Genmitsu

Z3 Laser Engraver & Cutter

V1.0 Oct. 2022

Contents

Welcome

Thank you for purchasing the Z3 Laser Engraver & Cutter from SainSmart.

Included in your package will be a USB Drive, that contains:

● Manuals

● Windows USB Driver

● Sample Files

Help and support are normally available from our Facebook Group. (SainSmart Genmitsu CNC Users Group, *https://www.facebook.com/groups/SainSmart.GenmitsuCNC*)

For any warranty or support problems please email us at *support@sainsmart.com*

You can visit our help doc *https://docs.sainsmart.com/togetmoreuserguides about CNC & Laser Engraving.*

Safety Guideline

Always exercise safety and caution when working with laser marking systems. Consider the listed recommendations to minimize risk:

● Laser processing is risky and users should carefully consider whether the object is suitable for laser processing.

● You must be at least 13 years old to operate the laser engraver.

● Direct exposure to the laser beam can cause severe bums and eye damage. Ensure that you are weaning proper laser safety goggles when working in the vicinity of the laser equipment .

● Processing objects and emissions shall comply with local laws and regulations.

● It is strictly forbidden to place any irrelevant total or diffuse reflecting objects in the equipment.

● The equipment should be kept away from electrical equipment that is sensitive to electromagnetic interference, otherwise it will cause interference.

● When you focus the laser do so only on the lowest power setting.

● Keep a fire extinguisher nearby since use of the laser may lead to an unexpected fire.

● Never leave an operating laser unattended.

● Fumes and smoke generated during the engraving / cutting process must be extracted from the room as some can be poisonous : make sure there is a ventilated system to the outdoors.

● Make sure the cutting area under the laser is metal or non-flammable.

● Ensure that the room or area you are operating the laser in is sufficiently labeled to prevent someone from unknowingly walking into an active work area.

Safety Guideline

- Be sure to disconnect the power when cleaning, maintaining or servicing the laser equipment.
- DO NOT stare at the bright and intense light appearing during the engraving process. Doing so can cause serious eye damage.
- Never use the laser except for the purpose intended.

  SainSmart does not accept any responsibility or liability for any use or misuse of the Laser.

Pay attention to

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

2. Do not look directly at the light
The brightness of the laser is harmful to the eyes, please try not to look directly at the laser.

3. No entry
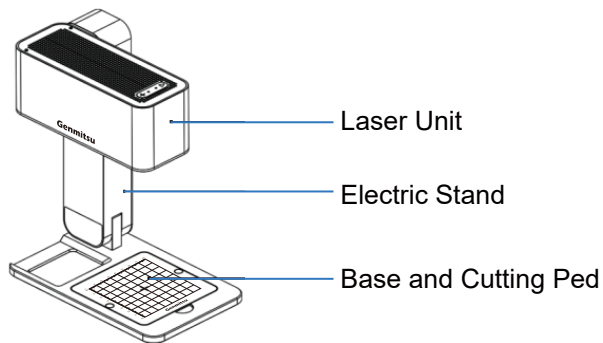Keep your hands away from the machine when the machine is working to avoid injury.
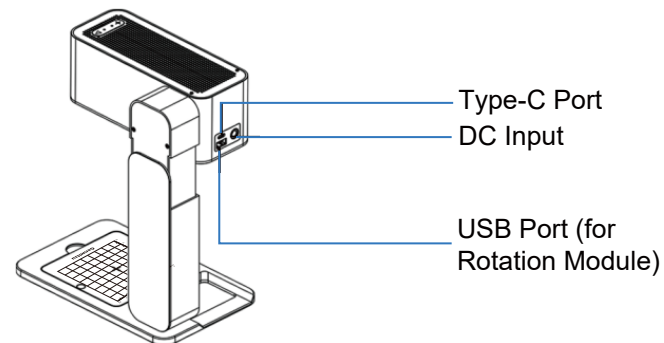
4. Turn off machine when not in use
Turn off the machine switch when the machine is not in use to avoid third-party operations.

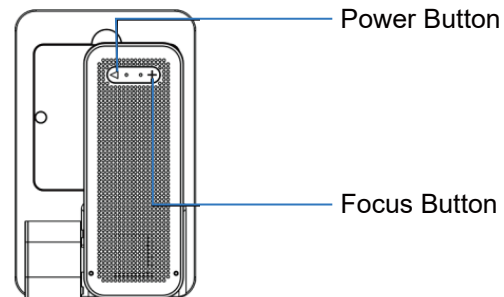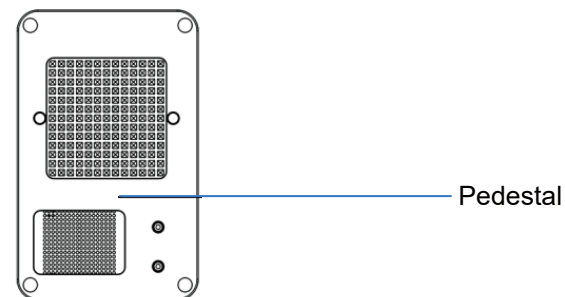# Product Details and Accessories

1. Front View

Laser Unit

Electric Stand

Base and Cutting Ped

2. Rear View

Type-C Port

DC Input

USB Port (for Rotation Module)

3. Top View

Power Button

Focus Button

4. Bottom View

Pedestal

Product Structure Accessories

Power Supply×1　USB Drive×1　USB Cable×1　Kraft Paper×1　Marker×1　Brush×1
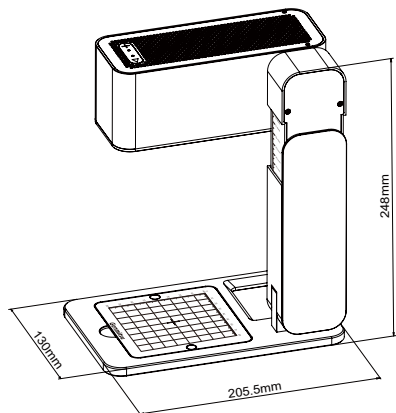
Laser Safety Goggles×1　Magnet Protective UV Shield (optional)　Portable Charger (optional)　Rotary Attachment (optional)

248mm

130mm

205.5mm

- Power Supply: Supply power for the engraving machine.
- USB Drive: Contains drivers, engraving software for PC, user manual and video instruction.
- USB Cable: Connect the computer and the machine.
- Laser Safety Goggles: Protect your eyes from hazardous laser eye exposure.
- Marker: Paint the engraving surface with marker or paints before engraving, and clean it when the job's done.
- Brush: Remove particles.
- Kraft Paper: Sample materials to evaluate your laser engraver.
- Magnet Protective UV Shield (optional): The protective shields around the machine protect your eyes from laser damage.
- Portable Charger (optional): Portability.
- Rotary Attachment (optional): Add-ons to engrave cylindrical objects, and an additional USB cable is needed.

Product Parameters

|	
Model	Z3
Material	High Strength Anodized Aluminum
Laser Focus	Automatic Focusing
Laser Head	450nm Blue Laser
Laser Power	5W
Connecting Interfaces	Bluetooth 5.0 Dual Mode Adapter, Type-C Port for PC
Operating Systems	Mobile: Android & iOS. Desktop: Windows & Mac OS
File Formats	JPEG/BMP/GIF/PNG/JPG/XJ/PLT/DXF/HPGL
Power Supply	12V/5A, Portable Charger
Power Consumption	0.89A(Standby) 2.2A(Engraving)
Cooling	Forced Air Cooling
Laser Service Time	>10000H
Engraving Area	8cm×8cm (3.14"×3.14")
Engraving Accuracy	0.05mm
Engraving Speed	600mm/s (1417"/min)
Engravable Materials	Paper, Wood, Bamboo, Cloth, Acrylic, Plastic, Leather, Bread, Fruit, Glass, Ceramic
Cuttable Materials	Paper, Wood, Bamboo, Leather
Support OS	Windows/IOS/MAC/Android
Laser Unit Size	21×13×22cm (8.27"×5.12"×8.66")
Package Size	35*25*14cm (13.78"×9.84"×5.51")
Machine Weight	1.9KG

Usage Guide

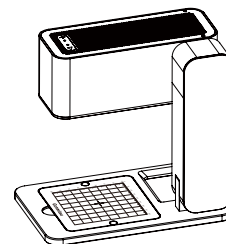**a. Open the Electric Stand**

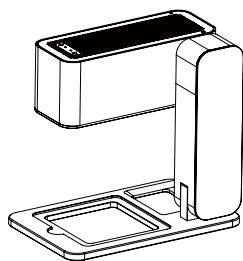Electric Stand
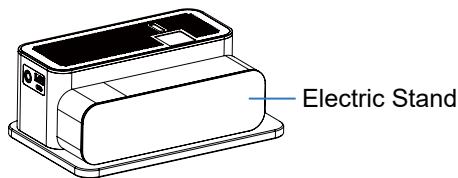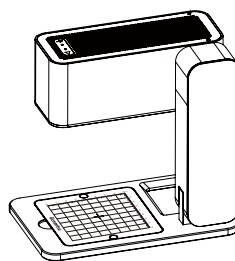
b. Open the Laser Unit
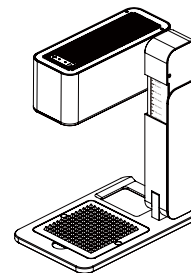
Laser Unit
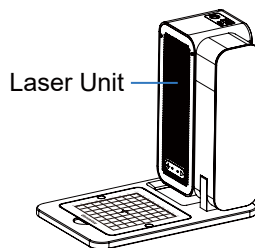
c. Finish

Three Operational Modes

a. Removing the Base:
Perfect for Large Objects

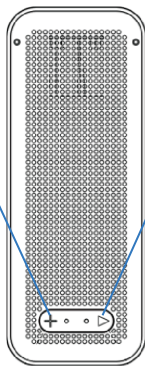**b. Flat Surface Attached to the Base**: Used for Smaller Objects

c. Honeycomb Cutting Surface of the base: Cutting Materials

Function Introduction

Focus Button:
- Short press to automatic focus.
- Long press once to go up, long press again to get down.

Power Button:
- Short press once to preview, press again to stop.
- Long press once to engrave, long press again to cancel engraving.
- During engraving, short press to stop engraving, short press again to continue.

Resources Download and Software Setup

Method 1: Driver, software, sample picture and instructions can be found in the USB flash drive that comes with the machine. (*Note: We recommend you to copy all files to your computer when you use it for the first time in case the flash drive get lost.*)

Method 2: Download it from SainSmart Resources Center. All files included in the flash drive can also be downloaded from Sainsmart Resources Center: https://docs.sainsmart.com/z3 or the following QR Code.

Scan QR code to download software and user manual. → →

APP Download & Introduction

1. APP Download and Test Engrave.

Method 1: Scan the following QR code to download.

Google Play　　　📱 Android　　　🍎 iOS

Method 2: Download from SainSmart Resources Center: https://docs.sainsmart.com/Z3. Other resources like the user manual and video instructions can also be downloaded here.

Note:

Corresponding permission should be granted after successful installation.

2. Setup your Laser Engraver.

a. Connect the Z3 Engraver to the power supply and power on.
b. Enable bluetooth on your mobile phone or tablet.
c. Open "Engraver" and click "Not Connected" in the upper right corner. The app will search for available devices.
d. Then click "Genmitsu_Z3xxxxx".
e. The machine will be connected to your phone within a few seconds. The upper right corner will show "Connected". You can now start engraving your first job with the app.

① Start your first test engraving.
② Select Photo either one of your own, or select samples from the "Image Library".
③ You can Crop, Add Text, or additional Images after selecting your desired photo/drawing.
④ Select "Next Step" from the top right corner when complete.
⑤ Adjust your Image, Black and White, Grayscale, Outline only, Sketch Filter, or Rotate.
⑥ Select "Next Step".
⑦ You can preview your project and prepare to position the Laser Engraver on your material.
⑧ Use Trace or Outline to help you place your image on the desired engraving surface.
⑨ When ready select Start Engrave.
⑩ Wait for the engraving process to complete before moving the engraver.
⑪ Congratulations, in just a few moments you created your first engraving!

Introduction to Software Interface (Load Content)
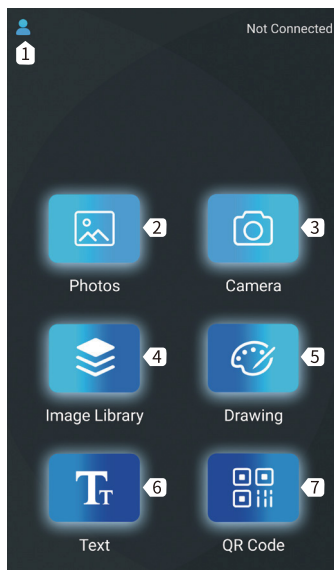
1 **Menu**
New User Guide/ Feedback/ User Agreement/Equipment/ Language Setting.

2 **Picture**
Import photos from Gallery.

3 **Camera**
Take photos via camera.

4 **Image Library**
Built-in Graphic Libray.

5 **Drawing**
Create your artwork.

6 **Text**
Add text.

7 **QR code**
Generate bar code or QR code.

Roller Settings
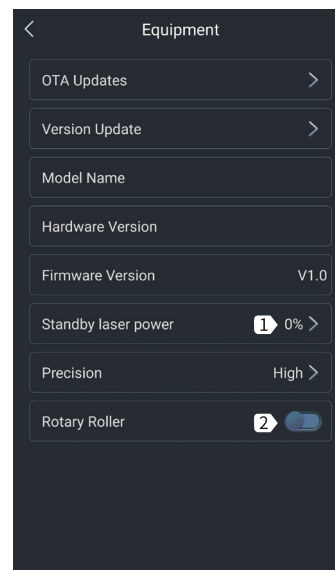
1 **Standby laser power**
Set the laser power when the machine has no engraving job.

2 **Roller mode**
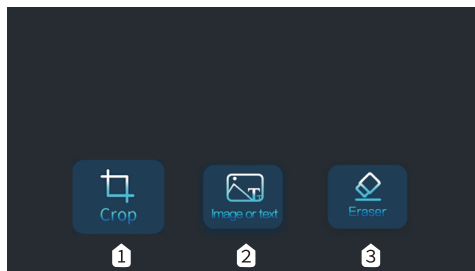Activate/inactive the roller mode. When it is activated, it can engrave cyclical objects.

APP Download & Introduction

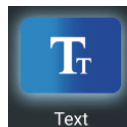| <	Image Editing	Next step

ABCD
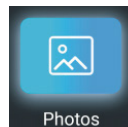
1 **Crop**
Crop your image in different shapes.

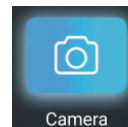**2** **Photo or Text**
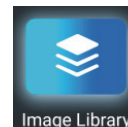Add additional images, custom text to your images.

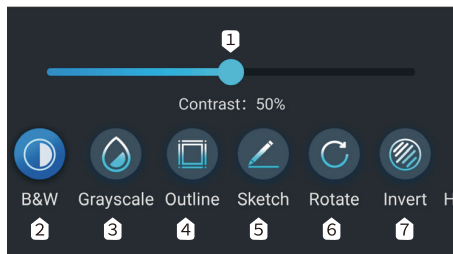Input Text   Load Photos from Album   Shoot via Camera   Add Photo from Image Library

3 **Eraser**
Modify the photo with eraser.

Crop ①   Image or text ②   Eraser ③

APP Download & Introduction

Carving set — Next step

ABCD

Contrast: 50%

B&W ② Grayscale ③ Outline ④ Sketch ⑤ Rotate ⑥ Invert ⑦

❶ **Contrast**
Adjust the Contrast slider to increase or decrease the text/photo contrast.

ABCD — ABCD — ABCD
Contrast 16 — Contrast 50 — Contrast 80

❷ **Black and White**
Convert your image to black and white.

❸ **Grayscale**
Convert your image to a grayscale version.

❹ **Outline**
Convert your image to an outline drawing.

❺ **Sketch**
Convert your image to a sketch drawing.

Black and White — Grayscale — Outline — Sketch

❻ **Rotation**
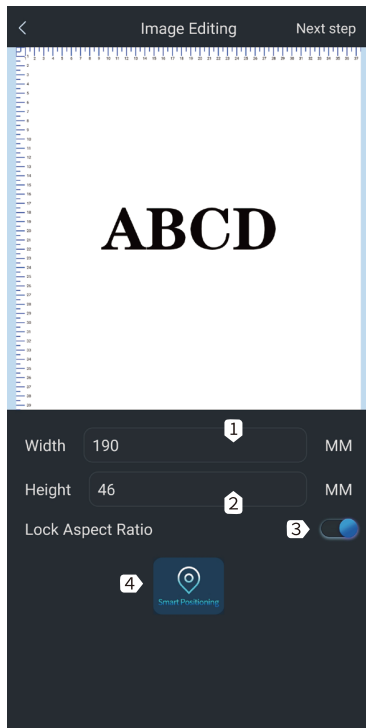Rotate your image 90°, 180° or 360°.
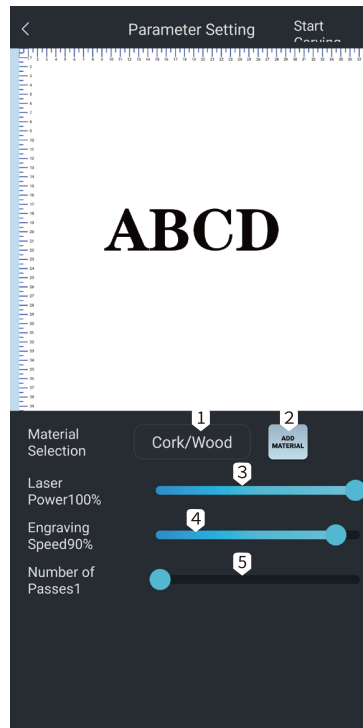
❼ **Invert**
Invert your image colors.

❽ **Horizontal Flip**
Rotate your image horizontally.

Introduction to Software Interface (Load Content)

Image Editing   Next step

ABCD

Width   190   MM
Height   46   MM
Lock Aspect Ratio
Smart Positioning

1 Width
Customize the width and height of your image.

2 Height
Customize the width and height of your image.

3 Lock Aspect Ratio
Preserve the relative width and height when resizing images or text.

4 Smart Positioning
The laser head moves in a rectangle around where the engraving job goes to help you position your workpiece.

Parameter Setting   Start Copying

ABCD

Material Selection   Cork/Wood   ADD MATERIAL
Laser Power100%
Engraving Speed90%
Number of Passes1

1 Material Selection
The app has built-in engraving settings for common materials, including cork, bamboo, cloth, etc.

2 Add Material
Add your custom material and its engraving settings. (laser power/engraving speed)

3 Engraving Power
Adjust the power level to engrave different materials.

4 Engraving Speed
Set the engraving speed. The engraving speed determines the engraving depth.

5 Number of Passes
Sets how many times the laser runs with this engraving job.

13

APP Download & Introduction

Introduction to Software Interface (Load Content)
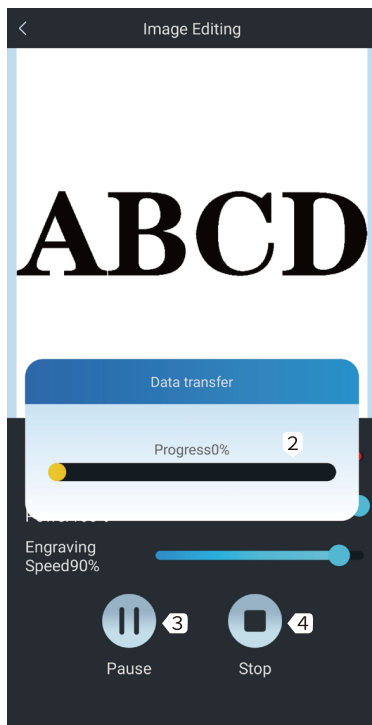
1 **Engraving job transferring**
Start engraving when 100% is completed.

2 **Engraving progress**
Display the engraving progress.

3 **Pause**
Pause the engraving process.

4 **Stop**
Stop the engraving job.

1 **Save**
Save the image you edited with the app to your phone.

2 **Engraving Completed**
Current engraving job is finished.

Resources Download and Software Setup

1. Driver Installation on Windows:

File Location: 01_ windows / driver / driver.exe ./
Locate and double-click the .exe file to start the installation program, click "install" to install the driver. When you see a dialogue box that reads "Driver preinstallation successful! ", Click "OK" to finish the installation.
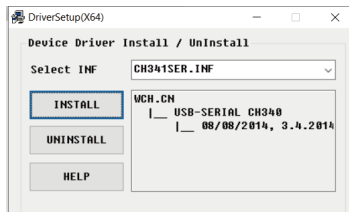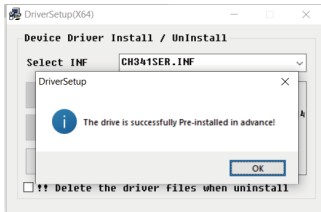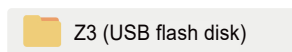
❶ 01_Windows

❷ driver

❸ driver.exe

❹ Click "Install"

❺ Click "OK" to complete the installation

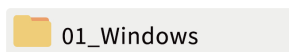# Resources Download and Software Setup

2. **Software Installation on Windows:**
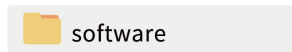File Location:
USB Flash Drive / windows / software / Engraver/
Double-click the file icon to start the setup process, and
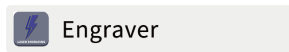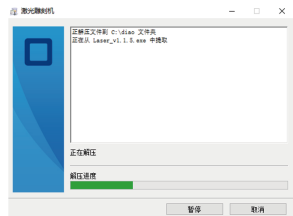the software is successfully installed when the progress
bar reaches the end.

| 📁 Z3 (USB flash disk)	📁 01_Windows
❶	❷
📁 software	⚡ Engraver
❸	❹

3. **Machine Connection on Windows:**
Connect the machine to the computer with the USB cable.
Open the engraving software — click the "connect device"
icon — the machine is successfully connected to your
computer when the icon turns blue.

❶ Double click the
software icon

❷ Click the "connect
device" icon

Connect the Machine

❺ The software is successfully installed
when the progress bar reaches the end.
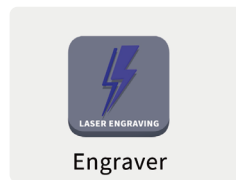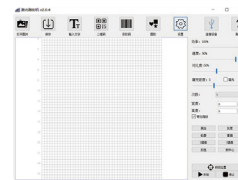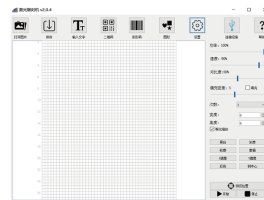
❸ The machine is connected
when the icon turns blue

Note: If you get an alert from your antivirus software when installing the engraver software, please add it as an exception
to your antivirus software to allow it to install and operate. As an executable program, the engraving software sometimes
receives false-positive alerts from some antivirus software.
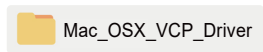
Resources Download and Software Setup

4. **Driver Installation on Mac OS**：

File Location: 02-MAC / driver / Mac_OSX_VCP_Driver /
Double-click on the package (.pkg file) and an installation wizard for the application. The installation wizard then performs all the necessary tasks to install the driver correctly.
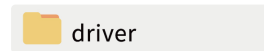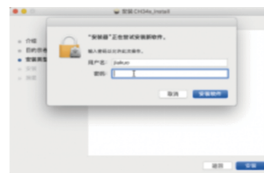
Z3 (USB flash disk)

❶

❷

❸

Mac_OSX_VCP_Driver

❹
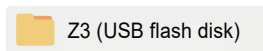
❺ Click "Continue"

❻ Enter computer password

❼ Click "Continue Installation"

❽ Continue Installation

❾ Complete Installation

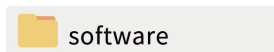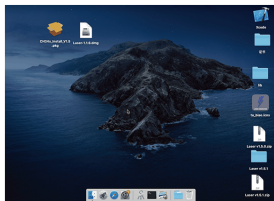## 5. Software Installation on Mac OS：

File Location: 02-MAC / software / Engraver / Installation and open the disk image (.dmg file), drag and drop the software to the Application folder, the software is successfully installed.

Z3 (USB flash disk)

❶

❷

❸

❺ Drag and drop the software to the Application folder

❹ Double click the .dmg file

❻ Complete installation

6. Machine Connection：

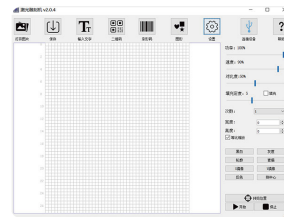Connect the machine to the computer with the Type-C cable.

Open the engraving software — click the "connect device" icon — the machine is successfully connected to your computer when the icon turns blue.

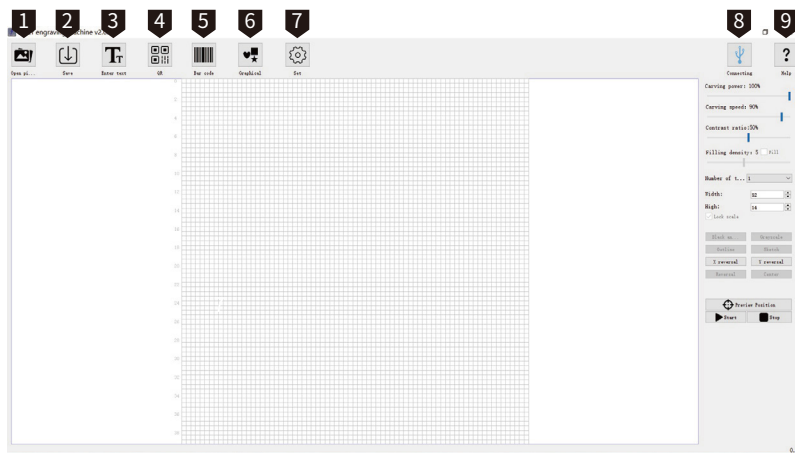❶ Double click the software icon

❷ Click the "connect device" icon

❸ The machine is connected when the icon turns blue

Connect the Machine

# Custom PC Engraving Software Introduction

User Interface

1. **Open**
   Load photos from computer.

2. **Save**
   Save the edited texts and photos.

3. **Input Text**
   Create/edit text, change font family, font style, font size and text rotation etc.

4. **QR code**
   Create QR code.

5. **Bar Code**
   Create Bar code.

6. **Graphics**
   The graphics creation tool helps you quickly create graphics, including circles, squares, hearts and stars.

7. **Settings**
   You can set the power of your laser here for test firing and framing of projects. You can also enable/disable the rotary attachment here.
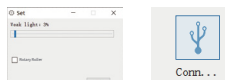
8. **Connect the device**
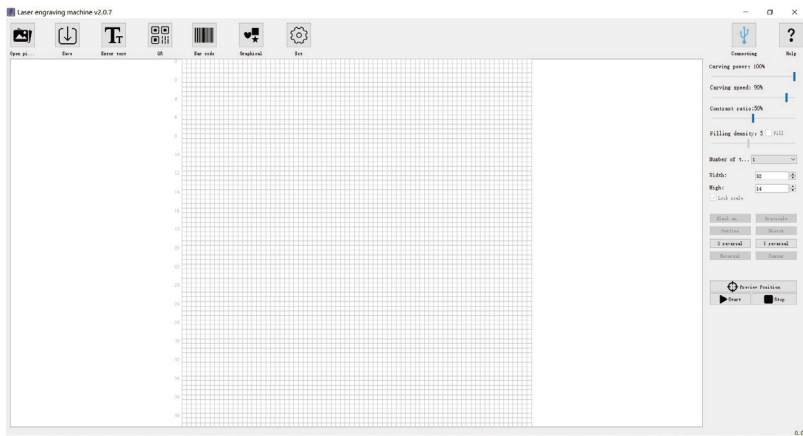   Click to connect the machine with your PC. The icon turns blue if the machine is successfully connected.

9. **Help**
   Link to SainSmart Resources Center, where you can find software, user manual, and video tutorial for the machine.

Custom PC Engraving Software Introduction

Engraving Settings

❶ **Engraving Power**
Adjust the power level to engrave different materials.

❷ **Engraving Speed**
Set the engraving speed. The engraving speed determines the engraving depth.

❸ **Contrast**
Adjust the Contrast slider to increase or decrease the text/photo contrast.

ABCD
Contrast 16

ABCD
Contrast 50

ABCD
Contrast 80

❹ **Filling Density; Filling**
The filling effect can only be effective for vector graphics, select vectorization; Click "Fill" to apply the effect, drag the fill slider to adjust the filling density.

❺ **Engraving Times**
Sets how many times the laser runs with this engraving job.

❻ **Width; Height**
Customize the width and height of the text/photo.

❼ **Lock Aspect Ratio**
Preserve the relative width and height when you resize the image or text.

Custom PC Engraving Software Introduction
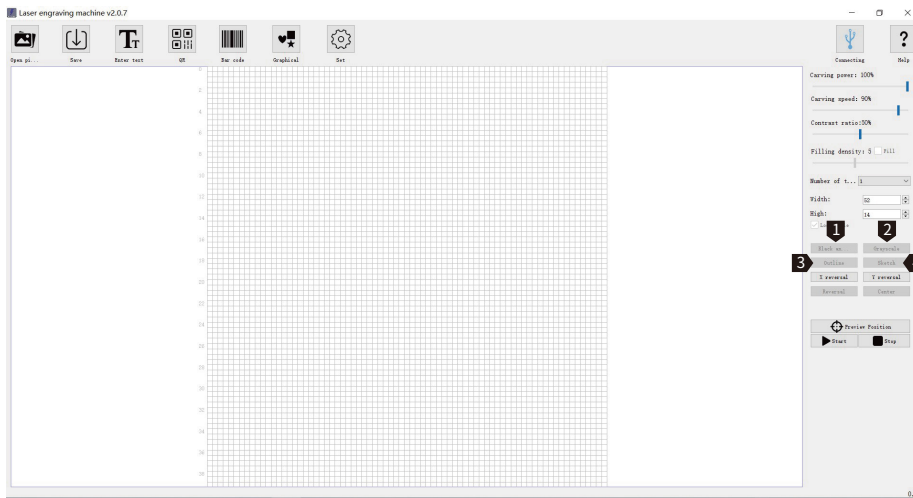
Engraving Settings

❶ Black and White
Convert your image to black and white.

❷ Grayscale
Convert your image to a grayscale version.

❸ Outline
Convert your image to an outline drawing.

❹ Sketch
Convert your image to a sketch drawing.

Black and White

Grayscale

Outline

Sketch

Custom PC Engraving Software Introduction

Engraving Settings
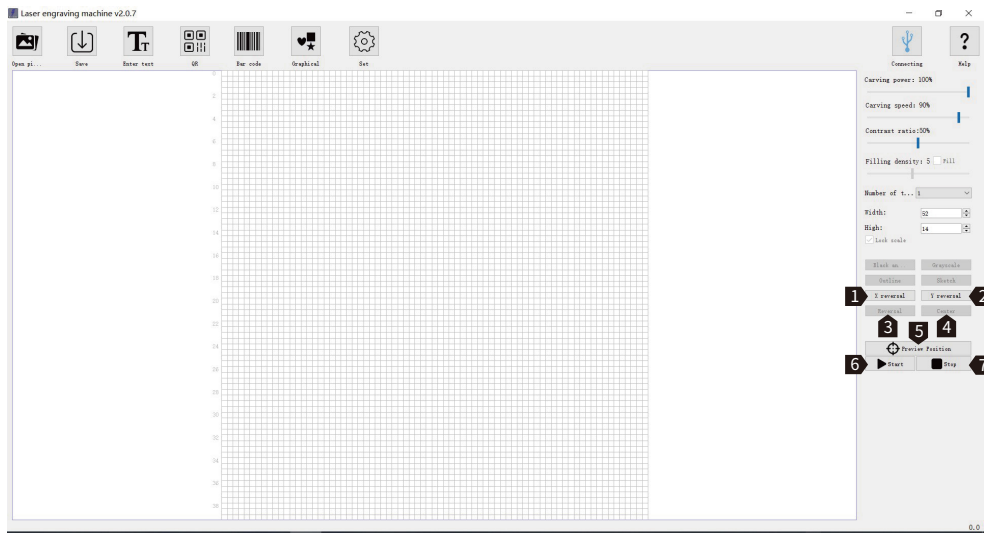
❶ X Reversal
Rotate your image horizontally.

❷ Y Reversal
Rotate your image vertically.

❸ Reversal
Invert your image colors.

❹ Center
Move your image to the center.

❺ Preview Location
The laser head moves in a rectangle around where the engraving job goes to help you position your workpiece.

❻ Start
Start engraving.

❼ Stop
Stop engraving.

Custom PC Engraving Software Introduction

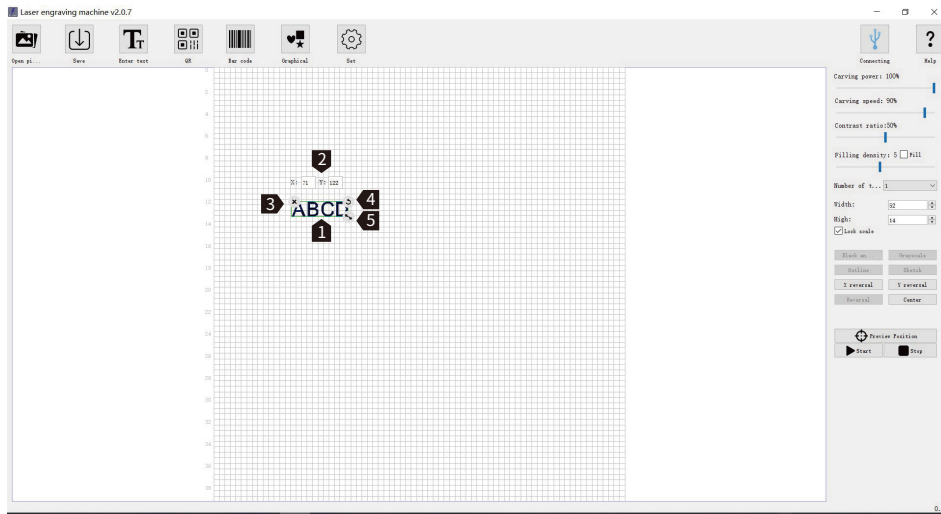❶ After loading your artwork, left-click the mouse to move the artwork position, right-click the mouse to move the drawing board. Scrolling the mouse wheel to zoom in or out from the mouse's location.

❷ X:71 Y:122 are the X Position and Y Position of your artwork. These numbers change with your artwork position.

❸ ✖ Remove your artwork from the drawing board.

❹ ⟳ Left-click the icon with your mouse to rotate your artwork.

❺ ↖ Left-click the icon with your mouse to zoom in/out your artwork.

FAQ

I. Unable to power on the machine.
Ensure all outlets, switches, and power cables are plugged in and powered up properly. Try a different power source or cable if necessary.

II. Unable to connect to computers.
1. USB cable not connected: Please make sure the data cable is correctly plugged. On some PCs, the front USB port is not receiving enough power for the engraving machine. We recommend using the USB port at the back for a stable connection.
2. The driver is not correctly installed: Install the driver according to the instructions again. After the installation is done, your computer can recognize the machine as a serial port. You can find a serial COM port in the computer's device manager.
3. If both solutions above are not working, try unplugging the USB cable and power cord, turn off the machine for at least five seconds, then power it on and reconnect again.

III. Machine gives no response when controlling via the mobile phone application.
1. The wrong machine is connected: If you have multiple machines in the workspace, please make sure you connect to the correct machine.
2. Compatibility Issue: Compatibility issues may occur when updating your phone to a new system version. Please don't hesitate to contact us with your system information if that happens. We will add support for it as soon as possible.

IV. The engraving looks blurry or shadowed.
1. Focus: Most commonly, the laser was not correctly focused before starting the job.

2. Engraving Speed: If you set the engraving speed too fast, the laser will have insufficient time to engrave your workpiece. Please adjust your engraving settings and do the engraving again.

3. Image Quality: If the image you imported has very light colors and fine lines, it will also affect the engraving quality.

4. Workpiece Position: The laser module has a fixed focal length, which means the workpiece should be placed on a flat surface and make sure it is in parallel to the machine, or poor engraving result.

V. Unexpected stops when offline engraving.

The engraving job has not been fully transferred. Re-connect the machine and transfer the engraving job again should solve the problem.

VI. Inaccurate focus

Read the "Focus" section in the User Manual carefully. Use the focusing tools provided with the machine to adjust the focus. If the focusing tool is missing, you can use white cardboard with 5mm thickness to adjust the focus instead. You can contact our support team for further assistance if needed.

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