

# **CutLabX Software**

## **User Manual**

**Dongguan xinjia laser technology co., limited**

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## —、 General overview

### Introduction to CutLabX software

CutLabX is a layout, editing and control software for laser cutting machines. CutLabX talks directly to your laser without the need for additional software. In addition, CutLabX provides a large number of materials for you to use. You can also sell materials to obtain points to purchase paid materials. You can even exchange these points for actual money in reality.

With CutLabX you can:

- Import various common vector graphics and image format artwork (including DXF, PNG, JPG, BMP, SVG) and other formats. You can also run NC format and CutLabX proprietary files and use purchased materials in CutLabX.
- Edit and even create new vector shapes in graphics
- Apply settings such as power, speed, engraving times, grayscale mode, etc.
- Send results directly to your laser cutting machine.

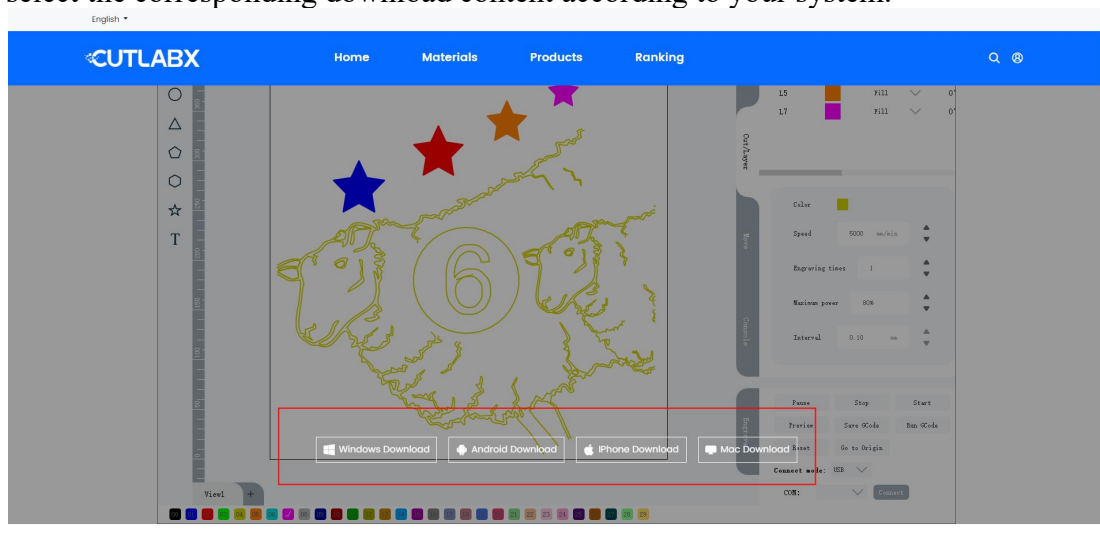
CUTLABX is a native application written for Windows, macOS, with light versions on Android and ios.

## 二、 Software Use

### 1.1. CutLabX Software Download And Installation

#### 1.1.1. Download CutLabX

Visit [www.cutlabx.com](http://www.cutlabx.com) to enter the homepage of the software official website, and select the corresponding download content according to your system.



- **Windows:** After clicking Windows Download, a zip file will be downloaded, which contains the latest installation package.
- **Android:** After clicking Android download, two QR codes will pop up, you can use your Android phone to scan the QR code, the first QR code is to enter the Google Store to download, the second QR code is to download an apk file format installation package.
- **IOS:** After clicking on iPhone to download, a QR code will pop up. Use your iPhone to scan the QR code and enter the Apple Store to download the software.
- **Mac OS:** After clicking Mac download, it will jump to the Apple Store, where you can download it.

#### 1.1.2. System Requirements

- **Windows:** Windows 7.0 or higher, 64-bit system
- **Android:** Android 6 and above
- **IOS:** ios 13.0 and above
- **Mac OS:** MacOS 11.0 and above

CutLabX does not have high requirements for computer performance, but if your design contains a large number of images or some complex vector graphics, a computer with better performance will be able to handle the content more easily.

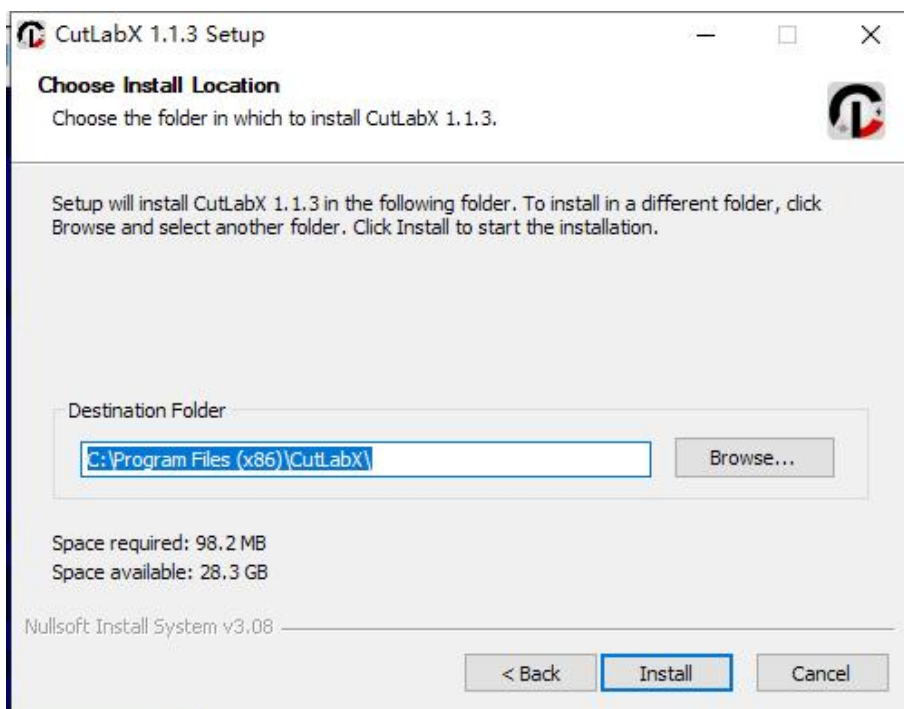
### 1.1.3. CutLabX Installation

#### Windows:

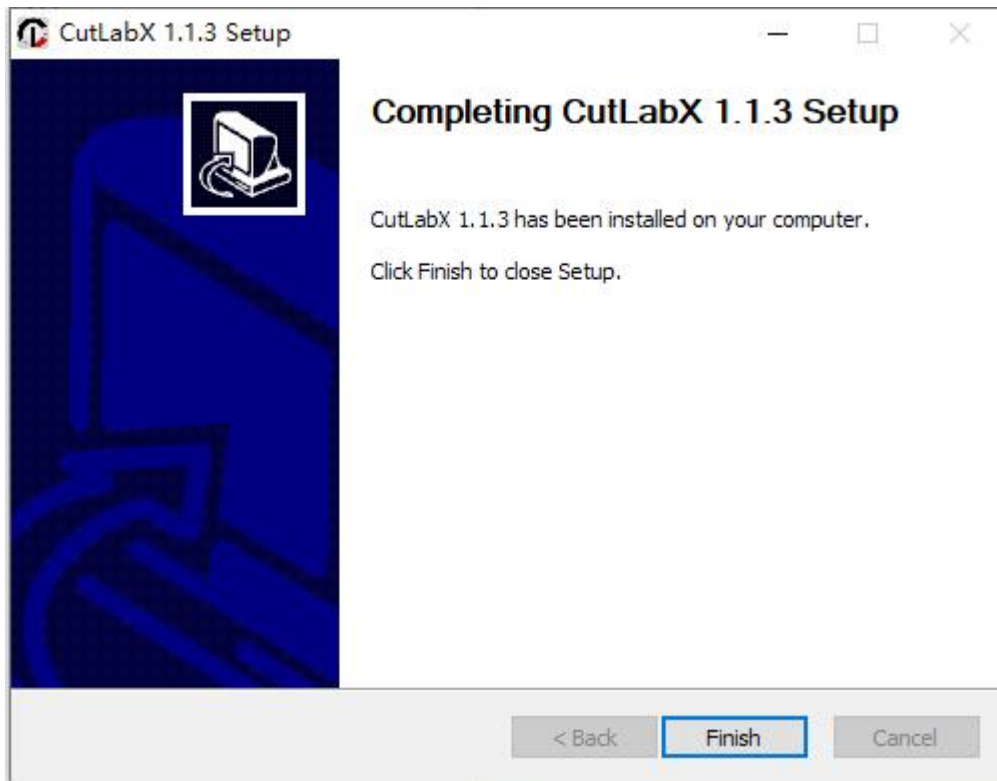
Double-click to start the installer. Windows may first ask you if you trust us



Then click Next, select the path you want to install, and click Install



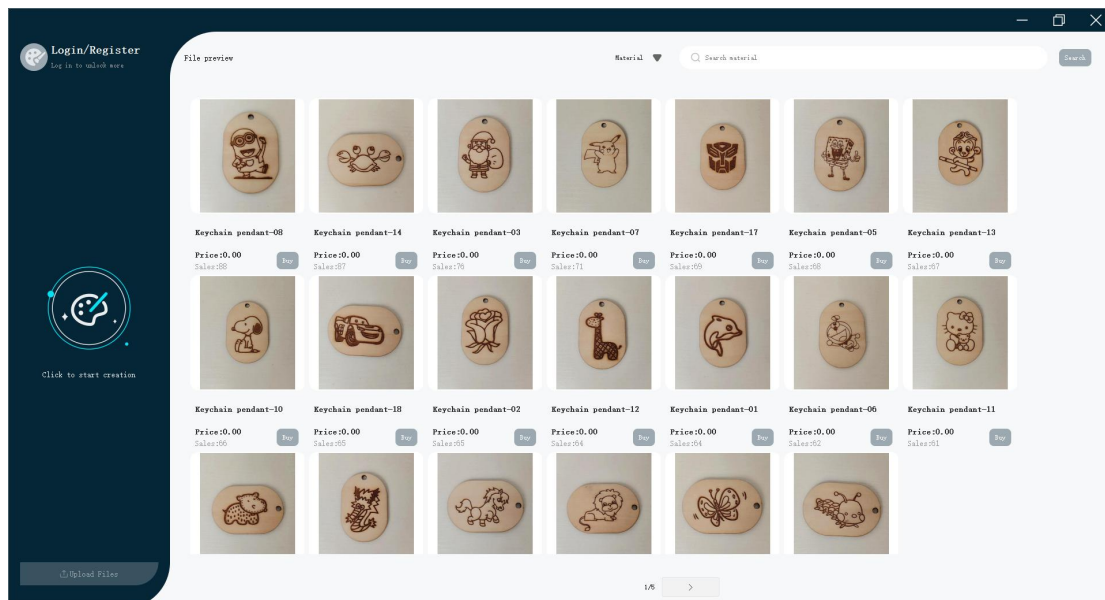
Once the installation is complete, you will see the following:



The installation is now complete. Find the software icon on the desktop and start the program.

## 1.2. Software Main Window And Buttons

Main interface



### 1.2.1. Material

CutLabX provides a large number of free materials that you can log in to purchase and then use. CutLabX also supports users to create some exquisite materials by themselves and then upload them. Here they can also set different prices for other users to purchase and use; when



your materials are paid materials and other users purchase them, you can Earn some points that can be redeemed for real money.

### **1.2.1.1. Material Search**

#### (1) Search for material by author name

Click the filter drop-down box in the search area of the main interface, select "Author", enter the full name or part of the author's name in the right input box, click the "Search" button, and all author materials containing the author's name will be searched.

#### (2) Search for materials by material name

Click the filter drop-down box in the search area of the main interface, select "Material", enter the full name or part of the material name in the input box on the right, click the "Search" button, and all materials containing the material name will be searched.

### **1.2.1.2. Material Content And Details**

#### (1) Material display content

The searched materials or the materials that are refreshed when opened for the first time will be displayed in pages, with 20 materials displayed on each page. Each material will display a main image, material name, price, sales volume and current status.

①Price: The currency of this price is the virtual currency in the software

②Current status: When not logged in, the status of the materials is displayed as "Purchase", and the materials cannot be used at this time; after logging in, the status of the purchased materials is displayed as "Used", and the materials can be used, and the unpurchased materials are displayed as "Purchase".

#### (2) Material details

When logged in, click the main image of the material to enter the material details interface. The material details interface will display relevant information about the material, such as the main image, material name, label, material type, model, price, material, laser power, detailed text description, and details. Pictures, prices. and allow users to purchase or use this interface.

### **1.2.1.3. Material Purchase And Use**

#### (1) Material purchase

When logged in, click the "Purchase" button of the material on the material page. If the currency balance is sufficient, a pop-up prompt will appear after clicking the

button to indicate that the purchase is successful, and the status of the button will change to "Use"; if the balance is insufficient, a pop-up will prompt that the balance is insufficient.

## (2) Material Use

When the status of the material is "Use", click the "Use" button to jump to the creation interface, and the files in the material will be imported. Related parameters and views will also be imported.

### 1.2.1.4. Material Upload

Click the "Upload File" button in the main interface to enter the upload material page. Fill in the corresponding material information and click the "Upload" button to upload. After the upload is successful, the background will review it. After the review is successful, the material will appear on the material page.

- Main image: A picture used to display on the main page of the material. Only one main image is supported. The supported file format is jpg or png.
- Material name: The name of the material, allowing text in various languages
- Material file: The file format is fixed .cutlabx, which can be exported by CutLabX software
- Material: The material used to make the material, such as wood board, paper, etc. This attribute does not support customization at the moment. If necessary, you can customize the material in the tag.
- Machine model: All machines and models used to produce materials. This attribute does not support customization at the moment. If necessary, you can customize the model in the tag.
- Price: The selling price of the material, the unit is the currency included in the CutLabX software, which can be exchanged for real currency
- Power: The laser power of the machine used to make the material. Customization is not supported at the moment. If necessary, the power can be customized in the tag.
- Material type: The type of materials sold, such as animals, buildings, etc., does not support customization at the moment. If necessary, you can customize the material type in the tag.
- Material Description: Fill in some introduction about the material or some steps for making the material
- Tags: Support customization, you can fill in the content you want, such as model, festival, animation, etc. Multiple tags can be separated by English commas
- Material details pictures: You can upload some pictures of assembled materials or

upload pictures of introduced materials. It supports uploading multiple pictures. Deleting pictures is not supported at the moment. It supports jpg and png format pictures.

## 1.2.2. Personal Center

### 1.2.2.1. User Management

Note: When logging in, registering, or changing your password, make sure your device network is normal.

#### (1) register

Click the "Login Register" button on the main interface, then click the "Register" button in the login window, enter the corresponding user information, and click "Register" to register successfully.

- Username: cannot exceed 15 characters. Please do not enter some inappropriate words, otherwise CutLabX may ban your account.
- Email: Email is your unique identifier. Please ensure that the email you entered exists and can receive emails, otherwise you will not receive the registration code and will not be able to register successfully.
- Password and confirmation password: The password and confirmation password must be consistent and cannot be less than 8 digits and cannot exceed 20 digits.
- Verification code: After clicking "Send", you will receive the verification code in your email and enter it in the corresponding area.
- Privacy and Policy: Please read the corresponding terms and click to agree, otherwise you will not be able to register.

#### (2) Log in

Click the "Login Register" button on the main interface, enter your email and password on the login interface to ensure that your account can be used normally, read the corresponding privacy terms, and click the "Login" button.

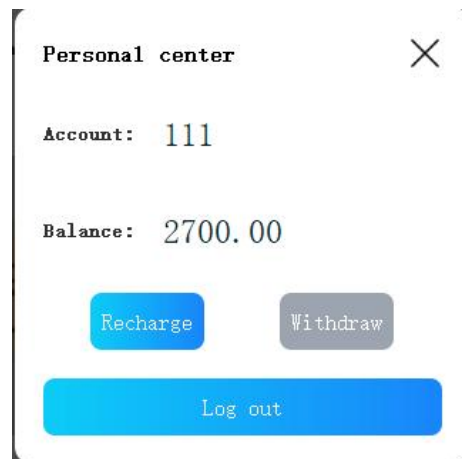
After logging in, you will be logged in automatically every time you enter the software.

#### (3) Change Password

Click the "Login Register" button on the interface, then click "Forgot Password", and fill in the password on the change password interface. Corresponding information, click "Change Password".

- Email: Make sure your email exists and can receive emails, and that it has been registered.
- Password and confirmation password: The password and confirmation password must be consistent and cannot be less than 8 digits and cannot exceed 20 digits.
- Verification code: After clicking "Send", you will receive the verification code in your email and enter it in the corresponding area.
- Privacy and Policy: Please read the corresponding terms and click to agree, otherwise you will not be able to change your password.

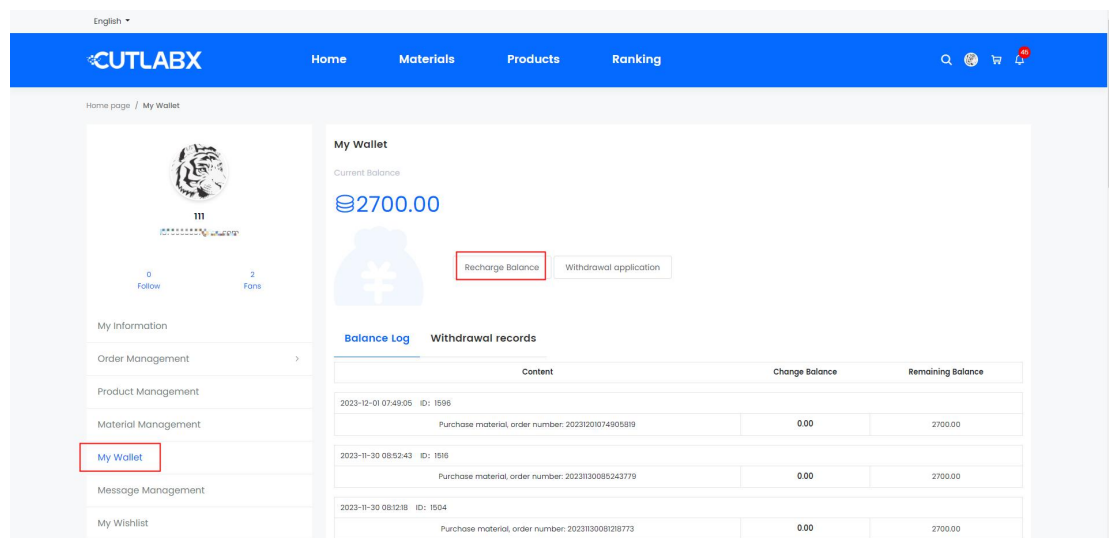
## 1.2.2.2. Personal Center

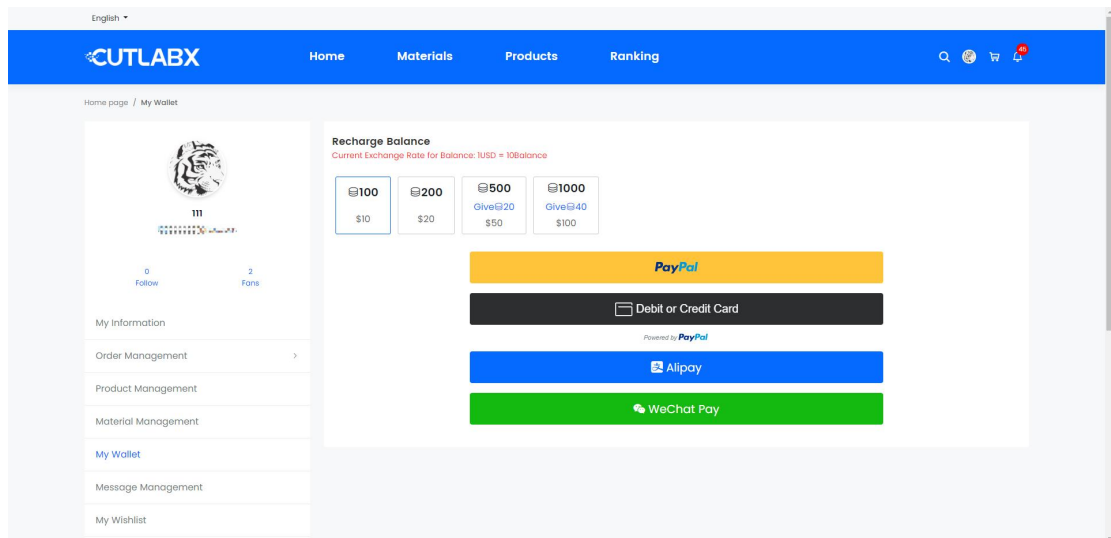


(1) User information: After successful login, the personal center window will pop up and the user's name will be displayed. After successful login, you can also click the "Personal Center" button on the main interface to enter the window.

(2) Currency management: After successful login, the personal center window will pop up and the corresponding information will be displayed. After successful login, you can also click the "Personal Center" button on the main interface to enter the window.

- Currency balance: The personal center window will display the user's currency balance. Currency can be used to purchase materials, or it can be withdrawn and exchanged for real currency.
- Recharge: The "Recharge" button will be displayed in the personal center. Clicking the "Recharge" button will jump to the software's official website page. After logging in, click "Wallet" in the personal center and click the "Recharge" button in the wallet. Currently, four recharge methods including Paypal, credit card, WeChat, and Alipay are supported, with a fixed amount. The actual currency conversion ratio is subject to the web page.





- **Withdrawal:** The "Recharge" button will be displayed in the personal center. Clicking the "Recharge" button will jump to the software's official website page. After logging in, click "Wallet" in the personal center and click the "Withdrawal" button in the wallet. Currently, withdrawals to PayPal, Alipay, and bank cards are supported. The minimum withdrawal limit is 500 currencies. Please ensure that the information entered when withdrawing is accurate, otherwise the withdrawal will fail.

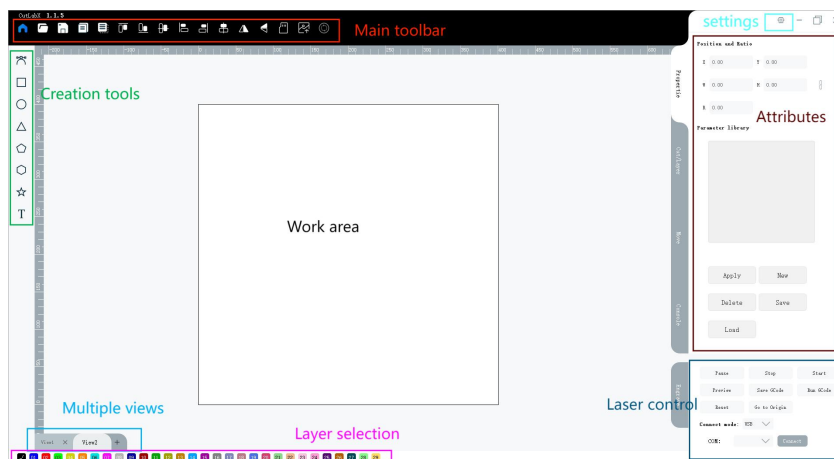
(4) **Log out:** Click "Log out" on the personal center interface to log out of the account and return to the main interface.

## 1.3. Creation Interface And Buttons

CutLabX software is compatible with many types of laser cutting machines and engraving machines. As long as your machine is a GCode-based system, CutLabX supports almost all.

### 1.3.1. Creation Main Interface

Click the "Click to start creating" button on the main interface to enter the main creation interface.



The main creation interface consists of the following contents:

- Main toolbar area
- Multi-layer selection area
- Device Settings Area
- Cut/Layer Window
- Console window
- Creation tool area
- Multi-view management area
- Properties Window
- Move Window
- Laser control window

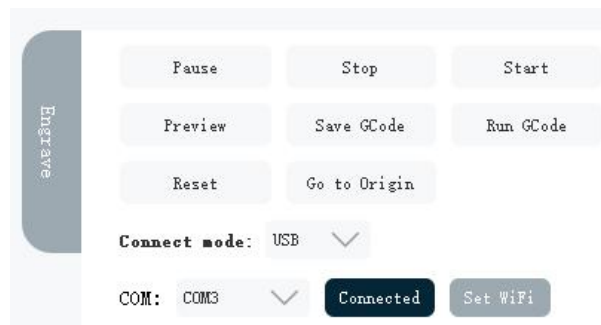
### 1.3.2. Laser Control Window (Engraving Window)

The laser control window allows you to select the connection method of the machine, view and control its connection status, control some operations on the laser, and set the relevant settings of the machine (if your laser machine has this function)



#### 1.3.2.1. USB Connection

Select the "USB" connection mode in the engraving window of the creation interface, select the appropriate port in the COM port, and click the "Connect" button. After the connection is successful, the "Connect" button will change to "Connected" and the "Set up wifi" button will appear.



If the COM port is not displayed, follow the steps below to confirm:

(1) Make sure your laser is turned on and use a normal USB data cable to connect the laser to the computer

(2) Make sure you have installed the appropriate driver on your computer, which is compatible with your computer system version. You can ask the merchant who sells the laser to ask them to provide the corresponding driver.

(3) Make sure that your computer interface is not loose or has poor contact. It is recommended to try a different computer interface.

If the COM port is displayed, but the connection fails after clicking the connect button, please follow the steps to confirm:

(1) Make sure your laser supports the software

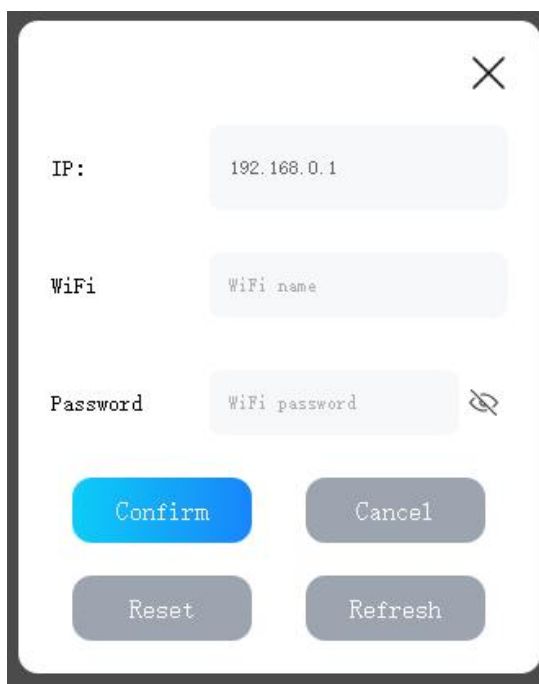
(2) Make sure your laser is in a normal state. If the laser has not been initialized or is in an abnormal state such as an alarm state, the connection will fail. Some lasers have a status indicator light. Under normal conditions, the indicator light is always white. For details, please contact the merchant who sells the laser.

(3) Make sure your COM port is not occupied by other software. It is recommended to close other laser-related software before connecting.

### 1.3.2.2. Set Up WIFI

**If the laser does not have wifi function, the "Set wifi" function will be invalid.**

After successfully connecting through USB mode, click the "Set wifi" button to enter the wifi setting interface.



The screenshot displays a white dialog box with a grey border and a close button (X) in the top right corner. It contains three input fields: 'IP:' with the value '192.168.0.1', 'WiFi' with the placeholder 'WiFi name', and 'Password' with the placeholder 'WiFi password' and a toggle icon. Below the fields are four buttons: 'Confirm' (blue), 'Cancel' (grey), 'Reset' (grey), and 'Refresh' (grey).

- IP: The IP of the current laser will be displayed, which can be used for subsequent wifi connections. The default IP of the laser is 192.168.0.1, and at this

time the laser acts as a router device to send wifi

- WiFi: The name of the WiFi to which the laser machine will be connected. The format of the WiFi name currently only supports Arabic numerals, English, except!,? English characters other than , ~ and \$. The connected wifi can be either the wifi in your home or the hotspot on your mobile phone
- Password: The wifi password for the laser to connect to wifi. Currently only supports Arabic numerals, English, except!,? English characters other than , ~ and \$, the password length cannot exceed 64 characters
- Confirm: After entering the wifi name and password, click the "Confirm" button. You need to restart the software and laser, otherwise the settings will be invalid and other errors will occur.
- Refresh: Clicking the "Refresh" button will re-obtain the current laser IP.
- Reset: Clicking the "Reset" button will reset the laser to the initial wifi mode, that is, the ip is 192.168.0.1, and the laser will send wifi for other devices to connect.

### 1.3.2.3. Wifi Connection

**If the laser does not have wifi function, the "wifi connection" function will be invalid.**

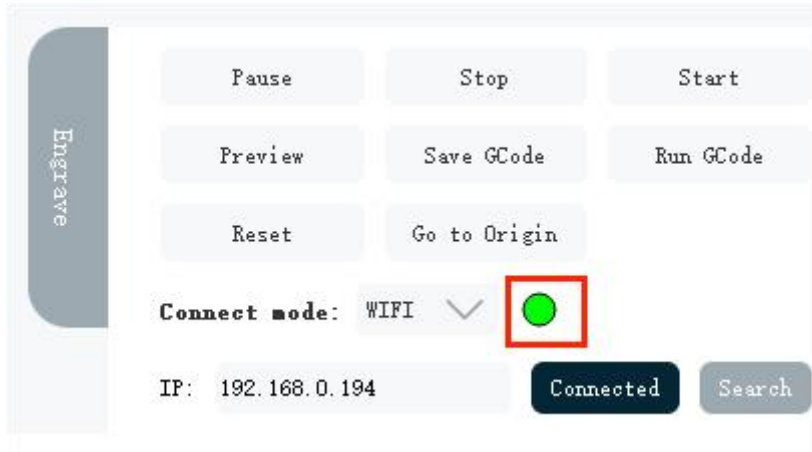
Select the "WiFi" connection mode in the engraving window of the creation interface and switch to the wifi connection interface.



- IP: Enter the IP of the laser. The ip of the laser can be viewed in the "Set wifi" interface after connecting through USB mode, or you can obtain the ip by searching
- Search: After clicking the "Search" button, the IP of the laser connected to the network connected to the current computer will be searched, and the IP will be displayed in the IP input box. If there is no laser connected to the network or the network is poor, the IP will be displayed as empty, and the laser is in the initial state, that is, when the IP is 192.168.0.1, the IP cannot be searched.
- Connection: After clicking the "Connect Button", if connected, the button will change to Connected, and the communication status indication area will appear.



Green represents smooth communication, yellow represents communication delay, and red represents communication abnormality.



### Disconnect:

(1) When the communication abnormality lasts for 5 minutes or more, the connection will be automatically disconnected. When communication abnormalities occur for a long time, please restart the laser and software and try to connect again.

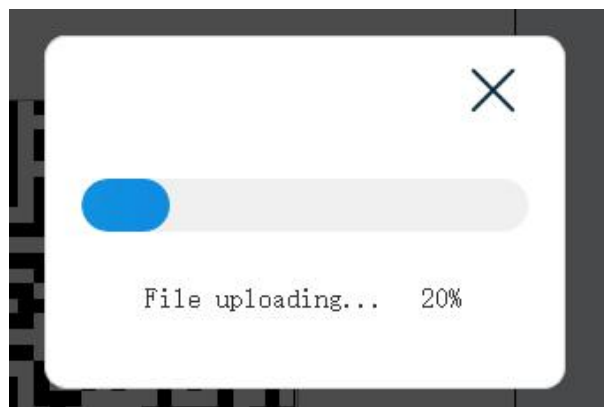
(2) After connecting through wifi mode, the connection will be automatically disconnected after switching the computer network. At this time, when connecting through wifi mode for the first time, you will be prompted to restart the laser machine. Please follow the prompts to restart the machine, otherwise other abnormal problems will occur.

**Note:** Before connecting, please make sure that your computer is not using other tools such as proxy servers. These tools will change your computer's IP, causing the WiFi mode to fail to connect successfully.

### 1.3.2.4. Start, Stop, Pause, Preview

- Start: Run the file of the selected graphic in the current view on the laser.

(1) After clicking the start button in wifi mode, a transmission progress bar will appear. When the progress bar reaches 100%, the laser will start engraving.



(2) In USB mode and WIFI mode, if the graphics are too complex, a rotating dynamic box will appear after clicking Start. The laser will start engraving after the

dynamic box disappears.



- Pause: Pause the running job, click the "Start" button again to continue the job.
- Stop: Stop the running job immediately.
- Preview: After selecting the graphics in the current view, there will be a rectangular frame, and the laser will preview according to the size and position of the rectangle.

Note: If no graphics are selected, all graphics in the current view will be selected by default.

### 1.3.2.5. Save Gcode And Run Gcode

- Save GCode: This function will save all the content in the current view as an executable engraving file. The saved content includes all parameters such as power and speed. The file format can be saved as .nc or .gcode.
- Run GCode: Load and run a local executable engraving file, the file format is .nc.

### 1.3.2.6. Reset And Return To Origin

- Reset: Click the "Reset" button, the laser will perform a return cycle. During this process, the laser moves to the starting position, touches the travel switch on the boundary and rebounds to stop. The position of the laser is ( 0,0)
- Origin: The origin is the starting position of the laser operation. The default origin of the laser is (0,0). If the origin is not set, the coordinates of the lower left corner of the graph on the canvas are (30,30), then the preview and engraving position of this point is also (30,30); if the origin is set to (20,20), then the position of this point The preview and engraving position is (50,50). The origin can be cleared in CutLabX or by restarting the laser.

## 1.3.3. Main Toolbar Area



Hover over an icon in the software to see its name.

### 1.3.3.1. Main interface

Clicking this icon will jump to the main interface of the software.

### 1.3.3.2. Open File

Open a file. Supported file formats are .png, .bmp, .jpg, .jpeg, .cutlabx, .dxf, .svg.

- png, bmp, jpg, jpeg: These four file formats are image files. The larger the pixel value of the image, the import time will be delayed, and the edges will be somewhat jagged after enlargement. After the above file formats are imported, they will be displayed in the current view of the canvas.
- dxf: The file format is a vector file
  - (1) The imported content will be displayed in the current view
  - (2) The file is imported at a ratio of 1:1, and the imported position coordinates are consistent with the actual position coordinates.
  - (3) If the actual coordinates exceed the maximum coordinates that CutLabX can display, the import will be invalid.
  - (4) After the file is imported, the file content will be treated as a whole and cannot be split or layered.
  - (5) If the original dxf file has multiple layers, it will be a whole after import and cannot be split or layered.
  - (6) After the dxf file is imported, the display of text content in the file is not supported for the time being.
- svg: The file format is a vector file
  - (1) The imported content will be displayed in the current view
  - (2) svg files are mainly exported and generated by the software Inkscape and the software Adobe Illustrator. The svg files generated by both software support import, but only the svg files generated by Inkscape can be imported at a 1:1 ratio.
  - (3) If the original svg file has multiple layers, it will be a whole after import and cannot be split or layered.
  - (4) After the svg file is imported, the display of text content in the file is not supported for the time being.
- cutlabx: The file format is CutLabX file
  - (1) The cutlabx file has its own view. After the file is imported, the file content will be displayed in a new view. If the file has multiple views, the software will also

display corresponding multiple views after importing.

(2) If the software has blank views, that is, there is no content in the views, these blank views will be cleared after importing the cutlabx file.

(3) After the cutlabx file is imported, the file content will be imported at a 1:1 ratio, and related parameters such as position coordinates, power speed, etc. will also be imported.

### 1.3.3.3. Save Document

All view contents and corresponding parameters in the software will be saved as files, and the file format is .cutlabx.

### 1.3.3.4. Copy And Paste

- Copy: Select the graphics or text content in the software, click the copy icon or press Ctrl+C, the graphics or text will be saved in the clipboard inside the software.
- Paste: If the relevant content has been copied, click the paste icon or press Ctrl+V to insert the contents of the clipboard in the software into the canvas.

Note: The text generated by pasting does not support modifying the text content.

### 1.3.3.5. Align Top , Align bottom And Horizontal center alignment

These buttons will move all shapes in the current selection to align the top, bottom, or horizontal center of the selected shape with the rectangular area formed by the selected shape.

### 1.3.3.6. Left aligned , Align right And Vertical center alignment

These icon buttons will move all currently selected shapes to align the left, bottom right, or vertical center of the selected shape with the rectangular area formed by the selected shape.

### 1.3.3.7. Horizontal mirroring And Vertical mirror

Horizontal mirroring will flip all currently selected graphics vertically; vertical mirroring will flip all currently selected graphics horizontally.

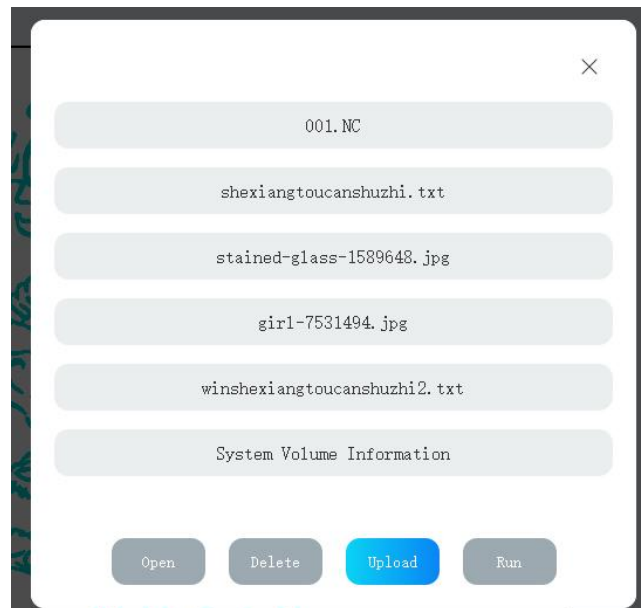
### 1.3.3.8. Read TF card

Note:

- (1) The laser must have a TF card.

(2) The TF card must be used in WiFi mode.

Click the TF card icon to display the TF card interface window, which displays all files in the root directory of the TF card by default.



- **Open:** Open other folders in the root directory of the TF card.
- **Delete:** Delete the files in the TF card.
- **Upload:** Only files in nc format are allowed to be uploaded to the TF card. If the file size is too large, the upload time will be extended, subject to laser hardware and network restrictions.
- **Run:** Only files in nc format are allowed to be run. Please ensure that the engraving range of the file does not exceed the movement range of the laser. After starting to run, three buttons appear: pause, continue, and stop.

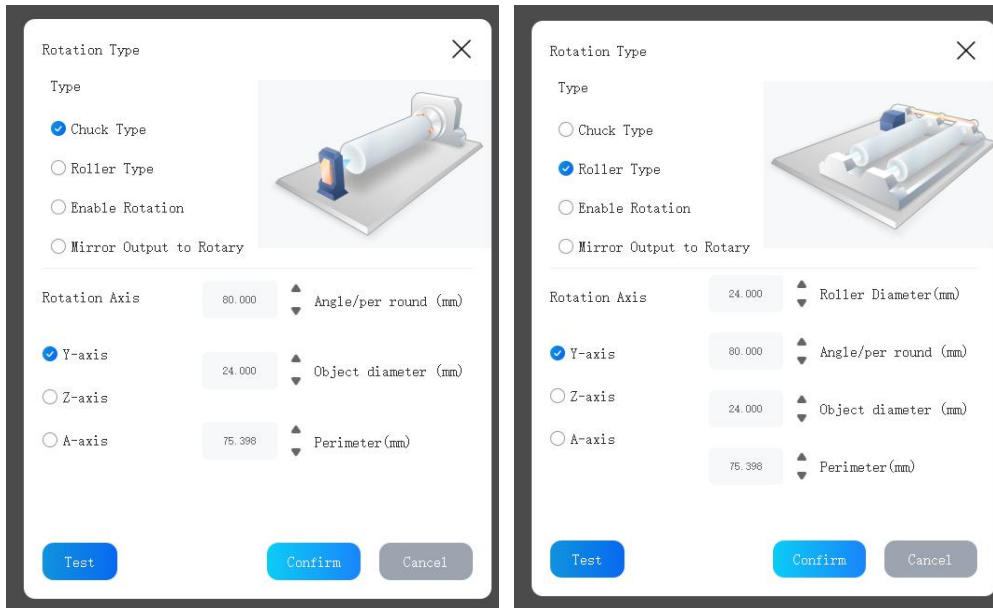


### 1.3.3.9. Upload material

Click the upload material icon to enter the main interface. You can click the "Upload File" button on the main interface to upload materials.

### 1.3.3.10. Roller settings

Click the roller setting icon to open the roller setting window. There are two types of rollers in the roller setting interface, chuck type and roller type, as shown below:



Chuck Roller

Roller Type Roller

General steps for rollers:

- Determine your roller type, chuck or roller.
- Make sure your laser supports rollers.
- Enable scrolling. When the scroll is enabled, the scroll icon will change from gray to white.
- Determine whether the roller wants to replace a certain axis of the laser.
  - (1) Selecting the Y axis will replace the Y axis of the original laser, that is, when the laser is running, it will only move in the X axis direction.
  - (2) Selecting the Z axis will replace the X axis of the original laser, that is, when the laser is running, it will only move in the Y axis direction.
  - (3) Select A axis, which is not supported yet.
- In the Steps per revolution box, enter the number of steps it takes for the attachment to complete one full revolution. For chuck rotation, this will be one turn of the chuck, and for a roller, this will be one full turn of the wheel, not the item. For GCode devices with dedicated rotation axes, this number should only

be "360 degrees". If not using a dedicated rotary axis, the correct travel distance must be dialed in through trial and error using the "Test" button.

- Click the Test button to verify that the roller or chuck completes a full revolution.
- Enter the diameter or circumference of the object you want to engrave and the system will automatically calculate the other value.
- Align the object under the laser head where the X or Y axis begins, and then rotate the object in the rotating attachment to the point where you want to start engraving.
- When using rotation, you usually preview it first to confirm the position of the laser engraving.
- Remember to uncheck the "Use rotation" checkbox when you're done so you don't mess up the next regular item.

**Note:**

(1) Mirror Output to Rotary and A-axis functions have not been implemented yet, and the selection is invalid.

(2) The roller parameters of some lasers have been hard-coded in the software and cannot be modified.

(3) After using the roller, when the graphics in the software are previewed for engraving, the actual engraved graphics will be the graphics after the graphics in the software are rotated 90° counterclockwise.

(4) The roller mode is not suitable for using the camera function.

(5) In roller mode, engraving will start from the current laser position.

(6) In roller mode, the preview will run in the direction of the X-axis or Y-axis. The value of the X-axis or Y-axis is determined by the maximum stroke of the laser, which is half of the maximum stroke. For example, if the laser's stroke is 130mm\*130mm, and the Z-axis is selected as the roller, the laser will move in the Y-axis direction of X=75 during preview.

(7) To modify the roller parameters, start the roller or conduct roller testing, you need to click "Confirm" to take effect.

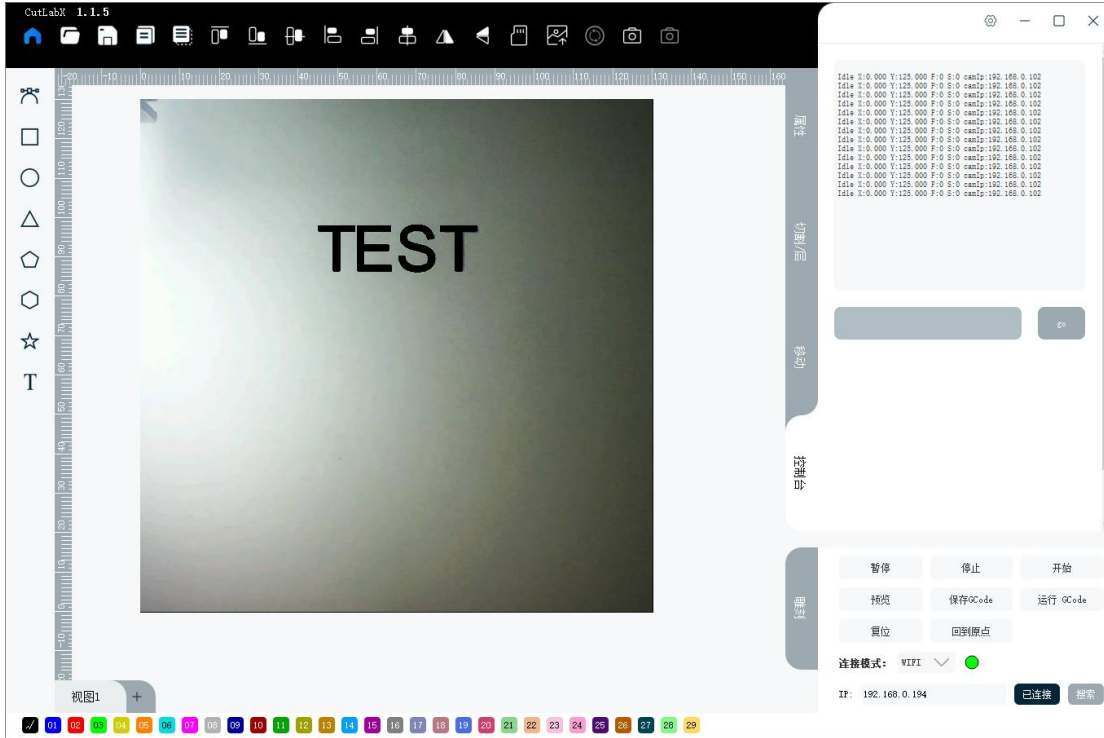
### 1.3.3.11. Taking photos

After clicking the photo icon, a gray photo-taking icon will appear on the right side of the photo icon, the laser will move to the upper left corner, and an image will appear in the canvas area within a few seconds. Each time you click the photo icon, it takes a few seconds to refresh the image. This is related to the strength of the network the laser is connected to. When the network is poor, it will take longer for the image to appear or refresh the image.



After taking a photo, place the content you want to engrave on the acquired image, and then engrave it. You will

You can see the 1:1 engraving content on the actual object, and the position is consistent.



Note:

(1) Make sure your laser has camera function and supports the use of CutLabX software.

(2) To use the camera function, please use it in wifi mode.

(3) When the laser is not connected to the software, the camera icon is hidden by default.

(4) If the camera icon does not appear after the software and laser are connected through wifi mode, please check the corresponding information in the console window, wait for a few seconds to refresh, and ensure that "camIP" has an ip address. If there is still no icon after the ip address appears, please Contact the merchant that sells the laser; if there is no IP address, please try to restart the laser and software, or contact the merchant that sells the laser.

(5) If no image is displayed when you click to take a photo, please ensure that the CutLabX software version is 1.1.5 or above, and then calibrate the camera in the settings; if after calibrating the camera, there is still no image display when you click to take a photo, please contact the merchant who sells the laser.



(6) If the photo positioning is inaccurate: ① Please ensure that the focus of your object is accurate ② Try to recalibrate the camera.

(7) The camera function is not suitable for use in roller mode.

(8) The image obtained by taking a photo will not be updated in real time. Clicking the photo icon will refresh the image.

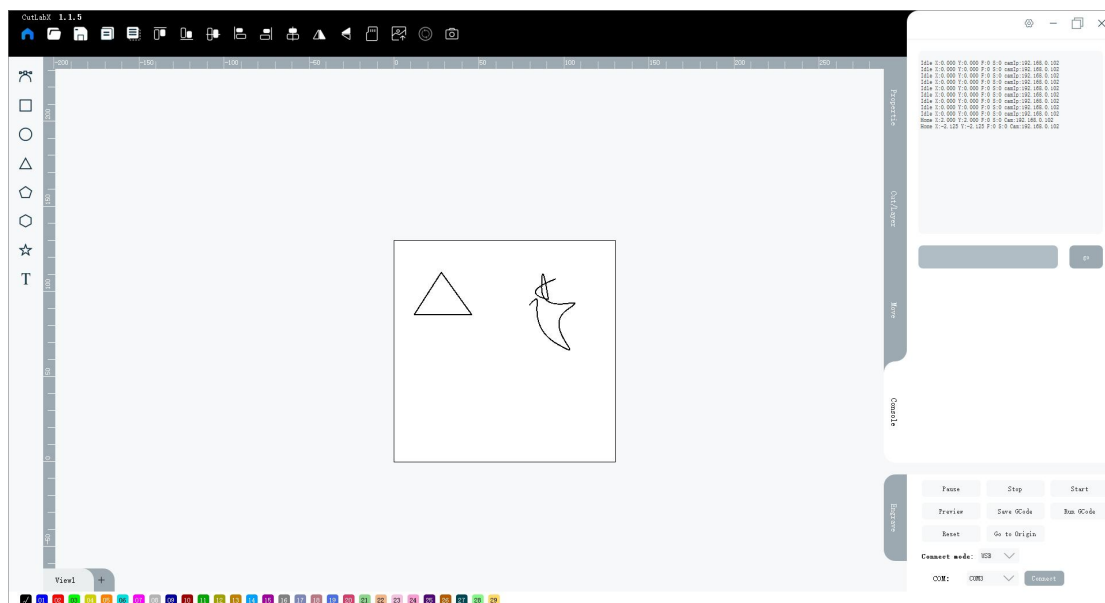
## 1.3.4. Creation tools

### 1.3.4.1. Line drawing tool

Click the line drawing icon to use the line tool. Left-click anywhere on the page to start a line, then click elsewhere to place the endpoints of the line. The Line tool will continue adding segments until you right-click to stop.

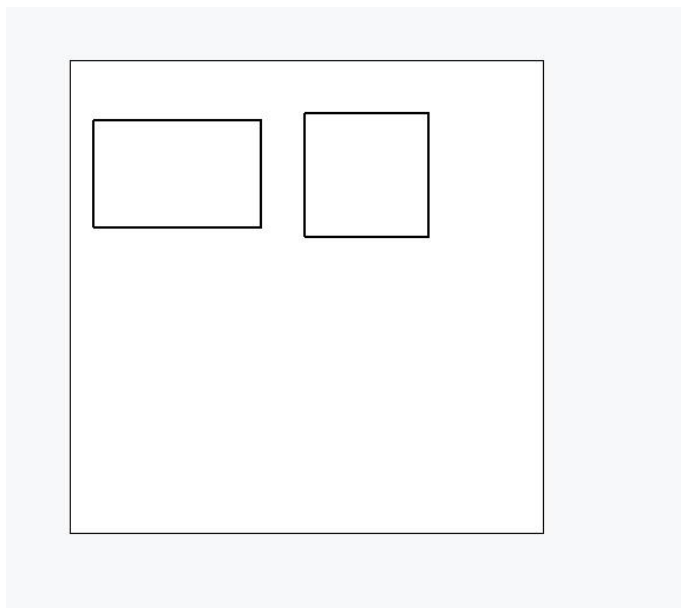
To create a curve, click and drag as you place points. When using the Line tool, you can combine curved and straight segments. The size of the painting cannot be less than 2mm in length or width.

If you want to exit the line drawing tool, right-click the mouse to exit after stopping drawing the line.



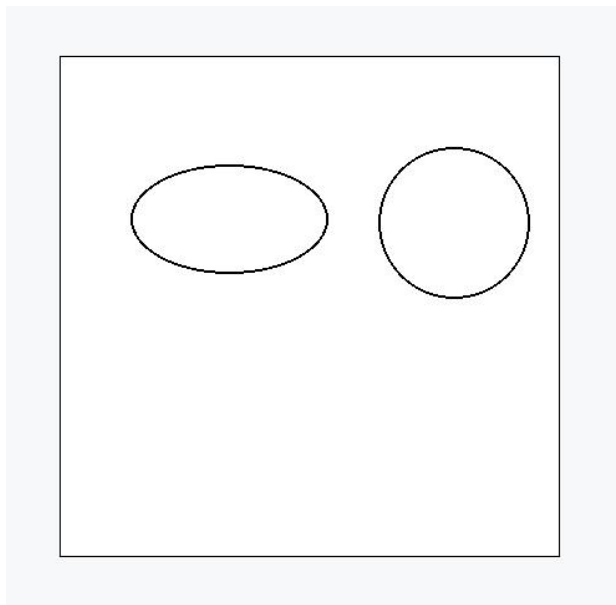
### 1.3.4.2. Rectangle tool

The Rectangle tool is used to draw squares and rectangles. Dragging diagonally will generate graphics according to a fixed proportion. Right-clicking on an empty area will exit using the rectangle tool. The size of the painting cannot be less than 2mm in length or width.



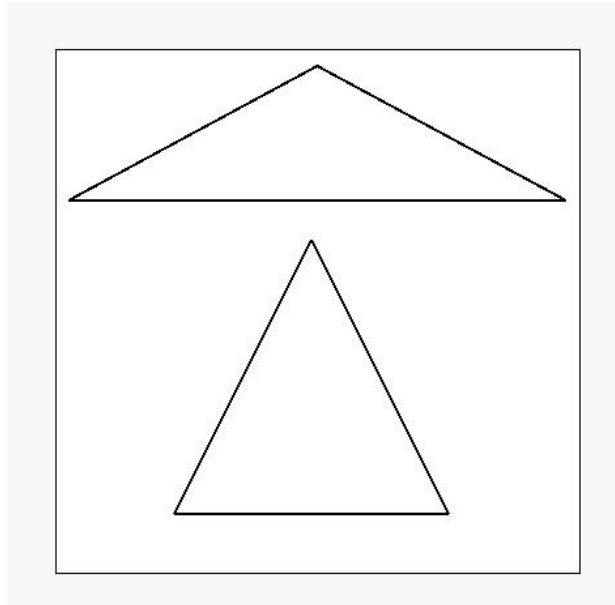
### 1.3.4.3. Ellipse tool

The Ellipse tool is used to draw ovals and circles. Right-clicking on an empty area will exit using the Ellipse tool. The size of the painting cannot be less than 2mm in length or width.



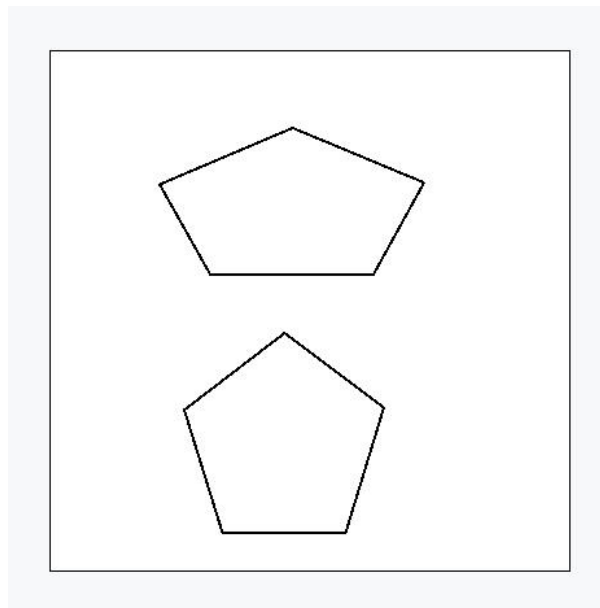
### 1.3.4.4. Triangle Tool

The triangle tool is used to draw triangles. Right-clicking on an empty area will exit using the triangle tool. The size of the painting cannot be less than 2mm in length or width.



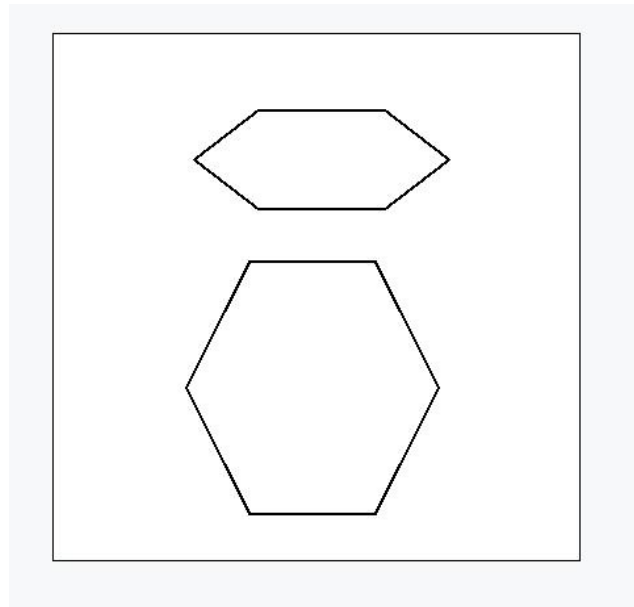
#### 1.3.4.5. Pentagon Tool

The Pentagon tool is used to draw triangles. Right-clicking on an empty area will exit using the Pentagon tool. The size of the painting cannot be less than 2mm in length or width.



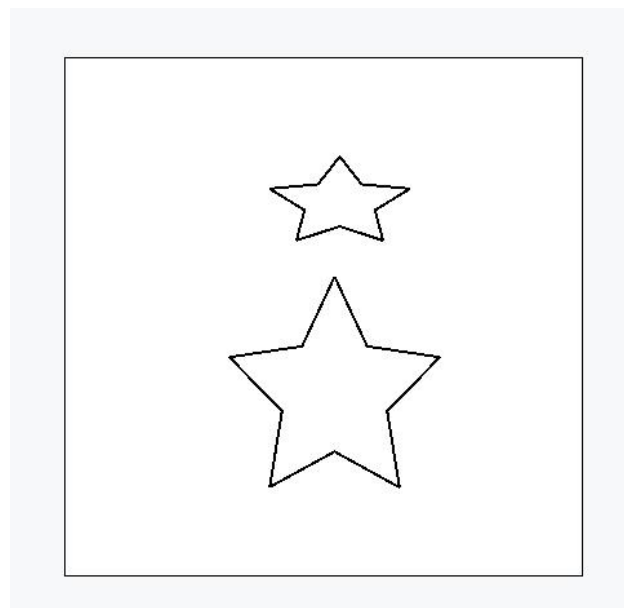
#### 1.3.4.6. Hexagon Tool

The Hexagon tool is used to draw triangles. Right-clicking on an empty area will exit using the Hexagon tool. The size of the painting cannot be less than 2mm in length or width.



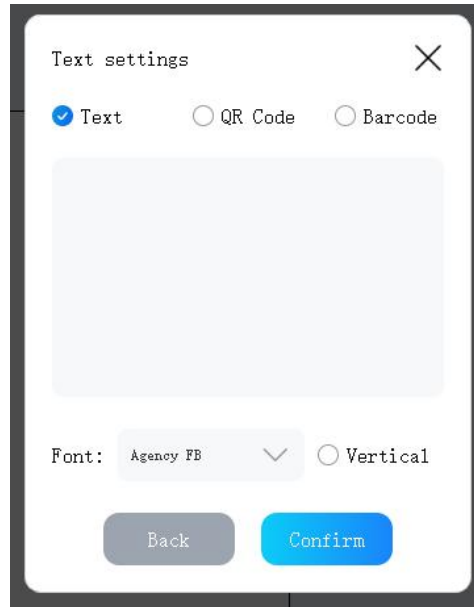
#### 1.3.4.7. **Pentagram tool** ☆

The Pentagram tool is used to draw triangles. Right-clicking on an empty area will exit using the Pentagon Tool. The size of the painting cannot be less than 2mm in length or width.



#### 1.3.4.8. **Text tool** T

Text tools can be used to generate text, QR codes, and barcodes. The text setting window appears after left-clicking the text tool icon.



- **Text:** After selecting the text radio button, enter the corresponding content in the text editing area. After selecting the font, click the "Confirm" button, and the corresponding text content will be generated in the work area.
  - (1) **Text content:** You can enter corresponding content in the text editing area, support multiple languages text, support line breaks and other operations.
  - (2) **Fonts:** The font list depends on the fonts owned by your computer system. If you need other fonts, please use the tools provided by the operating system to install the fonts and restart the CutLabX software.
  - (3) **Vertical:** Display the text content vertically.

Note: The text content supports secondary editing. Double-click the generated text with the left mouse button to edit it again.
- **QR code:** After selecting the QR code radio button, enter the corresponding content in the text editing area, click the "Confirm" button, and the corresponding QR code will be generated in the work area. Can be scanned via mobile device with camera
  - (1) Support input of simple text, URL, etc.
  - (2) WiFi information is supported, but requires a specific format, such as:  
WIFI:S:Name;P:Password;T:WPA;;
  - (3) Support contact address, etc., such as:  
MECARD:N:1,1;ADR:1;TEL:1;EMAIL:1;NOTE:1;URL:1;;
- **Barcode:** After selecting the barcode radio button, enter the corresponding content in the text editing area, click the "Confirm" button, and the corresponding barcode will be generated in the work area. Can be scanned via mobile device with camera. The input content only supports Arabic numerals and English letters. The barcode generated by inputting other content cannot scan the corresponding content.

### 1.3.5. Layer selection

**Palette:** The palette is located at the bottom of the main creative window, with the black layer selected by default.



Lasers do not print in color, so these colors are used to assign different types of operations to the shapes in the design. A common convention is to use bright red for cuts, but how you use the color is up to you.

With nothing selected in the workspace, click the color entry and a new shape will be created in that color. If you have something selected, clicking a color entry will apply that color to the shape you selected. The colors currently used in the design also appear as entries in the Cut/Layers window, where you can select the operation each color represents.

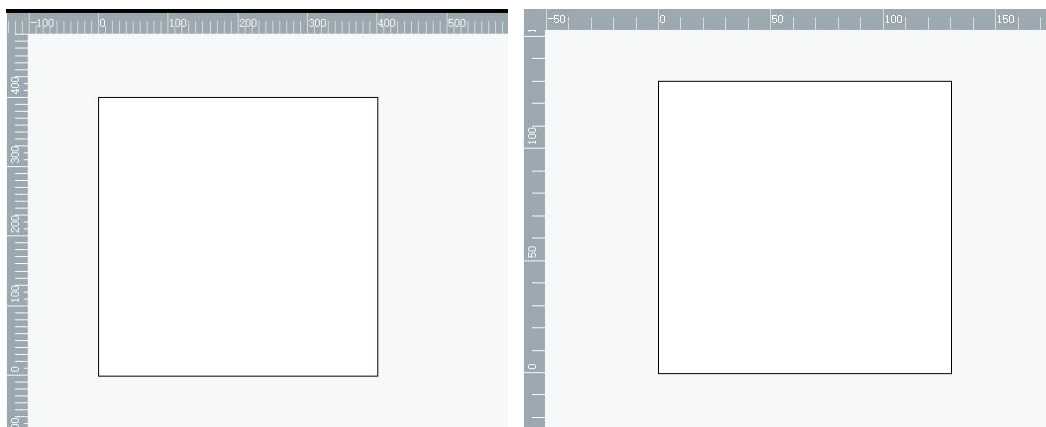
### 1.3.6. Working area

#### 1.3.6.1. Work area display

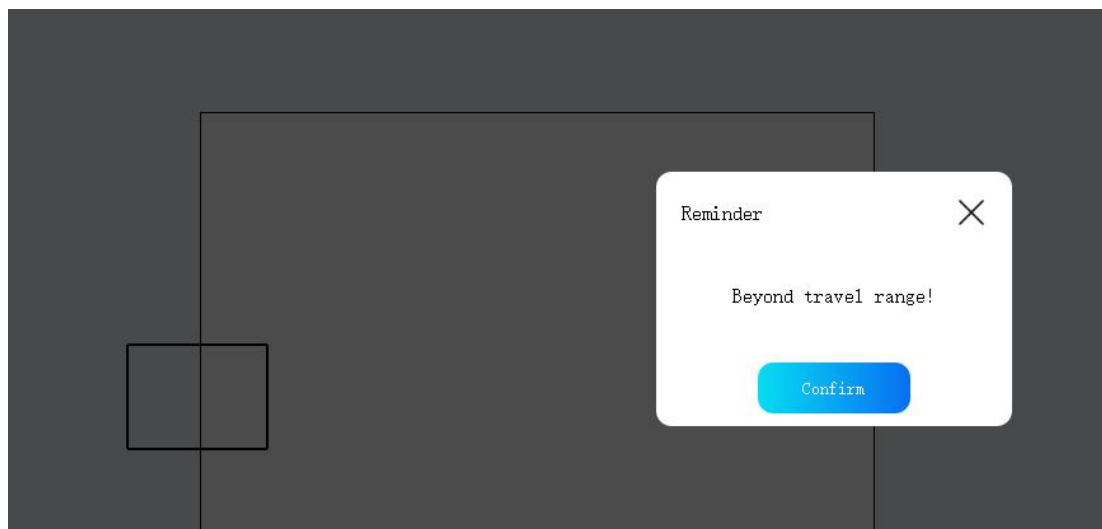
The middle area of the software creation main interface is the image display area. The maximum area range displayed is:

X: -900~1300      Y: -700~1100

The working area, that is, the canvas area, is in the middle of the display area and consists of a black border and a white area. When the laser is not connected, the default size is 400mm\*400mm. After the laser is connected, it is refreshed to the corresponding area according to the relevant parameters inside the laser.



When the image exceeds the working area, there will be a corresponding prompt to prevent the operation when previewing or running.

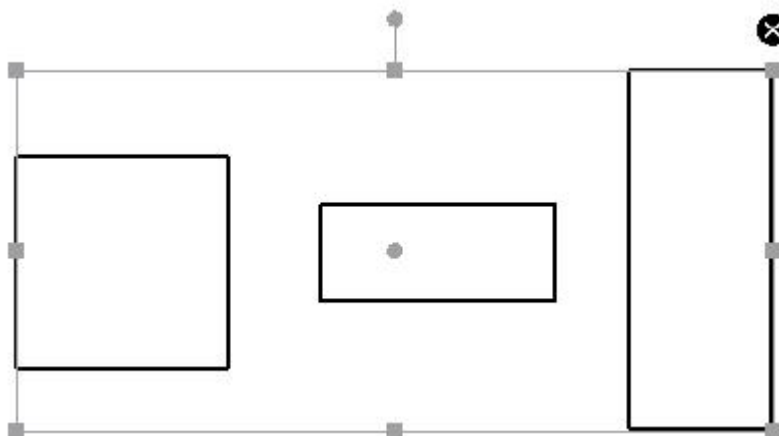


### 1.3.6.2. Panning and zooming of the work area

- Pan: To pan the work area, hold down the right mouse button and drag to move the work area. When the X coordinate range of the displayed area is -400~800, you can pan left and right; but when the Y coordinate range is -400~750, you can pan up and down.
- Zoom: Slide the mouse wheel to zoom in or out where the mouse is.

### 1.3.6.3. Graphic selection, scaling, movement and deletion

- Choose:
  - (1) Use the right mouse button to click on a blank area to exit the creation tool.
  - (2) Use the left mouse button to click the graphics area to select a single graphic, or use the left mouse button to double-click the graphic to force selection of the graphic.
  - (3) If you want to select multiple graphics, you can select a collection of shapes by holding down the left mouse button and dragging a rectangle around the content you want to select. Even if the rectangle does not completely cover the graphics you want to select, they will be selected. After selecting the graphic, there will be a rectangular frame on the border.



(4) You can use the left mouse button to click on a blank area to deselect the graphic.

- Zoom: After selecting the graphic, place the mouse on the border of the rectangular box and the corresponding icon will be displayed. Drag the border with the left mouse button to zoom, and drag and drop diagonally to zoom in equal proportions.
- Move: After selecting the graphic, place the mouse in the rectangular box and a corresponding icon will appear. You can move it by dragging with the left mouse button.
- Delete: After selecting the graphic, click the close icon in the upper right corner of the rectangular box to delete the graphic, or use the del key to delete.

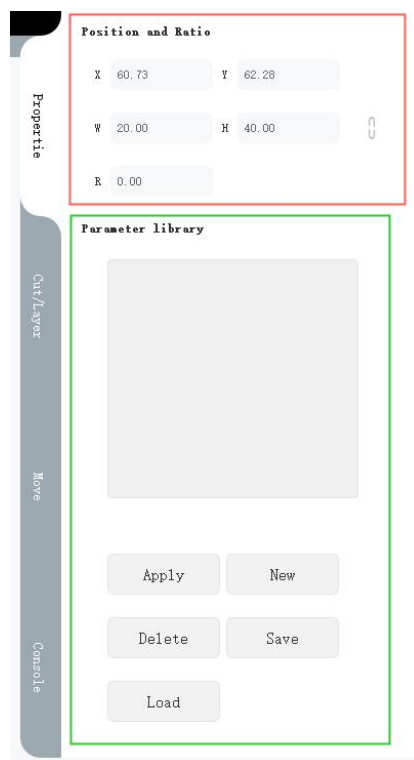
### 1.3.7. Multiple views

Multiple views are allowed in the software, and each view is independent. The layers and related parameters in different views have no influence on each other or are related to each other. When there is too much content in one view or too many layers are displayed, you can create other views and place some content in other views to make the interface cleaner. Layers of the same color may have different parameters in different views.

### 1.3.8. Properties window




The properties window contains two parts: parameter library and graphics position coordinates.





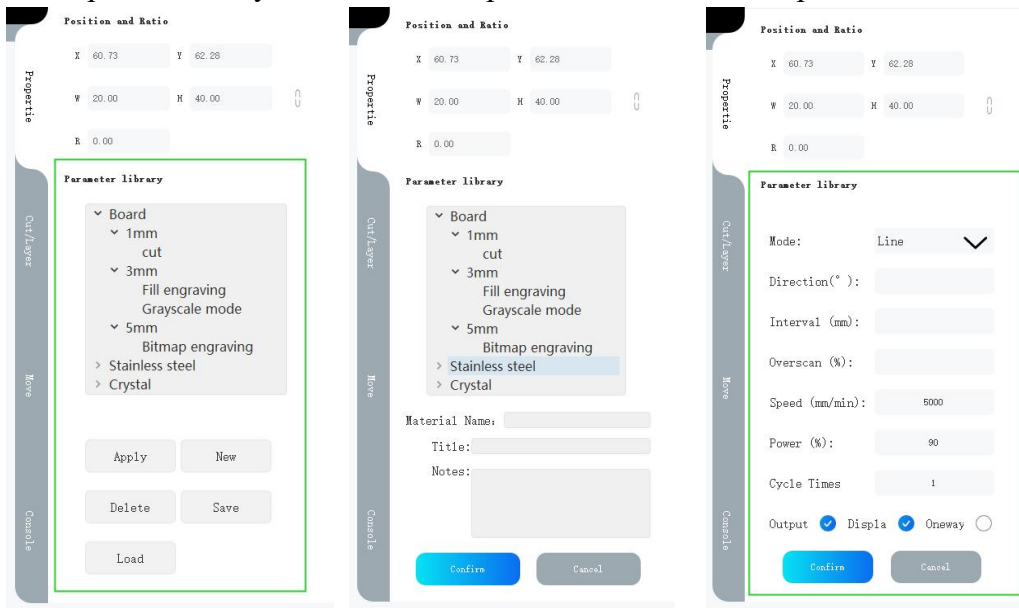
### 1.3.8.1. Position and Proportion

The Position and Scale areas are used to adjust the size, position, and orientation of the selected graphic. Note: After selecting the graphic, a rectangular frame will appear. The size, position and direction refer to the size, position and direction of the rectangular frame.

- X and Y: represent the coordinate position of the lower left corner of the currently selected graphic. The X coordinate increases from left to right, and the Y coordinate increases from bottom to top. After modifying the corresponding X and Y coordinates, the selected graphics will also move to the corresponding X and Y coordinate positions.
- Width and height: represent the size of the currently selected graphic. After modifying the width and height dimensions, the dimensions of the selected graphics will also change to the modified dimensions. The software starts proportional changes in width and height by default, that is , when the icon on the right side of width and height is , after changing the size of length or width, the parameter of the other value will change in a certain proportion. As shown in the picture above, the width and height are 20mm and 40mm, and the ratio is 1:2. When the width value is changed to 40mm, the height will become 80mm in the ratio of 1:2. If you cancel the equal proportions and click the icon to change to , you can change the width and height independently.
- Rotate: The Rotation box is used to rotate the current selection by the entered number of degrees.

### 1.3.8.2. Parameter Library

The parameter library is mainly used to store common preset parameters for different operations on different materials, and have a way to quickly apply these parameters. If you want to add parameter values to the parameter library, you can create a new parameter file directly in the parameter library, set the material type, title (you can also enter the material thickness, etc.) and a short description, and then set the corresponding parameters. Parameter library data can also be saved as a file to your computer so that you can use these parameters in other computers.



Create new parameter file      Fill in parameters

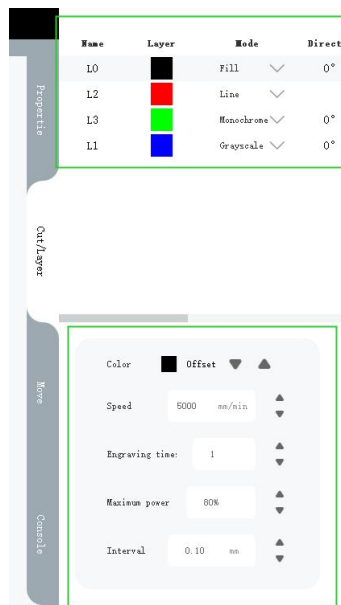
- Create a new parameter file:
  - (1) After clicking the "New" button in the parameter library with the left mouse button, an information filling window will appear.
  - (2) Fill in the information in the information filling window, fill in the material name, title and brief description information.
  - (3) Click the "Confirm" button to complete the parameter file creation.
- Fill in the parameters:
  - (1) Double-click the brief information item of the parameter file, that is, "Cutting" or "Bitmap Engraving" in the picture above, to enter the parameter information filling window.
  - (2) Fill in the corresponding parameters, such as mode, power speed, etc. This parameter is consistent with the parameters in "Cutting/Layer".
  - (3) Click the "Confirm" button.
- Change parameters:
  - (1) Double-click the brief information item of the parameter file, that is, "Cutting" or "Bitmap Engraving" in the picture above, to enter the parameter information filling window.
  - (2) Modify the corresponding parameters.
  - (3) Click the "Confirm" button.
- Save parameters: Click the "Save" button in the parameter library with the left

mouse button to save the data in the parameter library as a file to your computer so that you can automatically load the parameter library next time you restart the software, or use it in other computers. Change the parameter file. The file format is fixed to .xjcs.

- Application: After selecting the graphic in the work area, select the corresponding parameter file (use the left mouse button to click on the brief information of the parameter file), and then click the "Apply" button. Note: Some parameters cannot be applied to some graphics. For example, grayscale mode parameters cannot be applied to vector graphics and text. It will be invalid after clicking Apply.
- Delete parameters: After selecting the brief information of the corresponding parameter file, click the "Delete" button, the parameter file will be deleted, and then click the "Save" button so that the parameter file in the computer can be modified simultaneously.
- Load parameter library: Click the "Load" button and select the parameter file that exists in your computer. The file format is .xjsc. Parameter files originally existing in the parameter library will not be cleared.

### 1.3.9. Cut/Layer

The "Cut/Layer" window mainly displays layer-related information and related parameters. It mainly contains two parts of information, one part is the relevant information and some parameters of the layer, displayed in the form of a table, and the other part is the main parameters of layer carving. This window supports multiple layers, which are used to engrave different graphics with different parameters during the engraving process.



- Name: The name of the layer, which can be edited to customize the name.
- Layer: The color of the layer, different layers have different colors. The content of the working area belongs to a certain layer, and its border color is consistent with

the layer color.

- Mode: The mode is divided into two parts, one is the mode of vector graphics, and the other is the mode of bitmap graphics.

Vector graphics: There are three modes: line, fill, and cross-fill.

(1) Line: In this mode, the laser will move along the path you designed at the power speed you selected. If you use a higher speed or lower power, you may only leave shallow marks on the surface of the object; if you use a lower speed and higher power, you will cut the object or even penetrate the material, This depends on the material of your object.

(2) Fill: After selecting this mode, the laser will scan line by line and fill the shape you want. At this time, the content in the working area will also be filled and displayed with the color of the layer.

(3) Cross fill: After selecting this mode, the laser will scan and fill the shape you want line by line, and run it again in the form of lines after the scanning and filling is completed.

Bitmap graphics: There are five modes: black and white, dither, outline, grayscale, and negative image.

(1) Black and white: The bitmap mode selects black and white mode by default. This mode can be used when certain parts of the image are clearly black and white, and this mode is more suitable for images that are originally black and white.

(2) Dithering: Dithering is also called error diffusion dithering, which is the best choice for smoothing colored images such as photos. This also approximates shadows with simple dots, but does so without an obvious pattern and tends to produce more subtle shadows.

(3) Outline: After selecting this mode, the outline of your image will be extracted during the engraving process, and the engraving will be carried out based on the trajectory of the line.

(4) Grayscale: Grayscale mode enables variable depth (3D) sculpting instead of shading. Images often need to be created specifically for this purpose. Using a diode laser, this gives great shadows but is more difficult to achieve than normal dithering. This mode uses more detailed images.

(5) Negative Image: Selecting this mode will invert your image during the engraving process. Black becomes white, white becomes black. This is useful for engraving stone slabs or glass, as the burnt areas will become lighter.

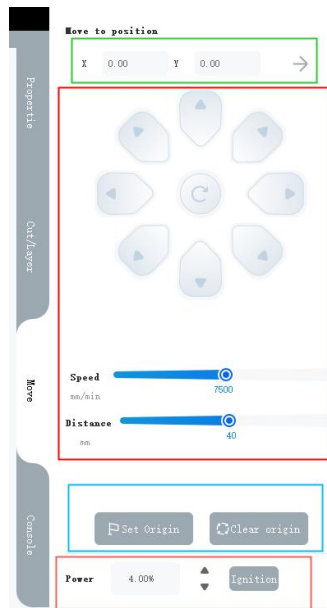
- Direction: Typically 0, meaning the laser will scan back and forth horizontally across the image, from the bottom to the top of the image. If you set this value to 180, the laser will scan the image from top to bottom. Setting this to 90 will cause

the laser to scan vertically across the image, going from left to right. Line mode and outline mode do not have this function.

- **Overscan:** When enabled, extra movement is added at the beginning and end of each line to give the laser time to speed up before firing and slow down after firing. If your machine has lower acceleration, or you see deeper burns on the sides of the fill, you may need to increase the amount of overscan. If the image is placed on the boundary of the work area, it may touch the boundary during additional movement. Line mode and outline mode do not have this function.
- **Unidirectional:** Bidirectional mode when not enabled by default, the laser will engrave in a scanning motion from side to side, engraving in one direction, and then engraving again in the return direction. When enabled, the laser will engrave in one direction and then return to the beginning of the next line, rather than engraving back. Line mode and outline mode do not have this function.
- **Output:** Started by default. When it is turned off, no information will be output to the laser when engraving, so after it is turned off, the laser will not respond when engraving.
- **Display:** Displayed by default. When display is turned off, the contents of the layer will not be displayed in the work area.
- **Delete:** After clicking the delete icon, the layer and the contents of the layer in the working area will be deleted.
- **Offset:** When laser engraving runs multiple layers, the content of each layer will be engraved from top to bottom in the order of the layers. After clicking the layer with the left mouse button, you can click the offset button to move the layer and change the engraving order of the layer.
- **Speed:** This parameter is the movement speed of the laser during engraving, in mm/min. The larger the value, the shallower the engraving will be. The default speed is 5000mm/min.
- **Power:** This parameter is the laser power during laser engraving, calculated as a percentage. When 0%, the laser does not emit light, and when 100%, the laser moves at the maximum laser power. The default laser power is 80%.
- **Engraving times:** The laser will engrave repeatedly for the currently set engraving times.
- **Padding spacing:** Controls the spacing between scan lines. The smaller the value, the smaller the spacing between scan lines.

### **1.3.10. Move window**

The moving window is mainly used to control laser movement, positioning and other functions.



### 1.3.10.1. Location movement

- Coordinate position movement: By entering the X and Y values, and then clicking the move arrows, the laser moves to the X and Y coordinate positions.
- Button control movement: You can click the movement button to make the laser move according to the set speed and power. Clicking the different moving direction buttons will make the laser move in different directions. Click the middle button and the laser will return to the origin position.

(1) Speed: You can drag the pulley to set the speed when moving. The maximum speed is the maximum speed of the machine.

(2) Distance: The distance the laser runs every time the button is clicked. The distance during movement can be set by dragging the pulley.

### 1.3.10.2. Zero point setting and origin clearing

- Set zero point: that is, set the origin point. When the laser is at a certain coordinate, click Set Zero Point to set the origin point of the current coordinates. The origin is the initial position when the laser starts to move, and the default origin is (0,0). When the origin is not set, the machine runs at the content point (10,10) of the working area, and the actual running position of this point is (10,10). When the zero point is set to (20,20), the actual running position of this point is (30,30) .
- Clear origin: Clear the set origin and reset the origin to the initial position (0,0).

### 1.3.10.3. Preview laser power control

During preview, the laser will run at a certain power. Here you can set the laser power during laser preview. The default is 4%, the maximum value is 20%, and the

laser does not emit light at 0%.

Clicking the "ignition" button with the left mouse button will cause the laser to emit light in a static state, making it easy to determine the current location of the laser spot.

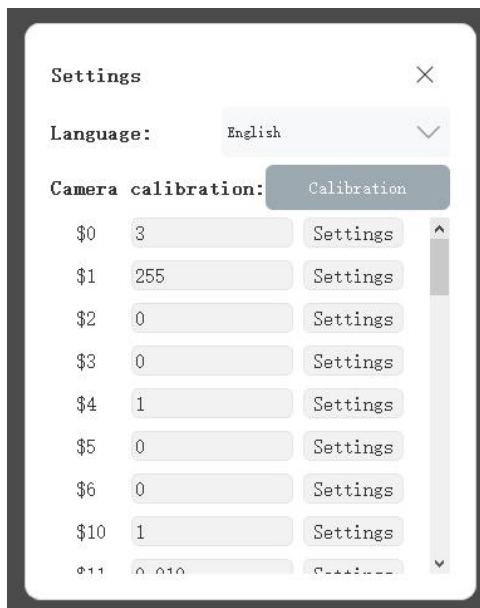
### 1.3.11. Console window

When the software is connected to the laser, the console will always receive the current information and status of the machine and output it. If no information is output from the console after connection, it indicates that the machine connection is abnormal. Please restart the machine and software and try to reconnect.

You can enter commands in the text box and the console will output the results.

### 1.3.12. Settings window

Click the "Settings" icon button in the upper right corner of the main creation interface, and the settings window will appear. The settings window is mainly used for software language switching, camera calibration and laser internal parameter settings.



#### 1.3.12.1. Language switch

The default language of the software is English. Click the drop-down box in the settings window to select other languages to switch. After selecting the language, you need to restart the software for it to take effect. The software currently supports Chinese, English, Korean, Japanese, Italian, Spanish, German, Russian, and French.

#### 1.3.12.2. Camera calibration

Camera calibration is mainly used to calibrate when there is a deviation in the photo positioning. From CutLabX version 1.1.5 onwards, the camera calibration

button will be in the settings window.

#### Calibration steps:

(1) The problem of placing a flat surface in the engraving machine and being able to engrave clear traces at the default power speed, and the size of the object must be greater than 130mm\*130mm

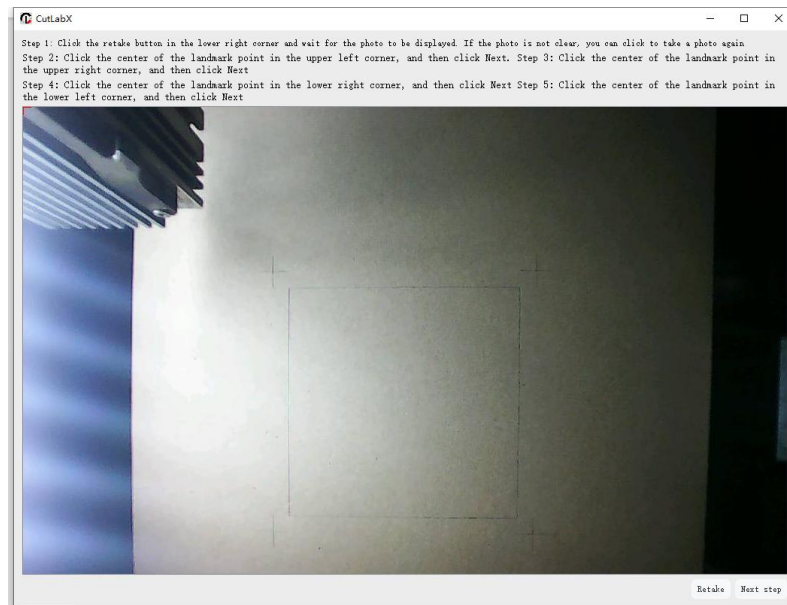
(2) Align the focal length of the machine

(3) Use wifi mode to connect the software to the laser

(4) Make sure your current view has no content

(5) Click the "Calibrate" button in the setting interface. A prompt "Do you need to calibrate the camera" will appear. Click the "Confirm" button. At this time, a square and four small crosses will be automatically drawn in the work area, and the transfer and engraving will be automatically performed. A camera calibration window will appear in the software.

(6) Wait for the engraving to be completed. Click the "Retake" button in the camera calibration window. The laser will move to the upper left corner. After a few seconds, the image will appear in the calibration window. If it is not clear, click "Retake" again. Retake" button and wait for the image to appear. You can use the left mouse button to drag the image to move it, and use the mouse wheel to zoom in or out on the location of the mouse.



(7) Click the centers of the four crosses in the image in sequence, in the order of upper left → upper right → lower right → lower left. After clicking the center of each cross, you must click Next to make the red cross turn into a green cross, and the center of the green cross is the same as The centers of the crosses in the images coincide. When the centers of the four green crosses coincide with the centers of the crosses in the image, click the close button or close the window,



and the calibration is completed.

