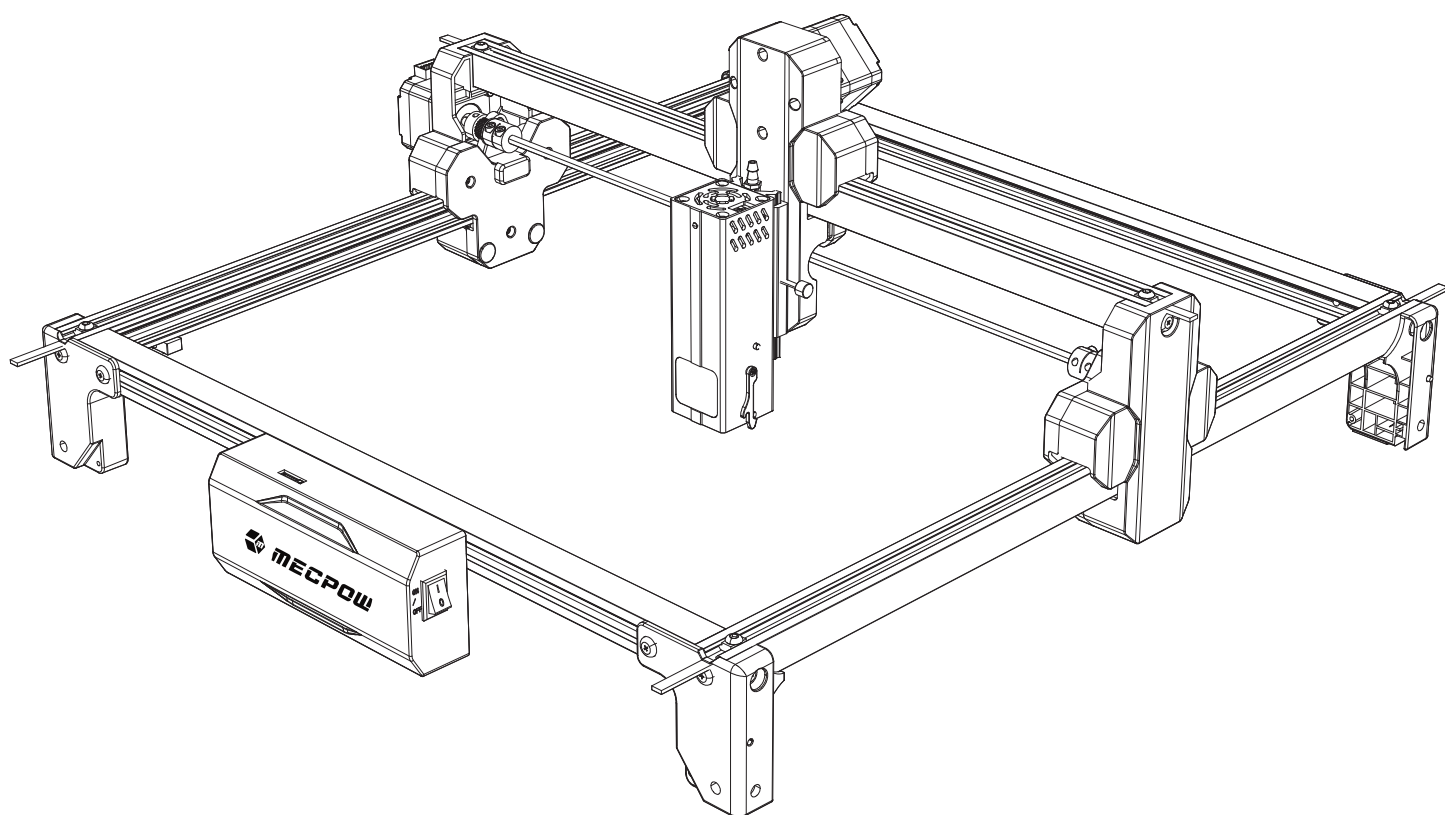




X3S



User Manual

CATALOGUE

ENGLISH.....	01~24
DEUTSCHE.....	25~48
ESPAÑOL.....	49~72
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1. Preface

Dear Customer,

Thank you for purchasing our laser engraving machine. This device is a high-tech product that integrates light, machinery, and electricity. In order for you to use and maintain the equipment better, please read the user manual carefully and follow the steps in the manual.

Disclaimer

Any losses caused by improper use or failure to follow the steps in the user manual will be borne by the individual. The final interpretation of the user manual belongs to our company, and we reserve the right to modify any information, data, technical details, etc. in the manual.

2. Security Statement

Safety Precautions

- * Laser processing can be risky, and users should carefully consider whether the object to be processed is suitable for laser work.
- * The object being processed and emissions must comply with local laws and regulations.
- * This machine uses a Class IV laser (high-power laser radiation), which may cause the following situations:
 - (1) Ignition of surrounding flammable materials;
 - (2) During laser processing, other radiation and toxic and harmful gases may be produced, depending on the object being processed;
 - (3) Direct exposure to laser radiation can cause harm to the human body. There must be fire-fighting equipment in the workplace, and flammable and explosive materials must not be stacked around the workbench or machine. Good ventilation must also be maintained.
- * The environment in which the machine is located should be dry, free from pollution, vibration, strong electricity, strong magnetism and other interference. The working ambient temperature should be 5-30°C, and the working ambient humidity should be 35-65%RH.
- * The working voltage of the machine is AC100-240V.
- * During the operation of the machine, it must be monitored throughout. Before leaving, all power must be cut off to prevent any unforeseen issues. If an abnormal situation occurs, please immediately cut off the power and deal with it!
- * It is strictly prohibited to place any reflective or diffuse objects in the machine that are not relevant to its operation to prevent laser reflection on the human body or flammable materials.
- * The machine should be kept away from electrical equipment sensitive to electromagnetic interference, which may cause electromagnetic interference to it.
- * It is strictly forbidden for non-professionals to disassemble the laser engraver as there may be dangers such as high voltage inside the machine.



Warning

1. The laser engraving machine can produce laser light. It is strictly prohibited to place any living organisms under the laser emission (the port is marked with a yellow warning sign).
2. Photosensitive patients are prohibited from using or getting close to the laser engraver.
3. When using the laser engraving machine, the operator and anyone near the machine must wear laser safety glasses. Do not operate the laser machine without laser goggles. Our machine comes with a pair of laser safety glasses. If you want to purchase additional goggles, the goggles should offer wavelength protection between 400-445nm (+5nm), have an outer diameter of +5, and meet a minimum L5 level.
4. When the laser engraving machine is in operation, the user must pay close attention and not leave it unattended to avoid ignition of the engraved material. Place the machine in a fireproof area and ensure good ventilation. It is recommended to have a fire extinguisher nearby in case of emergencies.
5. Make sure there are no flammable materials near the laser engraving machine. We recommend placing a honeycomb working table under the machine.
6. When operating the laser engraver, ensure that there is enough space around it. Engraving certain materials may produce smoke, which should be vented out using a specialized exhaust system.
7. Do not touch the laser beam or the object being processed while the machine is in operation, as this could cause

serious injury or beam reflection. Additionally, avoid touching the radiator as it may be hot due to the laser engraving machine working or just recently stopping.

8. Children or teenagers (especially those under 14 years old) are not allowed to use the laser engraving machine alone and should be supervised by an adult at all times.

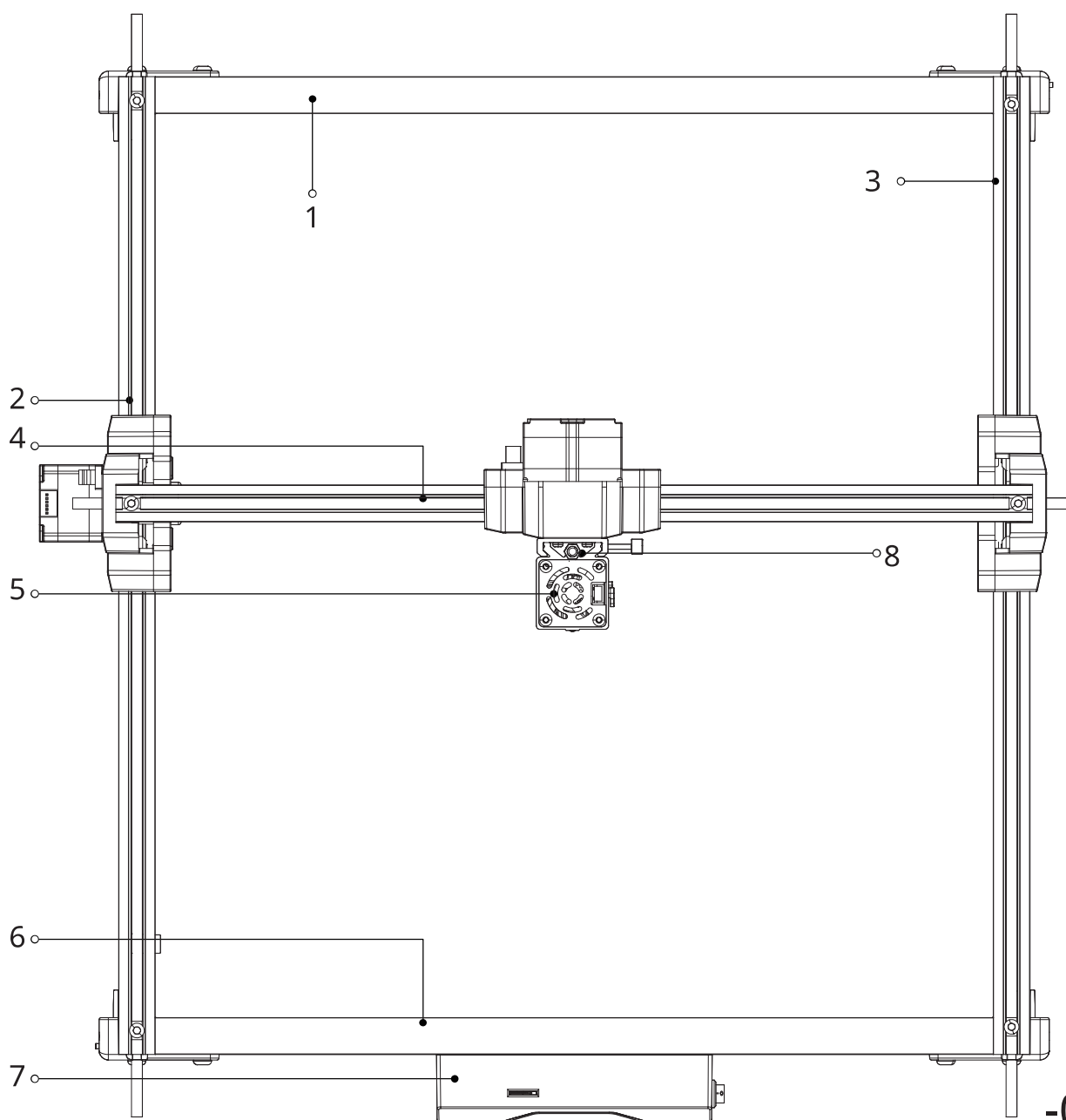
9. The operating temperature of the machine is 5°F-86°F (-15°C-30°C).

10. When laser engraving, there is a risk of fire. When the laser engraving machine is in use, it must be supervised by a skilled operator who can use a fire extinguisher to handle any accidents that may occur.

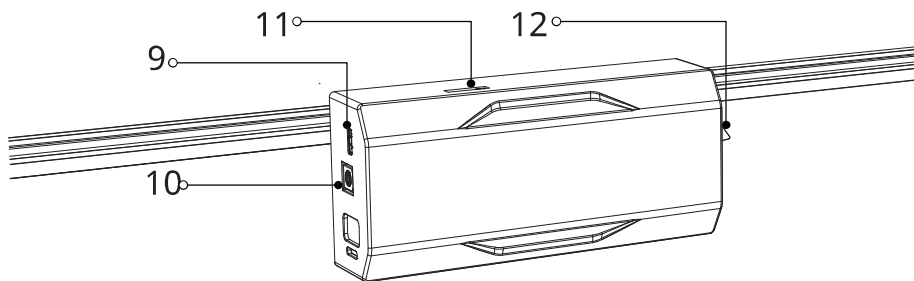
11. Our laser engraving machine is equipped with a built-in flame sensor to maximize the safety of our equipment. But please note that no written or implied warranty is made regarding the availability or functionality of the flame sensor.

3. Diagram

1. Rear X-Axis
2. Left Y-Axis with Scale
3. Right Y-Axis
4. X-Axis Assembly
5. Laser Module
6. Front X-Axis with Scale
7. Control Box
8. Air Pump Inlet (Note: The air pump requires separate purchase.)



- 9. Type-C Port
- 10. DC Port
- 11. TF Card Port
- 12. Power Switch



4. Specifications

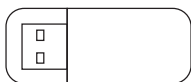
Laser Power	7W	12W
Product Size	547x573x227 mm	
Package Size	590x330x130 mm	
Net Weight	2.7 kg	2.8 kg
Wavelength	445±5 nm	
Electrical Power	60W	
Power Adapter	AC 100-240V (Input), DC 12V 5A (Output)	
Engraving Area	360x360 mm	
Engraving Speed	10000 mm/s	
Method of Data Transmission	WiFi Connection, Type-C Wired Connection	
Spot Size of Laser Beam	0.05x0.07 mm	0.06x0.08 mm
Engraving Accuracy	0.01 mm	
Materials for Laser Engraving	Paper, Bamboo, Wood, Fabric, Metal (non-glossy), Acrylic, Plastic, Leather, Bread, Fruit, Glass (non-mirrored), Ceramics, etc.	
System Support	Windows, MacOS, Android, iOS	
Software Support	LaserGRBL, LightBurn, MKSLaser (Mobile App)	
File Format Support	JPEG, BMP, GIF, PLT, PNG, DXF	
Tilt Alarm Angle	15±5°	
Laser lifespan	≥10000 Hours	

5. Package List

Left Y-Axis with Scale*1	Right Y-Axis*1	Front Control Module with Scale*1	Rear X-Axis*1
X-Axis Assembly*1	Smooth Rod Assembly with Coupling*1	M5*30mm Screw*5	M5*16mm Screw*5
M5*10mm Screw with Gasket*3	Power Adapter*1	Goggles*1	Hex Key 2.5mm*1 Hex Key 3.0mm*1
Laser*1	Data Cable*1	Wood Board*2	TF Card*1



User Manual*1



Card Reader*1



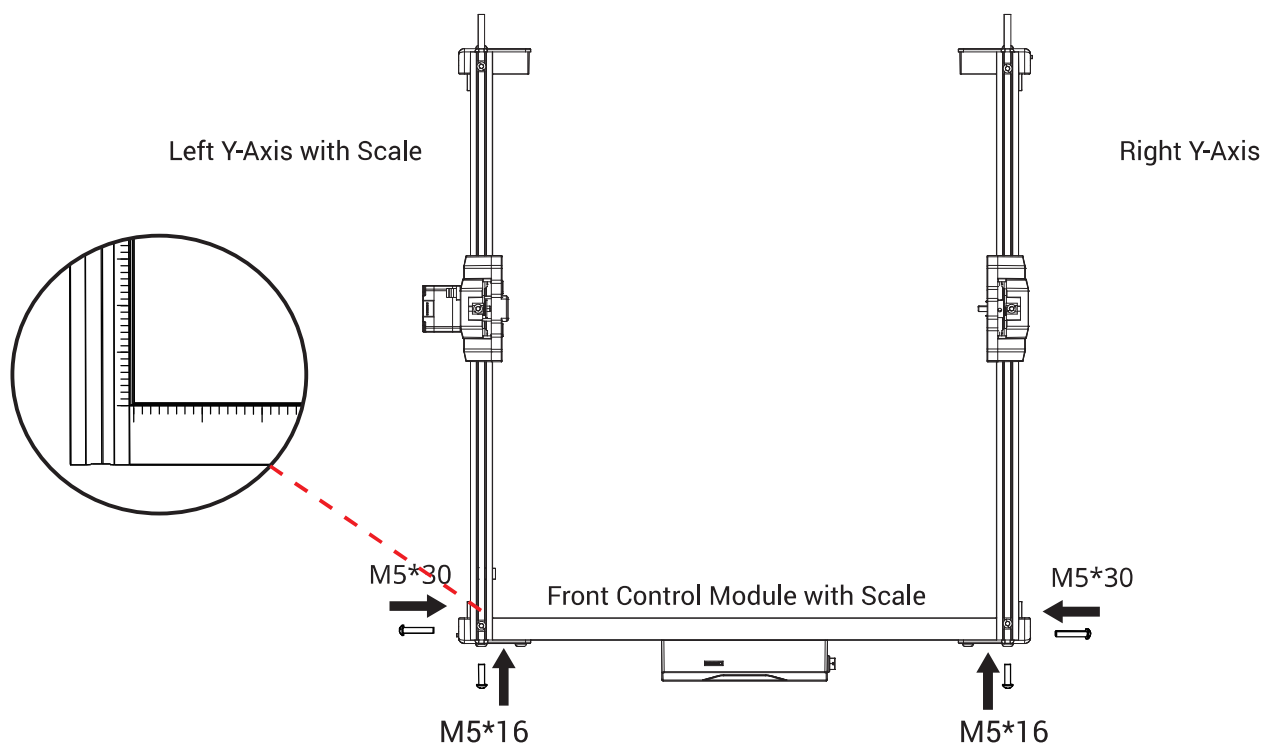
Cable Clamp*2



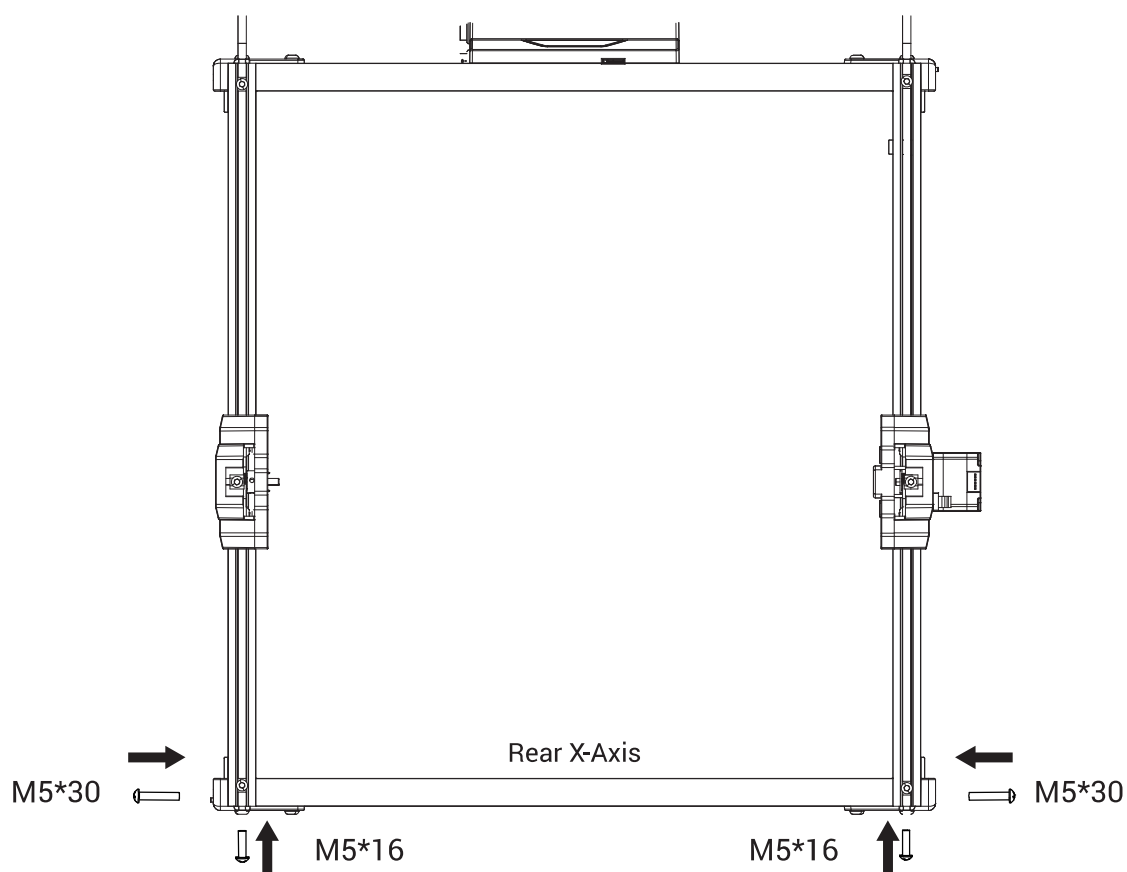
Cable Tie*2

6. Assembly Guide

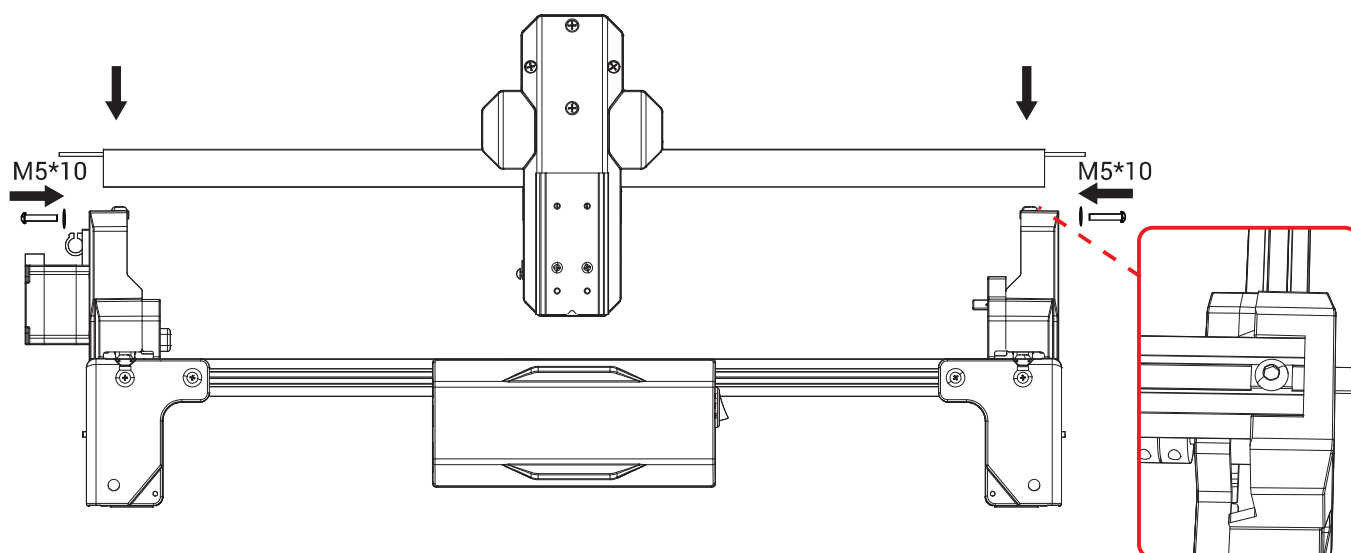
Step 1: Take the left Y-axis with scale, right Y-axis and front control module with scale, assemble them as shown in the figure, then fasten the three modules securely with M5x30 and M5x16 screws.



Step 2: Install the rear X-axis.



Step 3: Fit the X-axis module into the corresponding slot, then fasten it securely with M5x10 screws with gaskets.

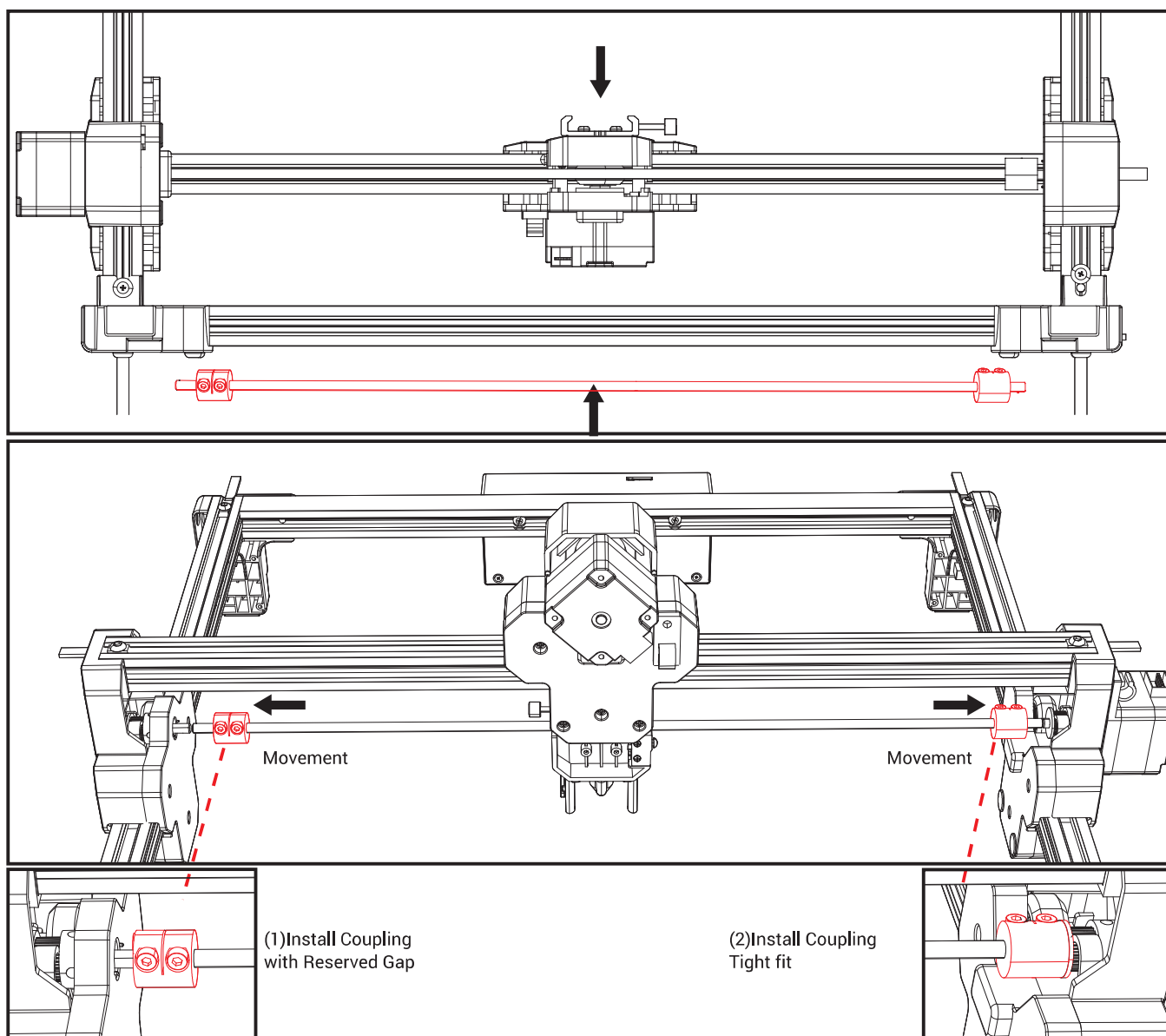


Step 4: Install the smooth rod assembly (insert from the direction of the rear X-axis)

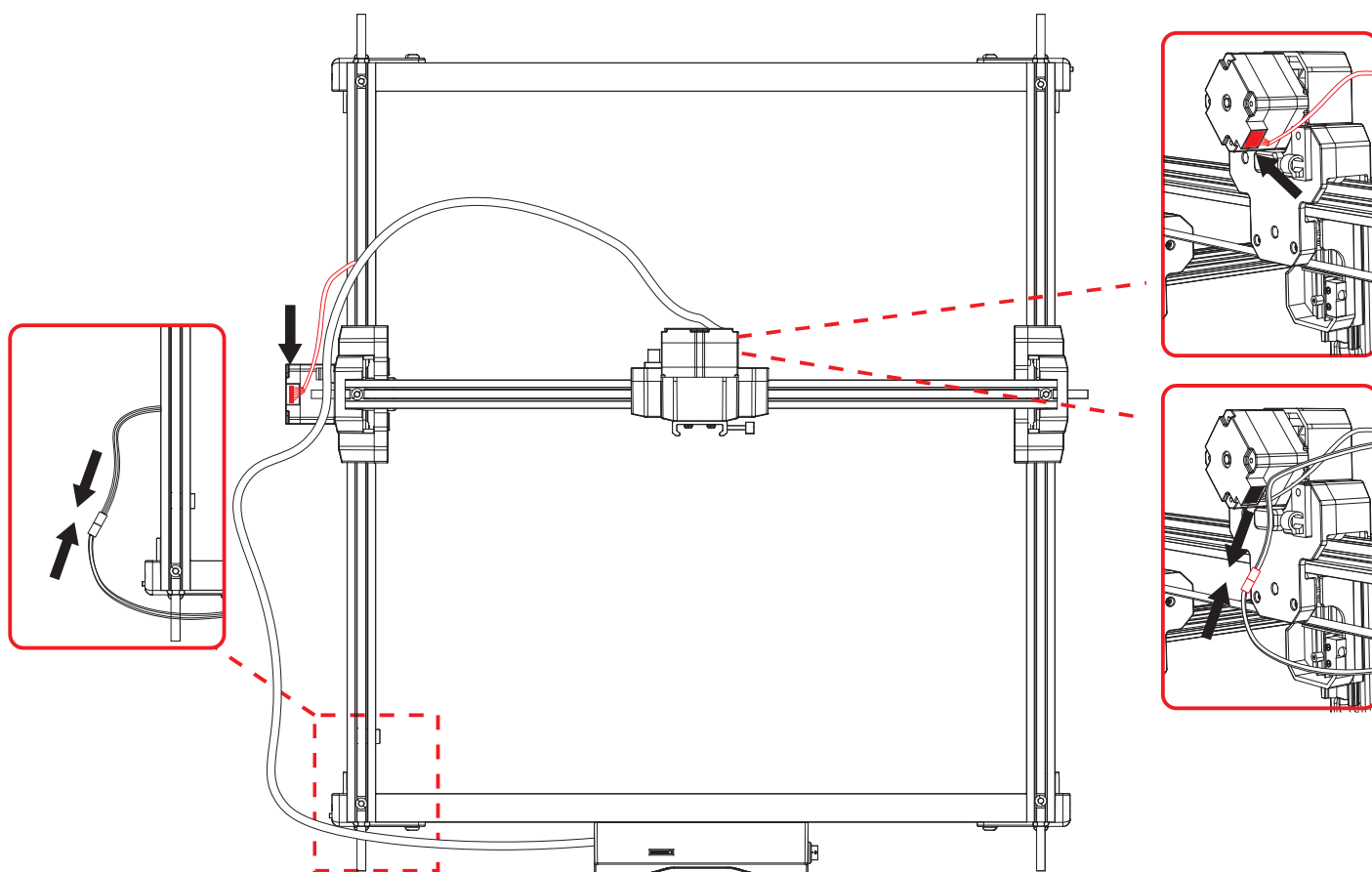
(1) Push the X-axis module into the bottom of the rear X-axis, place the smooth rod assembly in position, and slide the coupling at both ends to connect to the machine.

(2) After installing the couplings, tighten them firmly with a 2.5 mm hex key.

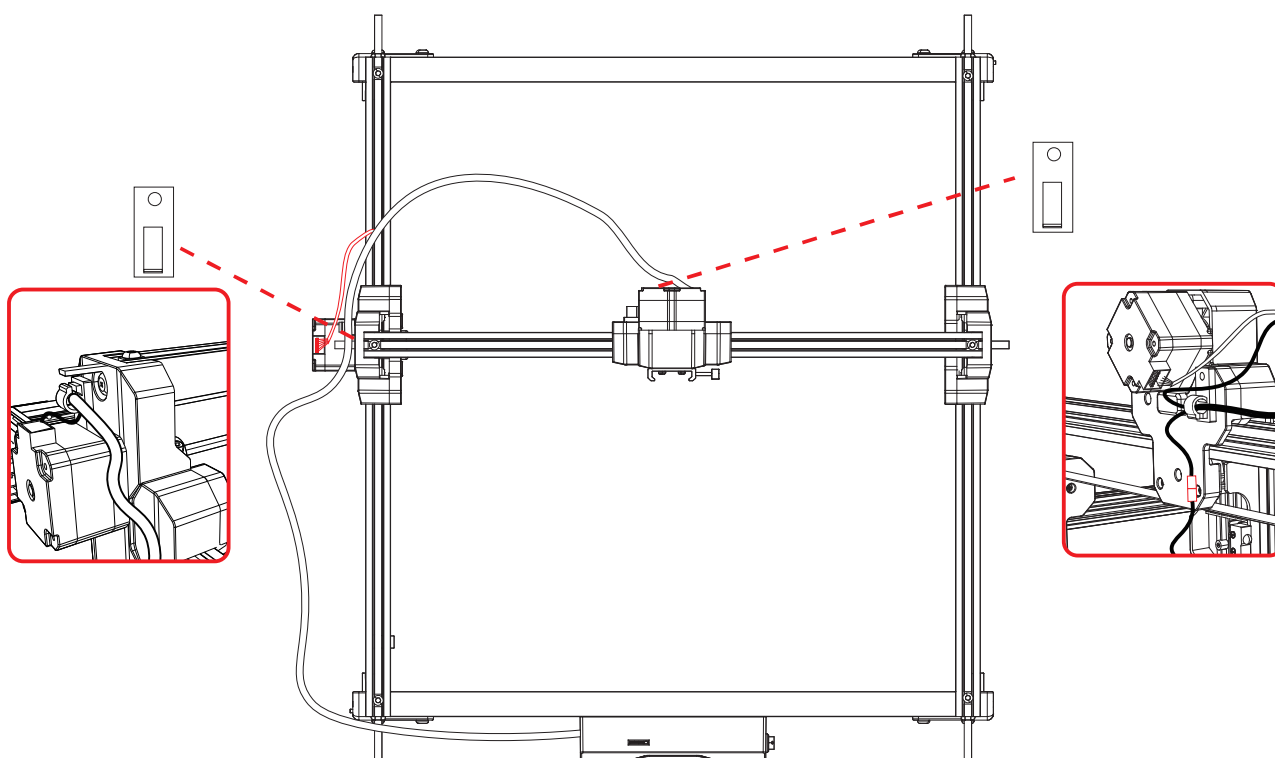
Note: Apply sufficient force to ensure a tight lock.



Step 5: Connect the Y-axis limit switch, Y-axis motor cable, X-axis motor cable and X-axis limit terminal block respectively.

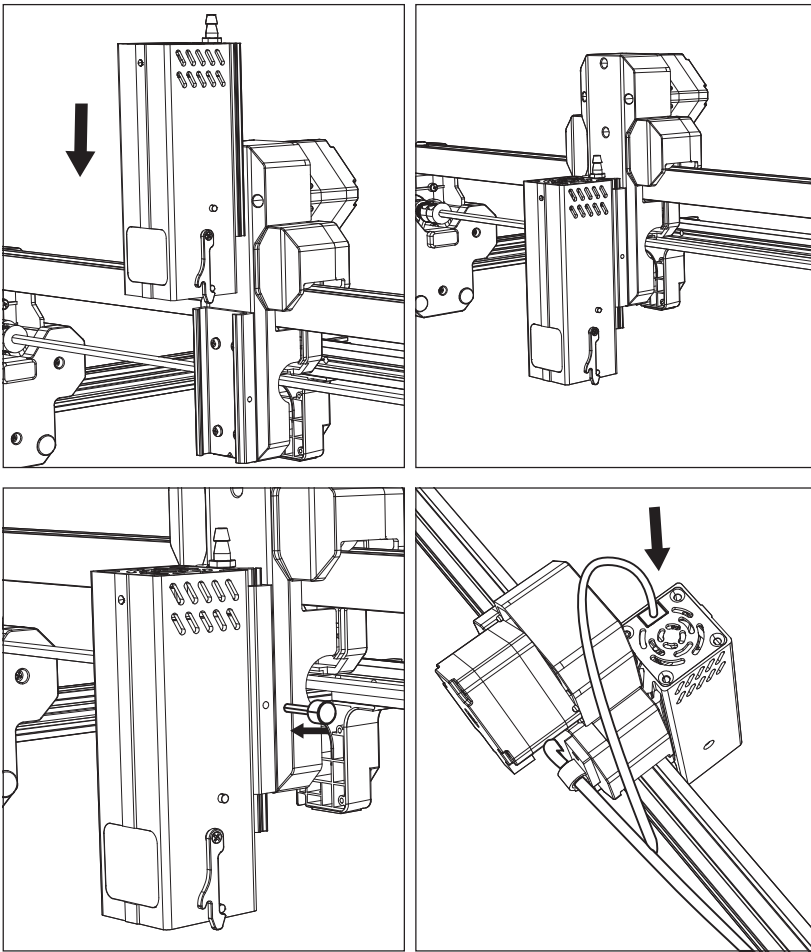


Step 6: Secure the cable.



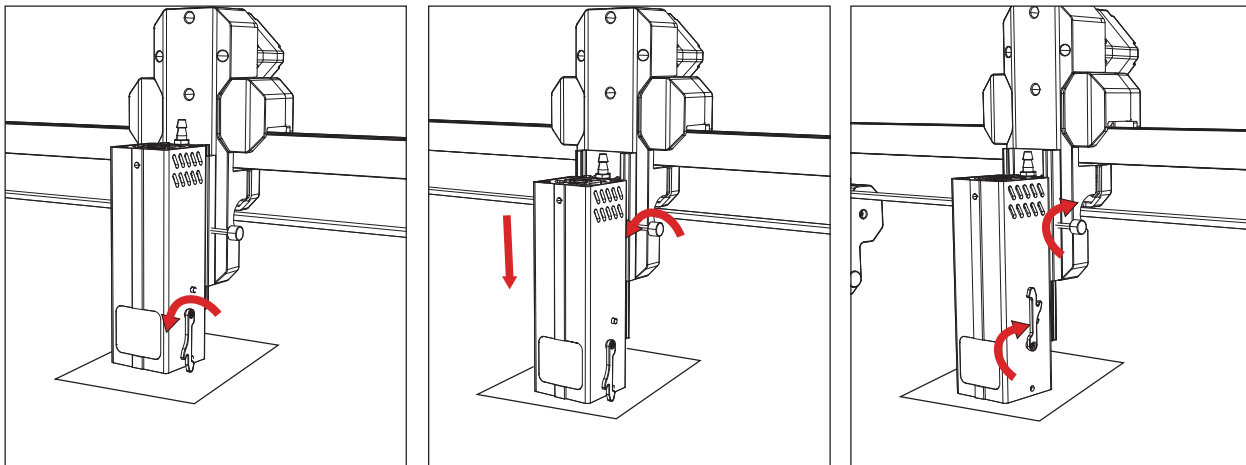
Step 7: Install the laser module

- (1) Slide the laser module into the sliding plate.
- (2) Tighten the manual screw to secure the laser module.
- (3) Plug the cable into the laser module.

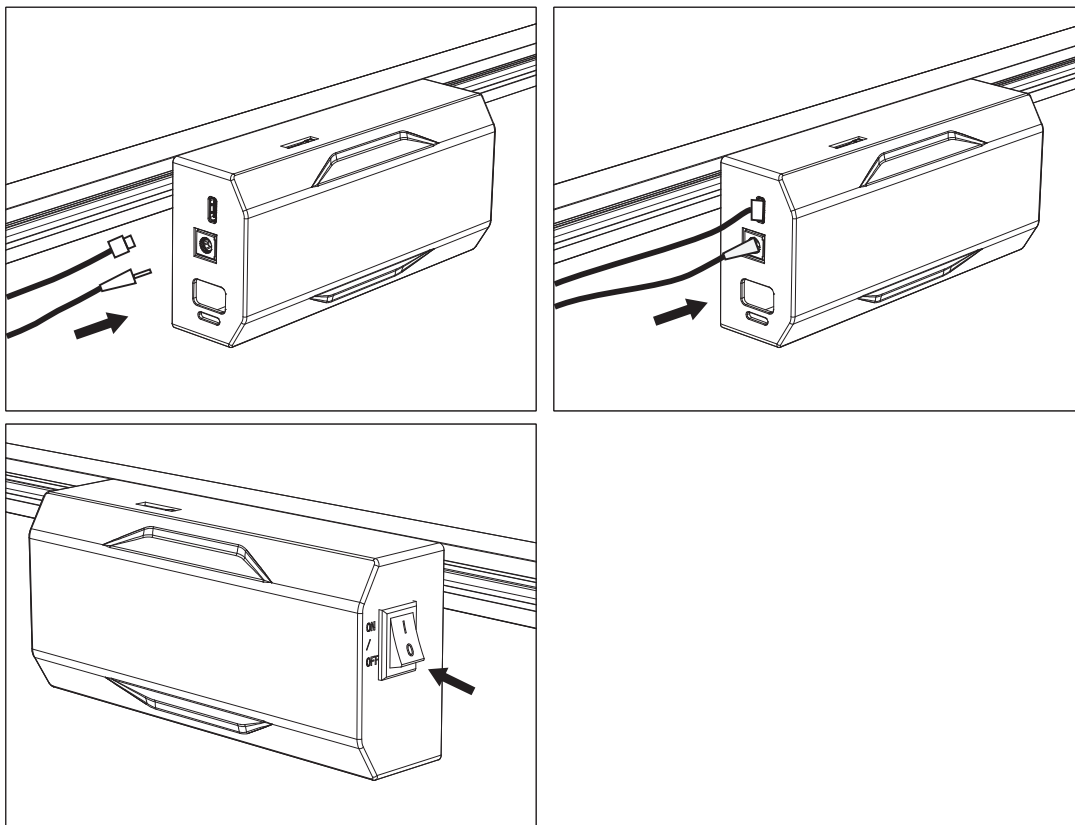


Step 8: Focusing

- (1) Rotate the focusing tab clockwise to the lower position.
- (2) Loosen the laser module nut clockwise and lower the laser until the focusing tab touches the printed object.
- (3) Tighten the laser module nut counterclockwise and retract the focusing tab.



Step 9: Plug the DC power connector and data cable into their respective ports, connect the other ends to the computer, and then turn on the power switch.



7. Functions & Operations

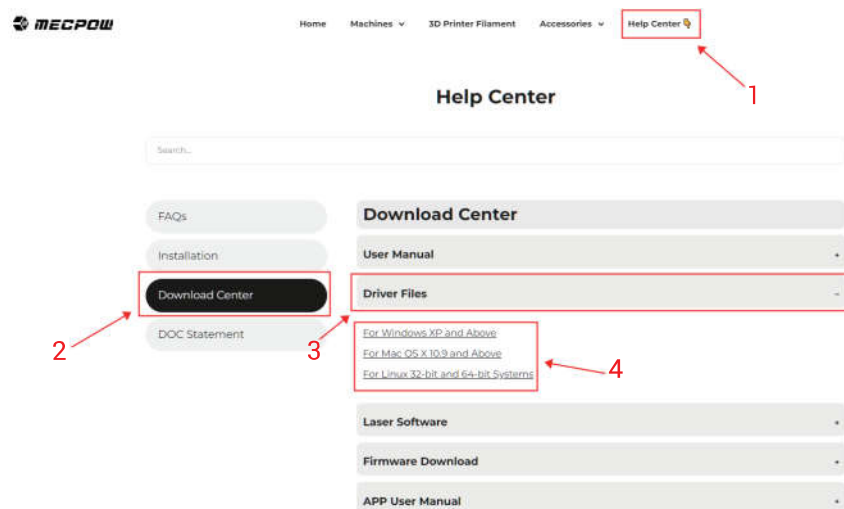
Parts	Functions	Troubleshooting Method
USB Port	Supports connection with PC for device control and data transmission.	Install the USB driver.
DC Power Input	Equipped with a stable power supply system to ensure continuous operation of the device.	Check whether the indicator light is functioning correctly or replace with a properly working power supply.
TF Card Slot	Insert the TF card into the engraver's slot, then control the device to perform engraving tasks via the MKS mobile APP.	1. Check whether the TF card is functioning correctly. 2. If the issue persists, please contact customer service.
Power Switch	One-click power switch control; the indicator light turns on synchronously after startup for clear status visibility.	Check whether the indicator light is functioning correctly or replace with a properly working power supply.
Tilt Sensor	It detects the machine's tilt angle. If the tilt exceeds $15\pm5^\circ$, the alarm will be triggered and the machine will stop operating automatically.	Ensure the machine tilt angle does not exceed 15° .
Limit Switch	They stop the laser module from moving when it reaches the home position of the X-axis or Y-axis.	1. Check if the limit switch wires are short-circuited or open-circuited. Check if the limit switches are stuck or interfered.
Built-in Wi-Fi	Supports wireless connection with mobile phones, enabling convenient device operation directly through the MKS APP.	1. Turn on your phone's WLAN and check if the device's corresponding WiFi signal can be detected. 2. Attempt to connect your phone to the WiFi signal and confirm if the connection is successful. 3. Open the MKS mobile APP and verify whether it can establish a connection with the device. If the connection still cannot be achieved after the above operations, please contact customer service for assistance.

8. Driver

Download Methods

1.Download the driver from the link below.

<https://mecpow.com/pages/driver-files>



2.Contact the customer service to get the file of the driver.

Note:

The driver for Mac users supports OS X 10.9 to OS X 10.15 and OS X 11.0 (Big Sur) and above.

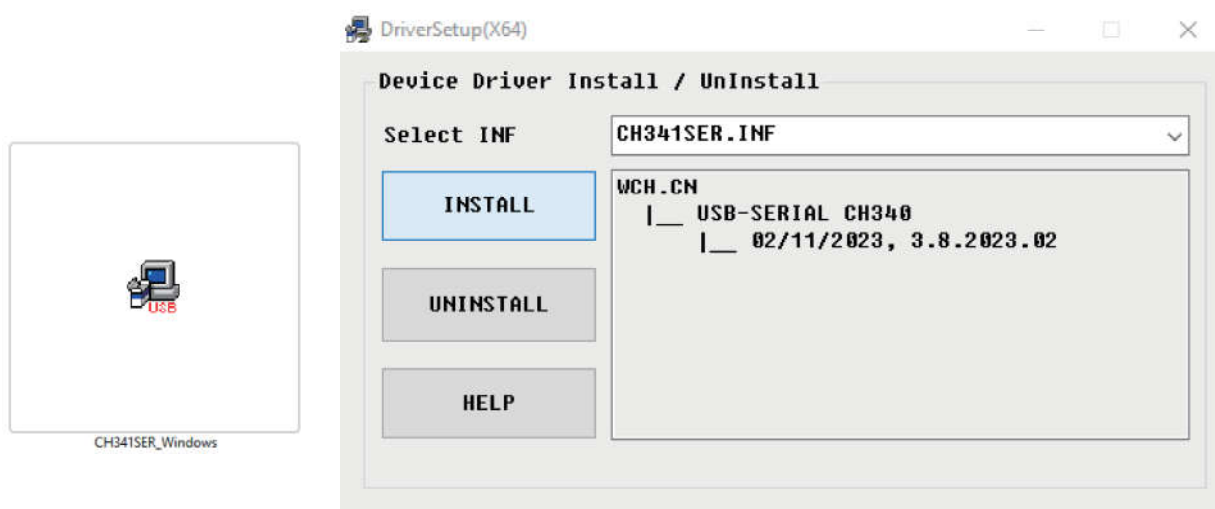
The driver for Linux users supports 32-bit and 64-bit systems.

Please turn on the machine and connect it to your computer via the USB cable before starting the driver!

Installation

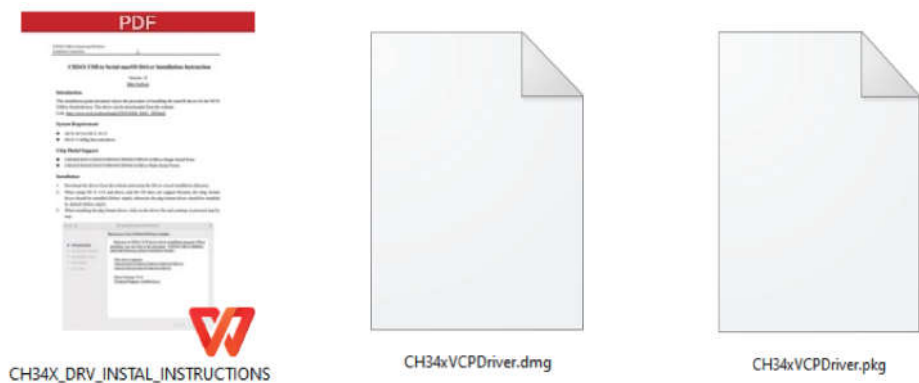
For Windows Users:

1. Open the downloaded driver.
2. Click "INSTALL".
3. Click "OK" when the driver is installed successfully.



For Mac Users:

1. Open the instructions.
2. Open the downloaded driver and follow the instructions to install it.



For Linux Users:

1. Open the file - README.
2. Open the file - driver, and follow the "README" to install it



9. Control via Computer Software

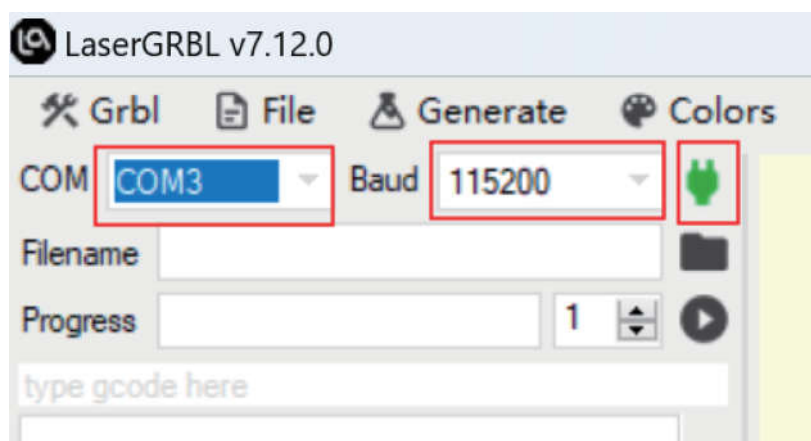
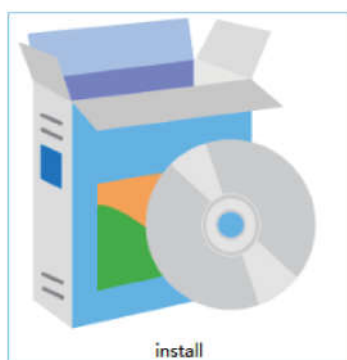
Connect the engraving machine with the software in real time via the USB cable. During operation, you can start or stop the engraving machine through the control panel.

LaserGRBL

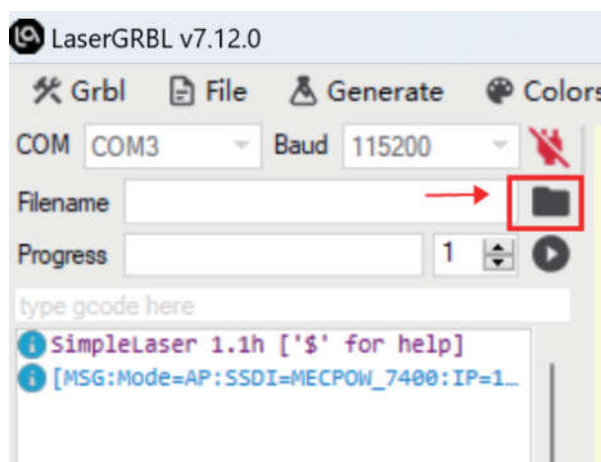
It's a free open-source software that supports Windows computers. Download it from:

<http://lasergrbl.com/download/>

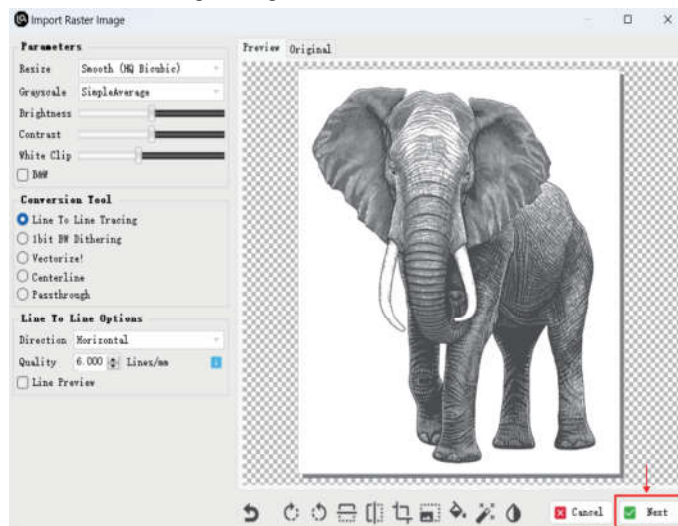
1. Install it.
2. Open the software. Select "COM" and "115200", then click "Connect."



3. Click "Open File" to select the engraving file.



4. Select the engraving mode and click "Next".



5. (1) Select the engraving speed. (It is suggested to refer to the engraving parameter table.)

(2) Select "Laser Mode": select "M4" for engraving and "M3" for cutting

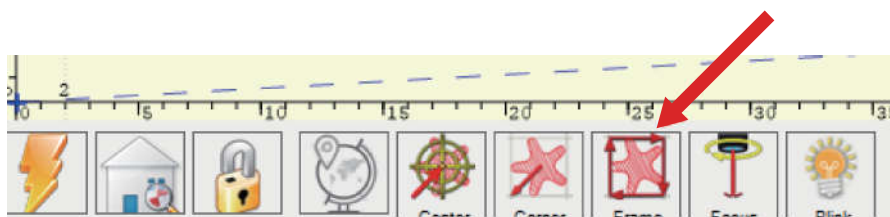
(3) Set the engraving power, 1000 is the maximum power.

(4) Set the engraving size.

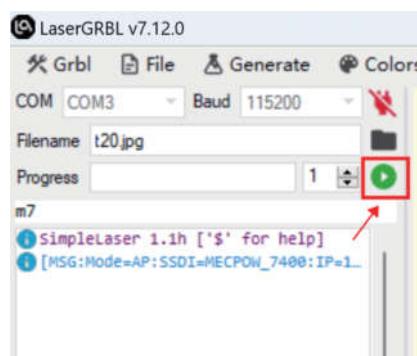
(5) Click "Create."



6. Click "Framing" to preview the engraving range and adjust the engraving position.



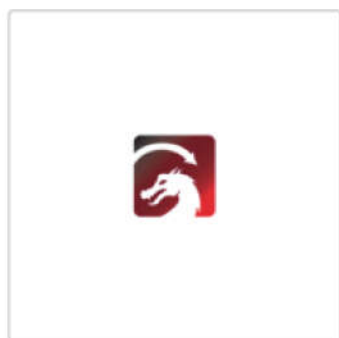
7. Click "Run Program" to start engraving



LightBurn

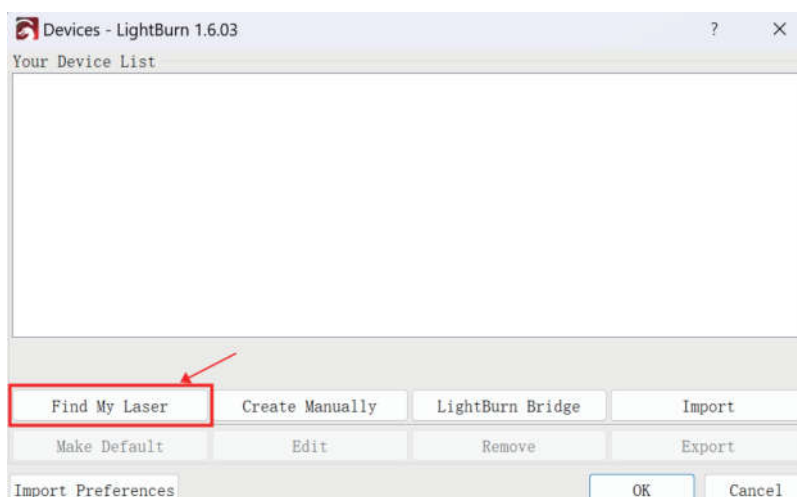
It's a paid professional software that supports MAC, Linux and Windows computers. Download it from:
<https://lightburnsoftware.com/pages/download-trial>.

1. Install it.

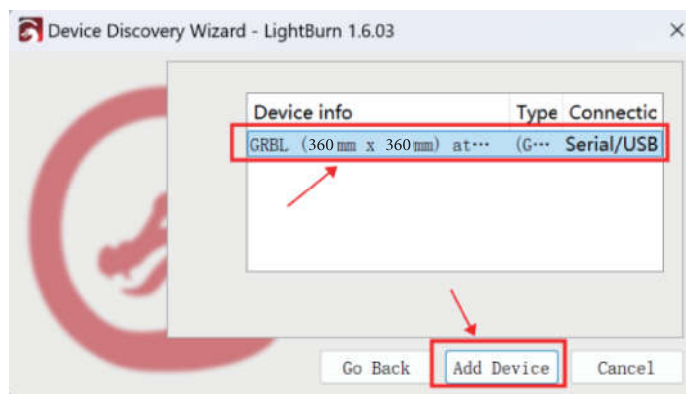
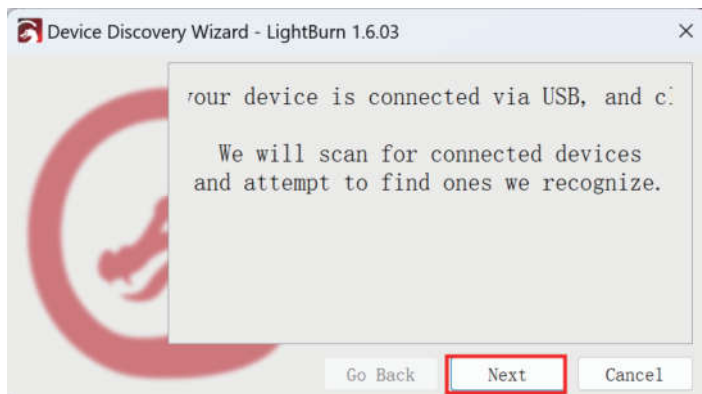


LightBurn-v1.6.03

2. Open the software and click "Find My Laser".



3. Select your device and click "Add Device".

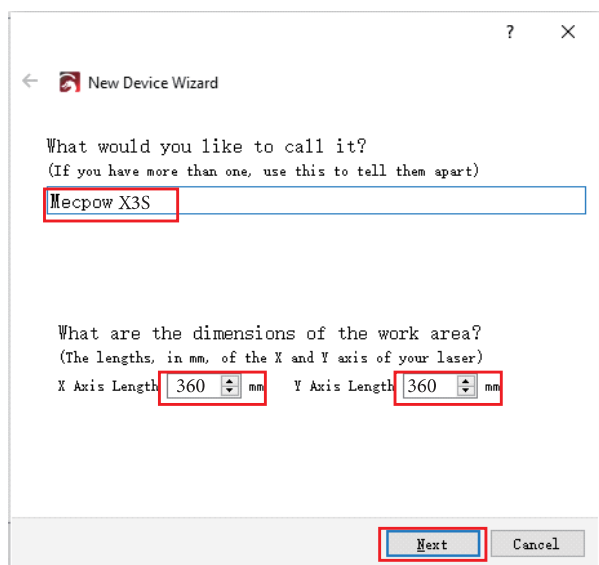


4. Name your device and enter the X-axis and Y-axis lengths, then click "Next".

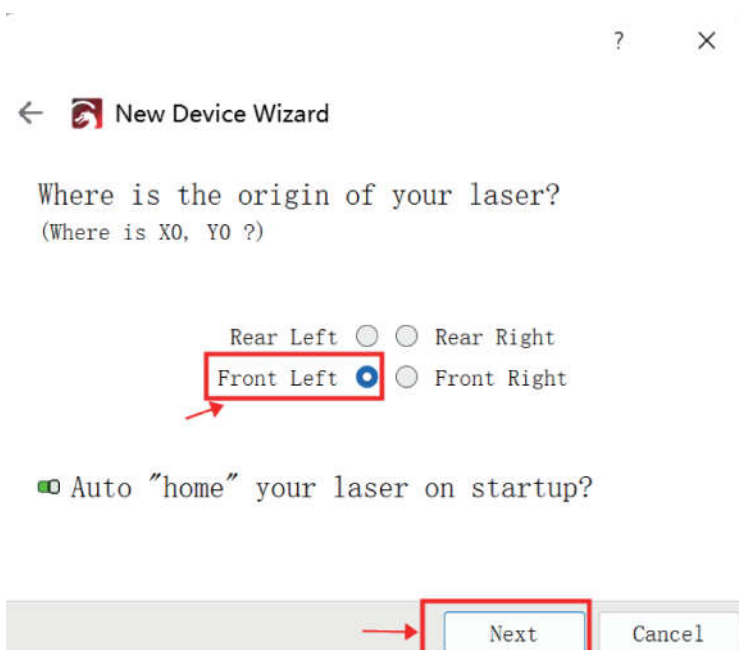
Name: Mecpow X3S

X-Axis Length: 360mm

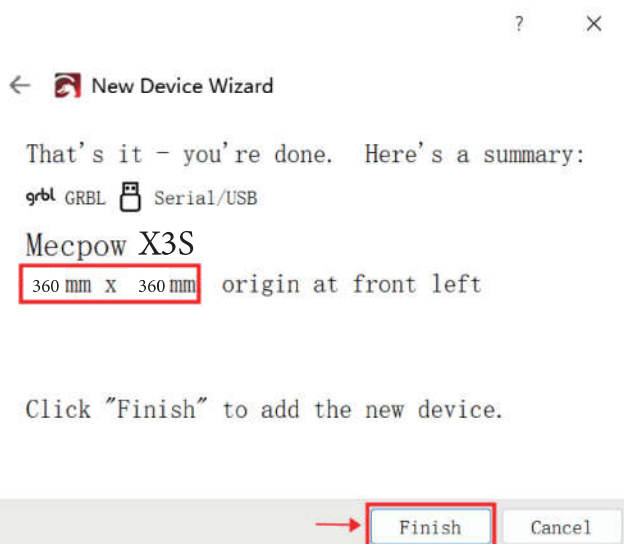
Y-Axis Length: 360mm



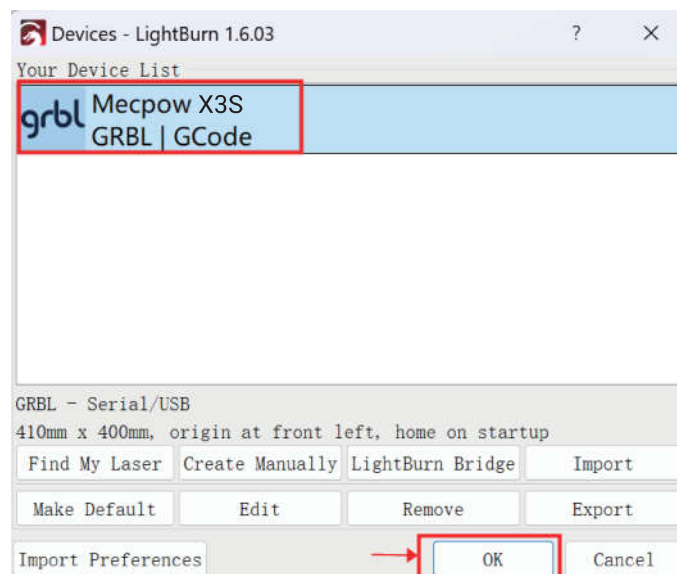
5. Select "Front Left" as the origin of your laser and click "Next".



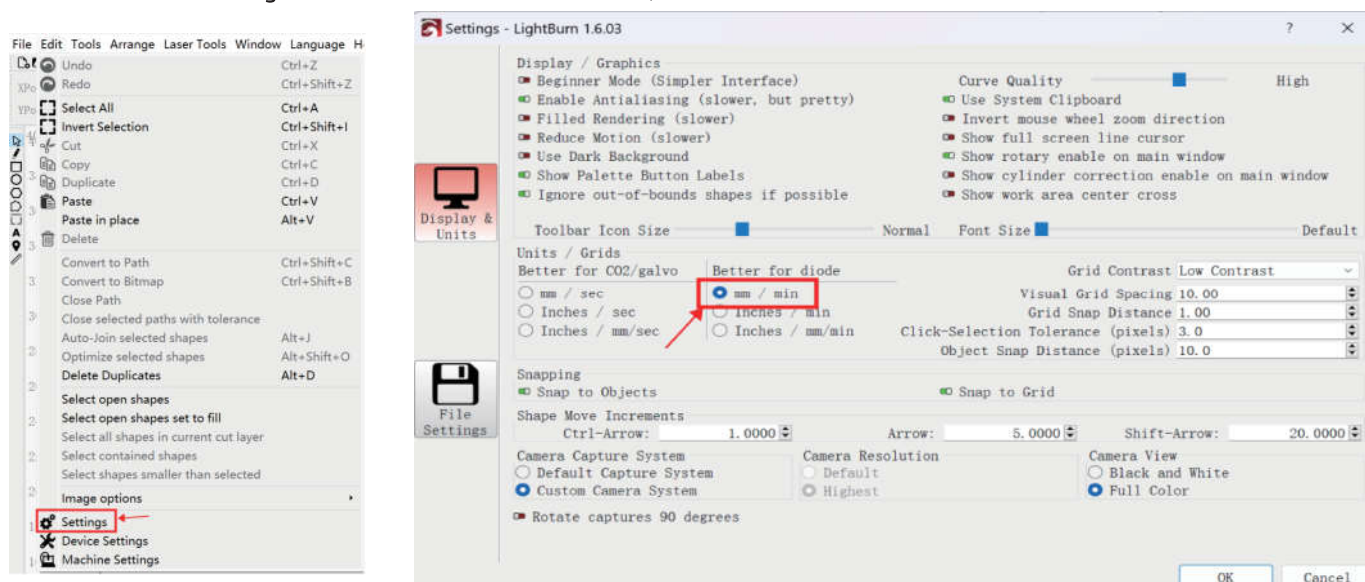
6. Click "Finish".



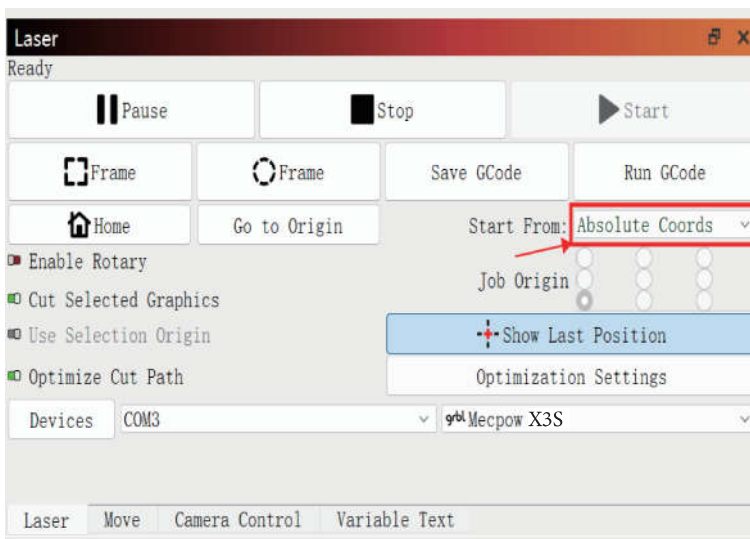
7. Select Mecpow X3S and click "OK".



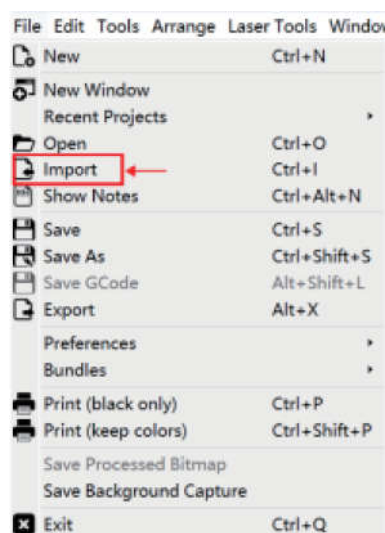
8. Click "Edit" - "Settings" and set the unit to "mm/min", then click "OK".



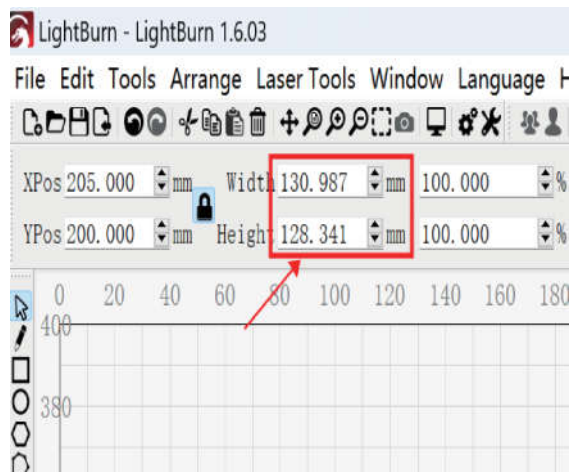
9. Select "Absolute Coords" in the "Start From" section, and then select the circle in the lower left corner in the "Job Origin" section.



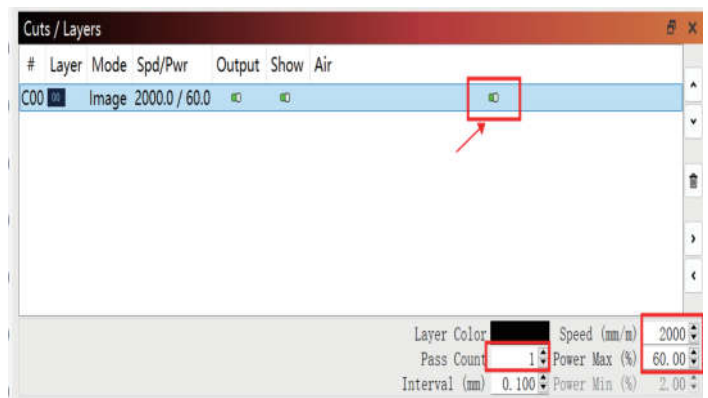
10. Click "File" - "Import" to import the engraving file.



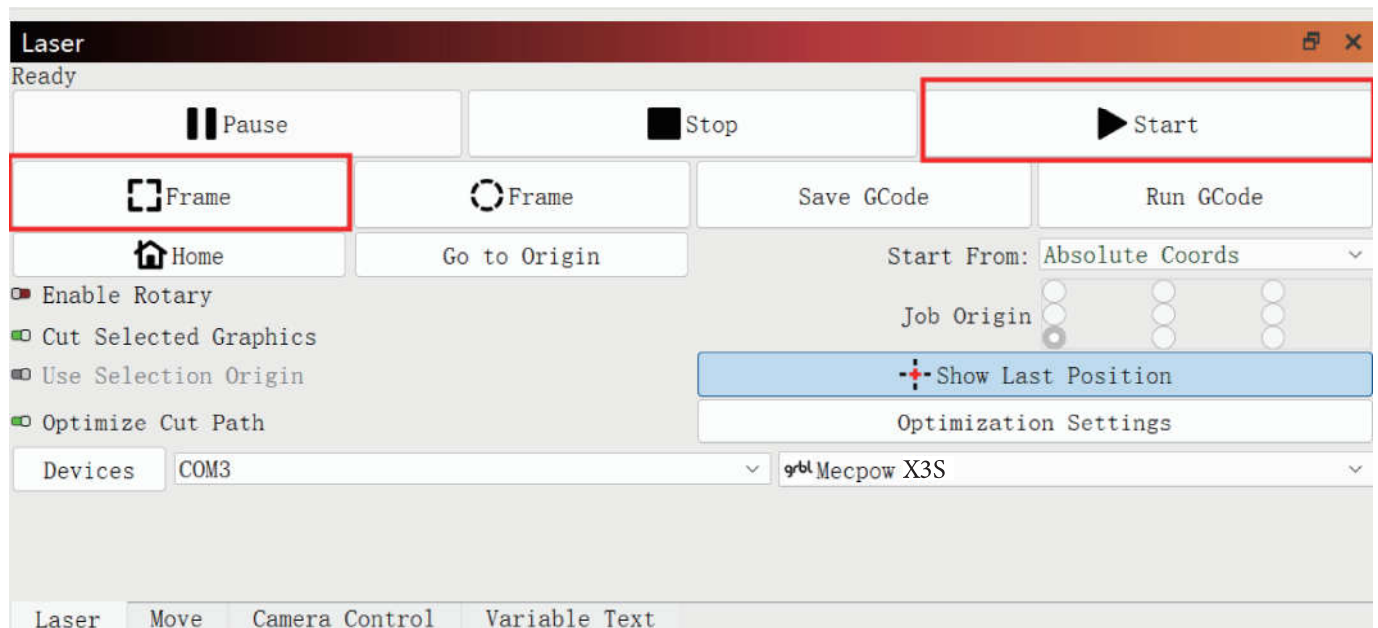
11. You can modify the engraving size on the top of the interface after importing the file.



12. Select the engraving mode and set the operating parameters for laser engraving or cutting. (Recommended operating parameters for engraving or cutting different materials are listed in the next section.).



13. Click "Frame" to preview the engraving range and adjust the engraving position, then click "Start" to start engraving.



10. Control via Mobile App & TF Card

MKSLaser is a free mobile application that supports Android and iOS devices.



iOS



Android

Connection

Enable the Wi-Fi function of your phone and connect the Wi-Fi "Mecpow_*****".

Wi-Fi Name: Mecpow_*****

Wi-Fi Password: 12345678

Note:

1. The "*****" in the name is a random combination of numbers. It varies by machine.
2. To ensure the stability of the Wi-Fi signal, it is recommended to connect your phone to the Wi-Fi of the engraving machine before inserting the TF card.
3. The app needs to be used with the TF card. The uploading of the engraving file will fail if the TF card has not been inserted.

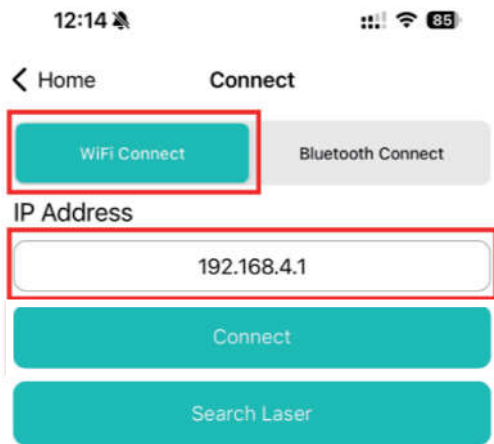
1. Open the MKSLaser app.



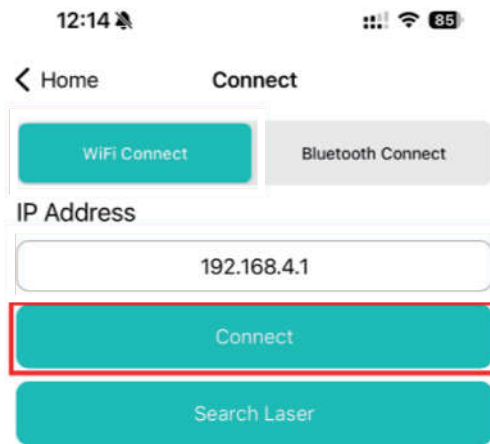
2. Click on the  icon.



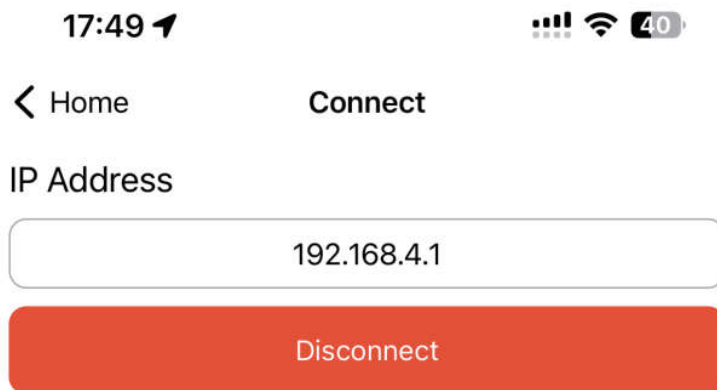
3. Enter the IP address: 192.168.4.1



4. Click on "Connect."

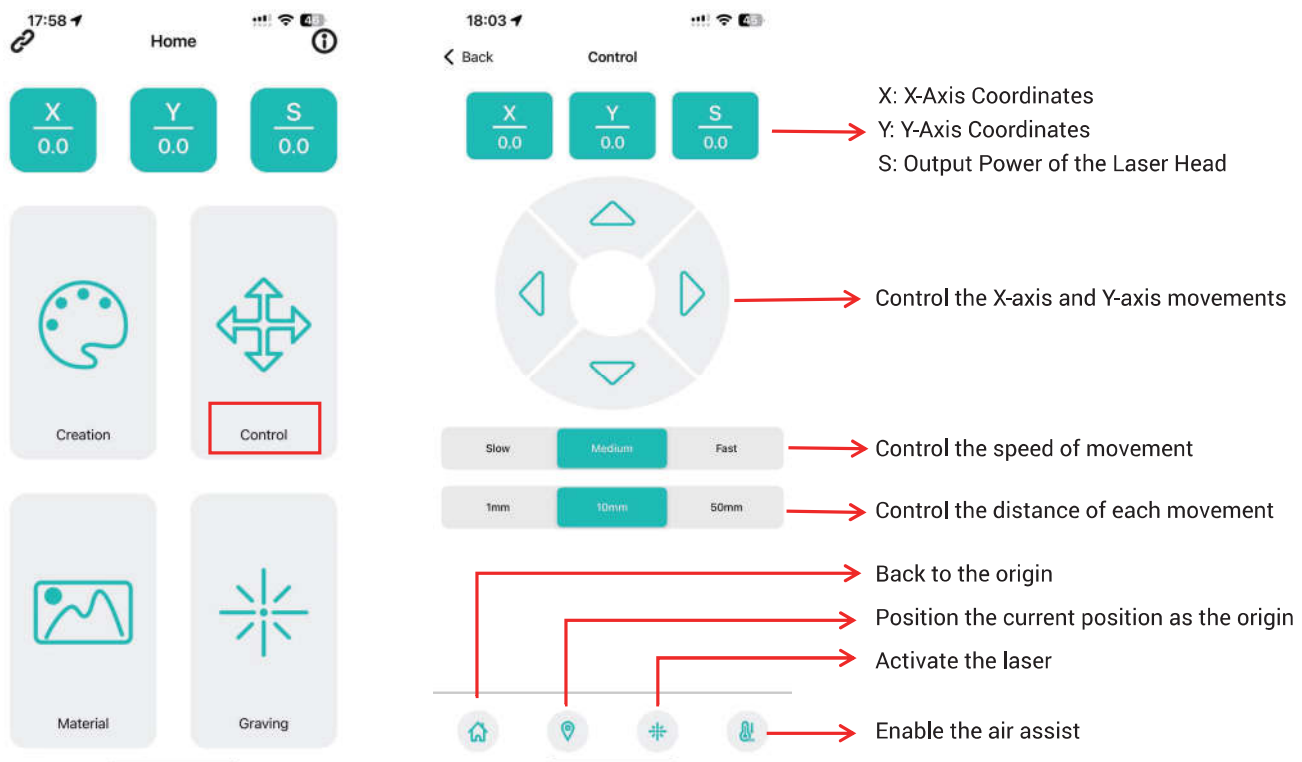


5. When "Connect" turns to "Disconnect", it means the Wi-Fi connection is successful.



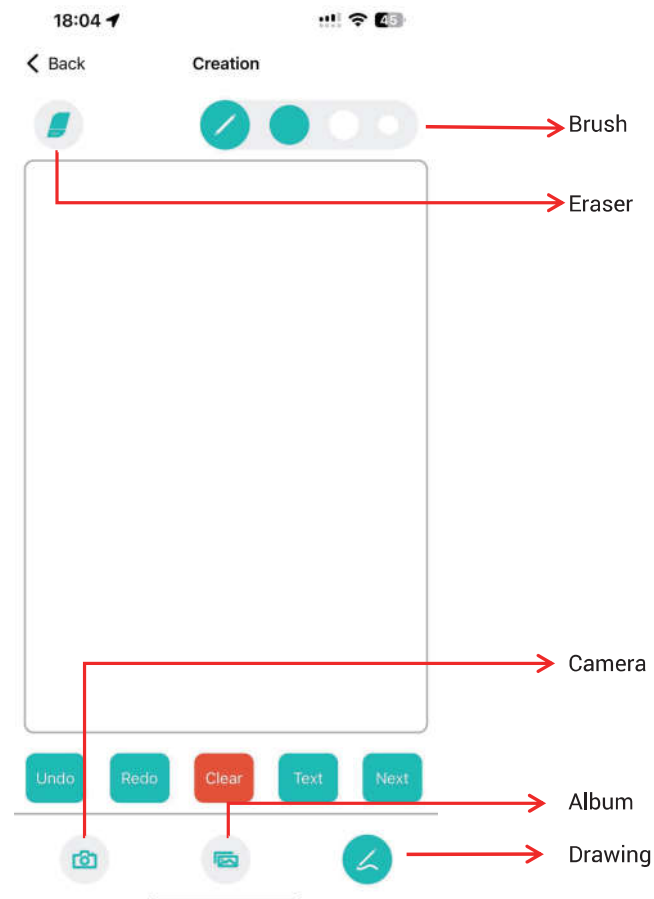
Control Function Introductions

Click the Control button to enter the Control page and check the functions below.

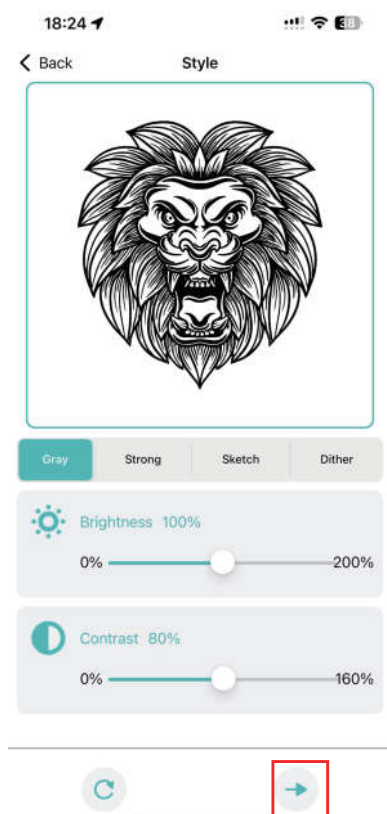


Creation Function Introductions

(1) Go back to the homepage and click on "Creation" to enter the Creation page.



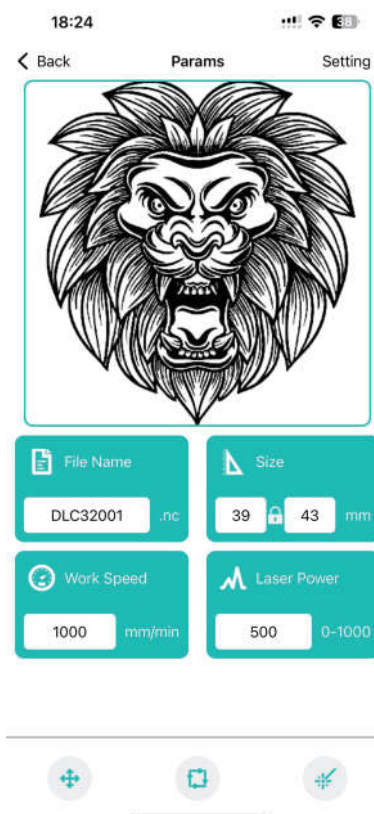
(3) Beautify the image with the functions below. Click on the right-pointing arrow to move to the parameter setting page after beautifying the image.



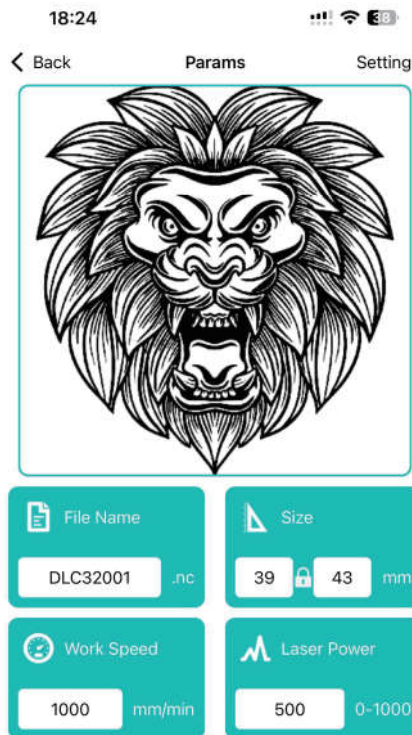
(2) Click on the Camera/Album/Drawing icon to import an image.



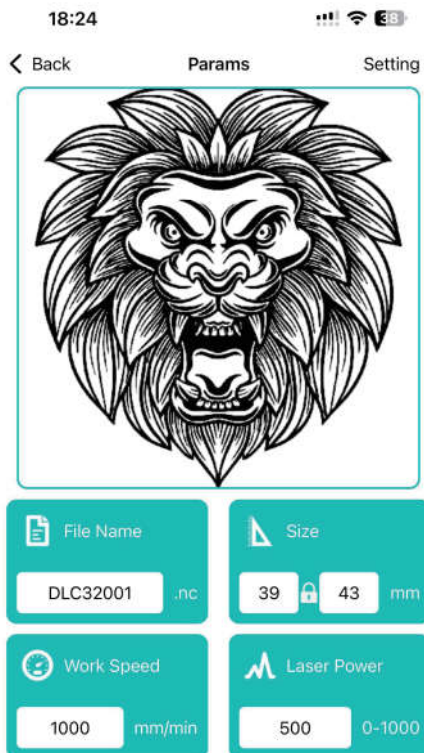
(4) Set the file name, size, work speed and laser power.



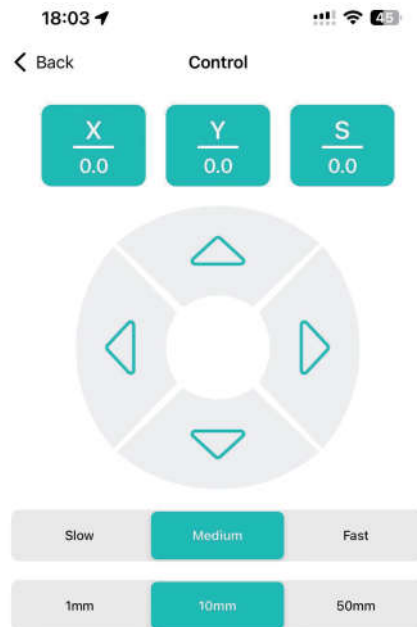
(5) Click on the cross-pointed arrow and move the laser head to the desired starting point.



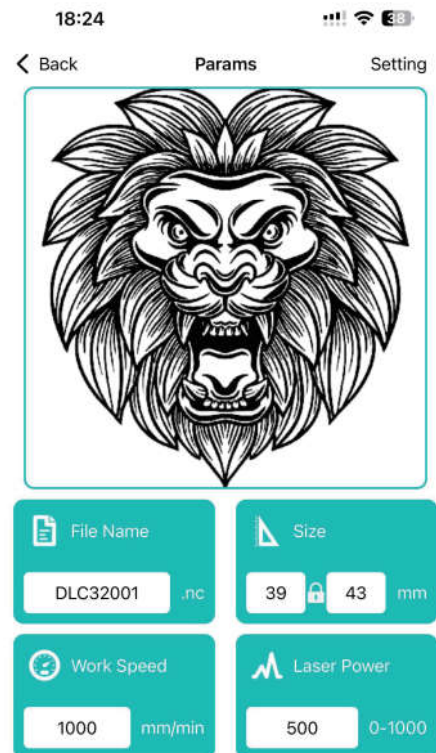
(7) Go back to the parameter setting page and click on the framing icon to check the engraving area.



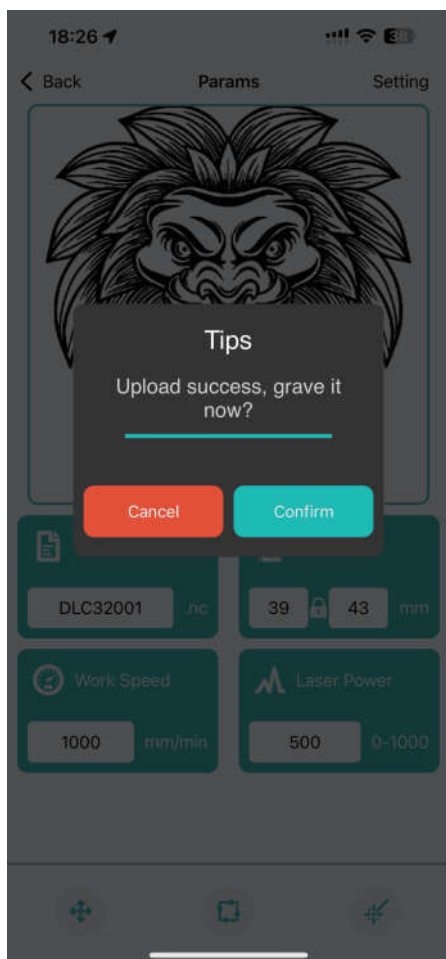
(6) Click on the location icon to position it.



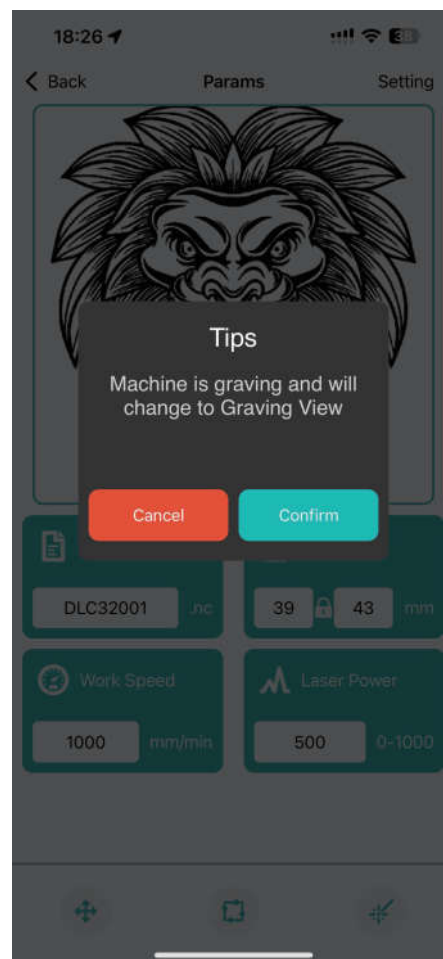
(8) Click on the engraving icon to upload the engraving file and start engraving.



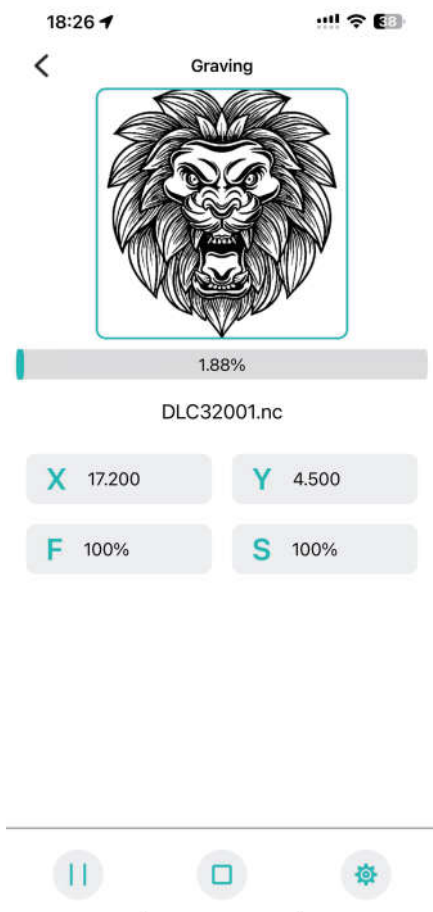
(9) Click on "Confirm."



(10) Click on "Confirm."



(11) Enter the engraving page.



For detailed usage of the MKSLaser app, please refer to the information in the TF card or download the user manual by visiting the link below or scanning the QR code below.

<https://mecpow.com/pages/download-center>



Help Center

FAQs

Installation

Download Center

Download Center

User Manual +

Driver Files +

Firmware Download +

APP User Manual -

[MKSLaser APP Instructions for Mecpow Laser Engravers](#)

11. Recommended Operating Parameters

X3S (7W)				
Mode	Materials	Power (%)	Speed (mm/min)	Note
Engraving	Wood Board	70	2000	
	Bamboo	70	2000	
	Leather	80	2000	
	Cardboard	70	2500	
	Black Acrylic	70	2000	
	Anodized Metal	80	1500	
	Fabric	60	2000	
Cutting	2mm Poplar Board	100	200	1 Pass
	3mm Poplar Board	100	150	1 Pass
	Cardboard	100	300	
	Leather	100	300	
	Fabric	100	700	
	3mm Black Acrylic	100	100	3 Pass

X3S (12W)				
Mode	Materials	Power (%)	Speed (mm/min)	Note
Engraving	Wood Board	50	3000	
	Bamboo	50	3000	
	Leather	60	3500	
	Cardboard	50	3500	
	Black Acrylic	50	4000	
	Anodized Metal	60	3000	
	Fabric	40	4000	

X3S (12W)				
Mode	Materials	Power (%)	Speed (mm/min)	Note
Cutting	6mm Basswood	100	130	1 Pass
	8mm Basswood	100	100	1 Pass
	10mm Basswood	100	90	1 Pass
	12mm Basswood	100	100	2 Pass
	15mm Basswood	100	100	3 Pass
	3mm Poplar Board	100	300	1 Pass
	6mm Poplar Board	100	100	2 Pass
	7mm Poplar Board	100	50	2 Pass
	Cardboard	100	400	
	Leather	100	600	
	Fabric	100	1000	
	3mm Black Acrylic	100	100	1 Pass
	10mm Black Acrylic	100	100	4 Pass
Note: 1. All 12W cutting data were obtained with the laser connected to an air pump. 2. The above engraving power and speed are for reference only; the actual values shall prevail.				

12 . Troubleshooting

1. Why does the X3S laser engraver show no response after powering on?

Cause: Not powered on

Solution: Inspect the socket, switch, and machine's power socket to ensure proper connection and normal power supply.

2. Why can't the machine connect to the computer?

Causes:

a: USB cable not connected

b: Driver not installed correctly

c: Other exceptional circumstances

Solutions:

a: Verify both ends of the USB cable are securely inserted into the computer and machine interfaces. Note that front-panel USB ports on some desktop computers may be non-functional; connect to rear ports instead.

b: Complete driver installation following the operating instructions. If the computer recognizes the device as a serial port post-installation, this indicates successful hardware connection.

c: Disconnect the USB cable and power supply. Allow the device to remain completely powered off for 5 seconds before reconnecting.

3. Why does the mobile app show no response when connecting to the machine?

Causes:

a: Incorrect Wi-Fi connection

b: Compatibility issues

Solutions:

a: Check if the IP address is correct: 192.168.4.1, and re-verify the Wi-Fi connection; refer to the app user manual for details.

b: For newly released phones or after system upgrades, if connectivity issues arise due to compatibility problems, contact our customer service. Providing a screenshot of your phone's configuration will facilitate prompt technical support.

4. Why is the engraving effect faint or absent?

Causes:

- a: Incorrect focus
- b: Insufficient engraving depth
- c: Image speed
- d: Object placement

Solutions:

- a: Consult the user manual to achieve precise focus.
- b: Caused by excessive speed or insufficient burn time. Refer to the engraving parameters section in the manual to readjust settings.
- c: Imported images must be clear. Excessively fine lines or faint colors directly impair engraving quality.
- d: The engraving object is positioned at an angle. As the laser's focal length is fixed, the object must be placed flat and parallel to the machine body. Otherwise, the focal length becomes inaccurate, leading to abnormal engraving results.

For more questions and answers, please refer to the link below or scan the QR code below.

<https://mecpow.com/pages/faq>



13. Compliance Statement



This product is in compliance with the standards of the European Community.



This symbol indicates that the product is capable of being recycled.



This symbol indicates that the product should not be disposed of as household waste. The product must be sent to separate collection facilities for recovery and recycling of electrical and electronic equipment.

FCC Statement

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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

This device 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.

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