer.longerlaser&hl=en_US

For iOS devices, search for "LaserBurn" in the Apple App Store or visit the following link:

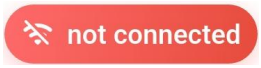
https://apps.apple.com/us/app/laserburn/id6451089363

Alternatively, you can download the app from Rosewill's official website:

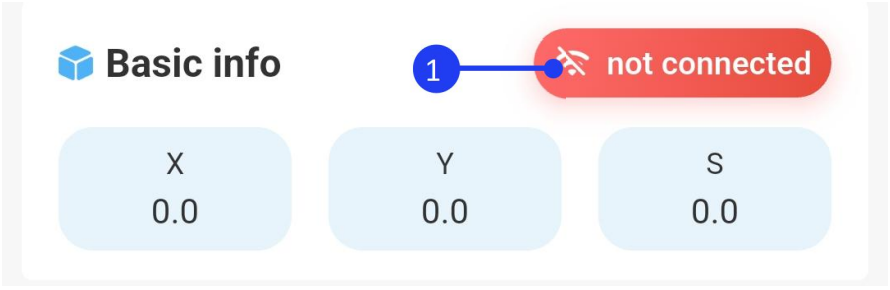
For complex grayscale engraving, it is recommended to transfer the image to your mobile phone's album and then import it into the app for engraving, as this method tends to produce better results.

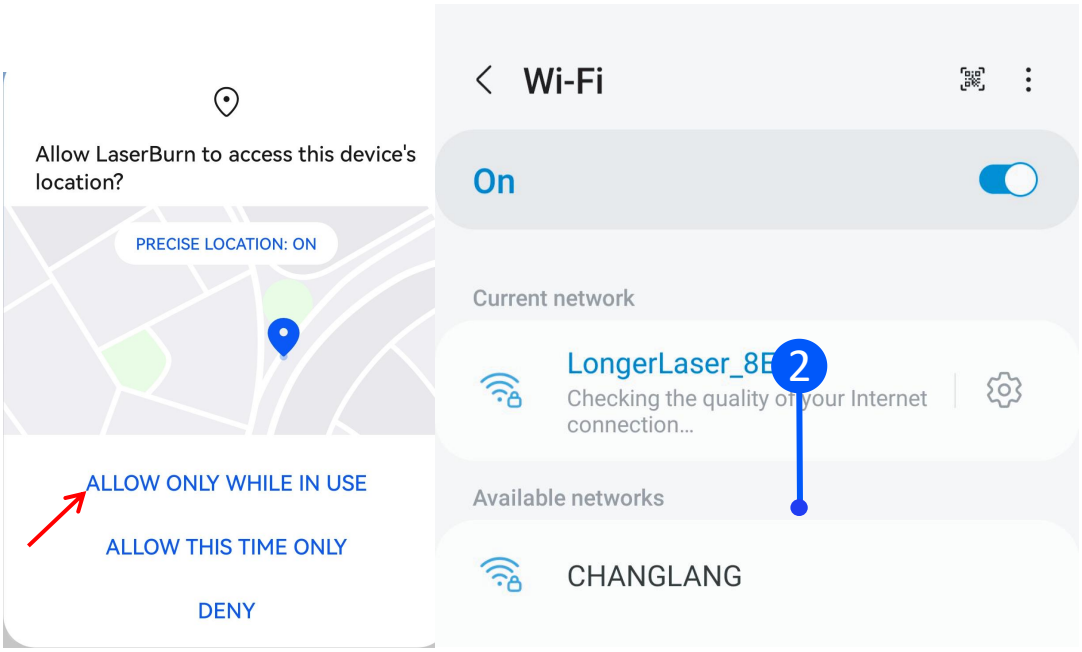
2. Connect to Wi-Fi in AP mode

Note: There are two modes, AP and STA, for connecting the **Ray6mini** via Wi-Fi. The key difference is that in AP mode, the phone will lose internet access, while in STA mode, it can stay connected to the network.

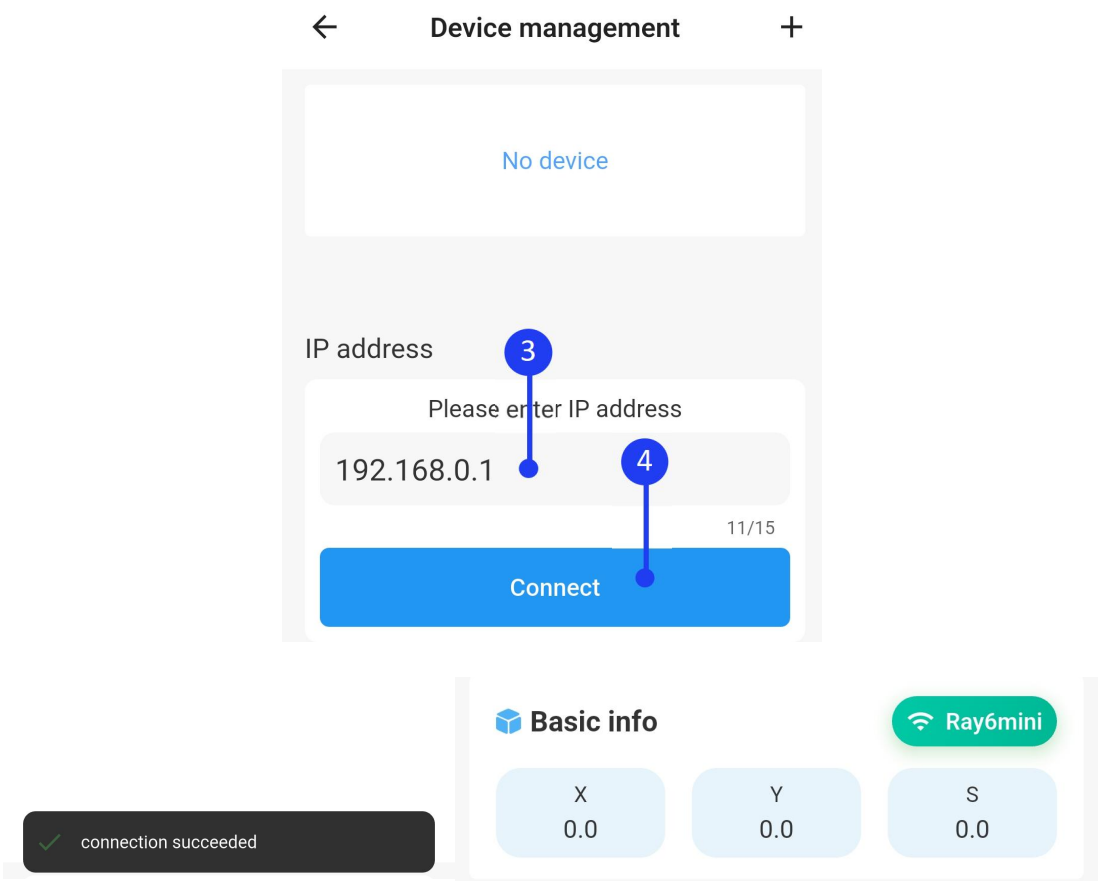
1) Run the LaserBurn app and go to the Home page. Click the not connected icon 

. When prompted with ‘Allow LaserBurn to access this device?’, select ALLOW ONLY WHILE IN USE to ensure the app can search for the **Ray6mini**'s Wi-Fi network.

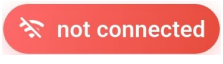




Open your phone's WLAN settings, search for the Wi-Fi network starting with LongerLaser_XXXX and connect using the password 12345678 . Then, enter the IP address 192.168.0.1 , click Connect, and wait for the "connection succeeded" confirmation message.

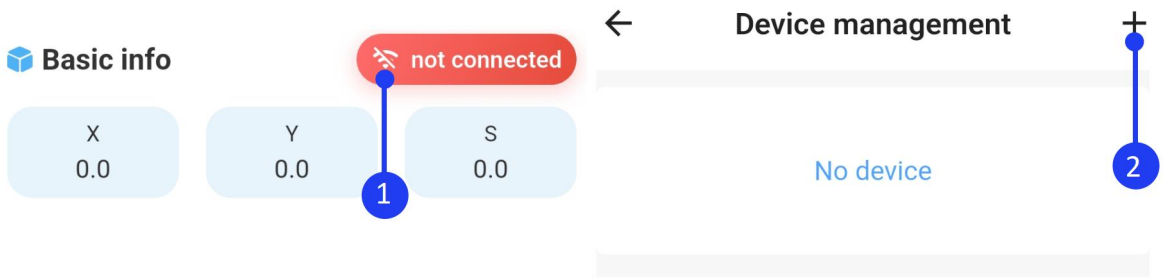


3. Connect to Wi-Fi in STA mode

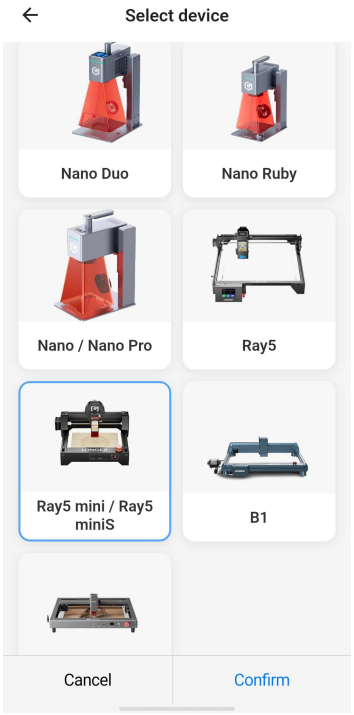
1) Open your phone's WLAN settings. Run the LaserBurn app, go to the Home page, and click the not connected icon 

, to enter the network configuration page. Click Add + in the upper

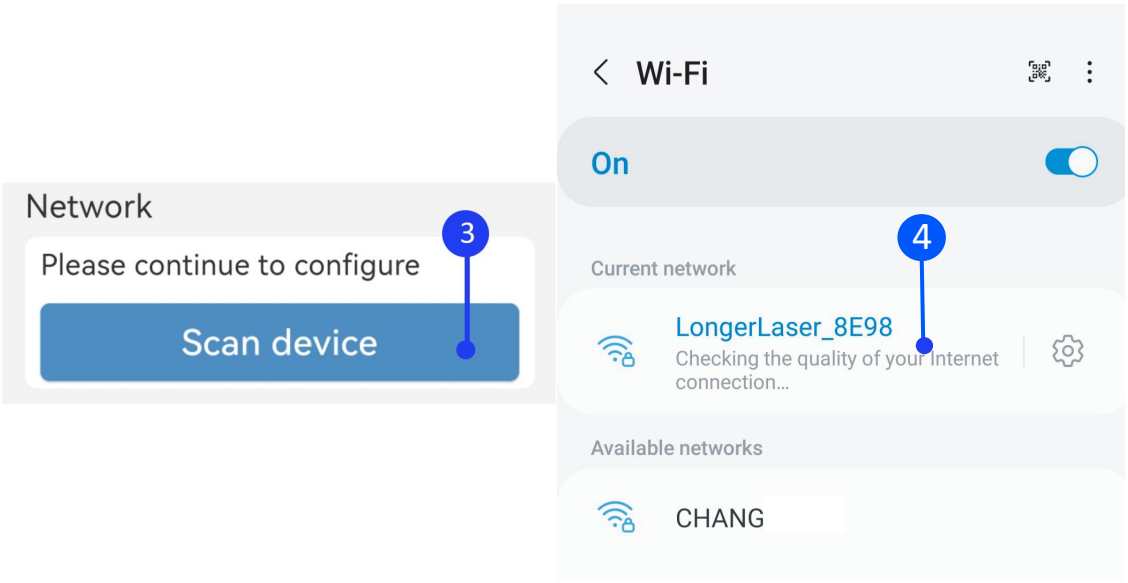
right corner.



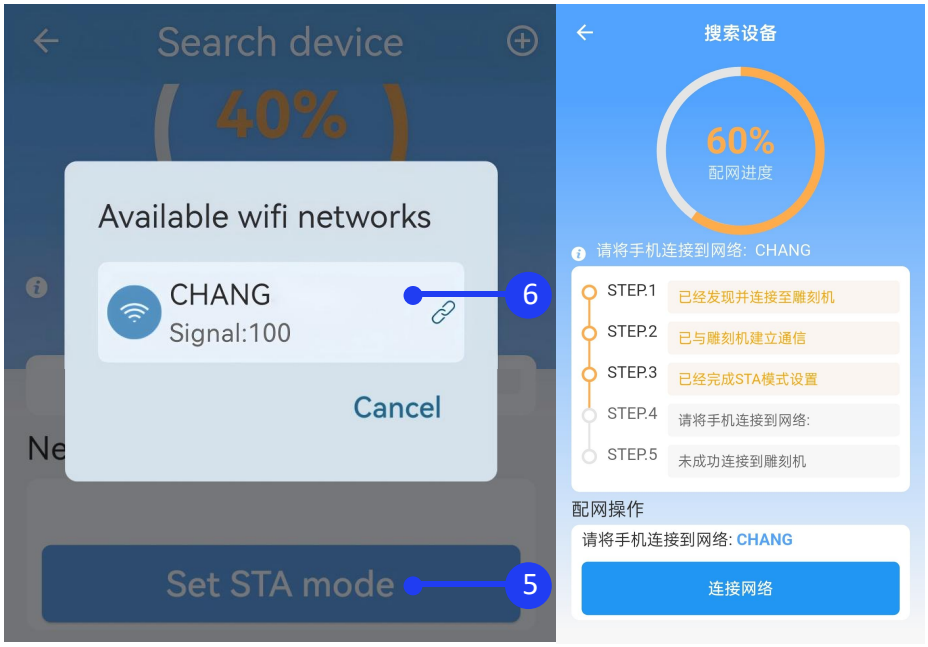
2) Select the Ray5 mini/Ray5 miniS image and click Confirm.



3) Click Scan device, search for the WIFI network starting with LongerLaser_XXXX， and connect using the password 12345678 .

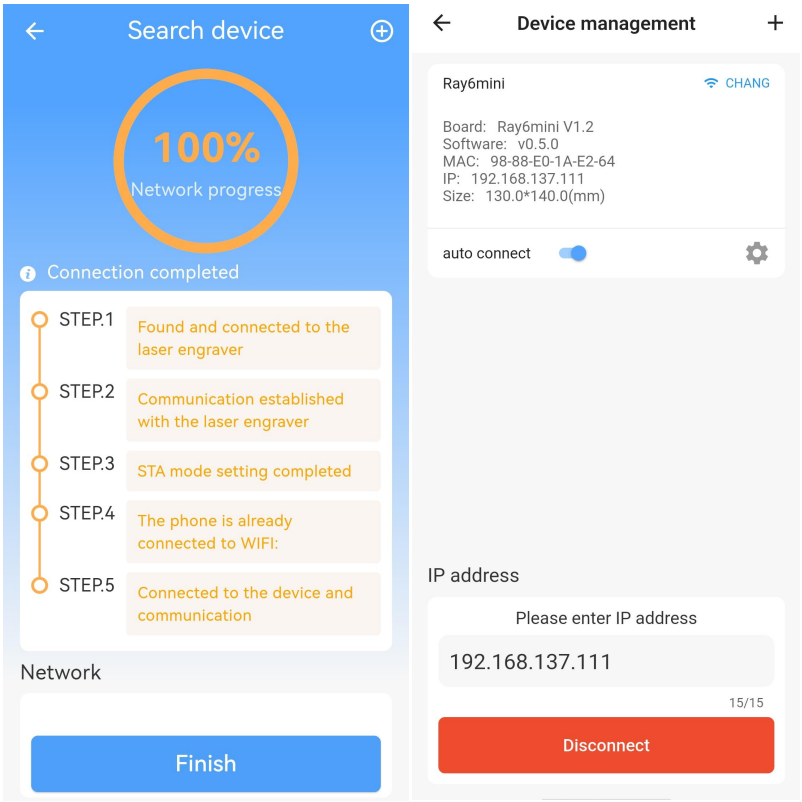


4) Once connected, return to LaserBurn and select Set STA mode to connect the **Ray6mini** to a router (supports 2.4G only). Enter the router's password. The indicator light on the front of the **Ray6mini** will turn orange (breathing light) while connecting and switch to green if the connection is successful. If the connection fails, the indicator will remain orange, and you will need to restart the process from step 1).

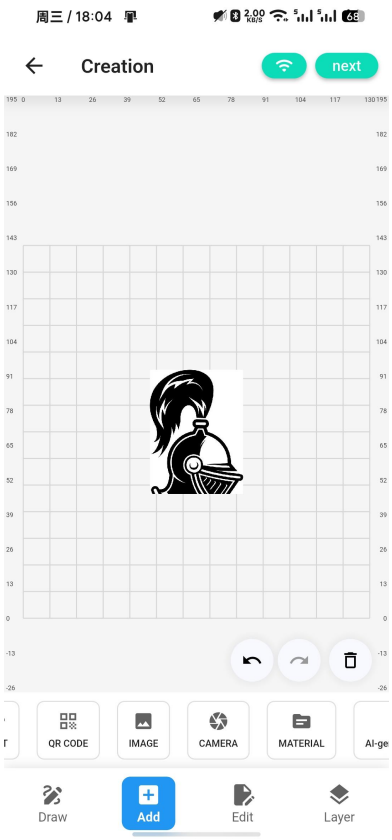


5) Return to LaserBurn, click Connect network at the bottom of the page, and ensure your phone is connected to the same Wi-Fi network as set in STA mode. Wait for network configuration to complete. When the connection is successful and the progress reaches 100%, click FINISH to return to the device list.

Note: Once the device is connected, clicking anywhere on the device list will disconnect it. Conversely, clicking when disconnected will automatically reconnect your phone to the device.


Search device
100%
Network progress
Connection completed
STEP.1
Found and connected to the laser engraver
STEP.2
Communication established with the laser engraver
STEP.3
STA mode setting completed
STEP.4
The phone is already connected to WIFI:
STEP.5
Connected to the device and communication
Network
Finish
Device management
Ray6mini
CHANG
Board: Ray6mini V1.2
Software: v0.5.0
MAC: 98-88-E0-1A-E2-64
IP: 192.168.137.111
Size: 130.0*140.0(mm)
auto connect
IP address
Please enter IP address
192.168.137.111
15/15
Disconnect

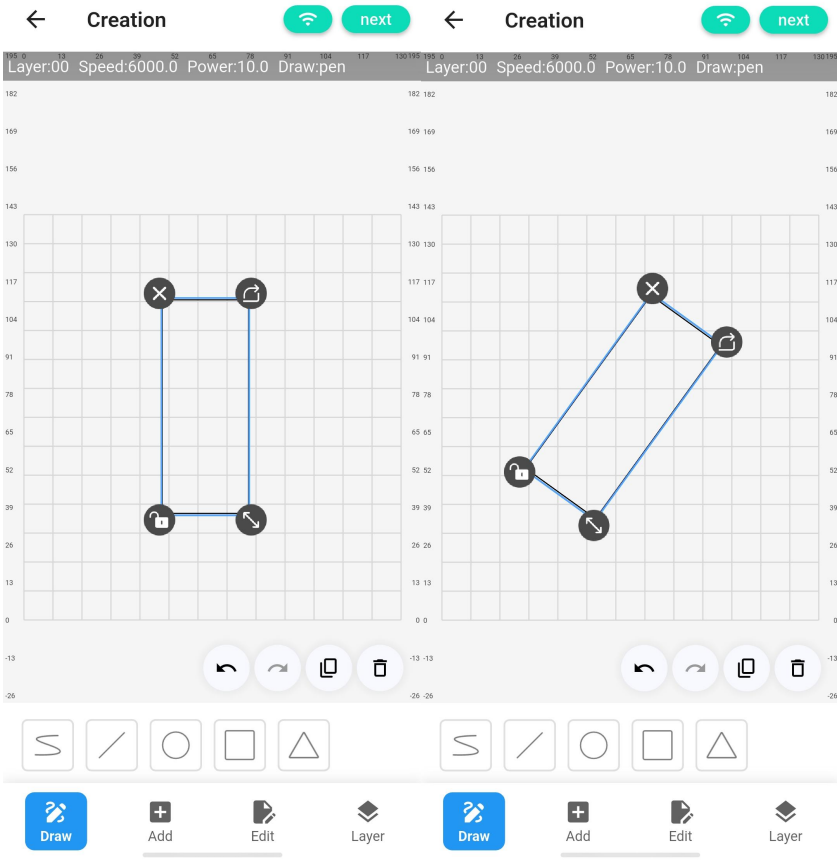
4. Creation


周三 / 18:04
Creation
next
QR CODE
IMAGE
CAMERA
MATERIAL
Draw
Add
Edit
Layer

In the creation interface, you can import graphics through various methods, including drawing, text, QR codes, photo albums, cameras, material library, etc.

1) Draw

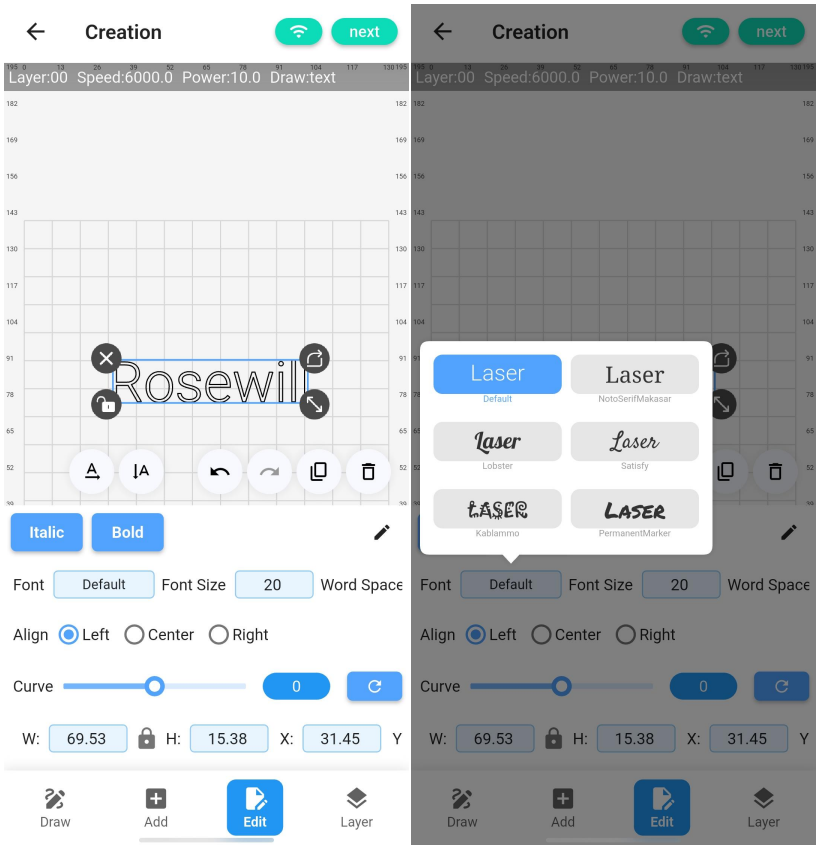
Draw simple images, such as circles, rectangles, triangles, etc.



Enter a value in Size to scale the graphic proportionally or hold down the button  to drag. If you need to adjust the length and width separately, click the button  to unlock the proportional

lock. Enter a value in Position to change the Graphic's position, or select and move it within the canvas by dragging. Enter a value in Rotate to rotate the graphic counterclockwise to the corresponding angle, or hold down the button to rotate it freely. If you click the button , the size, position or angle of graphic can only be changed by entering a value. Clicking the button will delete the graphics.

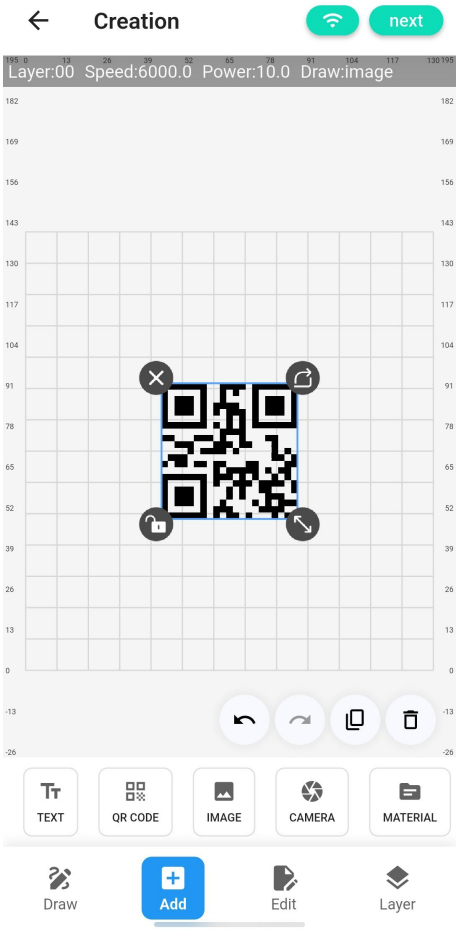
2) Text



Enter text and adjust the font, text size, position and angle.

3) QR code

Generate a QR code based on the input content and adjust its size, position, or angle.



4) Layer

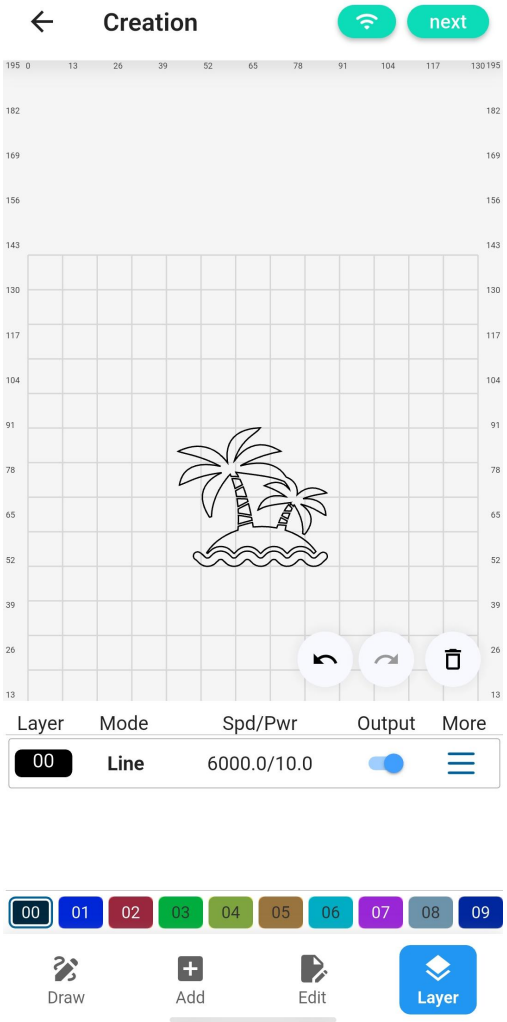
Layer mode: Set line or fill

Laser type: Choose from 2.5W or 3.5W 450nm Blue light

Processing method: Engrave or cut

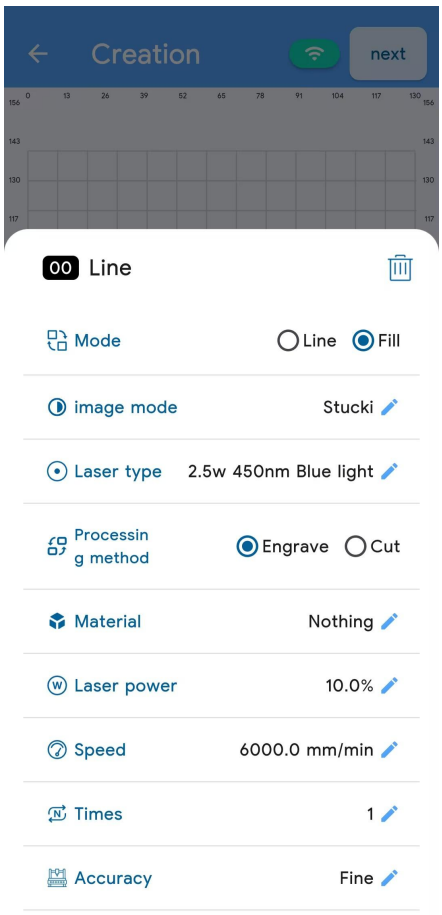
Material: Choose the corresponding material from the material library, and the app will automatically set the appropriate

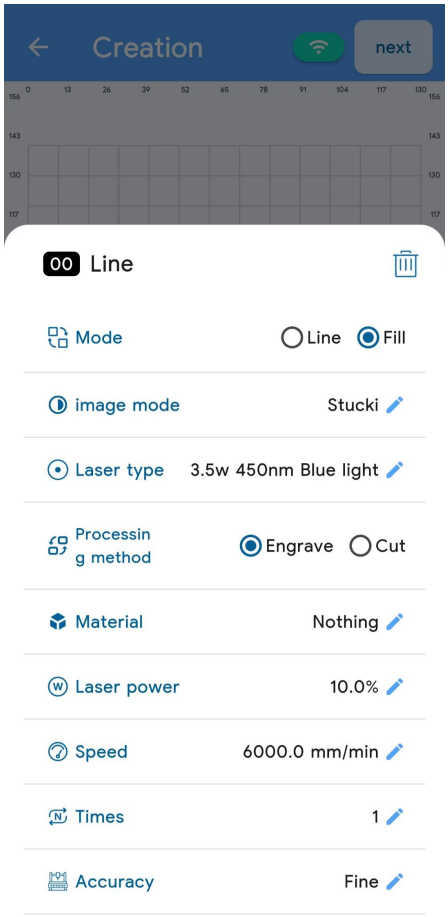
parameters based on the selected processing method and laser power. If adjustments are needed, click the edit button to modify the settings.



Different colored layers allow you to set specific parameters for your design, enabling you to engrave or cut multiple files simultaneously. You can customize parameters such as layer mode, laser type, processing method, material, laser power, speed, number of passes, and accuracy. Up to 11 parameters can be set in the app. To set the parameters, select the design, click Layer, and choose the

corresponding colored layer.





5) Album

Import pictures from your mobile phone album.

6) Camera

Use your phone’s camera to take pictures and import them into the app.

7) Undo


Undo the last operation The app supports up to 20 steps of

undo.

8) Redo

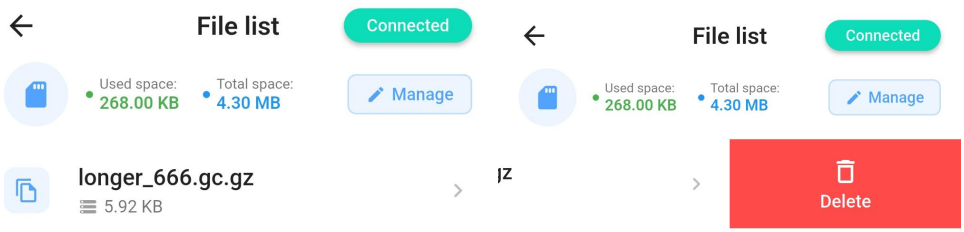
 Redo the last undone operation. The app supports up to 20 steps of redo.

9) Clear

 Clear all graphics from the canvas.

5. Files

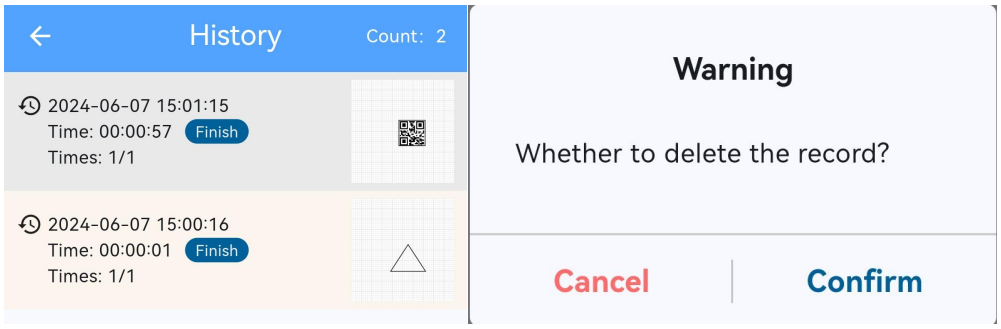
When connected to the engraving machine, you can preview the files uploaded to the **Ray6mini**. To delete a file, select it from the list and slide it to the left. When the available memory is nearly full, please delete unnecessary files to ensure new files can be uploaded.



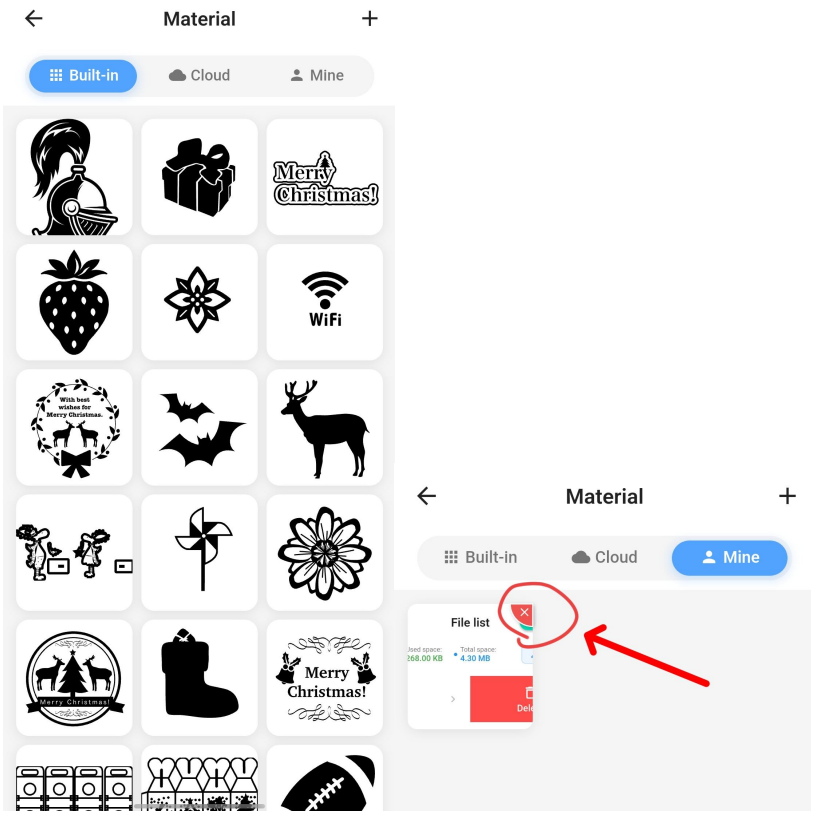
6. History

The History section displays a list of graphics from previous operations on the app. To delete unwanted images, simply

long-press a file in the list.



7. Material

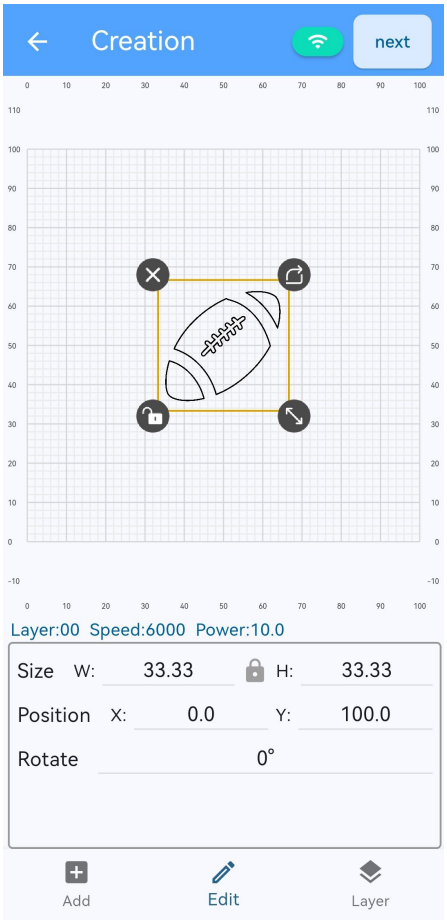


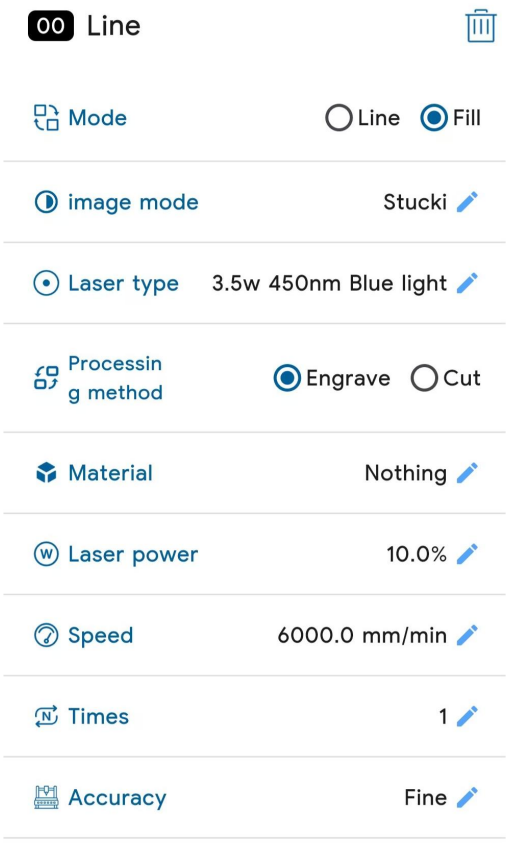
The Material section is the graphic library within the app. To add graphics, click the ADD button in the upper right corner to import from your phone's album or memory. You can find your uploaded pictures in the Mine menu and click the cross in the upper right corner of the picture to delete it, but built-in images cannot be

deleted.

8. Create a Project in LaserBurn APP

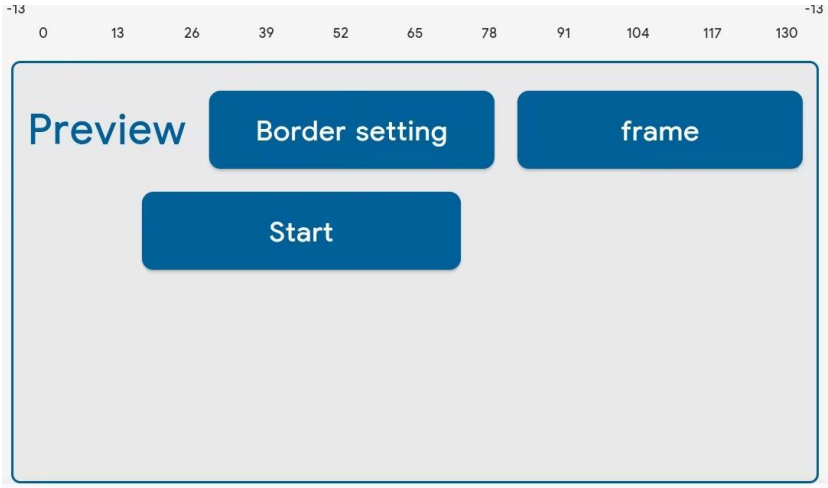
1) Run the LaserBurn app and connect it to the **Ray6mini**. Add a graphic, click Edit to set the size and position, then click Layer to adjust the graphic parameters. After setting, click next in the upper right corner.

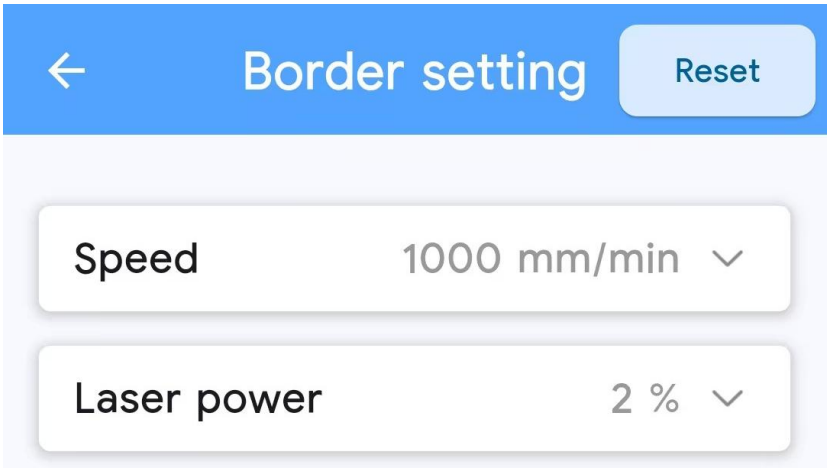




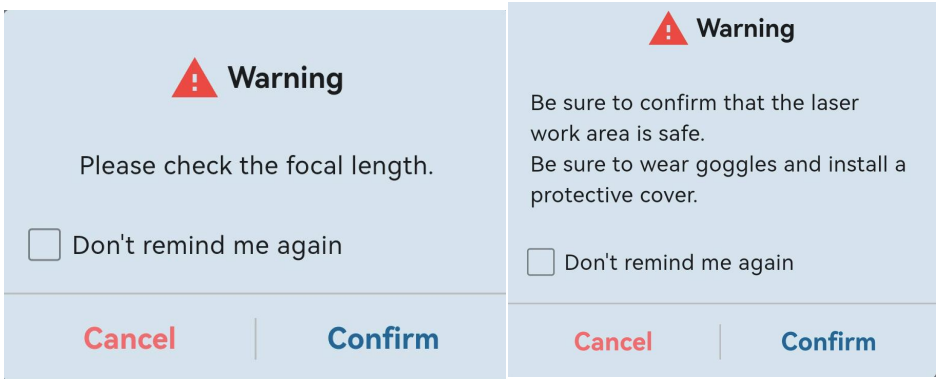
There are 4 values for accuracy: Ultra Fine, Fine, Fast, and Ultra Fast. The default value is Fine. For more precision, select Ultra Fine. For more efficiency, select Fast or Ultra Fast.

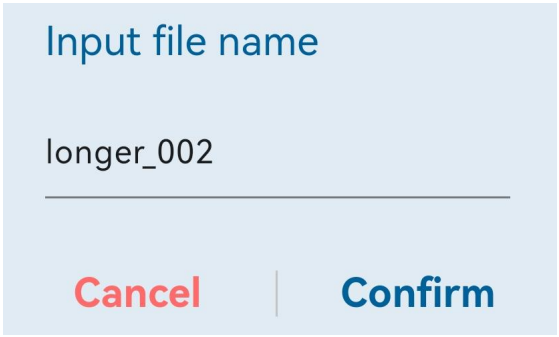
2) Click Border setting to set the speed and patrol power. After setting, click frame to patrol the border. After confirming that the engraving position is correct, click Start to start engraving.





3) Once you ' ve confirmed the focus is properly adjusted and goggles are worn, click Confirm to confirm the file name. The file will then upload to the **Ray6mini**. After the upload is complete, click Confirm to start the engraving task.





4) The app will display the task progress. You can click Pause to pause the task or click Stop to cancel it. When the task is completed, a 'Work completed' prompt will appear. Click Confirm to return to the Home page.