



3020 NOVA

USER MANUAL



Customer Installation Manual

Applicable Machine Model:3020nova

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1.Safety Guidelines (Mandatory Reading)

1. Mandatory safety requirements (failure to comply may result in equipment damage or personal injury).
2. Only personnel aged 18 and over may operate the machine; minors must use it under the constant supervision of an adult familiar with the machine.
3. Gloves must be worn during installation, and safety goggles must be worn during operation to prevent injury from metal shavings or laser radiation.
4. The machine is for indoor use only and must be placed on a level, stable workbench (load-bearing capacity $\geq$ 50kg), away from flammable and explosive materials.
5. The power supply can be switched between 220VAC or 110VAC; the use of power supplies with voltages other than those specified or modifications to the circuitry are strictly prohibited.
6. It is recommended to plug the machine directly into a wall socket only; the use of extension cords or power strips is not recommended (high current may cause equipment malfunction; final confirmation should be made with the manufacturer).
7. The emergency stop button (E-stop) must always be kept in an easily accessible position; press it immediately in case of emergency.

✗ Prohibited Actions:

1. When the machine is in operation, do not touch the spindle, work area, or moving parts to avoid pinching or scalding.
2. Do not disassemble the power supply or electrical components; otherwise, the warranty will be voided.
3. Do not leave the machine unattended while it is running. Children must stay away from the equipment (climbing on it is also prohibited even when it is shut down).
4. Ensure the installation environment is well-ventilated. Some materials may produce smoke during carving, so it is recommended to use smoke extraction equipment.

2. Basic Product Information

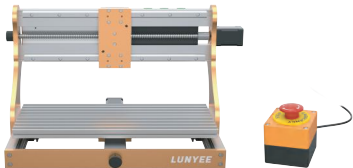
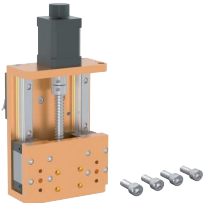
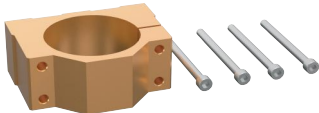
2.1 Core Specification Parameters

Item	Specifications	Remarks
Work Area	300×200×80 mm	Maximum Size of Carvable Workpiece
Transmission Mode	SFU1204 Ball Screw + HGR15 Linear Guide Rail	Balances Precision and Quiet Operation
Control Panel	3-Axis 5.2 Control Board	Mainstream Open-Source Firmware with Strong Compatibility
Motor Type	Stepper Motor	Reduces Step Loss and Improves Carving Precision
Spindle Parameters	800W, 65mm Diameter 6-Speed Gear Shift, Speed Range:10000-32000 RPM	Suitable for Materials Such as Metal,Wood,and Plastic
Power SupplySpecification	DC 48V, Maximum 10A	Original Factory-Matched Power Supply Required

Item	Specifications	Remarks
Maximum Moving Speed	X/Y Axes: 5000mm/min $\pm 10\%$	Rapid Movement Efficiency
	Z Axis: 500mm/min $\pm 10\%$	Ensures Vertical Direction Precision
Carving Precision	$\leq 0.05\text{mm}$	Calibration Operation Required
Limit Switch	Supported (Xmax/min, Ymax/min, Zmax/min)	Prevents Over-Travel Damag
E-stop Button	Mechanic Tactile Switch	Hardware-Level Emergency Stop
Z-Probe	Self-Locking Independent Emergency Stop Box	Automatic Workpiece Height Calibration
Overall Dimensions (Length*Width*Height)	39.3cm×52cm×41cm	100mm Peripheral Heat Dissipation Space Reserved for Installation
Overall Machine Weight	19.2kg	2-Person Collaboration Recommended for Handling

2.2 Packing Parts List

✓ Please Check All Parts Before Installation; Contact After-Sales Support If Any Part Is Missing:

Main Product Body	Z-Axis Assembly & Screws	Spindle Fixture & Screws
		
4G USB Flash Drive	Trimmer	Press Plate
		
Tool Box	Data Cable	Tool Setter
		

3.Installation Preparation

3.1 Installation Environment Requirements

1.Space: The overall dimensions of the machine are 39.3cm×52cm×41cm.A 100mm surrounding heat dissipation space must be reserved (especially near the control box and spindle),and the machine should not be placed against a wall or block the air vents.

2.Workbench: Select a level workbench with a load-bearing capacity of ≥ 50 kg(such as a metal workbench or solid wood table)to avoid vibration affecting carving precision.

3.Power Supply: Ensure the wall socket is properly grounded and the voltage matches(220V or 110V,selected according to the machine's power switch).

4.Auxiliary Tools: Prepare a level(to calibrate the workbench level)and a marker pen(to mark the direction of parts); gloves (to prevent scratches) are optional.

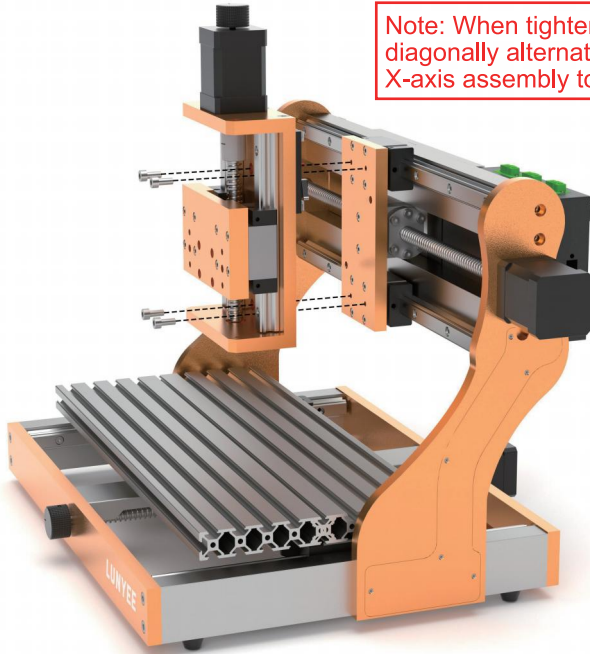
3.2 Packing Parts List

Tool Name	Specification/Usage	Remarks
Wrench	Hexagon socket, wrench, screwdriver	No Additional Purchase Required; Included in the Set
Install screws	Dowels * 2 Long screws *4 Short screws * 4	Install the pin first when installing the spindle clamp.
Tool Clamping	1/4 to 1/8 chuck adapter	Supports 1/4 inch and 1/8 inch A conversion adapter needs to be installed.
Lubrication	Brush, lithium grease	Make the ball screws and linear guides run more smoothly

4.Step-by-Step Installation Tutorial

4.1 Step1: Install the Z-Axis Bracket

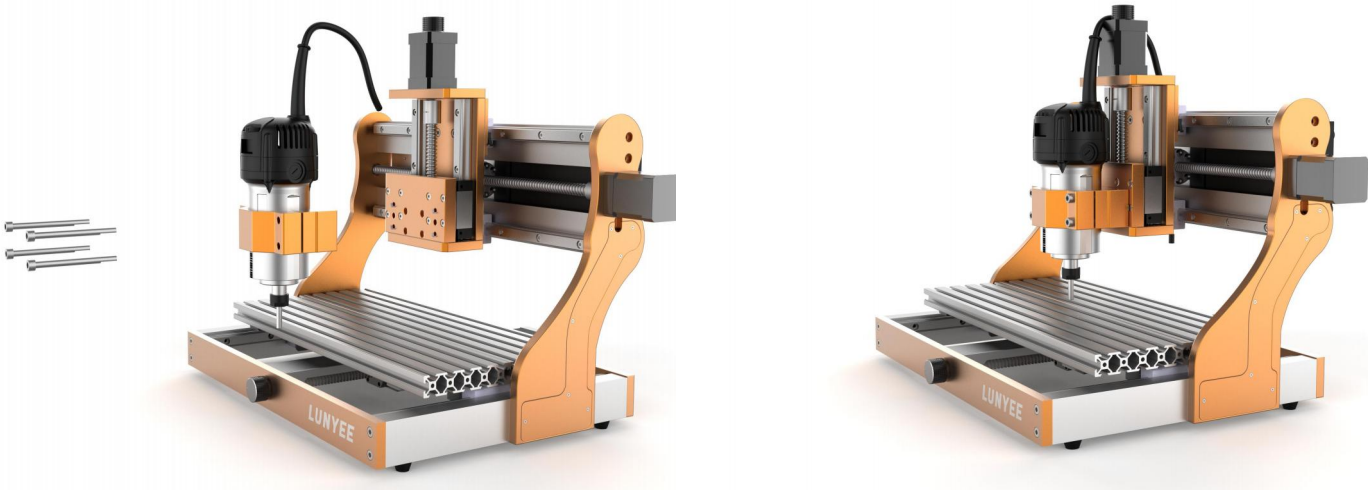
Note: When tightening the screws, please tighten them diagonally alternately to avoid uneven force causing the X-axis assembly to tilt.



1. Remove the module from the foam and lay it flat on the mounting table (ensure the profile is not twisted and the surface is clean and free of foil stains).
2. Take a wrench, align it with the four screws on the profile, and tighten them.

4.2 Step 2: Secure the Fixture and Trimmer

Note: The power cord interface of the trimmer should face a direction convenient for subsequent wiring (usually backward, away from the working area) to prevent wire harness tangling after installation.

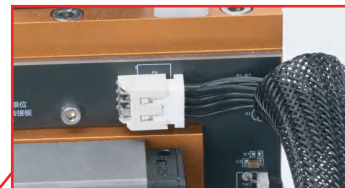


1. Insert the two locating pins into the holes shown in the diagram.
2. Assemble the Clamp, ensuring the screw holes on the Clamp align with the mounting holes on the Z-axis assembly. Pass the four M6x75 socket head cap screws through the mounting holes and tighten them to a semi-tight position with a wrench.
3. Insert the trimmer into the slot of the 65mm clamp, adjust its position to ensure the dresser is perpendicular to the platform, tighten the screws, and gently wiggle the dresser to confirm it is securely in place.

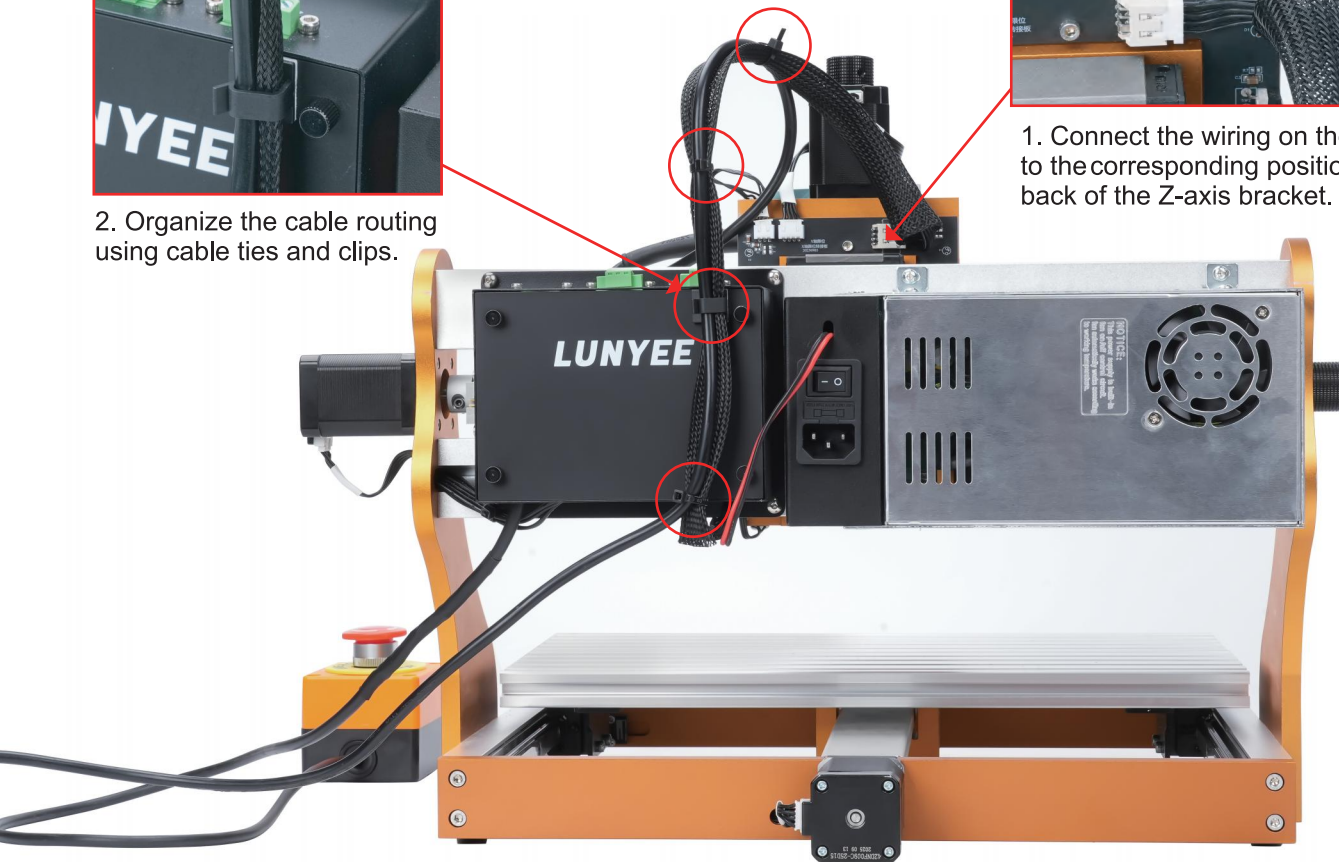
4.3 Step 3: Wiring and Cable Management



2. Organize the cable routing using cable ties and clips.



1. Connect the wiring on the machine to the corresponding position on the back of the Z-axis bracket.



5.Electrical Connection Tutorial

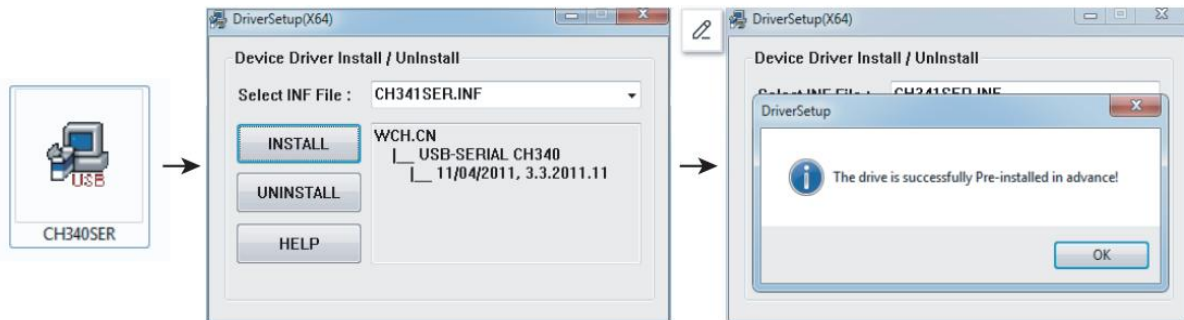
5.1 Driver Installation (Windows/Mac)

Function: Install the CH340 driver to ensure stable USB communication between the computer and the machine.

5.1.1 Windows

1. Obtain the Driver:

- Method 1: Insert the USB driver disk that comes with the machine, find the "CH340SER" folder, and double-click "Driver Setup (X54).exe".

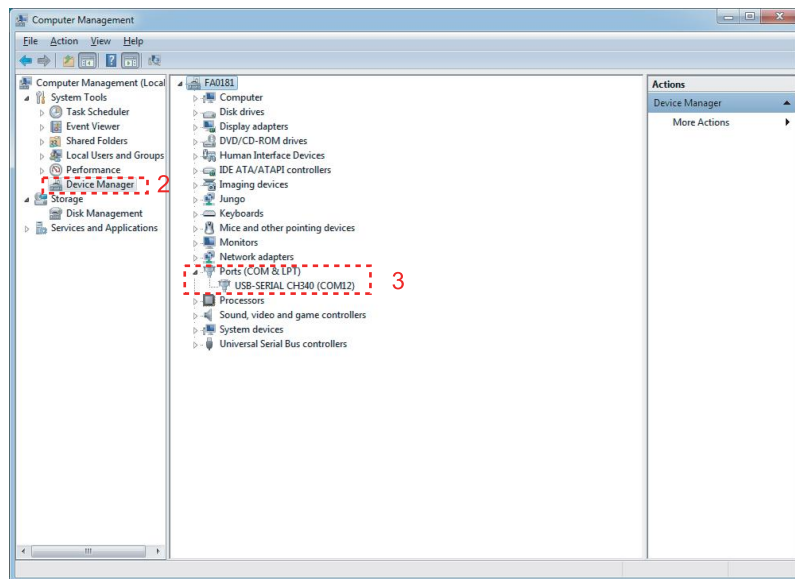
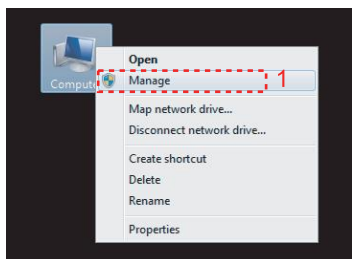


- Method 2: If the driver disk is missing, download link: <https://lunyeecnc.com> (if the link is invalid, contact the manufacturer's after-sales service to obtain the latest link).

- Installation Steps:

- Double-click the installation program, select "INSTALL", and wait for the progress bar to complete (approximately 1-2 minutes).

- If prompted with "Driver installation failed", first click "UNINSTALL" to uninstall the old driver, then restart the computer and reinstall the driver.



• Verification: After installation, right-click "This PC" → "Manage" → "Device Manager", and check if "USB-Serial CH340" exists under "Ports (COM & LPT)". The installation is successful if there is no yellow exclamation mark next to it.

5.1.2 Mac

- Mojave OS and above (10.14+): No driver installation is required. The system comes with built-in CH340 support, so you can connect the machine directly.
- Sierra (10.12)/High Sierra (10.13): You need to contact the manufacturer's technical support (support@lunyeecnc.com) to obtain the dedicated driver. Do not use the Windows driver.

5.2 Finding the Machine's COM Port (Windows)

Prerequisite: First, connect the machine to the computer via a USB cable, and turn on the machine's power (toggle the control box switch to "ON").

Operating Steps:

1. **Windows XP:** Right-click "My Computer" → "Manage" → "Device Manager" → expand "Ports (COM & LPT)".
2. **Windows 7:** Click "Start" on the taskbar → right-click "Computer" → "Manage" → "Device Manager" → "Ports (COM & LPT)".

3. **Windows 10:** Type "Device Manager" in the taskbar search box → click to open → expand "Ports (COM & LPT)".

Identify the port:

- Find the entry labeled "USB Serial Port (COMX)" (X is a number, such as COM3) – this is the machine's COM port.
- If there are multiple USB serial ports, right-click each entry → "Properties" → "Details" → "Hardware IDs". The one containing "CH340" is the machine's port.

Note: The COM port number may change each time the USB interface is replaced, so you need to find it again.

6. Guide to Using UGS Software

6.1 Connect UGS

1. Connect the USB cable and power on.
2. Copy the UGS installer from the USB disk or download UGS from here:

https://winder.github.io/ugs_website/download/

UGS Platform

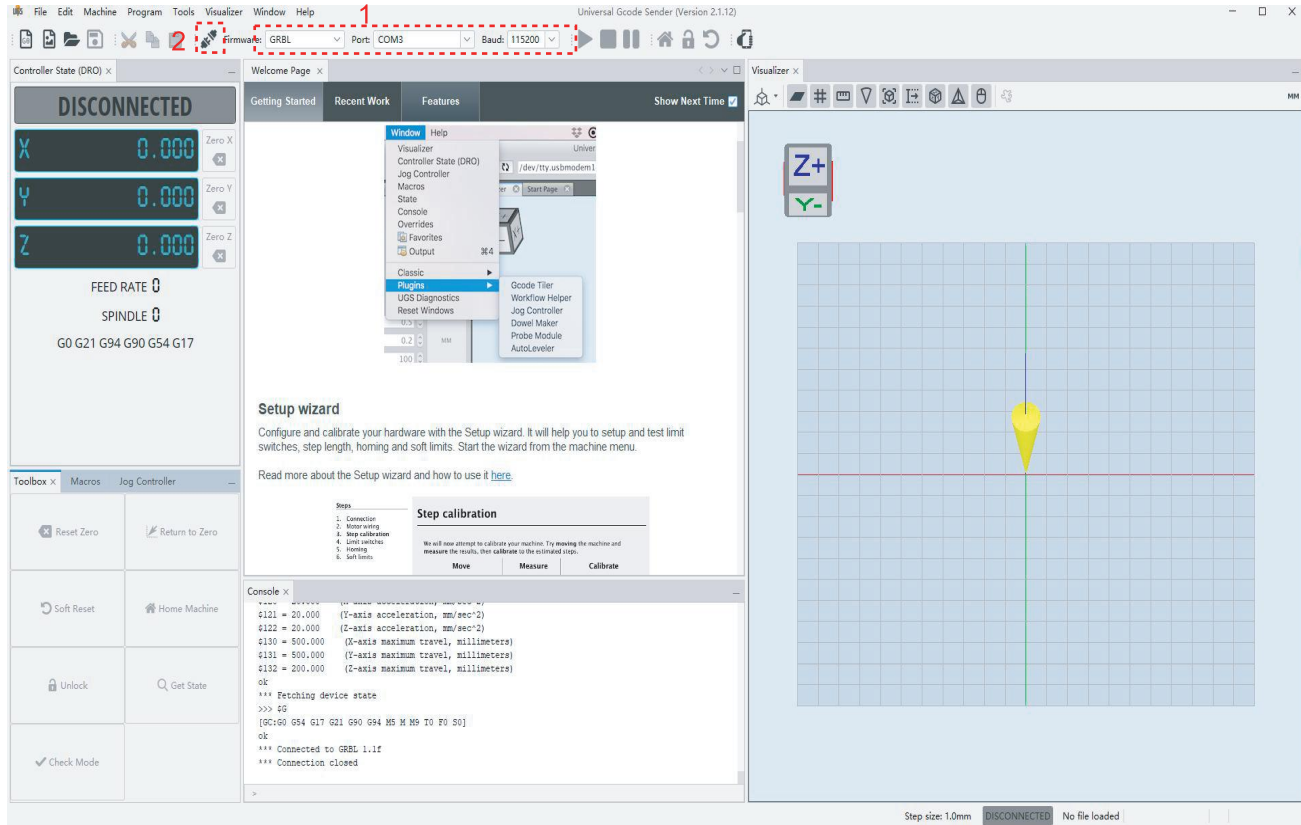
The next generation platform-based interface.

Version 2.0.14	Version 2.0.13	Description
 Windows x64	 Windows x64	Windows 64-bit version with bundled Java
 Windows	 Windows	Windows version with bundled Java
 MacOSX	 MacOSX	MacOSX version with bundled Java
 Linux	 Linux	Linux version with bundled Java
 Linux ARM	 Linux ARM	Linux ARM version with bundled Java. Can be used with RaspberryPi
 All platforms	 All platforms	A generic package without Java which needs to be installed separately

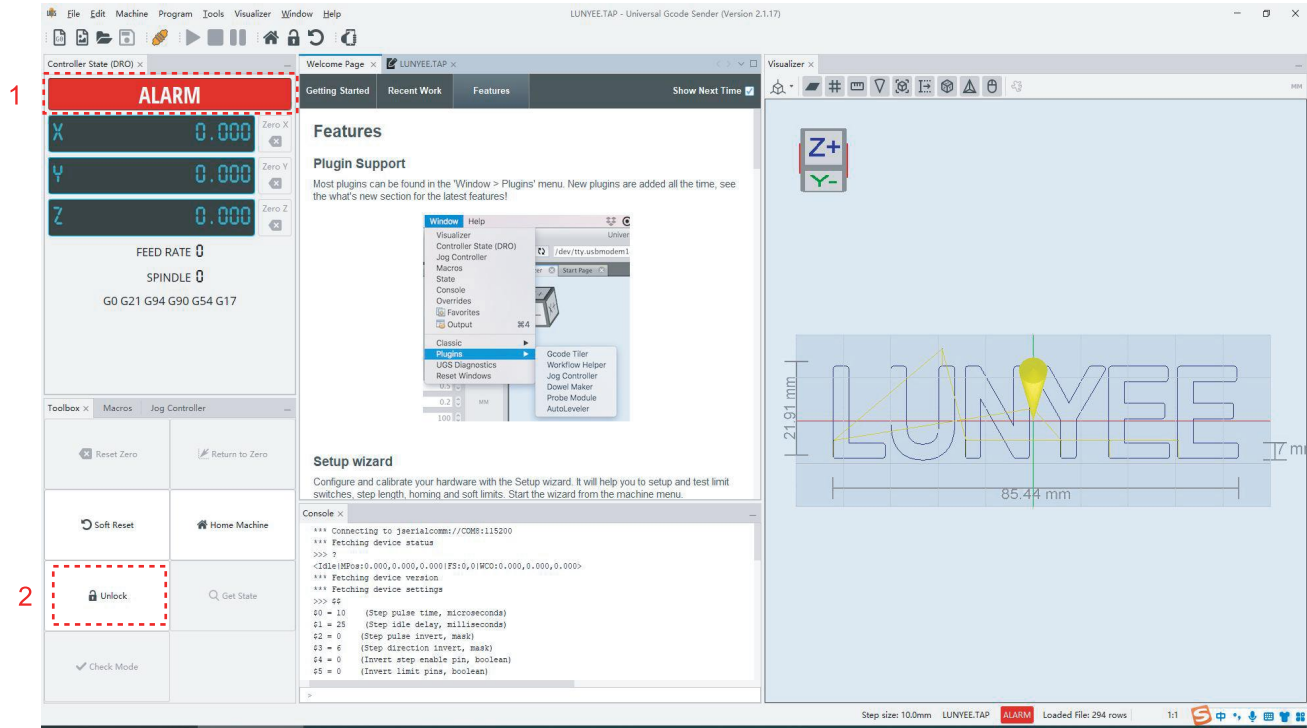
3. Unzip the file, find "bin>ugsplaform64.exe", double click to open the software.



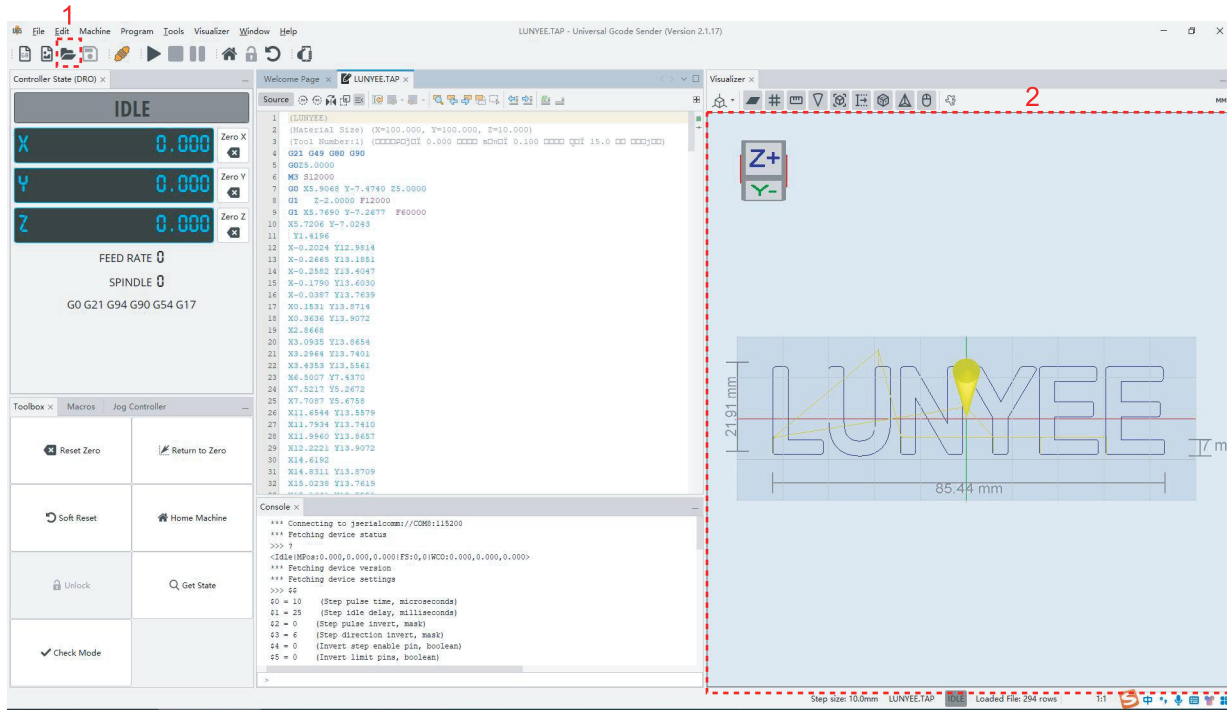
4. Connect the machine and computer via USB cable, select "Firmware-GRBL", COM port, and Baud-115200"; and then click "Connect" button.



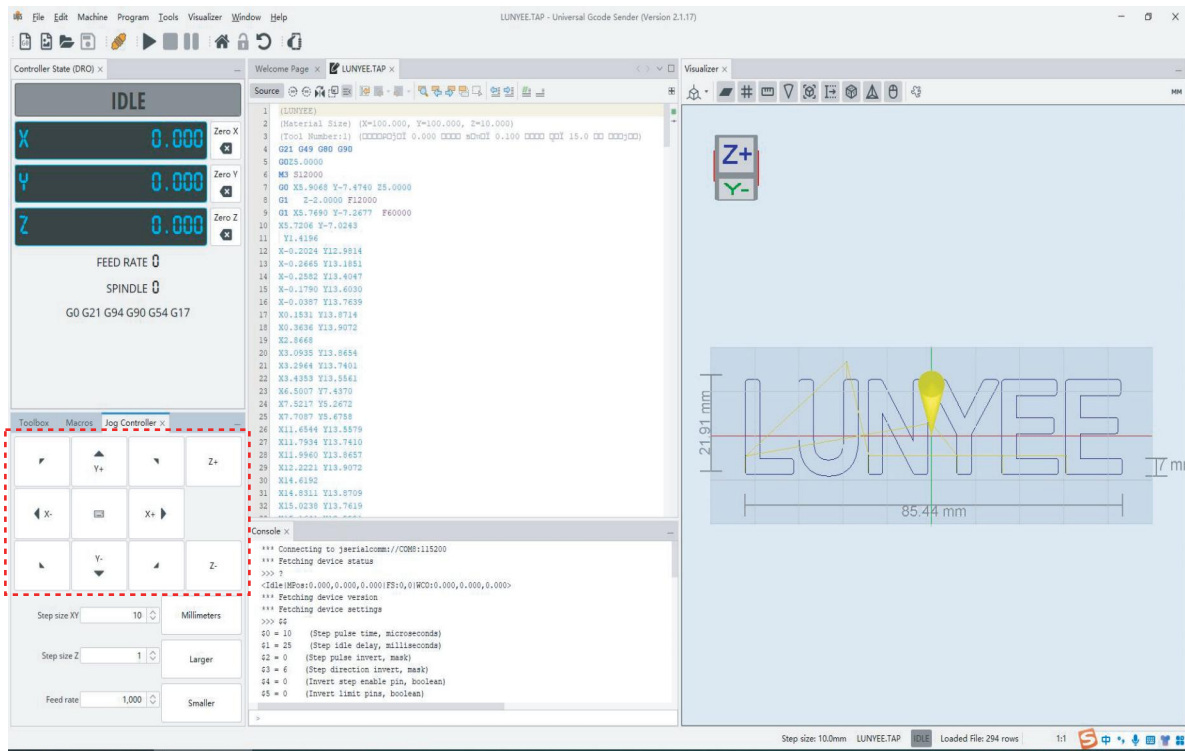
5. Status will change to ALARM, click "Unlock" to change the status to "IDLE" .



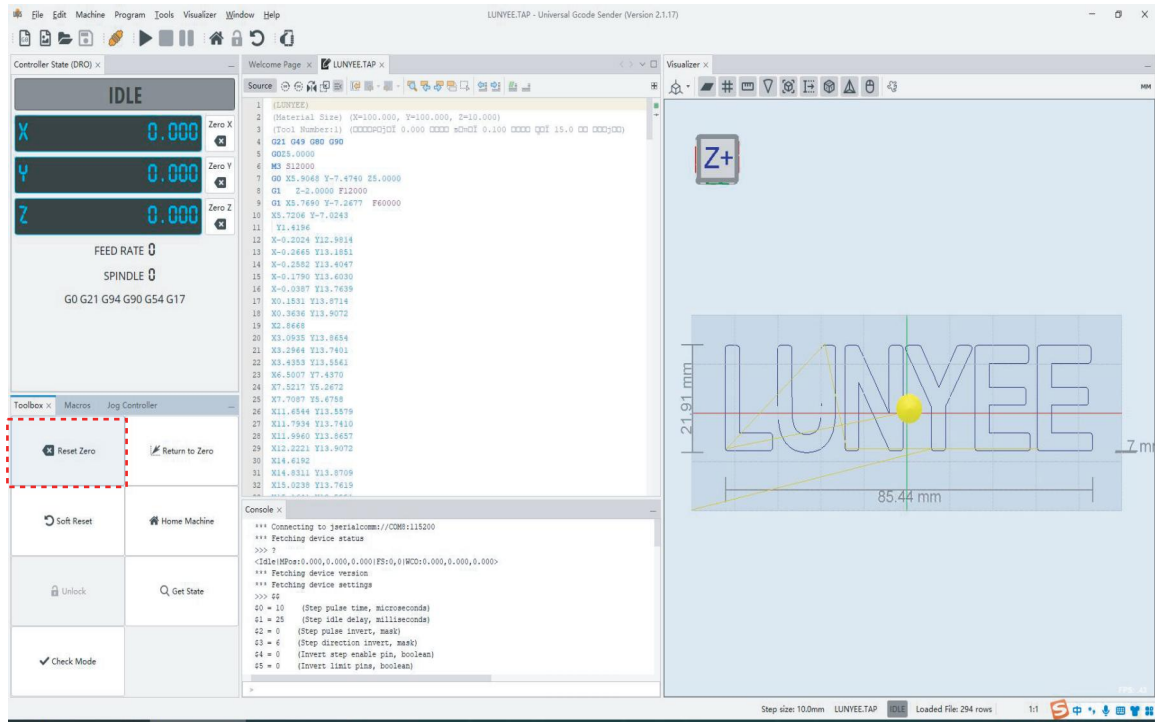
6. Open a G-code file, Preview G-Code in Visualizer.



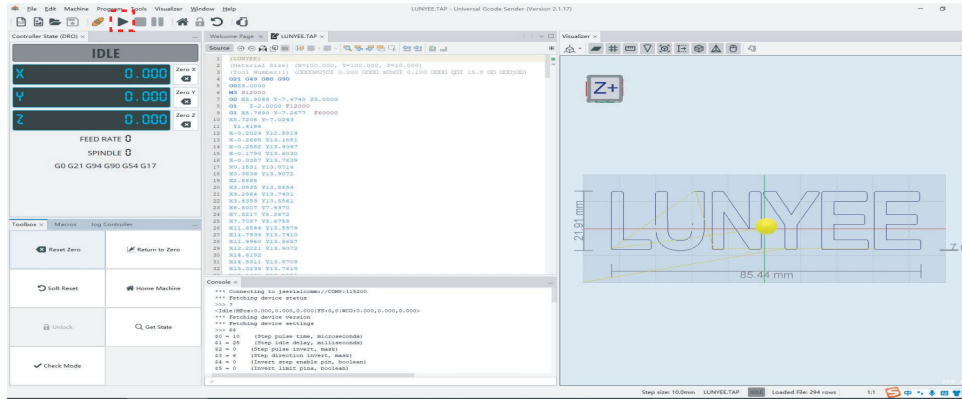
7. Click the Jog Controller to move the bit to the origin of the object.
- The proper gap between the bit and object's surface is that only an A4 paper can move through tightly.



8. Click "Reset Zero" in the toolbox window.



9. Then click "Send" to start engraving.



10. Engraving Finished.



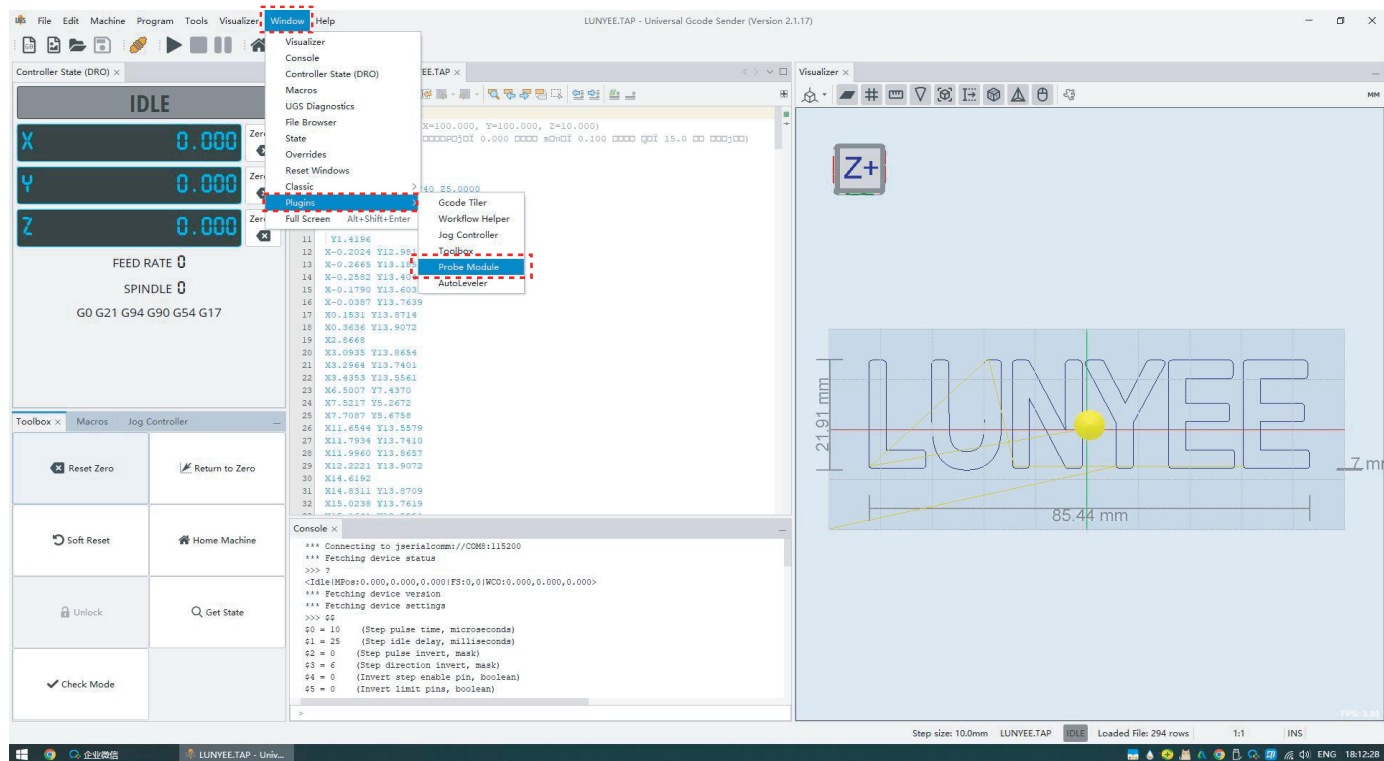
6.2 Z-probe Operating

1.Measure the thickness of the Z-probe.

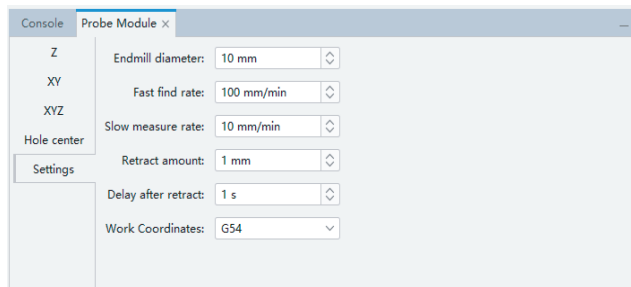


Thickness: 19mm

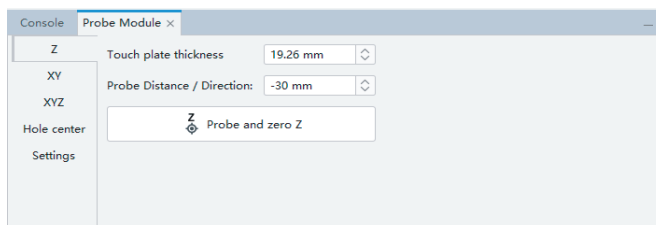
2. Click Window->Plugins->Probe Module.



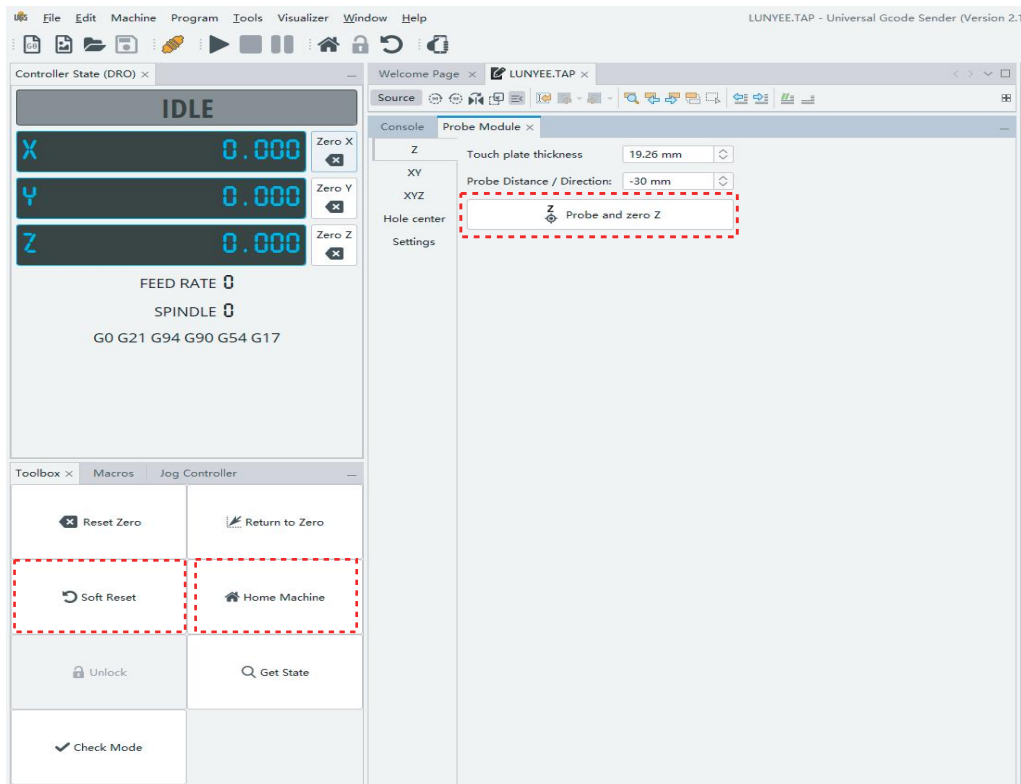
3.Setting:edit the parameters as follow.Z-probe will run twice in fast and slow speed for accurate result.The speed will be faster when number is set to bigger.



Click"z":enter the measured Z-probe thickness in Touch plate thickness.Probe Distance/Direction:set it to-30(means Z-axis moves downward for 30mm max.).If the router bit still cannot touch the Z-probe when it move 30mm,it will show error alarm.When it turns to "ALARM",click "Unlock"



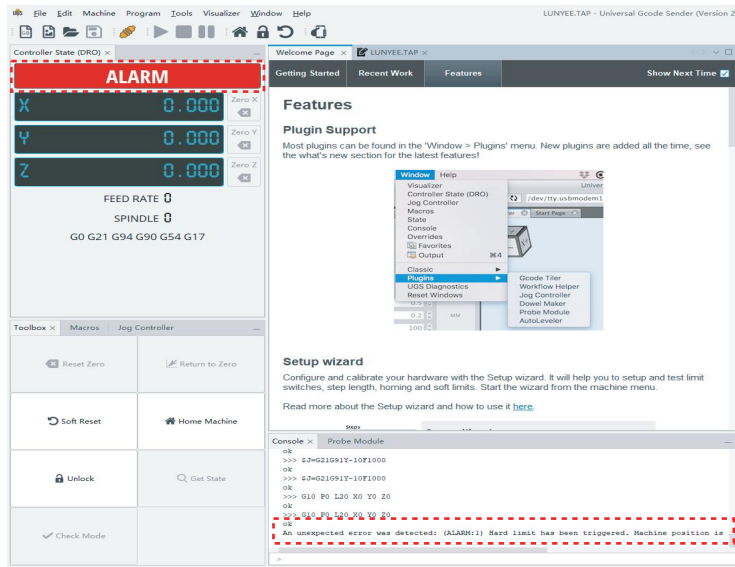
4. Click "Reset Zero", Then click "Probe and zero Z", Click "Return to Zero" Open the file, then click send to engraving.



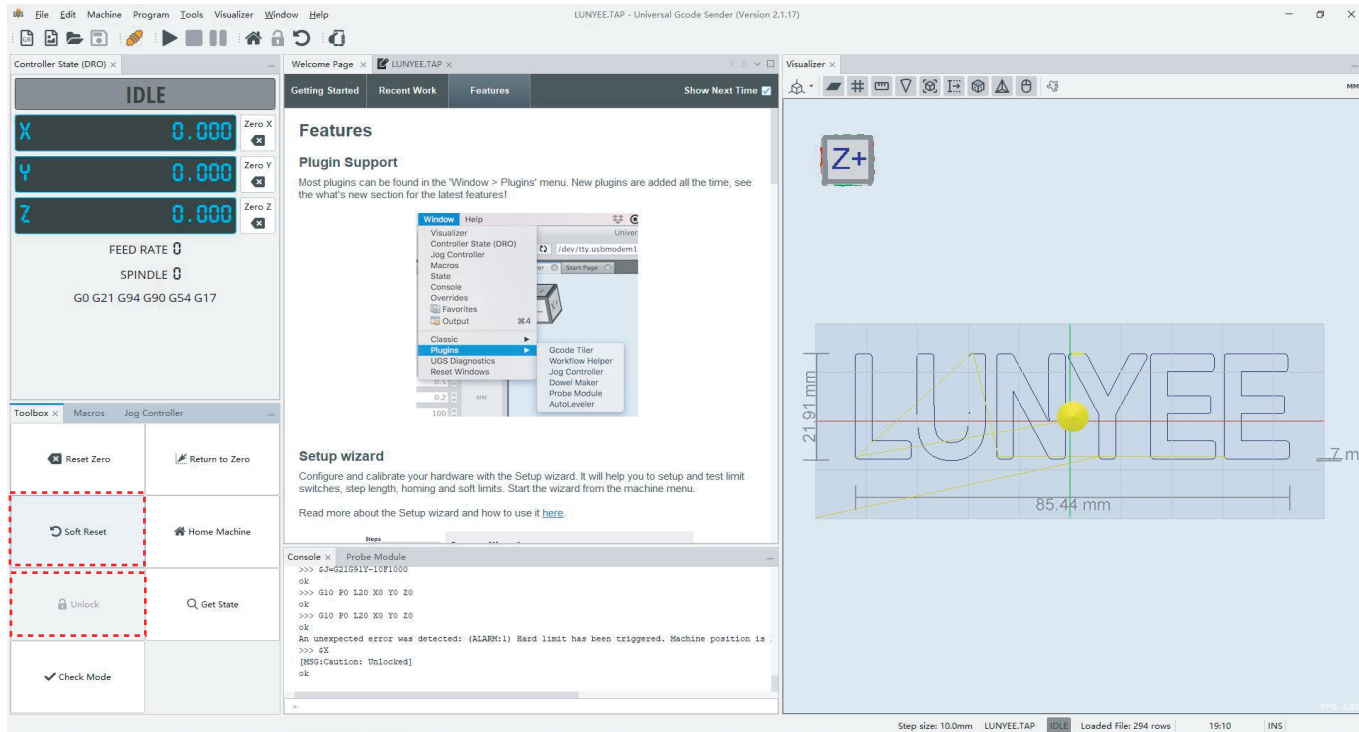
6.3 Unlock Limit Switch

1. When the machine triggers limit switches, it will turn to "Alarm". Console window will show the following error message:
An unexpected error was detected:(ALARM:1)Hard limit has been triggered.Machine position is likely lost due to sudden halt.

Re-homing is highly recommended.[MSG:Reset to continue]



2. Click Soft Reset>Unlock, then jog the axis to the opposite direction from the limit switches.



3.If it turns to"ALARM" and shows error message again,repeat this step.Click Soft Reset->Unlock;then limit switch will be unlocked completely.

1

The screenshot displays the LUNYEE.TAP - Universal Gcode Sender (Version 2.1.17) interface. The top-left panel shows the 'Controller State (DRO)' with a red 'ALARM' banner. The X, Y, and Z axes are all at 0.000. The 'FEED RATE' and 'SPINDLE' are set to 0. The 'G0 G21 G94 G90 G54 G17' code is shown. The 'Toolbox' panel includes buttons for 'Reset Zero', 'Return to Zero', 'Soft Reset', 'Home Machine', 'Unlock', 'Get State', and 'Check Mode'. The 'Console' window shows the following output:

```

Probe Module
ok
>>> G10 P0 L20 X0 Y0 Z0
ok
>>> G10 P0 L20 X0 Y0 Z0
ok
An unexpected error was detected: (ALARM!) Hard limit has been triggered. Machine position is :
>>> Z0
[MSG:Caution: Unlocked]
ok
An unexpected error was detected: (ALARM!) Hard limit has been triggered. Machine position is :

```

The error messages are highlighted with a red dashed box. The 'Visualizer' panel on the right shows a 3D model of a part with dimensions 21.91 mm and 85.44 mm. The status bar at the bottom indicates 'Step size: 10.0mm', 'LUNYEE.TAP', 'ALARM', 'Loaded File: 294 rows', '19:10', and 'INS'.

4. Jog the axis to the opposite direction.

The screenshot displays the LUNYEE.TAP - Universal Gcode Sender (Version 2.1.17) interface. The main window is divided into several panels. On the left, the 'Controller State (DRO)' panel shows 'IDLE' status and coordinates for X (0.000), Y (0.000), and Z (0.000). Below this is a 'Jog Controller' panel with directional buttons (X+, X-, Y+, Y-, Z+, Z-) and settings for Step size XY (10 mm), Step size Z (1 mm), and Feed rate (1,000). The central panel displays 'Features' and 'Plugin Support' information, with a 'Window' menu open showing options like Visualizer, Controller State (DRO), Jog Controller, Macros, State, Console, Overrides, Favorites, Output, Classic, Plugins, UGS Diagnostics, and Reset Windows. The 'Plugins' submenu is also visible, listing Gcode Tiler, Workflow Helper, Jog Controller, Dowel Maker, Probe Module, and AutoLeveler. At the bottom left, a 'Console' panel shows G-code commands and an error message: 'An unexpected error was detected: (ALARM:1) Hard limit has been triggered. Machine position is ...'. The right panel, titled 'Visualizer', shows a 2D plot of the word 'LUNYEE' with dimensions 21.91 mm and 85.44 mm. The status bar at the bottom indicates 'Step size: 10.0mm', 'LUNYEE.TAP', 'IDLE', 'Loaded File: 294 rows', '19:10', and 'INS'.

6.4 How to Use E-Stop

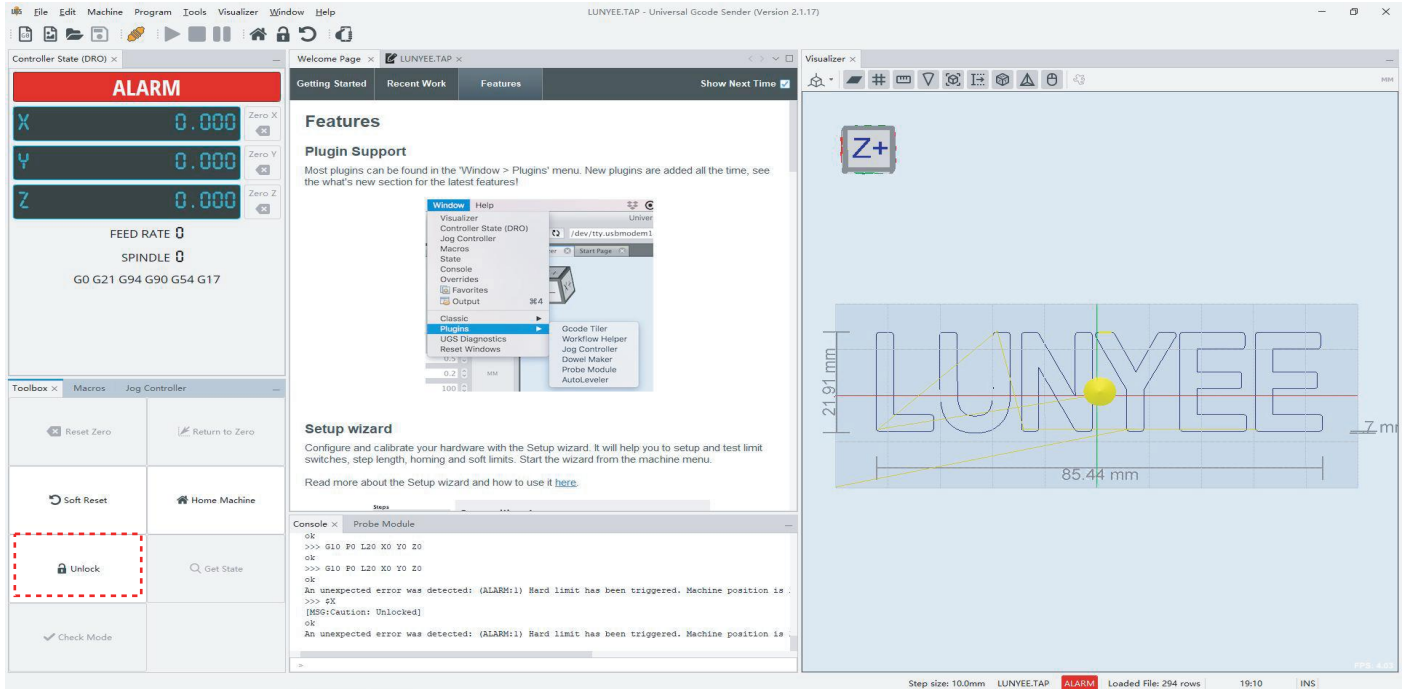
1. Press down the Emergency Stop button to stop the machine when unexpected situation occurs.



2. You can also restore manually: Rotate the button clockwise to restore normal working state.



3. Click on the software window to restore:
It will turn to "ALARM", click "Unlock" to return to normal working status.



7. Common Troubleshooting

Fault Phenomena	Possible Causes	Troubleshooting Solutions
Driver installation failure (Windows)	1.Conflict with old drivers 2.Insufficient system permissions	1.First, uninstall the old driver (click "UNINSTALL"), then restart the computer. 2.Right-click the installation program → select "Run as administrator".
Software cannot connect to the machine	1.Incorrect COM port selection 2.Emergency stop not reset 3.Limit switch triggered	1.Recheck the COM port (see Section 5.2). 2.Rotate the emergency stop button clockwise to reset it. 3.Unlock the limit switch according to Section 7.1.
Spindle does not rotate	1.Spindle power cable not fully plugged in 2.Fuse in the control box blown	1.Check the connection cable between the spindle and the control box, and reinsert it firmly. 2.Contact after-sales support to replace the fuse (do not disassemble the control box by yourself).

Fault Phenomena	Possible Causes	Troubleshooting Solutions
Poor engraving accuracy is poor (with misalignment)	1.Loose screws 2.Workpiece not 3.securely fastened 4.Limit not calibrated	1.Check the screws of each module and retighten them. 2.Secure the workpiece with pressing plates (to prevent movement during engraving). 3.Reperform the zeroing operation.
Limit switch alarm (Alarm:1)	1.Machine overtravel 2.triggering the limit switch	Unlock the system following these steps: 1.Click "Reset". 2.Use the direction buttons to move the axis away from the limit position (e.g., click "X-" if the X-axis is overtraveled). 3.Click "Unlock".

8. After-Sales Support

8.1 Warranty Information

- **Warranty Period:** 1 year for the main unit (control box, motor, spindle); 3 months for consumable parts (screws, pressing plates, USB cables).
- **Warranty Coverage:** Only covers non-human-induced damages (e.g., motor failure, control box failure during normal use). Damages caused by manual disassembly, drops, or mismatched voltage are not covered under warranty.

8.2 Contact Information

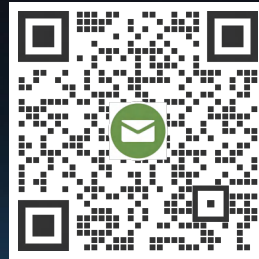
- Technical Support Email: **support@lunyeecnc.com** (Responses provided within 24 hours; recommended to attach photos of the fault and the machine serial number).
- Official Website Resources: www.lunyeecnc.com/ (Latest drivers, software, and video installation tutorials are available for download).



Welcome to the CNC Community!



Save contact



support@lunyeecnc.com

OfficialWebsite: lunyeecnc.com

TechnicalSupport:support@lunyeecnc.com