Mini Bluetooth Laser Engraving Machine

User's Manual

Ⅰ.Quickunderstanding of products

1.Productdescription

This product is asmall desktop laser engraving machine, can be used as a tool in flat, opaque,no added flame retardant material organic materials, for example: wood, paperjam, bamboo, leather, and other materials carved, but also through color papercover glass, ceramics, metal and other objects surface. After carving left the pattern content and color paper color， It can also directly engrave metal. You can also cut a softer sheet. Forexample, paper, thin board, EVA sheet, non-woven fabric, cloth, and othermaterials.

The mobile powersupply and adapter power supply, supporting computer and mobile phone Appcontrol engraving. This machine is powered by a universal 12V/3A adapter in random package to achieve the best printing effect. When using a computer to operate, in order to ensure the effect of the engraving machine, an external adapter can be connected. Any movement such as shaking, falling, collision, tilting, rising and falling during work will immediately suspend the work.

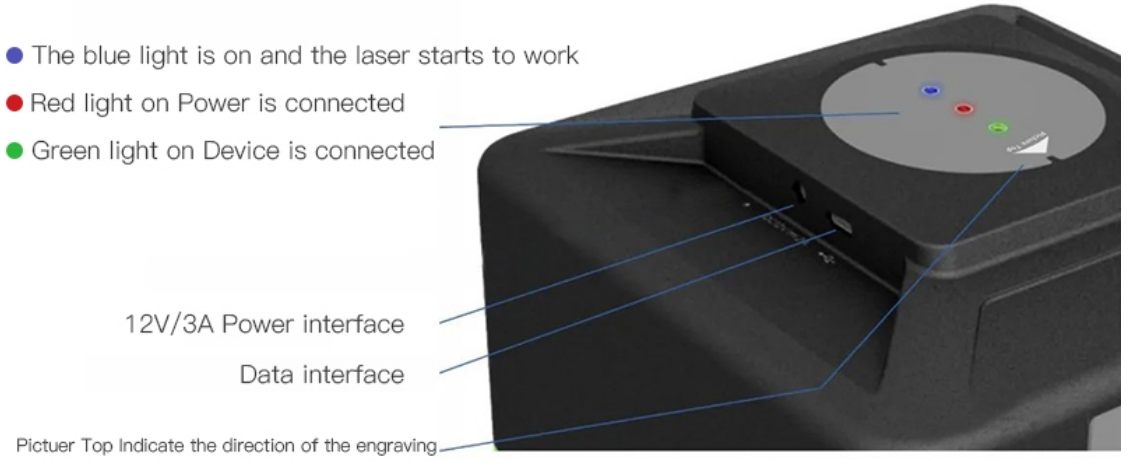
2. PackingList

SN	Product name	Quantity	Remark
1	Laser engraving machine main body	1	
2	Transparent bracket	2	It can be used for both engraving and cutting. It is used to protect the desktop when cutting. It is placed horizontally directly under the product and fits with the product holder.
3	Accessory box	1	Contains: 1.12V/3A DC power supply X1 2.Type-C data cable X1 3. Goggles X1 4. Rectangular black PVC sheet, Used to assist in adjusting focus 5. Certificate of conformity 6. Warranty card 7. APP download guide card
4	Gift box (non-standard)	1	Contains: 1.100mm*100mm; 2. Thickness 1.5mm wood board*5PCS; 3.20mm blocks *4PCS; 4. Thickness 1mm, length and width 120*120mm Color non-woven fabric 5PCS (random color,For cutting) 5.110*108mm color cardboard for cutting,5 colors, 4PCS for each color.
5	Metal bottom plate	1	It can be used for both engraving and cutting. It is used to protect the desktop when cutting. It is placed horizontally directly under the product and fits with the product holder.

3. Introduction to Signal Lamp, Power Supply and Data Transmission

3.1 Signal:

A red light indicatesthat the power supply is connected, a green light indicates that the device isconnected, and a blue light indicates that the laser is starting to work (aweak spot is emitted when the blue light is not on for adjusting the focus and previewing the engraving position).



3.2：Electricity and datatransmission:

Signal light: The red light is on to indicate that the power is connected, the green light is to indicate that the device is connected, and the blue light is on to indicate that the laser is working (when the blue light is off, a weak spot is emitted, which is used to adjust the focus and preview the engraving position).

Interface identification for power supply and data transmission:

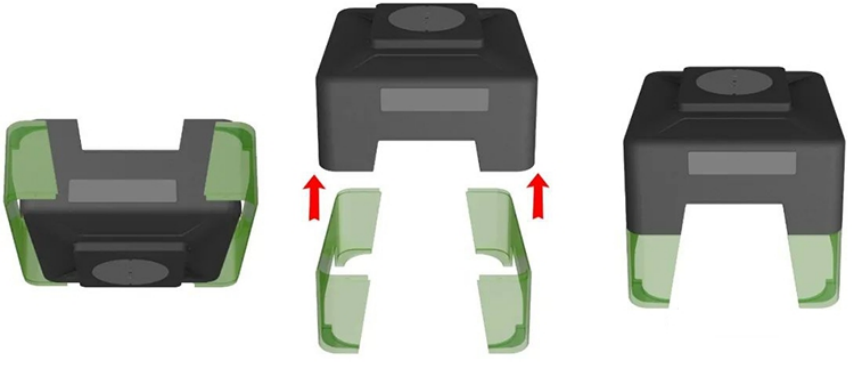
·The 12V/3A DC power adapter that the user carries with this product is powered, or it can be equipped by itself.

·Support Type-S USB data cable to connect to computer to transfer data.

· Mobile phone Bluetooth transmission and APP use: install APP, support dual-mode Bluetooth connection to mobile phone to transmit data

4.Assembly

Assemble the diagram：

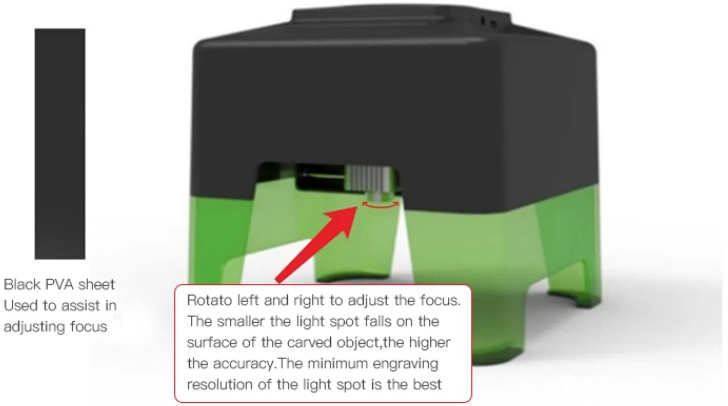


5.Adjust laser focus:

This product needs to adjust the focus manually, in the fuselage inside the laser head under the twisting knob can adjust the focus, this product in the case of power on the blue laser spot shot out, no harm to the human body, adjust the laser focus to achieve the minimum light point carving effect is the best. This product has been out of the factory for carving 1.5 mm planks for focusing, such as carving 1.5mm planks do not need to adjust the focus, if you need to carve different thickness objects, need to place the object under this product to adjust the focal length manually. For the first operation, it is recommended to use the1.5 mm thick template attached to packaging box to try carving.

The methods of focusing are as follows:

Place the carve dobject horizontally under the engraving machine, observe the blue light point, manually adjust the knob below the laser head, and achieve the minimum light point, the engraving effect is the best. Because the laser will producereflection, if the color of the surface of the carved object is light color, then the light point reflection, thus increasing the difficulty of observing the light point size when adjusting the focus, the accessories box of this product has a black PVC piece attached, because the light point irradiation on the black surface is conducive to clear observation of the light point size, can be used to place on the surface of the carved object to assist in adjusting the focus.



Note: observe the light point falls to the minimum pointon the surface of the object, and the focal length has been adjusted whenrotating to the minimum point. Note that the smaller the focus adjustment, the more refined the image effect, the focal length is not

adjusted well, and theremay be a situation where the image can not be engraved. effective engraving rangeof laser focus for this product is between 35 mm-80mm (from laser knobcalculation). can be carved to an object surface below the bottom of this product, or to a surface above the bottom of the product.

6.Engraving and cutting functions:

Engraving: Thismachine adopts laser engraving method, can be carved flat, opaque, withoutadding flame retardant material organic materials, such as: wood, paper jam,bamboo, leather, plastic, etc., there are multiple picture patterns andfunctions in the APP, see APP operation guidance for details.

Cutting: this product can also cut softersheet material, such as paper, thin board, EVA sheet, non-woven fabric, cloth,and other materials. When cutting, please place the metal plate attached tothis product horizontally on the bottom of this product, and then place the materialthat needs to be cut horizontally on the metal plate so as not to cut the badtable top.

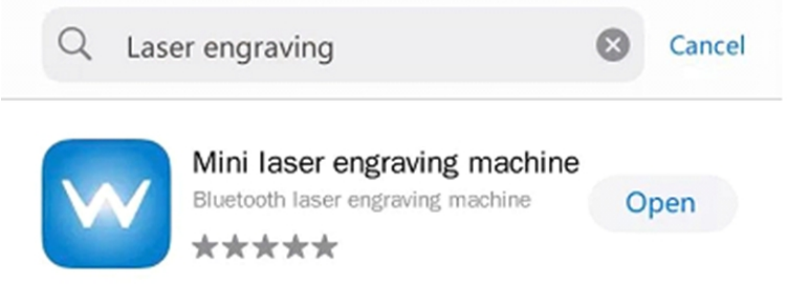
7.Operationflow:

App Download：

Android users: in the Google Play store and other application market search :" Mini laser engraving machine "," laser engraving machine "," laser engraving machine ", appear full name :" Mini laser engraving machine" application is the application of this product.

iPhone mobile phone users: in the App Store search " Mini laser engraving machine "," laser engraving machine "," laser engraving machine ", download.

APP icon:



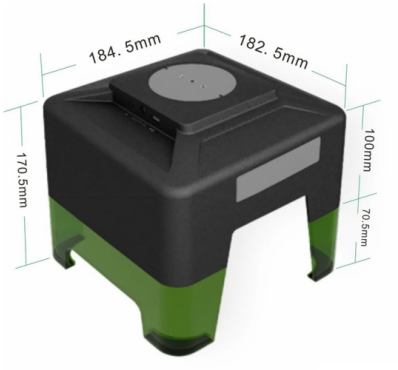
Computer control engraving: connect power - connect computer- Install engraving software (software download address: https://drive.google.com/file/d/1yDOr8OX9b-xVWsCLwIb97xw6zQq8oJ2E/view?usp=sharing) - open engraving software - import printing pictures - start printing- print complete - pull-out shutdown;

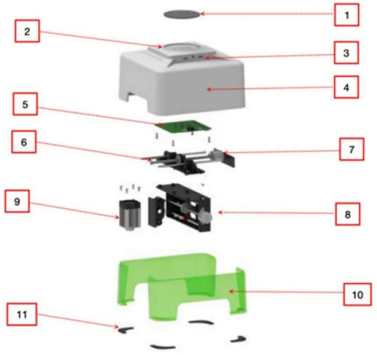
Mobile phone control engraving: connect power – connect Bluetooth -- import pictures --edit engraving content -- start engraving --finish -- pull off the electric shutdown;

(See APP operation process for details, this productis mainly mobile phone APP operation, there are rich functions to experience.)

Ⅱ . Hardware Introduction

1. Hardware composition





1: Indicator Panel; 2: Indicator ; 3 : External Interface; 4: Shell; 5 : Main Control Circuit Board; 6: Y Axial Wire Rod ; 7: Motor; 8: X Axial Wire Rod ; 9: Laser tube; 10: bracket; 11: foot pad

2. Performance parameters

product name	Laser engraving machine
Engraving area	90*80mm
Engraving mode	X.Y axis drive, semiconductor LD diode light-emitting engraving
Software support language	Chinese, English and follow mobile phone system
Image format	jpg,bmp (24bit), tiff, png(below 32bit), pcx(8bit and 24bit), pcd
Image accuracy	510dpi
Support operating system	Win、Android、Ios
Laser head power	5W
Power	12V/3A
Is the laser replaceable	Replaceable, need tweezers and Phillips screwdriver to assist
Laser working temperature	0~45℃
Indicator light	Power indicator: red Working equipment indicator: blue Connected equipment status indicator: green
length of work	Laser module life is more than 10,000 hours
interface	DC power supply seat; USB (Type-C interface)
Engravable and cutable materials	Bare stainless steel and other metals with low light reflectivity can be engraved with various metal oxidation, electrophoresis and electroplating layers. Brass, aluminum, iron and other high light reflectivity of the metal can not be carved. Other combustible materials such as wood, plastic, leather, etc. can be carved, power adjustable, for different materials have the appropriate carving parameters configuration.
Materials that cannot be engraved	Can not be burned, such as: metal (no paint coating), flame-retardant material, transparent plastic, mirrorItems, items with strong reflection.
Equipment component materials	Plastic + Hardware
Certification	FCC/CE/fda
size	Product size: length 185mm*width 183mm*height 171mm (height after assembly) Packing size: length 235mm*width 235mm*height 165mm
Dimensions product weight	0.9kg
With packaging and accessories weight number	1.5kg

Ⅲ . App Practice Guide and Skills

Product Manual

https://drive.google.com/drive/folders/1dZBMNieslGPnIVnrsClKyMf8DGAVyE4p?usp=sharing

Product installation package

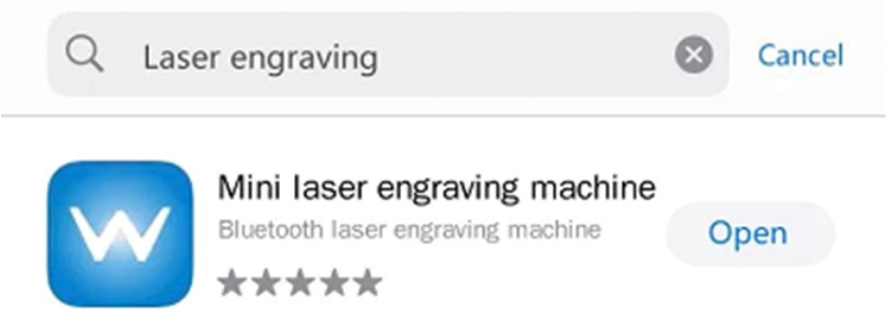
https://drive.google.com/drive/folders/1rT-uWJfb3korFa-aY9tWxltbYevMKbtP?usp=sharing

1.APP installation

Android users: in the Google Play store and other application market search :" Mini laser engraving machine "," laser engraving machine "," laser engraving machine " , appear full name :" Mini laser engraving machine" application is the application of this product.

iPhone mobile phone users: in the App Store search " Mini laser engraving machine "," laser engraving machine "," laser engraving machine " , download.

APP icon:



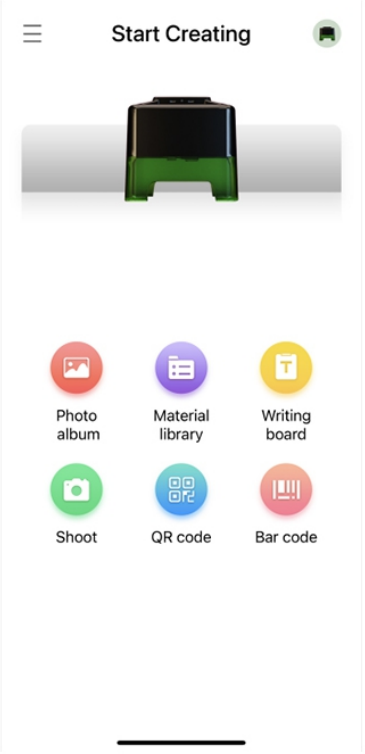
2. Connection Equipment

2.1： Power supply

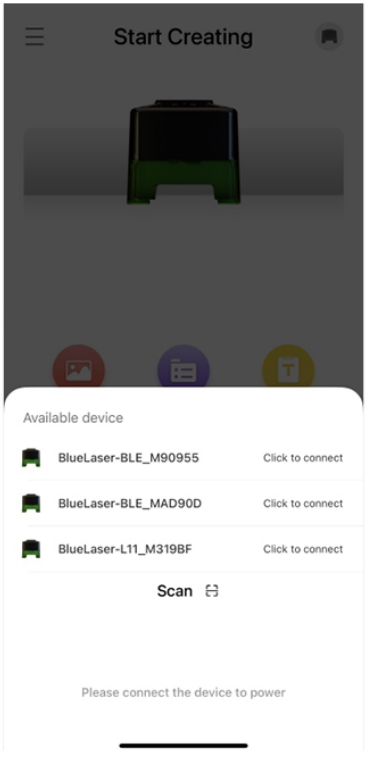
(power supply can be selected DC the power adapter, or 5 V2A of portable battery power supply, with the accessories box inside the Type-C data line inserted on the fuselage of the Type-C power supply interface. If you want tooperate this product with a computer, you can use two Type-C data lines at the same time, one connecting computer, one connecting portable battery. A data line can also be used to connect the product to the computer, and then DC power adapter)

2.2:Open APP, Click on the Connected Engraving Machine (see below)

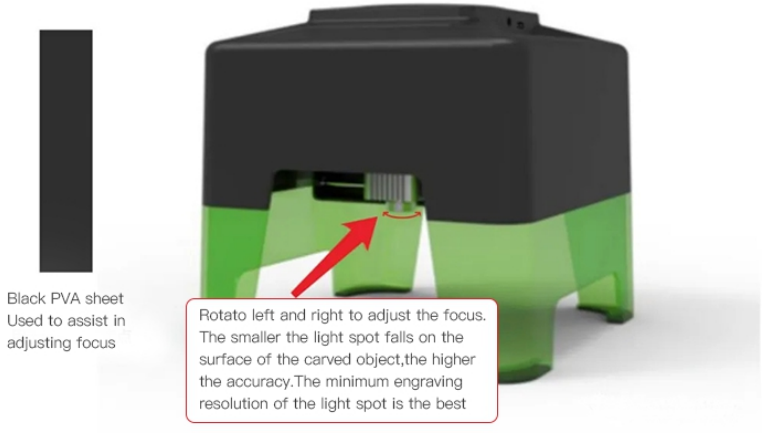
Open the APP and connect to the engraving machine



Click Scan, then click the device name to connect



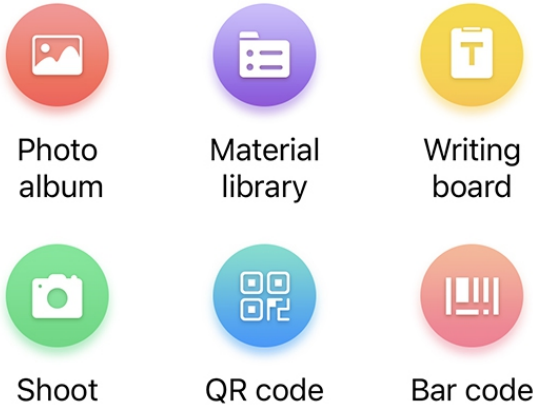
3. Confirm focus



Place the carved object horizontally under the engraving machine, observe the blue light point, manually adjust the knob below the laser head, and achieve the minimum light point, the engraving effect is the best. Because the laser will produce reflection, if the color of the surface of the carved object is light color, then the light point reflection, thus increasing the difficulty of observing the light point size when adjusting the focus, the accessories box of this product has a black PVC piece attached, because the light point irradiation on the black surface is conducive to clear observation of the light point size, can be used to place on the surface of the carved object to assist in adjusting the focus.

4. Get the engraving

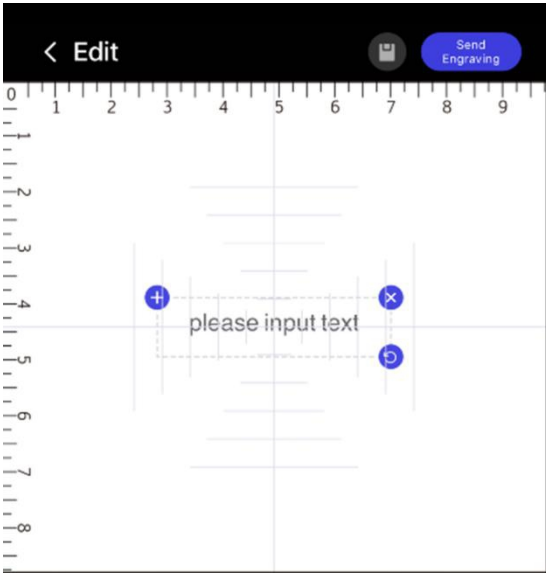
There are 6 ways for APP to obtain materials: photo album, material library, writing board, shooting, QR code, and barcode (see figure below):



4.1Cellular Album: Click on the album is through the mobile phone album to get the content you want to carve, select the picture can go to the page editing pictures.

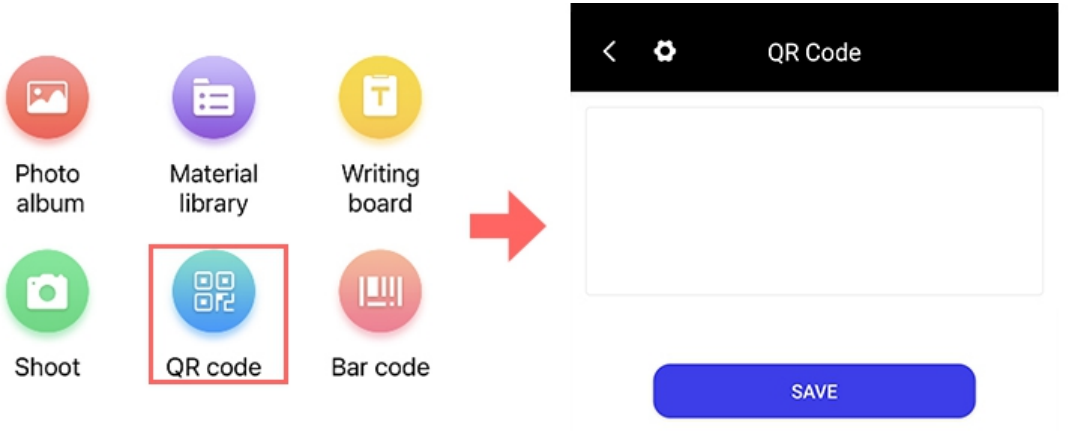
4.2 APP Material Library: Click on the material library is to enter the APP own material library to get the content you want to carve, select the picture can go to the page to edit the picture. The

4.3 Input text in white background: input text can do the corresponding editing of the text, can add text paragraphs, rotation and zoom, as shown in the figure, after editing the text click on the upper right corner to send to the next page;



4.4 Photos: Click on the camera to get what you want to carve, such as images, graphics, books, and so on. After taking pictures, you can go to the page where you edit the pictures.
material library will update the content on a regular basis, each time after their own work will be automatically saved to the material library, convenient for your next use.

4.5QR Code： Click to take a photo is to get the content you want to engrave through the phone camera, such as portraits, graphics, content on the book, etc. After the photo is completed, you can enter the page for editing pictures.



4.6Barcode: You can enter a number to generate a two-dimensional code, which is convenient for engraving two-dimensional code graphics.

5.Editing Material

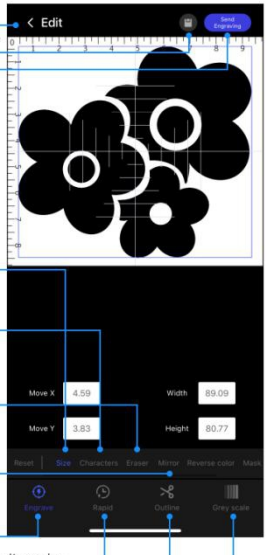
5.1 Menu features for editing material interface (figure)

Select the engraving content and enter the edit page:

Return to the previous level

Click Save to create a picture

After editing, click this button to send the picture to the engraving configuration page, and set the speed and power according to the engraved material



Size: Through input, accurately edit the size and position of the picture

Text: You can add text to the picture, add multiple text layers, zoom and rotate

Eraser: You can erase the parts that do not need to be engraved, and you can choose round or square strokes

Mirror: the picture is symmetrically flipped, easy to operate

Engraving: After clicking engraving and clicking the next button, the picture will be uploaded and the engraving will start

Fast engraving: For patterns with more lines, it can be engraved more quickly

Cutting: suitable for cutting an edge contour of graphics, and also suitable for text and content without noise

Grayscale: make the picture gray, suitable for bitmap images, engraving with excessive gray content

After sliding on the right:

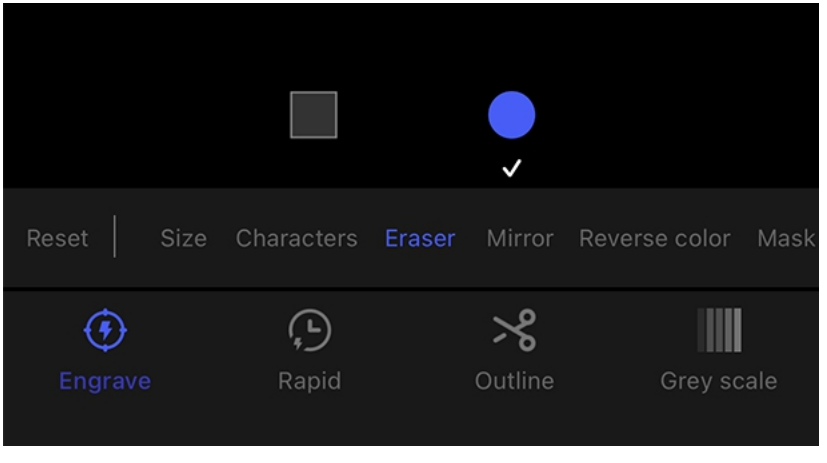
Reverse color: reverse color

Mask: choose different shapes to engrave partial patterns

Contrast: enhance or weaken the contrast of the picture

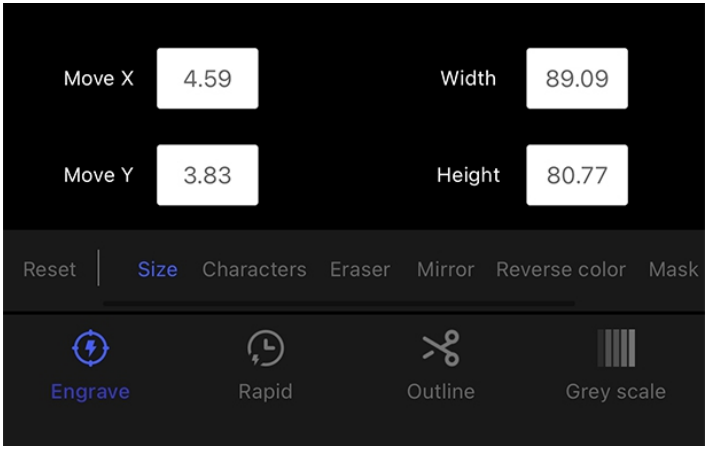
5.2 Add text

You can add more than one text layer to edit the picture, select the font and zoom in on the text, and you can use an eraser to parts. You can also add multiple text layers, select fonts and zoom in on text, and use an eraser to remove unwanted parts.



5.3 Dimensions and coordinates

On the size page, you can set the size of the selected image and precise coordinate positioning.



5.4Edit complete, send

Click "Edit Finish, Send" in the upper right corner to the device. The time to send the picture will vary according to the size of the picture. The larger the picture, the longer the time, and the maximum frame size will not exceed 150 seconds. The Android system is faster than the IOS system.

6. Carvingand cutting

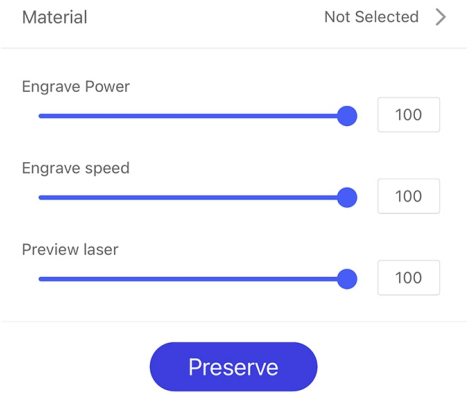
This product can be flat, opaque, non-flame-retardant materials of organic materials, such as: wood, paper jam, bamboo, leather, but also through color paper to cover the surface of glass, ceramics, metal and other objects, after carving left pattern content and color paper color. also can cut softer sheet material, such as paper, thin board, EVA sheet material, non-woven fabric, fabric, etc.

This product has built-in G-Sensor sensor, when the product is working, any sloshing, falling, collision, tilting, rising and falling and other movements will immediately suspend work, can start carving again in app.

6.1 Engraving parameter settings

Engraving configuration:

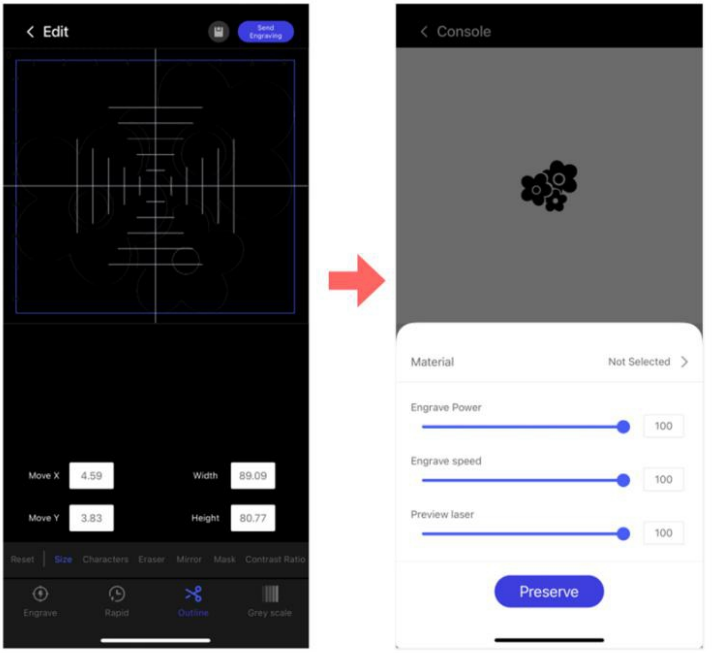
After sending the picture, automatically go to the engraving configuration setting page, select the material option according to the material to be engraved, if there is no suitable option can manuallyslide the button to adjust the power and speed. The higher the power value, the higher the laser power; the lower the speed value, the slower the engraving speed, the deeper the engraving depth.



6.2 Cutting configuration:

If the picture in "contour mode" click send, then there will be cutting configuration options, first select the material, cutting power value should be the largest and constant, the slower the cutting deeper. Usually high hardness materials need to reduce the speed of cutting, or after the completion of the cutting click "again" for multiple original path cutting, in order to achieve the purpose of cutting for different materials.

After setting up the configuration, click the "save" button in the upper right corner to enter the engraving page, if you need to reset the engraving configuration when carving, you can click "pause engraving" and then click "configure" button on the left of "pause engraving" to set up, after setting up click "save" and then click "continue engraving" can.



6.3 Engraving and Preview

Set the configuration parameters, click save, go to the engraving page, in this page can be pre-carved preview, to determine the location of the engraving content, if the location is not right, can be adjusted to the correct before carving, such as:

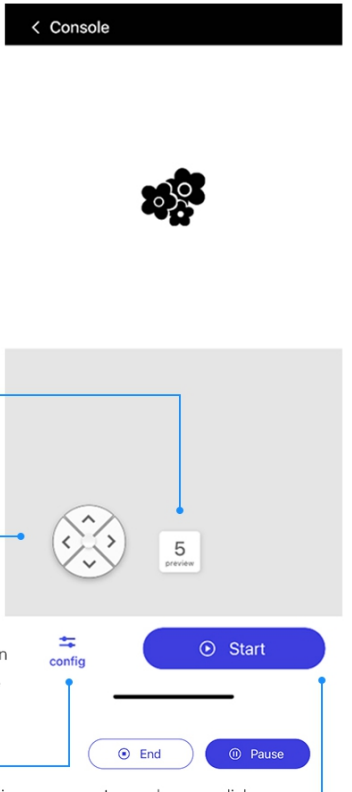
After setting the engraving configuration, click Save to enter the engraving operation page

Return to the previous level

Preview button. After clicking, the laser spot will move along the edge of the pattern to be engraved. At this time, you can adjust the position of the engraved material to ensure that the engraving is at the ideal position. Click the preview button and run it 5 times. After stopping, you can click to continue. Preview, you can also click halfway to stop the preview.

If you need to fine-tune the position of the light spot after previewing, you can adjust the position of the light spot by pressing this button.

Click to enter the config page. After you start engraving, you find that the configuration needs to be adjusted. Click Pause and reset the configuration , then you can continue to engrave the unfinished engraving content, or you can stop engraving and edit it again.



Click here to start engraving. After starting, you can stop and pause; click “Pause” to set the engraving configuration and click to continue; after completion, you can repeat engraving, or click the next one to start a new creation.

In the engraving configuration page can choose the corresponding material, different materials use different power or speed, the higher the power, the deeper the carving depth, the slower the speed, the deeper the carving depth, only adjust to the most suitable material carving parameters, will carve out a good effect.

Finally confirm the adjustment of the focus, confirm the location of the carving, click on the start of carving, waiting for the end of the carving can enjoy their own carving works. More material carving works need everyone to explore, according to the different materials, will carve out different effects of the effect, but also need to set different carving configuration.

There are some wood with grease, so there will be some smoke effect, can try to wipe off, the effect after wiping depends on the material.

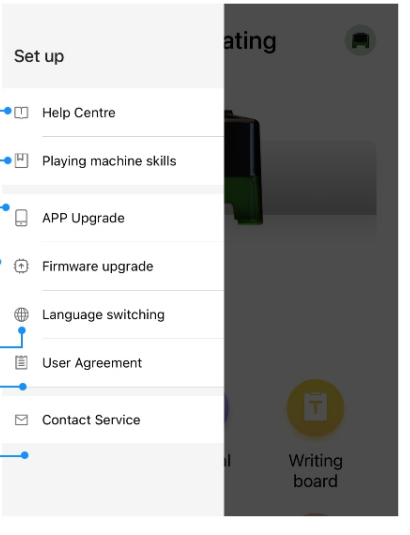
7. Paper engraving

For ceramic, purple sand pot, glass, metal products surface carving, can be used to attach color paper, engraving color paper, so that the color on the color paper attached to the surface of the object, because of the material of the color paper, the color carved on the surface of the object will not be easily rubbed off.

The engraving effect on the surface of the glass covered by colored paper

8.APP settings menu introduction

Open the APP to enter the settings,
you can enter the product description first



Help

Share carving skills and ideas

App upgrade reminder

Firmware upgrade reminder, a red dot means there is new firmware, click to upgrade the device firmware

Back to switch language

APP user agreement

Customer service mailbox, problem feedback

IV. Points for attention

1. this product G-Sensor built-in sensor, when the product is working, any sloshing, falling, collision, tilting, rising, falling and other movements willimmediately stop working.

2. this equipment uses the high power laser as the heatemission source, do not use the eye to look directly atthe laser head, althoughhas the G-Sensor device, but direct view at the weak blue light , will hurt the eye.

3.when the engraving machine works, observe the carved spot throughthetranslucent bracket.

4.please wear goggles.

5. Childrenunder the age of 12 are forbidden to operate, if you need tooperate, pleasebe accompanied by adults.

6.this product should be used in a supervised place.

7.this product is not used for along time, please use packaging box to avoid dustinto the XY shaft caused bymovement is not smooth, if the product is used for along time, please properlyapply lubricating oil to the XY silk rod and opticalshaft.

V. WARNING

Do not use the laser light source of this product to illuminate any object other than the object to be engraved, especially human eyes.

FCC Statement

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 FCC PART15 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.

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

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