

05 Feature Introduction

2. Water Chiller Temperature Display and Alarm Notifications:

2.1 PC Interface:

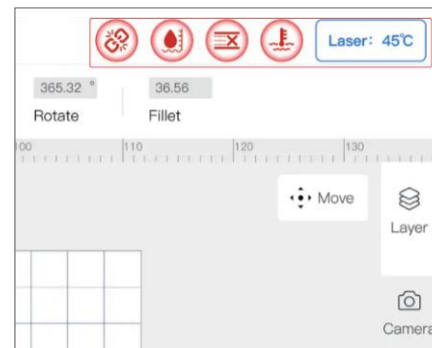
After connecting the Glacier engraving machine, the laser temperature is displayed on the left side of the interface. When the water chiller triggers an alarm, the corresponding alarm icon will be shown.

2.1.1 Laser Temperature:

The laser temperature is displayed in real time. Users can click to view the laser temperature and switch between Celsius and Fahrenheit.

When the temperature is below the alarm threshold, the icon is displayed in blue.

When the temperature exceeds the alarm threshold, the icon is displayed in red.



2.1.2 Water Chiller Not Installed:

If the water chiller is not installed, the software will display the following alarm icon. In this state, engraving cannot be performed.



2.1.3 Abnormal Water Flow:

If the water chiller's flow function is abnormal, the software will display the following alarm icon. In this state, engraving cannot be performed.



2.1.4 Water Level Abnormality (Too High/Too Low):

If the water level in the chiller is abnormal, the software will display the following alarm icon. In this state, engraving cannot be performed.



2.1.5 Water Temperature Abnormality (Too High/Too Low):

If the water temperature in the chiller is abnormal, the software will display the following alarm icon. In this state, engraving cannot be performed.

05

Feature Introduction

2.2 Mobile App Interface:

After connecting the Glacier engraving machine, the laser temperature is displayed on the device information page. When the water chiller triggers an alarm, the corresponding alarm icon will be shown.

2.2.1 Laser Temperature:

The laser temperature is displayed in real time. Users can click to view the laser temperature and switch between Celsius and Fahrenheit.

When the temperature is below the alarm threshold, the icon is displayed in blue.

When the temperature exceeds the alarm threshold, the icon is displayed in red.



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05

Feature Introduction

3. Laser Temperature Protection Function:

3.1 When the laser temperature is between 40°C and 50°C, the laser temperature indicator light is yellow and steadily on.

3.2 When the laser temperature exceeds 50°C, the laser temperature indicator light flashes red.

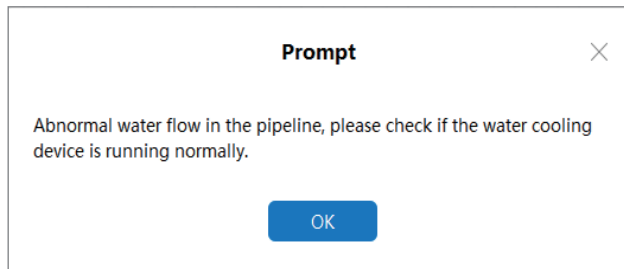
3.3 When the laser temperature is below 16°C, the laser temperature indicator light flashes red.

3.4 When the laser temperature is between 16°C and 40°C, the laser temperature indicator light is green and steadily on.

3.5 If the laser temperature is outside the 16°C–50°C range and the indicator light is flashing red, wait a few minutes. There is no need to turn off the water chiller. Once the laser temperature returns to the normal range, restart the machine to resume normal operation.

4. Water Chiller System Protection Function:

When the water chiller detects that the flow rate is below the set threshold, a flow alarm is triggered. The water chiller's display will show the E4 fault code, and the Atomstack Studio PC software will display the following pop-up notification.



05

Feature Introduction

5. Tilt Alarm

5.1 Activation:

When the function is enabled, it will trigger if the machine's tilt angle relative to the horizontal plane is between 15° and 20°: the machine will automatically stop, the buzzer will sound, and:

- If the machine has a display screen, the message "Machine Tilted" will appear.
- If there is no display screen, the PC software will show an alarm notification.

5.2 Alarm Reset Methods:

- Without Display Screen: The alarm is automatically cleared when the machine returns to a horizontal position.
- With Display Screen: Tap "Close" on the display to clear the alarm.

The machine is tilted,
please place the machine horizontally before use

Close

05

Feature Introduction

6. Flame Detection

6.1 Precautions:

- When used outdoors, sunlight may cause false triggers. Indoor use is recommended.
- The flame detection function must be turned on/off via the display screen or mobile app.
- When cutting dense boards, the flame detection function should be turned off to avoid false alarms.

6.2 Operation:

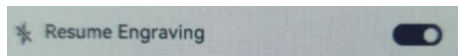
6.2.1 Enable the function. If a flame occurs directly beneath the laser, the function is triggered: the laser automatically returns to the machine origin, the buzzer sounds, and the display screen shows “Flame Detected”. If there is no display screen, the PC software will show an alarm notification.

6.2.2 After shutting down and restarting the machine, normal operation can be resumed.

Flame detected,
please restart the machine after eliminating danger

7. Using the Touchscreen to Control the Power-Off Resume Engraving Function

7.1 Tap “Power-Off Resume Engraving” to enable the function. The laser will automatically return to the machine origin and display a “Motor Locked” warning.



After turning on,
the motor will be locked and cannot be moved.
Are you sure to turn on?

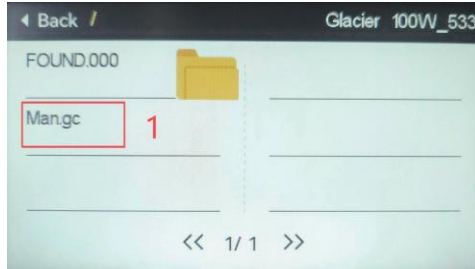
No

Yes

05

Feature Introduction

7.2 Select the engraving file.

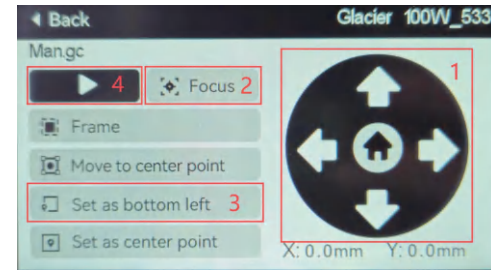


7.3 Use the touchscreen controller to move the laser to the desired engraving start position (see Figure 1).

7.4 Tap "Auto Focus" (see Figure 2).

7.5 Tap "Set as Bottom-Left Corner" to set the current position as the initial position (see Figure 3).

7.6 Tap "Start". After parsing the file, the machine will automatically begin engraving (see Figure 4).



7.7 If a power outage occurs during engraving, when power is restored, the machine will display "Unexpected power-off detected during engraving. Continue engraving?" Tap "Confirm". The machine will parse the coordinates and resume engraving from the position where it was interrupted, completing the unfinished portion.

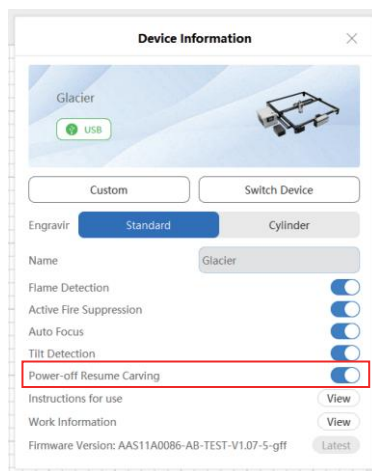
05

Feature Introduction

7.8 Precautions:

7.8.1 The Power-Off Resume Engraving function is disabled by default. There are three ways to enable this function:

- ①、On the touchscreen, go to the Settings interface and tap [Resume Engraving] to enable it.
- ②、In Atomstack Studio PC software, after connecting the Glacier 120W, click the Glacier 120W icon in the top-right corner of the software. In the “Device Information” window, click “Power-Off Resume Engraving” to enable it.
- ③、Using This Function via the Mobile App. (Please follow the App User Manual)



7.8.2 After enabling the Power-Off Resume Engraving function, the motor will be locked.

7.8.3 Ensure that the engraving machine and the workpiece remain stationary; otherwise, engraving deviations may occur.

7.8.4 During the file parsing process for resuming engraving, do not unplug or reconnect the HDMI cable, or you will need to restart the machine to proceed.

05

Feature Introduction

8. Focusing Method

8.1 Precautions:

When using a chuck, rollers, or engraving/cutting irregular objects (e.g., pebbles) or soft materials (e.g., office paper, kraft paper, cashmere fabric, denim), it is recommended to use the fixed-focus lens for manual focusing.

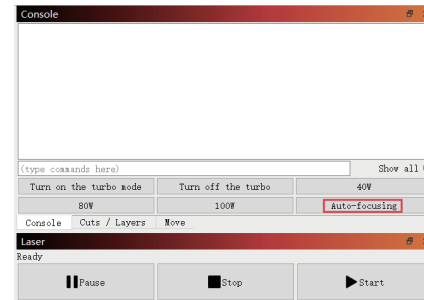
8.2 Auto-Focus Operation:

8.2.1 Use the physical button for auto-focus. First, move the laser above the object to be engraved, then press the Auto-Focus button on the top of the control box (see figure) to complete auto-focusing.



8.2.2 Automatic Focusing in LightBurn

- Move the laser head above the material to be engraved.
- In the LightBurn console window, click the Auto-Focusing button. The machine will automatically complete the focusing process.



8.2.3 Focusing via the Control Screen:

- Tap “Start Engraving”, select the file to be engraved, and enter the engraving page.
- Move the laser above the object to be engraved, tap “Focus”, and wait approximately 8 seconds to complete auto-focus.

8.3 Manual Focusing:

8.3.1 For Engraving: Rotate the focusing knob until the laser just touches the top surface of the 16 mm fixed-focus sheet.

8.3.2 For Cutting: Rotate the focusing knob until the laser just touches the top surface of the 3 mm fixed-focus sheet.

- When cutting materials thicker than 5 mm, use the 3 mm focus sheet.
- When cutting materials 5 mm or thinner, use the 16 mm focus sheet.

06

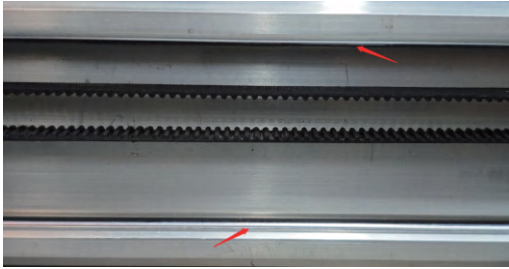
Machine Maintenance

6.1 Dual Axis Shaft Cleaning

Recommended cleaning frequency: once per week

Procedure: wipe the upper and lower optical shafts

Cleaning tools: lint-free cloth, anhydrous ethanol



6.2 Laser Cleaning

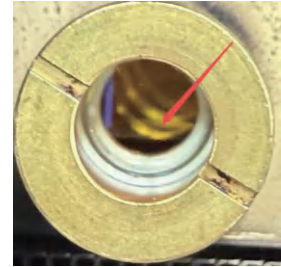
Recommended cleaning frequency: once per week

Procedure: wipe the nozzle and protective window

Cleaning tools: lint-free cloth, anhydrous ethanol, Phillips screwdriver



Nozzle



Protective window

6.3 Honeycomb Plate and Base Plate Cleaning

Recommended cleaning frequency: once per week

Procedure: wipe the honeycomb plate and base plate

Cleaning tools: lint-free cloth, anhydrous ethanol

1. PC Software: Atomstack Studio (PC) and LightBurn

1.1 Atomstack Studio (PC)

Atomstack's self-developed PC control software, customized for the product, providing an optimized user experience.

Advantages: Free of charge, timely updates, simple operation, preset parameter case library, offline processing, assisted positioning and calibration, dual-laser operation, automatic accessory recognition, USB management.

1.2 LightBurn

LightBurn is a professional paid software integrating design, editing, and control for laser devices.

Advantages: Powerful features, comprehensive operation commands, good compatibility, free trial available.

2. Mobile App: Atomstack Studio (APP)

Atomstack's self-developed mobile control software, customized for the ATOMSTACK Glacier.

Advantages: Easy device connection, simple operation, offline work, preset parameter case library, power-off resume engraving, assisted positioning and calibration.

3. Software Download:

For software download links and instructions, please refer to: <https://atomstack.com/pages/atomstack-studio-software>

08

LightBurn Software Installation and Usage

1. Driver Installation Methods

1.1 Install the driver using the installation files provided on the USB drive shipped with the machine.

1.2 Driver download links:

Windows driver: <https://asa.atomstack.com/downloadWindowsDrivers.do3>

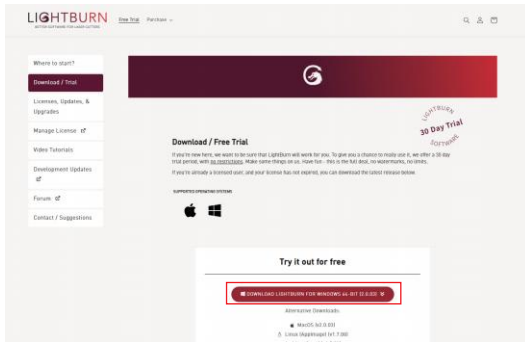
Mac driver: <https://asa.atomstack.com/downloadMacDrivers.do3>

2. LightBurn Software Installation

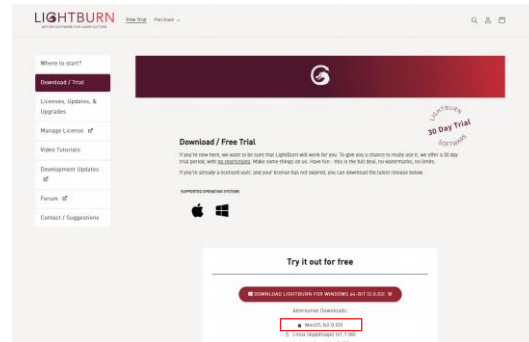
2.1 Visit the LightBurn official website or the following link to download and install the software: <https://lightburnsoftware.com/pages/download-trial>

***LightBurn is a paid software. After the one-month trial period, a purchase is required.**

Windows Download:



MacOS Download:



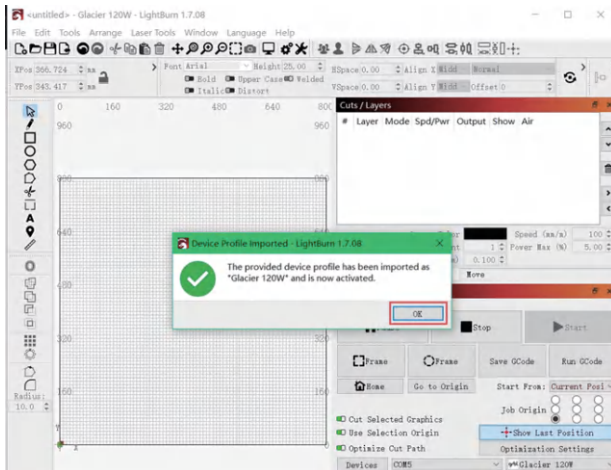
08

LightBurn Software Installation and Usage

3. LightBurn Software Usage

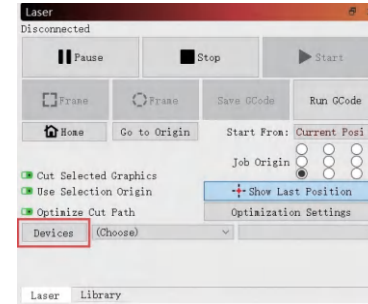
3.1 Importing Device Configuration File

3.1.1 Drag the device configuration file AtomStack_Glacier_120W.lbdev from the USB drive provided with the machine into the LightBurn workspace. A dialog box will appear; click OK to complete the device configuration. (For LightBurn version 1.3.00 and later, use this method.)

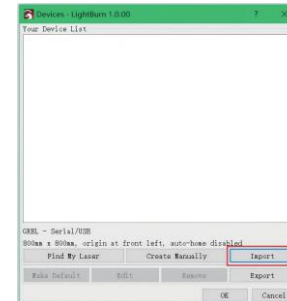


3.1.2 If the method in 3.1.1 does not work, try the following method to import the configuration file. (For LightBurn versions prior to 1.3.00)

3.1.3 In the "Laser" window, click "Devices".



3.1.4 Select "Import".

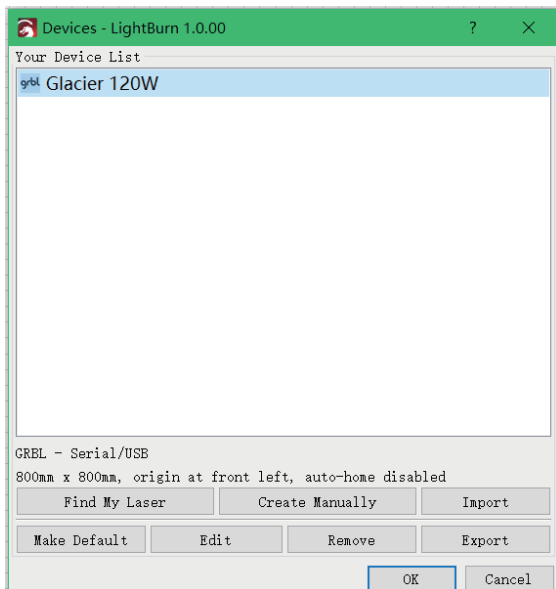


08

LightBurn Software Installation and Usage

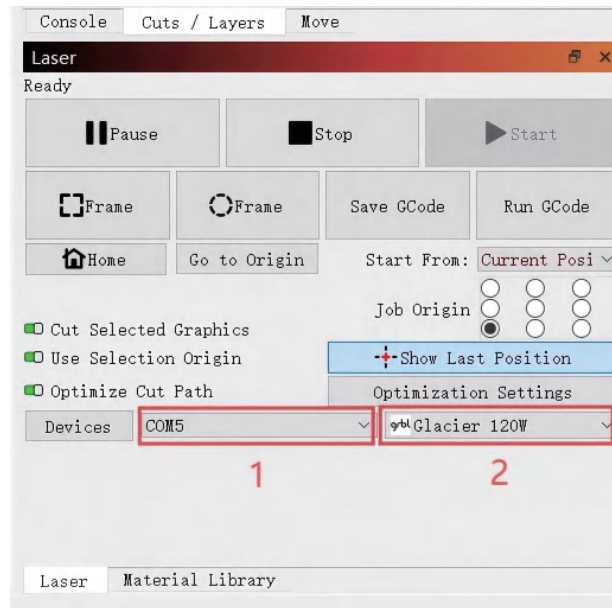
3.1.5 Select the configuration file “AtomStack_Glacier_120W.lbdev”, click Open, then OK. The configuration file can be obtained from the USB drive provided with the machine or from the official website.

AtomStack Glacier 120W.lbdev



3.2 Connecting LightBurn to the Machine

3.2.1 After successfully importing the device configuration file, in the Laser window of the software, select the corresponding COM port and the device name Glacier 120W. The machine will emit a beep sound, indicating a successful connection.

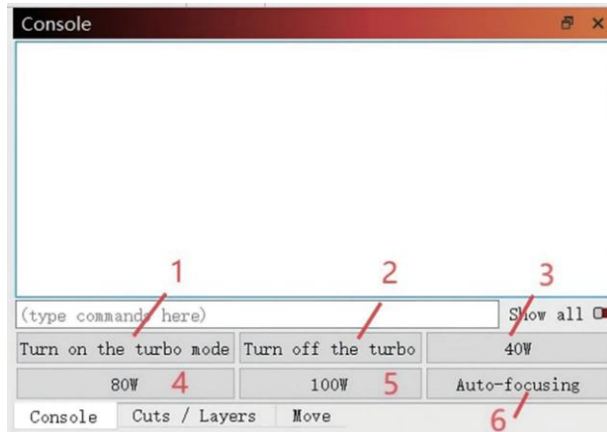


08

LightBurn Software Installation and Usage

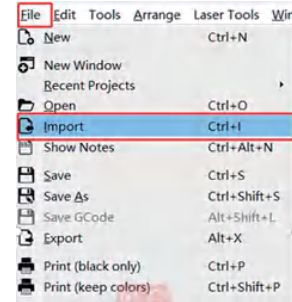
4. Macro Command Button Functions

- 4.1 Turn on the Turbo Mode Button: Enable Turbo Mode. It is recommended not to use this mode as the default, and only enable it during cutting.
- 4.2 Turn off the Turbo Mode Button: Disable Turbo Mode. It can be turned off during engraving.
- 4.3 40W Button: Switch to 40-watt laser power level.
- 4.4 80W Button: Switch to 80-watt laser power level.
- 4.5 100W Button: Switch to 100-watt laser power level.
- 4.6 Auto-Focusing Button: Tap this button to complete auto-focusing.

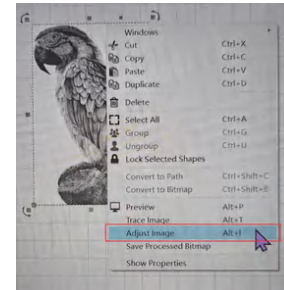


5. Engraving a Project Using LightBurn (Example: Glacier 120W)

- 5.1 Select "File", then click "Import" to open an image for editing.



- 5.2 Left-click the image with the mouse, then right-click to open the context menu and select "Adjust Image" (see figure).



08

LightBurn Software Installation and Usage

5.3 In the parameter settings page, configure the parameters as follows:

Image Mode: Stucki

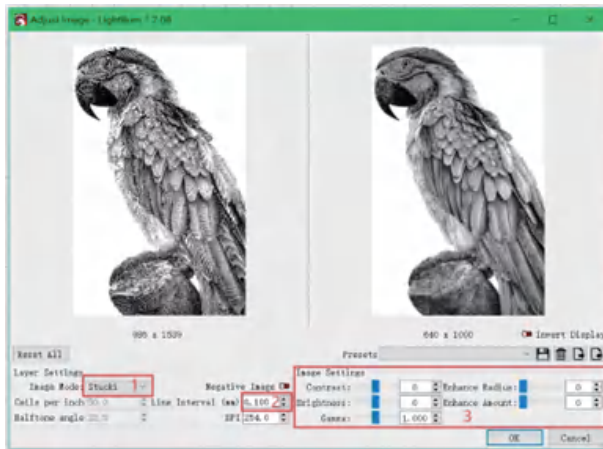
Line Interval: 0.1

Contrast: 0

Brightness: 0

Gamma: 1

Leave all other parameters at their default values. Click OK to complete the parameter settings.



5.4 Setting Engraving Speed, Power, and Passes

1) In the Console window, click the “40W” power level button.

2) Click “Cuts/Layers”.

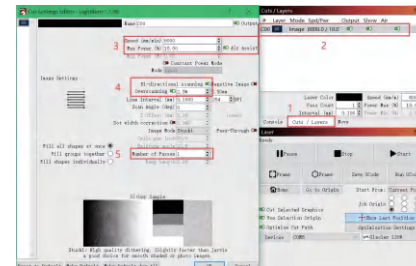
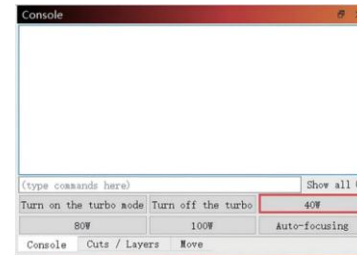
3) Double-click the engraving layer with the left mouse button to open the settings dialog.

4) Set the following parameters:

Speed (mm/min): 6000 Power Max (%): 10 Air Assist: On

5) Enable Bi-directional Scanning and Overscanning.

6) Set Number of Passes: 1, then click OK to complete the settings.



08

LightBurn Software Installation and Usage

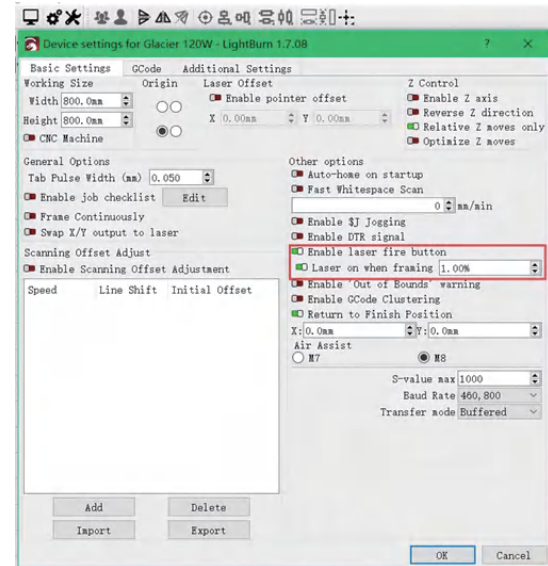
5.5 Setting Image Dimensions

Set the image size, for example: Width: 64 mm, Height: 100 mm. Adjust according to the desired engraving area.



5.6 Laser Frame Settings

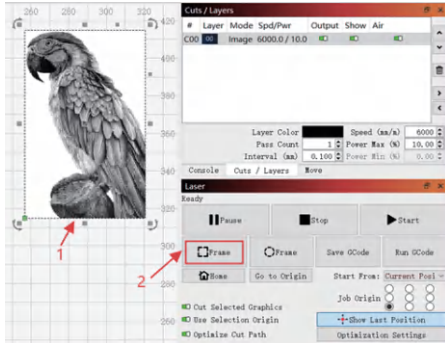
Go to Device Settings → Enable Laser Fire Button.



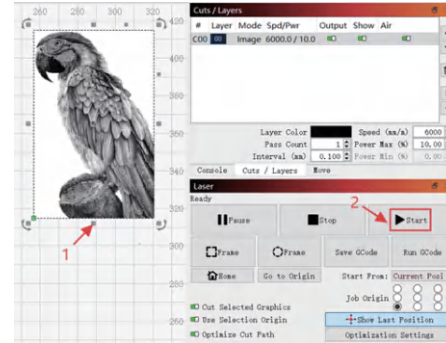
08

LightBurn Software Installation and Usage

5.7 Select the image and click “Frame” to preview the engraving area.



5.8 Select the image and click “Start” to begin engraving.



5.9 After the engraving is completed and the laser module stops, you can remove your engraved work from the machine.



5.10 For more recommended engraving and cutting parameters, please download the electronic file from the official website at the following path: <https://www.atomstack.com/pages/material-setting>.

Engraving and cutting parameters refer to the website <https://atomstack.com/>

1. Power switch is turned on, but the machine does not respond

- 1.1 Check whether the emergency stop button has been pressed. If so, rotate it clockwise to release.
1.2 Check whether the USB key is inserted.

2. Can LaserGRBL software be used?

Since the baud rate is 460800, LaserGRBL software is not compatible.

3. Auto-focusing failure

- 3.1 Check if the object is placed outside the auto-focusing range, which may prevent the lower limit switch from being triggered.
3.2 Check if the object is made of soft material, causing the lower limit switch to sink into the holes of the honeycomb plate.
3.3 Check whether the upper and lower limit switches are faulty.

4. Homing failure

- 4.1 Check whether the Z-axis auto-focusing function is working properly, as the homing sequence starts with the Z-axis.
4.2 Check whether the X and Y-axis limit switches are faulty.
4.3 Check whether the X and Y axes can move normally.

5. Alarm codes and reset methods

Code	Alarm Name	Description
0	None	No alarm
1	Hard Limit	Hard limit triggered. Check the limit switches.
2	Soft Limit	Soft limit alarm.
3	Abort Cycle	Cycle aborted. No action required.
4	Probe Fail Initial	Probe initialization failure. Check if the limit switch can be triggered normally.
5	Probe Fail Contact	Probe contact failure. Auto-focusing did not touch the workpiece within the travel range.
6	Homing Fail Reset	Homing failure. Possibly due to misoperation or limit issue. Check limit switches and re-home.
7	Homing Fail Door	Homing failure. Safety door was opened during the homing cycle.

5. Alarm codes and reset methods

Code	Alarm Name	Description
8	Homing Fail Pulloff	Homing failure. Inspect the limit switches.
9	Homing Fail Approach	Homing failure. Limit switch not found within search distance. Check if the Z-axis is functioning normally.
11	Machine Tilt Alarm	Machine tilt alarm.
12	Flame Detected	Flame detected.
13	Door Open	Enclosure door open.
14	Safe Lock Open	Safety lock open.
17	BLE Open	Bluetooth enabled; device in network configuration mode, other operations are disabled.
19	Laser Temperature Out of Limit	Laser temperature over limit. Check chiller tubing and related components.
20	Chiller Warning	Chiller alarm. Check chiller error codes.

Customer service:

For detailed warranty policy, please visit our official website: www.atomstack.com
For technical support and service, please email: support@atomstack.com

Manufacturer:

Shenzhen AtomStack Technologies co., Ltd.

Address:

17th Floor, Building 3A, Phase II, Intelligent Park, No. 76, Baohe Avenue,
Baolong Street, Longgang Dist., Shenzhen, 518172, China

Scan the code to enter the discussion group.

Scanner APPLICATION:
QR code reader/ Barcode scanner or any APP with scanner.

Benutzerhandbuch Glacier 120W/90W

◦ English • Deutsch ◦ Français
◦ Italiano ◦ Español

