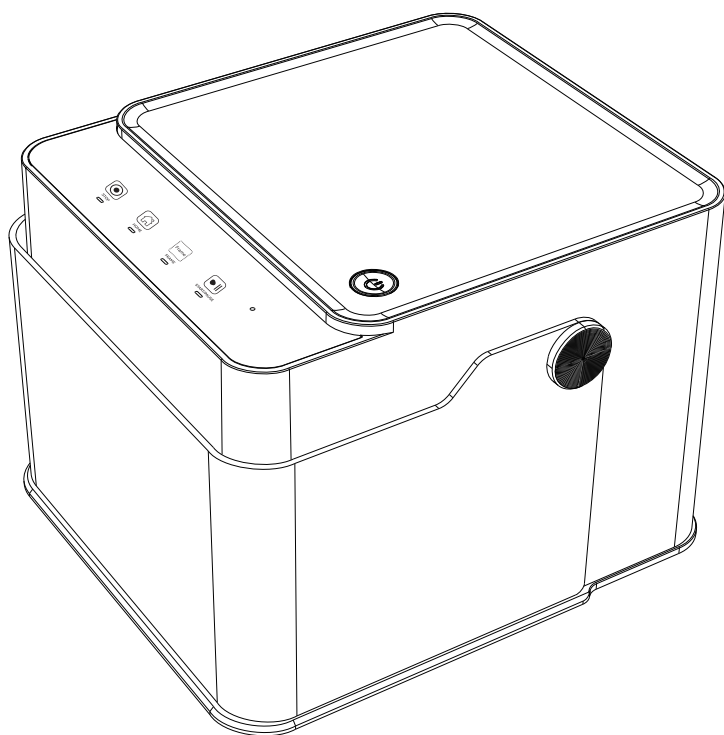




M1

Laser Engraver



User Manual

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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

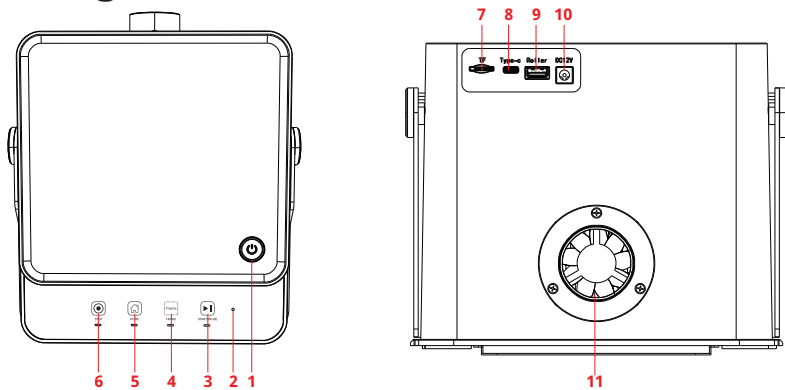
Safety Instructions

1. Before using the Mecpow M1, please ensure that the protective cover is closed and the laser reflector is clean.
2. The M1 complies with Class 1 laser safety standards. Before starting laser engraving, check that the protective cover is intact and not damaged. If any damage is found, stop using the device.
3. During operation, ensure that the laser remains within the protective cover. When processing objects with the Mecpow M1, always cover the work area with the protective cover and wear eye protection for safety.
4. It is important to avoid moving the device while laser engraving to prevent any self-protection measures from causing the device to stop working. This can also affect the final result of the engraving work by disrupting the engraving process. If you need to move the device or the object being engraved, it is recommended to do so before or after the engraving process. It is crucial to avoid moving the device or objects during laser operation.
5. Minors should always be supervised and assisted by an adult when operating this product.
6. When cutting or engraving flammable materials at low speed and high power, there is a risk of flames occurring. If flames are detected, it is important to stop the processing immediately.
7. When the device is powered on, it is essential to avoid disassembling any parts of the machine body to prevent accidental contact with the power supply. Additionally, do not touch any electronic components with your hands or tools.
8. If you encounter any of the following situations, please stop using the product immediately and turn off the power:
 - A burnt smell coming from the machine
 - An open flame generated from the engraving material
 - Damage to the internal components of the product
 - Unexpected stoppage of the product
 - Abnormal noise or light that has never occurred before
9. Please use caution when using controls or making adjustments, as performing procedures not specified may result in hazardous radiation exposure.

Maintenance

1. To maintain optimal performance, regularly clean the lens of the machine with a dust-free cloth or paper dampened with alcohol.
2. Be cautious when using or storing the machine to prevent foreign objects from entering the top vents and interfering with its operation.

3. Diagram



Introductions and Functions

Parts	Names	Functions
1	Power Button	Turn the power on/off.
2	Indicator	Indicate machine status: White: Standby Blue: Running Red: Alarm Green: Wi-Fi Connected
3	START/PAUSE Button	(1) Click it to start engraving/cutting before the machine works. (2) During operation: First click: Pause the machine. Second click: Continue engraving/cutting. (3) In standby status: Click it to repeat engraving the latest file transferred to the TF card (excluding MKSLaser mobile DLC files).
4	FRAME Button	Start framing the working area of the laser.
5	HOME Button	Return to origin.
6	STOP Button	Stop engraving/framing.
7	TF Port	Insert the TF card to read files.
8	Type-C Port	For connection to a computer
9	Rotary Roller Port	Insert the roller cable to connect the rotary roller.
10	DC Input Port	Plug in the power adapter for power.
11	Exhaust Fan	For removal of fumes and smoke during engraving or cutting

Indicator

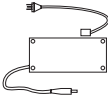
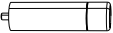
Press these four buttons, and the white light comes on.		A. STOP
		B. HOME
		C. FRAME
		D. START/PAUSE
Indicator	Indicator Status	A. Machine Startup and Standby: Solid white
		B. Engraving Status: Solid blue
		C. Protective Cover Opened/Machine Tilted ($\geq 15^\circ$): Flashing red light (with 3 alarm sounds)
		D. WiFi Connected: Solid green

4. Specifications

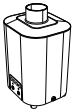
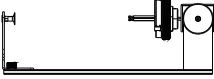
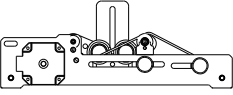
Model	M1	
Product Size	220 x 264 x 194 mm	
Electrical Power	60W	
Input of Laser	DC 12V 5A	
Laser Power	3.5W	
Wavelength	455±5nm	
Engraving Area	100 x 100 mm	
Max. Engraving Speed	10000 mm/min	
Engraving Accuracy	0.01 mm	
Height of Engraved Objects	<4.5 cm	
Materials for Laser Engraving	Wood, plastic, leather, cardboard, stone, ceramic, coated metal, bamboo, etc.	
Software Support	LaserGRBL, LightBurn, MKSLaser	
System Support	Windows, macOS, Android, iOS	
File Format Support	JPEG, BMP, JPG, GIF, PLT, PNG, DXF, HPGL, NC, etc.	
Method of Data Transmission	Wired Connection: USB Port	
	Wireless Connection: WiFi	
Tilt Alarm	15±5°	

5. Package List

Accessories

 Power Cable *1	 User Manual *1	 Power Adapter *1	 Googles *1	 Screwdriver *1	 Wood Board *2
 2.5mm Hex Key *1	 Laser Module *1	 Engraving Area Positioning Plate *1	 Marker Pen *1	 Card Reader *1	 TF Card *1 Machine Maximum Capacity Support: 16G
 Flange *1	 Aluminium Plate *5	 M3x7 *3	 Wrench *1	 Roller Cable *1	 Riser Column*4

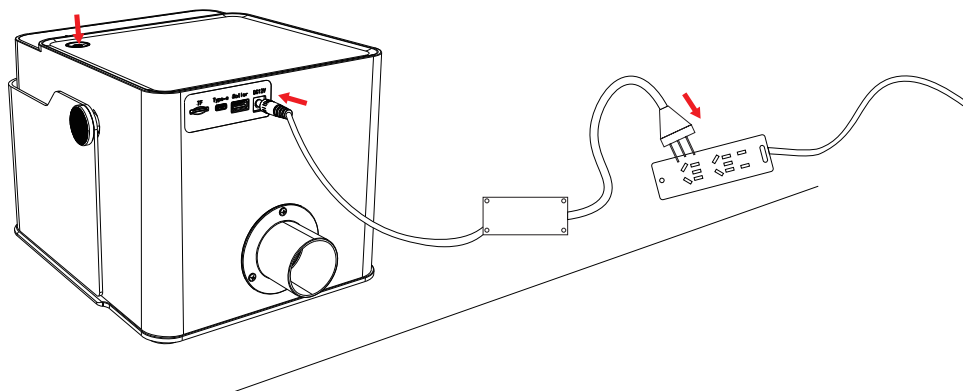
Optional Accessories

 1064nm 1.2W Infrared Laser Module (Suitable for Engraving Metals)	 Fume Extractor	 Rotary Roller Module (G5)	 Rotary Roller Module (G3 Pro)
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6. Instructions for Use

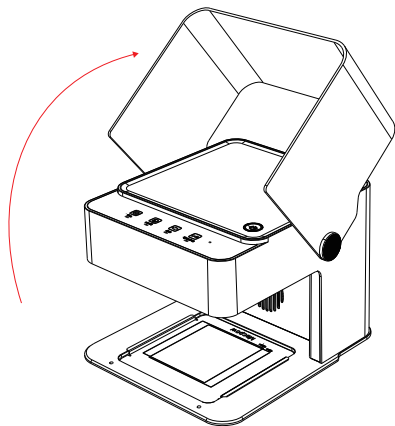
1. Power the Machine

- (1) Insert the power adapter into the socket.
- (2) Connect the 12V DC power cable to the power port.
- (3) Press the power button to start the machine. The indicator light will turn white. (As shown in the figure below.)



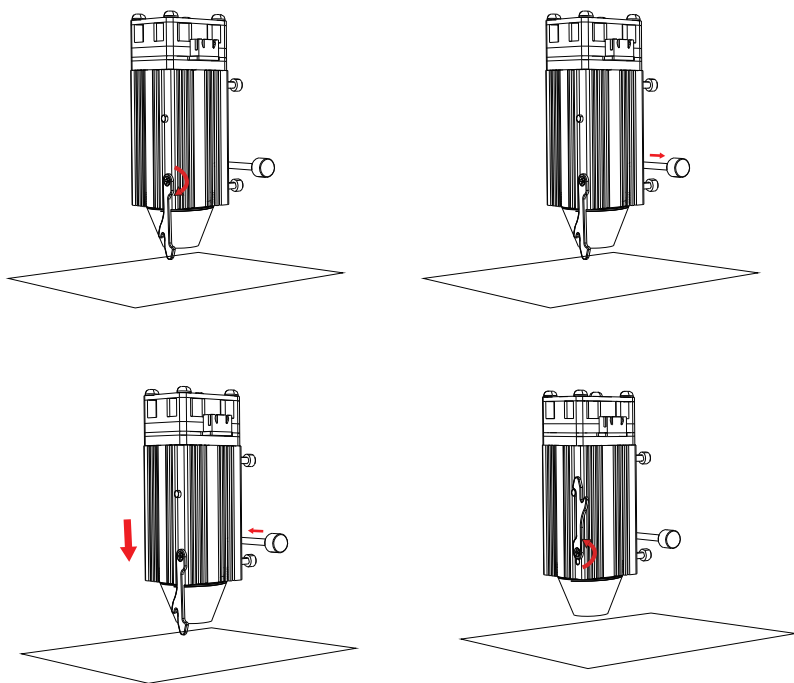
2. Place Material

- (1) Lift the protective cover.
- (2) Place the engraving/cutting material on the working area.

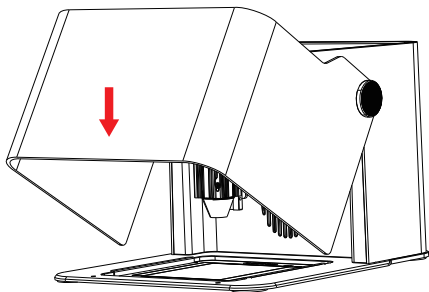


3. Adjust Laser Focus (As Shown In The Figure Below)

- (1) Pull the focusing lever downward.
- (2) Loosen the handle screw.
- (3) Adjust the laser module height until the focusing lever contacts the material surface, and tighten the handle screw.
- (4) Return the focusing lever to its original position.



4. Close the protective cover, and press the HOME button to make the laser module return to origin.



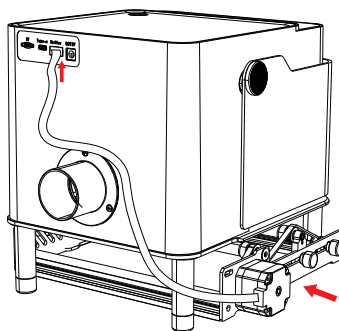
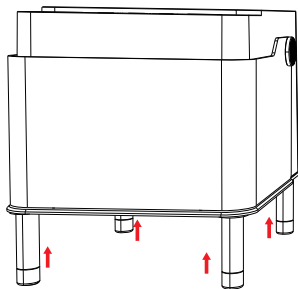
5. Start Engraving/Cutting (Compatible with MKSLaser (APP), LightBurn, and LaserGRBL)

Note: The protective cover must be closed for operation. Otherwise, operation will not proceed. During engraving or cutting, opening the protective cover will interrupt the process.

6. Adjust the Machine Height

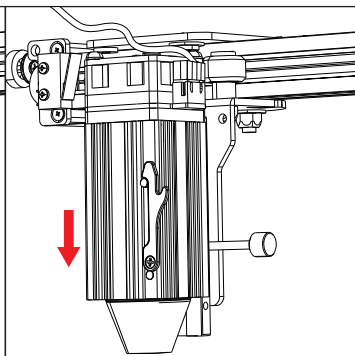
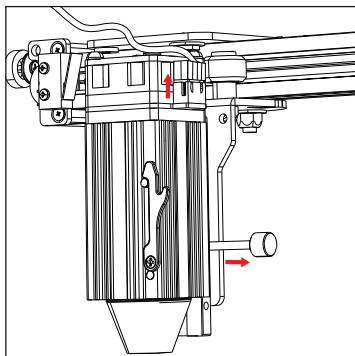
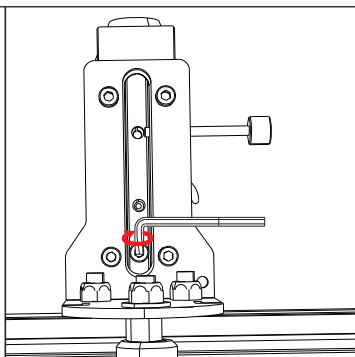
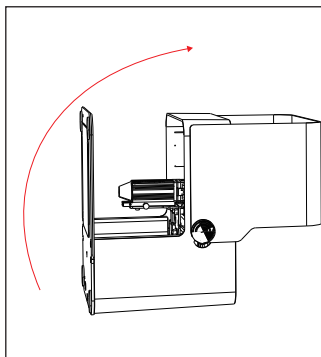
(For rotary roller module applications or engraving thick materials)

- (1) Align four riser columns with the screw holes on the machine base.
- (2) Tighten them to secure them in place.
- (3) Place the rotary roller at the bottom of the machine.
- (4) Insert the USB end of the roller cable into the rotary roller port on the rear of the machine, and connect the other end to the rotary roller.



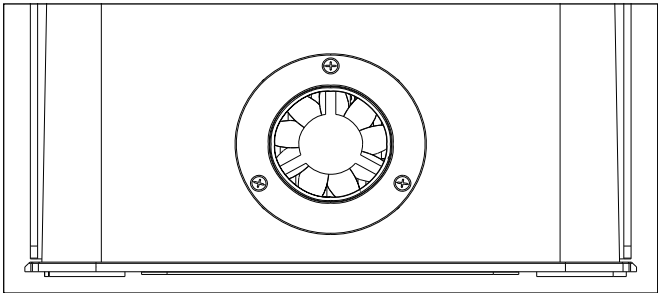
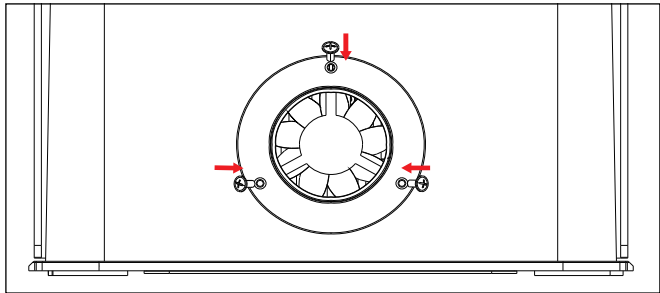
7. Replace the Laser Module

- (1) Tilt the machine base upward.
- (2) Remove the rear screw by using the 2.5mm hex key.
- (3) Loosen the left-side screw and unplug the laser power cable.
- (4) Slide the laser module downward and remove it.



8. Install the Flange

Align the flange with the rear fan screw holes and secure it with three M3×7 screws.



7. Driver

Download Methods

Before installing the driver, power on the machine and connect it to your PC via a USB cable.

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.

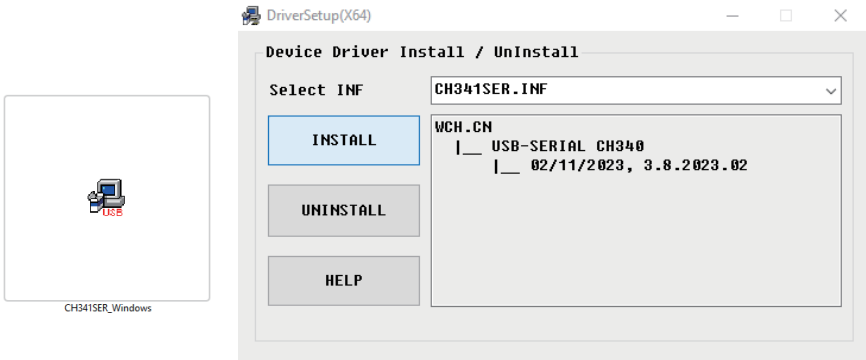
Note:

- For Windows users, if you're using a system below Win10, you'll need to install the driver manually. If you're using the Win10 system or above, there is no need to install the driver.
- 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.



CH34X_DRV_INSTALL_INSTRUCTIONS



CH34xVCPDriver.dmg



CH34xVCPDriver.pkg

For Linux Users:

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



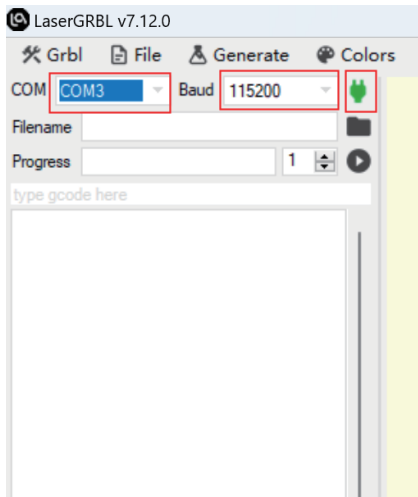
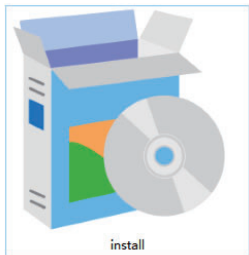
8. Control via Computer Software

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.

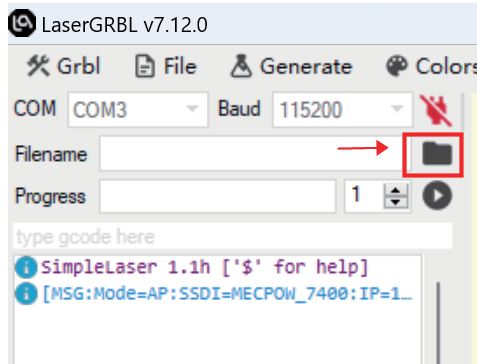
LaserGRBL

It's a free open-source software that supports Windows computers. Download it from: <http://lasergrbl.com/download/>

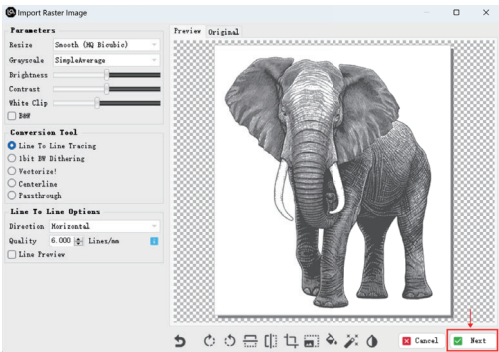
- 1. Install it.
- 2. Open the software. Select "COM3" and "115200", then click "Connect".



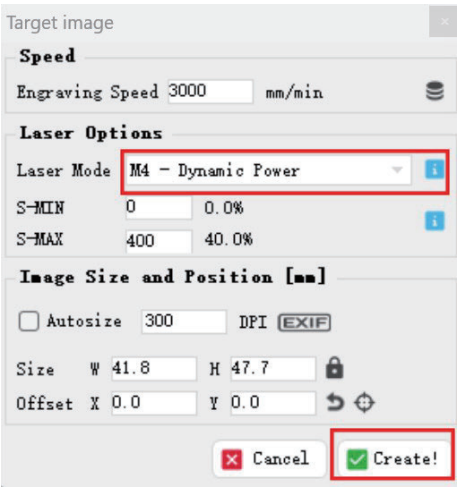
3. Click "Open File" to select the engraving file.



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



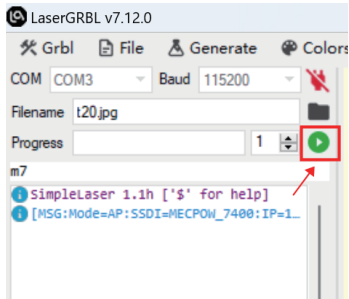
5. Select the operating parameters for laser engraving or cutting. (M3 is for constant power carving, and M4 is for variable power. Please check section 10 for recommended operating parameters for engraving or cutting different materials.)



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



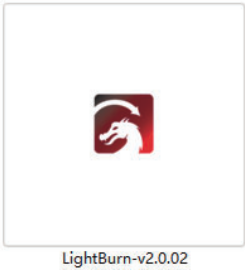
7. Click "Run Program" to start engraving



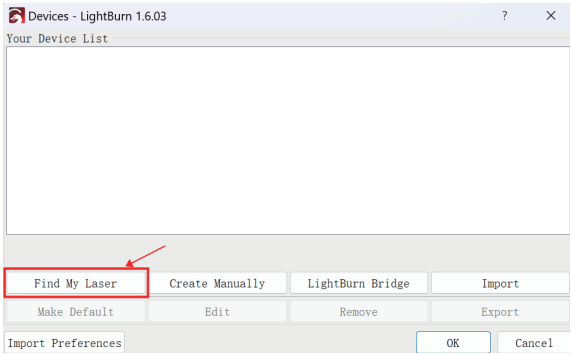
LightBurn

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

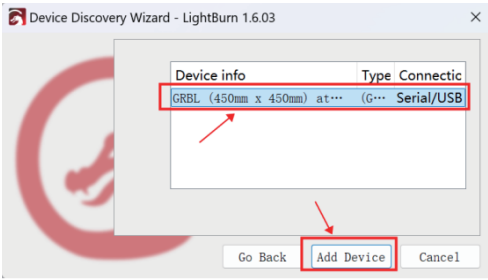
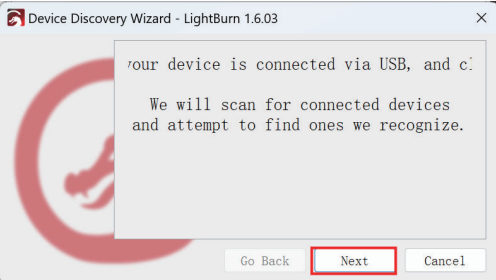
1.Install it.



2. Open the software and click “Find My Laser”.



3. Select your device and click “Add Device”.

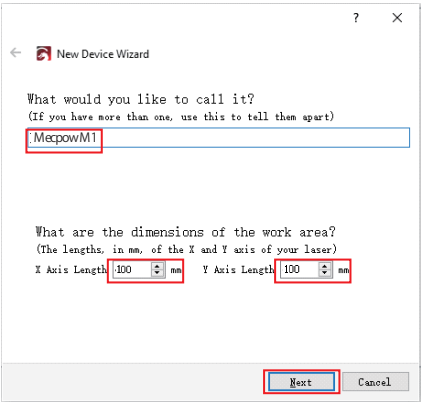


4. Name your device and enter the X-axis and Y-axis lengths, then click “Next”.

Name: Mecpow M1

X Axis Length: 100mm

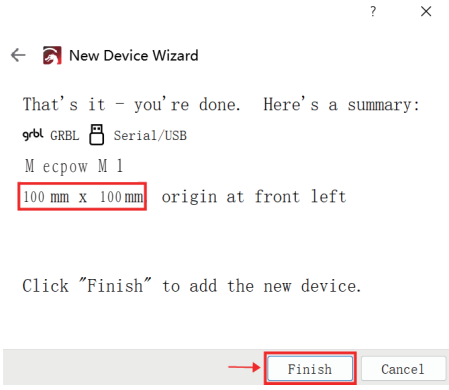
Y-Axis Length: 100mm



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

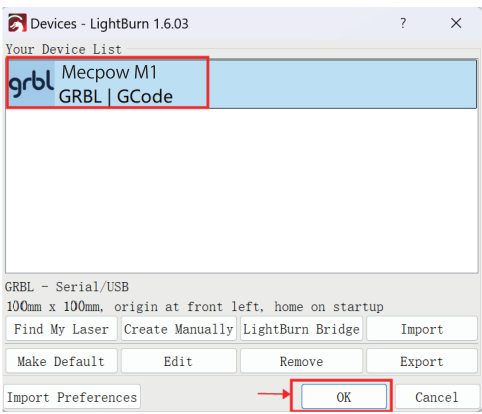


6. Click "Finish".

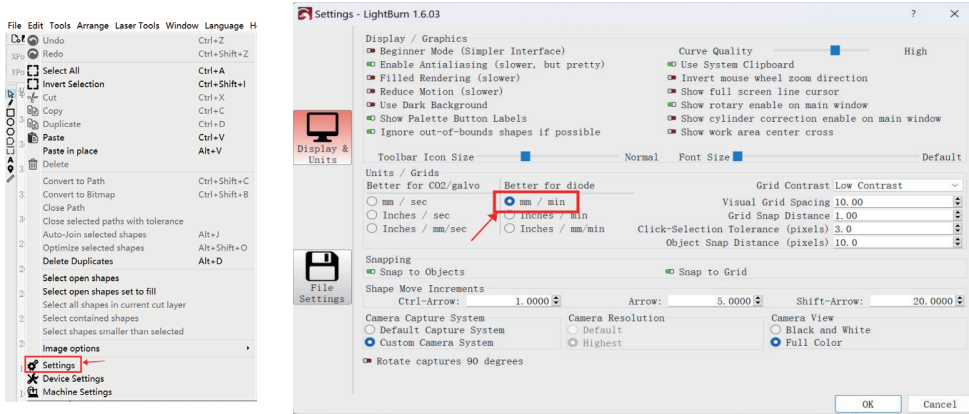


Click "Finish" to add the new device.

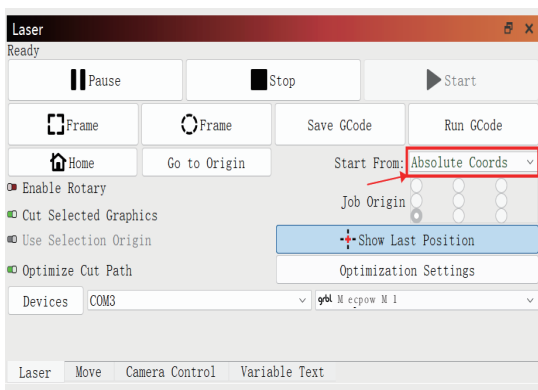
7. Select Mecpow M1 and click "OK".



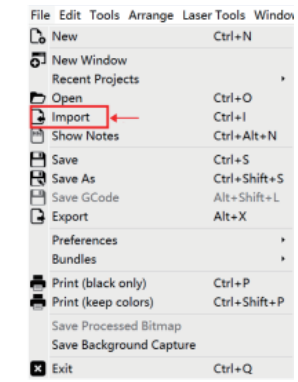
8. Click "Edit" - "Settings" and set the unit to "mm/min", then click "OK".



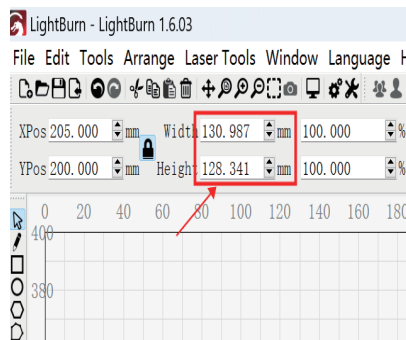
9. Select "Absolute Coords" in the "Start From" section, and then select the circle in the lower left corner in the "Job Origin" section.



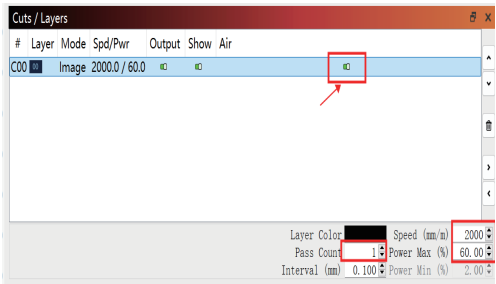
10. Click "File" - "Import" to import the engraving file.



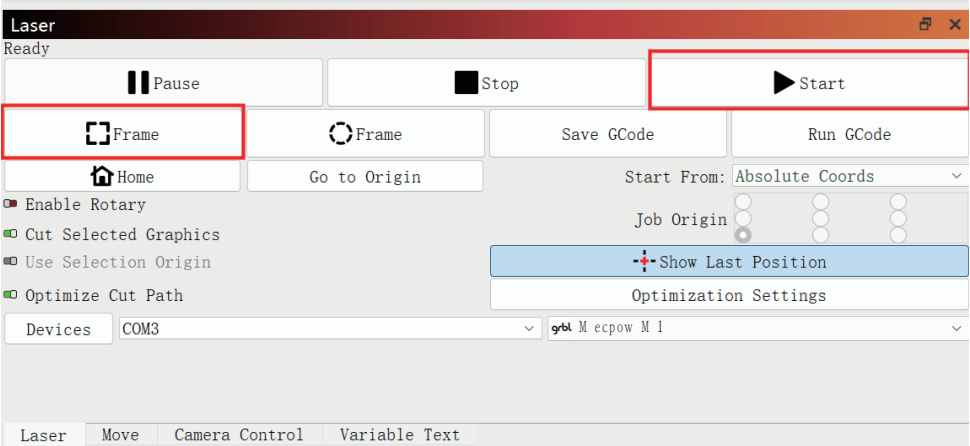
11. You can modify the engraving size on the top of the interface after importing the file.



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.



9. Control via Mobile App & TF Card

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

App Download

Scan the QR code and download it.



iOS



Android

Wi-Fi Connection

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

Wi-Fi Name: Mecpow_*****

Wi-Fi Password: 12345678

Note:

- The "*****" in the Wi-Fi name is a random combination of numbers. It varies by machine.
- 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.
- 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.

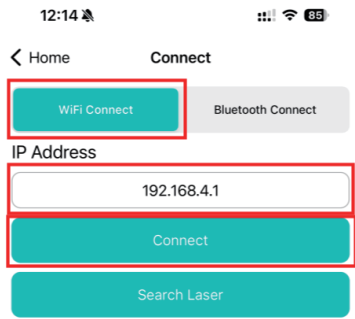
2. Open the MKSLaser app.



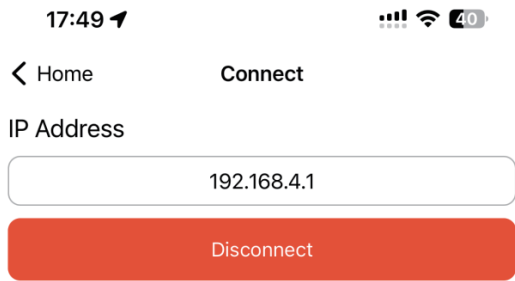
3. Click on the  icon.



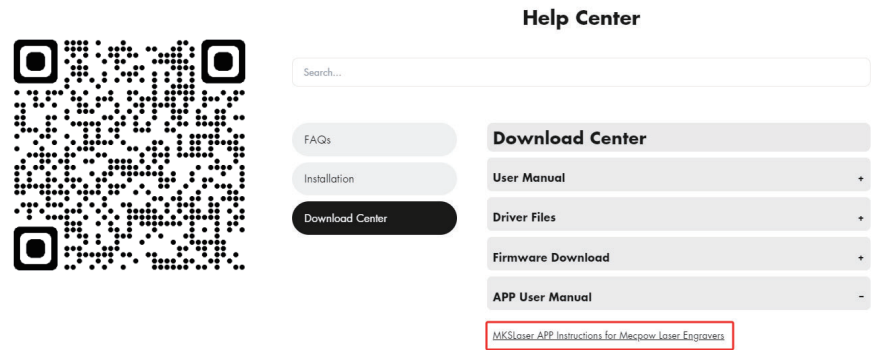
4. Select "WiFi Connect", enter IP Address "192.168.4.1", and click "Connect".



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



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>



Control via TF Card

Prepare a LightBurn G-code file for engraving or cutting and save it in the root directory of the TF card. Insert the TF card into the laser engraver.
Note:

- The TF card only supports the FAT32 format.
- The laser engraver reads the latest modified file in the root directory of the TF card by default when there is more than one file in it.
- The engraver can only recognize NC and GC files with English names.
- The engraver can recognize NC and GC files saved with LightBurn. However, NC and GC files saved with LaserGRBL can only be recognized by the engraver after being converted with MKSLaser. MKSLaser can be obtained from the attached TF card or Mecpow.com.

10. Recommended Operating Parameters

Mecpow M1 (3.5W)				
Mode	Materials	Power (%)	Speed (mm/min)	Note
Engraving	Wood Board	100	2000	
	Bamboo	100	2000	
	Solid Wood	100	2000	
	Leather	100	1600	
	Glass	100	600	The surface must be frosted.
	Ceramics	100	600	
	Stainless Steel	100	40	The surface must be frosted, not glossy.
	Anodized Metal	100	600	
	Fabric	60	3500	
	Acrylic	100	1000	The surface needs to be painted.

Mecpow M1 (5W)				
Mode	Materials	Power (%)	Speed (mm/min)	Note
Engraving	Wood Board	100	3000	
	Bamboo	100	3000	
	Solid Wood	100	3000	
	Leather	100	2000	
	Glass	100	800	The surface must be frosted.
	Ceramics	100	800	
	Stainless Steel	100	300	The surface must be frosted, not glossy.
	Anodized Metal	100	800	
	Fabric	40	5000	
	Acrylic	100	1500	The surface needs to be painted.
Cutting	2mm Thick Board	100	70	
	3mm Thick Board	100	120	
	Cardboard	100	1300	
	Leather	100	100	
	Fabric	100	1500	

11. Troubleshooting

1. Why can't the M1 laser engraver power on?

Causes:

- a. The M1 laser engraver may not be properly connected to the input port.
- b. The plug could be loose.
- c. The power adapter might be damaged.

Solutions:

- a. Check that the power cable is securely connected and that you're using the official adapter.
- b. Test alternative outlets. If the issue persists, we recommend contacting technical support.
- c. Purchase a new power adapter.

2. Can't the machine connect to Wi-Fi?

Causes:

- a. Weak or unstable Wi-Fi signal
- b. Incorrect Wi-Fi password
- c. Incorrect IP address input

Solutions:

- a. Make sure the machine is connected to the network.
- b. Ensure the password is entered correctly (capital letters matter).
- c. Try accessing 192.168.4.1 in your browser.

3. Why is my computer software unable to connect to the machine?

Causes:

- a. Select the incorrect port.
- b. Use Windows 7/8 without the proper drivers.

Solutions:

- a. Try switching the COM port.
- b. Install the appropriate driver if you're using Windows 7/8.

4. Why does my laser engraving look blurry?

Causes:

- a. Incorrect focal length
- b. Unsuitable material for engraving/cutting
- c. Incorrect power or speed settings

Solutions:

- a. Adjust the focal length of the laser module via the focusing lever until the beam achieves minimal dot size.
- b. Ensure the material is appropriate for engraving/cutting.
- c. Adjust power, speed, or other parameters accordingly.

5. What should I do if the lens is damaged?.

Causes:

- a. Lens not cleaned regularly, causing dust buildup
- b. Lens assembly damage from external force

Solutions:

- a. Regularly clean the lens with alcohol swabs (recommended after every 20 hours of cumulative use) to prevent dust buildup affecting laser output.
- b. If the lens assembly is damaged, you can replace it as needed or contact Mecpow's manufacturer to purchase replacement components.

12. 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 Caution:

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.

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

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.

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna.