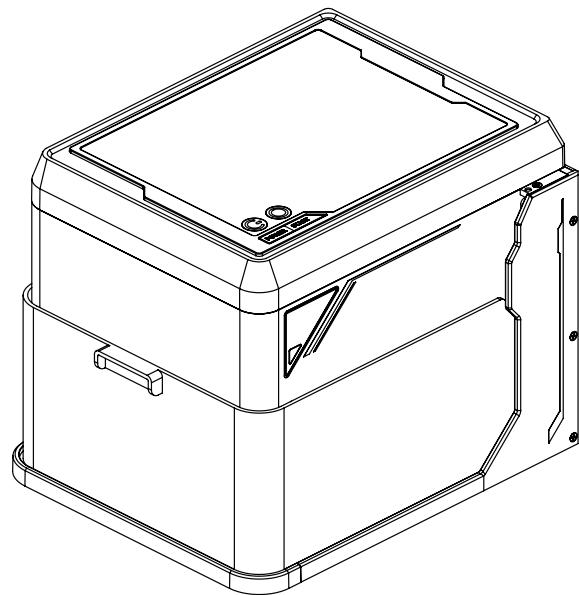


UTKA

A1 User Manual



Please read this instruction manual carefully before use
Please use the laser engraving machine correctly and safely

Thanks for choosing UTKA laser engraving machine

Please read the user manual carefully before use and keep it for reference. For warranty and any technical support, please contact our service team:

info@utkalaser.com

Note: For faster response and assistance, please send your order number when contacting us, thank you!

FCC WARNING

Warning

To assure continued compliance, any changes or modifications not expressly approved by the party. Responsible for compliance could void the user's authority to operate this equipment.

FCC Statement

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement:

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

SAFETY INSTRUCTIONS

Thank you for purchasing the UTKA laser engraving machine. In order to better use and maintain this device, please read this manual carefully and follow the steps in the manual.

Important statement!

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

The power cord cannot be hung on the edge of the table or contact with high-temperature surfaces to prevent damage to the power cord.

Never plug or unplug the power cord with wet hands.

- ◇ Never rinse the machine with water.
- ◇ Never immerse this product in water or other liquids to avoid fire or leakage.
- ◇ Unplug the power plug of the product when cleaning the product or when not in use.
- ◇ Before maintenance work, unplug the power cord to turn off the machine.
- ◇ Make sure all ventilation holes are not blocked or covered.
- ◇ Do not insert anything into the opening.
- ◇ Do not wipe the product with solvents such as gasoline, alcohol, and chemicals.
- ◇ Do not use this product in an environment with flammable, explosive, corrosive, combustible or metal dust particles.
- ◇ Do not disassemble, repair or modify this product.
- ◇ Prevent the machine from falling or strong shaking.
- ◇ This product does not contain parts that can be repaired by users. If this machine is damaged or malfunctions, please go to the designated maintenance point or manufacturer for replacement.
- ◇ If the product has abnormal sounds, odors, high temperatures, etc., please stop using this product immediately.
- ◇ After the product expires, please do not discard it at will, and it should be handed over to a local qualified agency for disposal.
- ◇ This product is not a toy and children are prohibited from operating it.
- ◇ Please keep this instruction manual.

SAFETY INSTRUCTIONS

Notice!



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



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



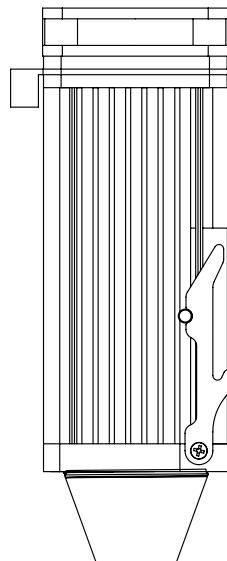
2. The brightness of the laser is harmful to the eyes. Please do not look directly at the laser.



4. Turn off the power of the machine when it is not in use to avoid misoperation by a third party

Maintenance and Care

The laser module is a consumable. It is recommended to turn off the machine power for 10 minutes after 4 hours of engraving and 1 hour of cutting.



CONTENTS

English

English

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03 Product structure and assembly.....	08
04 PC software download and installation.....	23
05 Mobile software download and installation.....	27
06 Mobile phone connection.....	28
07 Computer connection	30
08 FAQ	31
09 Maintenance and care	38

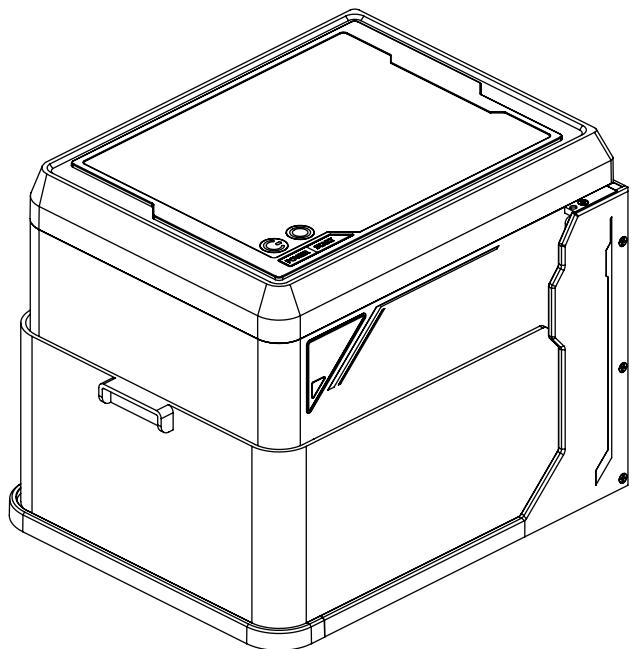
01 PRODUCT PARAMETERS

Product model	A1
Main materia	ABS+high strength metal
Laser wavelength	455nm / 1064nm
Engraving speed	8000mm/min
Laser life	> 10000h (27°C ambient temperature)
Focus mode	Knob focus
Engraving area	100×100mm
Engraving accuracy	±0.01mm
Engraving height	< 50mm
Cutting material	455nm laser: 5W laser power can cut 3-5mm plywood, 5-7mm pine board 10W laser power can cut 5-7mm plywood, 7-10mm pine board 1064nm laser: cannot cut
Total power	<60W
Input voltage	DC24V 2.5A
Engravable materials	455nm laser: can engrave most non-transparent materials such as paper, wood chips, plastic, leather, cloth, cardboard, leather, stone, ceramics, stainless steel, coated metal, etc. 1064nm laser: can engrave all metal materials, plastic, leather, etc.
Data transmission	USB to serial port wired transmission, WiFi wireless transmission
Cooling method	Air cooling
Supported system	CutLabX software platform (windowsOS, macOS, Android, iOS) GRBL software platform (windowsOS, macOS)
Supported format	CutLabX software platform -> Image formats: JPEG/BMP/JPG/GIF/PLT/PNG/CUTLABX -> Vector formats: DXF/PLT/HPGL GRBL software platform -> NC/BMP/JPG/PNG/DXF and other formats

02 PRODUCTS AND ACCESSORIES

English

English



Standard accessories



TF card



Card reader



Power supply



Type-C data cable



Marker pen



Paper



Brush



User Manual



Goggles



Planks

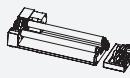
Optional accessories



Engraving positioning
module



Air Purifier

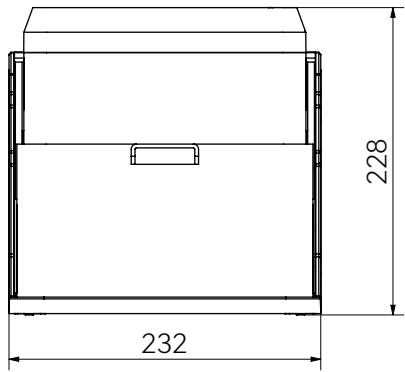


Rotating axis
module

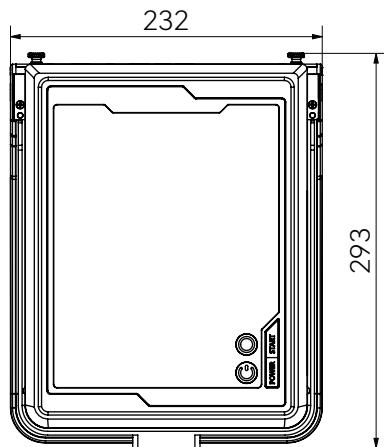
03 PRODUCT STRUCTURE AND ASSEMBLY

English

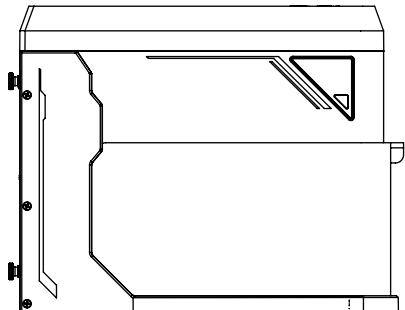
Front view



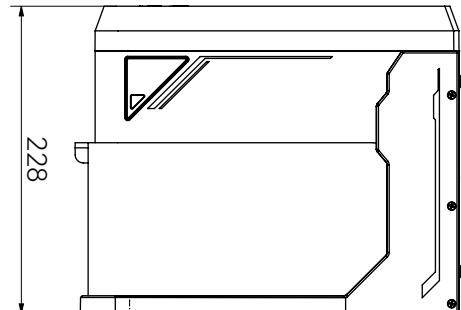
Top view



Left view



Right view

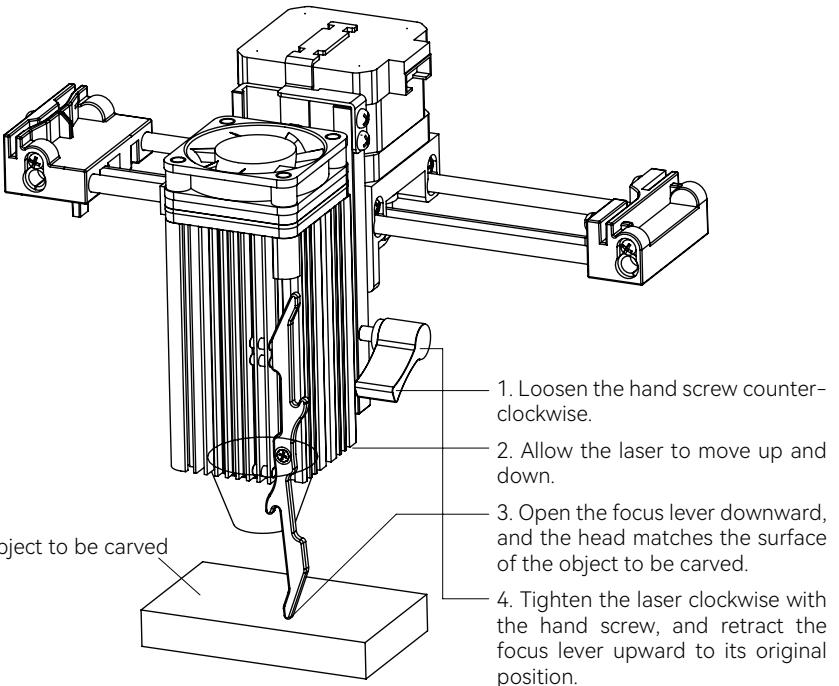


English

03 PRODUCT STRUCTURE AND ASSEMBLY

【Focus laser focusing method】

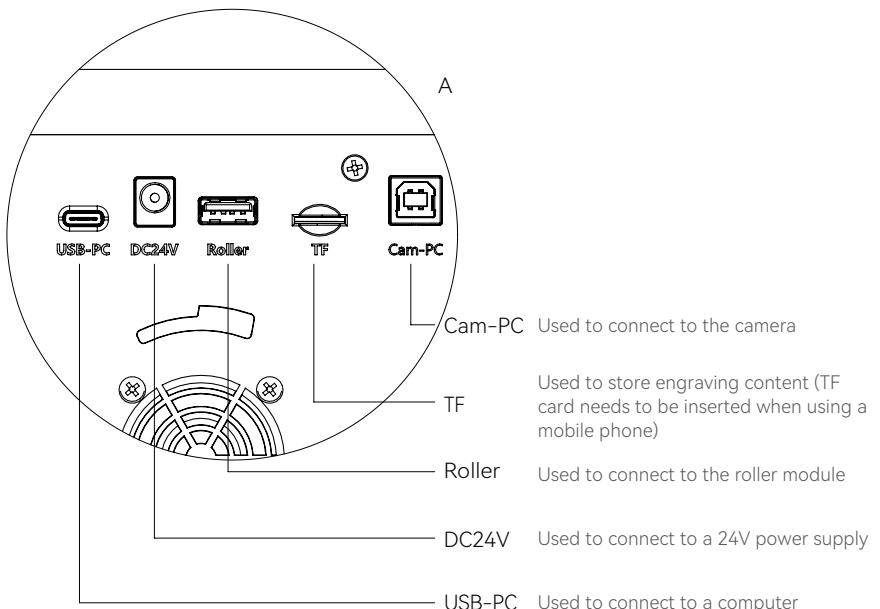
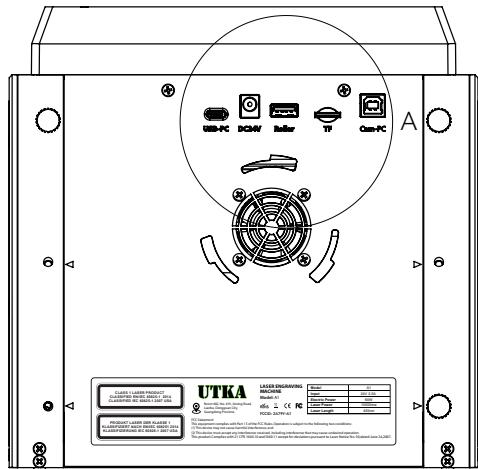
1. Loosen the hand screw counterclockwise.
2. Allow the laser to move up and down.
3. Open the focus lever downward, and the head matches the surface of the object to be carved.
4. Tighten the laser clockwise with the hand screw, and retract the focus lever upward to its original position.



03 PRODUCT STRUCTURE AND ASSEMBLY

【 Functional Description 】

English



English

03 PRODUCT STRUCTURE AND ASSEMBLY

【 Functional Description 】

English

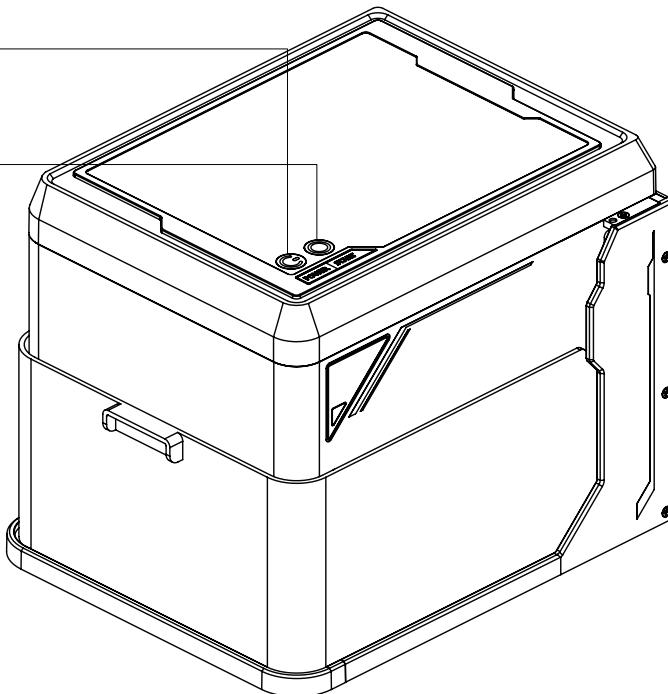
English

Power switch

Used to turn the machine on and off

Offline engraving

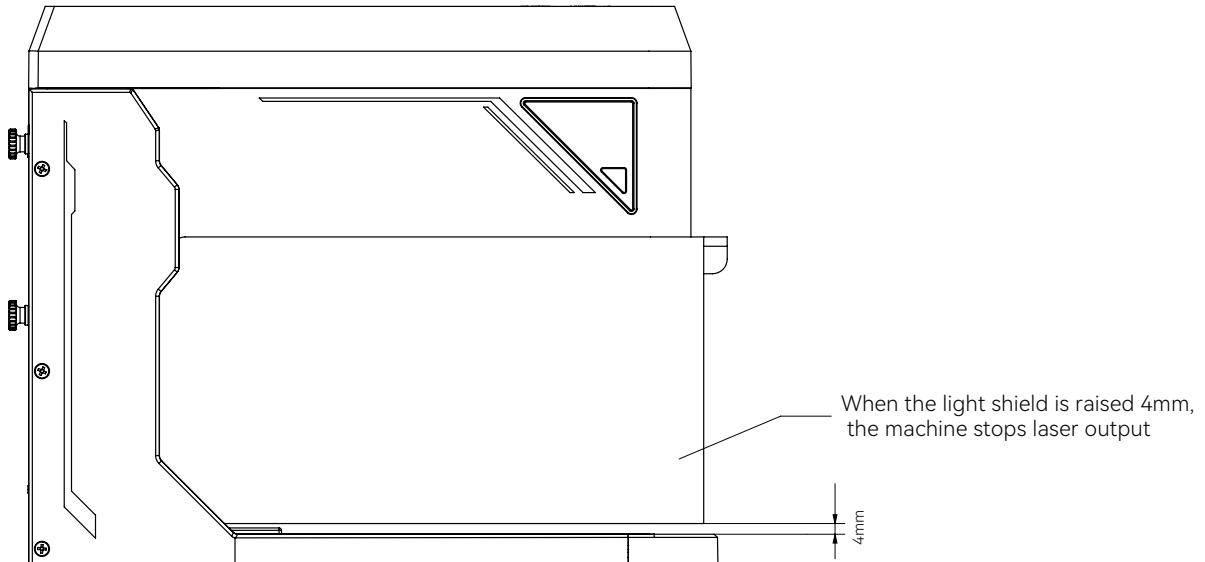
1. Generate an engraving or cutting file (gcode) through the LightBurn software and save it to the root directory of the TF card, and save it as: 001.nc
2. Insert the TF card into the machine before turning on the machine, and then use the matching power adapter and power cord to connect to the controller panel, and finally turn on the power switch on the stone side of the control panel.
3. Press the "Offline Engraving" button:
 - a. After pressing, the machine will automatically reset and preview
 - b. Press and hold for more than 3S to enter engraving
 - c. Short press again to pause
 - d. Short press again to continue
 - e. Press and hold for more than 3S again to cancel engraving



03 PRODUCT STRUCTURE AND ASSEMBLY

【 Function Description 】

When the light shield is opened, the laser module will immediately stop laser output.

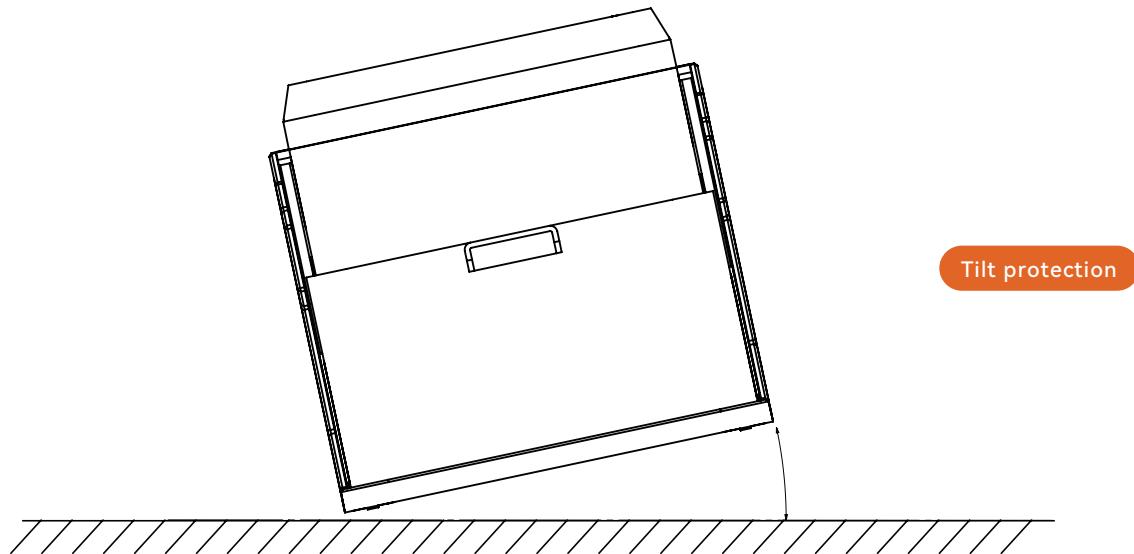


03 PRODUCT STRUCTURE AND ASSEMBLY

【 Function Description 】

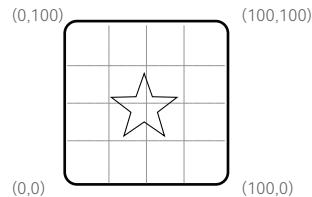
When the host machine is tilted from the horizontal plane and remains tilted for more than 1 second, the machine will stop running immediately and the laser module will stop laser output.

After entering the protection state, the machine must be restarted to restore normal function.



03 PRODUCT STRUCTURE AND ASSEMBLY

【 LightBurn Run 】



For example, let's say we want to engrave a star, which is located at the center of the LightBurn workspace as shown on the computer screen, at (50,50).

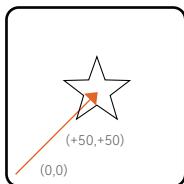
The following figure shows the machine in each of the three startup modes

Problems can occur when manually moving the laser module in the absolute coordinate system or the user origin. This is because the machine does not know that it has been moved.

It cannot know its true position unless the origin position is reestablished or homed.

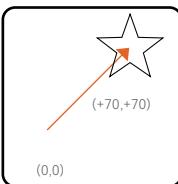
Consider the following sequence of operations when working in absolute coordinates:

1. The machine's origin is (0,0)
2. The user physically drags the laser to a position near (100,100), and the machine still thinks it is at (0,0);
3. The user runs the star program. The machine starts moving up and to the right to reach the "center" and hits the upper right corner.



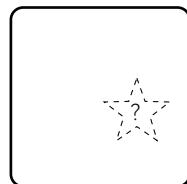
A) Absolute Coordinates:

The machine will move to the center,
The finished star will be at (50,50)



B) User Origin:

Suppose the user origin is set at (20,20),
Then the finished star will be at (70,70)



C) Current Position:

The star will appear wherever the laser module is located at the moment the program is started.



Important

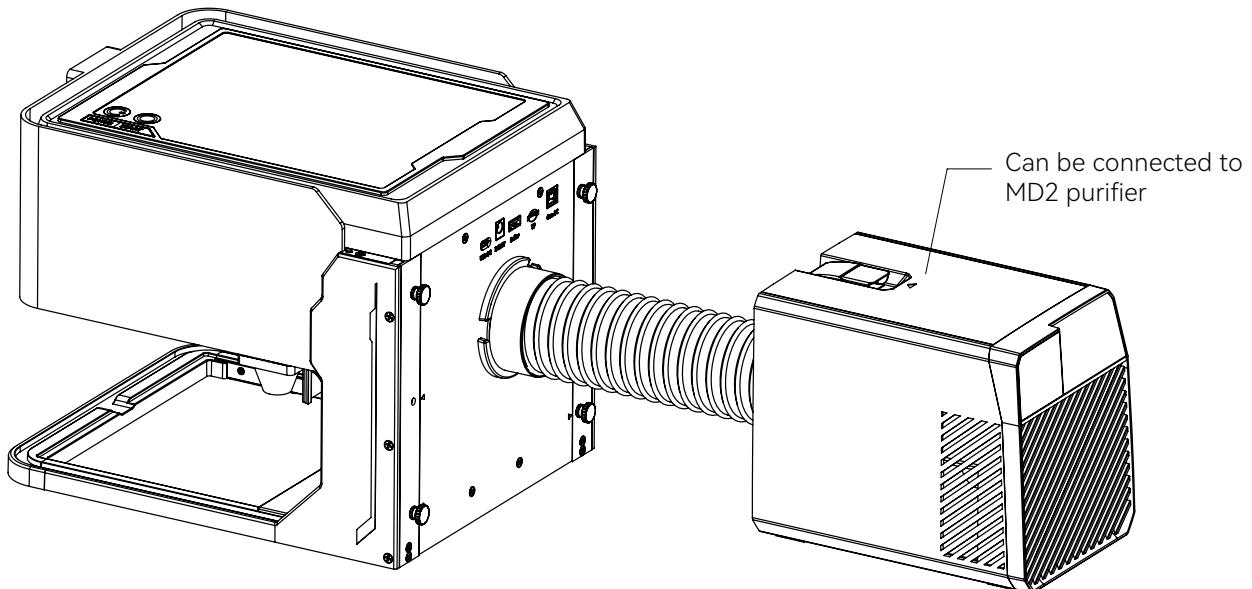
If the machine crashes, be sure to pull the laser back to the center slightly before homing.

There are two limit switches on the machine, one each for X and Y. If the limit switch on one of them is pressed, the machine will not move that axis when homing.

【 Functional description 】

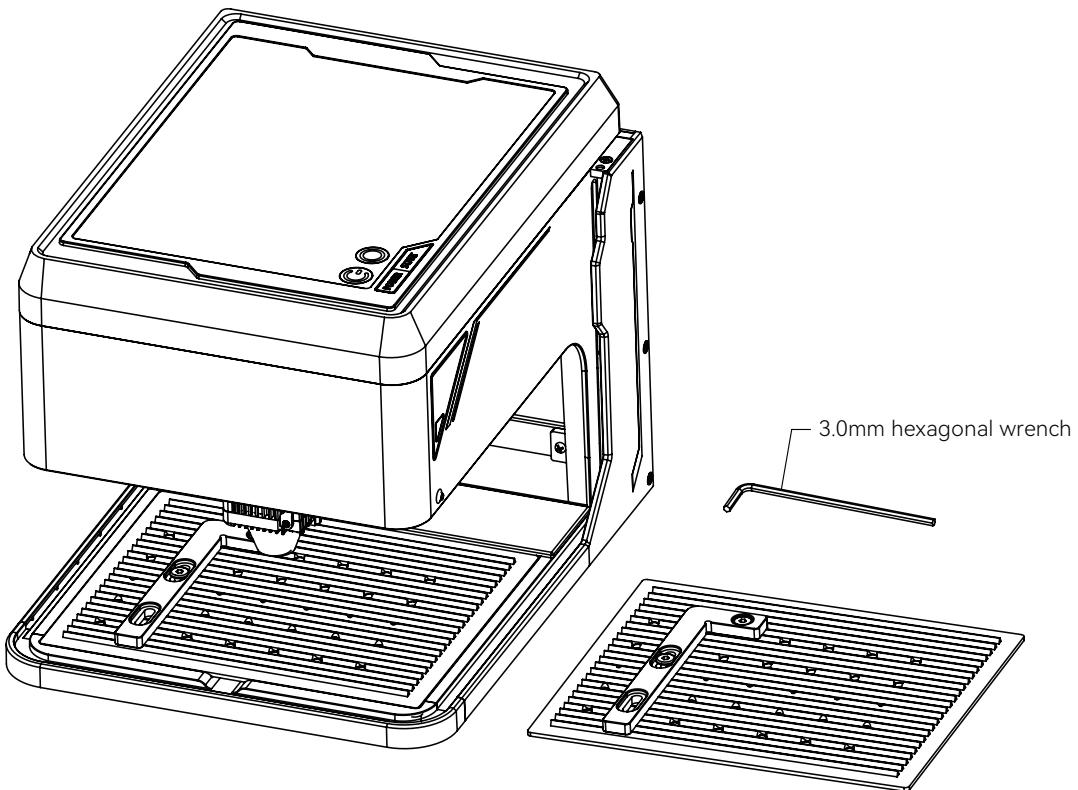
Connect the telescopic exhaust pipe to the air purifier:

- Connect the pipe to the air purifier
- Turn on the air purifier and use it.



03 PRODUCT STRUCTURE AND ASSEMBLY

Optional: Engraving board

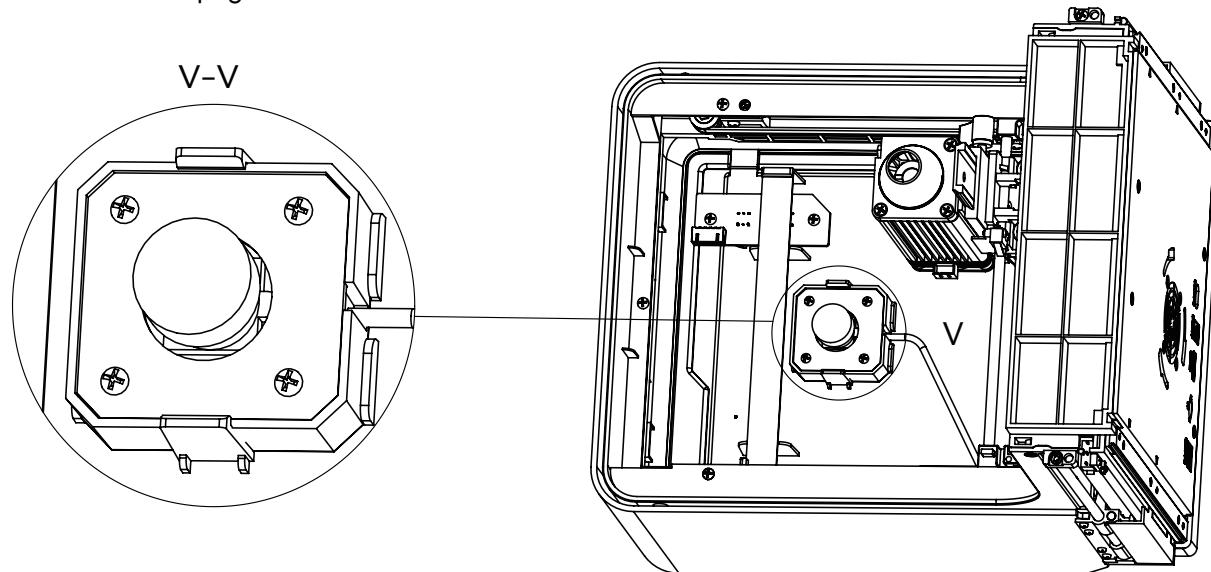


In LightBurn, a calibrated camera improves engraving efficiency and accuracy.

It enables fast workpiece positioning, material saving, object tracking, and lens and alignment calibration.

Since the software operates in absolute coordinates, homing is recommended.

Using the camera function with LightBurn requires a specific setup process, and we have built-in parameters in the TF card (see next page).

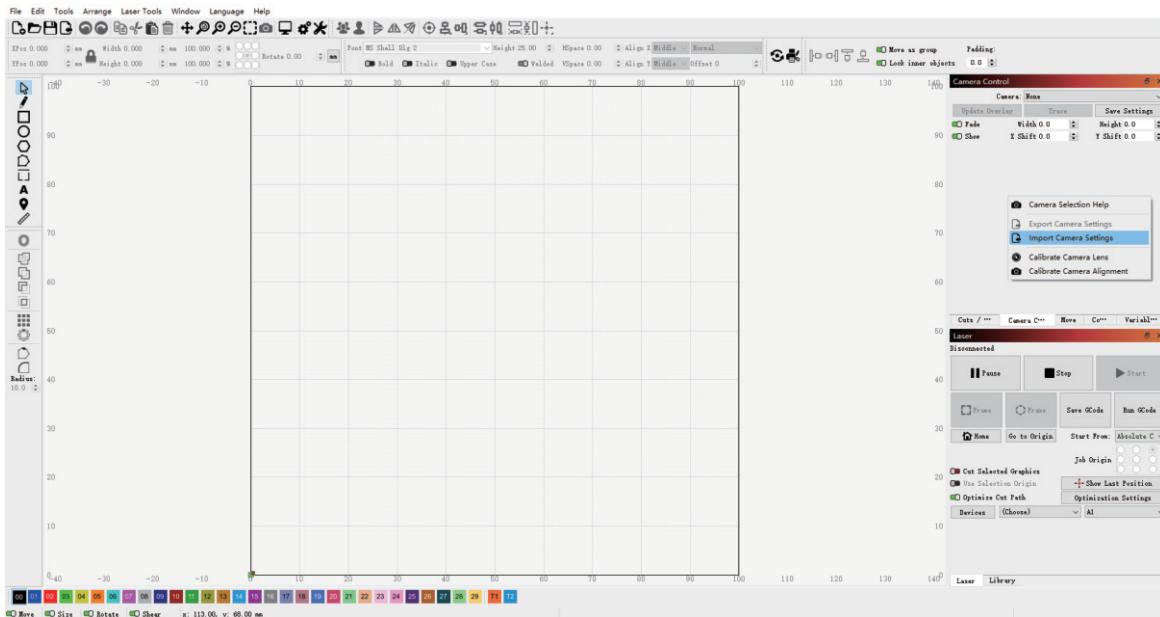


03 PRODUCT STRUCTURE AND ASSEMBLY

Optional: Camera module

1. Use the right mouse button to import the file in the camera position - path: A1_04_Software_GRBL\Lightburn Camera Parameter\A1 Camera calibration file.lbcm.

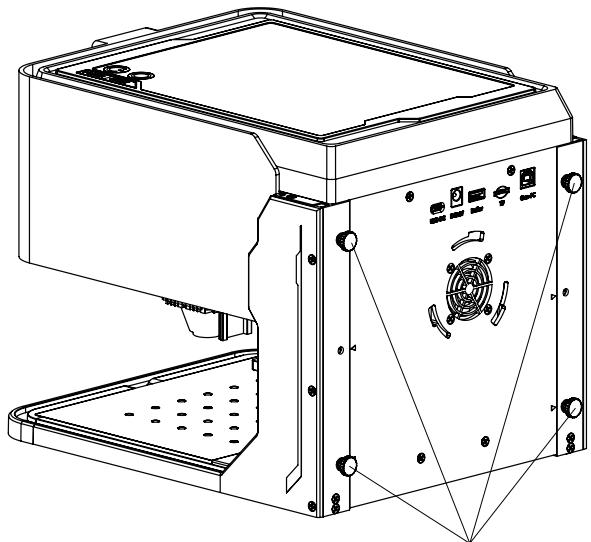
2. Enter the TF card path: A1_04_Software_GRBL\Lightburn Camera Parameter\Camera Control picture into your camera settings interface and you can use it.



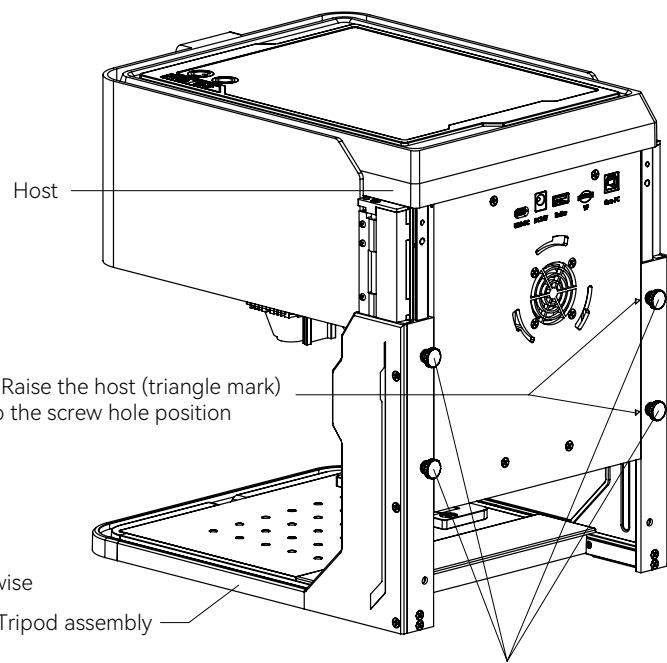
03 PRODUCT STRUCTURE AND ASSEMBLY

English

English



1. Unscrew all 4 thumb screws counterclockwise



Tripod assembly

3. Tighten the host and tripod assembly by turning the 4 thumb screws clockwise.

03 PRODUCT STRUCTURE AND ASSEMBLY

Optional: MD19 Rotary Axis

*Tip: When you use the rotary module, you need to open the protective cover to work, please contact customer service.

When you open the cover to use, the machine has become a Class IV laser device. Please pay attention to laser radiation safety when using it.

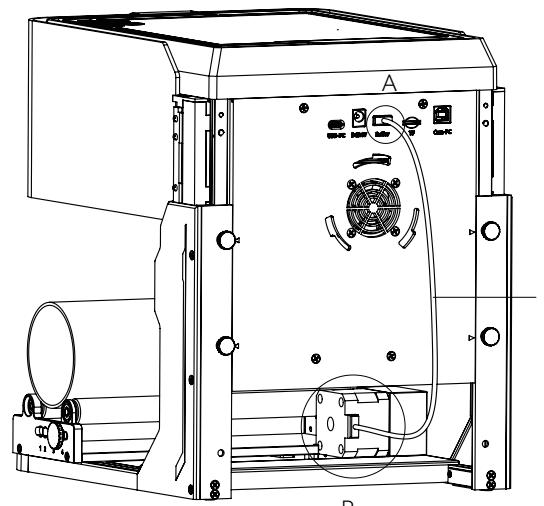
Place the roller in the desired area, use the connecting wire to plug into the panel "roller", and the other end into the roller motor.

Engraving a tapered cylinder: For example, for some popular glasses, it is usually best to support the narrow end of the cylinder so that the horizontal edge is presented to the laser. The rotator includes an end support.

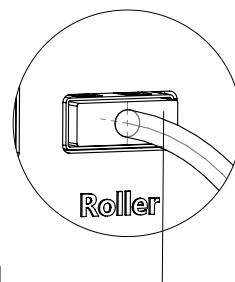
When using rotary engraving, the X axis will perform its normal scanning motion, but the Y axis remains stationary, and the rotation will move in that direction.

The rotator can accommodate a wide variety of round objects, from something as thin as a pencil to a 32-ounce Yeti-style glass.

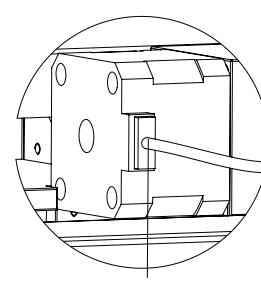
It consists of a fixed axis and a moving axis that can be locked in 1 of 4 positions.



A--A



B--B



Rotary axis lead

1. Insert the rotary axis lead plug into the socket above the host Roller

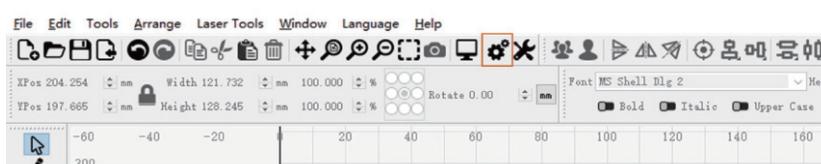
Note:

1. Loosen the knobs at both ends at the same time, push the pulley to the desired position, and then lock the knobs at both ends at the same time.
2. When using rotary engraving vector content, it is recommended that the engraving speed is <800mm/min.

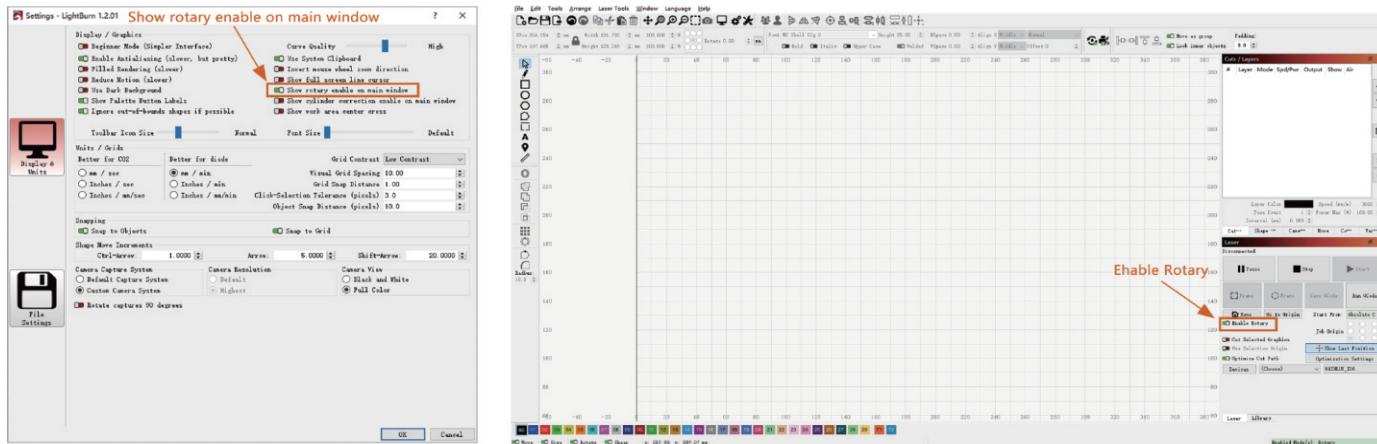
【 LightBurn Software Settings 】

1. Add "Start Rotation" to the main window.

1.1 Click "Settings" on the toolbar.



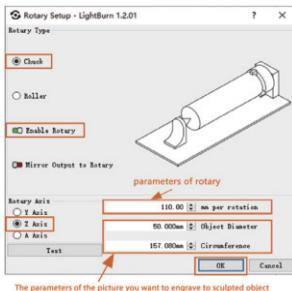
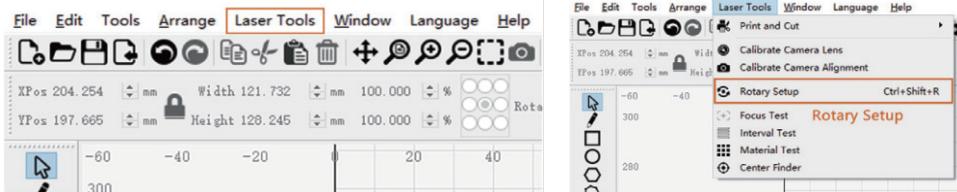
1.2 In the settings window, turn on the "Show Rotation in Main Window" button and click "OK".



【 LightBurn Software Settings 】

2. Open the Rotation Settings window and set the parameters.

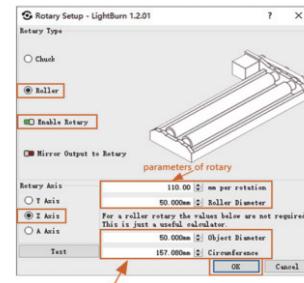
2.1 Open the Rotation Settings window, click "Laser Tools" on the toolbar, and then click "Rotation Settings".



2.2 Set the correct parameters in the Rotation Settings window, as shown in the figure.

Steps:

- (1) Select the rotation type "Chuck".
- (2) Turn on "Enable Rotation".
- (3) Select the "Z-axis" rotation axis.
- (4) Enter the parameters of the rotation device (fixed values).
- (5) Enter your object parameters: the actual measured diameter and circumference of the object to be measured.



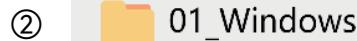
2.3 Set the correct parameters in the Rotation Settings window, as shown in the figure.

Steps:

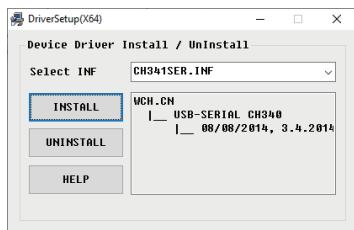
- (1) Select the rotation type "Roller".
- (2) Turn on "Enable Rotation".
- (3) Select the "Z-axis" rotation axis.
- (4) Enter the parameters of the rotation device (fixed values).
- (5) Enter your object parameters: the actual measured diameter and circumference of the object to be measured.

1. Driver installation path:

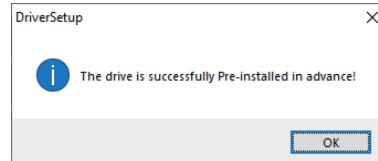
Double-click the U disk folder/windows/driver/driver.exe/Click to install/Driver installation is successful



⑤ Click to install



⑥ Confirm to complete the installation



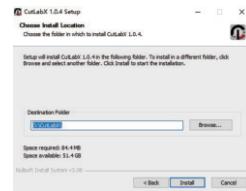
2. Software installation path:

Double-click U disk data file/windows/software/ CutLabX/Wait for the progress bar to complete the installation

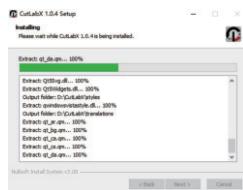
- ①  TF card
- ②  01_Windows
- ③  software
- ④  CutLabX



⑤ Double-click CutLabX installation



⑥ Select the installation location and click "OK"



⑦ Wait for the progress bar to complete



⑧ Installation completed

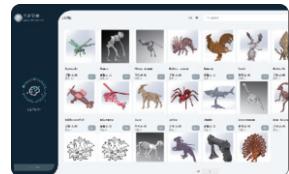
3. Online operation:

Use a data cable to connect the machine to the computer
Double-click the software icon-enter the creation interface-select the appropriate port

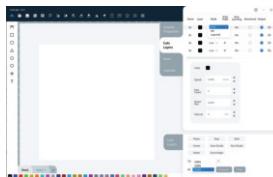
Click "Connect" when it becomes "Connected" to indicate a successful connection.



① Double-click the software icon



② Enter the homepage and click Start Creating



③ Select the appropriate port to connect

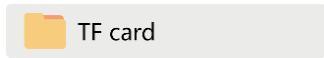


④ Connect successfully

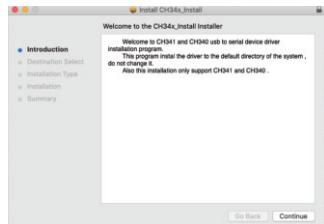
Tip: After clicking CutLabX, if anti-virus software pops up or the computer house-keeper warns of risks, the CutLabX file is the Win system installation package. If it is wrongly judged as a suspicious file, please select Allow all program operations, and the software installation will be successfully completed.

1. Driver installation path:

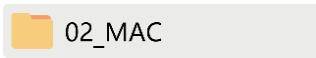
Driver installation path: Double-click U disk/02_MAC/driver/CH34x_Install_V1.4.pkg/Installation introduction/Installation type/Installation/Installation completed



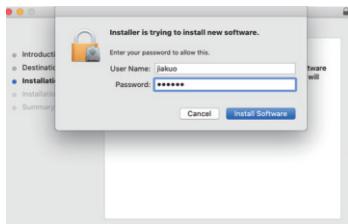
①



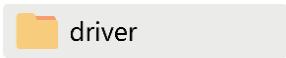
④ Click Continue



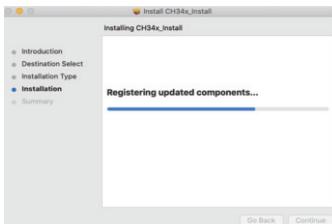
②



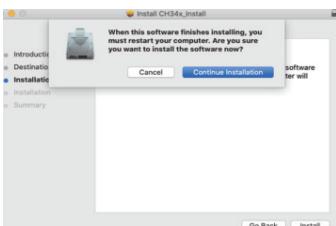
⑤ Enter the computer password



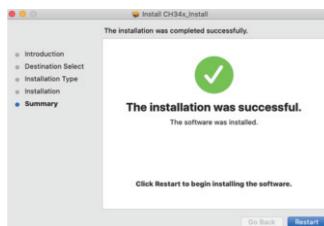
③



⑥ Click Continue installation



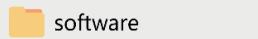
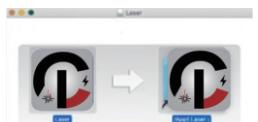
⑦ Continue installation



⑧ Complete installation

2. Software installation path:

Double-click the USB disk/02_MAC/software/CutLabX/software icon right/Complete the installation

- ①  TF card
- ②  02-MAC
- ③  software
- ④  CutLabX
- ⑤  Double-click the software icon
- ⑥  Drag the icon to the right of the Applications folder
- ⑦  Complete the installation

3. Online operation:

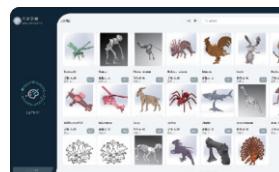
Use a data cable to connect the machine to the computer

Double-click the software icon-click the connection device icon-select the appropriate port

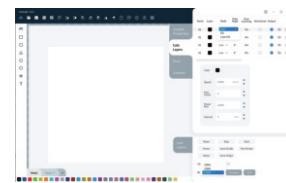
Click "Connect" when it becomes "Connected" to indicate a successful connection.



- ① Double-click the software icon



- ② Enter the homepage and click Start Creating



- ③ Select the appropriate port to connect



- ④ Connect successfully

Tip: When the machine is connected to MAC, you must select a name that begins with: W.ch.....

05 MOBILE SOFTWARE DOWNLOAD AND INSTALLATION

English

01

Method 1:

App download web: <https://www.cutlabx.com>

02

Method 2:

Scan the QR code to download



Web Download

Note:

1. For Android system, open the browser and scan the QR code to download.
2. After successful installation, the corresponding permissions must be granted.

English

06 MOBILE PHONE CONNECTION

1. Steps to connect the mobile phone to the machine: Default WiFi

*Note: After the mobile phone is successfully connected to the machine, the mobile phone will have no network.

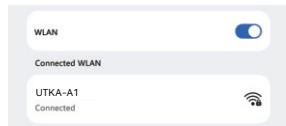
01

Turn on the machine and turn it on



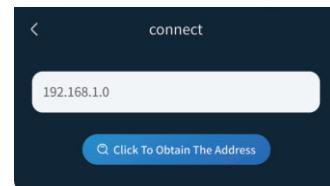
02

Turn on the mobile phone's WLAN and find the WIFI signal
The name is UTKA-A1, and the password is 12345678



03

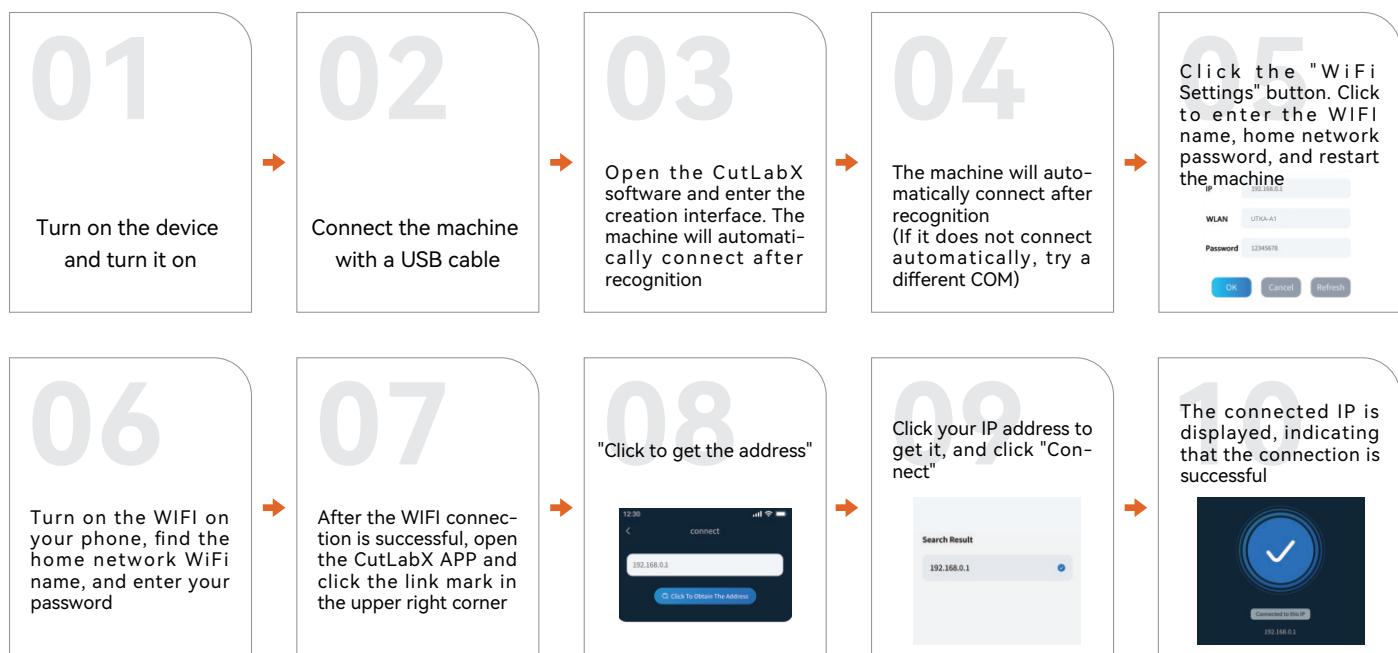
After the WIFI connection is successful, open the CutLabX APP,
Click the link mark in the upper right corner,
Enter 192.168.0.1 as the IP address,
and click "Connect" to complete the connection.



(Tip: When using WiFi mode, the machine and the mobile phone must be in the same WiFi network)

06 MOBILE PHONE CONNECTION

2. Steps to connect the phone to the machine: Home network



(Tip: To use the WiFi mode, the machine and the phone must be in the same WiFi network)

07 COMPUTER CONNECTION

3. Steps to connect the computer to the machine via USB

*Note: Install the driver according to your computer system (see driver installation instructions).

English

English

01

Turn on the machine and turn it on



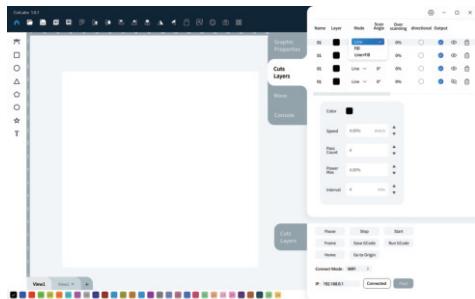
02

Connect the UTKA-A1 machine with a USB cable



03

Open CutLabX software and enter the creation page



04

Automatically identify the machine and connect
(If it does not connect automatically, you may need to try another COM)



(Tip: When the machine is connected to a MAC, you must select the name that begins with: W.ch.....)

FAQ-Machine-related issues

Questions	Solutions
What type of laser source does the machine use?	It is a semiconductor laser
What happens if the machine loses power during operation?	When the power is cut off during an engraving task, the laser head will remain in place. When the power is turned on again, the machine will initialize and will not continue the original task.
Why can't the pattern be engraved at all (or the engraving is very shallow)?	The imported picture should be clear and the color should not be too light; before engraving, please make sure the focus is correct and the power, speed and time settings are appropriate.
What if the pattern is not engraved completely (or the depth is inconsistent)?	Please make sure that the engraving object is flat, the machine is level, and it has been adjusted normally according to the operating instructions.

FAQ-Machine related issues

Questions	Solutions
How to focus the UTKA-A1 laser engraving machine?	Place the material on the stage, lower the left knob to focus, and lock it after focusing. For example, engrave and cut a 2mm thick basswood board.
Will the working platform be damaged during laser engraving?	During the engraving or cutting process, the laser may penetrate the object and leave marks on the work surface. Be sure to place an object that the laser cannot penetrate under the engraving object, such as: stainless steel plate, aluminum alloy plate, etc.
Why can't I start engraving when pressing the button on the host during offline engraving?	<p>Make sure there is an engraving file in the root directory of the TF card and the TF card is inserted.</p> <p>Note:</p> <ul style="list-style-type: none">a. The machine reads the engraving file with the latest modification date in the root directory of the TF card by default. It is recommended to delete other irrelevant files in the root directory.b. This file can be generated by LaserGRBL, LightBurn, and CutLabX software, and the compatible format is NC. If GC is generated by default, please manually modify the file suffix to NC.
Why does the machine not respond after turning on?	<ul style="list-style-type: none">a. Check whether the power plug on the machine end is fully plugged in.b. Check the electrical status of the power socket.c. Check whether the power switch and light shield on the machine are closed.

FAQ-Machine related issues

Questions	Solutions
Why can't the machine connect to the computer after it is turned on?	<p>a. Reinstall the driver, the driver shows that it has been installed, indicating that the driver is normal.</p> <p>When the driver display is pre-installed, you need to check whether it is the original wiring or not connected to the machine. Please use another port on the computer.</p> <p>b. Is the port selection correct? Some computers will have 2 ports when connected. Please ignore com1 and select another com port. (The port number of the MAC must start with Wchusserial to work properly)</p> <p>c. Close other software that occupies the com port.</p> <p>d. When the protective cover is opened, the machine cannot be connected, and the protective cover needs to be closed.</p> <p>When connecting with Lasergtbl, it cannot be connected when CutLabX is opened. You need to close Lasergtbl to use it normally.</p> <p>*Note: In Lightburn, the machine can store multiple machine information, please select the appropriate configuration information according to the model.</p>
Why can't the mobile phone be used after the machine is turned on?	<p>a. Please use the mobile phone according to the manual.</p> <p>b. If the connection is abnormal due to incompatibility of the newly released mobile phone or system upgrade, please provide a screenshot of the mobile phone configuration and contact our customer service to get technical support as soon as possible.</p>

FAQ-Engraving/Cutting Related Questions

Questions	Solutions
What non-transparent materials can the UTKA-A1 laser engraver engrave or cut?	<p>455nm laser: can engrave paper, wood chips, plastic, leather, cloth, cardboard, leather, stone, ceramics, stainless steel, coated metal, and most other non-transparent materials</p> <p>5W laser power can cut 3-5mm plywood, 5-7mm pine board</p> <p>10W laser power can cut 5-7mm plywood, 7-10mm pine board</p> <p>1064nm laser: can engrave all metal materials, plastic, leather and other materials</p> <p>Cannot cut</p>
Can it be engraved on curved materials?	Yes, but the curvature of the material and the area of the engraved image should not be too large, otherwise there will be slight deformation.
Can it be engraved on reflective/transparent materials such as ceramics/glass?	Yes, but before engraving, anti-reflective materials (such as laser colored paper, black marker) need to be applied to the surface of the material to ensure the engraving effect and prevent reflected light from damaging the laser module.

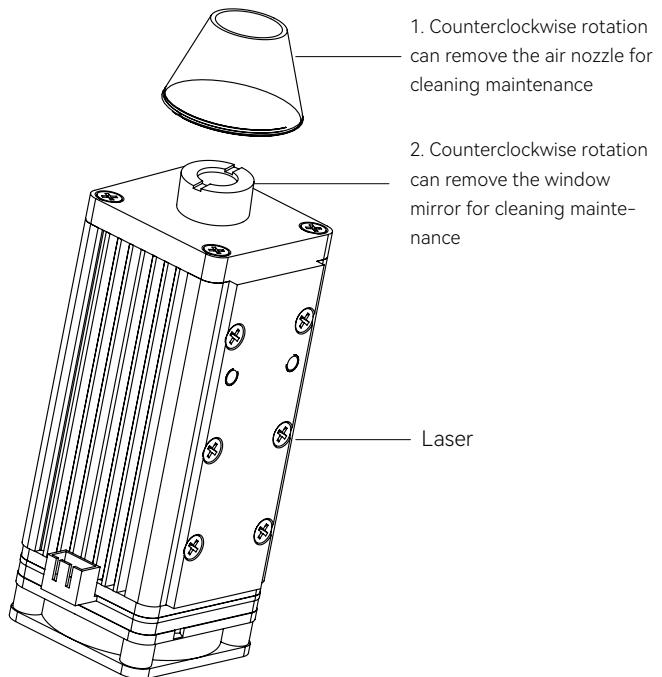
FAQ-Engraving/Cutting Related Questions

Questions	Solutions
Why do materials of the same material but different colors have very different processing effects using the same G-code file?	Materials of different colors have different optical properties and absorb and reflect laser energy differently. When engraving materials of the same material but different colors, it is recommended to set different powers and speeds in the software.
There is a lot of smoke on the cut material, how to deal with it?	Please reduce the laser power and increase the speed appropriately.
Why can't the material be cut?	<ol style="list-style-type: none">1. Make sure the machine and the engraving material are parallel to the work surface;2. Make sure the laser module protective lens is clean;3. Make sure the focus mode is correct;4. Confirm the material thickness again and set it according to the recommended parameters in the random data;5. Gradually increase the number of cuts, or appropriately reduce the cutting speed.

FAQ-Software related questions

Questions	Solutions
What software does the UTKA-A1 laser engraver support?	LaserGRBL (free) - Real-time LightBurn (paid) - Real-time/offline 30-day trial CutLabX (free) - Real-time/offline/mobile During real-time engraving, be careful not to let the computer freeze or enter standby mode (do not lock the screen) to avoid affecting the engraving.
Where can I download these software?	LaserGRBL (https://lasergrbl.com/download/) LightBurn (https://lightburnsoftware.com/pages/trial-version-try-before-you-buy) CutLabX (www.cutlabx.com)
What image formats does the software support?	LaserGRBL (bmp/png/jpg/gif/svg) LightBurn (bmp/png/jpg/jpeg/gif/tif/tiff/tga/ai/pdf/sc/dxf/hpgl/plt/rd/svg) CutLabX (AI, PDF, SVG, DXF, PLT, PNG, JPG, GIF, BMP)
Where can I get tutorials for the software?	LaserGRBL (https://lasergrbl.com/usage/) LightBurn (https://lightburnsoftware.github.io/NewDocs/) CutLabX (www.cutlabx.com)

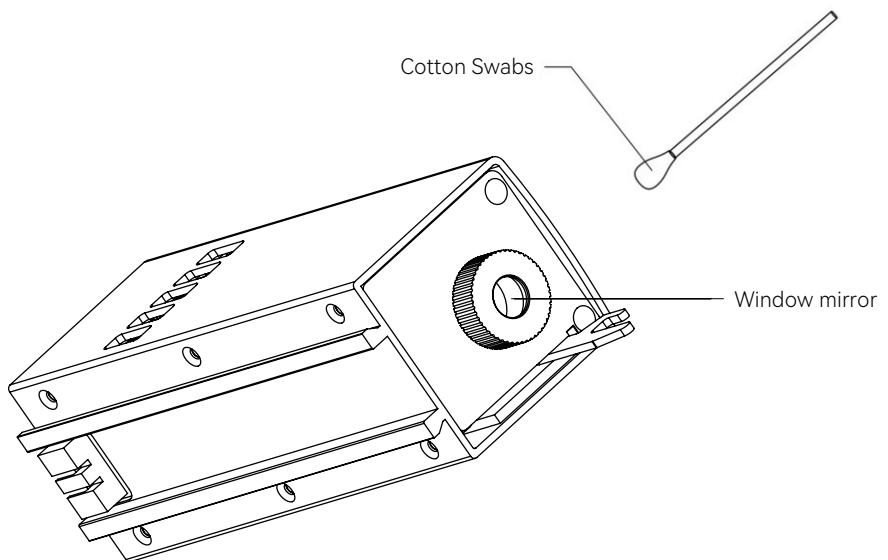
- * You can do some of the following regularly to keep the UTKA-A1 in good working order and reduce wear and tear on your engraving machine.
- * Clean the laser module lens: Over time, particles will deposit on the outer lens of the laser module. This will reduce the power output of the module and heat the lens.
- * If you find that your laser is having trouble cutting materials that you had no problems with before, it may be time to clean the lens.
- * Remove the laser from the machine, turn the knob to the right, and gently clean the lens with a cotton swab or alcohol wipe dipped in alcohol.
- * When using, connect the air pump module and select the appropriate air volume level based on what you need.



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* Clean the laser module lens: Over time, particles will deposit on the outer lens of the laser module. This will reduce the power output of the module and heat the lens.

*If you find that your laser is having trouble cutting materials that you previously had no problems with, it may be time to clean the lenses.





UTKA

✉ info@utkalaser.com