

## Nano Duo Laser Engraver User Manual V1.0



**Shenzhen Longer Technology Co., Ltd.**

Dear customer:

Thank you for choosing LONGER products **Nano Duo laser engraver**.

Maybe you are familiar with the engraving machine or have bought a similar engraving machine before, we still highly recommend that you read this manual carefully. The installation techniques and precautions in this manual can help you avoid any unnecessary damage or frustration.

More information please refer to:

1. Please contact us via email: [support@longer.net](mailto:support@longer.net)
2. Technical support: [\(+1\)888-575-9099](tel:+18885759099)
3. Facebook ID : [Longer Global](#)
4. Facebook Group : [Longer Laser Engraver Official Group](#)
5. YouTube channel: [Longer Official](#)

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## A. Safety Precautions

(1) The **Nano Duo** engraves and cuts materials by the means of a high-energy diode laser beam.

The hazards associated with a high-energy diode laser beam include the possibility of fires, generation of hazardous and/or irritating toxic fumes, but more importantly damage to eyes and skin.

(2) Laser engravers are divided into several internationally valid classes based on their performance and the risk of injury. The **Nano Duo** falls into the Class IV (Class 4 IEC standard focus on the American 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 any period of time less than or equal to $1 \times 10^3$ seconds but is considered a chronic viewing hazard for any period of time greater than $1 \times 10^3$ seconds.
Class II	Class II laser radiation is considered a chronic viewing hazard.
Class IIIa	Class IIIa laser radiation is, depending upon the irradiance, either an acute intrabeam viewing hazard or chronic viewing hazard. If viewed directly with optical instruments, Class IIIa laser radiation is classified as an acute viewing hazard.

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

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

Improper use of the controls and modification of the safety features may cause serious eye injury and burns.

Please wear Personal Protective Equipment (PPE, Safety Glasses are designed to filter specific ranges of laser wavelength. The **Nano Duo** Safety Glasses provided are specific for LONGER Laser Module;) when using the machine.

- DO NOT look directly into the laser beam.
- DO NOT aim the laser beam at reflective surfaces.
- DO NOT operate the laser without PPE protection for all persons nearby in the proximity of the **Nano Duo**.
- DO NOT allow unsupervised access to the **Nano Duo** to children.
- DO NOT allow access near the **Nano Duo** to pets.

- 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, and at the same time, the door of the room has a sealing effect, and the windows have curtains, to effectively avoid looking directly at the laser beam and some smoke and steam, Particles, and other highly toxic substances. At the same time, you can pay attention to the LONGER products (cover) in the follow-up.

(4) The high-energy diode laser beam can produce extremely high temperatures and significant amounts of heat as the substrate material is burned away while engraving and cutting. Some materials are prone to catch fire during cutting operations creating flame, fumes, and smoke.

(5) It is strongly recommended that a Fire Extinguisher should be located within proximity to the **Nano Duo**. Extinguishers should be halogen or multi-purpose dry chemical. Alternatively, or in conjunction with the Fire Extinguisher it is recommended a “Fire Extinguisher Ball” is positioned beside the **Nano Duo**.



- DO NOT use materials that are highly flammable, explosive or produce toxic by-products.
- DO NOT remove material from the cutting bed before it has cooled.
- **DO NOT leave the Nano Duo operating unattended.**
- ALWAYS clean up clutter, debris, and flammable materials in the laser **Nano Duo** bed after use.

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

#### (7) Environmental requirements

Temperature requirement: 10°C~30°C, humidity requirement: 20%~50%, this **Nano Duo** laser engravers can work normally within this range; beyond this range, this laser engravers will be unable to achieve the best engraving results.

(8) Below a list of some of the most known hazardous materials that the user SHOULD NOT attempt to engrave or cut on. If a material is not in this list, do not consider it to be safe to use. Obtain the

Safety Data Sheet (SDS) from the material's manufacturer when handling unknown materials.

Material	Reason to avoid engraving / cutting it
PVC (Poly Vinyl Chloride)	PVC will emit Chlorine gas when laser cut, or laser engraved. This toxic gas can ruin the optics and motion control system of the laser engraver, in fact, engraving or cutting PVC is a sure way of voiding the warranty of your laser engraver
Lexan / Thick Poly-carbonate	Lexan not only cuts poorly but it also catches on fire very easily. The window of the laser engraving machine is usually made from polycarbonate because it does a very good job of attracting infrared radiation., which is the frequency of light the engraver uses when cutting and engraving materials. This makes the laser cutter quite ineffective in cutting polycarbonate materials
ABS	ABS melts upon exposure to a laser beam as opposed to vaporizing which would be the ideal reaction needed for laser engraving. Instead of leaving a crisp image, ABS will melt and leave a gooey deposit on the surface.
HDPE	HDPE melts and catches on fire easily upon exposure to a laser beam.
Polystyrene Foam	Only very thin pieces can be laser cut but for the most part, polystyrene catches on fire and melts when exposed to a laser beam

Fiberglass	Fiberglass is made from two materials: glass and epoxy resin. The best method of marking glass is etching while epoxy resin can emit toxic fumes upon laser engraving. These two reasons make fiberglass a bad choice for a laser engraving material
Polypropylene	polypropylene melts and catches on fire easily and then the melted material continues to burn thereby forming pebble-like drips that harden on the surface
Coated Carbon Fiber	Coated carbon fiber emits noxious fumes. Additionally, carbon fiber can be cut  albeit with some fraying but this is not the case when it is coated.

(9) The **Nano Duo** has built in technology and algorithms to keep its users and the surrounding environment safe. This said it is important to understand the **Nano Duo** is not a toy and should be operated with care and respect.

## B. Product Information

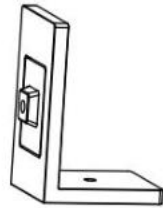
### 1. Product Specification

Features	Longer Nano Duo
Model	Nano Duo
Power	20W(450nm)&2W(1064nm)
Laser Wavelength	450nm&1064nm
Laser Source	Four diode lasers with FAC /fiber infrared laser
Engraving Precision	0.0019mm
Cutting Depth	16 mm poplar board, 8 mm Dark Opague Acrylic
Applicable Materials	Suitable for engraving or cutting on wood, acrylic, leather, cloth, metal, ceramics and other materials
Working Area	160*140mm
Resolution	4K
Preview Mode	Outline Preview, Contour Preview
Preview Speed	32000mm/s
Engraving Speed	10000mm/s
Net Weight	4.961kg
Gross Weight	7.495kg
Product Volume	Laser unit:243.3*162.5*145; Electric lifting bracket:357*282.5*227; Engraver:405.5*282.5*227
Engraving Angle	0~360°
Connection	WIFI, USB, APP
Support Format	jpg, bmp, png, dxf, svg, ai, tiff, etc
Support Systems	Windows ; MacOS ; Linux
Input Power	AC Input 110-240V 50/60Hz 1.7A DC Output 24V 5A 120W
Warranty Period	One year
Continuous Working Hours	More than 7 hours
Lifespan	10000+H
Material of Machine	Aluminum alloy
Safety Certifications	CE; FDA; FCC; RoHS
Support Languages	German; Japanese; French; English; Italian; Russian

## 2. Product Accessories List



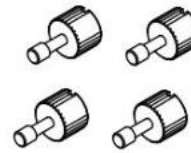
Laser unit



Leveling bracket



L-shaped material clamp



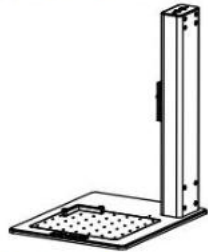
Thumb screws



Angle adjusting nut



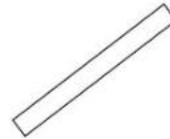
TF card



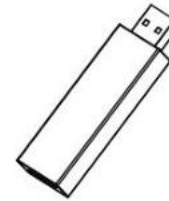
Electric lifting bracket



Angle adjusting thumb screw



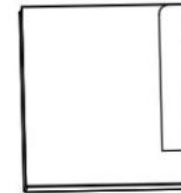
Ruler



Card reader



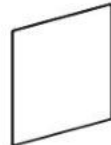
Allen wrench



Material pack



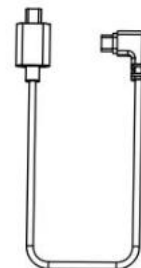
Protective shield



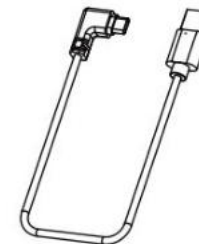
Glasses cloth



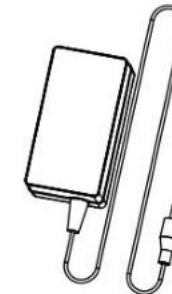
Goggles



Double type-c cable

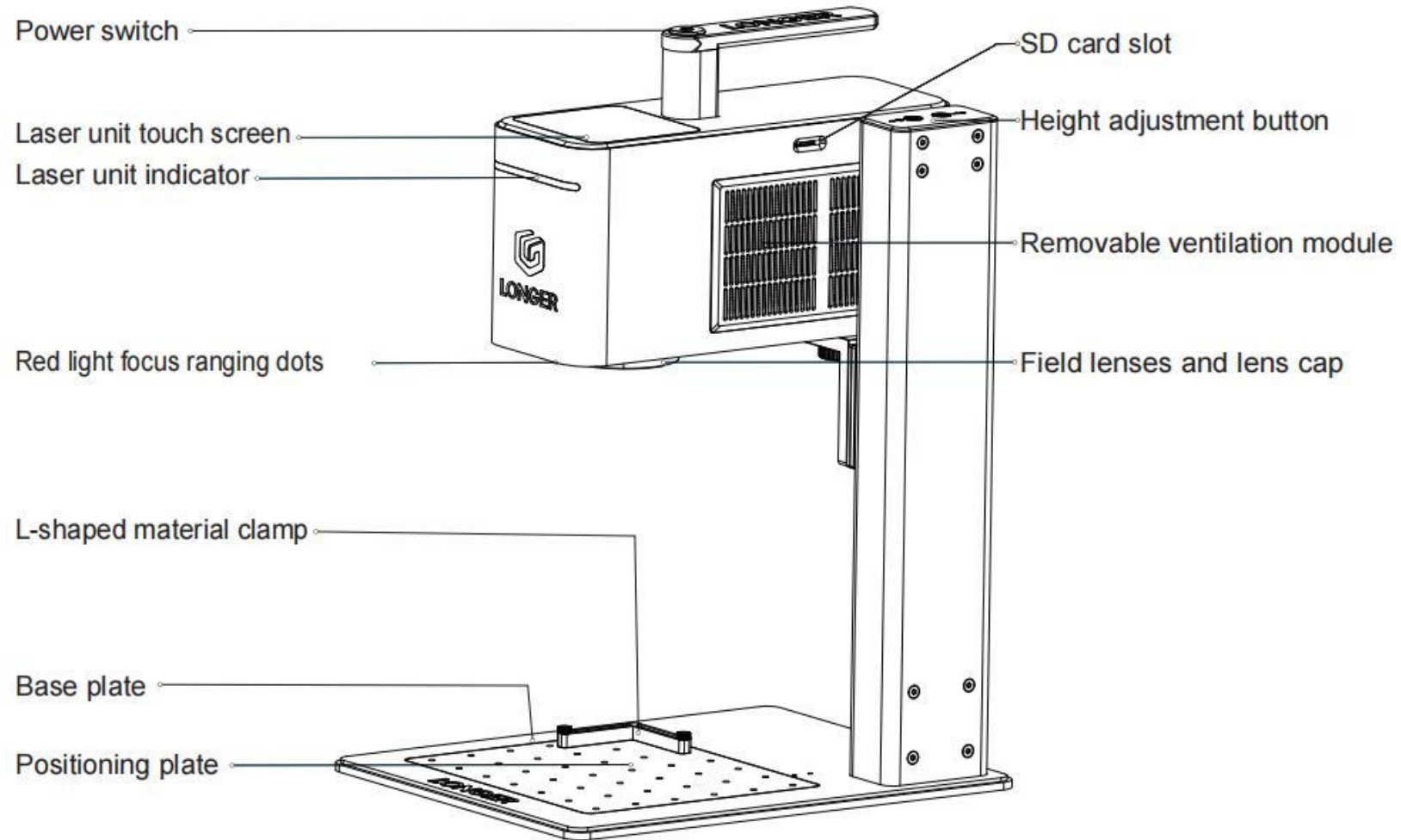


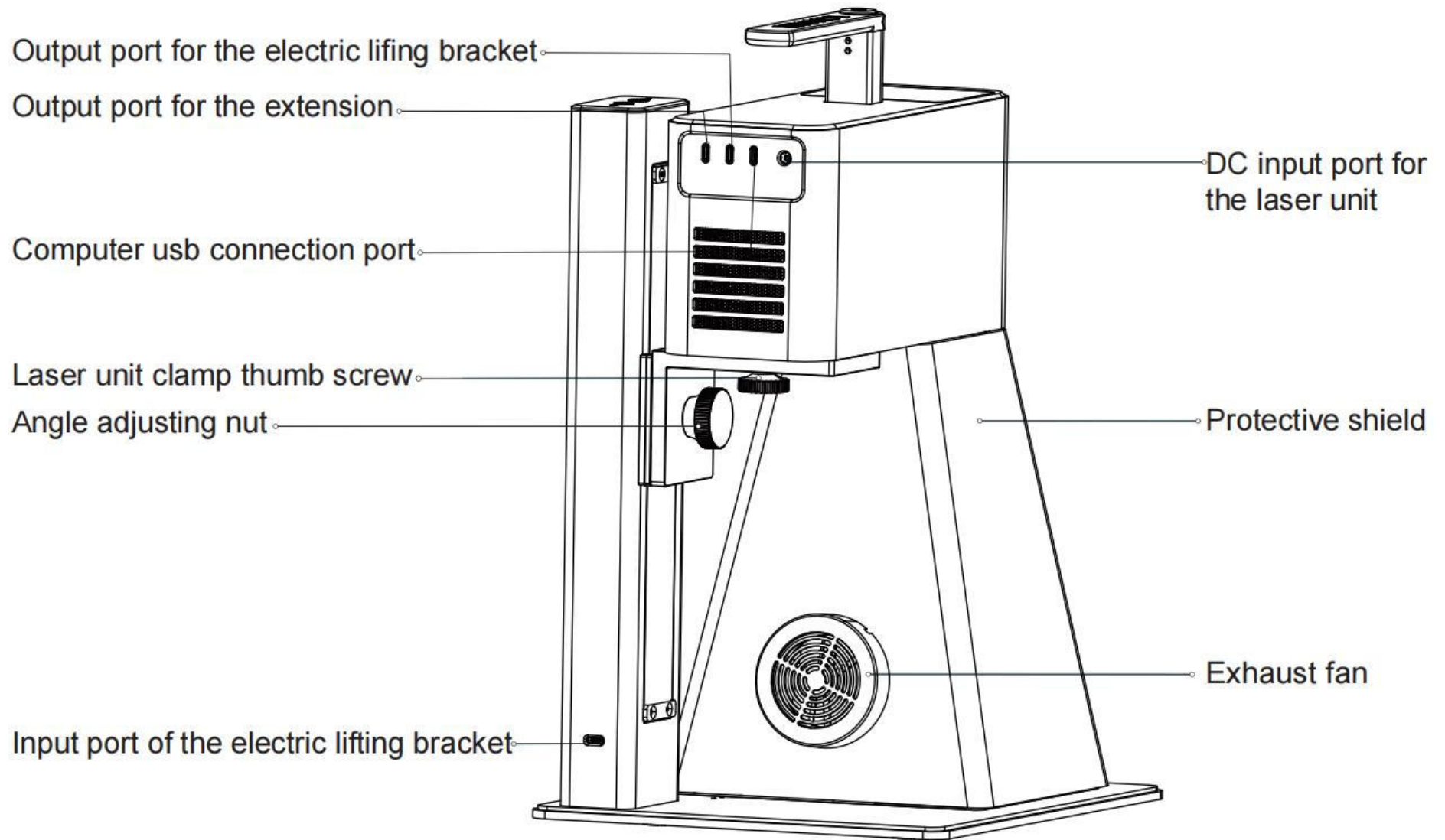
Data cable



AC cord/Power adapter

### 3. Product Instruction

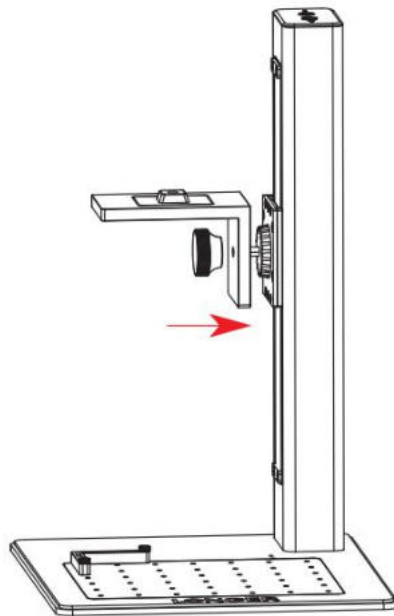




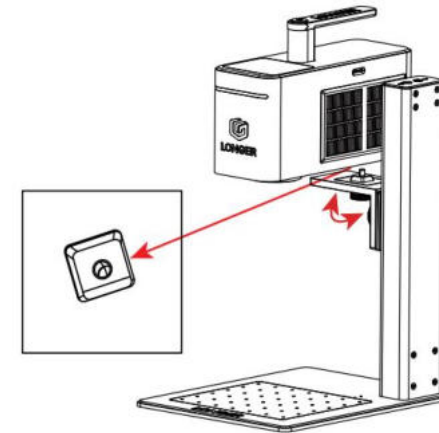
## C. Quick installation

### 1. Install the laser unit and protective shield

1) Fix the leveling bracket with the angle adjusting nut.



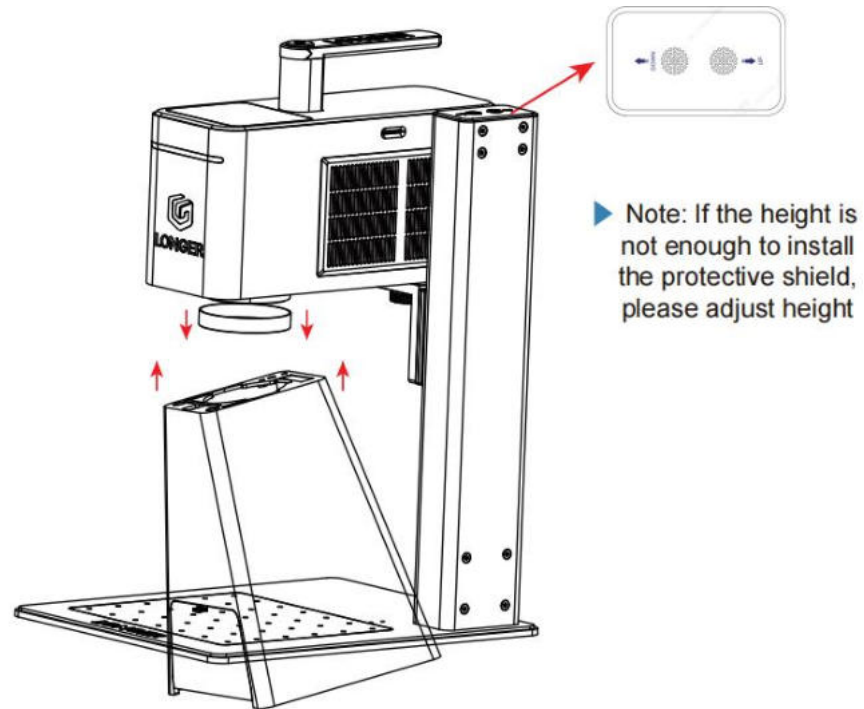
2) Fix the laser unit with the angle laser unit clamp thumb screw.



Align the laser unit with the leveling bracket, and tighten the laser unit clamp thumb screw clockwise to fix the laser unit.

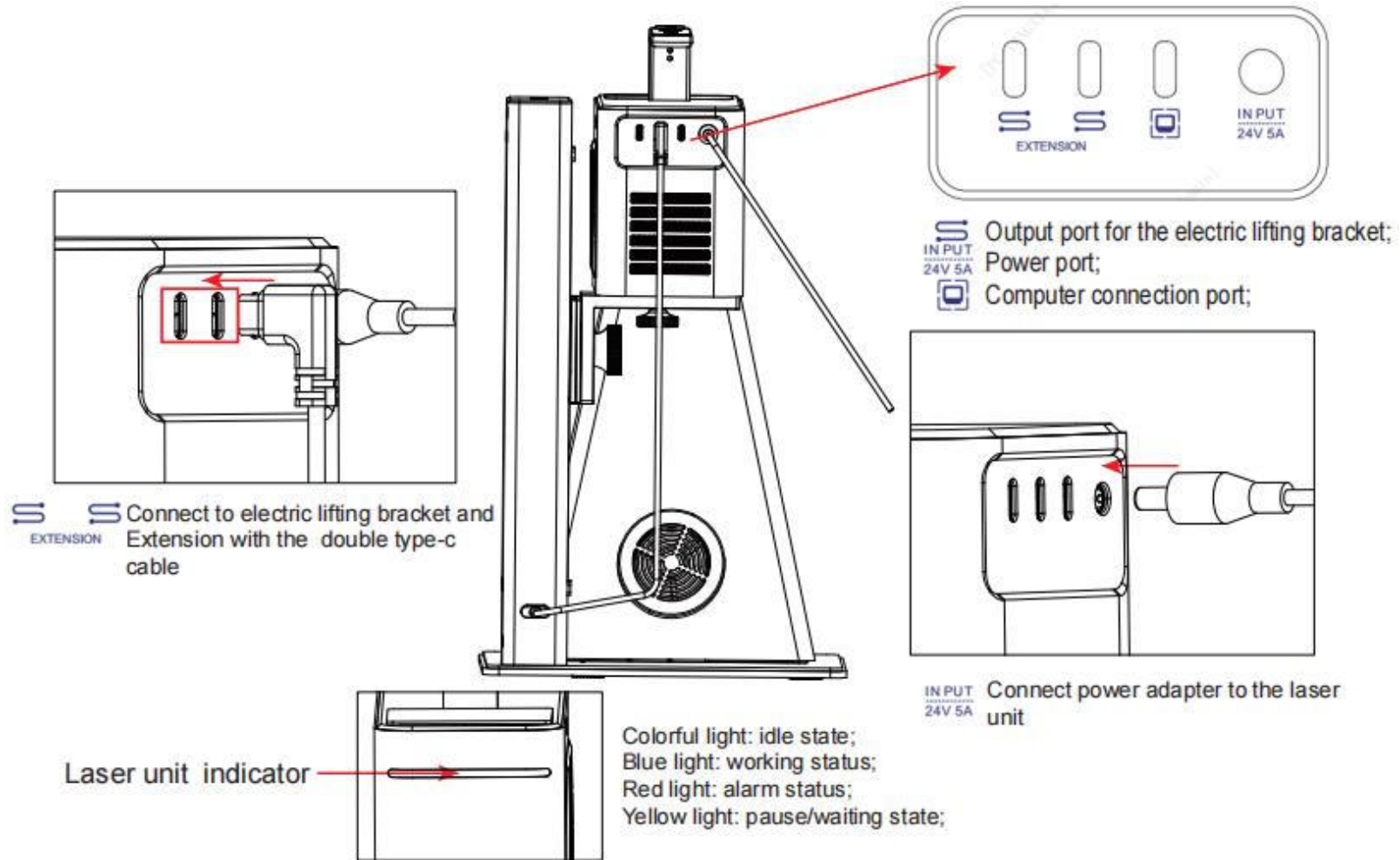


3) Fix the protective shield on the laser unit.



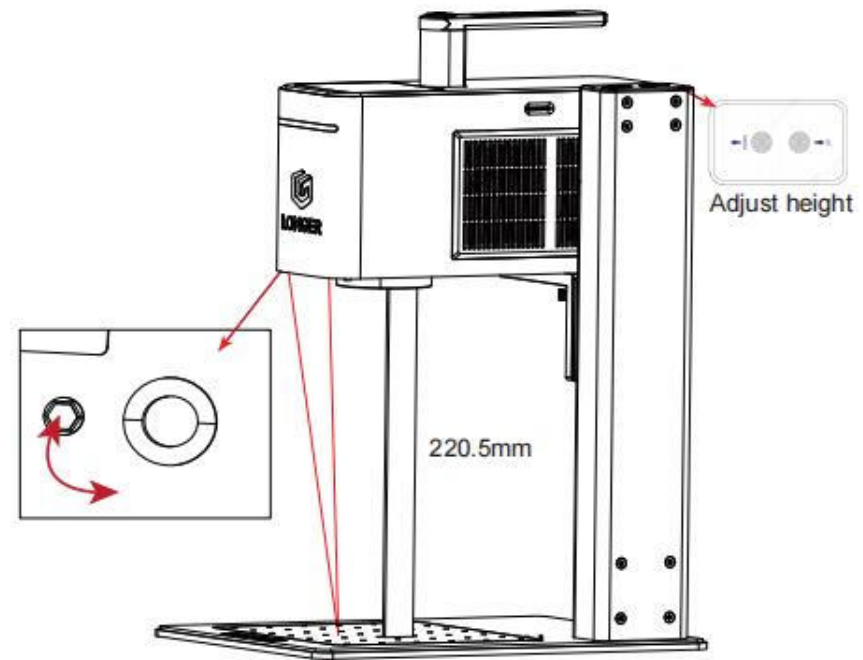
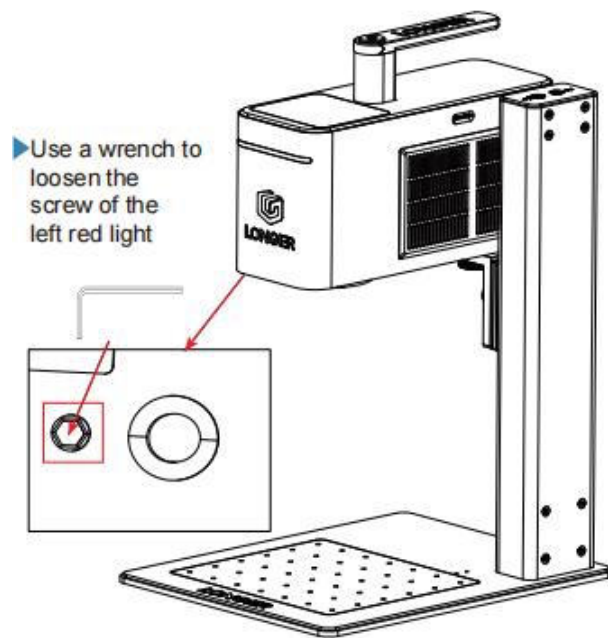
► Note: Remove the lens cap first and then install the protective shield. Make sure of exhaust fan is toward rear.

## 2. Connect the cable



### 3. Red light module adjustment

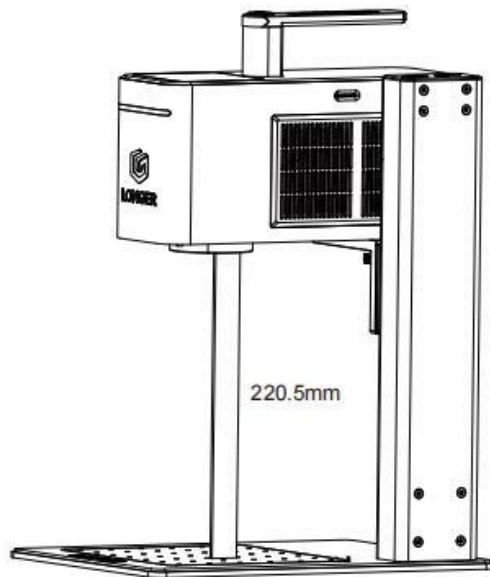
- 1) If the two red light spots cannot overlap at the focal length, you can adjust it manually
- 2) Move the laser unit up and down to the focal position (use a ruler to confirm), rotate the red light module by hand to find the overlapping point, and finally tighten the screws.



## 4. Adjust the focus

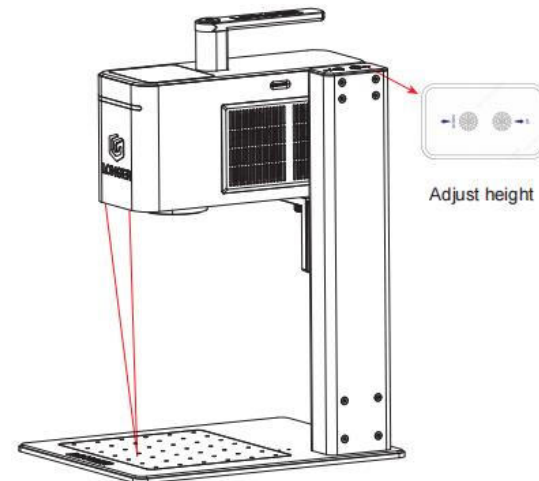
### 1) Focus by ruler

Adjust the height of the laser module by touching the button of the electric lifting bracket until the bottom of the field lenses is 220.5mm away from the surface of the engraved object.



### 2) Focus assist by red light

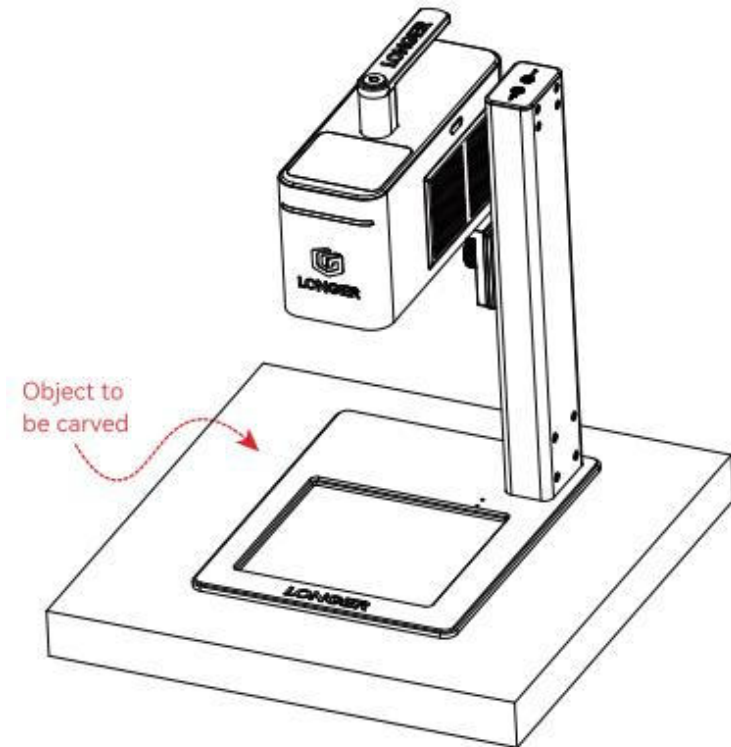
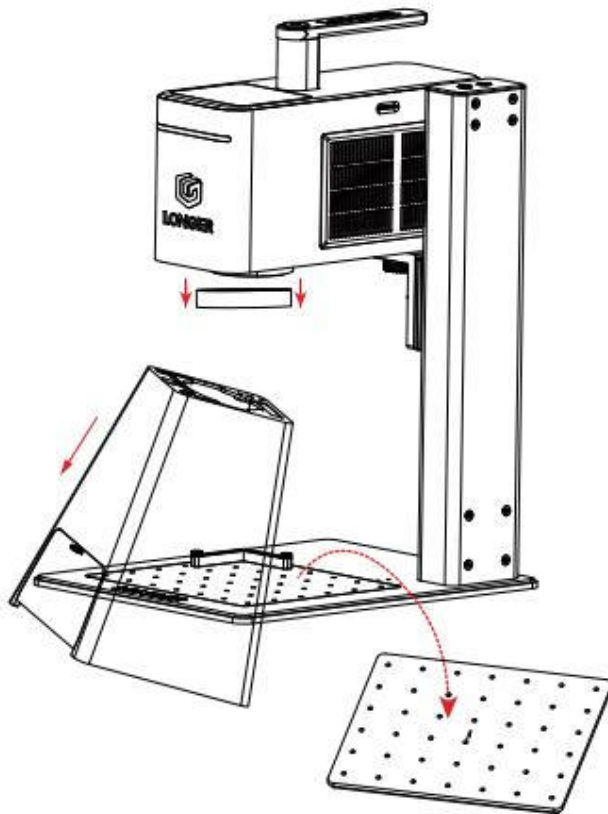
You can turn on the red light through the path of Setting-Laser focus-Manual on the screen and adjust the height of the bracket. When the two laser points coincide with each other, the focus is completed.



Note: The red dot is not the engraving center point, it is only used for focus reference.

## 5. Process large-sized materials

- 1) Adjust the height first, remove the protective shield and then take out the positioning plate.
- 2) Place the engraving machine steadily on the surface of the object to be engraved.

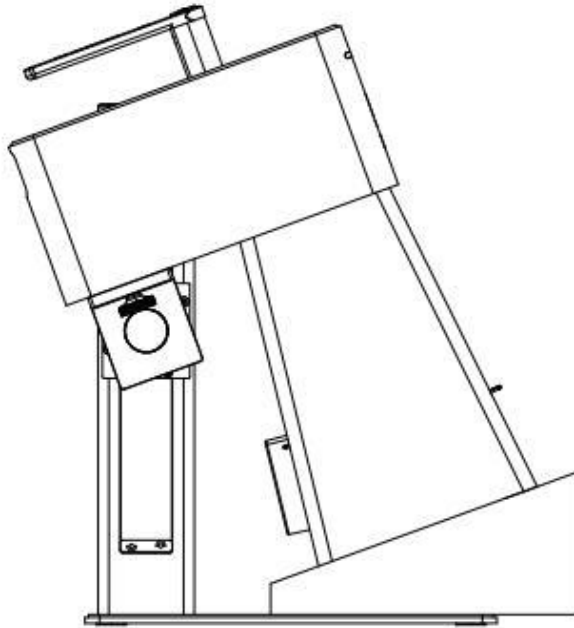


Note: The focal length needs to be readjusted according to the actual situation.

## 6. Process materials with slopes

### 1) Oblique engraving

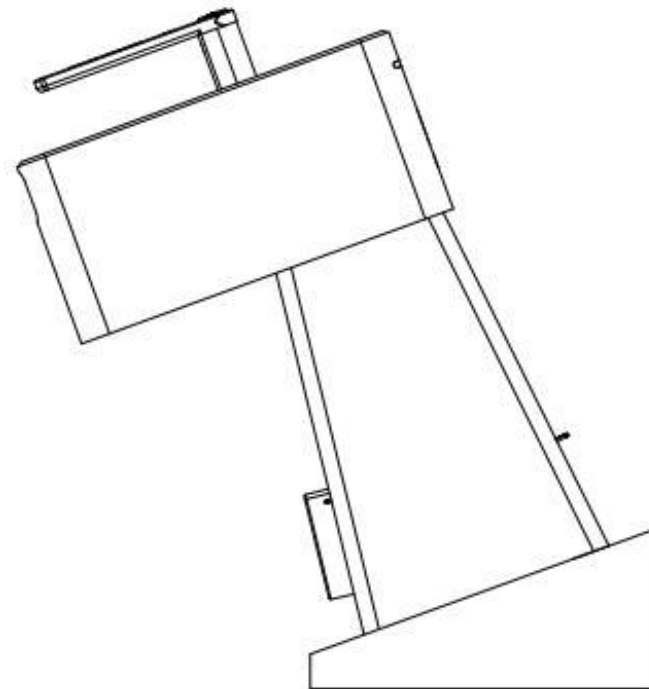
Turn the angle adjustment knob counterclockwise to loosen it, adjust the angle of the mounting bracket, and after the adjustment is completed, it will mesh with the gear, then turn the angle adjustment knob clockwise to lock it and adjust focus.



Note: The laser head can only be rotated at 18° intervals.

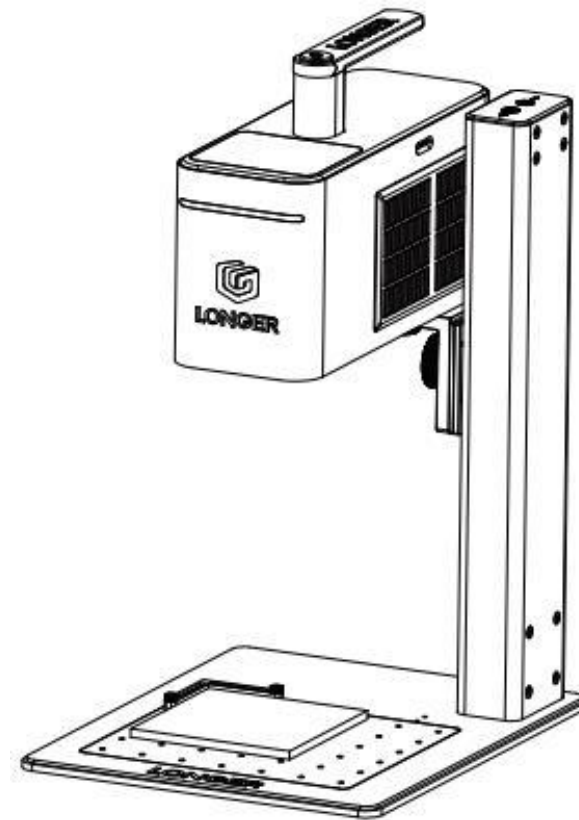
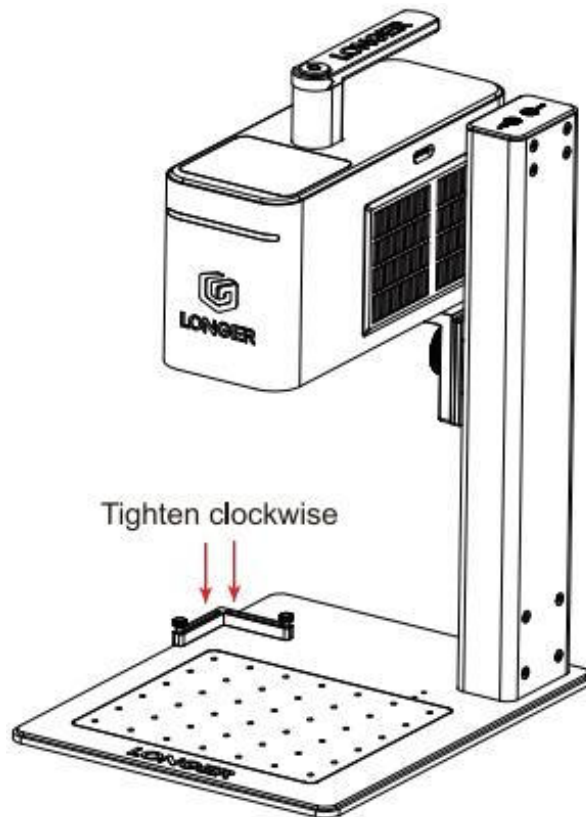
### 2) Handheld engraving

Hold the handle and place the protective cover against the surface of the object to be engraved, and you can engrave.



## 7. Batch engraving

1) Place the base plate and tighten the two M4X10 thumb screw.  
2) Place carving materials.

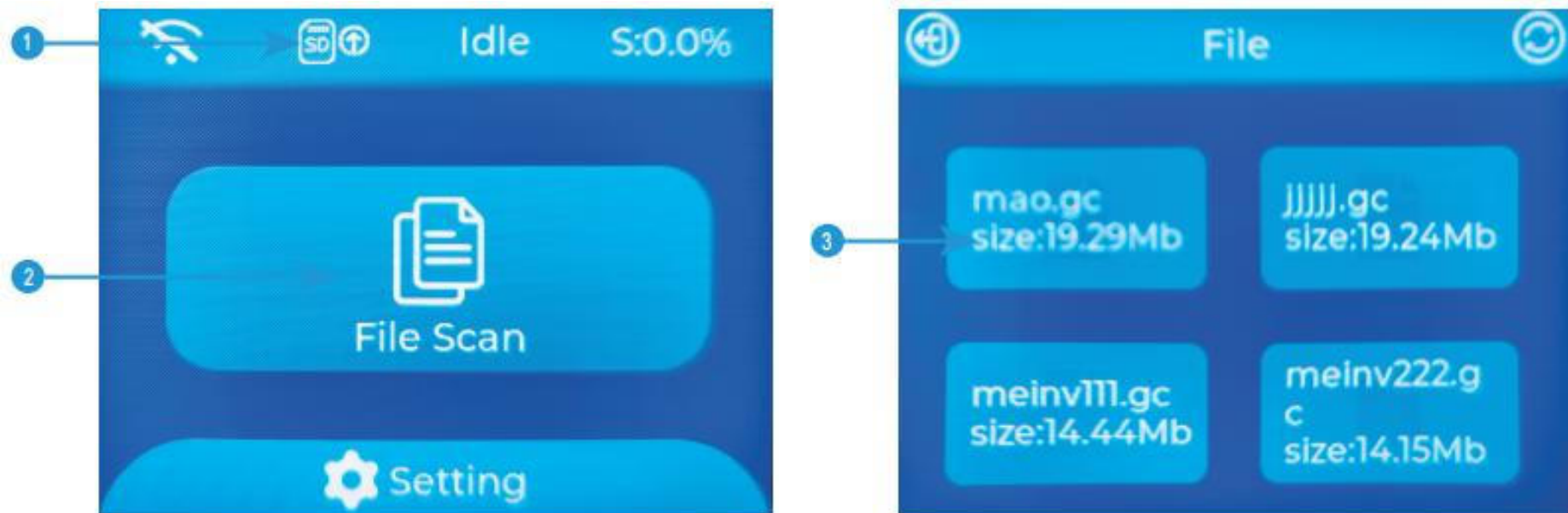




## D. SD card offline engraving

### 1. Usage

1) Insert the SD card on the side of the machine. When an upward arrow appears next to SD on the screen, the reading is complete. Click File Scan to choose the file.



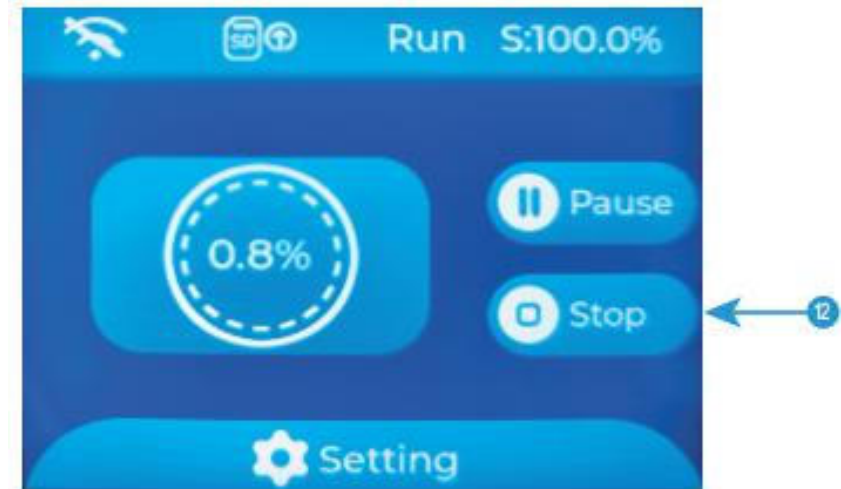


3) Select carving in work mode, choose 450nm or 4) After confirmation, click confirm.  
1064nm from light source, click next.



5) Click Border to confirm the engraving position. After confirmation, click start engraving.

6) Click Stop when engraving is complete.



7) Click Confirm.

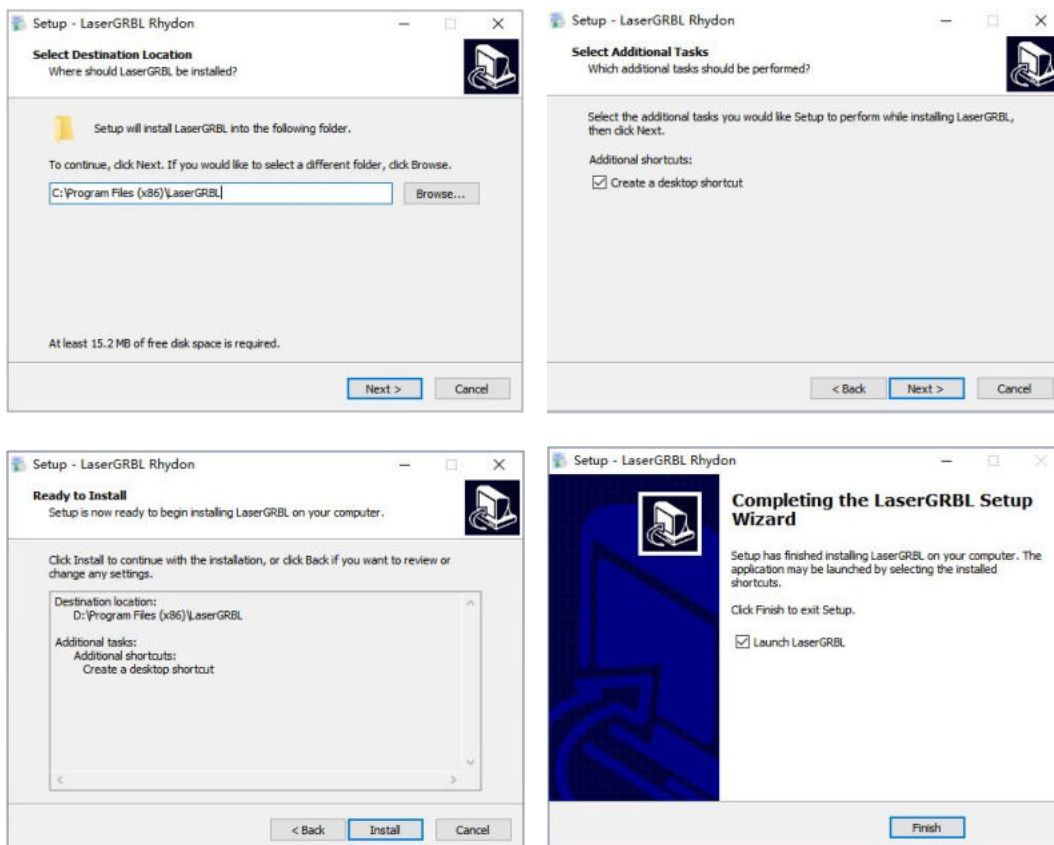


## E. LaserGRBL Software Operation

LaserGRBL is an easy-to-use and fully free software for laser engraver only running on Windows. Please save or back up data in time during use to avoid data loss, but LONGER is not responsible for any data loss caused by third-party software.

### 1. Software Download and Installation

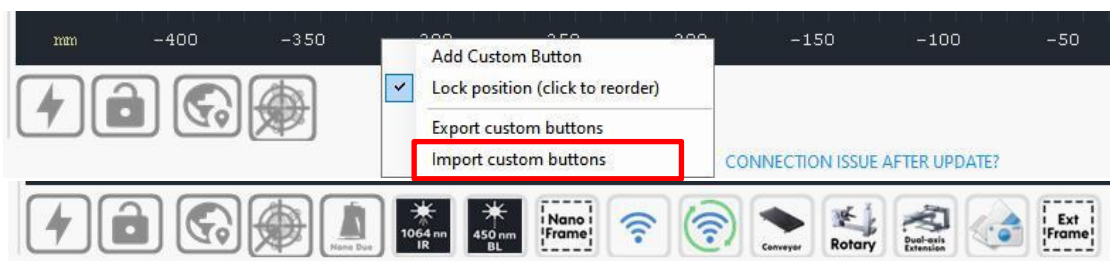
Double-click the LightBurn installation file in the software folder in the SD card or download it from the following link to install LaserGRBL, <https://lasergrbl.com/download/>, click Next > Next > Install > Finish.



## 2. Import configuration file

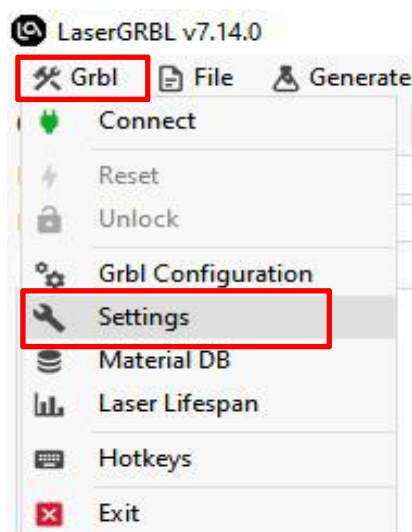
In order to meet the use of Nano Duo in LaserGRBL, it must to import custom buttons. Right-click in the blank area at the bottom and select [Import custom buttons](#), open [LaserGRBL\\_NanoDuo.zbn](#) file to import, click [YES](#) to confirm, then there are three new [Nano Duo](#), [Slide](#), [1064nm](#), [450nm](#) icons etc.

LaserGRBL NanoDuo.zbn file is stored in the softwares directory of the SD cards.



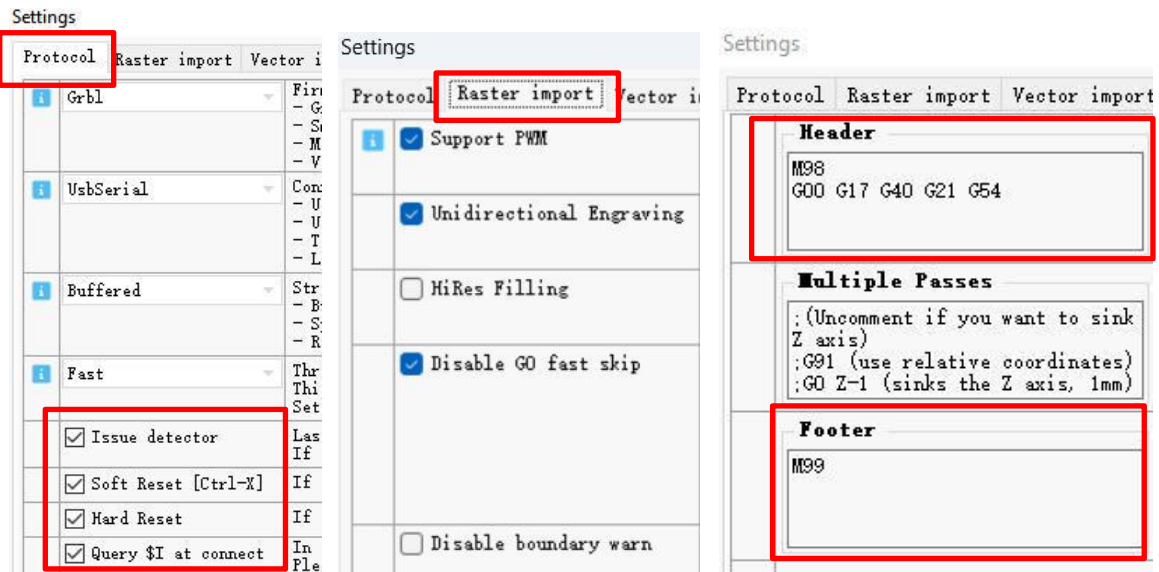
## 3. Setting

Click Grbl in the menu bar and select Settings.



Select Grbl, UsbSerial, Buffered, Fast in the Protocol interface and select the four options below.

In the Raster import interface, enable the Support PWM, Unidirectional Engraving, Disable GO fast skip options.



Fill in the following content in the Gcode interface:

Header:

**M98**


**G00 G17 G40 G21 G54**

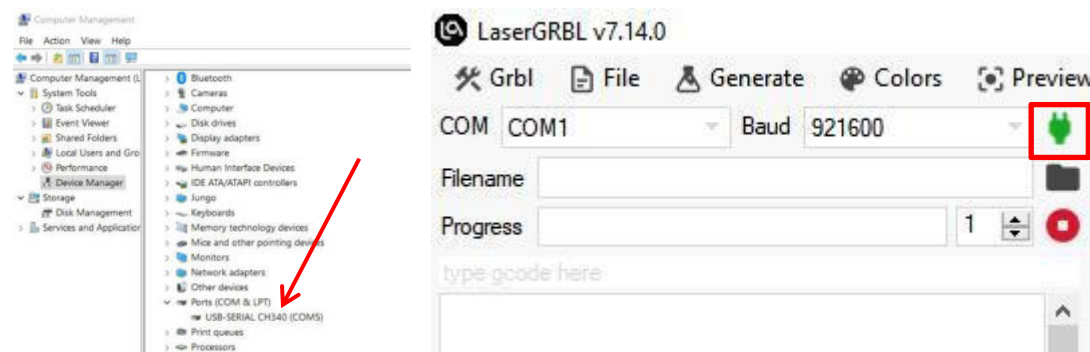
Footer:

**M99**

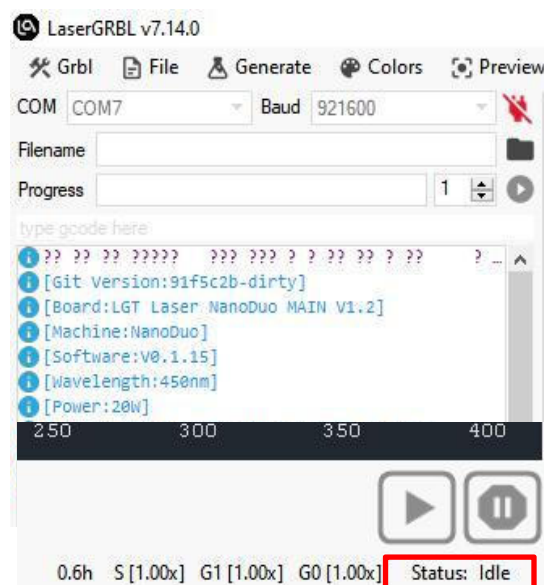
When all settings are completed, click the Save button.

#### 4. Connect Nano Duo to LaserGRBL

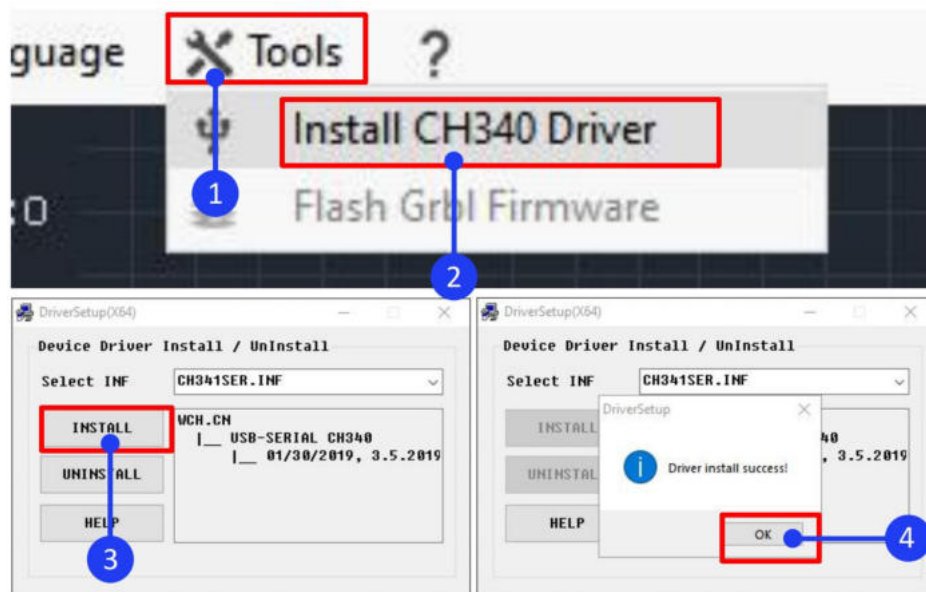
It needs connect the engraver to LaserGRBL software first. For Windows, it needs to right-click the computer and select [Manage](#), click [Device Manager](#), click to expand Ports (COM & LPT), find the port corresponding to the CH340 driver, and then select this port from the COM port list, set [961200 baud rate](#), click  to connect.



When connected to proper port grbl reply with “welcome message” showing Grbl firmware version. On the bottom-right of the LaserGRBL interface it shows “Status: Idle”



If no ports are listed in the drop-down, it means that no engravers were found, which could mean that it is not plugged in correctly, isn't powered, or the PC is missing a driver. Please click Tools menu to Install CH340 Driver from LaserGRBL software.

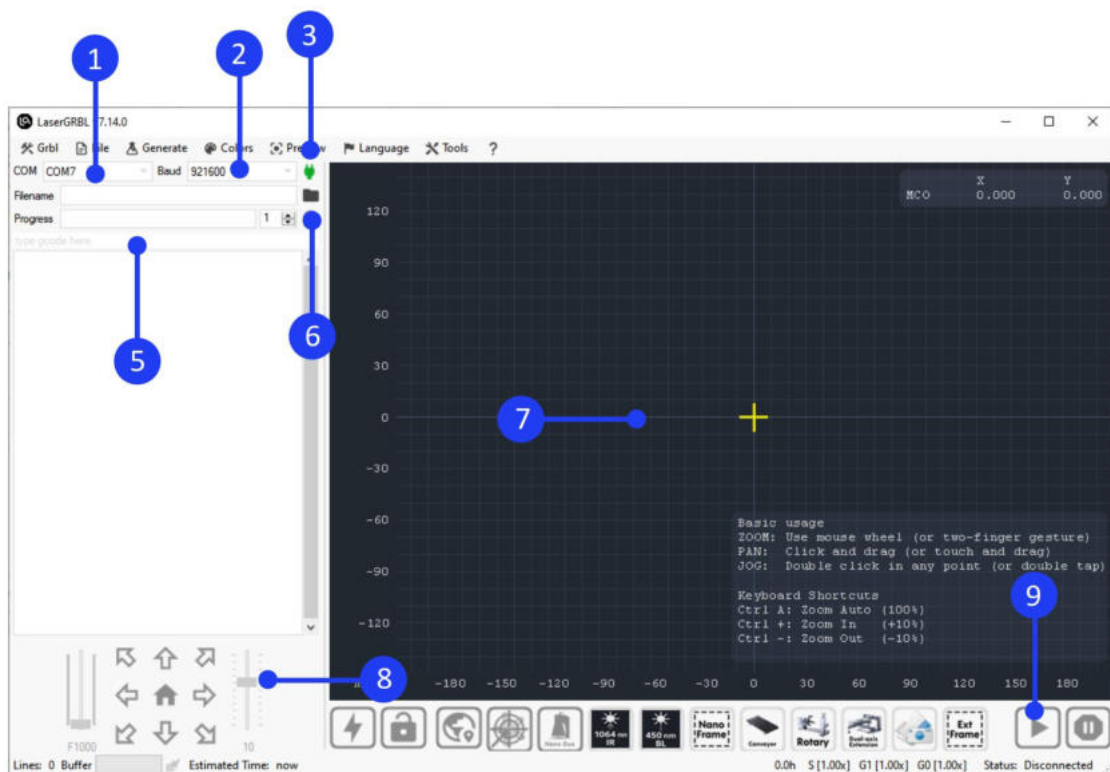


## 5. The main window of LaserGRBL

- ① Serial port: Select the serial port number to which is the Nano Duo is connected.
- ② Baud rate: Change the baud rate to 921600.
- ③ Connect button: After setting Serial port and Band rate, click the connect button to connect Nano Duo.
- ④ File button: Click the file button to import the file to be engraved into LaserGRBL.

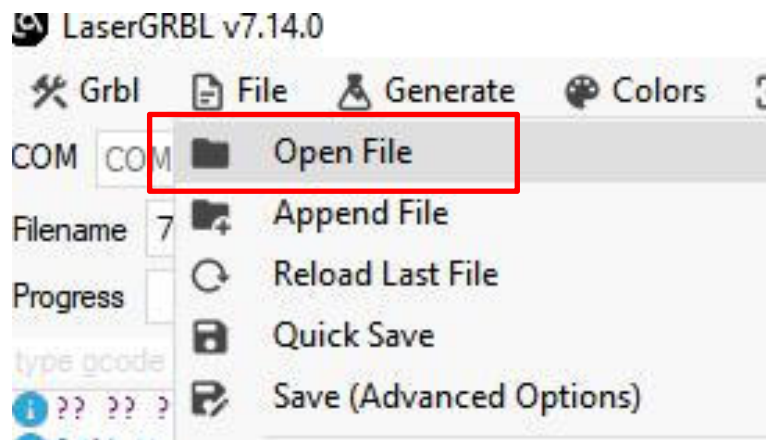


- ⑤ Manual commands: it can type any G-Code line here and press "enter". Command will be enqueued to command queue.
- ⑥ Run button: The green "play" button will start program execution.
- ⑦ Engraving preview: this area show final work preview. During engraving a small cross will show current laser position at runtime.
- ⑧ Jogging control: allow manual positioning of the laser. The left vertical slider control movement speed, right slider step size.
- ⑨ Pause and resume: this buttons can suspend and resume program progress.

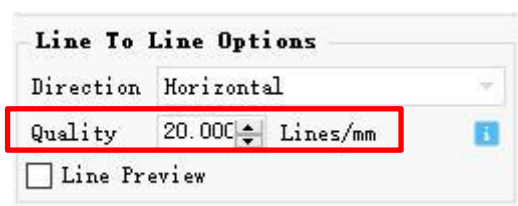




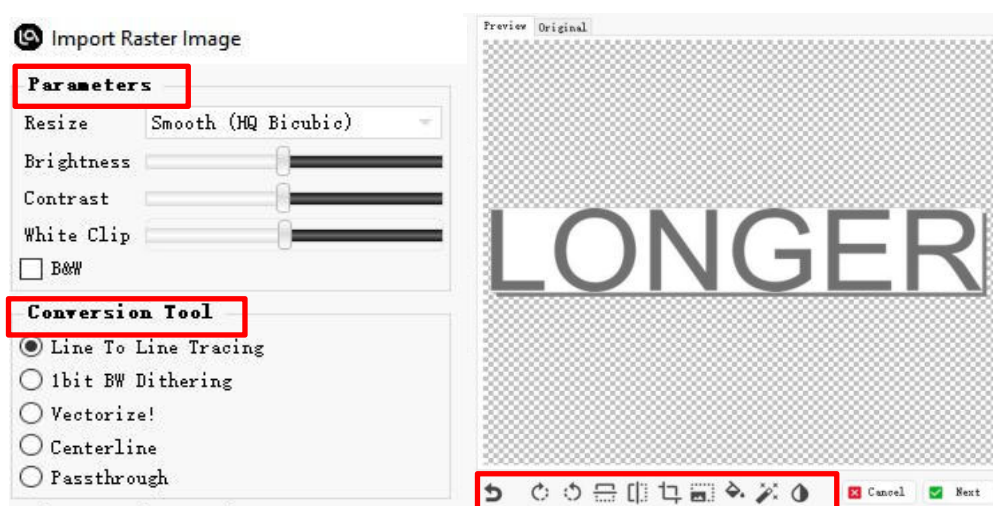
## 6. How to make a project in the LaserGRBL



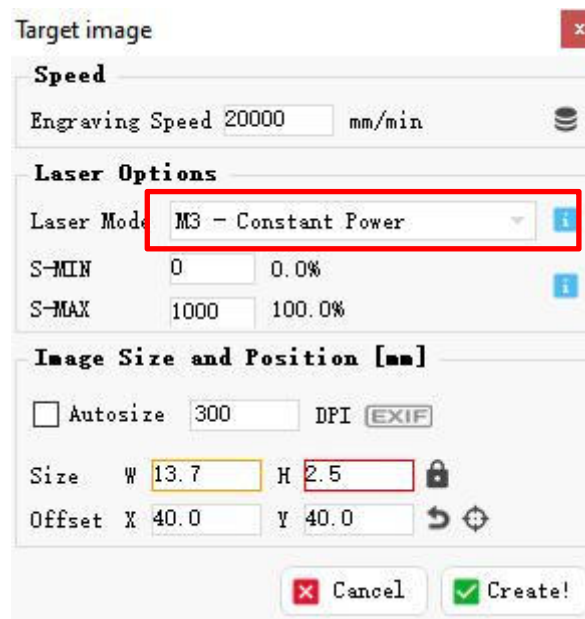
Click [File](#) > [Open](#) File to add the design to be engraved, set the [Quality](#) to 20Lines/mm



You can select different engraving modes in the [Conversion TOOL](#) and process the image color in [Parameters](#). If you need to process the image direction, size, etc., you can do it in Preview. click [Next](#),



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 **M3-Constant Power**, and the value of S-MAX is 10 times the target laser power, such as when the laser power is 100%, S-MAX needs to be set to 1000%, if the laser power is 60%, it needs to be set to 600%. Then set the size of the image to scale the design. If the design position is outside the working range, it should set the XY axis offset to adjust the graphics position. Click Create.



Note: The zero point of Nano Duo is at the lower left corner. If you want to engrave the file in the center, you need to set the Offset.


Offset x=80-(Size\_W/2);


Offset Y=70-(Size H/2);

After successfully importing the graphics and setting the parameters,

it needs to set the focus of Nano Duo, click  **Nano Duo button**,

If you use infrared laser engraving, click  **1064nm IR button**, if

you use blue laser engraving, click  **450nm BL button** to

engrave, then click  **Frame button** to determine the material

placement, and finally click  **Start button** to start engraving.

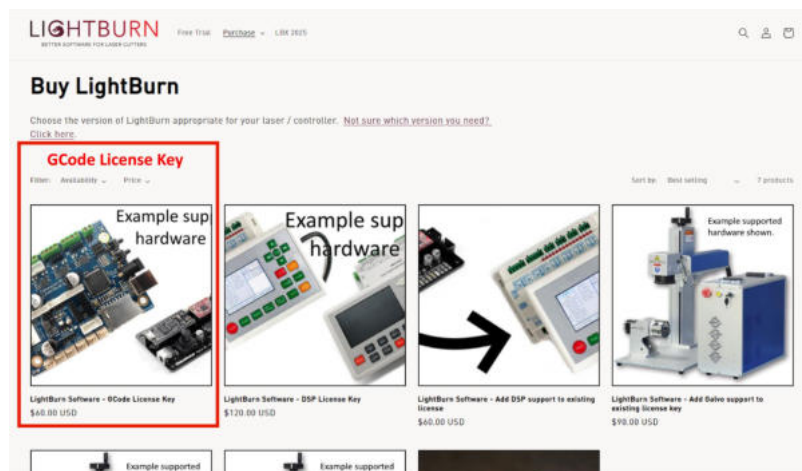


For detailed LaserGRBL software operation, please refer to

<https://lasergrbl.com/usage/>.

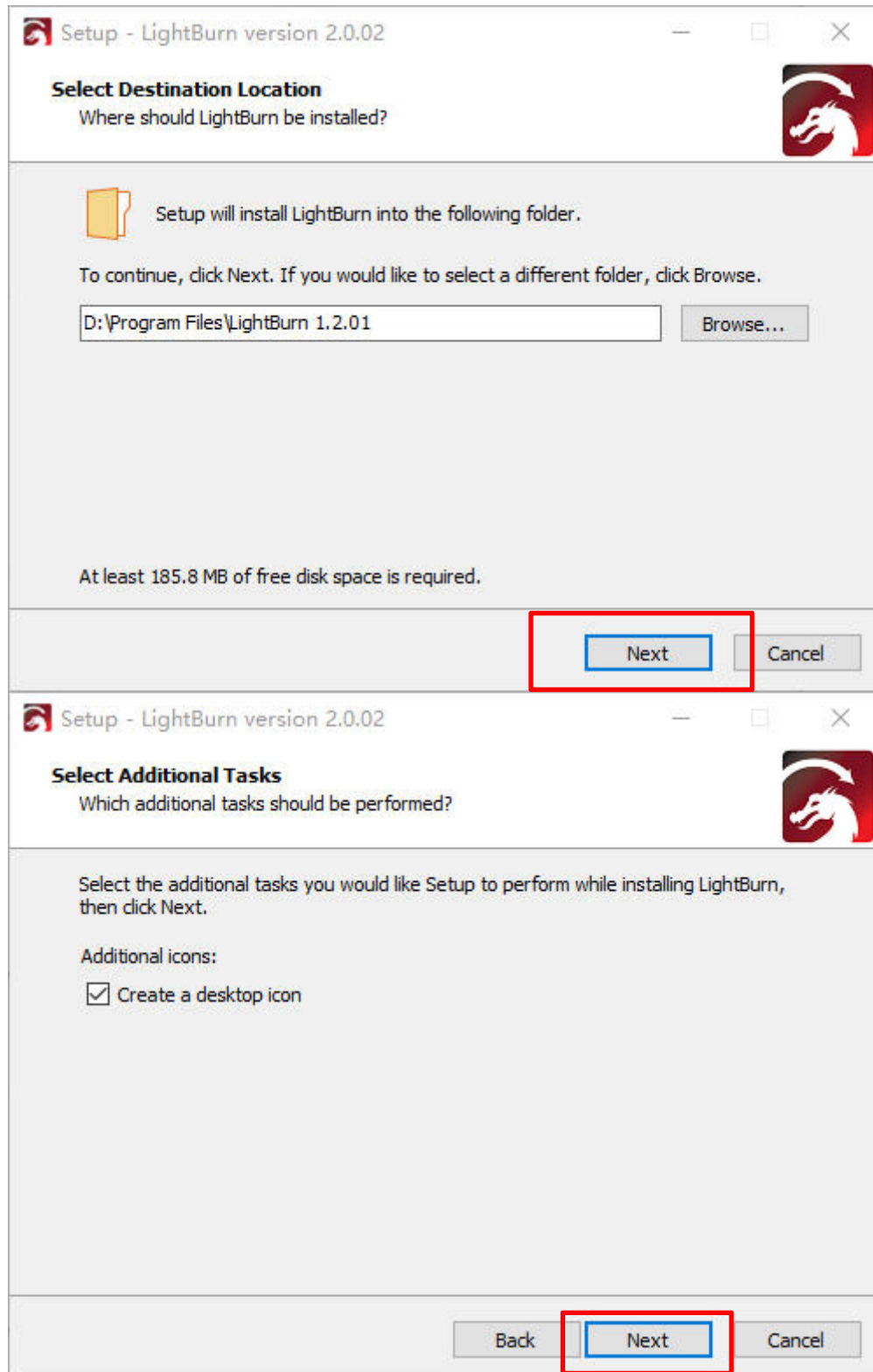
## F. LightBurn Software Operation

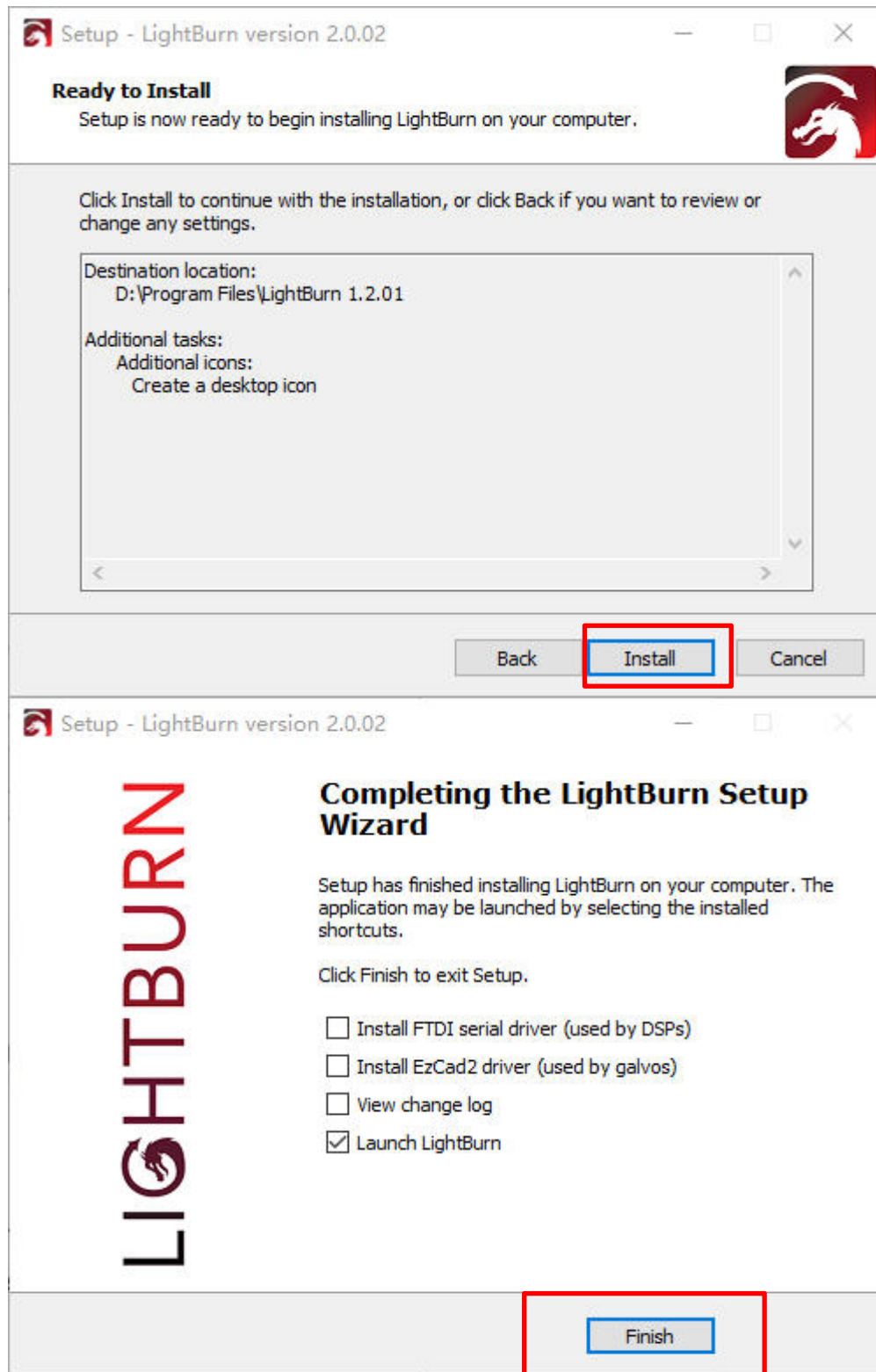
LightBurn is professional layout, editing, control and paid software for engraver, running on Windows, MacOS, and Linux. It provides a 30 days trial period. Please save or back up data in time during use to avoid data loss, but LONGER is not responsible for any data loss caused by third-party software. If the computer has previously installed the software or after 30-day free trial period, according to LightBurn's trial rules, it needs to purchase a license key to continue using it. To purchase a license and obtain a key code, please go to the LightBurn online store and select "[GCode License Key](#)".



### 1. Software Download and Installation

Double-click the LightBurn installation file in the software folder on the SD card or download it from the following link: <https://LightBurnsoftware.com/pages/download-trial> to install the trial version of LightBurn





To install LightBurn on [Mac](#), double-clicking the .DMG file after downloading it and drag LightBurn into Applications folder. When launching LightBurn for the first time, open a [Finder](#) window, browse to the '[Applications](#)' folder, hold the Control key and click the LightBurn icon, choose '[Open](#)' from the menu. When MacOS asks if it should open the program, click yes, and it will be listed as an exception in your launcher. From then on you can just launch the application normally.



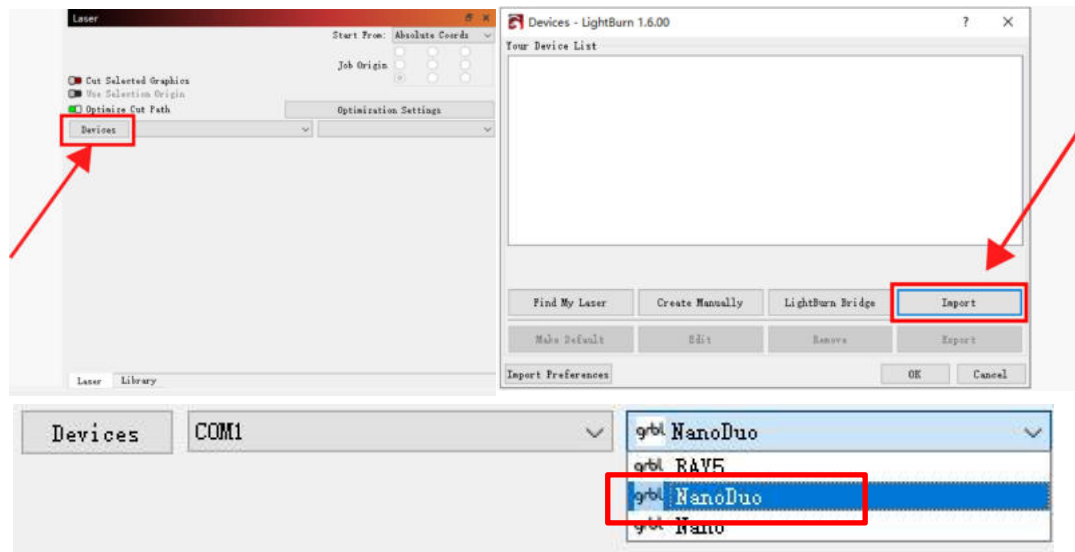
## 2. Import configuration file

Before using LightBurn with Nano Duo for the first time, it needs to import the laser Nano Duo.lbdev configuration file, which is in the software folder of the SD card.

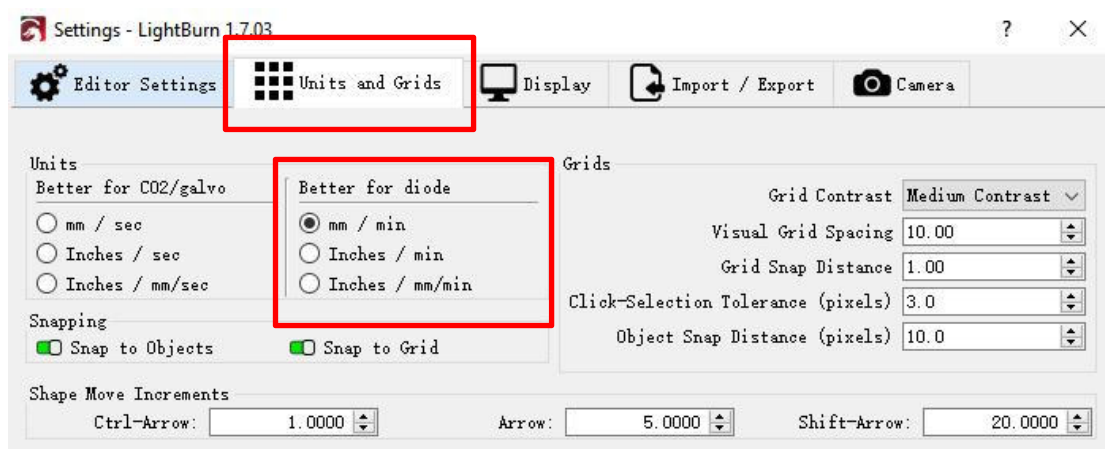
For the first time launching LightBurn, it will prompt a 'New Device Wizard' or click "[Devices](#)" in the laser control module to import the engraver. Click '[Import](#)', select the [Nano Duo.lbdev](#) file, and click OK to add the Nano Duo configuration to LightBurn. The macro



commands will be successfully added in the Console window and Nano Duo device would appear in the list of devices to the right of the 'Devices' button in the Laser window when the configuration file is imported successfully.



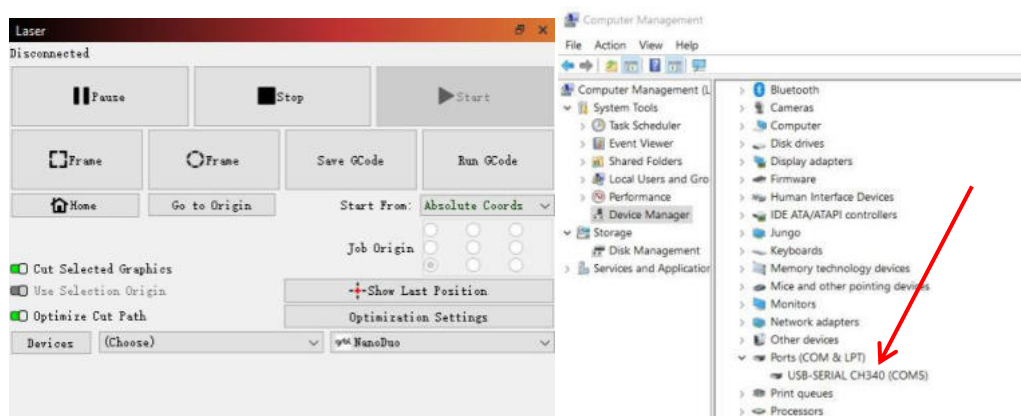
After adding the device, it is recommended to set the speed unit to mm/min. That is select 'Edit' on the task bar, select 'Settings', select mm/min as the unit, and click the 'OK' button.





### 3. Connect the Nano Duo to LightBurn

It needs connect the engraver to LightBurn software before use. For Windows system, it needs to right-click the computer and select [Manage](#), click [Device Manager](#), click to expand Ports (COM & LPT), find the port corresponding to the CH340 driver, and then select this port in the LightBurn, that is to manually choose the right port that the engraver is connected to, by clicking where you see '[\(Choose\)](#)' in the [Laser Window](#).



For MacOS, please go to About this Mac > Overview > System Report, select USB under Hardware, there will be USB Serial if the driver is installed automatically, and select cu.wchusbserial14230 port in the LightBurn by clicking where you see '[\(Choose\)](#)' in the [Laser Window](#).

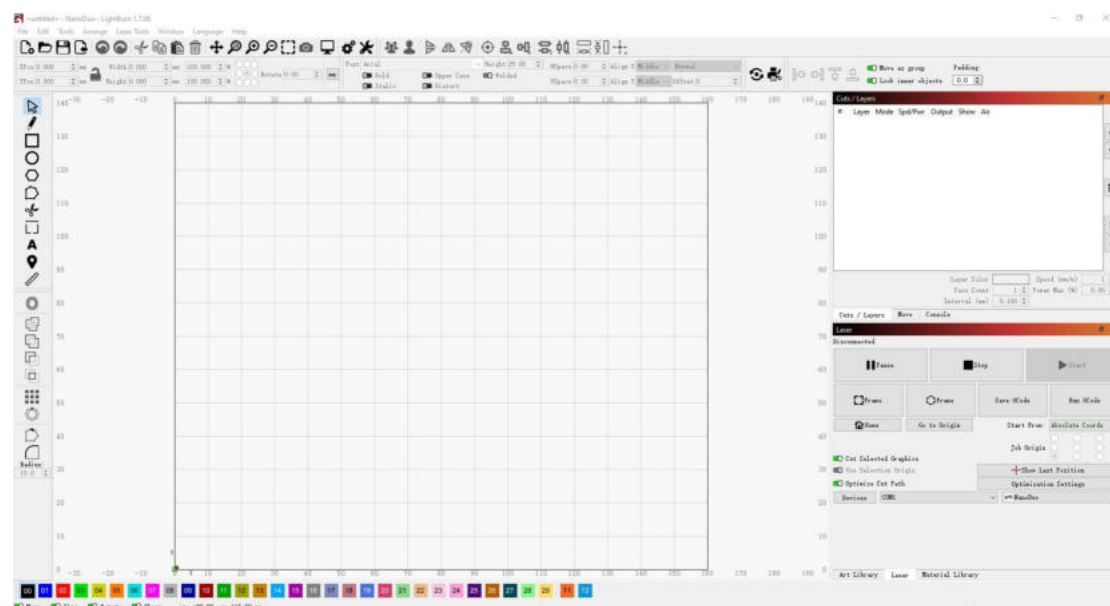
If no ports are listed in the drop-down, it means that no engravers were found, which could mean that it is not plugged in correctly, isn't powered, or the PC is missing a driver. It needs to download

CH340 driver from the link and double click it to install:

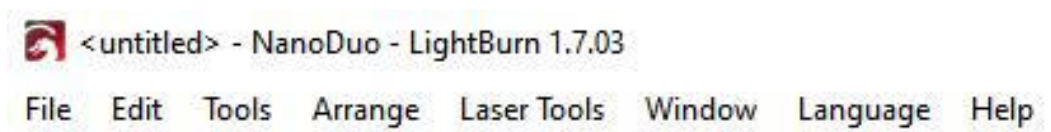
<https://drive.google.com/drive/folders/1Sc-TKuez-mz--38Vp6DeL-pGmQcQdHW4>.

#### 4. The main window of LightBurn

This is the default layout for the main LightBurn window, which includes Menus, Main Toolbar, Creation & Modifier Tools, Color Palette, Cuts / Layers, Laser Window, Move Window etc.



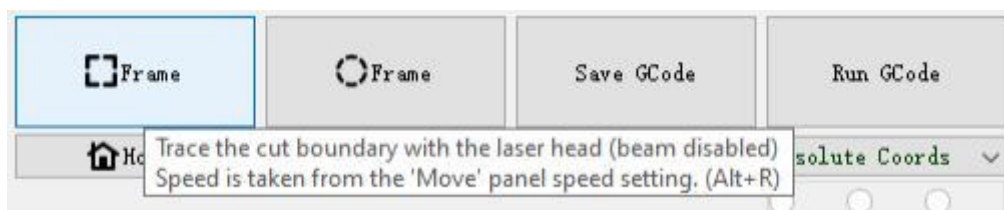
**Menus:** The menu bar at the top of the main window provides the access to almost every feature available in LightBurn, like File, Edit, Tools etc.



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



**Tool tips:** If hover the mouse over a control, then a small bit of text pop up that describes that button or feature, like this:



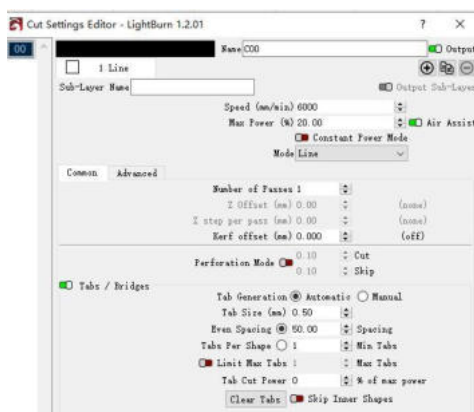
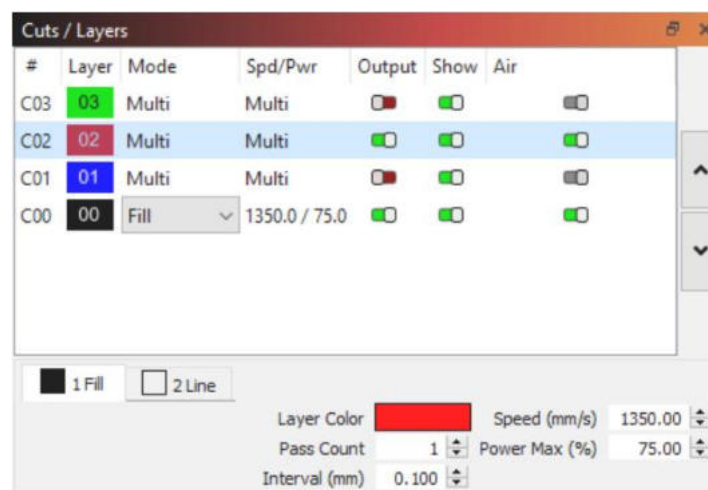
**Creation & Modifier Tools,**



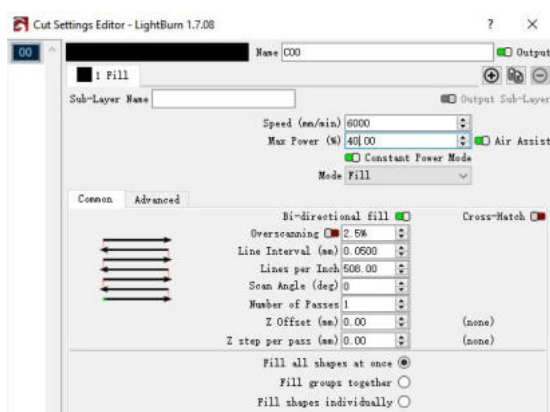
**Color Palette,** these colors are used to assign different kinds of parameters to the shapes in the design. If a design is selected, click a color entry will apply that color to the shapes in your selection. The colors currently in use in your design will also appear as entries in the Cuts / Layers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



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



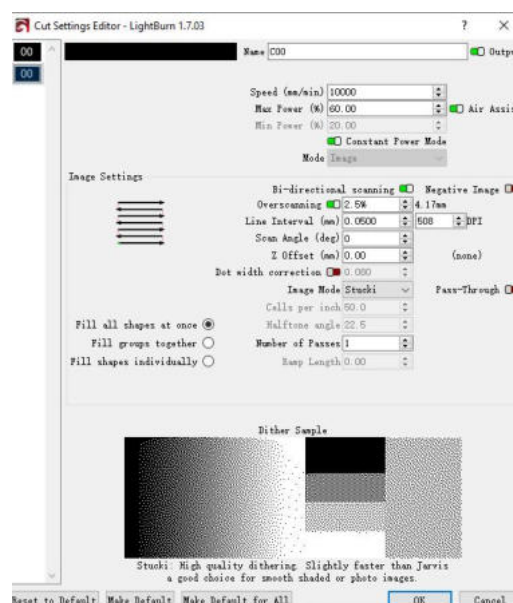
Line mode



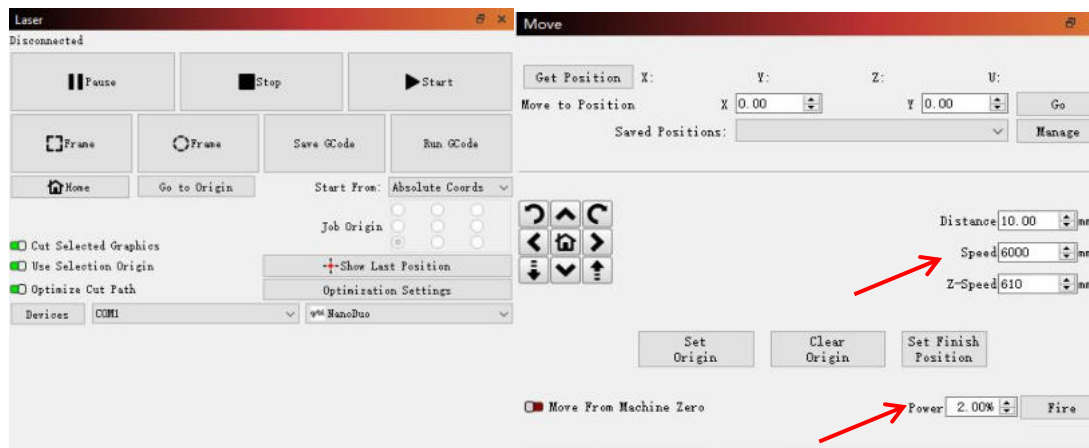
Fill mode



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

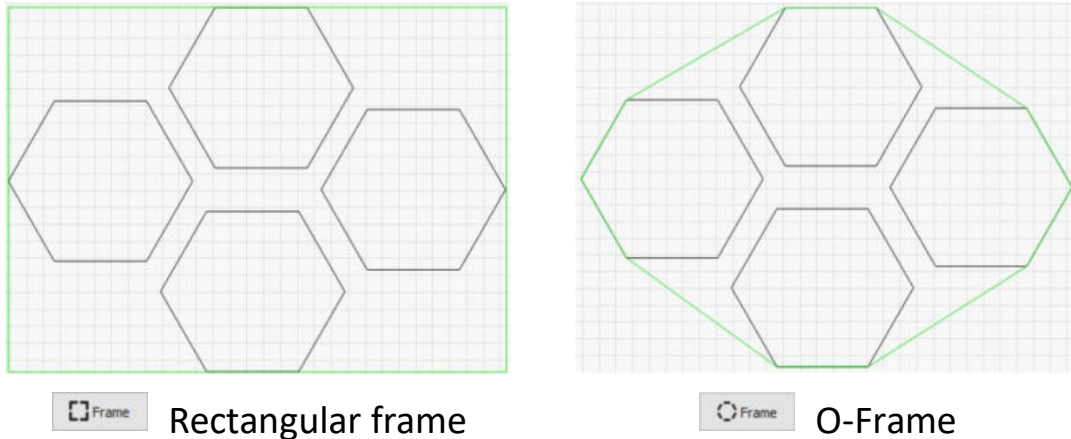
In **Line mode**, the laser follows the exact path of selected design, tracing the lines with the beam enabled at the setting power and speed. If laser moves quickly, or with low power, it will likely just etch the surface. If laser moves slowly and with high power, it will cut through the material. The only difference between surface marking and cutting is the power and speed. **Fill mode** permits the laser to scan line by line and fill in the selected shape, which will fill in closed shapes but not open shapes. **Image mode** is only available for images, and can control how LightBurn renders the image data on the laser. There are three image modes that are often chosen, which are Atkinson, Stucki, 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 shapes selected.  The O-Frame button, called the 'Rubber Band Frame', traces a path around selected design that is the shape of a rubber band stretched around it. The speed and laser power during frame are adjusted in the MOVE window. Due to software limitations, the maximum speed during frame can be 10,000 mm/min. These two different frame effects can be shown in the following figure:



**Console Window:** The Console window displays messages from the controller and commands sent to it by LightBurn, and some macro commands designed of Nano Duo engraver. It can also input direct commands to engraver through this window, such as \$\$ to display GRBL settings, \$X is to unlock machine if it has been locked due to an alarm or error. The Console window will also display alarm or error messages sent to LightBurn by the laser's controller, indicating that there was a problem with the machine's operation.





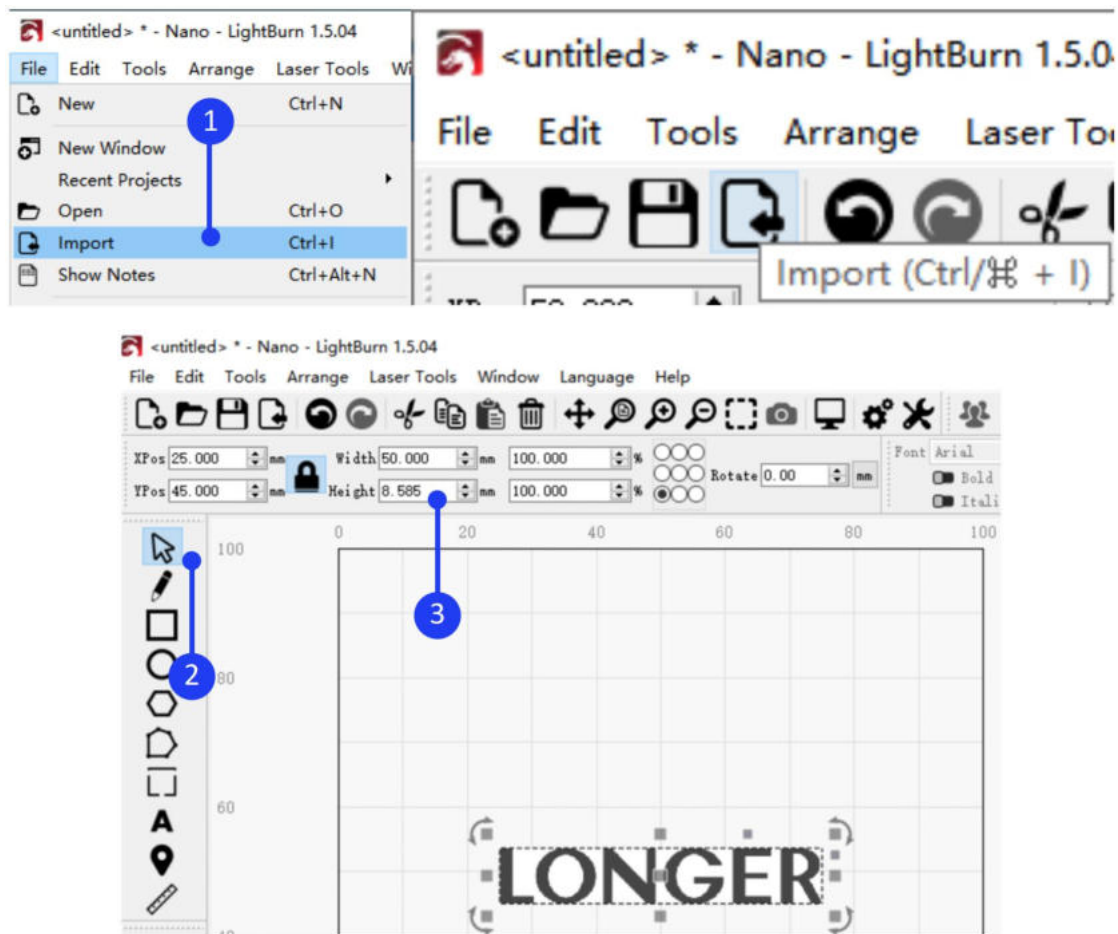
## 5. How to make a project



Generally speaking, creating a engraving task includes importing graphics, editing graphics, setting parameters, preview, framing and engraving. Taking engraving the LONGER LOGO and cutting after



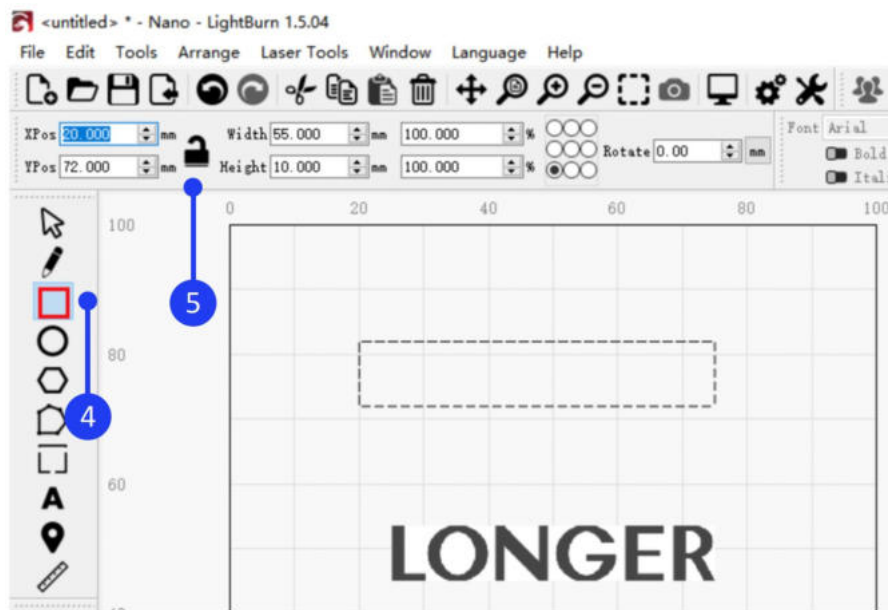
engraving as an example:



Click [File > Import](#) or click  import icon in Toolbar to add image to LightBurn, click  select icon to choose the image, change the width of image to 50.00mm, the height of image will change in proportion to the width.

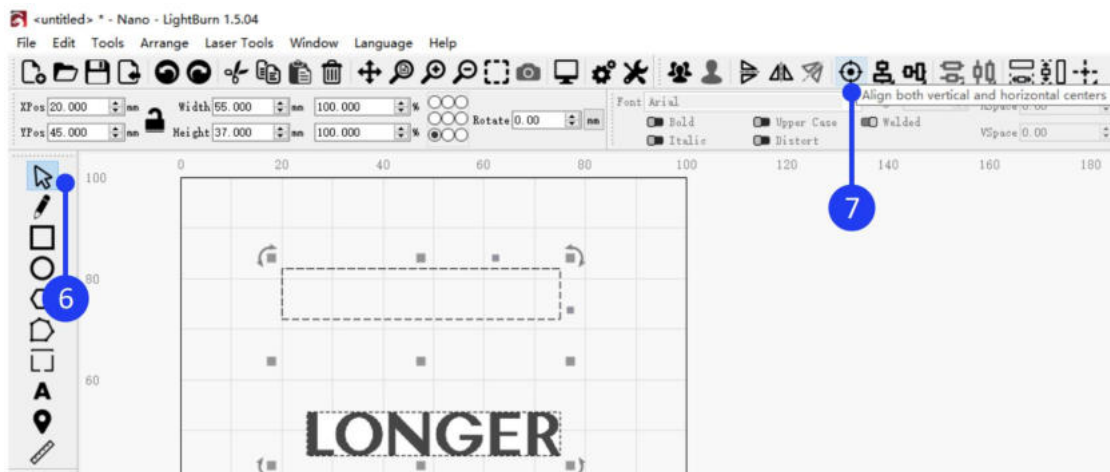


Click  Create Rectangle icon to draw a rectangle, click  to unlock, set the width and height of rectangle to 55.00 and 10.00.

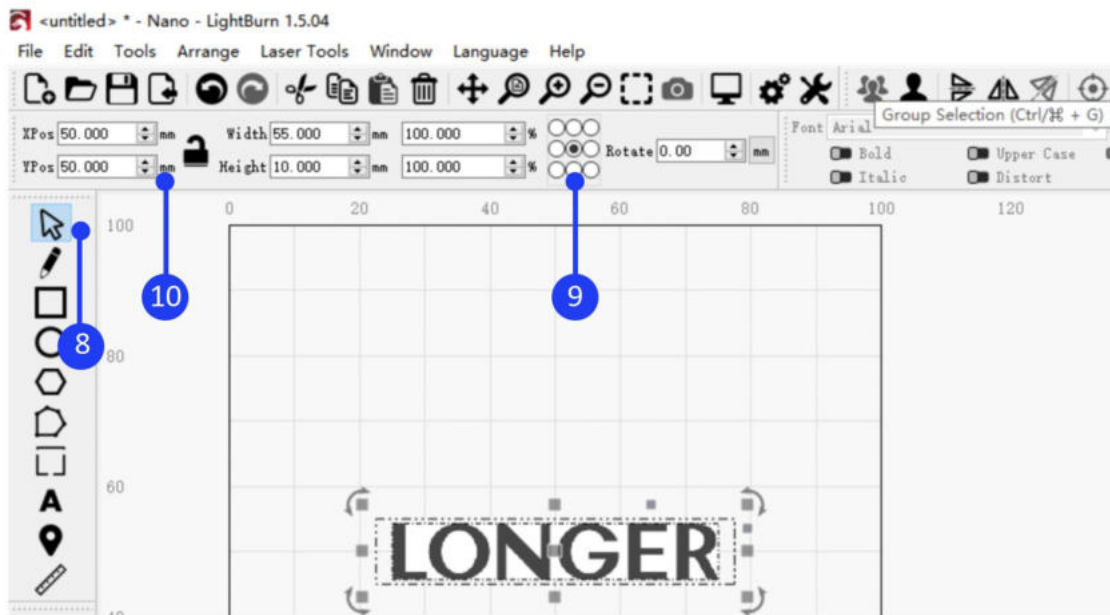




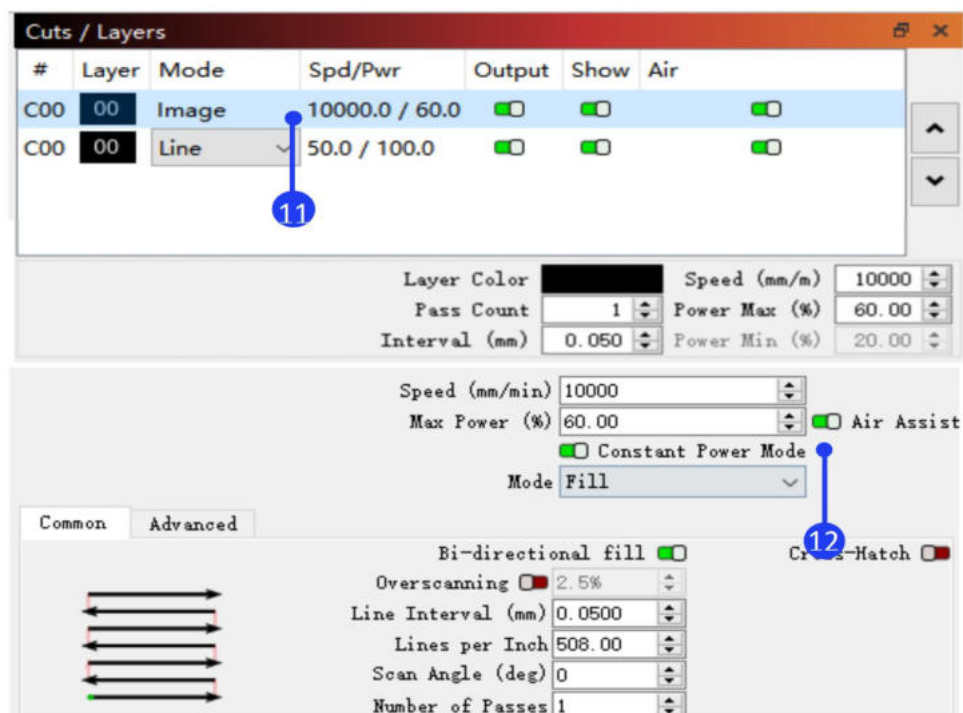
Click  **Select** button, hold down the Shift key on the keyboard, select the rectangle and image, click the  **Align Center** button on the toolbar to center align the image and rectangle.

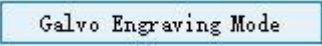

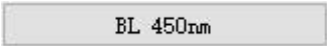




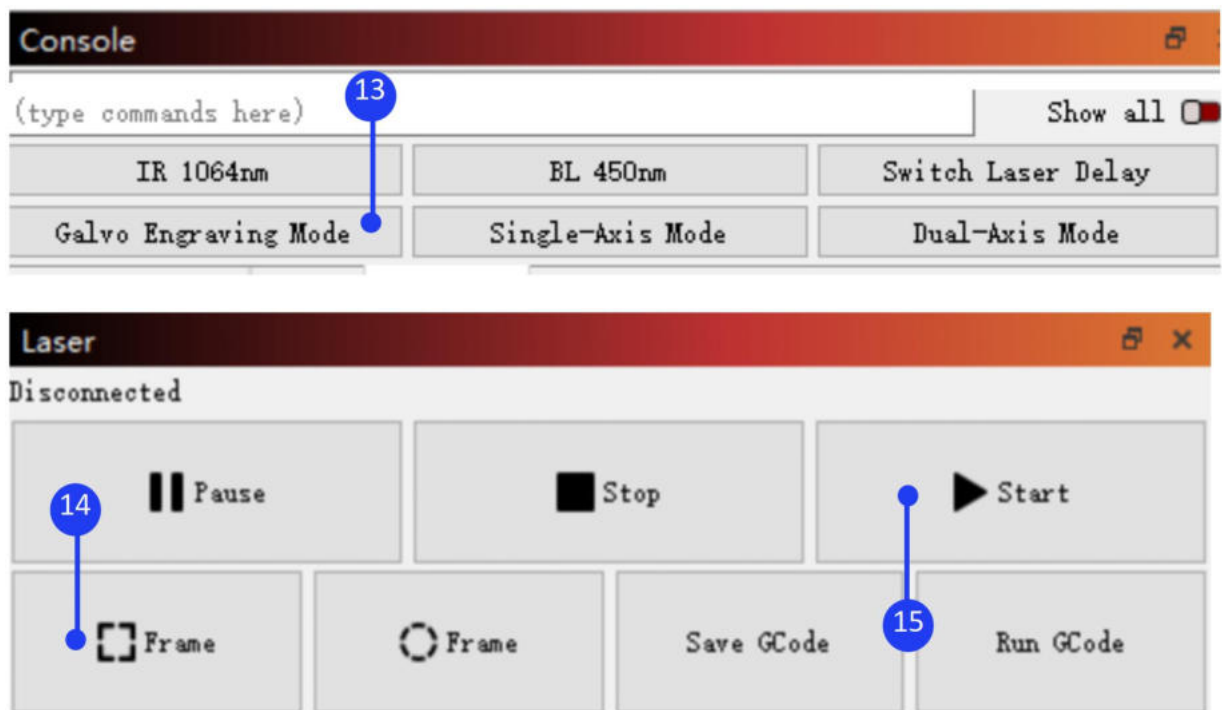
Set the coordinate point at the center of the image and enter the XY position coordinates as 80,70 respectively, so the design is moved to the center of working size.



Click on different layers in **Cuts and Layers** Window to set the corresponding parameters, **enable Constant Power Mode** (Please note that for image or fill engraving, the **Y interval is 0.05mm**, and adjust the specific parameters according to the actual materials and parameter table).



Click **Galvo Engraving Mode**  in the console window, If you use infrared laser engraving, click **IR 1064nm button** , if you use blue laser engraving, click **BL 450nm button**  to engrave, adjust the focus of Nano Duo and click the **Frame** button , confirm the placement of the engraving, then click **Start** .



## G.APP operation

### 1. Download and install

Please search for "LaserBurn" in Google play or visit the address below to download for Android system

[https://play.google.com/store/apps/details?id=com.longer.longerlaser&hl=en\\_US](https://play.google.com/store/apps/details?id=com.longer.longerlaser&hl=en_US)

Please search for "LaserBurn" in the Apple store or visit the address below to download for IOS system:

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

Or download from LONGER's official website:

<https://www.longer3d.com/pages/longer-app>

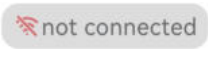
Or scan the code to download the APP:

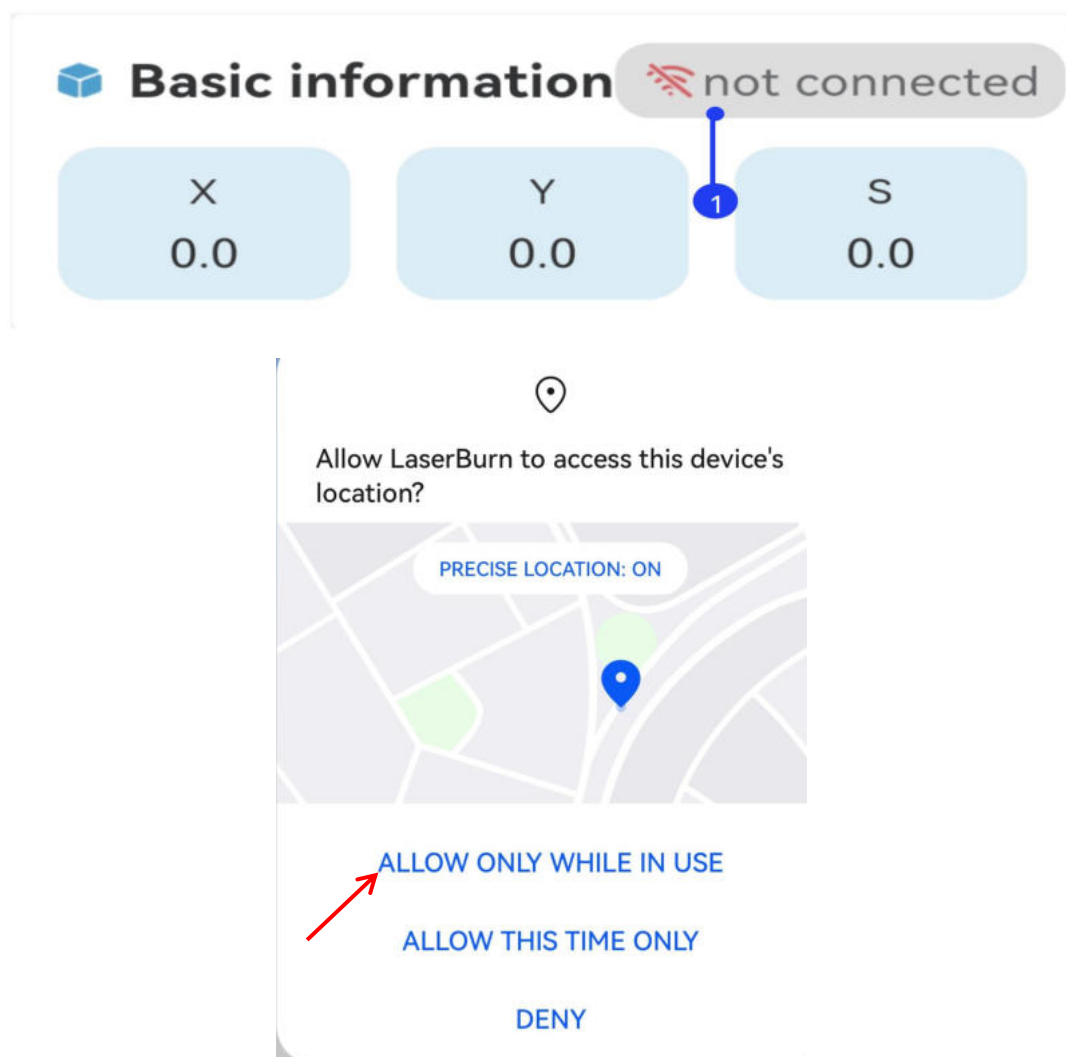


**For complex grayscale engraving, it is recommended to transfer the image to the mobile phone album and import it into the APP for engraving, which will have a better effect.**

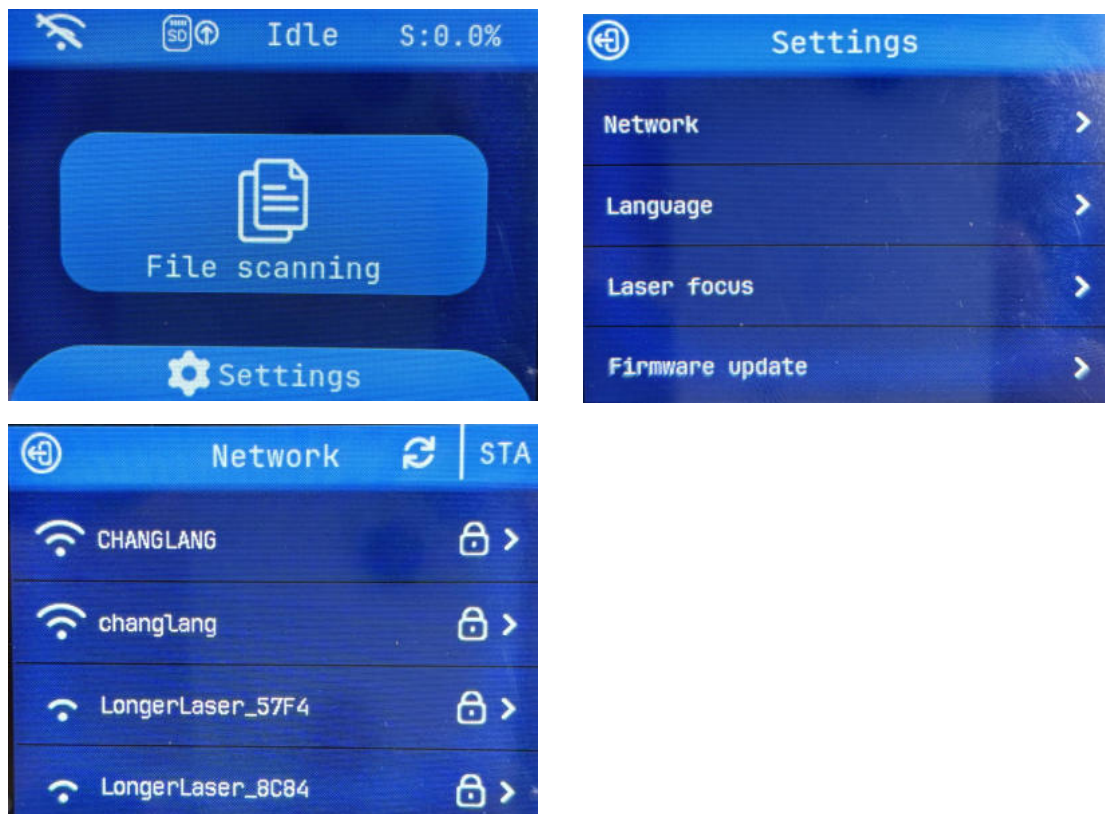
## 2. Connect to WIFI in AP mode

Note: There are two modes, AP and STA, to connect Nano Duo via WIFI. The difference is that in **AP mode the phone will have no network**, but in **STA mode the phone can maintain network**.

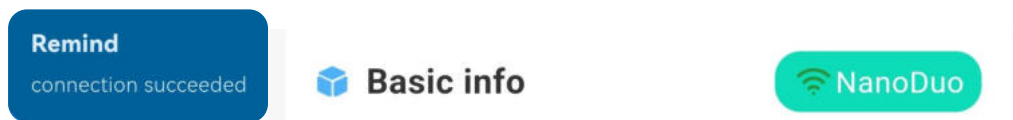
1) Run the LaserBurn APP and enter the Home page, click not connected icon . **when there is a 'Allow LaserBurn to access this device' prompt, you need to click 'Allow only while in use'**, otherwise you may not be able to search for WIFI of Nano Duo.





2) Open the WLAN settings of your phone, search for the WIFI that starts with LongerLaser\_, and enter the password 12345678 to connect to Nano Duo's WIFI. If you cannot find the WIFI of LongerLaser\_, follow the on-screen instructions to **click "Settings"** → **"Network"** to enter the WIFI list, click STA **"Reset WIFI"** in the upper right corner, and search the WIFI list again.

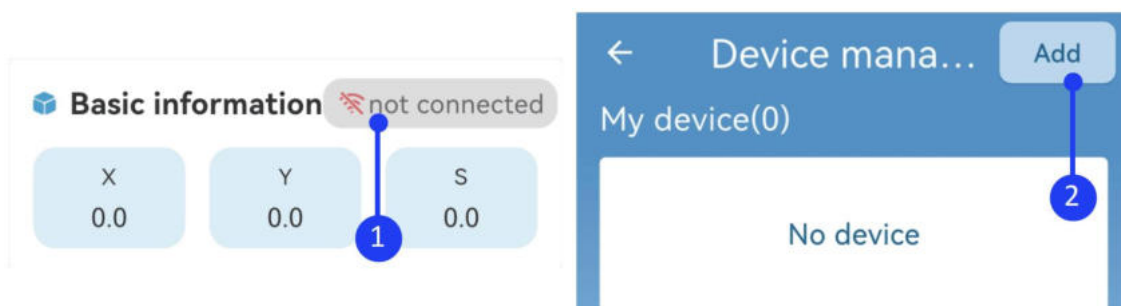


3) Enter the IP address **192.168.0.1** below, click **Connect**. There will be a remind **'connection succeeded'** when connect successful



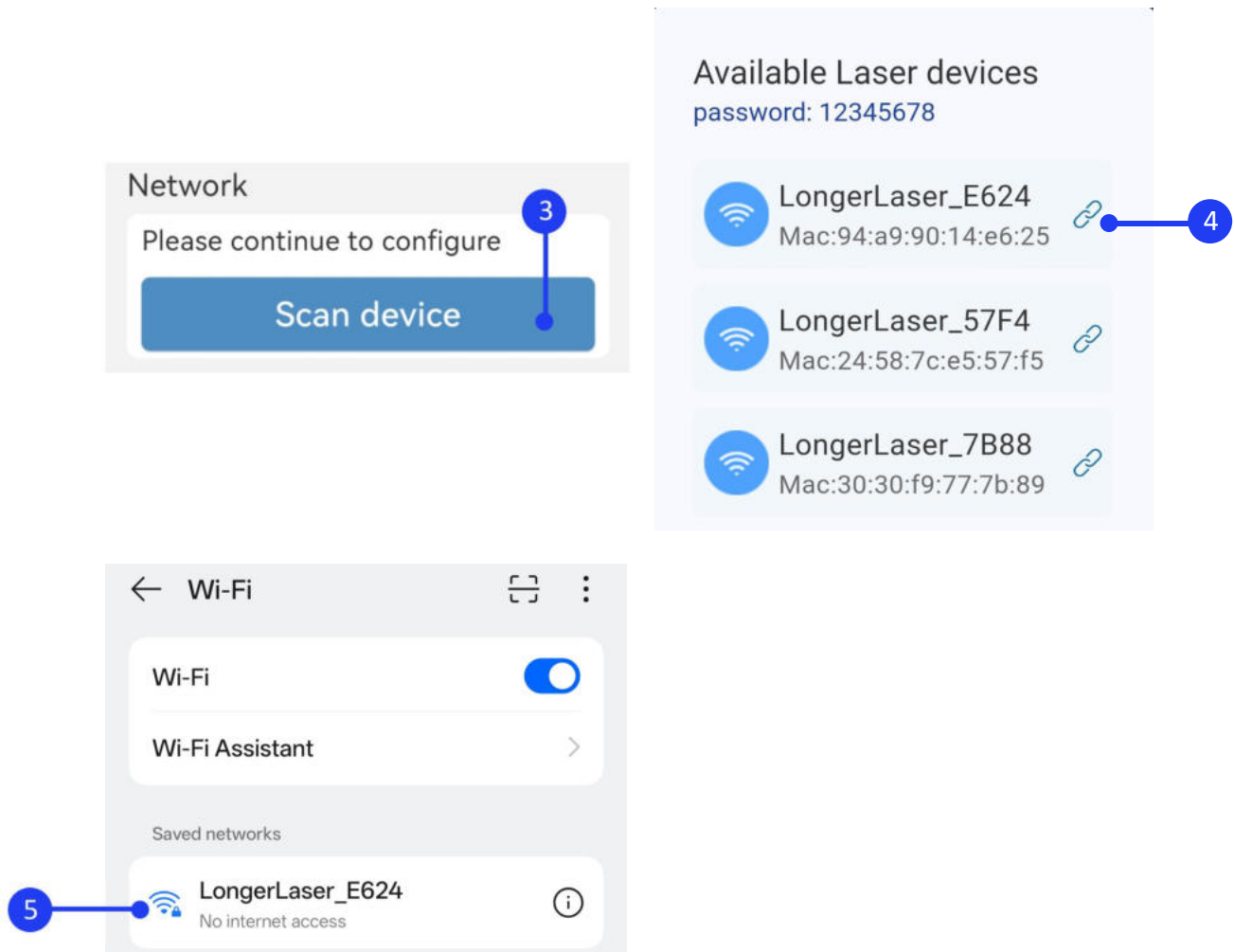
### 3. Connect to WIFI in STA mode

1) Open the [WLAN](#) settings on your phone. Run LaserBurn and enter the Home page, click [not connected](#) icon , enter the network configuration page, click [Add](#)  in the upper right corner.





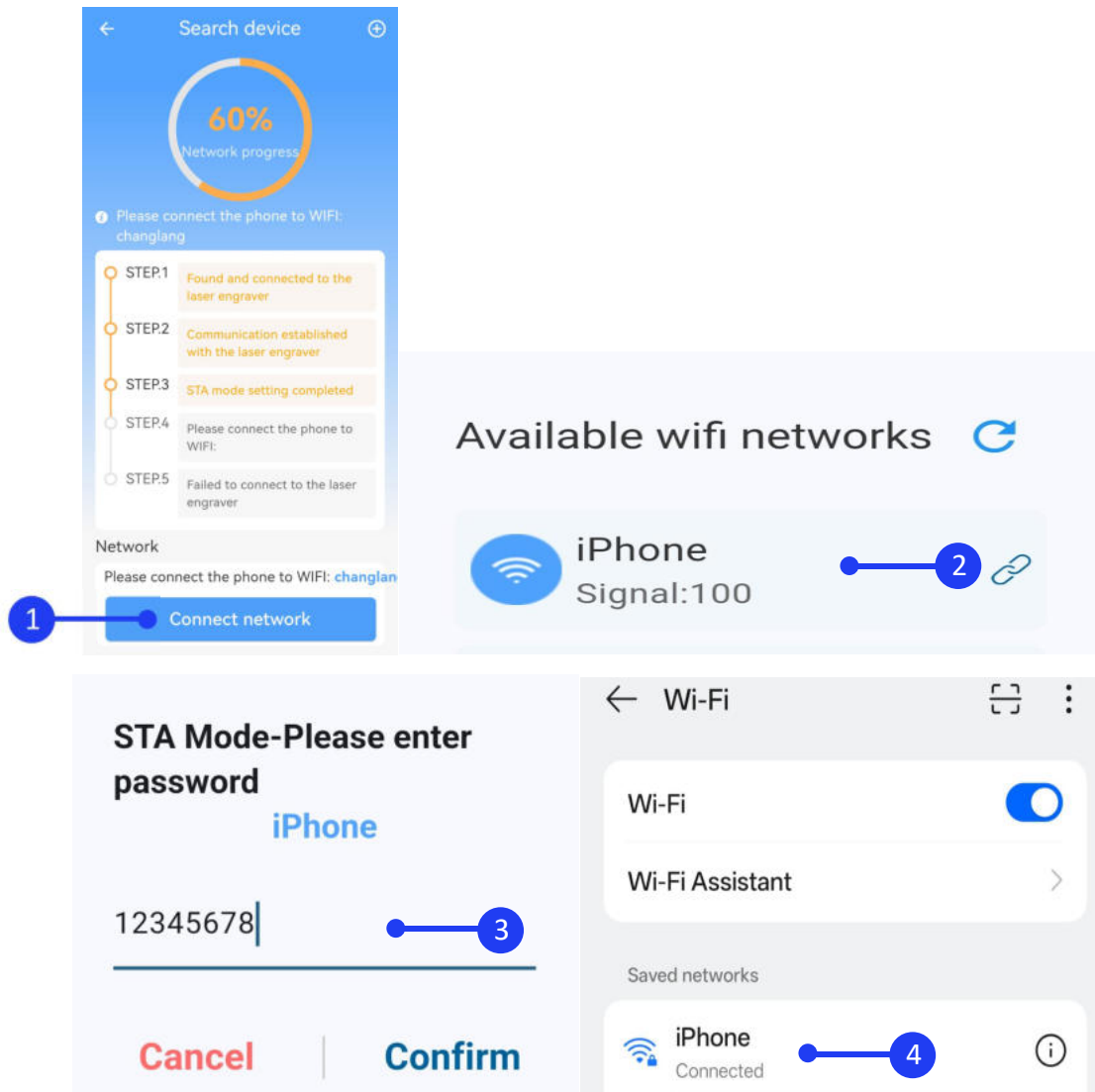
2) Click Scan Device, search and find the WIFI that starts with LongerLaser\_, click it, jump to the mobile phone WIFI list, enter the password 12345678, and connect to Nano Duo's WIFI.



3) After the connection is successful, return to LaserBurn, select STA mode to connect to the router WIFI (only supports 2.4G), and enter the password. During the connection process, the indicator light on the front of Nano Duo will switch to a running water breathing light. After the connection is successful, the machine will respond with three beeps. Click the App to Proceed to the next step.

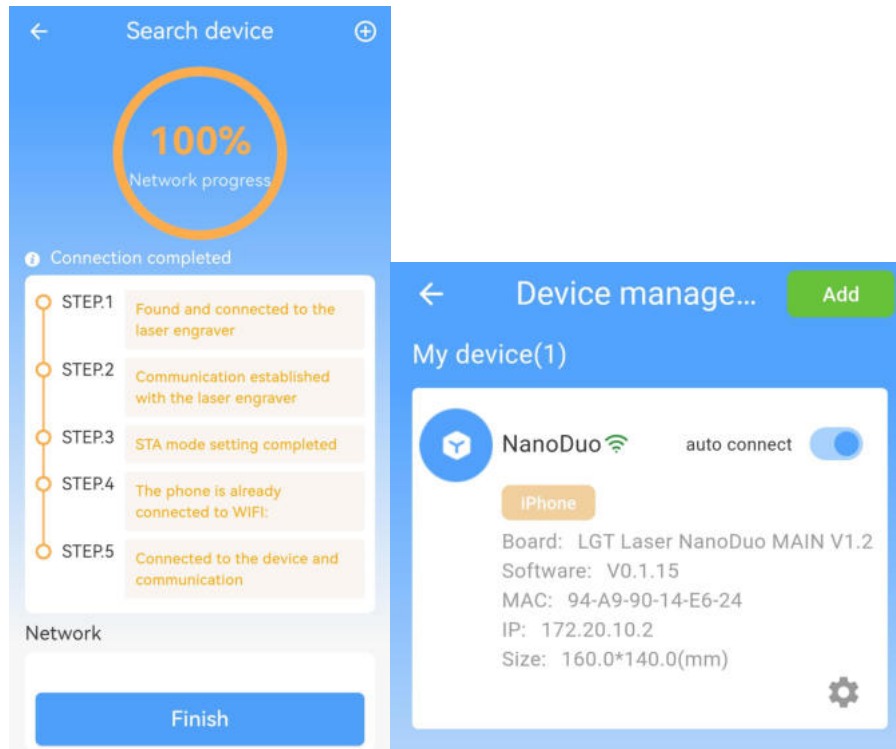


At this time, the network progress is 60%. After the connection fails, the machine will respond with a beep. Click the App to return to the first step and start again.

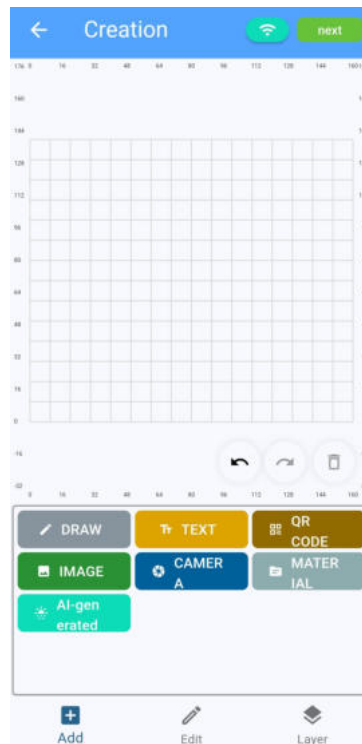


4) Back to LaserBurn, click **Connect network** at the bottom of the page, connect the phone to the same WIFI as the STA mode in the previous step, wait for network configuration. When the connection is successful and the network process reaches 100%, click **FINISH** at the bottom to return to the device list interface.

Note: After the device is connected, when click anywhere on the device list label, the machine will disconnect; conversely, if click when the device is disconnected, the phone will automatically connect to the device.



## 4. Creation

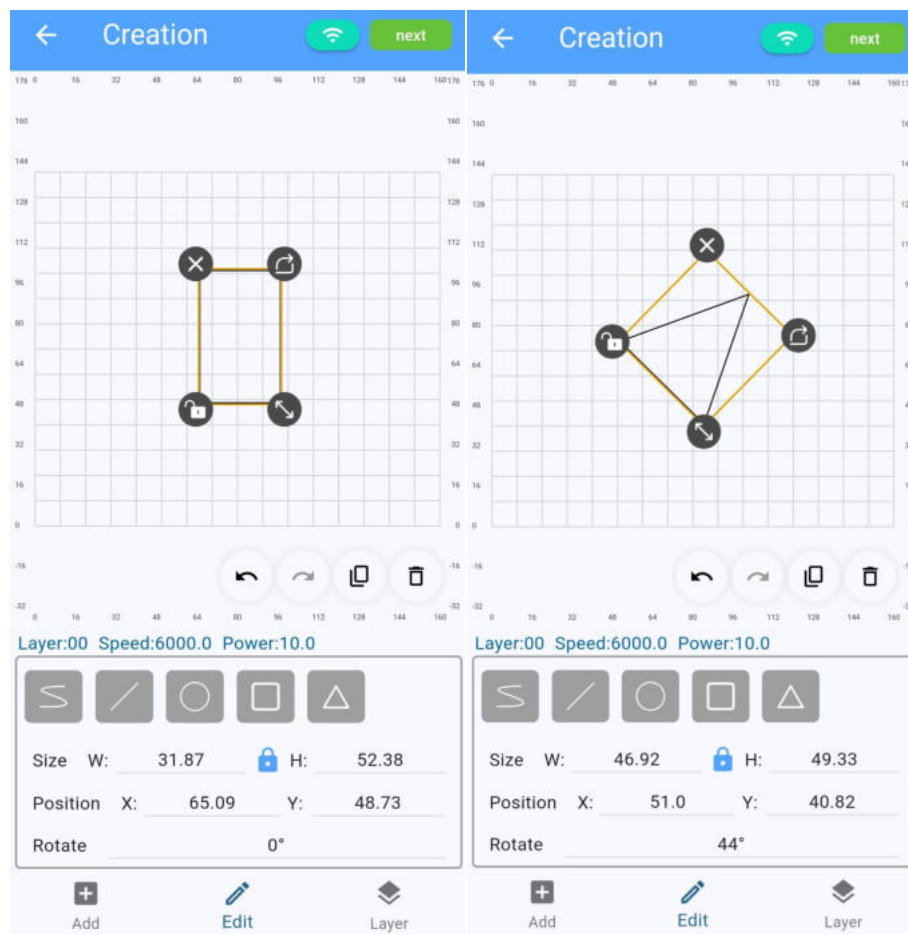







1) In the creation interface, graphics can be imported through painting, text, QR code, photo album, camera, material library, AI generation, etc.

2) Draw:

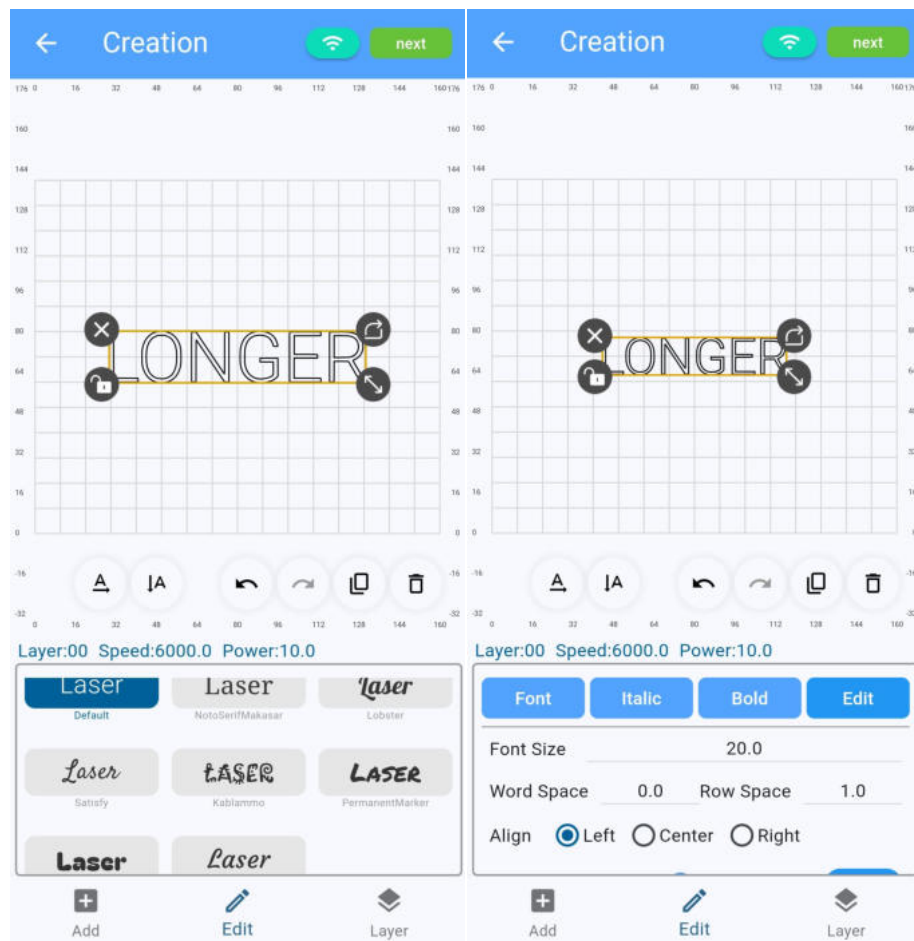
Draw simple images, such as circles, rectangles, triangles, etc.





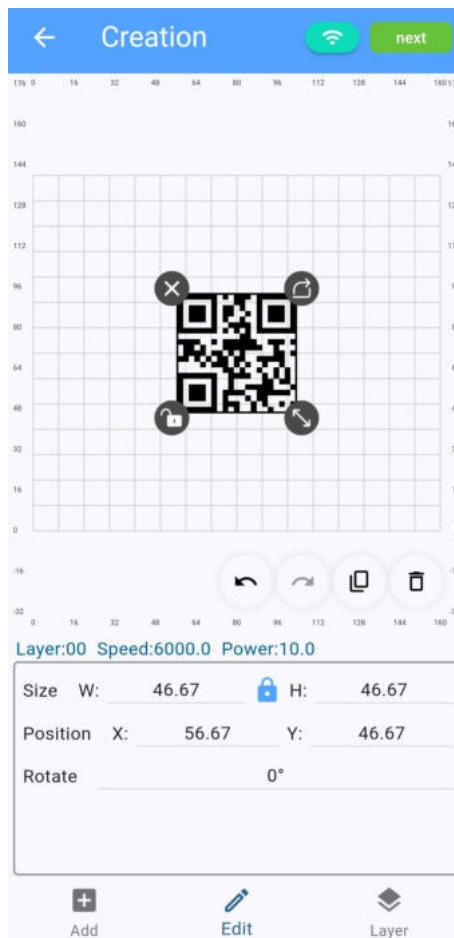
Enter the value in **Size** to scale the graphic proportionally or hold down the button  to drag. If you need to change the length and width of the graphic separately, you can click the button  to unlock the proportional lock; enter a value in **Position** to change the position of the graphic, or select the graphic and move it within the canvas by dragging it; enter a value in **Rotate** can rotate the graphic counterclockwise to the corresponding angle, or hold down the button  to rotate the graphic at any angle; if you click the button , the size, position or angle of graphic can only be changed by entering a value; click the button  can delete graphics.

### 3) Text



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

### 4) QR code



Generate QR code based on the input content, and change the size, position or angle of the QR code.

## 5) Layer

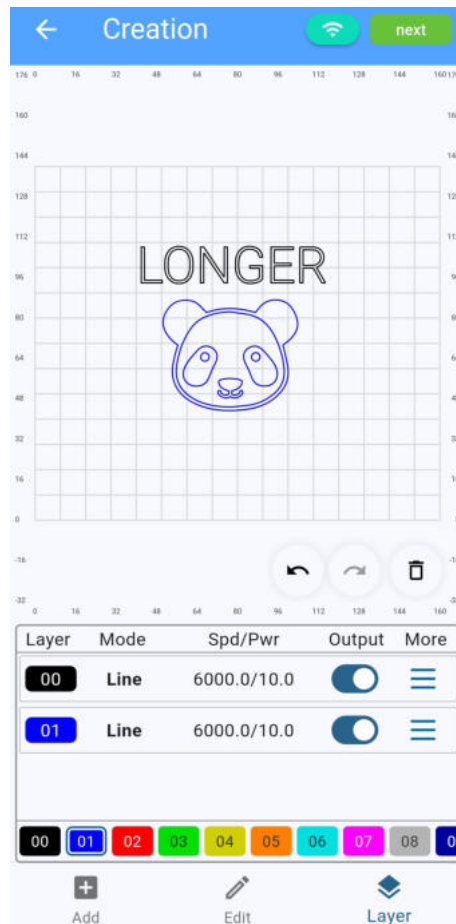
**Layer mode:** set line or fill

**Laser type:** Nano Duo can choose 20W 450nm Blue light or Nano Duo can choose 2W 1064nm Red light

**Processing method:** engrave or cut

**Material:** select the corresponding material from the material library, and the APP will automatically set the appropriate parameters

according to the processing method and laser power selection. If the parameters need to be modified, click the edit button to adjust.



Different colored layers can set different parameters for designs to meet the needs of engraving or cutting multiple files at the same time. Such as layer mode, laser type, processing method, material, laser power, speed, times and accuracy. Up to 11 parameters can be set in the APP, first [select the design](#) to set parameters, click [Layer](#), and select different colored layers.

Material

Nothing ☐

Basswood ☒

Solid wood ☐

Alumina(black) ☐

Leather ☐

Denim ☐

Material


Nothing ☐

Basswood (thickness:2.0mm) ☒


Basswood (thickness:4.0mm) ☐

Paulownia wood (thickness:6.0mm) ☐


Iridescent paper (thickness:0.1mm) ☐


00 Line 


Mode ☒ Line ☐ Fill


Laser type 20W 450nm Blue light 


Processing method ☒ Engrave ☐ Cut

Material Basswood 


Laser power 20.0% 

Speed 4000.0 mm/min 


Times 1 


00 Line 


Mode ☐ Line ☒ Fill


Laser type 2w 1064nm Red light 


Processing method ☒ Engrave ☐ Cut

Material Custom(30.0mm) 

Laser power 100.0% 

Speed 100.0 mm/min 

Times 3 

Accuracy Fine 

## 6) Album

Import pictures from the mobile phone album.

## 7) Camera

Use the phone camera to shoot pictures and import to APP.

www.longer3d.com

59

support@longer.net



## 8) Undo



Undo the last operation, up to 20 steps can be supported.

## 9) Redo



Redo the last operation, up to 20 steps can be supported.

## 10) Clear



Clear all graphics in the canvas.

## 11) Copy



Copy the original material

## 12) Flip Horizontal



Image is upside down

## 13) Flip Vertically

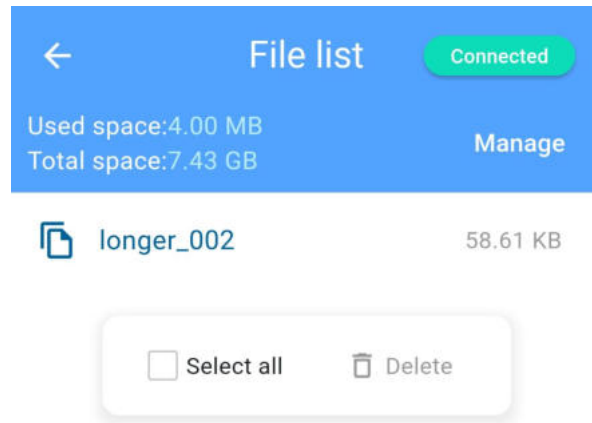


Mirror image left and right

## 5. Files

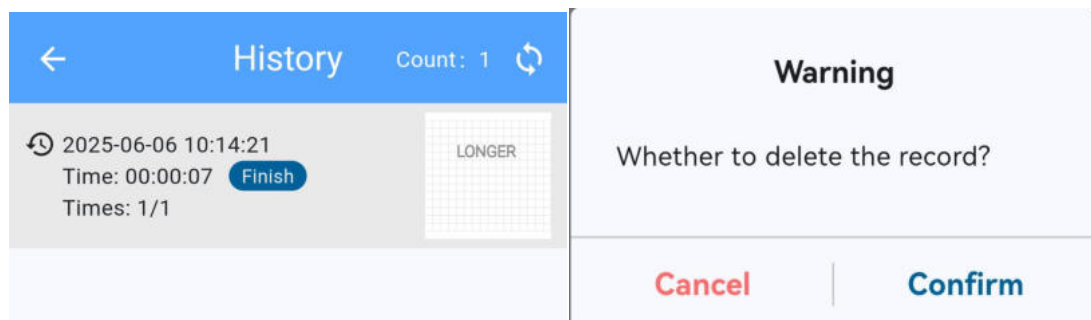
After connecting to the engraving machine, you can preview the file data uploaded to Nano Duo. Select a file from the list and swipe left

or tap the upper right corner to delete it. When the reserved memory is about to run out, please clean up unnecessary files in time, otherwise you will not be able to upload new files.

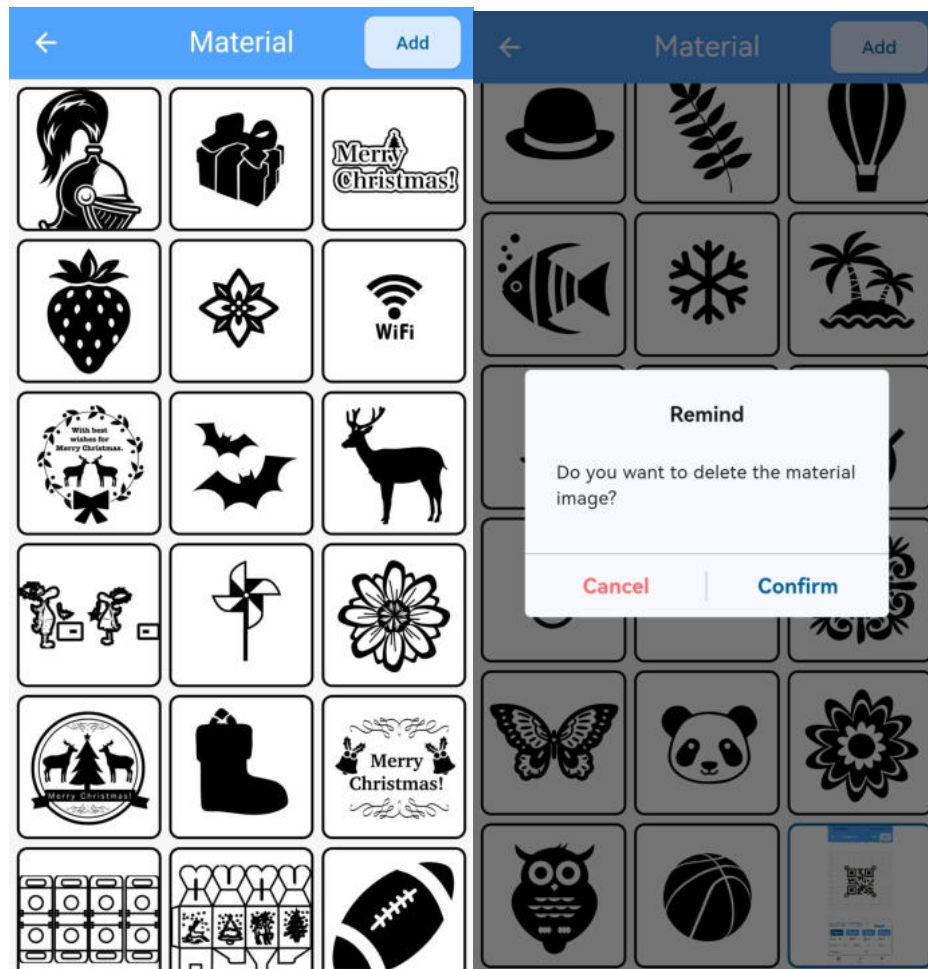


## 6. History

History displays a graphic history list of operations on the APP. You can long press a file in the list to delete unwanted images.



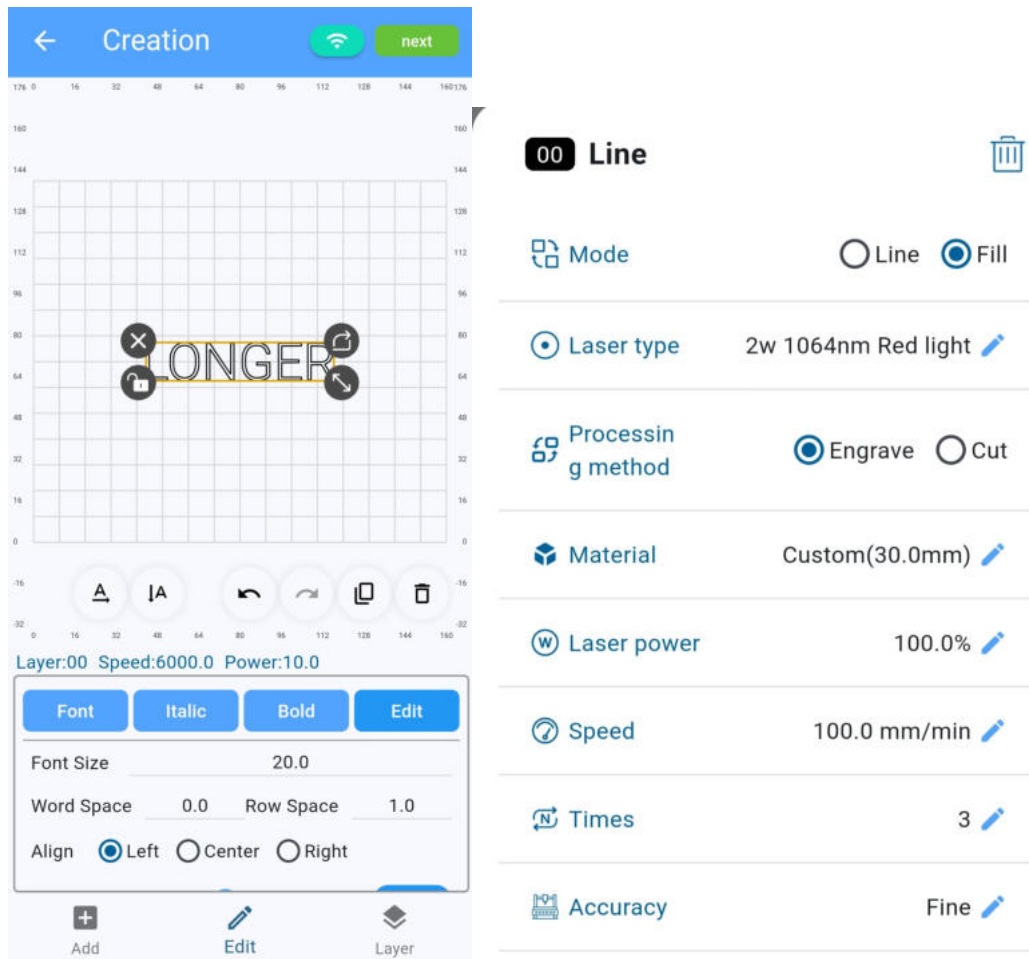
## 7. Material



Material: Graphic library in the APP. Click the **ADD** button in the upper right corner can add graphics from the phone album or phone memory. Long press on the self imported image can delete it, but the built-in image cannot be deleted.

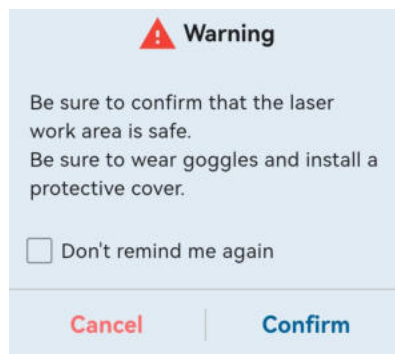
## 8. How to make a project on LaserBurn APP

1) Run LaserBurn app and connect the APP to Nano Duo, add a graphic, click **Edit** to set size and position, click **Layer** to set the parameter of the graphic, then click **next** in the upper right corner.

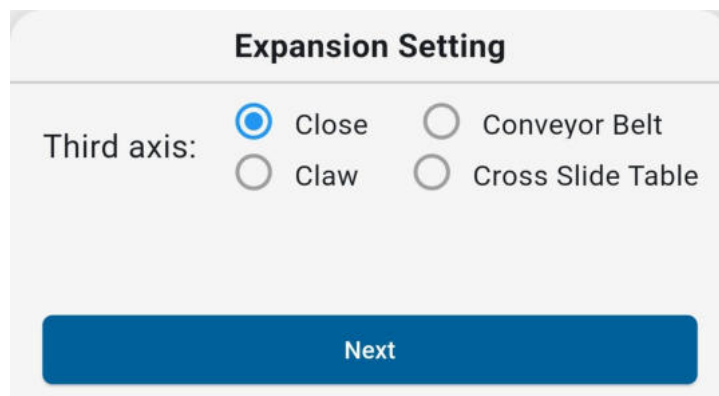


2) There are four precision values to choose from, Ultra fine (0.025mm) -- Fine (0.05mm) or Fast (0.075mm) -- Ultra fast (0.1mm). For users with high precision requirements, Fine (0.05mm) can be selected.

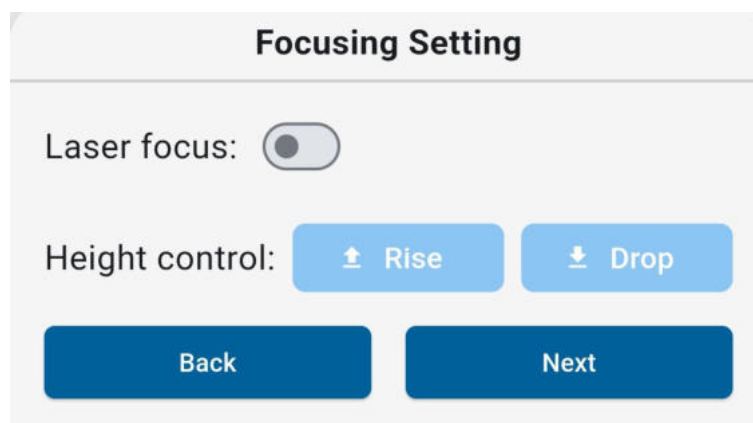
3) There will be a warning window, make sure the work area is safe, wear goggles and protective cover is installed, click [Confirm](#).



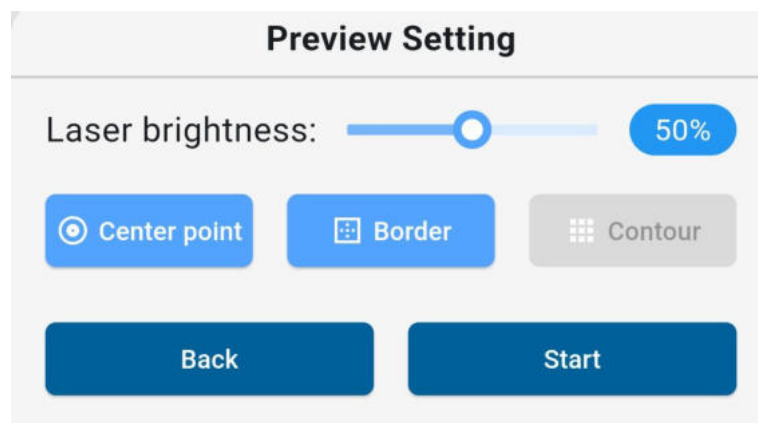
4) Set the third axis option, select **None** for the Nano Duo, click **Next**.



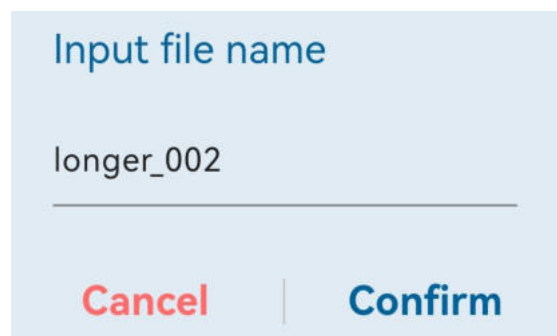
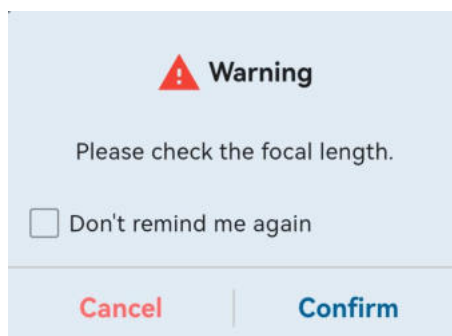
5) Set the focus, enable the **Laser focus**, the infrared laser will be turn on, click **Rise** or **Drop** to adjust the height until two infrared dots coincide with each other, click **Next**.

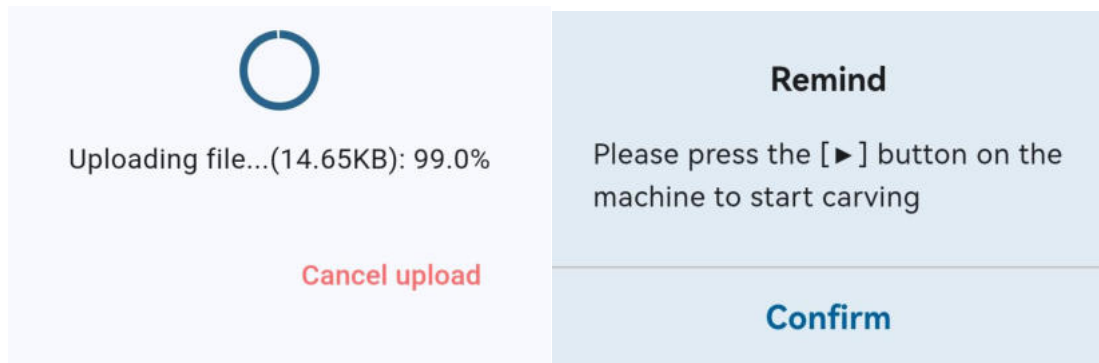


6) Click **Border** to preview the work position of the graphic to confirm the position of material is correct. If you cannot see the blue light clearly during preview, you can increase the blue light power appropriately, but be careful to avoid burning the engraving material, click **Start**.



7) After confirming that the focus is normal and the goggles are worn, click "Confirm" to confirm the file name, and the file will start uploading to Nano Duo. After the upload is completed, click "Confirm", and you need to press the OK box on the screen on the laser module to start the engraving task.





8) The APP will display the task progress. You can click [Pause](#) to pause the task, click [Restart](#) to resume the task, or click [Stop](#) to cancel the task. When the task is completed, there will be a 'Work completed' prompt. Click confirm to return to the Home page.

