AtomStack Studio PC Software Manual

catalogue

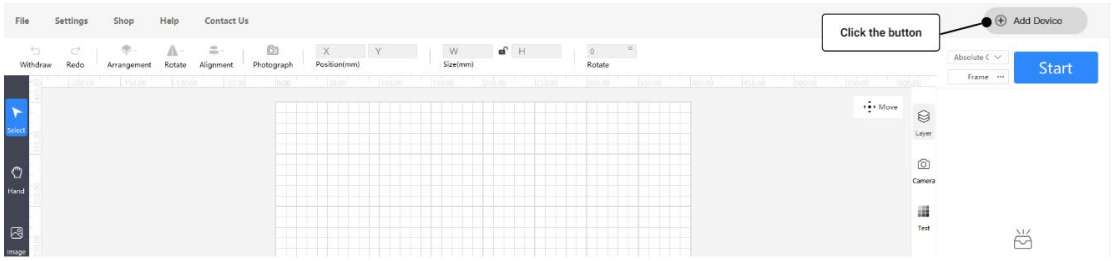
1. Download and install AtomStack Studio

（1）You can download the AtomStack Studio software for your PC operating system (system support: macOS 10.14 or later, Windows7 or later) from www.atomstack.com.

（2）After the download is complete, find the file in the folder where the software was downloaded. On either Windows or Mac, you can simply double-click the downloaded file to easily complete the installation process.

2. Connect and control devices via USB

（1）Open the AtomStack software and click the "Add Device" button in the upper right corner of the main interface.



（2）Connect the device to the computer using the USB cable that comes with the device and click the Next button.

If you cannot connect, please check the following:

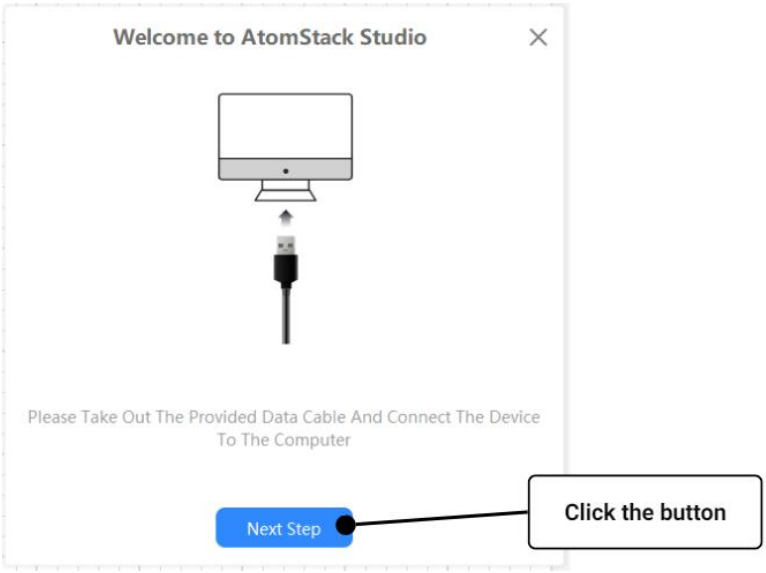
a. Please check whether the serial port of the device and the computer is working properly. You can try to replace the serial port of the computer and retry.

b. Other software (e.g., LightBurn) is being used to connect to the current device. Please close other similar software.

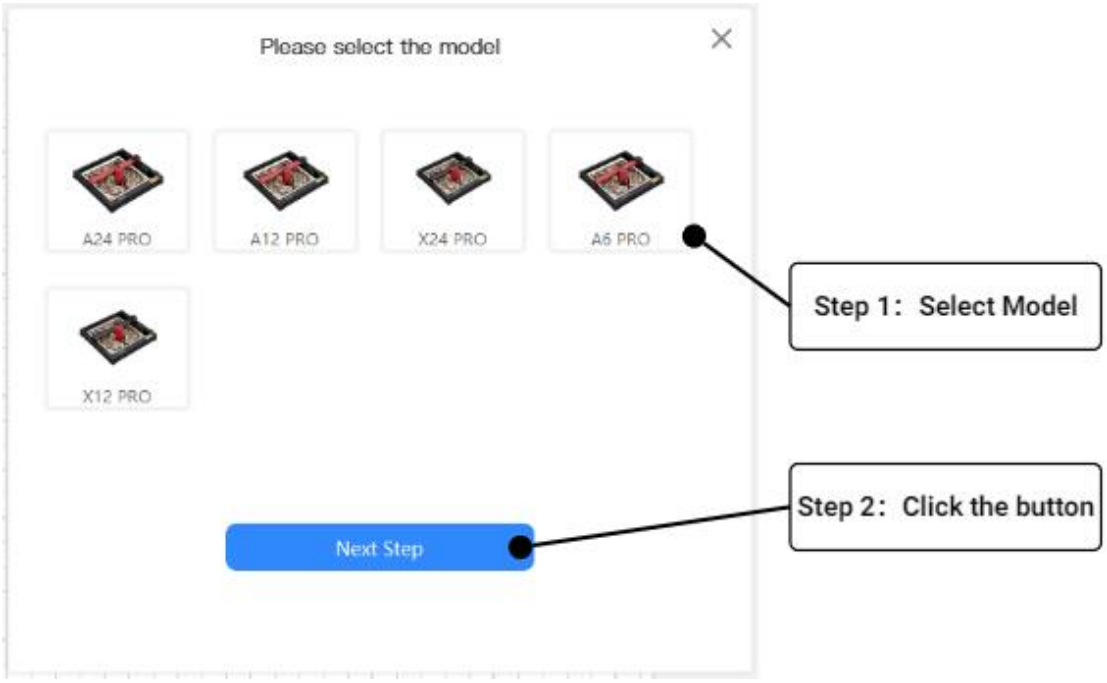
c. The computer USB driver is too old. Please update it:

Windows driver download address: https://asa.atomstack.com/downloadWindowsDrivers.do3

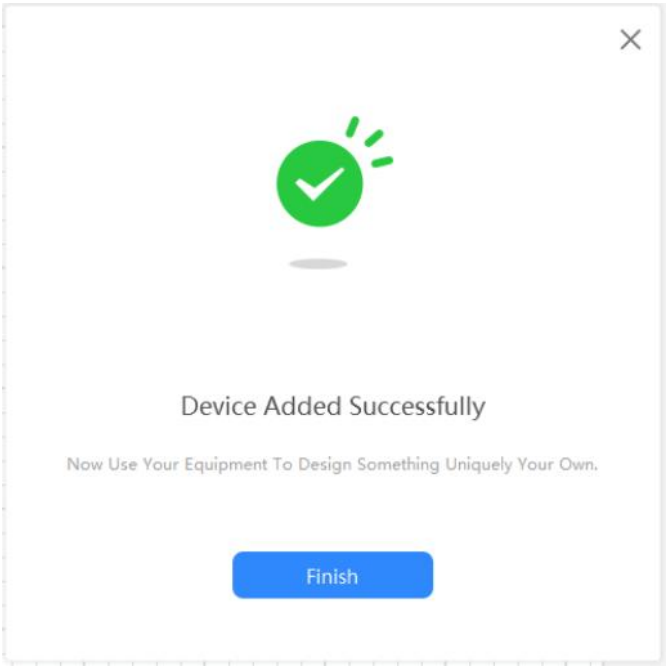
Mac driver download address: https://asa.atomstack.com/downloadMacDrivers.do3



（3）Please select the corresponding model in the interface and click the "Next" button.

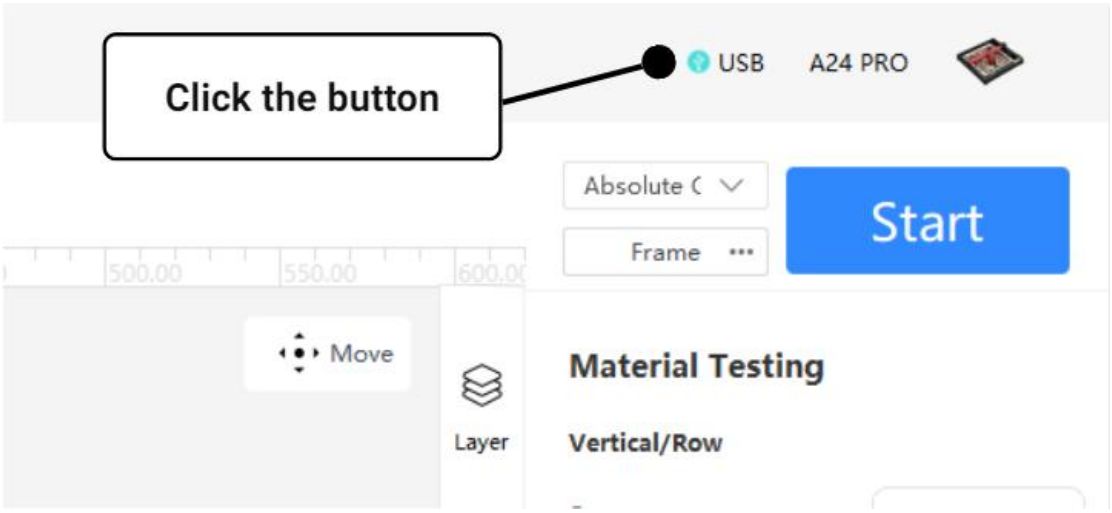


（4）The device has been added. Now start your design.

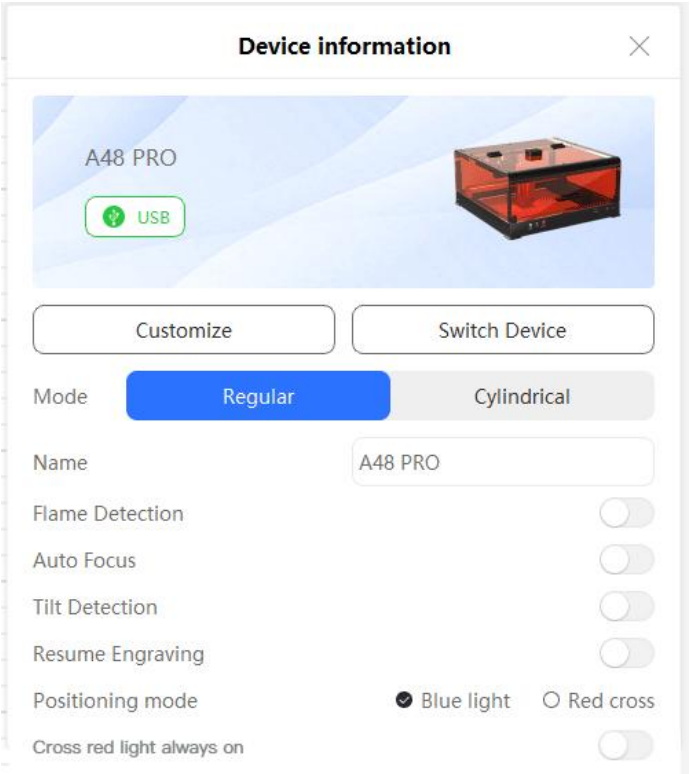


3. Equipment setup

（1）After connecting the device, click the device connection information in the upper right corner of the software home page to open the device Settings interface.

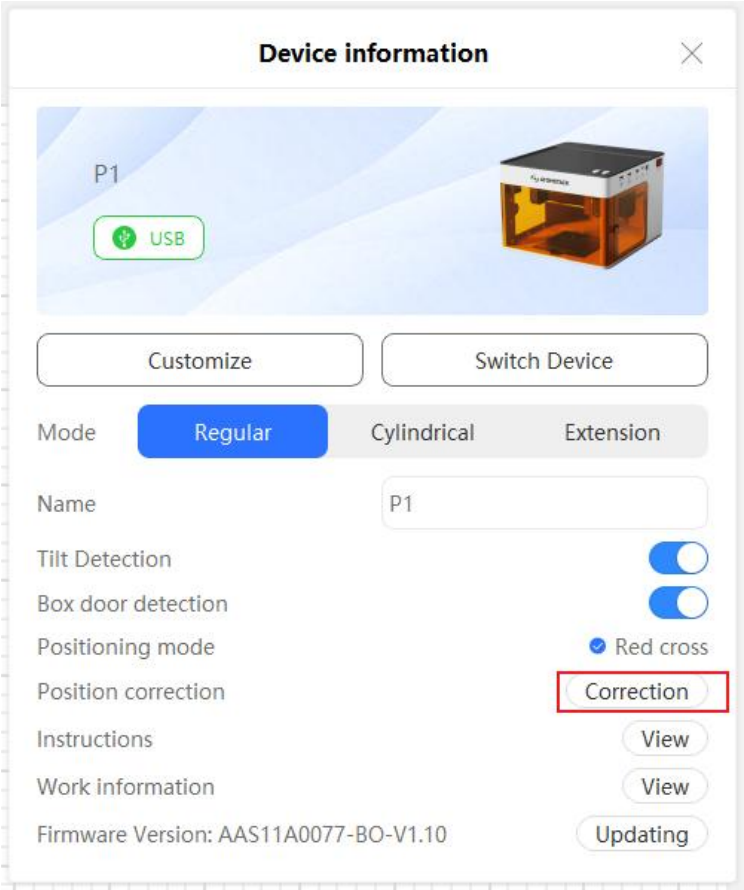


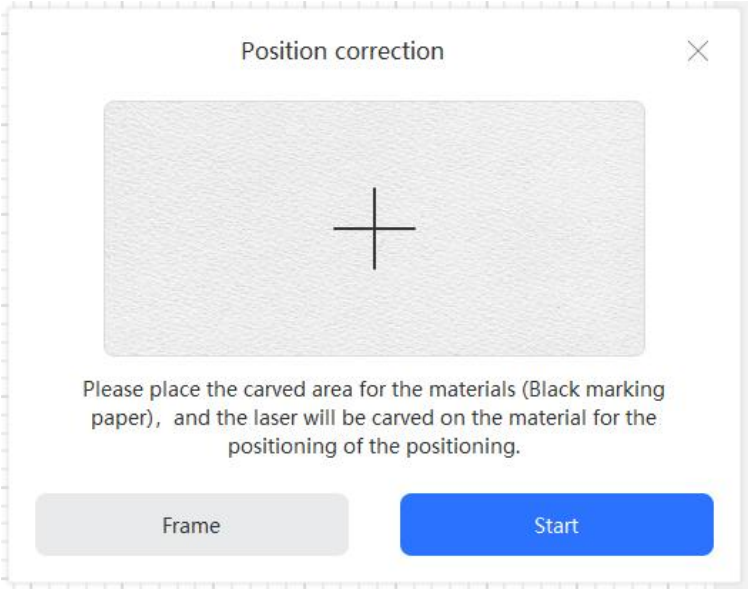
（2）In the interface, you can set up the device as needed.

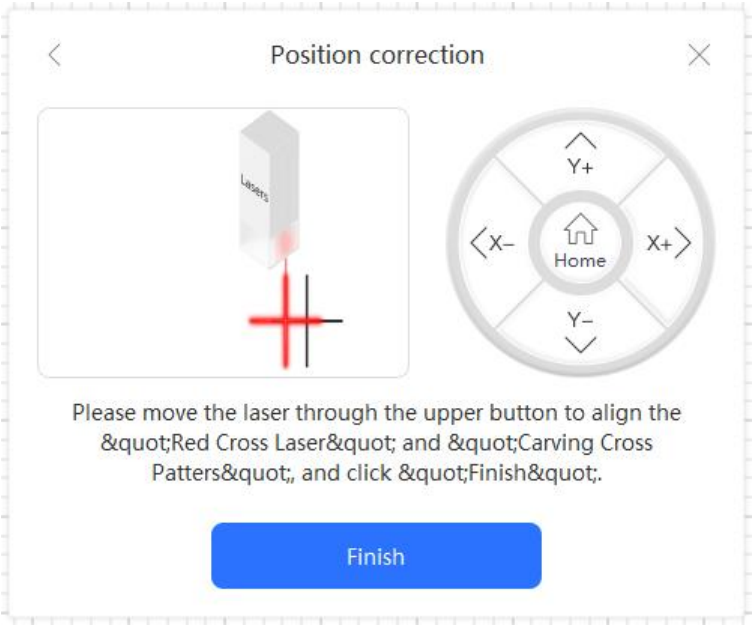


- Name: Set a new name for the device.
- Flame detection: When enabled, this function is triggered when a fire occurs directly below the laser.
- Automatic focus function of laser module: After activation, click the start button, the machine will automatically focus and start carving work only after successful focus.
- Tilt detection function: When enabled, if the machine is angled at 15°-20° from the horizontal plane, the function will be automatically triggered to stop the machine and start the buzzer alarm. Click "OK" on the device screen to cancel the alarm. (If available)
- Power failure continuation: When enabled, the machine can continue to complete the carving work after being stopped due to power failure. (If supported)
- Customization: The laser and extension shaft of the device can be customized. The recommended carving parameters and canvas size will be changed according to the updated hardware of the device.
- Red Cross Calibration: When your Red Cross laser experiences misalignment, use the "Position Calibration" feature in the device settings menu to adjust its alignment (recommended to use black label paper). When you click the "Start"

button, the laser head will engrave a cross on the material. If the laser's red cross doesn't align with the engraved cross after carving, move the laser's red cross using the up/down left/right buttons on the interface until they overlap, then click "Complete".

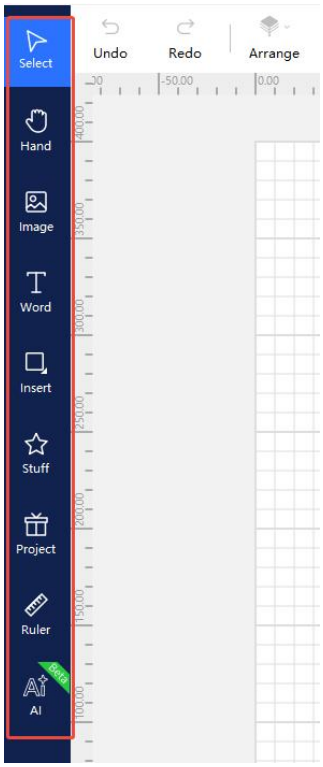




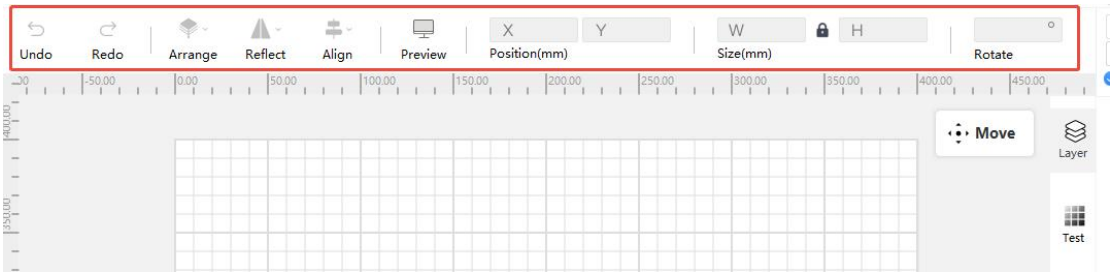


4. item design

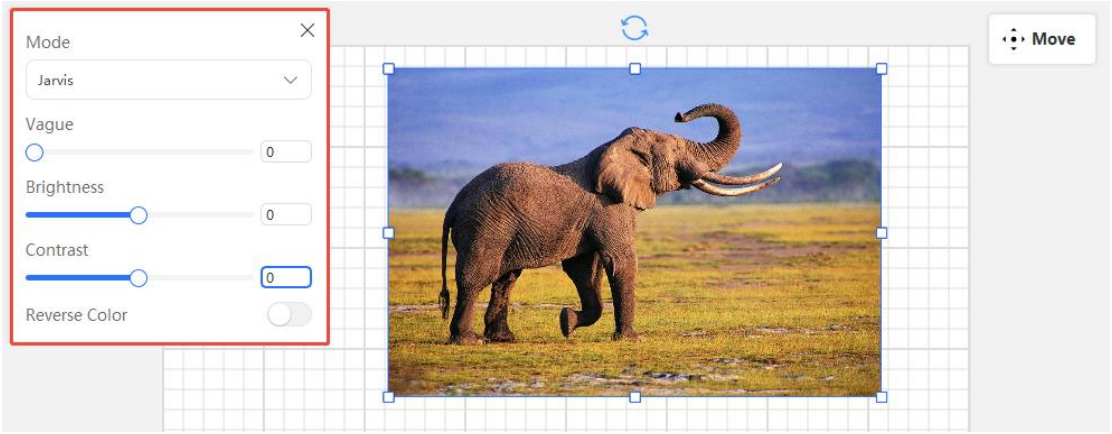
(1) You can use the design toolbar on the left side of the canvas to create designs, including inserting pictures, vector graphics, shapes, and text.



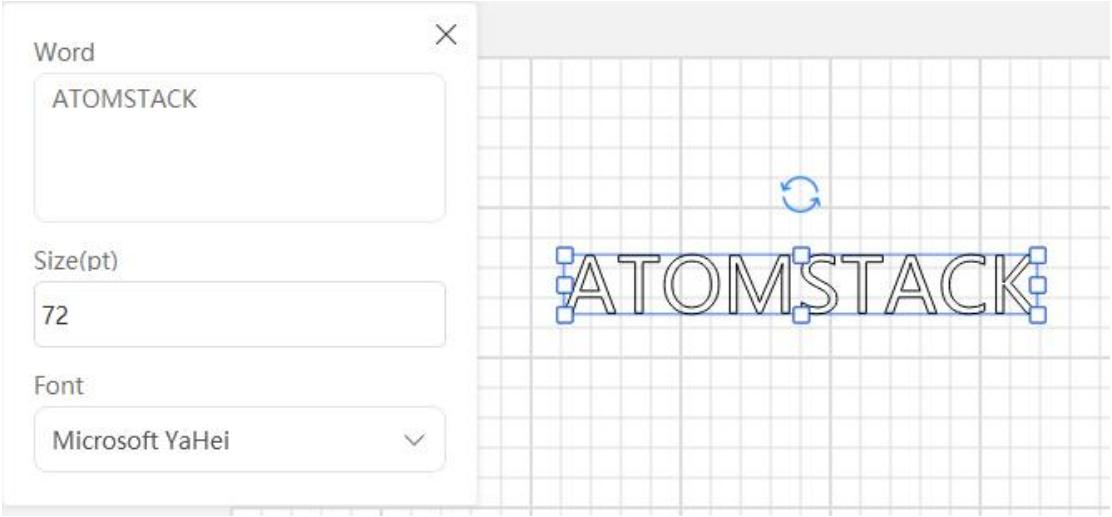
(2) After inserting the content and activating the object in the canvas, you can edit the position, size, rotation Angle, alignment, flip, and rounded rectangle of the object through the top editing bar.



(3) If you activate the image, you can also adjust the mode, blur, brightness, contrast and color of the image through the pop-up column on the left.

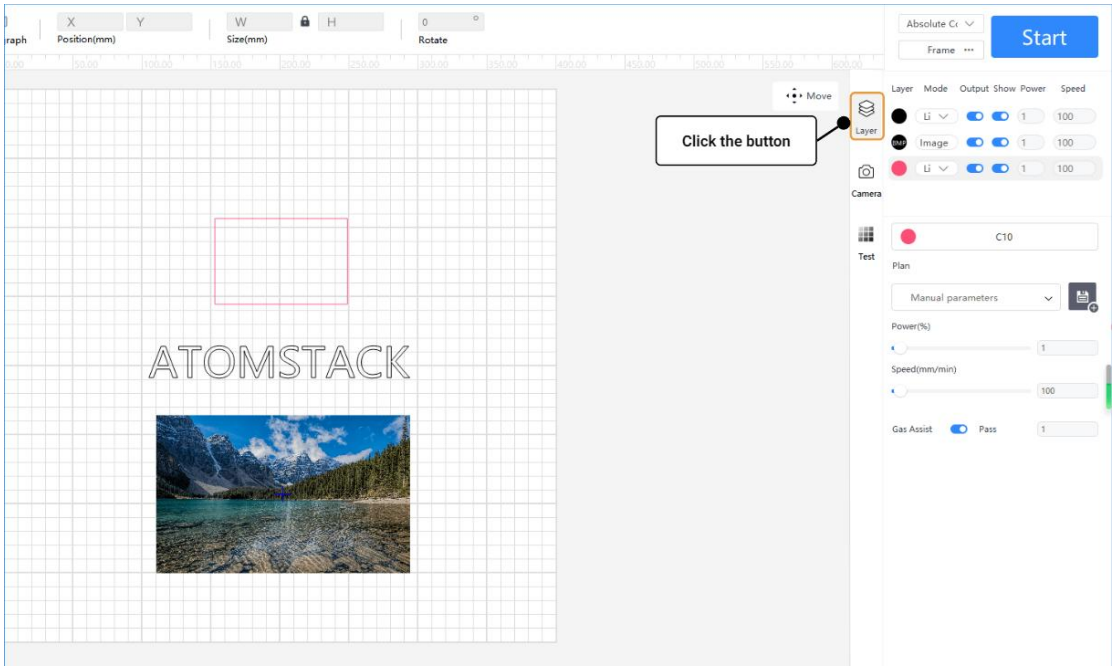


(4) If you activate the text, you can adjust the content, size and font of the text through the pop-up editing bar on the left.

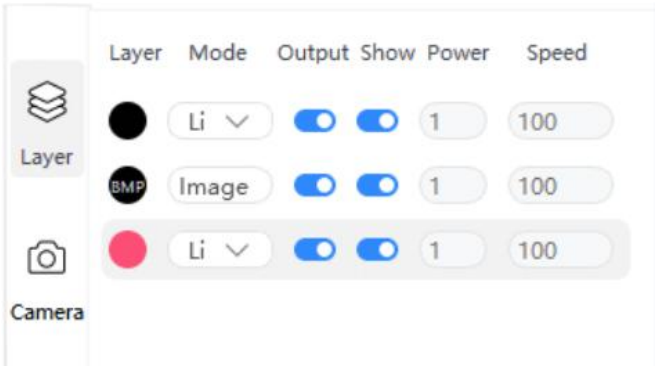


5. Set carving parameters

(1) Each object in the canvas corresponds to a "layer". When an object is activated, you can change the "layer" of the object by clicking on the bottom layer list. Double-click the circular pattern at the bottom of the layer to activate all objects in that "layer".



(2) Click the "Layer" button in the menu bar on the right side of the canvas. The interface displays the "layer" setting of all objects in the canvas to carve parameters.



(3) The Layers list displays all the "layers" in the canvas. You can edit the parameters of each layer or right-click to delete the layers.

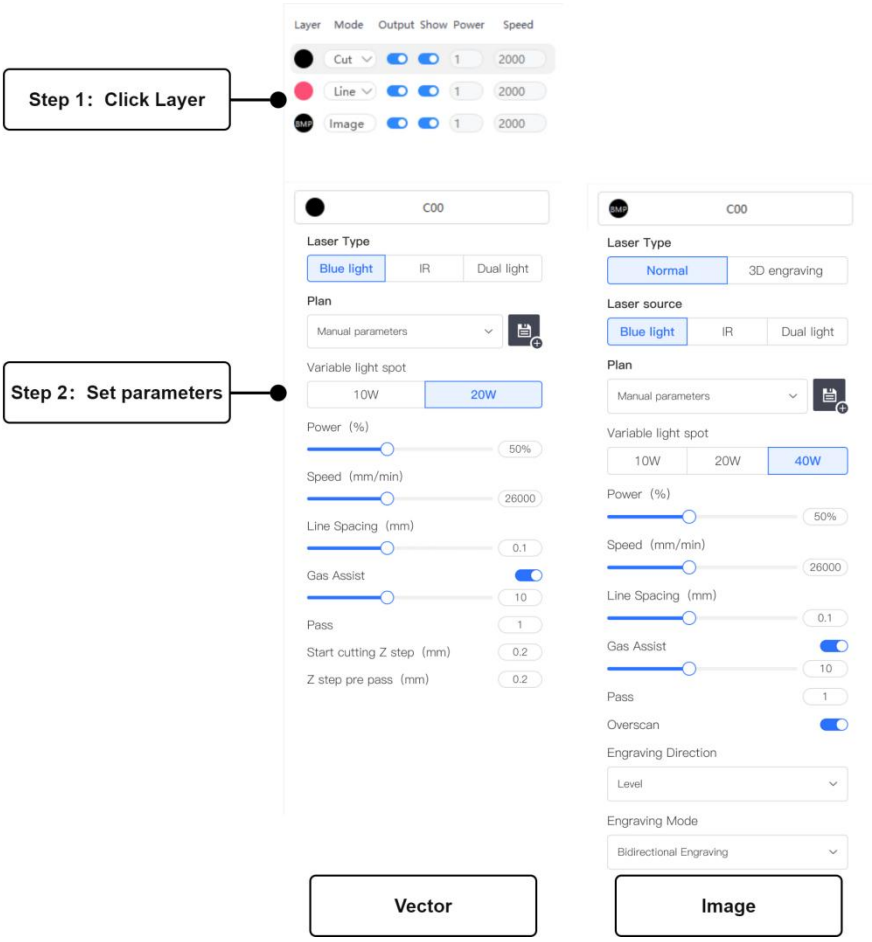
- Layer: The layer where the object is located. Because the carving parameters required for images and vector objects are different, they are displayed separately in the list. The image layer is displayed as "BMP".
- Type: The layer's carving type. Fixed images can only use one carving type, while vector objects can be set to "Line", "Fill", or "Cut". Here, "Line" means carving with vector lines, "Fill" means filling the vector object before carving, and "Cut" means cutting the vector lines.
- Output: Enable or disable the laser to carve the layer.
- Display: Enable or disable the layer to be displayed on the canvas.
- Power: The carving power used in this layer.

- **Speed: The carving speed used in this layer.**

(4) Click "Layers" in the list and other carving parameters for that layer are displayed below. The carving parameters required for images and vector objects are different.

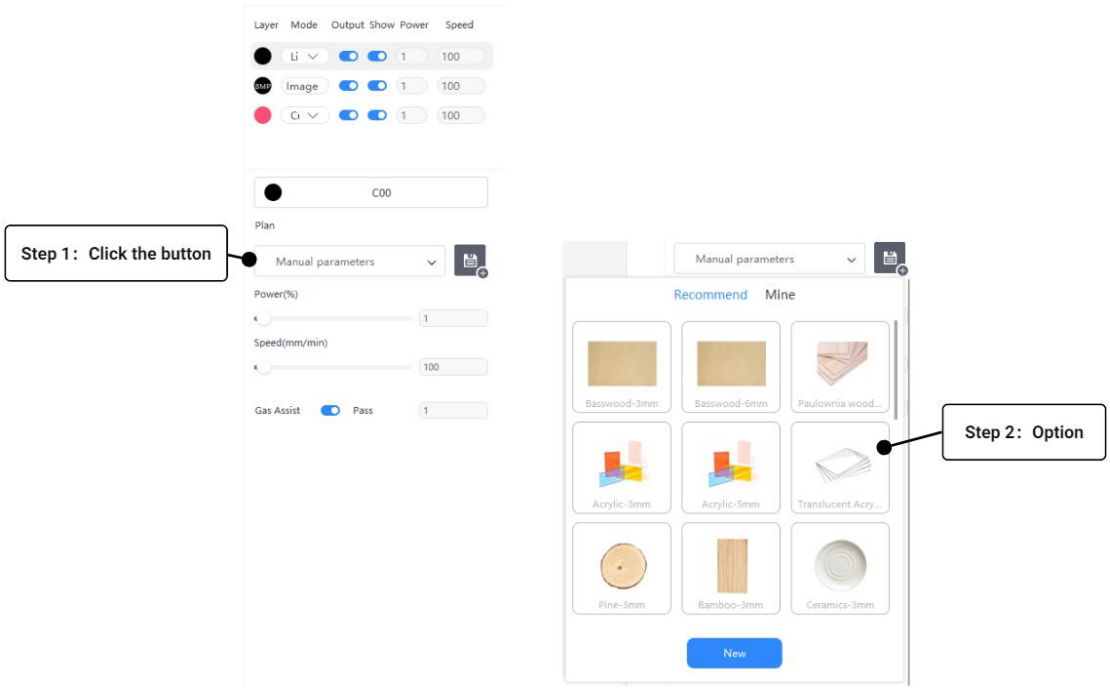
- Picture mode: Set the bitmap carving mode, you can choose "conventional" and "3D deep carving". Different modes will affect the final carving effect of the picture (if this function is supported).
- Laser light source: Set the type of laser light source, such as blue light, infrared light, red and blue dual light (if this function is supported).
- Scheme: Select an official or user-created carving parameter scheme.
- Variable light spot: The size and effect of the carved light spot can be affected by setting the maximum power of the laser (if this function is supported).
- Gas assist: Enable the gas assist function (if available).
- Processing times: The number of repeated carvings on this layer.
- Start cutting Z-axis sinking distance: The sinking distance of the laser's Z-axis before cutting begins (if this function is supported).
- Z-axis descent distance per cut: The Z-axis descent distance of the laser after each cut (if this function is supported).
- Line spacing: The spacing between continuous lines carved by a laser.
- Over scan: When carving a bitmap, the laser module adds an additional distance to avoid burning the edges of the carved area, but reduces the carved area of the bitmap in the carved area.
- Carving direction: Set the carving direction of the bitmap, which is divided into "horizontal" and "vertical".
- Carving mode: Set the bitmap carving mode, two-way carving —— high carving efficiency;

  one-way carving —— low carving efficiency, but better effect.

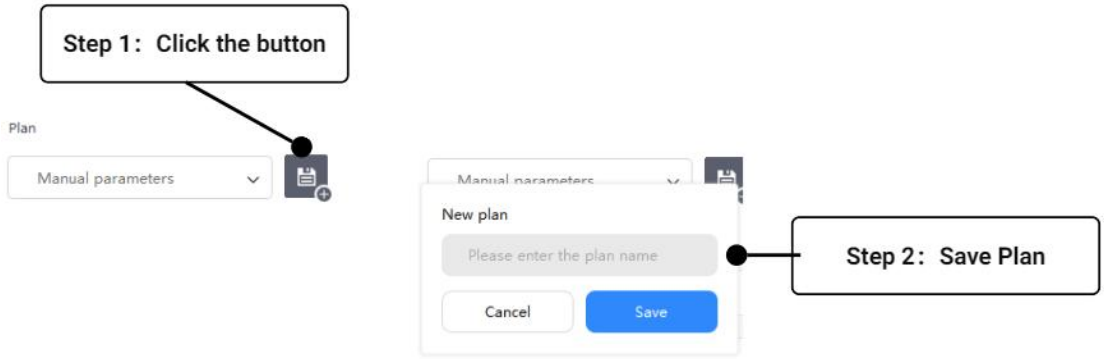


6. Material plan

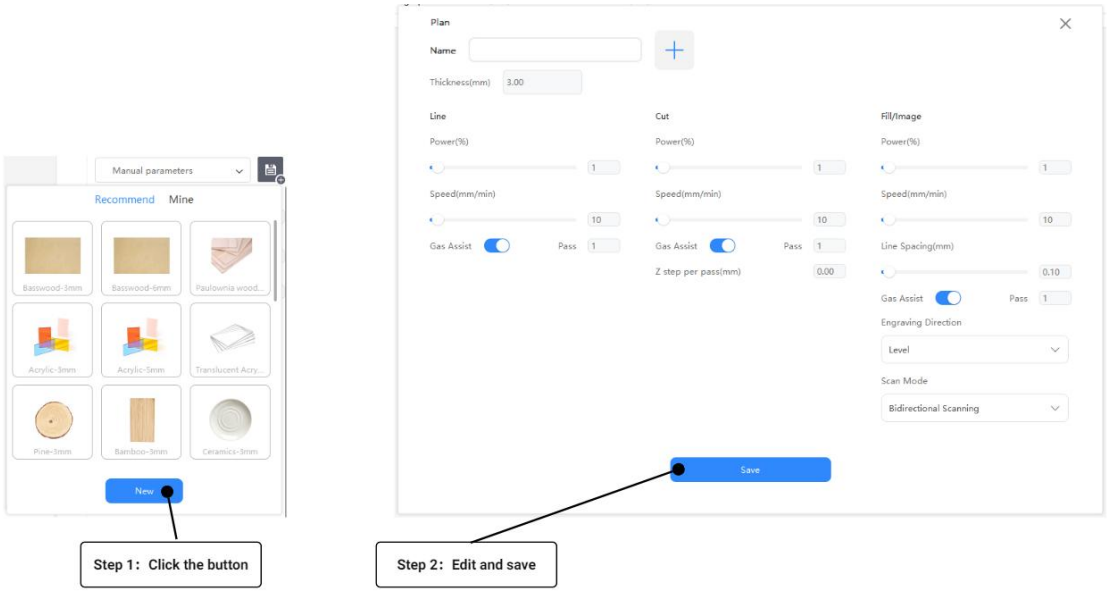
(1) When you set the "Layer" carving parameters, you can select the corresponding material scheme in the "Scheme" function to automatically load the carving parameters.



（2）When you want to save the current carving parameters, you can click the "Save" button and enter the scheme name to save the parameters of the current carving mode.



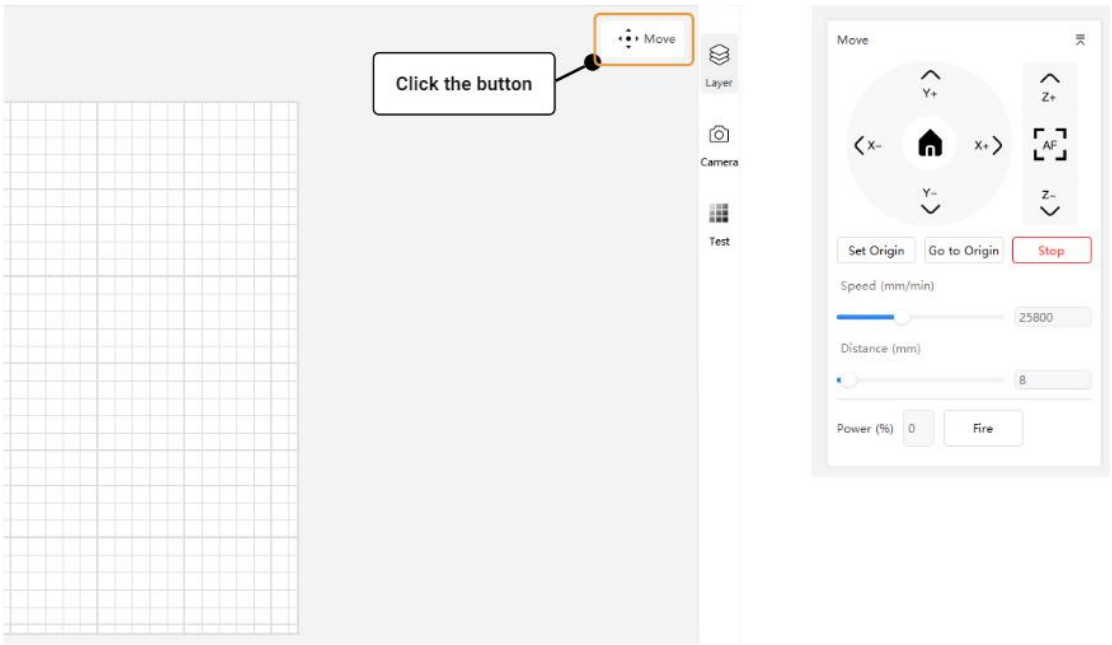
（3）You can also create a plan in the pop-up interface by clicking the "Create Plan" button in the plan list.



(4) After the solution is created successfully, you can view it in the solution list and edit, create a copy, or delete it by clicking the "..." in the upper right corner of the solution.

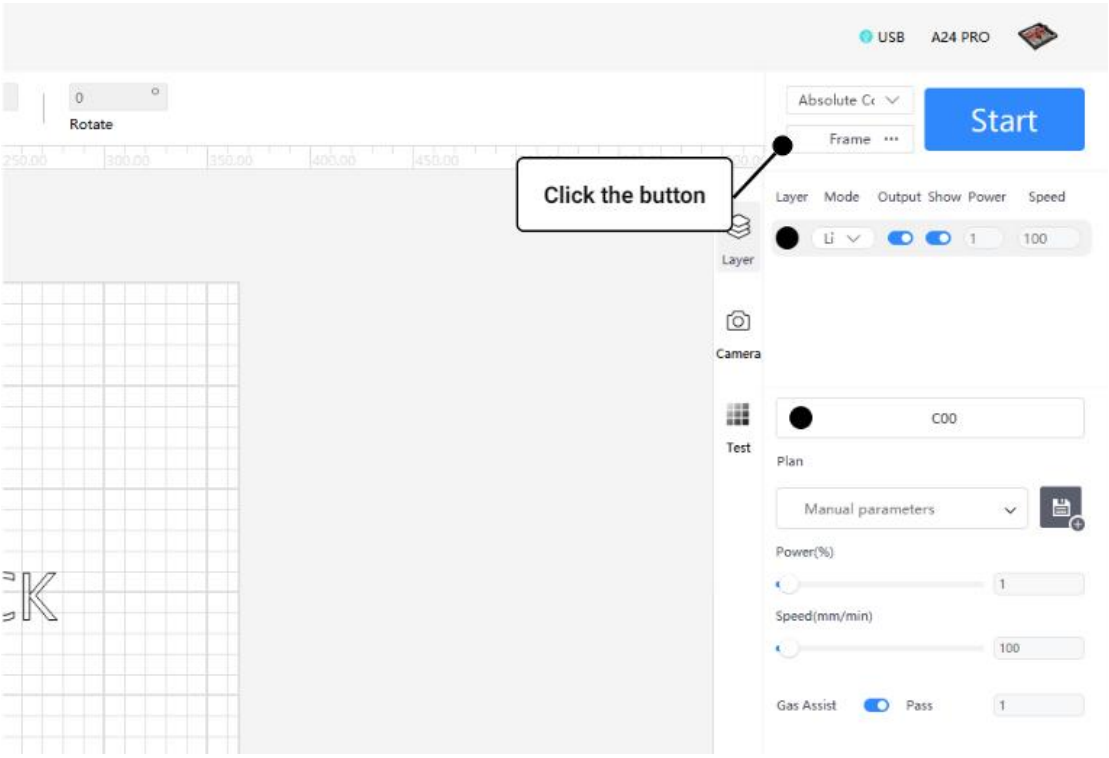
7. Laser movement

(1) Click the "Move" button in the upper right corner of the canvas to open the laser move operation interface.



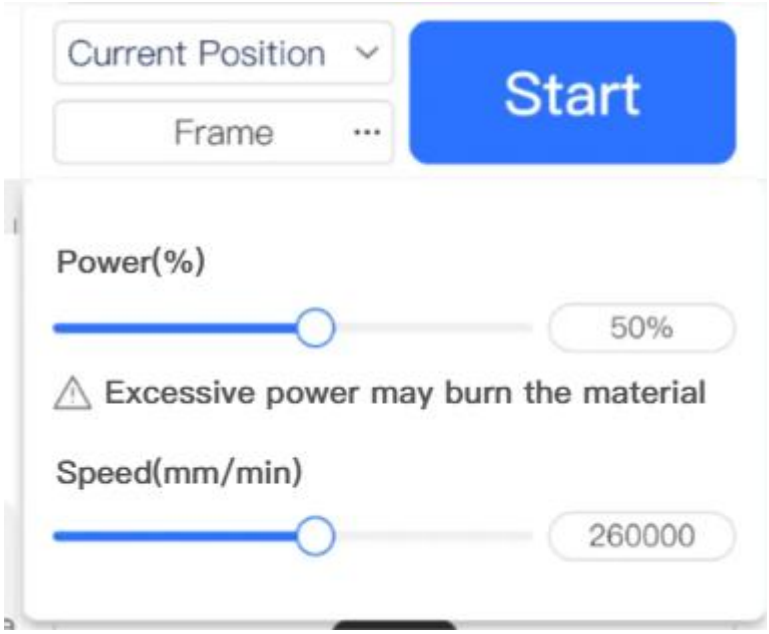
In the mobile interface, you can operate the XYZ axis of the laser, set the origin, patrol, and ignite.

- Patrol: The laser moves to show the carving position of the current project in the carving area.
- Emergency stop: Force the laser to stop any movement and light output.
- Set the origin: Set the origin with the coordinates of the laser's current position. When the starting position of the carving is selected as "user origin", the carving will start at the user's set origin coordinates.
- Move to the origin: Move the laser to the user's set origin position.
- Speed: The speed at which the laser moves along the XYZ axis.
- Distance: The distance the laser moves along the XYZ axis.
- Ignition: Perform laser emission test (power can be set to 0-20%).



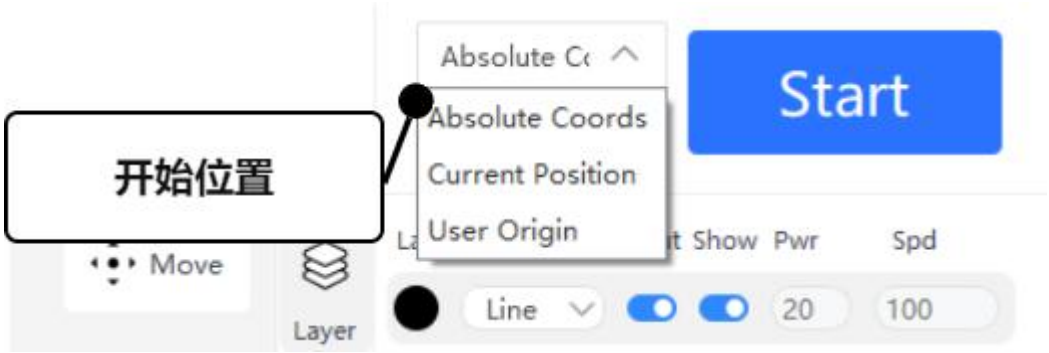
(1) When you have finished designing the object on the canvas, you can click the "tour" button in the upper right corner of the interface. The laser will move along the boundary of the pattern being processed on the material so that you can preview the carving area.

(2) You can also set the laser blue light output power and moving speed during the patrol by clicking "...", which is on the right side of the "Patrol" button.

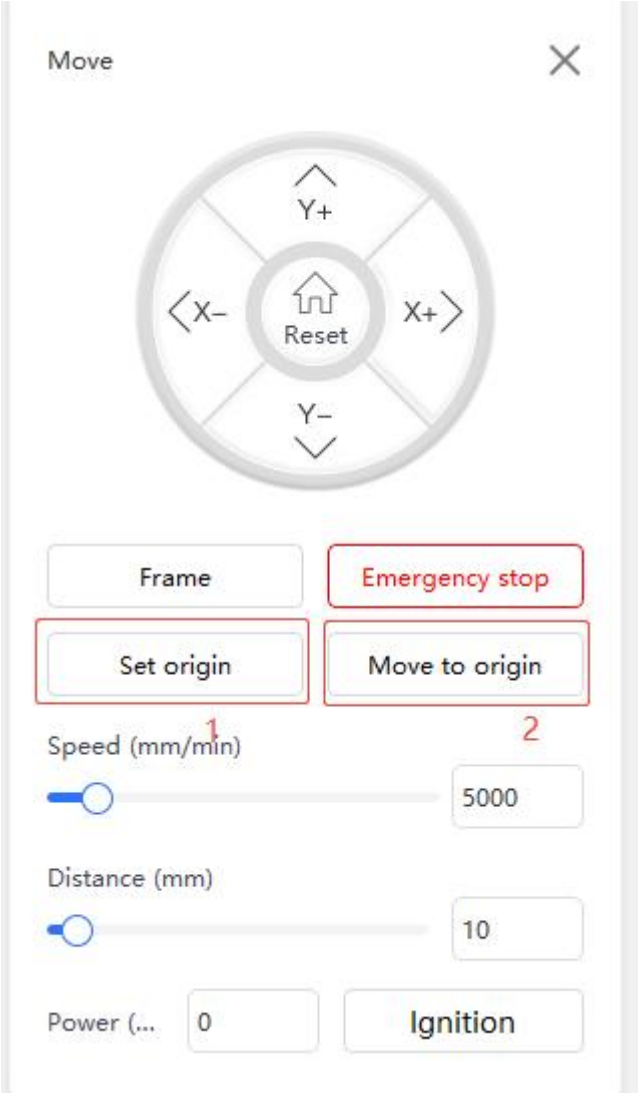


8. Start carving

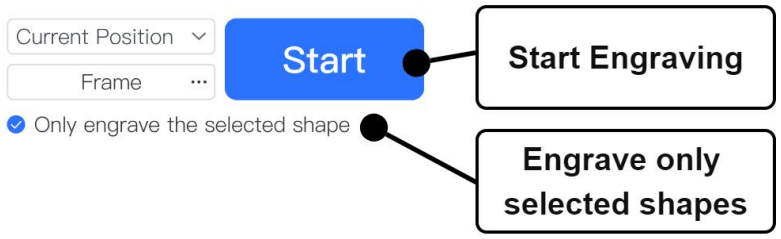
- Click the "Start Position" button in the upper right corner of the main interface to select the laser positioning mode.



- Current position: The current coordinate position of the laser is taken as the starting position of the carving work.
- Absolute coordinates: According to the coordinate position of the object in the canvas, the carving is carried out at the corresponding coordinate position in the machine working area.
- User Origin: The system uses the user-defined origin coordinates (0.0) as the starting point for carving. To activate this feature, first set a position as the origin (marked 1 in the diagram below). Then click "Move to Origin" (marked 2 in the diagram) to position yourself at the specified origin.



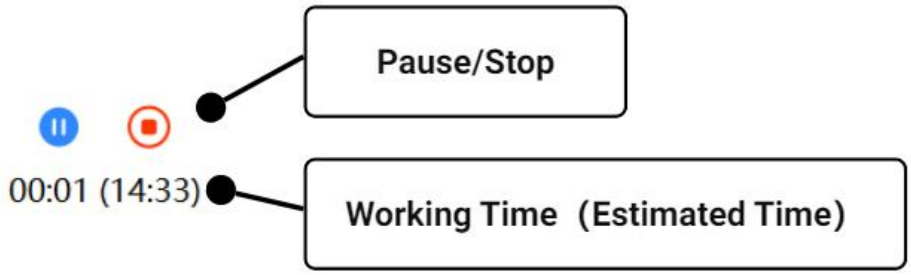
（1）If you check "Only carve selected shapes", the system will only carve the shapes you have selected on the canvas. If not checked, all shapes on the canvas will be carved. Click the "Start" button, and the laser will immediately start carving.



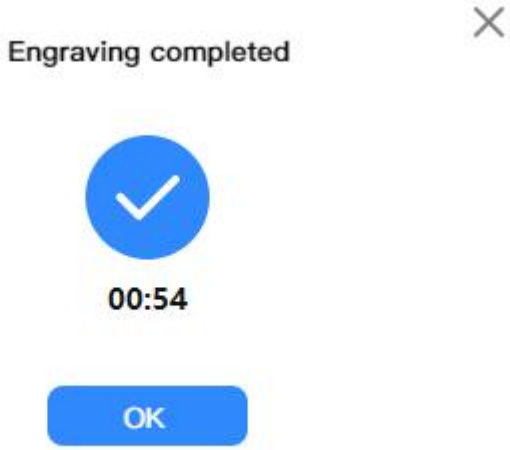
（2）When you enter the carving process, the interface displays the "pause" and "stop" buttons as well as the "working time (estimated time)".

- Pause: Pause the carving work, you can click the button again to continue the unfinished work.

- After the image is imported, you can adjust its parameters, position and size as needed. The cumulative working time of carving.
- Estimated time: The estimated duration of the current work.

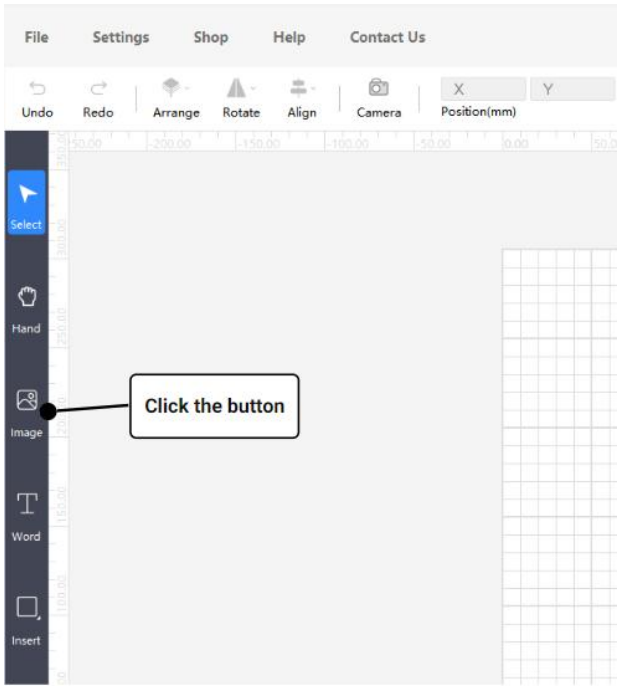


（3） After the carving is completed, there is a pop-up prompt on the interface.

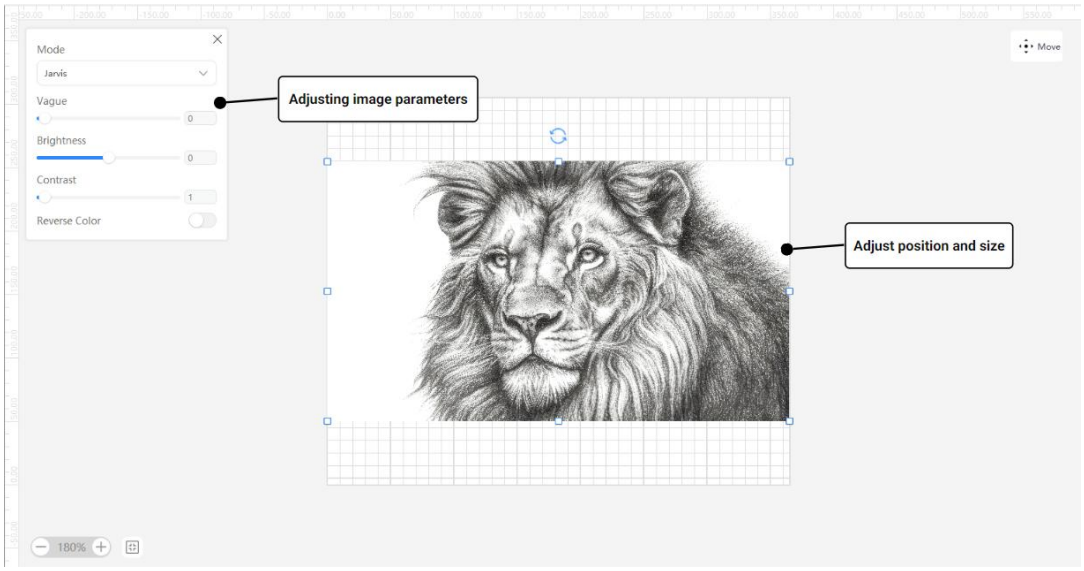


Make a work

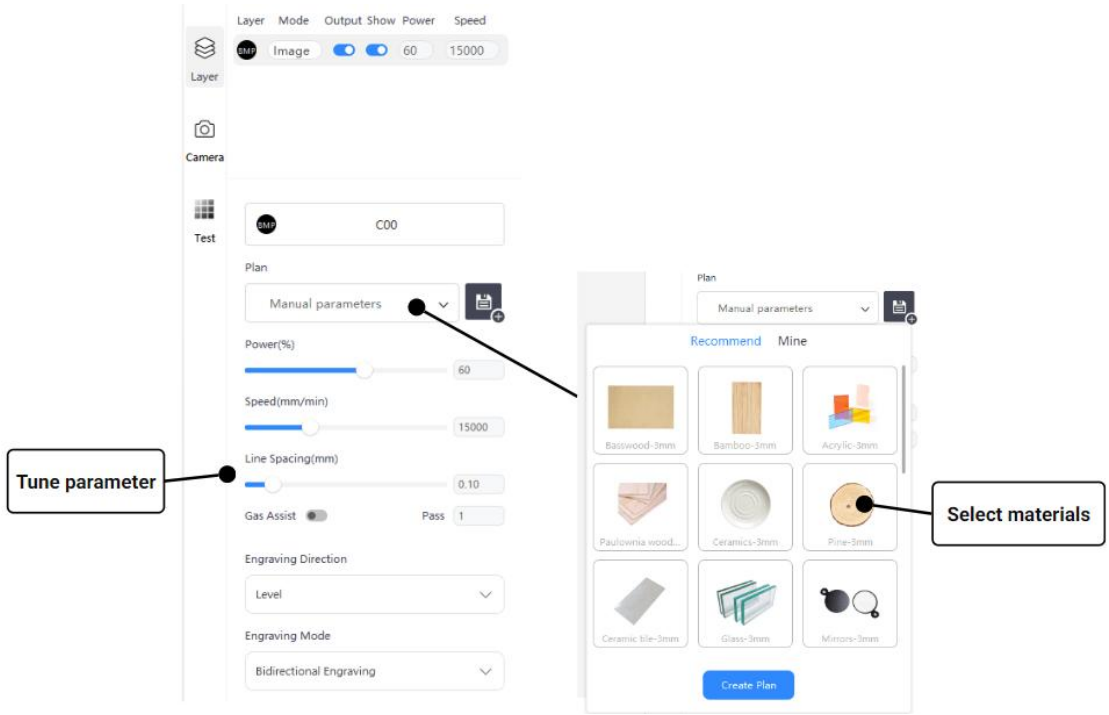
1. Let's try to complete a carving work. First, we can load an image by clicking the "image" button on the left.



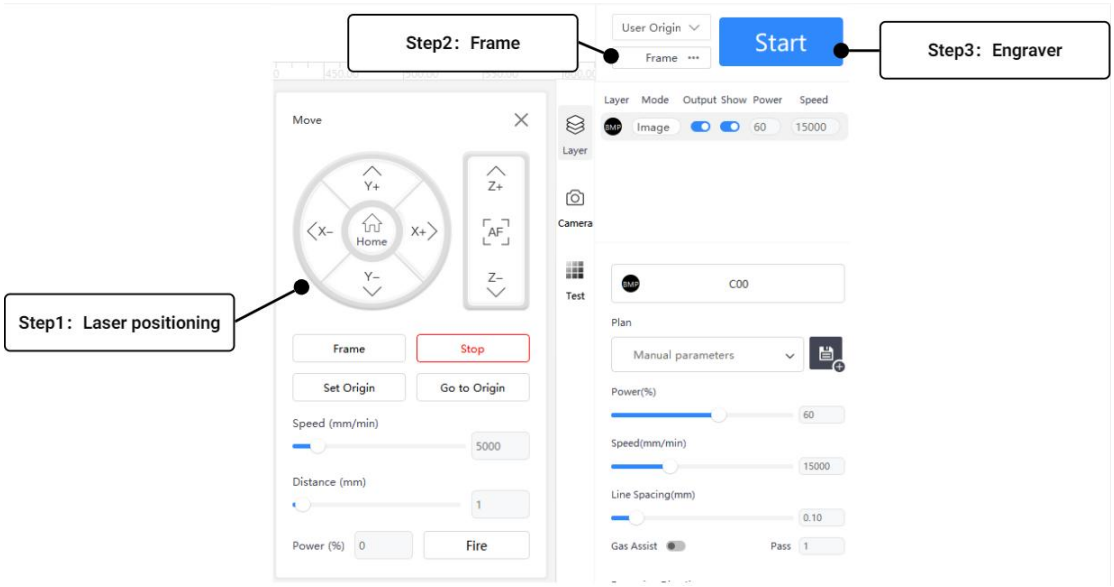
2. After importing the image, you can adjust the parameters, location and size of the image.



3. In the "Layer Management" interface on the right, you can configure carving parameters and then use the "Move" interface to precisely position the laser module. Utilize the "Border Patrol" feature to define the target area and position within the carving zone. Once everything is ready, click the "Start" button to initiate the carving process. The materials we use are MDF (3mm thick), with a power setting of 60%, a speed of 15,000 mm/min, and a line spacing of 0.1mm.



4. After completing the setting of carving parameters, the laser module can be positioned through the "Move" interface. Use "touring" to position the target range and position in the carving area. Click "Start" when ready to begin carving.

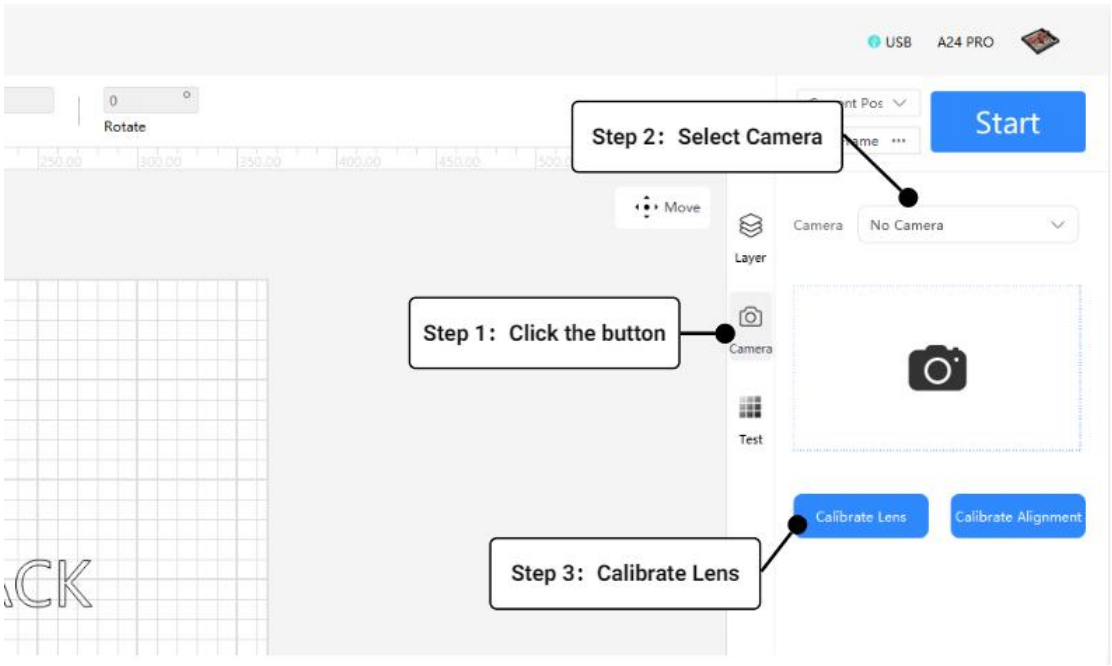


5. After the carving is completed, you can remove your carved work from the carving area after the laser module stops working.

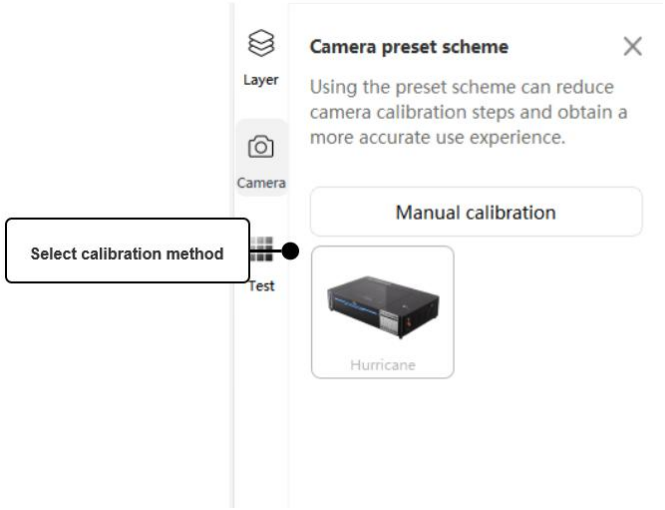
10. Camera calibration and alignment

(1) Within the software, you can utilize the "Snap" feature for visual positioning. When capturing images on the canvas using this function, if you notice significant image distortion, you can apply camera calibration and alignment to re-adjust the camera settings. If the image shows only minor distortion with slight positioning errors, simply align the camera using its alignment function to resolve the issue. Below is a complete guide to the camera calibration process (calibration + alignment) for you.

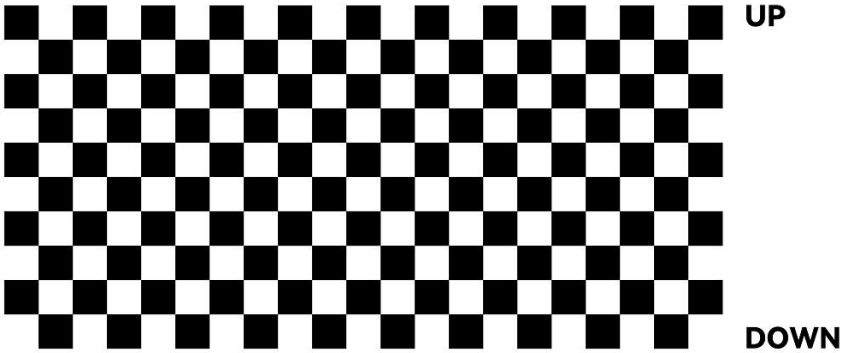
(2) Click the "Camera" button on the right menu of the canvas. Select the connected camera in the camera Settings that pop up, and click "Calibrate Camera Lens" to enter the camera calibration process.



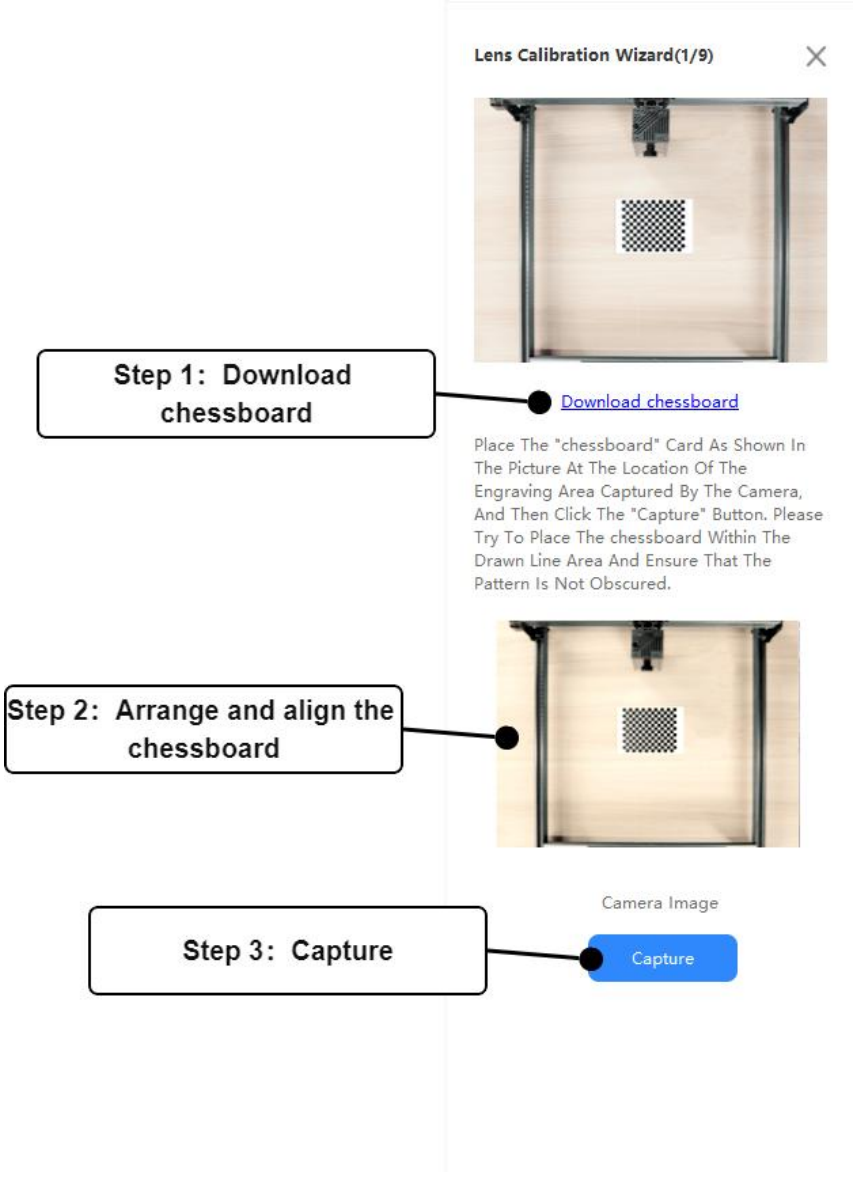
(3) If your device or camera supports the official preset calibration scheme, the interface will display the support options. Selecting the official preset scheme can reduce the number of calibration steps and provide a more accurate user experience. If your camera does not support the preset scheme, you can click the "Manual Calibration" button to manually calibrate the camera.



(4) To begin the camera calibration process: Step 1: Download a "checkerboard" image to your computer and print it on paper, ensuring all grid squares measure 1~1.2mm. Step 2: Position the "checkerboard" in the same area as your camera's shooting zone according to the diagram at the top of the interface. Step 3: Once the pattern is clearly visible, click the "Capture" button below to start the detection process.

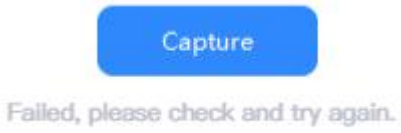


Please set horizontal printing and ensure that the width of a single square in the image is 1~1.2 cm.



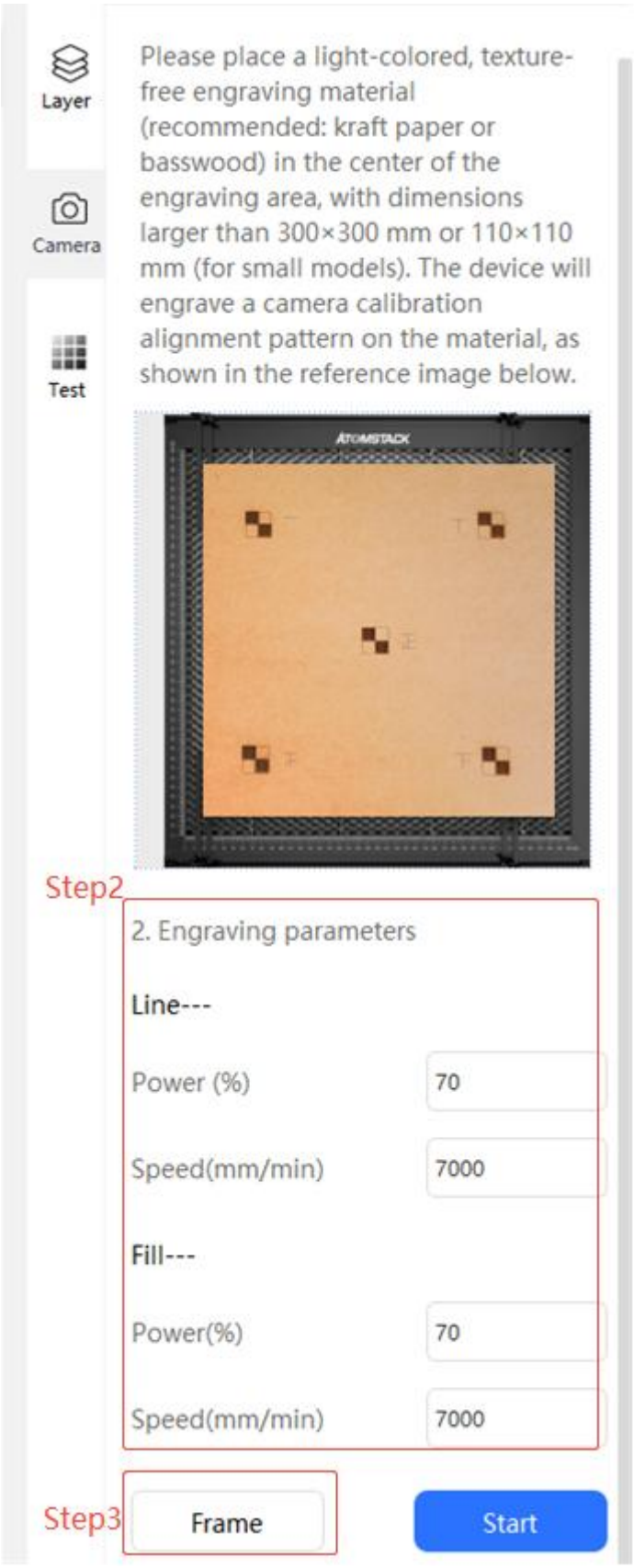
If the detection fails, please check and adjust the position of the "chessboard", whether the pattern is clearly visible/obstructed, and click the "capture" button again

to retry after completing the check.

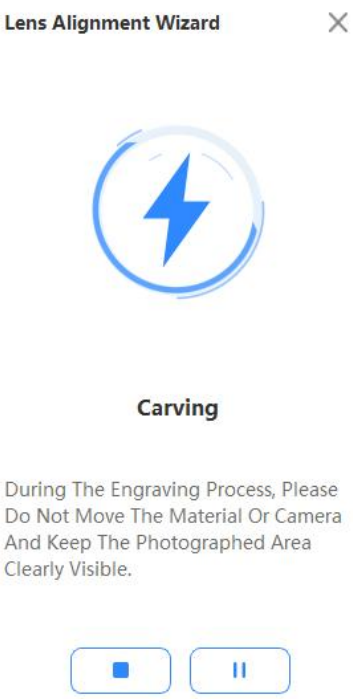


(5) After passing the test, you need to place the next position displayed in the schematic diagram on the chessboard and click the "Capture" button again. Repeat this step until the nine positions are calibrated. After the camera lens is calibrated, the interface enters the "camera alignment" process.

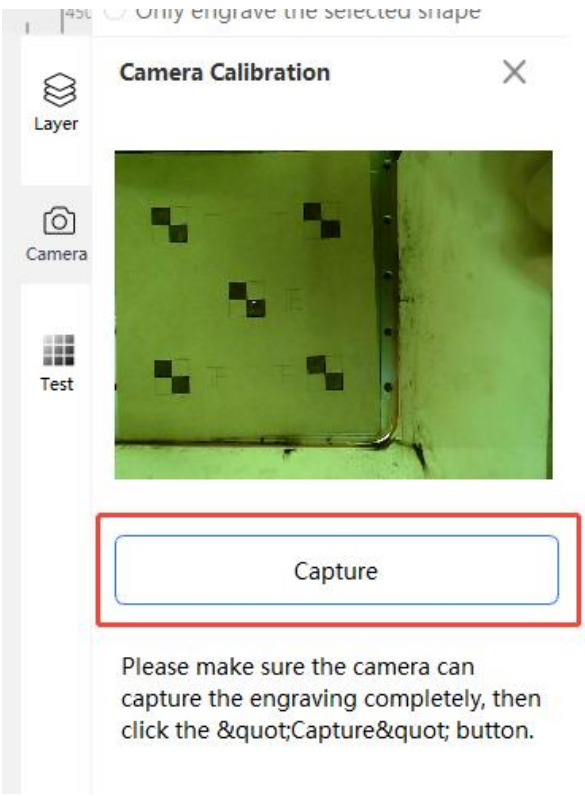
(6) In the "Camera Alignment" process: Step 1: Place a light-colored, non-textured material (preferably kraft paper) at the center of the carving area. Ensure the material's size exceeds the designated shooting range and secure it with adhesive tape to prevent movement during carving. Step 2: Set carving parameters using default settings for kraft paper. Step 3: Conduct a perimeter check to verify the carving area is properly positioned, then click the "Start" button to begin the carving process.

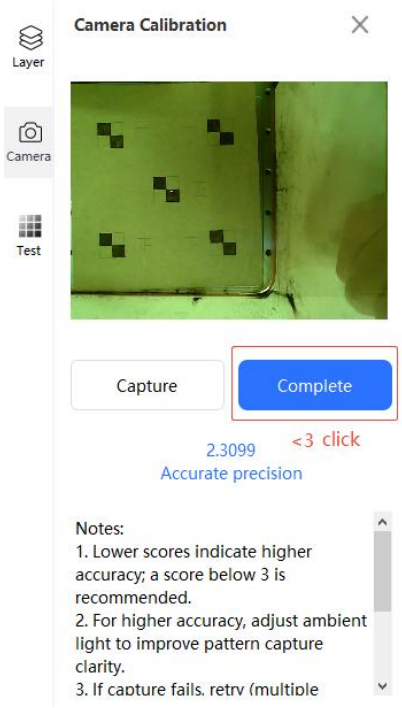


(7) Do not move the material during carving.



（8） When the carving is complete, you can click the "Capture" button to capture it.

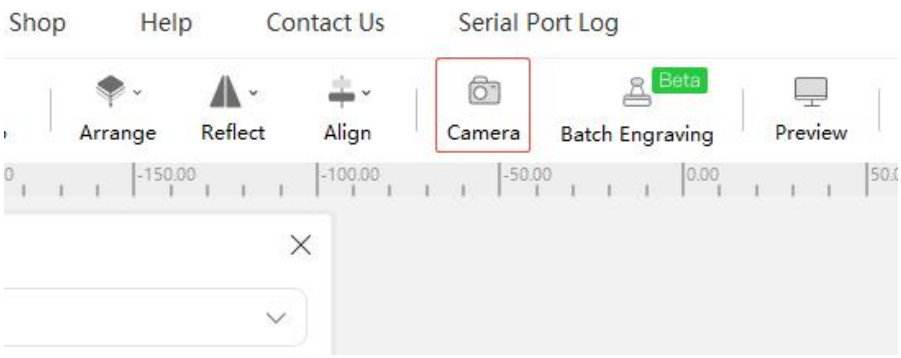




When the suggested score is less than 3, click Complete to complete the camera alignment. The following are the precautions when capturing:

- The smaller the score, the higher the accuracy. It is recommended that the score be less than 3.
- If you want to obtain higher accuracy, you can adjust the ambient light to improve the clarity of the pattern.
- If the capture fails, try again. Sometimes it takes several attempts to succeed. If it still fails, check whether the image is clear. If not, check whether the camera is dusty or the ambient light is too bright or too dark.

After alignment, you can refresh the canvas background through the "Take a Photo" function to visually locate it.



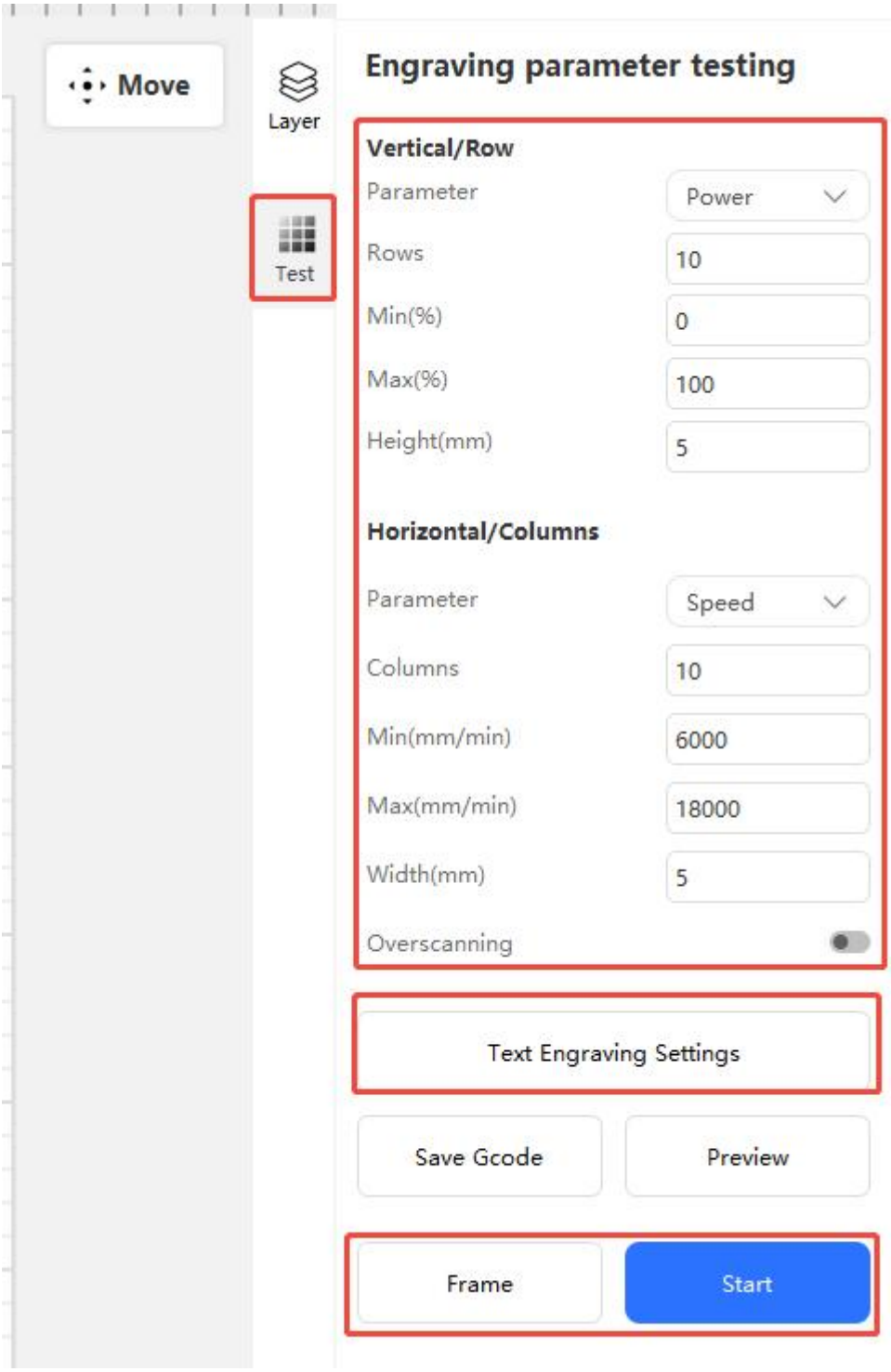
11. Material testing

(1) If you need to test the carving effect of the material, you can quickly test the material through the material test function. Step 1: Click the "Test" button in the menu on the right side of the canvas.

Step 2: Set the parameters to be tested in the list.

Step 3: Set the title text carving parameters in the material test matrix.

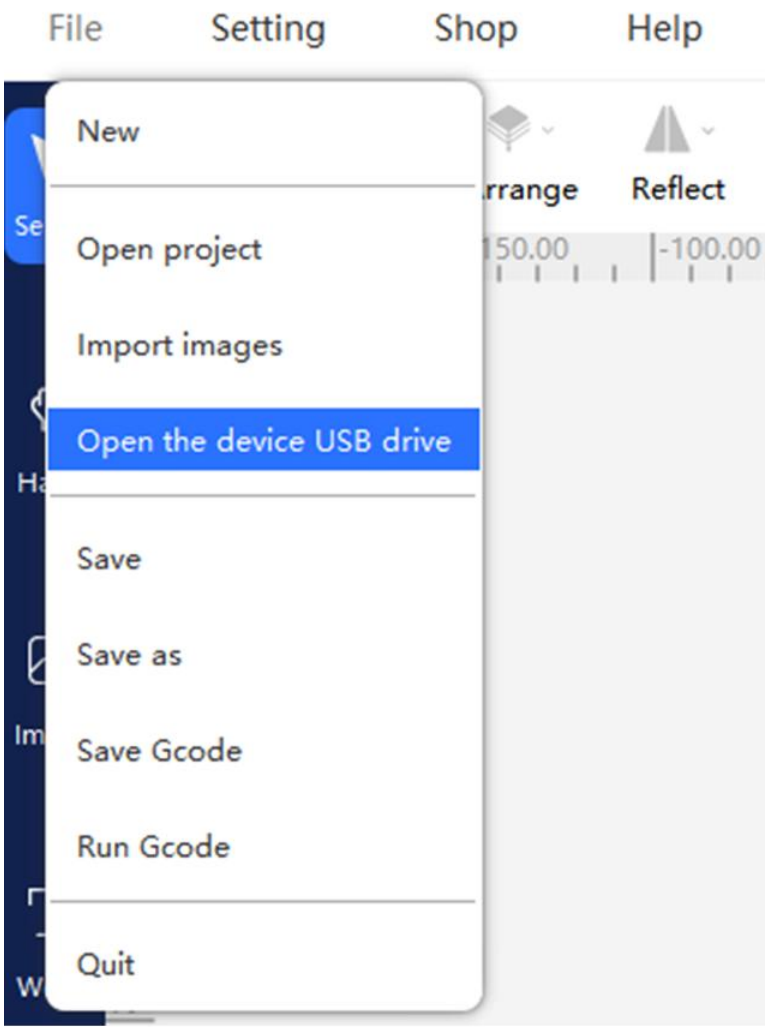
Step 4: Perform a patrol to check if the carving area is appropriate, then click the "Carve" button to start carving.



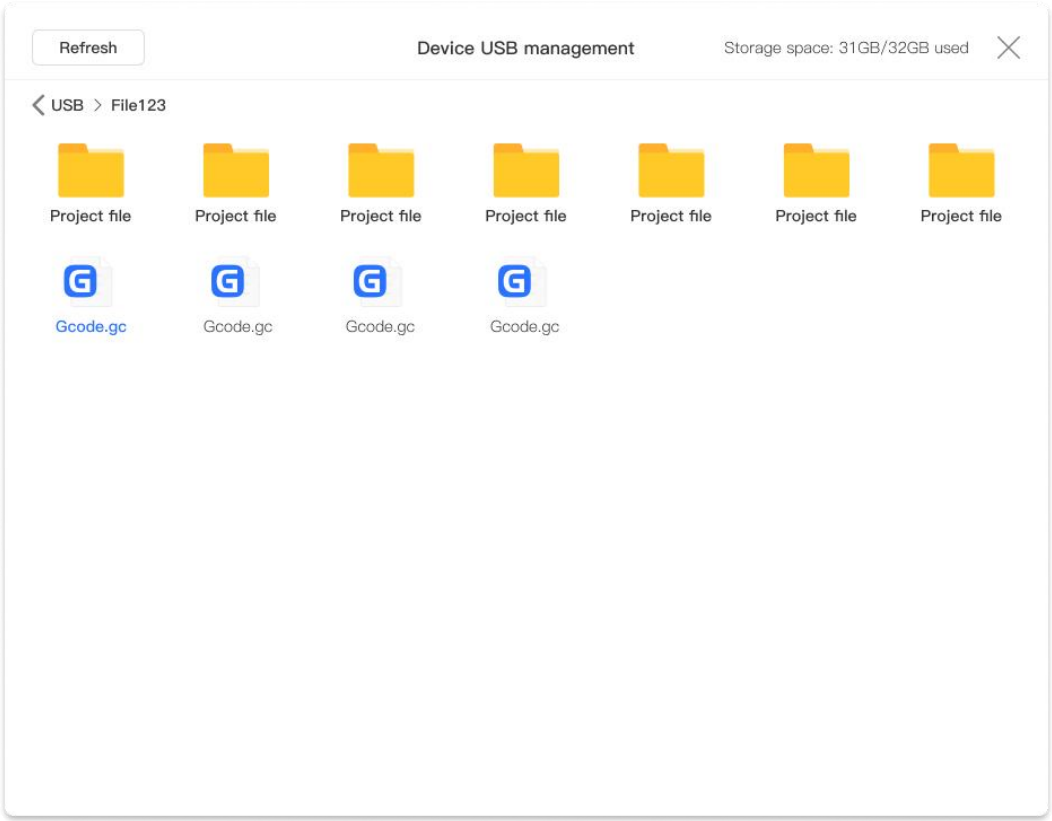
- Parameter: Set the carving parameters that need to be tested.
- Number of rows: Sets the number of rows in the test array.
- Columns: Set the number of columns in the test array.
- Minimum value: The minimum value of the test carving parameter.
- Maximum value: maximum value of the test carving parameter.
- Height: Sets the height of each carved rectangular object in the test array.
- **Width: Sets the width of each carved rectangle object in the test array.**

12. USB drive management

1) If your device supports U drive management, you can enter the U drive management interface by clicking "File-Open Device U Drive" on the home page after connecting the device.



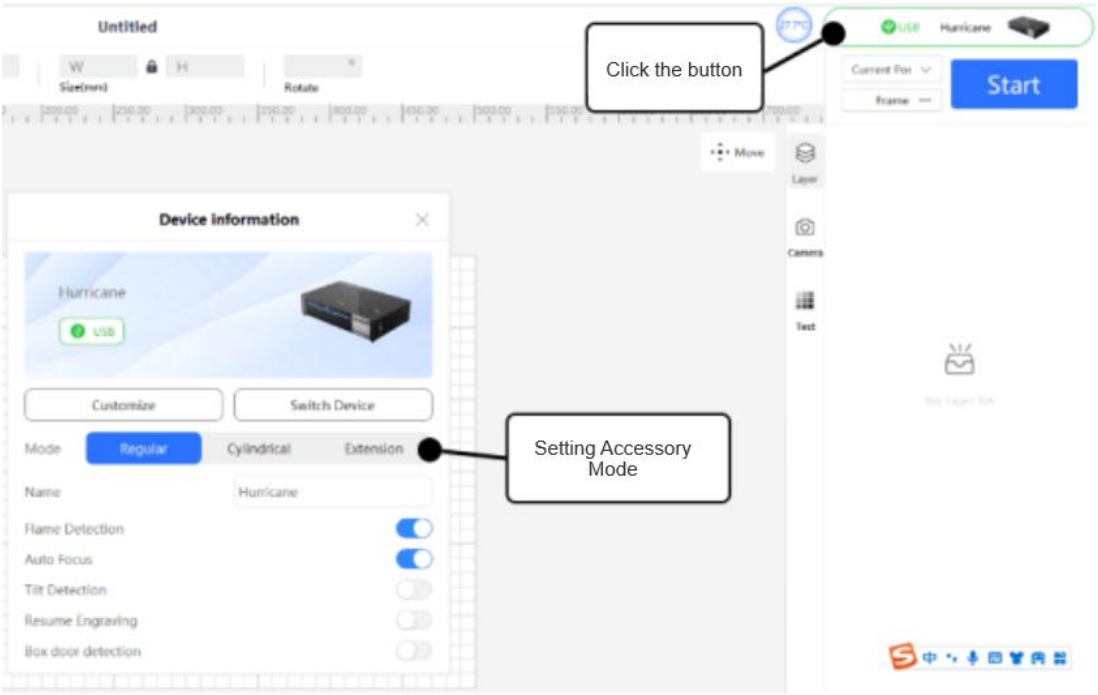
2) In the USB drive management interface, you can view, delete, rename, and run Gcode on the device USB drive.



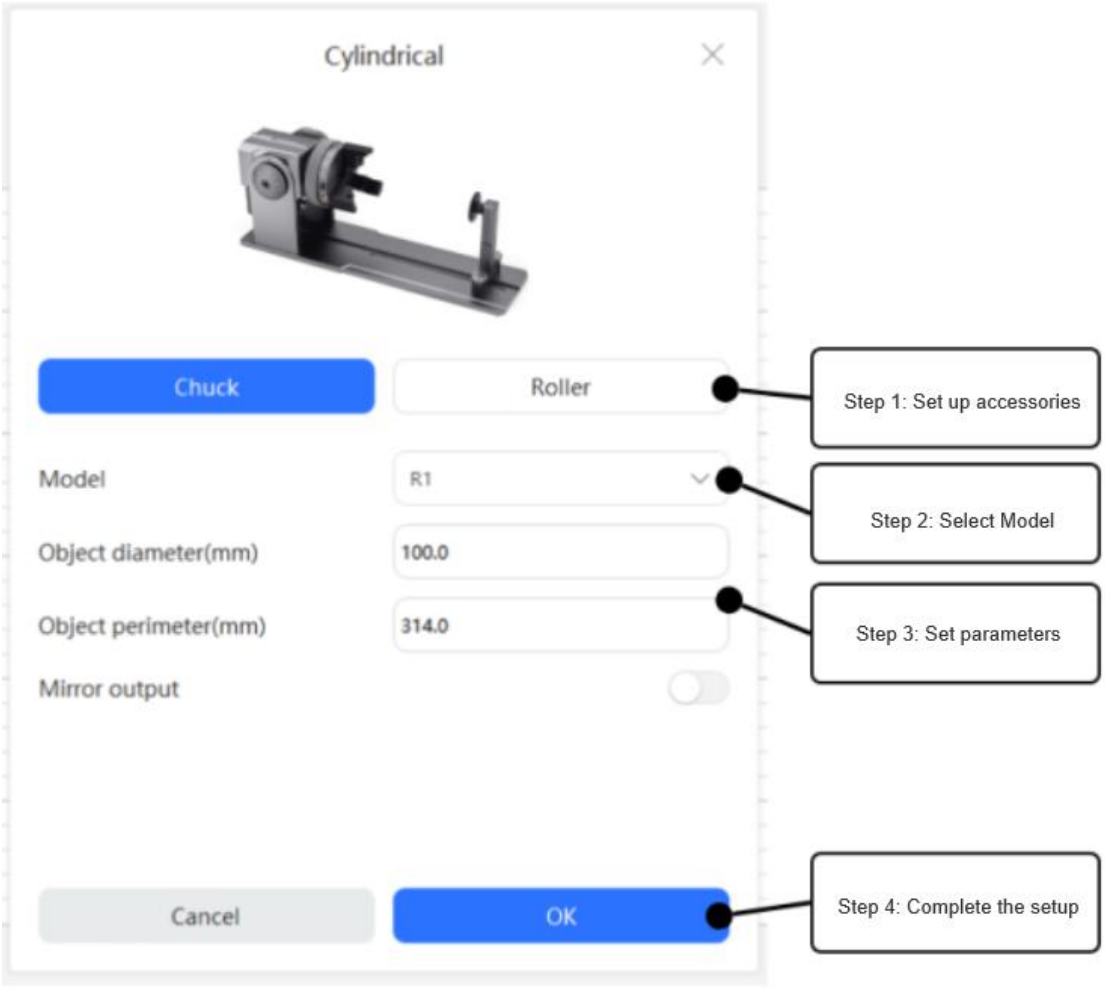
13.Switch accessories

1) After connecting the device, you can switch the current accessory mode through the device Settings interface. Users can switch between "standard", "cylinder" and "expansion".

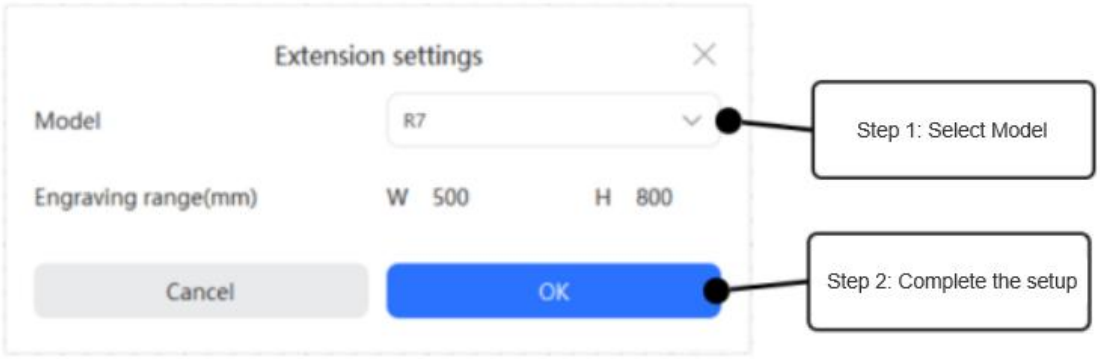
- Standard: The device is in default carving mode and is used when no accessory carving plane items are used.
- Cylinder: used for carving cylindrical objects with a chuck or spread.
- Enlargement: Used when carving with enlargement accessories.



2) If the cylindrical mode is used for carving, you need to first select the accessory type "spindle" and "roller", then select the model, and finally complete the corresponding parameter setting. After the setting is completed, click "OK" to complete the setting.

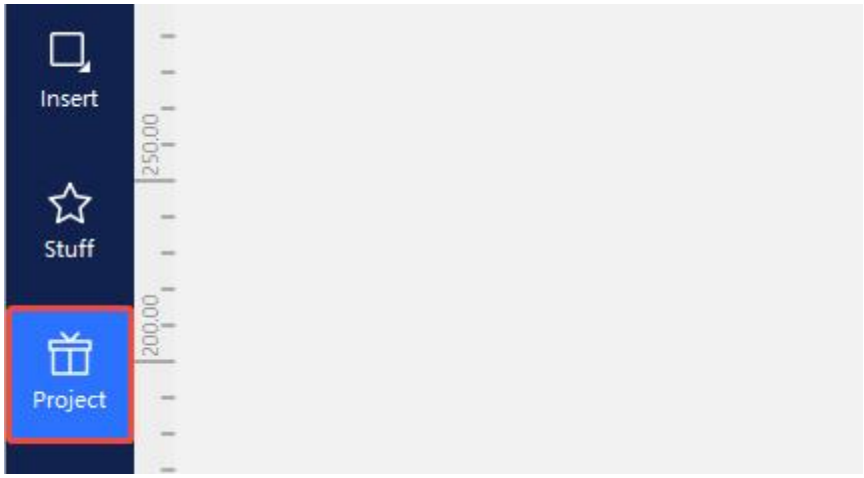


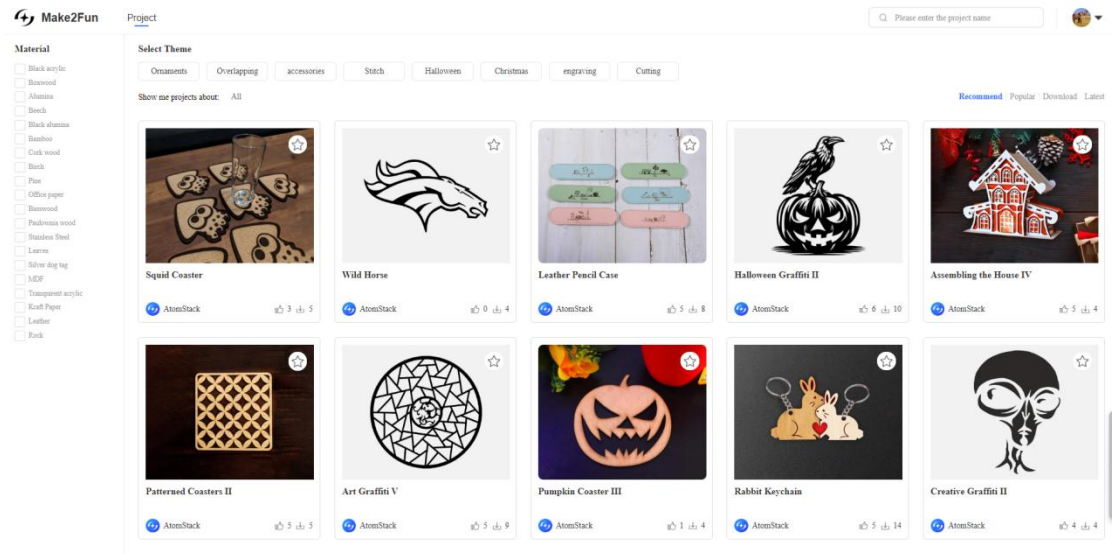
3）If you use the amplification mode to carve, you need to select the model, and then click "OK" to complete the setting.



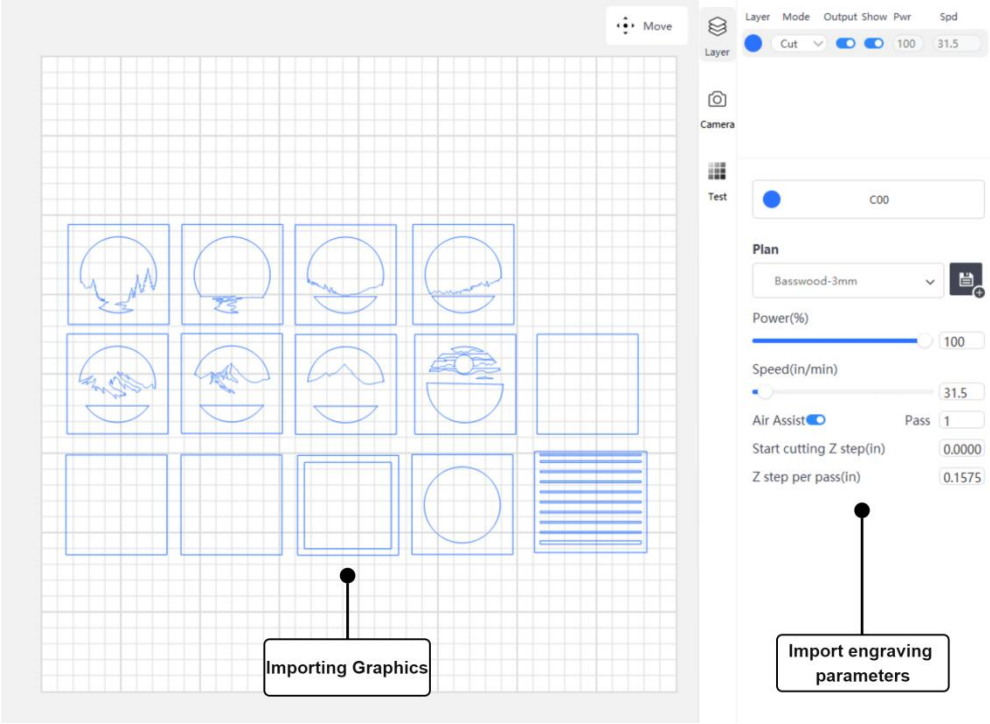
14. Case library

1）You can click the "Case" button in the toolbar to view the list of cases. The list shows different processes, materials and holiday carving cases. Click to select your favorite case.



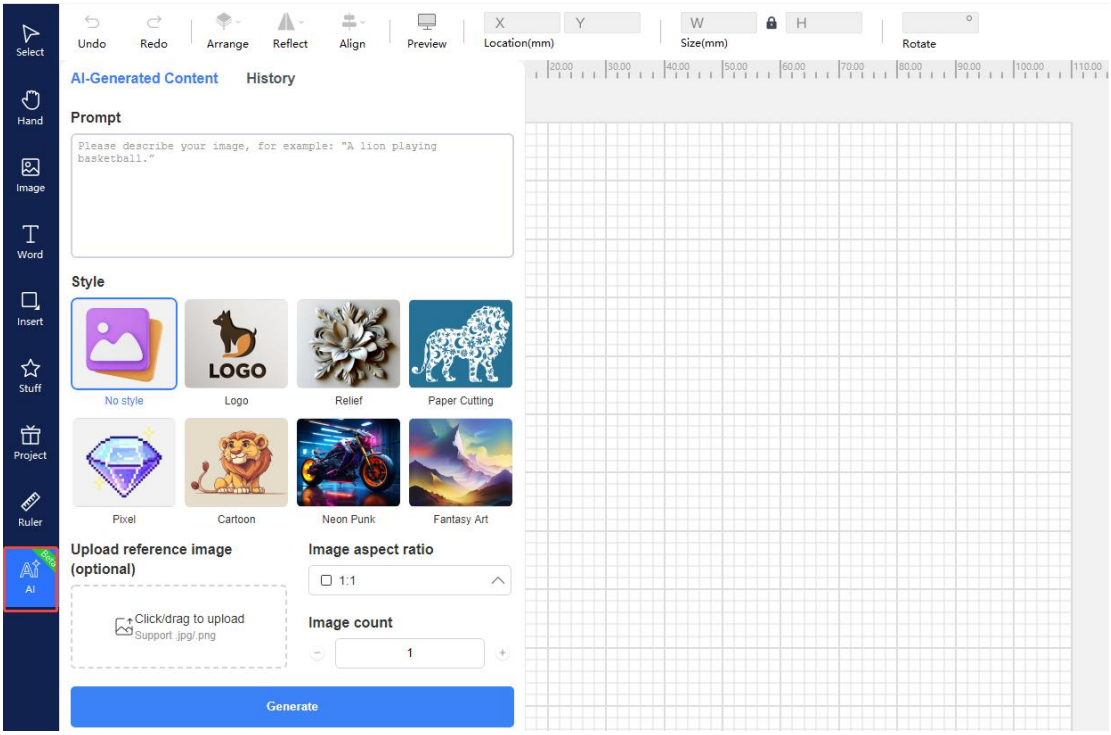


2）Import your selected case pattern into the canvas, and automatically set the carving parameters for you (connected to the equipment), to help you easily complete the case work.



15.AI Text to graphics

You can find AI text generation in the toolbar on the left.



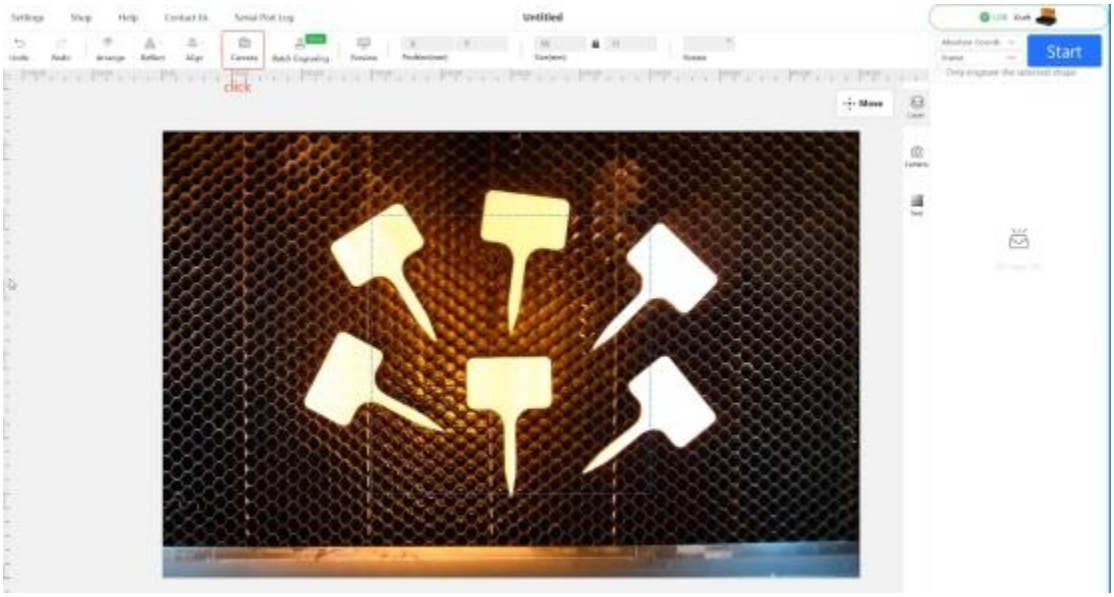
On the text to image page, you can set the following information:

- Prompt: Describe to the AI what you expect the image to look like
- Image style: Specify the style of the image to be generated
- Image ratio: Set the ratio of the image to be generated
- Number of images: Determines the number of images to be generated
- Upload reference pictures: Upload pictures for reference

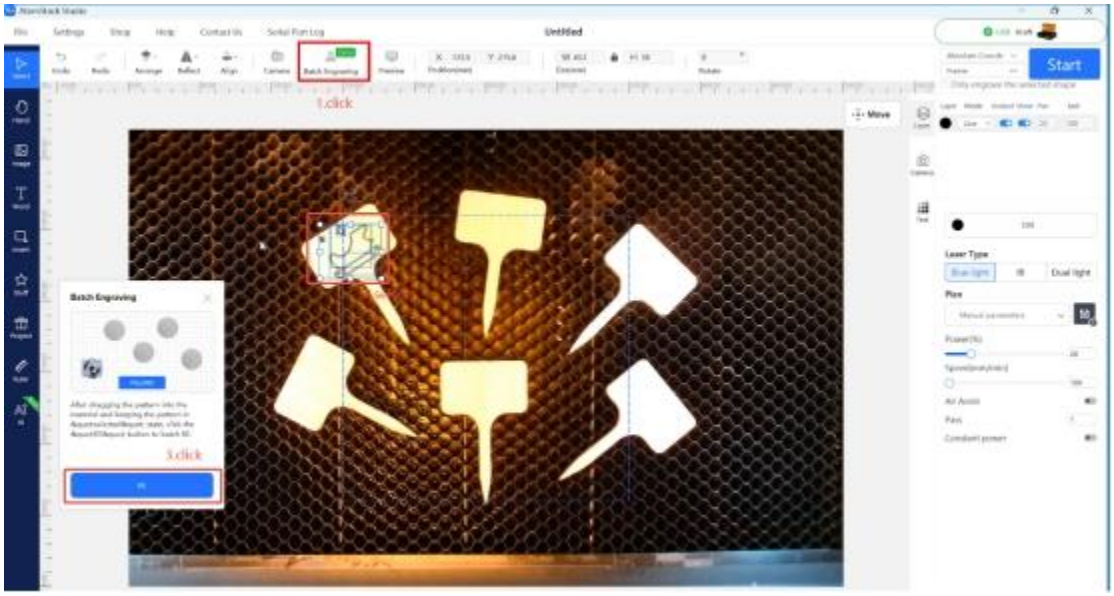
16. Batch carving

1) When you use the batch carving function for the first time, you need to download the configuration file. After the download and initialization are completed, you can start the batch carving operation.

2) The same shaped carving material is placed in the working area of the carving machine, and then photographed using the camera function.



3) Drag the carved pattern onto one of the carved materials. After selecting the pattern, click the "Fill in bulk" option.



4) If the direction of the pattern is wrong after batch filling, you need to manually adjust the direction.