AXISCREAT

Inherit the spirit of craftsman, focus on CNC engraving machine

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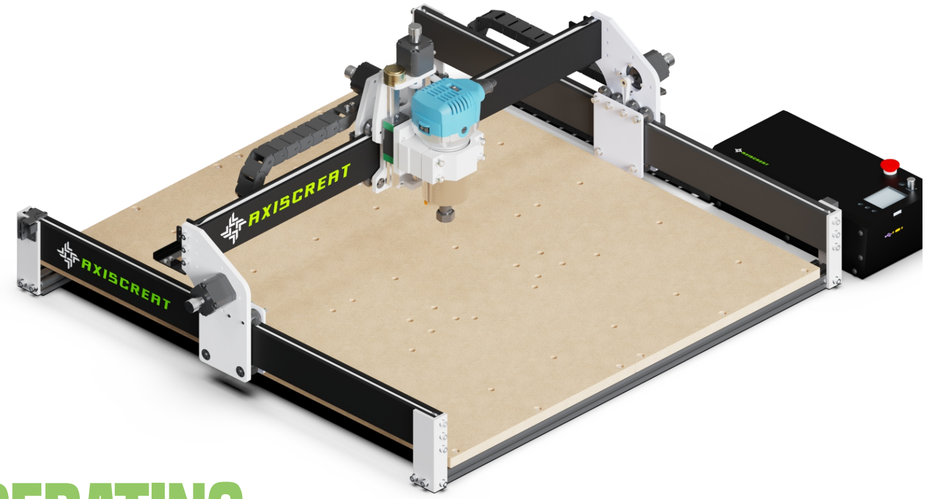


OPERATING INSTRUCTION

support@axiscreat.com, www.axiscreat.com

catalogue

Table of Contents

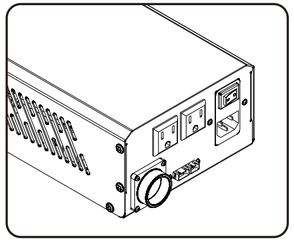
OPERATING INSTRUCTION

Safety Warnings

⚠ **Exercise caution when using the CNC machine. This device is an electrical machine with moving parts and hazardous areas.**

· The 6060 CNC machine is for indoor use only.
· Wear appropriate protective equipment when operating.
· Always place the CNC machine on a stable surface.
· Do not disassemble the power supply or electrical components. This may cause damage and void the warranty.
· Do not touch the machine spindle or place any parts near the work area while the machine is running.
· Do not leave children unattended around the CNC machine, even when it is not in operation. Injuries may occur.
· Do not leave the machine unattended while it is running.

⚠ **The control box has two 110v AC sockets, with a total power usage limit of 2 kilowatts. Do not exceed this limit to avoid damage to the electronic components.**



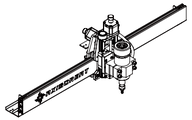
Technical Specifications

Parameter		Value
Machine Body	Dimensions (LWH)	1030mm*805mm*393mm
	Working Area (LWH)	600mm * 600mm * 95mm
	Frame	High-strength Aluminum
	Net Weight	23kg
Spindle	Supported Spindle Sizes	Outer Diameter 52mm, Outer Diameter 65mm
	Rated Power	710W
	Voltage	DC24V
	Collet Type	ER11-0
	Spindle Speed	10000-34000rpm
	Cooling	Air-cooled
Stepper Motor	Model	NEMA17
	Torque	0.55N.M
	Step Angle	1.8 degrees
	Rated Current	1.5A
Stepper Driver Chip	Model	DRV8825 (Replaceable as needed)
	Maximum Current	2.5A
	Microstepping	Supports 32 microsteps
Speed	Maximum XY Movement Speed	3500mm/min
	Maximum Z Movement Speed	500mm/min

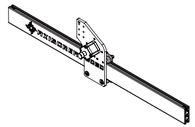
Technical Specifications

Parameter		Value
Positioning Accuracy	XY Positioning Accuracy	+/-0.03mm
	Z Positioning Accuracy	+/-0.03mm
Controller	Motion Control System	GRBL1.1
	Storage Capacity	Supports 64GB micro SD card (8GB included)
	User Interface	Offline Control Screen, PC Application
	Display Screen	2.5 inches
	Communication	USB-C
	Supported File Format	NC files
Sensors	X-axis	One limit switch for each direction
	Y-axis	One limit switch for each direction
	Z-axis	One limit switch for each direction
	Tool Sensor	Automatic Tool Sensor
Power Supply	Voltage	110V/220V, 50/60Hz (switchable)
	Maximum Power	2200W@110V / 4400W@220V
	External Power Outlets	2 (programmable)
	Maximum Current for External Outlets	15A
Processing Materials	Wood	
	Aluminum	

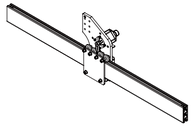
Assembly and Installation



❶ X-axis



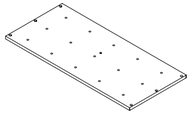
❷ Y1-left Y axis



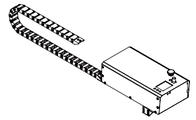
❸ Y2-right Y axis

❹ Front Fream Rail

❺ Rear Fream Rail



❻ MDF spoilboard



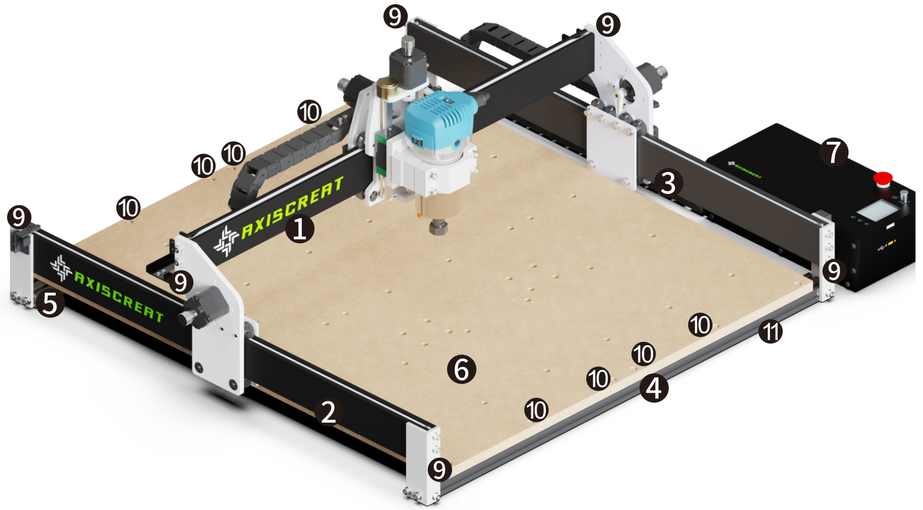
❼ Ccontroller box

❽ M4 Screw

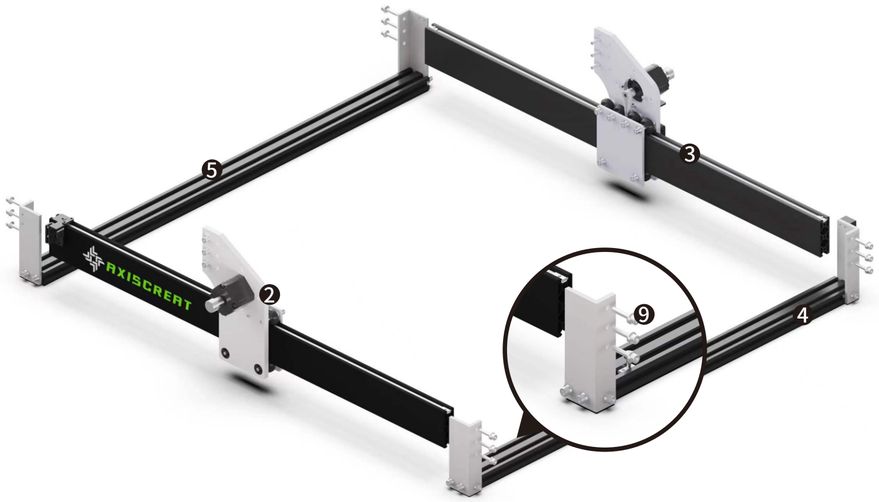
❾ M5 25Screw

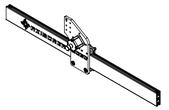
❿ M5 10Screw

⓫ M5 Spring LoadedT-Nut

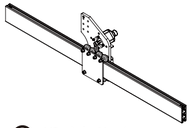


Step 1 | Assembly and Installation





❷ Y1-left Y axis



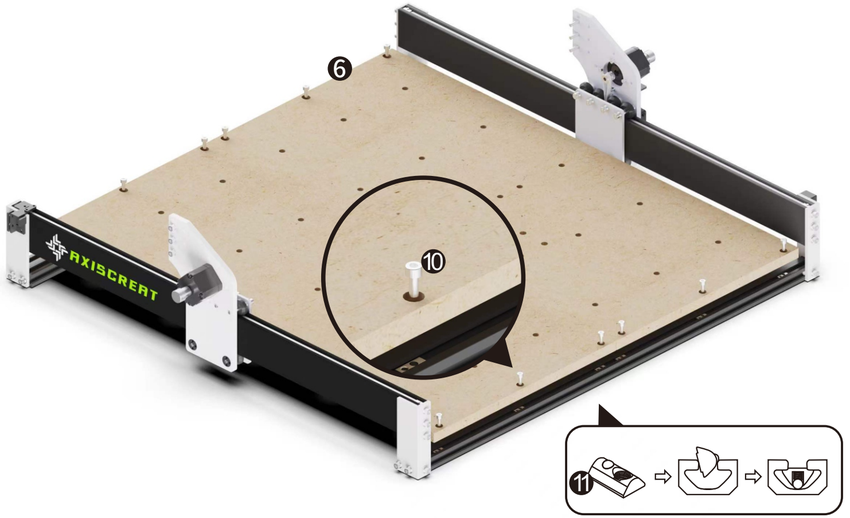
❸ Y2-right Y axis

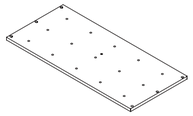
❹ Front Fream Rail

❺ Rear Fream Rail

❾ M5 25Screw

Assembly and Installation | Step2

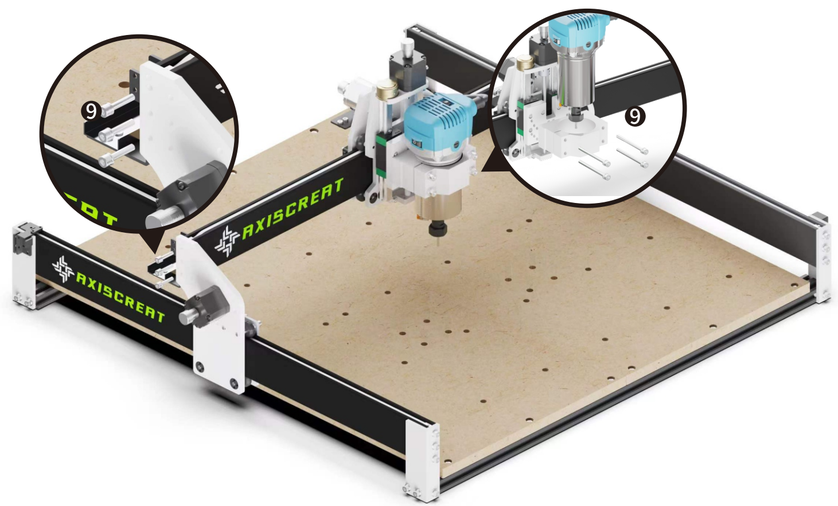


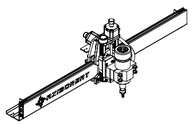


❻ MDF spoilboard

❿ M5 10Screw

⓫ M5 Spring LoadedT-Nut



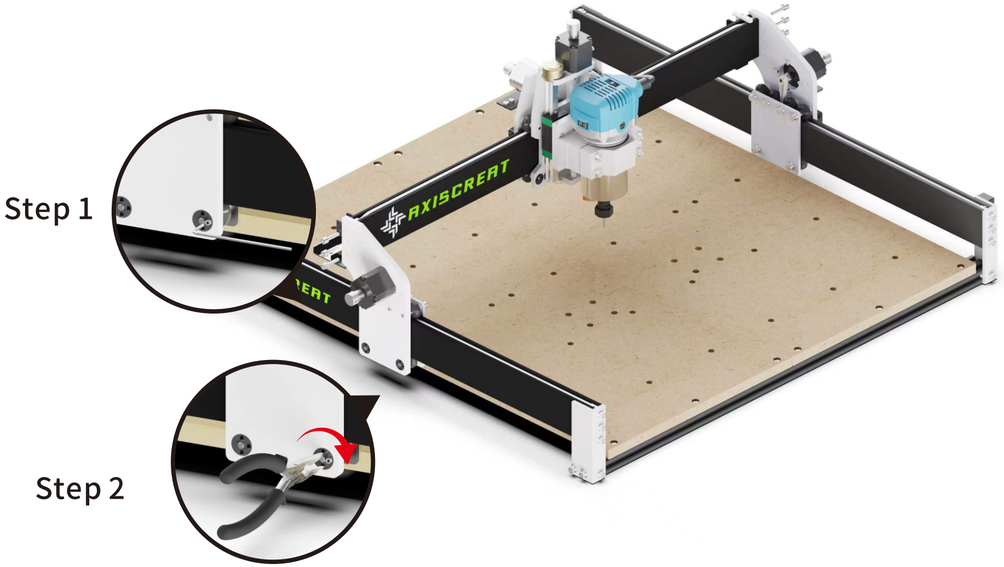


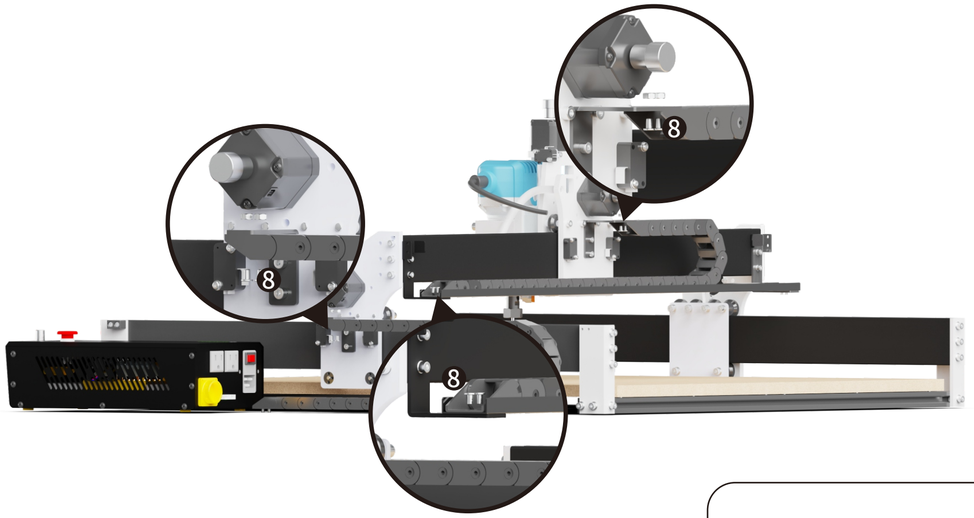
❶ X-axis

❾ M5 25Screw

Step 1

Step 2

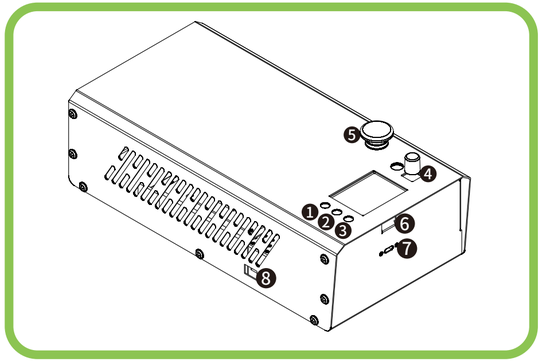


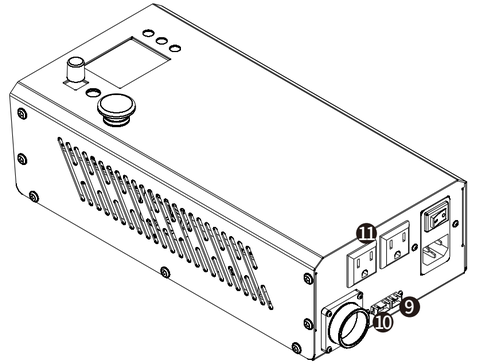


8 M4 Screw

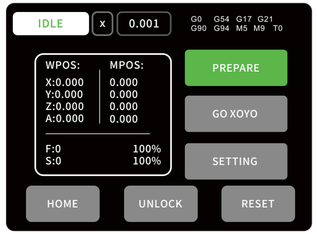
Button Introductions for the Offline Controller

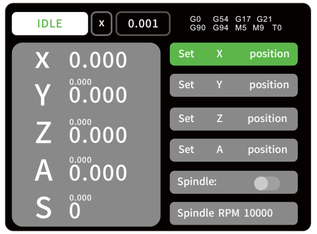
1. Manual Movement Distance: Adjust the value for each step
2. Switch Axis
3. Enter Manual Mode (MPG)
4. Knob, press to confirm; in manual mode, rotate counterclock wise to move in the negative direction
5. Emergency Stop Switch
6. Card Slot
7. USB Type-C
8. Power Switch
9. Laser
10. MPG
11. AC Sockets

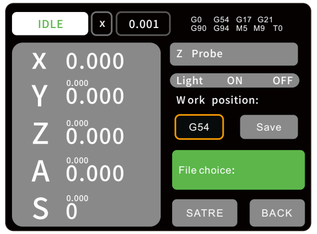




Interface







Prepare: Click the knob to enter the coordinate setting interface and prepare for processing

Goxoyo: Click the knob to return to the set workpiece origin coordinates

Setting: Parameter Settings

Home: Click the knob to return to the machine origin

Unlock: Click this button to clear the alarm after a limit switch is triggered

Zprobe: Z-axis tool sensor

Light: Control the LED light switch

Work Position: Can set workpiece coordinates for G54, G55, G56, G57, G58, G59

Filmchoice: Click to select the pro cessing file

Star: Start Processing

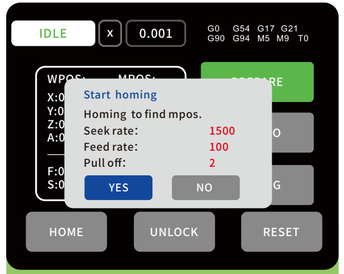
Set X Position: Switch to manual mode, move the X-axis to the desired origin position, click the knob to record the X-axis origin coordinates

Set Y Position: Switch to manual mode, move the Y-axis to the desired origin position, click the knob to record the Y-axis origin coordinates

Set Z Position: Switch to manual mode, move the Z-axis to the desired origin position, click the knob to record the Z-axis origin coordinates

Set A Position: The A-axis is not available, it is synchronized with the Y-axis

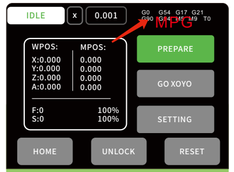
Preparing for Processing



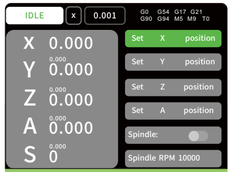
Turn on the power, it will display " Return to Home Position Automatically"

Click "Yes", the machine will return to the home position automatically

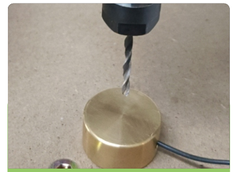
OPERATING INSTRUCTION



Press the 3rd button on the control box to switch to manual mode, displaying MPG



Move the position to zero, select X, Y position, press the knob to set X and Y to 0.000



Adjust the Z-axis to keep the distance between the drill bit and the tool sensor within 50mm

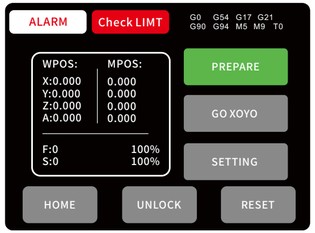
Click "Zprobe", select "Yes" (the tool thickness is pre-set according to our automatic tool sensor and does not need to be changed)

select "Yes" (the tool thickness is pre-set according to our automatic tool sensor and does not need to be changed)

At this point, XYZ will be set to 0. Click "Film Choice" to select the file to be processed (if the processing file does not have the spindle switch set, turn on the spindle before starting the process)

How to Unlock the Limit Switch

When the machine exceeds the working area, the limit switch will be triggered



After triggering the limit switch, the status in the upper left corner will change to ALARM

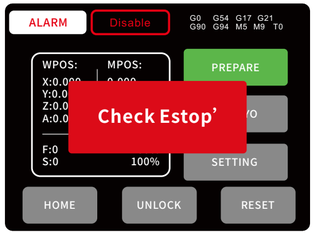
Click "UNLOCK", and the status will change to "IDLE"

Press the 3rd button on the left to switch to manual mode. The yellow MPG will appear in the upper right corner

Rotate the knob in the opposite direction of the triggered limit switch (if the movement speed is slow, press the first button on the left to select the movement distance per step)

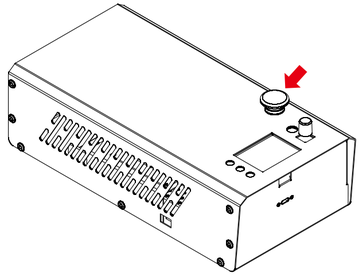
OPERATING INSTRUCTION

How to Use the Emergency Stop



In case of an accident, press the emergency stop button to prevent damage.

When the emergency stop is triggered, the status will change to ALARM.



Press the emergency stop again to release it. The status will change to IDLE.

After releasing the emergency stop, the status will change to IDLE. The machine will return to normal operation.

1.Back

Return: Go back to the previous page and save parameters to system memory.

2.Jog Feed

Manual Speed: Set the speed for manually moving the axis.

3.Spindle_RPM

Spindle Speed: Set the default speed for manually turning on the spindle. This value will be set as the default when starting up.

4.Wpos_Choice

G54-G59-Work Coordinate System: The default work coordinate system selected upon startup, ranging from G54 to G59.

5.MPG_choice

Handwheel Type: EC11 for control using the knob on the screen, MPG for control using an external industrial handwheel module. After connecting an industrial handwheel at the rear of the screen, the knobs next to the screen will automatically become inactive.

6.MPG_En_Mode

Handwheel Usage Mode:Mode 0: Long press the MPG button to enter MPG mode, allowing axis movement. Release the button to enter option selection mode for operations. Mode 1: Short press to toggle between MPG mode and option selection mode.

7.Probe_Distance

Tool Setting Distance: The maximum distance the tool tip can be from the tool setter surface during tool setting. If the tool is too high during tool setting, and the movement distance exceeds this value without touching the tool setter, an alarm will occur and exit the tool setting process.

8.Probe Seek Rate

Tool Setting Speed: The speed at which the machine rapidly moves to make initial contact with the tool setter during the tool setting process.

9.Probe_Tool_Height

Tool Setter Thickness: The distance between the lower surface of the tool setter and the contact surface. If the tool setter is fixed in position, set this value as the distance between the Z-axis workpiece zero point and the upper surface of the tool setter.

Offline Control Board Parameters

10.Probe_Return_Height

Retraction Height: The height position to retract to after making initial contact during the first tool setting. This value must be greater than the thickness of the tool setter.

11.Probe _Feed_Rate

Tool Setting Positioning Speed: The speed at which the machine moves slowly to make final contact with the tool setter during the tool setting process.

12.Probe_Back_Height

Tool Retraction Height: The height position to lift the tool to after completing tool setting. This value must be greater than the thickness of the tool setter.

13.Setting_Lanquage

Language Setting: Choose between Chinese or English.

14.Setting_Beep_En

Buzzer Enable: Enable or disable the buzzer sound.

15.(S0)Pulse_Microseconds

Pulse Interval: The minimum pulse width from idle to start of movement, or when the stepper motor changes direction. Typically set between 5-10. 10 is compatible with most drivers, while 5 is supported by only a few.

16.(S1)Idle_Loke_Tine

Motor Disable Time: Unit is 10ms. When stepper motors are idle, wait for this specified time before powering down the motors to reduce heat generation. Value of 255 keeps motors powered continuously.

17.(S2_1)x_step_Direction

X-axis Pulse Polarity: Set pulse signal polarity when using external drivers. For common anode connection, set to 0; for common cathode connection, also set to 0 to improve stability. No specific requirement for onboard drivers.

18.(S2_2)Y_step_Direction

Y-axis Pulse Polarity: Same function as 17.

19.(S2_3)Z_Step_Direction

Z-axis Pulse Polarity: Same function as 17.

20.(S2_4)a_step_Direction

A-axis Pulse Polarity: Same function as 17.

21.(S3_1)%_dove_Direction

X-axis Movement Direction: Set the direction of movement for the X-axis. 0 for forward, 1 for reverse.

22.(S3_2)Y _Move _Direction

Y-axis Movement Direction: Set the direction of movement for the Y-axis. 0 for forward, 1 for reverse.

23.(S3_3)Z_Move_Direction

Z-axis Movement Direction: Set the direction of movement for the Z-axis. 0 for forward, 1 for reverse.

24.(S3_4)A_Move_Direction

A-axis Movement Direction: Set the direction of movement for the A-axis. 0 for forward, 1 for reverse.

25.(S4)Invert_Enable

Motor Enable Level: Control signal (EN) level for stepper motors. For external drivers, set to 1 for common anode connection, 0 for common cathode connection; for onboard drivers, set to 0.

26.(S5)Invert_Limit

Limit Switch Level: For external limit switches, use normally open switches or NPN proximity switches, set to 0. Use normally closed switches or PNP proximity switches, set to 1.

27.(S6)Invert_Probe_Pin

Probe Switch Level: Set to 0 for touch probe switches. Set to 1 for PNP proximity switches or normally closed buttons used as probe switches.

28.(S10)Status_Report

Reporting Type: When communicating with upper-level software, specify the type of information sent. 0: Report workpiece coordinates without reporting buffer size. 1: Report machine coordinates without reporting buffer size. 2: Report workpiece coordinates and buffer size. 3: Report machine coordinates and buffer size.

29.(S11)Junction_Deviation

Angle Deviation: Minimum angular distance. When moving axes encounter very small angles, this parameter defines the threshold. Default is a straight line.

30.(S12)Arc_Tolerance

Arc Tolerance: Length of straight line segments into which arcs (G2, G3) are divided during interpretation of G-code.

Offline Control Board Parameters

31.(S13)Report_Inches

Inch Dimension Reporting: When communicating with upper-level software, send inch dimensions. 0: Disabled, 1: Enabled.

32.(S20)Soft_Limit_Enable

Software Limits Enable: 0: Disabled, 1: Enabled. Software limits restrict machine coordinates within specified maximum travel limits. Note: Requires properly configured limit switches and homing operation at each startup. Enable homing before enabling software limits.

33.(S21)Hard_Limit_Enable

Hardware Limits Enable: Enable or disable hardware limit switches.

34.(S22)Homing_Enable

Homing Enable: Enable or disable homing to machine zero.

35.(S23)Homing_Direction

Homing Direction: Represented by a binary number indicating the direction for XYZA axes.
Return to Origin Direction:Origin Direction:
Positioning direction Value X + Y + Z + 0. X- Y + Z + 1. X + Y- Z + 2. X- Y- Z + 3. X + Y + Z- 4. X- Y + Z- 5. X + Y- Z- 6. X- Y- Z- 7. Default setting $23=0, upper right corner, Z-axis up. $23=1, upper left corner. $23=2, lower right corner. $23=3, lower left corner. $23=4, special! Z-axis returns in the negative direction.
Conversion of Zero Return Direction:
Binary number with the first digit for X direction, second for Y direction, and third for Z direction. Specified by binary data."
Specified by binary data
Z+ Y+ X+
Value 0
Binary
00000000
Z+ Y+ X-
Value 1
Binary
00000001
Z+ Y- X+
Value 2
Binary
00000010

36.(S24)Homing _Feed _Rate

Homing locate speed: The speed at which the machine moves slowly to find the limit switch during homing.

37.(S25)Homing_Seek_Rate

Homing speed: The speed at which the machine moves quickly to find the limit switch during homing.

38.(S26)Homing_Delau

Homing debounce time: The delay time during homing to stabilize the limit switch signal.

39.(S27)Homing_Pu110FF

Homing release distance: The distance the machine backs off from the limit switch during homing.

40.(S30)Spindle_RPH_Max

Maximum spindle speed: The speed at which the spindle operates at full power. This setting relates the programmed S value in G-code to the actual spindle speed.

41.(S31)Spind1e_RPM_Min

Minimum spindle speed: The relationship between the speed specified by the S value in G-code and the actual spindle speed when running G-code.

42.(S32)Laser_Mode

Laser mode: Enables or disables laser mode. In laser mode, when sending M3/M4 commands, axis movement is required to activate output. In non-laser mode, M3/M4 commands directly activate output. Note: Enabling laser mode requires setting the spindle type to 0 and setting the maximum spindle speed to 1000.

43.(S40)PWM_Mode

Spindle type: 0 - Spindle with normal 0-100% proportional speed control or laser. 1 - Spindle with PWM speed control for model airplane ESC, used to control brushless electronic speed controllers (ESCs) for model airplanes. 2 - Spindle with PWM output for servo control, used for pen plotters with servo motors.

44.(S41)Corexy_Enable

COREXY: Defines whether the machine uses a COREXY structure. 0 - Disabled, 1 - Enabled. Note: COREXY is a special belt-driven mechanism used in lasers or pen plotters, not for engraving machines.

Offline Control Board Parameters

45.(S42)Z_Homing_Disable

Disable Z-axis homing: 0 - Enable Z-axis homing, 1 - Disable Z-axis homing. Disabling Z-axis homing is primarily used for lasers or pen plotters that do not have a Z-axis.

46.(S100)x_step_Per

X-axis pulse equivalent: Specifies the number of pulses required for the X-axis stepper motor to move 1 mm. Calculation method: For a 1.8-degree stepper motor, it's 200×microsteps/lead screw pitch.For a 0.9-degree stepper motor, it's 400×microsteps/lead screw pitch.Some external drivers directly provide the number of pulses per rotation after subdivision, which is then divided by the lead screw pitch. For belt drives, the lead screw pitch refers to the distance the pulley moves per rotation.

47.(S101)Y_step_Per

Y-axis pulse equivalent: Defined similarly to setting 46 for the Y-axis.

48.(S102)Z_Step_Per

Z-axis pulse equivalent: Defined similarly to setting 46 for the Z-axis.

49.(S103)A_step_Per

A-axis pulse equivalent: Specifies the number of pulses needed when the A-axis chuck rotates 1 degree. It's calculated as single rotation pulse count×chuck reduction ratio/360.

50.(S110)x_Max_Rate

X-axis maximum speed: Sets the maximum speed for the X-axis move ment. Standard setting: When executing a return to workpiece zero command, the stepper motor should be able to move the axis at full load without losing steps or jamming.

51.(S111)Y_Max_Rate

Y-axis maximum speed: Defines the maximum speed for the Y-axis, similar to setting 50.

52.(S112)Z_Max_Rate

Z-axis maximum speed: Defines the maximum speed for the Z-axis, similar to setting 50.

53.(S113)A_Max_Rate

A-axis maximum speed: Defines the maximum speed for the A-axis, similar to setting 50.

54.(S120)X_Acceleration

X-axis acceleration: Set the acceleration for the X-axis during acceleration and deceleration. Set standard: (Important) The X-axis should not lose steps or jam when moving back and forth at full load speed. (Important) When testing engraving machine relief graphics, the Z-axis motor should not deviate from the zero point at the starting and ending points of the Z-axis. Setting the acceleration too high may result in the relief carving becoming progressively higher or lower. This value is closely related to mechanical structure, stepper driver algorithm, stepper motor quality, and stepper motor current. It should be carefully set and ideally not exceed 200.

55.(S121)Y_Acceleration

Y-axis acceleration: Defines the acceleration for the Y-axis during acceleration and deceleration, similar to setting 54.

56.(S122)Z_Acceleration

Z-axis acceleration: Defines the acceleration for the Z-axis during acceleration and deceleration, similar to setting 54.

57.(S123)A_Acceleration

A-axis acceleration: Defines the acceleration for the A-axis during acceleration and deceleration, similar to setting 54.

58.(S130)X_Max_Travel

X-axis maximum travel: Set the maximum travel distance for the X-axis. Note: When software limits are enabled and after homing, movements are restricted within this set travel limit. During homing operations, if the axis exceeds this value without triggering the limit switch, the homing operation will be aborted. This value is irrelevant if software homing is not enabled.

59.(S131)Y_Max_Travel

Y-axis maximum travel: Defines the maximum travel for the Y-axis, similar to setting 58.

60.(S132)Z_Max_Travel

Z-axis maximum travel: Defines the maximum travel for the Z-axis, similar to setting 58.

61.(S133)A_Max_Travel

A-axis maximum travel: This setting is invalid when A-axis is not configured as Y2-axis. When enabled, it defines the maximum travel for the A-axis, similar to setting 58.

Offline Control Board Parameters

62.About

About: View system version.

63.Reset All

Restore factory settings: Reset all parameters to their default values.

64.Process_end_infornation

Rjob completion message: Set the screen position after program execution completes. 0 stays on the return option, 1 stays on the repeat option. Staying on the repeat option is mainly used for batch processing of individual programs.

65.Power_0N_homing

Homing at startup: Determines whether the machine homes upon startup.

66.Use_A_axis_as_v2_axis

A-axis as Y2-axis: Enables the use of A-axis as the second Y-axis. Used for machines with dual Y-axis configuration.