Cutting engraving integrated control system

- Underlying hardware specification-

7 inch screen

ZY72B8G series

Control System User Manual

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Directory

Chapter 1: System overview

Welcome to use the dual beam cutting and carving integrated system.

For the convenience of description, it is referred to as the system or this system in this manual.

This system mainly supports two major functions: laser cutting and laser engraving, supporting 8 laser heads for simultaneous processing, which can greatly improve processing efficiency. In addition, it also supports various auxiliary functions, such as brushes, punching, etc., to meet various specific practical needs.

This system has the characteristics of simple integration, easy operation, and easy learning. The system has strong performance, adopts advanced motion control algorithms, and has advantages such as smooth operation, stability, and strong anti-interference.

Below, we will provide a detailed explanation of the various components and parameters of the system.

Chapter 2: the system description

1. Hardware composition

The hardware mainly consists of a motion control card, a display screen (full touch), and a remote control handle. As shown in the following figure:

Control card

display screen

Remote control

2. Software composition

The software part is mainly classified into two categories: offline software and online software.

Among them, offline software can obtain graphics through the upper computer software and perform independent processing without the need to maintain connection with the computer during operation. It can

achieve simultaneous cutting of single and multiple heads according to the configuration, improving efficiency.

Online software needs to maintain connection with the upper computer and form a more powerful system with the visual configuration of the upper computer, in order to achieve more complex, intelligent, and personalized functions such as mark point cutting, template cutting, and real-time contour extraction of graphics.

Chapter 3:system function description

The main functions of the system are shown in the table below:

model	ZY72B8G	ZY72B8G-2400
Hardware		
screen	7 inches	7 inches
Universal output port	8	8
Universal input port	8	8
Number of supported platforms	2	2
Controlled Axes	8-axis	8-axis
Supports laser count	8	8
disk space	500M	500M
Data transmission method	Network communication, USB communication, USB drive	

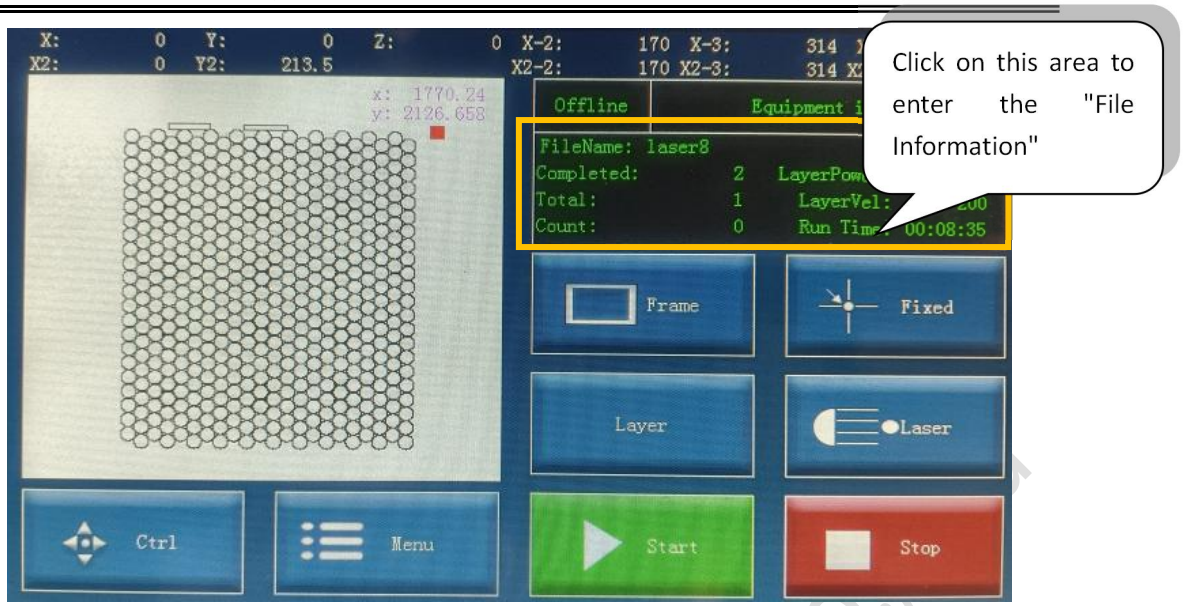
Support laser	Various DC lasers, RF lasers, CO2 lasers	
In terms of functionality		
Input/output diagnostic interface	√	√
Quick movement function of buttons	√	√
Support for mobile light output	√	√
Return to positioning point function	√	√
Counting function	√	√
Processing progress display	√	√
Processing graphic display	√	√
Real time display of machining graphic trajectory	√	√
Power outage continuation function	√	√
Online motherboard upgrade	√	√
Automatic feeding, synchronous feeding	√	√
Super format cutting	√	√
Mirror Cut	√	√
Offline pause allows for movement and shooting	√	√
Offline pause supports modifying layer parameters such as power and speed	√	√

Multilingual	√	√
Offline pause allows for movement and shooting	√	√
Offline pause supports modifying layer parameters such as power and speed	√	√
Multiple VIRTUAL ARRAYS, MODIFY the number of rows and columns below	√	√
Multiple head mutual shift	√	√
Scrap processing	√	√
Blowing (processing, light output, layer)	√	√
Error log, error prompt	√	√
IO configuration	√	√
Logo upgrade	√	√
remote control	√	√

Chapter 4：Description of System parameters

1. Power on

After the system is started, it enters a self-test to ensure that all parts of the system have no faults before starting and entering the system.



2. Main interface

The main functions of the main interface are shown in the table below:

Button	Function Description
ctrl	When the system is idle, click to enter the control interface.
menu	When the system is idle, enter the "Menu" interface. Speed can be set, etc.
start	Start and pause reuse buttons.
stop	Stop the running device and keep it idle.
Frame	After clicking, the device will follow the starting mode to move the graphic outline. Effective in the presence of graphics.
layer	Pop up the layer interface and modify layer speed, power, etc.

Fixed	Set the current position to a fixed point and set it to fixed point mode, Starting machining from this fixed point in fixed-point mode
Laser	Click once to emit the laser once, for machine adjustment and other purposes.

3. Menu interface

Click the "Menu" button on the main interface to pop up a menu box

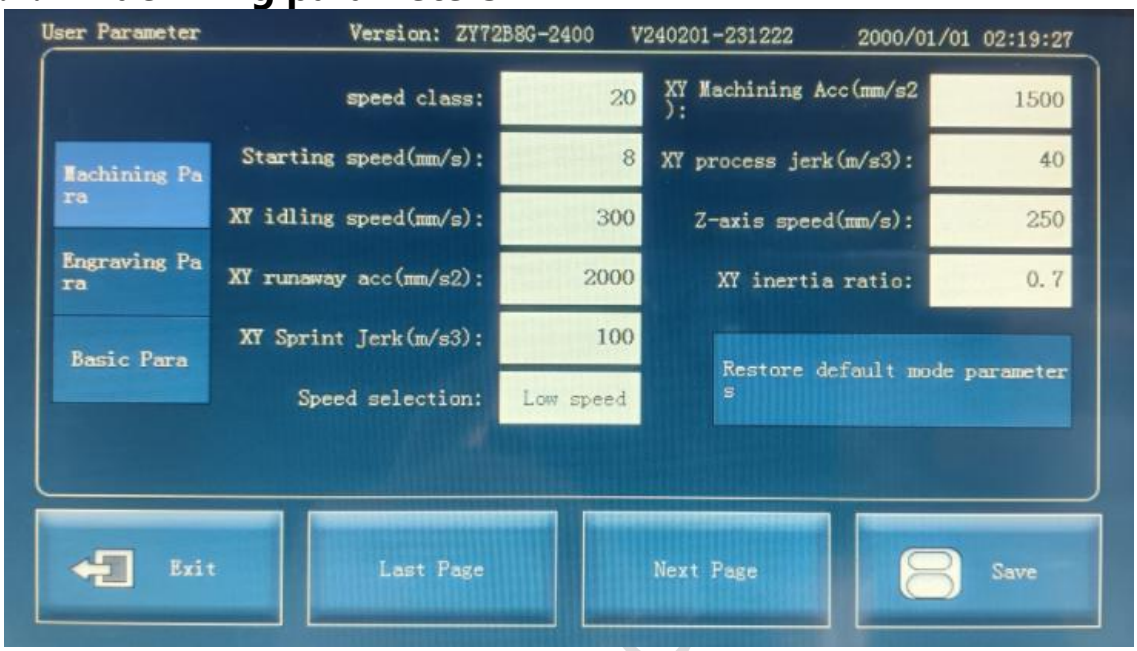
items such as user parameters, system parameters, files, USB drives, diagnostics, and others. Users can click to access the desired functions as needed.

Button	Function Description
User parameters	Configure common parameters, such as axis parameters, multi head mutual movement, laser configuration, etc
system parameter	Configure core parameters, such as axis parameters, multi head mutual movement, laser configuration, etc
File	Operate on files that exist on the local disk of the system.
USB disk	Operate on files with external storage device USB drives.
diagnosis	Used for diagnosing equipment faults, viewing input or manually controlling output functions.
other	Other infrequently used functions.
Exit	Exit the menu interface and return to the main interface.

Below is an explanation of the relevant parameters under each menu.

3.1 User parameters

3.1.1 Machining parameters



As shown in the above figure, the various functions of the machining parameters are shown in the table below:

Machining	unit	Function Description
Speed class	None	The larger the curvature, the slower and smoother it runs in curved areas. Generally, setting a more appropriate value is sufficient, and this value is rarely changed. The default value can be used, but it can also be adjusted according to the specific cutting effect.
Starting speed	mm/s	The starting speed of processing operation, also known as the starting speed.

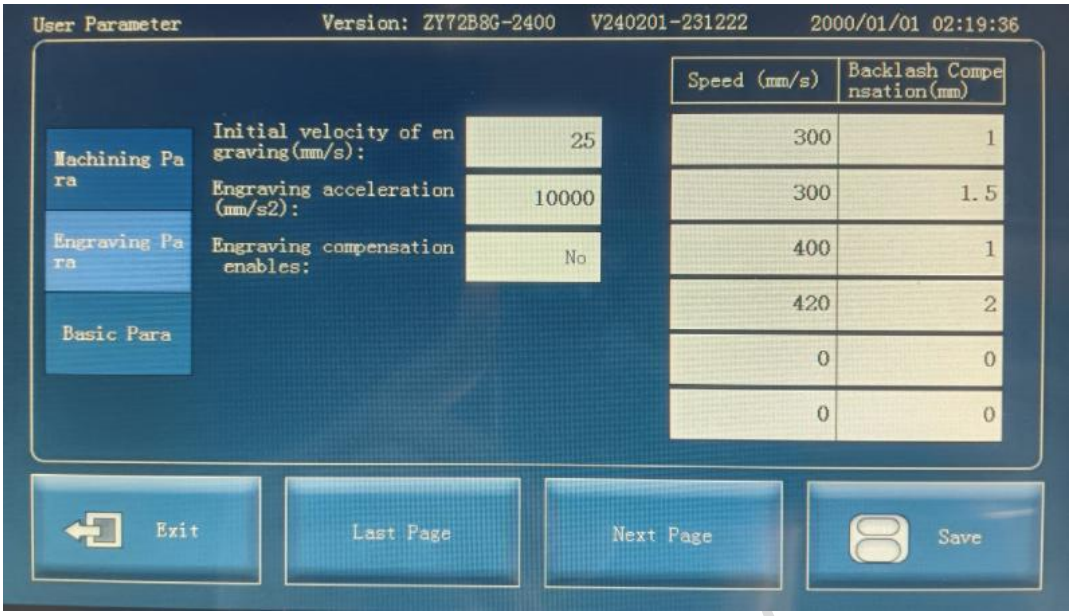
		Generally, adjustments are made based on the equipment. Generally speaking, when the motor load of the equipment is light, the starting speed can be slightly higher (such as 15mm/s), and when the equipment is heavy, the starting speed can be slightly lower (such as 5mm/s). Generally, a speed range of 10mm/s to 20mm/s is sufficient. Of course, a slightly faster speed is also possible, but it is recommended not to exceed 50mm/s.
XY idling running speed	mm/s	The speed during idle machining can usually be slightly higher than the machining speed. If a stepper motor is used, it can usually run faster to around 600mm/s. If a servo motor is used, it can usually run up to 800mm/s or a bit larger. According to the actual adjustment, ensure that the equipment can withstand the range and adjust it under the premise of stable operation.
XY runaway	mm/s^2	The acceleration during idle processing

acc		(controlling the speed change). Generally speaking, stepper motors typically have a maximum speed of 1000mm/s ² To 3000mm/s ², Servo motors are usually adjustable to a larger range, such as 1000mm/s ² Up to 5000mm/s ². Adjust according to specific circumstances.
XY Sprint Jerk	m/s³	The acceleration speed during idle machining (controlling the speed of acceleration change) is generally set to the default value. The speed of air running can generally be faster, so it can be adjusted to 5m/s ³ Left or right, or slightly larger, with a maximum capacity of 300m/s ³, But it is generally not recommended to adjust it too much, as the impact of the motor is relatively large, such as 120m/s ³ Almost done. Of course, this needs to be adjusted according to the specific situation of the device. For low-power devices, this value can be slightly lower to make the motor accelerate more smoothly.

Speed Selection	grade	1. Low speed: The lowest speed, the most gentle, and the best effect; 2. Normal: It is relatively faster at low speeds, which is a common speed configuration; 3. Faster: a relatively ordinary and faster processing method; 4. High speed: The fastest and most efficient speed configuration.
XY machining Acc	mm/s^2	The acceleration during processing (such as cutting, drawing brushes). The acceleration during general processing is slightly smaller than that during idle running, mainly to ensure better cutting effect. Usually, the stepper motor is set to 800mm/s ² To 2000mm/s ²。 If servo is used, adjust to 800mm/s ² To 3000mm/s ²。 Of course, this is only a reference value, and it can be adjusted according to the device. It can be slightly larger or smaller than the reference range. If it is required to be stable, adjust it down a bit, and if it is

		required to be fast, adjust it up a bit.
XY process Jerk	m/s³	The rate of acceleration change during processing (such as cutting, drawing brushes, etc.). This is usually done using the default value. If it requires stability, the acceleration should be at 60m/s ³ Up to 80m/s ³ , If fast, adjust to 100m/s ³ Up to 150m/s ³。 The general system also provides reference values, which can be adjusted based on the system's reference value or adjusted according to the reference value.
Z-axis speed	mm/s	The speed of Z-axis idle running (feeding speed).
XY inertia ratio		The proportion of XY acceleration, according to which the Y-axis acceleration is reduced (usually the Y-axis is heavier and smaller)

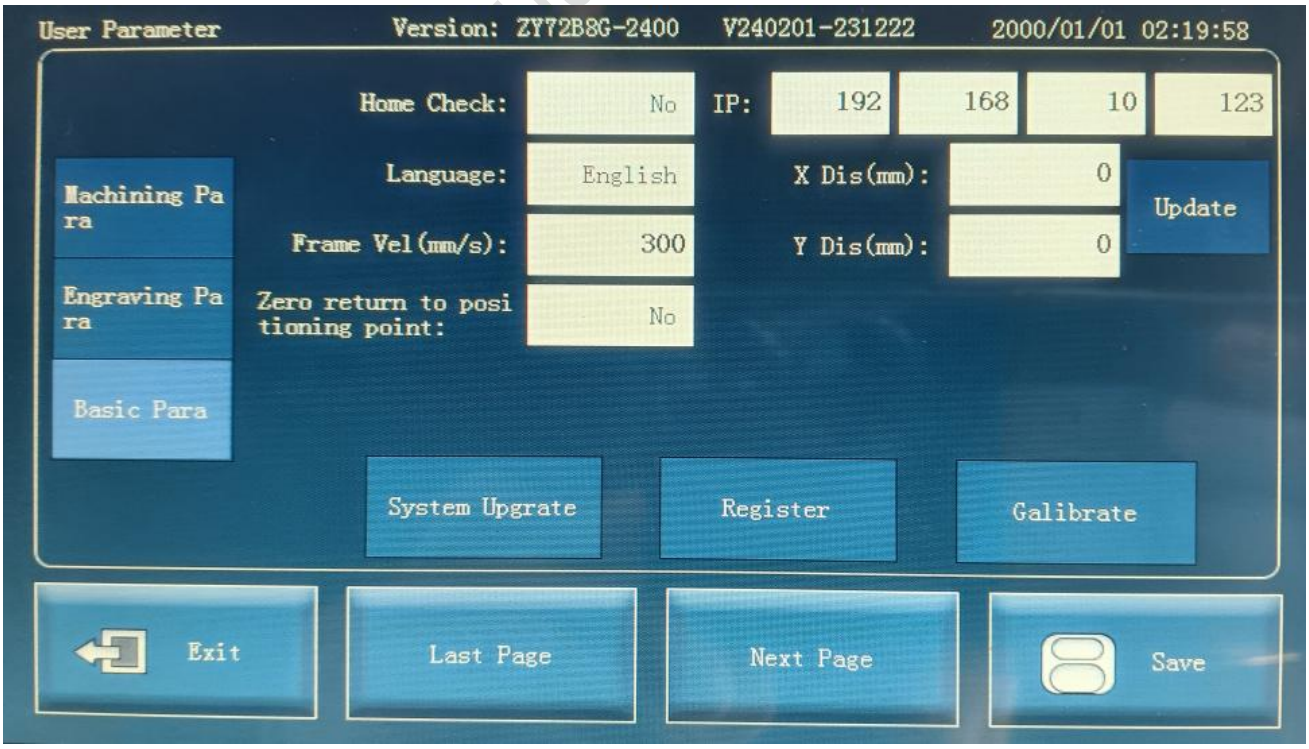
3.1.2 Engraving parameters



Sculpt Parameters	Unit	Function Description
Initial velocity of engraving	mm/s	The starting speed during carving, also known as the starting speed. This can be adjusted based on the starting speed during cutting. Usually, it is also adjusted to 10mm/s to 20mm/s. Adjust according to the actual situation.
Engraving acceleration	mm/s^2	The acceleration during carving is used to control the acceleration during carving processing. Generally, the stepper motor is set to 500mm/s ² Up to 5000mm/s ²。 The larger the value, the faster the reaction and speed. The servo motor can be increased a bit.

		Generally, it needs to be adjusted according to the carving effect.
Engraving compensation enable	none	Yes: indicates turning on carving compensation; No: Indicates that carving compensation is turned off.
Gap Compensation Table Configuration	none	If engraving is enabled, enable the gap compensation table for compensation.

3.1.3 Basic parameters



As shown in the above figure, the carving parameters are shown in the

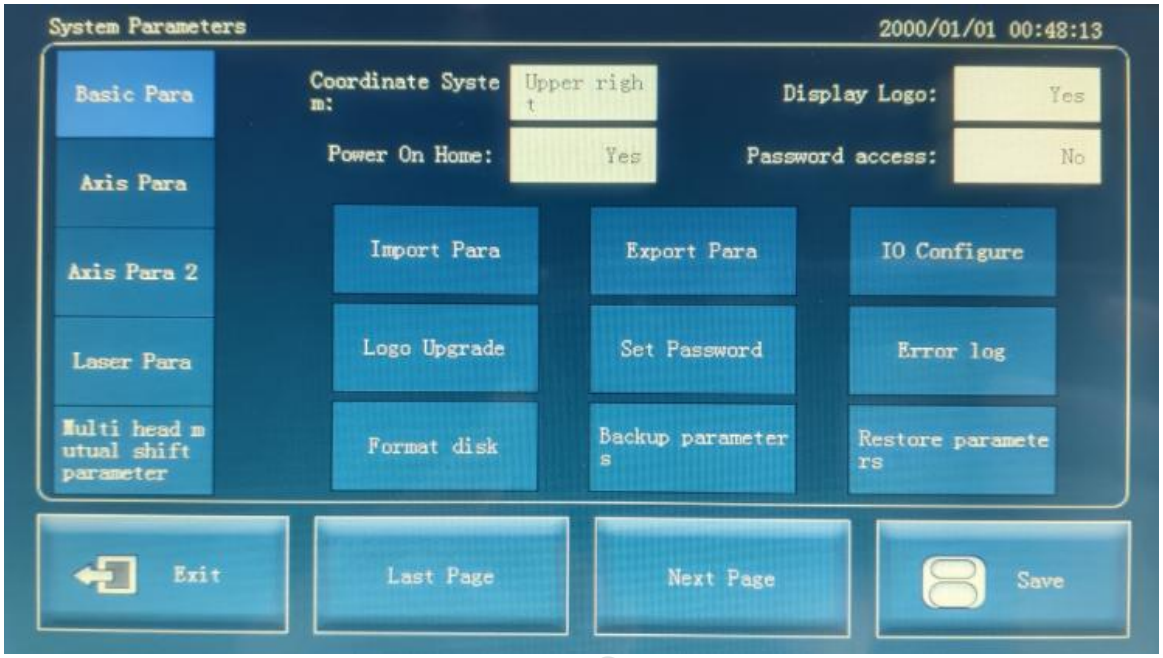
table below:

Basic parameters	unit	Function Description
Home check	none	No: indicates that either returning to zero or not returning to zero can be processed; Yes: indicates that processing can only be carried out after successfully resetting to zero.
language	none	Select the system display language, which currently supports Simplified Chinese, Traditional Chinese, English, Japanese, Korean, Russian, German, French, Portuguese, Spanish, Vietnamese, Thai, and Indonesian. Choose switching based on the language used by the user.
IP Address	none	Configure the local IP address, making sure it is in the same network segment as the network card connected to the computer. If the local configuration is 192.168.10.112, then the computer configuration is 192.168.10.100. The first three 192.168.10 must be consistent with the computer

		network card configuration, while the last one is different.
X dis	position coordinates	Set the X coordinate of the positioning point, which can be obtained by clicking on the update button on the right; After the device successfully returns to zero, it will automatically run to that position.
Y dis	position coordinates	Set the Y coordinate of the positioning point, which can be obtained by clicking on the update button on the right; After the device successfully returns to zero, it will automatically run to that position.
system upgrade	none	Upgrade
register	none	Registration code registration
Screen correction	none	Correction screen
Zero return positioning point	none	Choose whether to return to the positioning point after successfully returning to zero

3.2 System parameters

3.2.1 Basic parameters



As shown in the above figure, the definition of basic parameters is shown in the table below.

Basic parameters/ function	**Function Description**
Coordinate System	There are four coordinate system options: top left, top right, bottom left, and bottom right. The correct coordinate system set by the user based on the device is mainly related to the display direction of the transmitted graphics.
Power on Home	Yes: Automatically return to zero upon startup; No: It does not automatically return to zero when turned on, but a

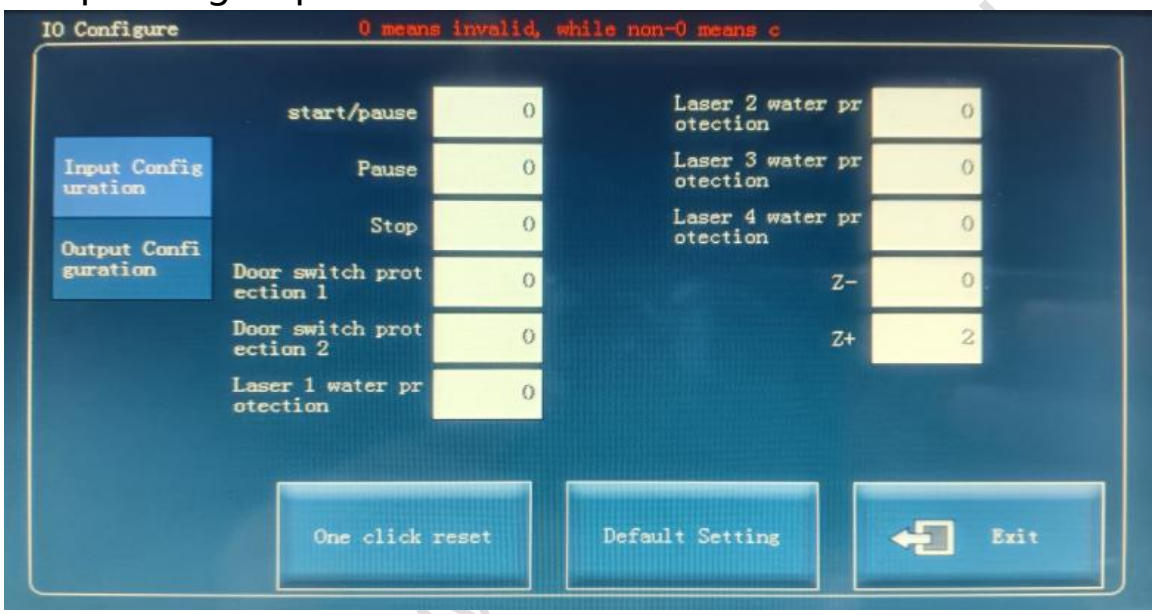
	prompt will appear indicating whether to return to zero. Users can choose according to the prompts, and generally, the adjusted devices are reset to zero. When just adjusting the machine, please choose No.
Display logo	Yes: Display logo on startup; No: The logo will not be displayed when turned on. Choose as needed.
Password access	The setting is: entering system parameters requires entering a password, with an initial password of "888888". Click on Change Password under the interface to change it. Set to No: No password is required to enter system parameters. Before May 26, 23, the administrator password was 123456. After May 26, 23, the administrator password was changed to 888888, and the user password can be freely changed.
Import Para	Import the parameters of the USB drive into this system.
Export Para	Export parameters to a USB drive.
IO configuration	Configure input/output ports. Output, each specific function can be configured to a specified output port, or default values can be used. It is generally recommended to use default configuration, unless one output port is faulty or used for other purposes. Similarly, input can also be configured to specific pins based on specific functions, and

	it is generally recommended to use default settings unless there are special circumstances.
Logo Upgrade	The created logo can be placed on a USB drive, and then the boot logo can be upgraded through the USB drive. After a successful upgrade, you will see the upgraded logo when booting up.
Set password	The password for entering the system parameters can be modified according to the wizard.
Error log	You can open the log that just reported an error, in order, to facilitate locating and troubleshooting certain special faults.
format disk	Format the local disk. Note that formatting will delete all local machining files.
Backup Parameters	Back up the current parameters to backup
Restore parameters	Restore the previously backed up parameters back up

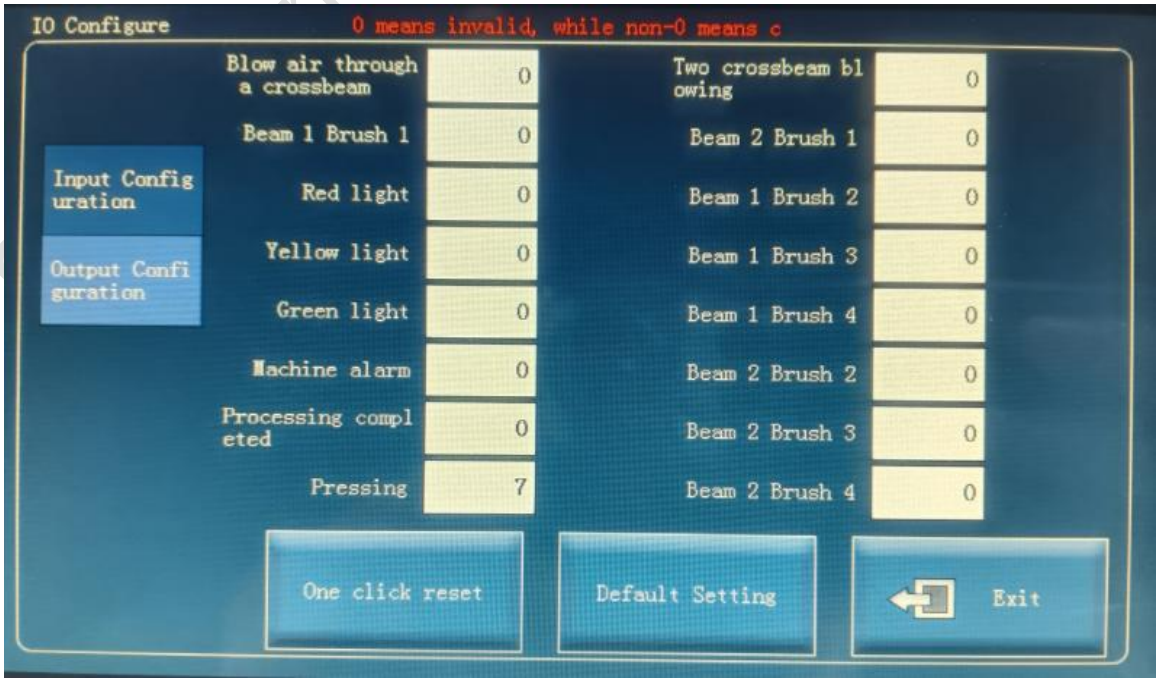
IO configuration under basic parameters:

Configure the corresponding IO ports according to the required functions, and set unnecessary functions to 0

Input configuration: 0 indicates invalid, non 0 indicates corresponding IO port.

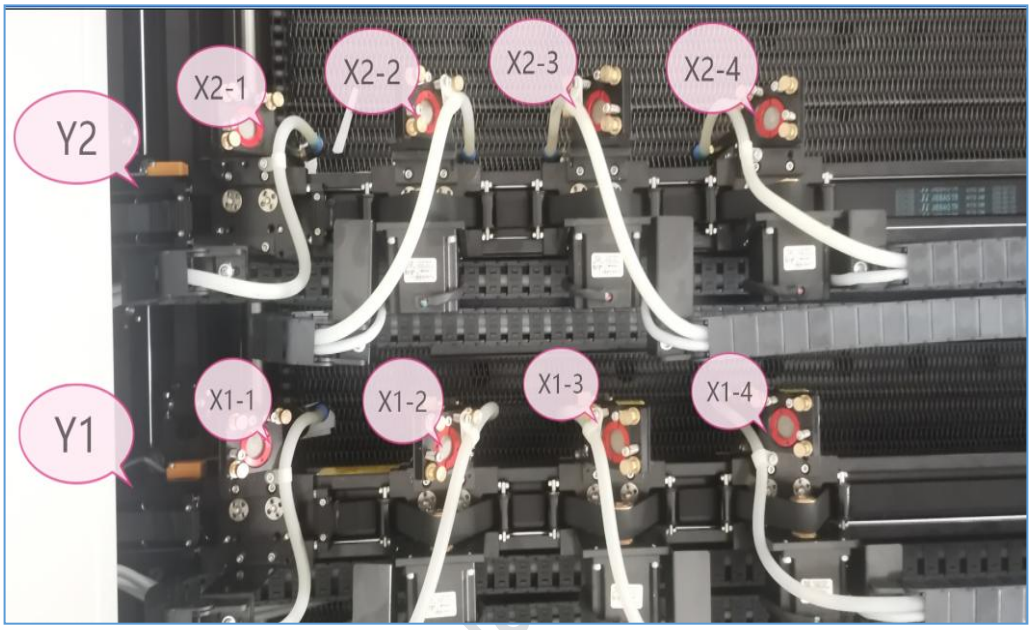


Output configuration: 0 indicates invalid, non 0 indicates corresponding IO port.

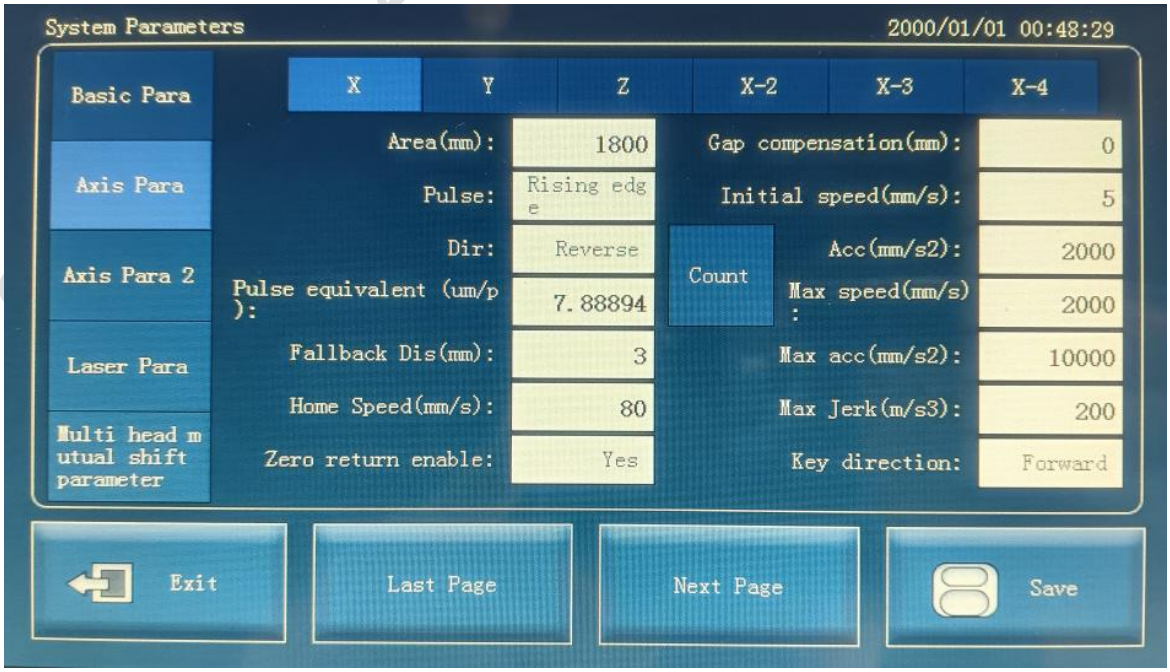


3.2.2 Axis Parameters 1 and 2

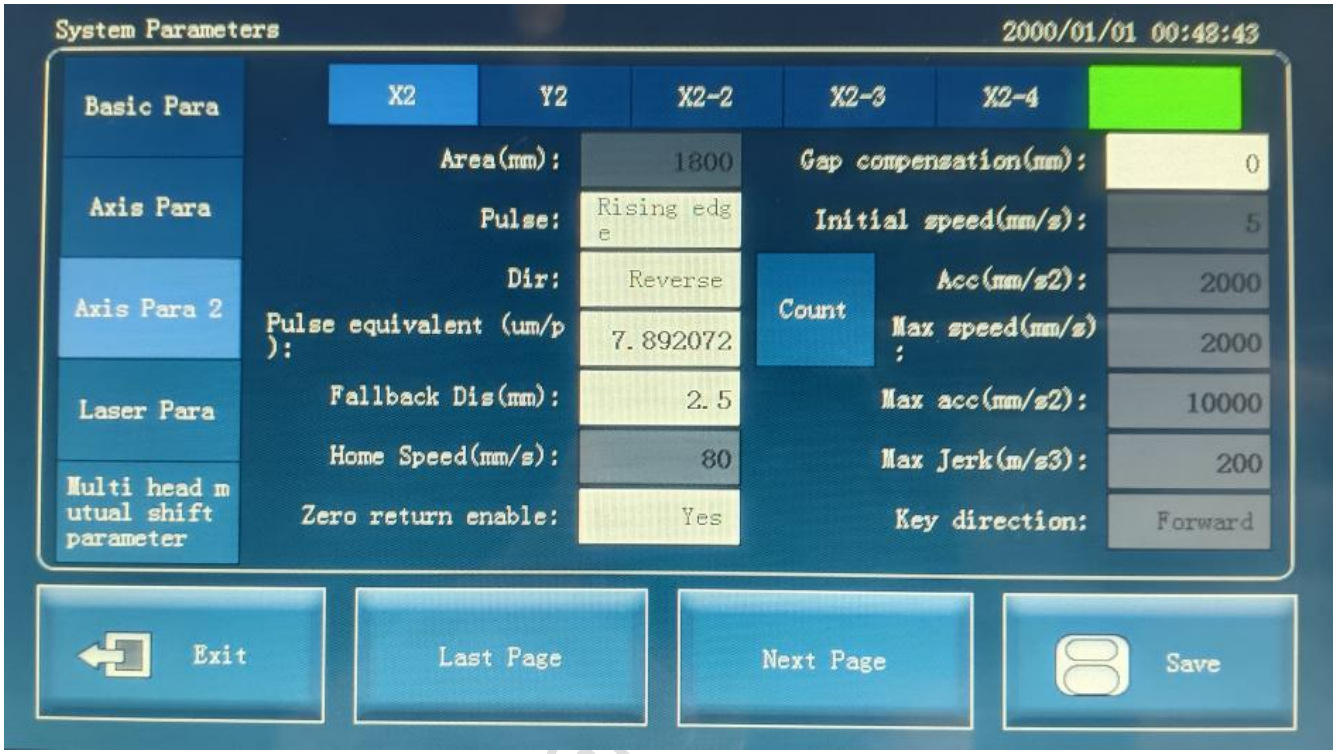
Firstly, let me explain the allocation of axes as shown in the following figure:



Axis parameter 1: mainly corresponds to the axis parameters of a crossbeam



Axis parameter 2: mainly corresponding to the axis parameters of the second crossbeam



Axis parameters and functions	unit	Function Description
Axis selection label	none	Select the required configuration axis. Currently, there are 12 axes available, including the X-axis, Y-axis, X-2 axis, X-3 axis, X-4 axis for one platform, as well as the X2 axis, Y2 axis, X2-2 axis, X2-3 axis, X2-4 axis, Z-axis, and W-axis for two platforms.

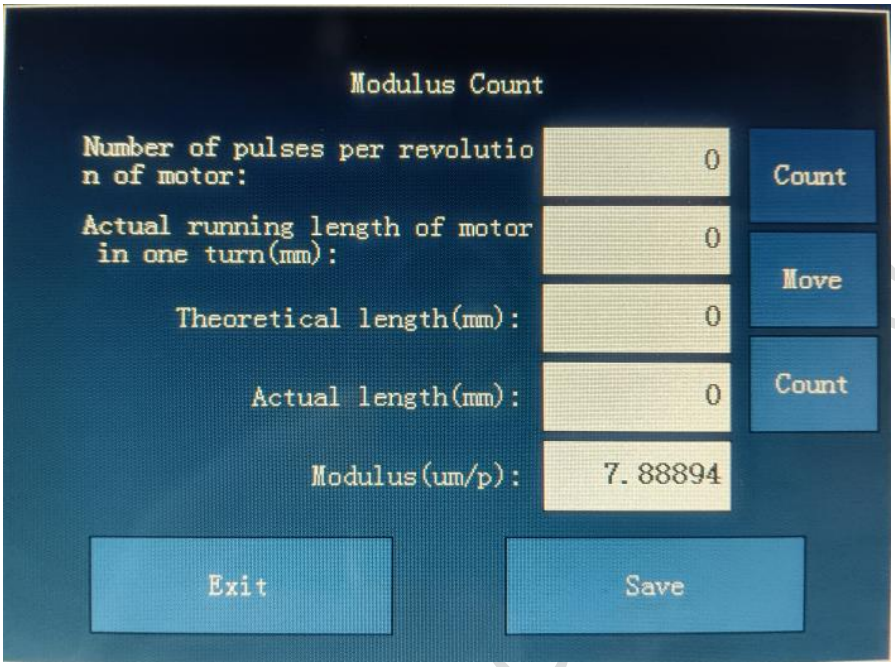
		Correspond one-to-one with the interface labeling of the control system.
area	mm	Set the travel distance of the axis and adjust it according to the size of the machine.
Pulse.	Rising/falling edge	Pulse control form, refer to driver configuration.
Dir	Forward/Reverse	Adjust the running direction of the shaft.
pulse equivalent	um/pul	Indicates the displacement of each pulse during operation. Calculate based on the drive and mechanical reduction ratio.
count	none	Call the pulse equivalent calculation tool, which provides convenient methods for calculating pulse equivalent, one is theoretical calculation, and the other is actual measurement method. Users can choose any method according to their actual situation to obtain the

		correct pulse equivalent.
Fallback Dis	mm	The distance from the origin switch after returning to zero is usually set appropriately. Usually set at around 5mm.。
Home speed	mm/s	Set the speed when returning to zero. The speed cannot be set too high, usually 30mm/s to 50mm/s.
Zero return enable	yes/no	Yes: then the axis is allowed to return to zero. No: Cancel the zero return of the axis.
Gap compensation	mm	The user compensates for the reverse clearance of the device.
initial speed	mm/s	Set the initial speed for starting the axis, usually set at 10mm/s. The general range is between 5mm/s and 30mm/s.
Acc	mm/s^2	The acceleration of single axis movement. Generally, stepper motors use 500mm/s ² To 2000mm/s ² That's it. Typical value is 1500mm/s ²。 The servo motor has a

		wider range of use, within 500mm/s ² Up to 5000mm/s ² Between. Typical value is 2000mm/s ²。
Max speed	mm/s	Set the maximum speed that the axis can operate at. Adjust according to the motor capacity of the equipment. This parameter is used to specify the maximum speed range of the axis. After debugging, there is generally no need to make any changes.
Max Acc	mm/s²	Set the maximum acceleration that the axis can operate at. Adjust according to the motor capacity of the equipment. This parameter is used to specify the maximum speed range of the axis. After debugging, there is generally no need to make any changes.
Max Jerk	m/s³	Set the maximum acceleration speed that the axis can operate at. Adjust according to the motor capacity of the equipment. This parameter is

		used to specify the maximum speed range of the axis. After debugging, there is generally no need to make any changes.
Key direction	yes/no	Change the direction of the single axis movement button, including the button directions for remote control, panel, and software positions

The following figure shows the equivalent calculation interface that pops up after clicking on it:



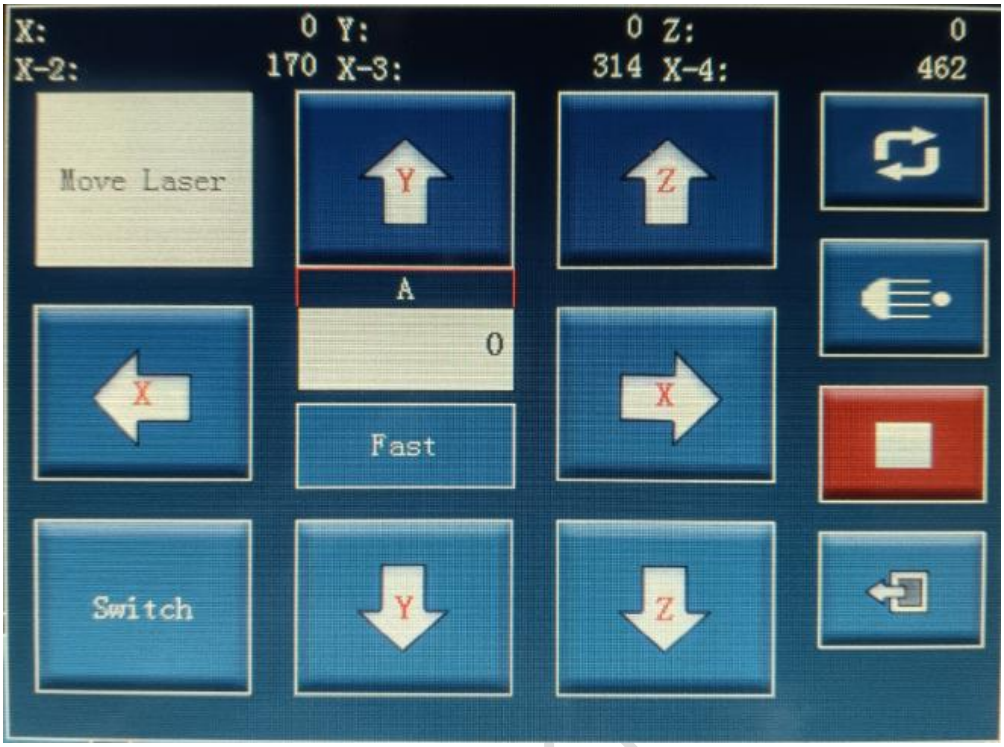
If the specific parameters of the device are known, calculate the pulse equivalent using the number of pulses per motor turn and the actual length of each motor turn.

If the specific parameters of the device are not known, or if further fine-tuning of the pulse equivalent is required. Calculate the pulse equivalent using both theoretical and actual lengths.

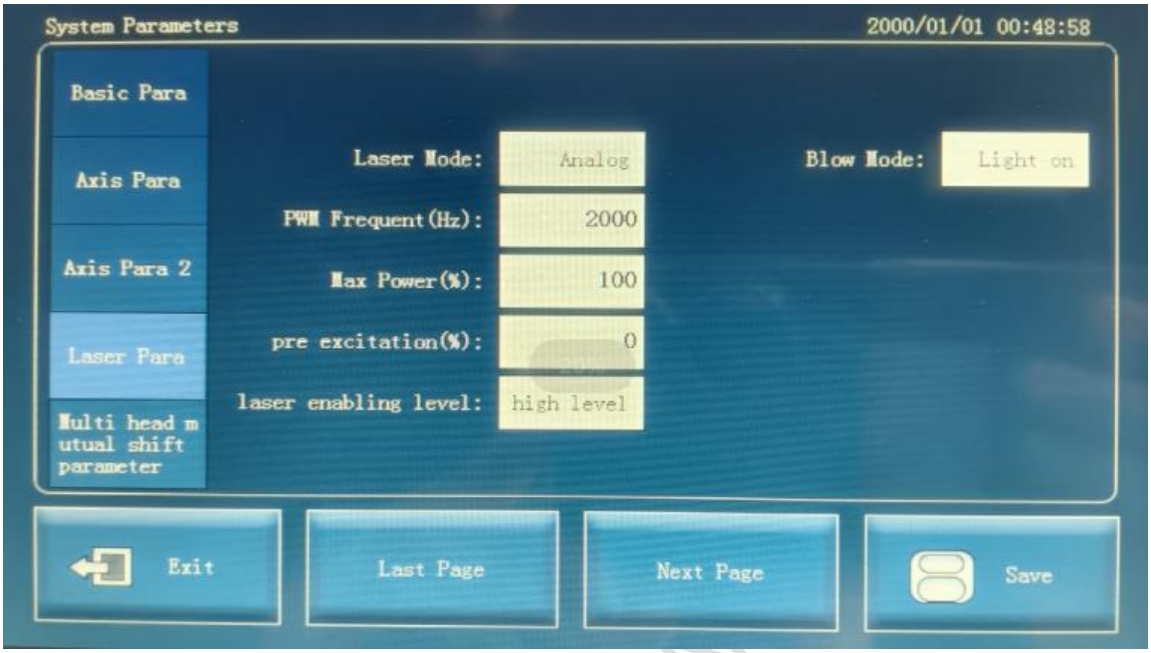
Equivalent calculation	**unit**	**Function Description**
Number of pulses per revolution of motor		Stepper motor; For example, for a 1.8 degree, 32 segment drive machine, the number of pulses per motor cycle is 360/1.8 * 32=6400 (pulses). Servo motor; Taking Panasonic servo A5 as an

		example, the PR008 parameter defaults to the upper computer sending 10000 pulses to rotate the motor once.
The actual running length of in one turn	mm	The length of one revolution of the motor.
theoretical length	mm	The length of one revolution of the motor.
Actual length	mm	The actual length measured using measuring tools, if 50mm
Count		Calculate the pulse equivalent based on the number of pulses per cycle filled in and the actual length of one cycle of the motor
Count		Calculate pulse equivalent based on the filled theoretical length and actual length
Move		Entering the mobile interface allows for shooting and movement

Click [Move] to pop up the movement control interface, which is used to verify whether the set equivalent is correct, as shown in the following figure:



3.2.3 Laser parameters

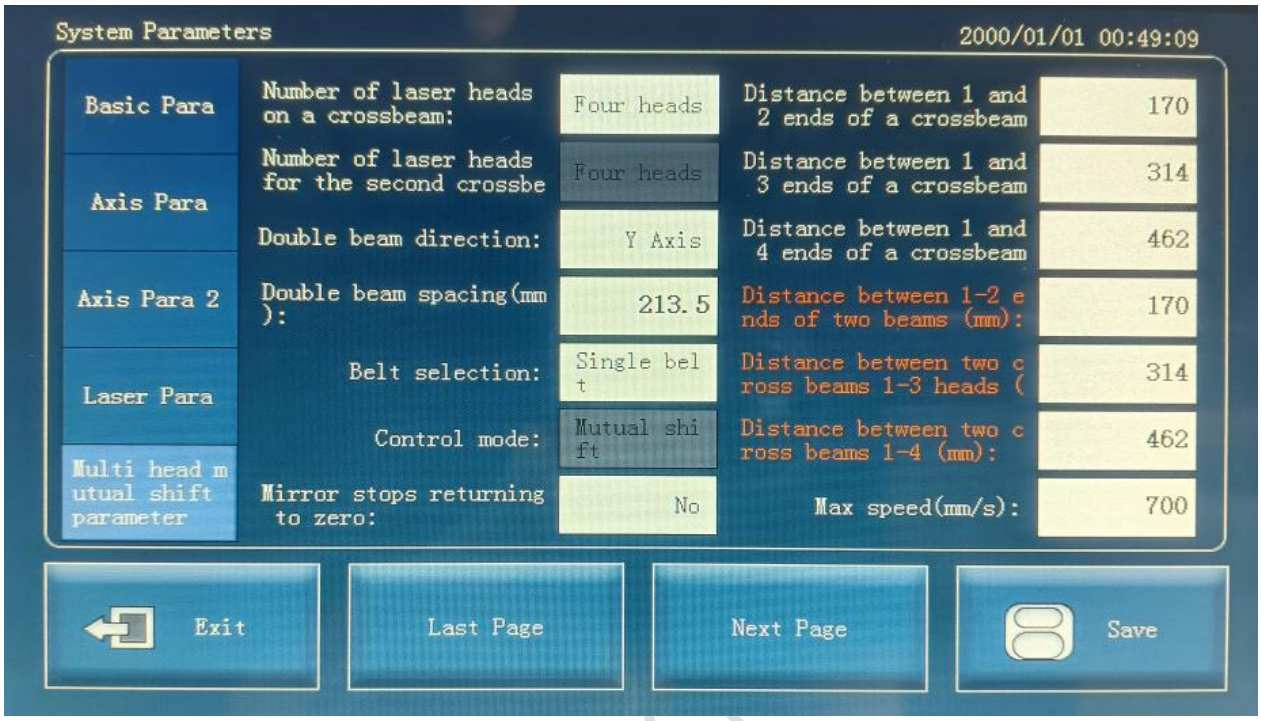


As shown in the above figure, laser parameters are mainly used to configure parameters related to laser control. The specific functions are shown in the table below:

Laser parameters	unit	Function Description
Laser mode	nothing	This mode is related to the connection of the laser power interface. If the connection is in simulation mode, select simulation. If the laser power supply PWM input port is connected, select PWM mode. In addition, different lasers are equipped with ultraviolet light, optical fibers, etc. Configure according to the laser power supply used.

PWM frequency	Hz	Configure PWM waveform frequency.
Max power	percentage	Set the maximum output power of the laser. Limit the maximum output power of the laser port, such as setting 50%, so that the maximum power of the system is 50% of the laser tube, which is half. This is usually set to 100%. The maximum power limit is usually not required.
Pre excitation	percentage	Set the percentage of normal output power. Equivalent to the minimum or zero value of output power. Usually set to 0%
Laser enable level	nothing	If set to high level, it means outputting laser at TTL high level; If set to low level: indicates that the laser is output at low TTL level.
Blow mode	nothing	We recommend using a high level here

3.2.4 Multi head mutual movement parameters



Switching to the multi head mutual transfer parameter can be configured according to the device architecture. The specific parameter specifications are as follows:

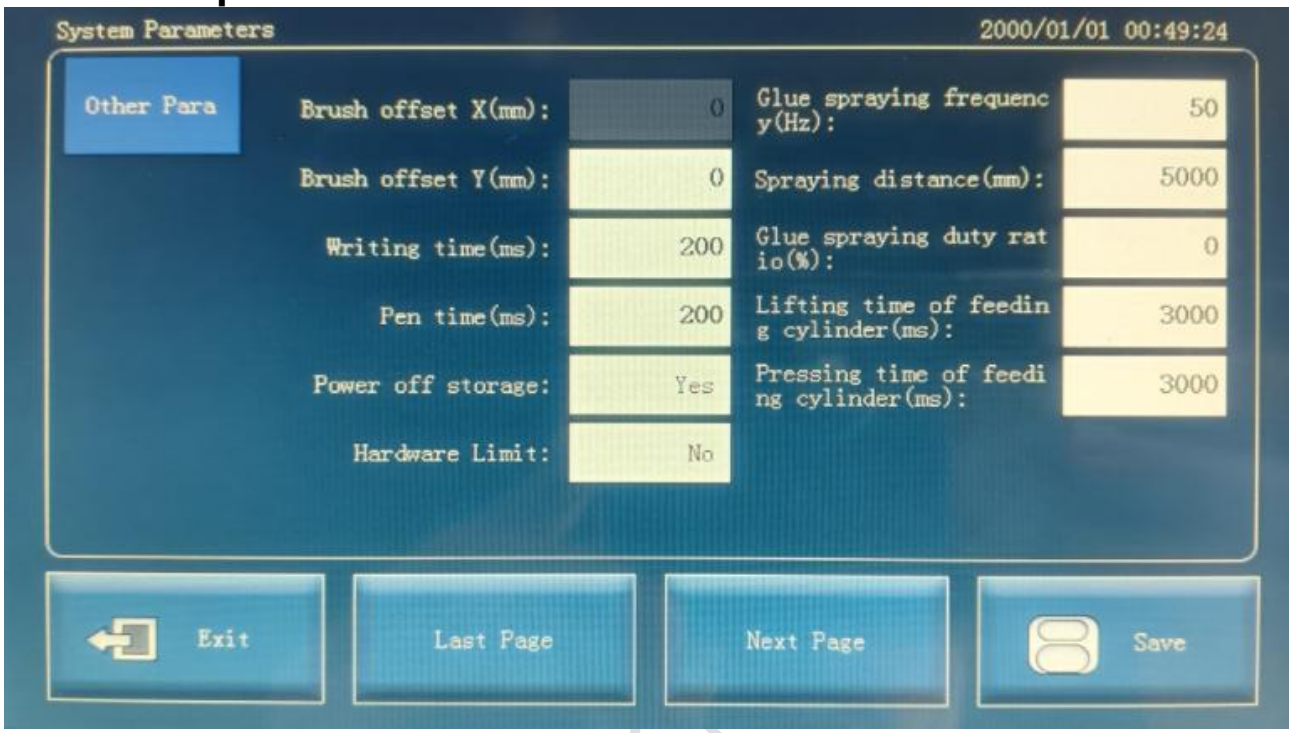
Multi head mutual shift parameter	**unit**	**Function Description**
Number of laser heads on a crossbeam	no	One crossbeam, select single head, double head, three head, and four head modes according to the machine equipment
Number of	no	Two crossbeams, select single head, double

laser heads for the second crossbeams		head, three head, and four head modes according to the machine equipment
Double beam direction	X/Y	According to the equipment selection, it is usually in the Y direction, which means there are two crossbeams in the Y direction.
Double beam spacing	mm	The actual double beam spacing of the machine
Mirror stops returning to zero	mm/s	The machine can only be turned on when the mirror cutting and the mutual moving head limit are installed on the laser head. When turned on, the mirror cutting will stop and return to zero, or it will return to zero after 20 processing times. If the machine's mutual moving head limit is not installed on the laser head, the option must be turned off, and it must be manually reset after the mirror cutting stops.
Max speed	no	Maximum speed of mutual head separation
Belt	no	Single belt: corresponding to single belt

selection		machines; Double belt: corresponds to a double belt machine.
control mode	mm	According to the machine structure configuration.
Distance between 1 and 2 ends of a crossbeam	mm	Inter shift/normal, multi head in inter shift mode, single head in normal mode
Distance between 1 and 3 ends of a crossbeam	mm	The distance between one and two ends of a crossbeam
Distance between 1-4 heads of a crossbeam	mm	The distance between one and three ends of a crossbeam
Distance between the first and	mm	The distance between one and four ends of a crossbeam

second ends of the second crossbeam		
Distance between the first and third ends of the second crossbeam	mm	The distance between the first and second ends of the second crossbeam
Distance between the first and fourth ends of the second crossbeam	mm	The distance between the first and third ends of the second crossbeam

3.2.5 Other parameters



Other parameters refer to parameters other than those mentioned above, as shown in the above figure. The detailed parameter functions are listed in the table below:

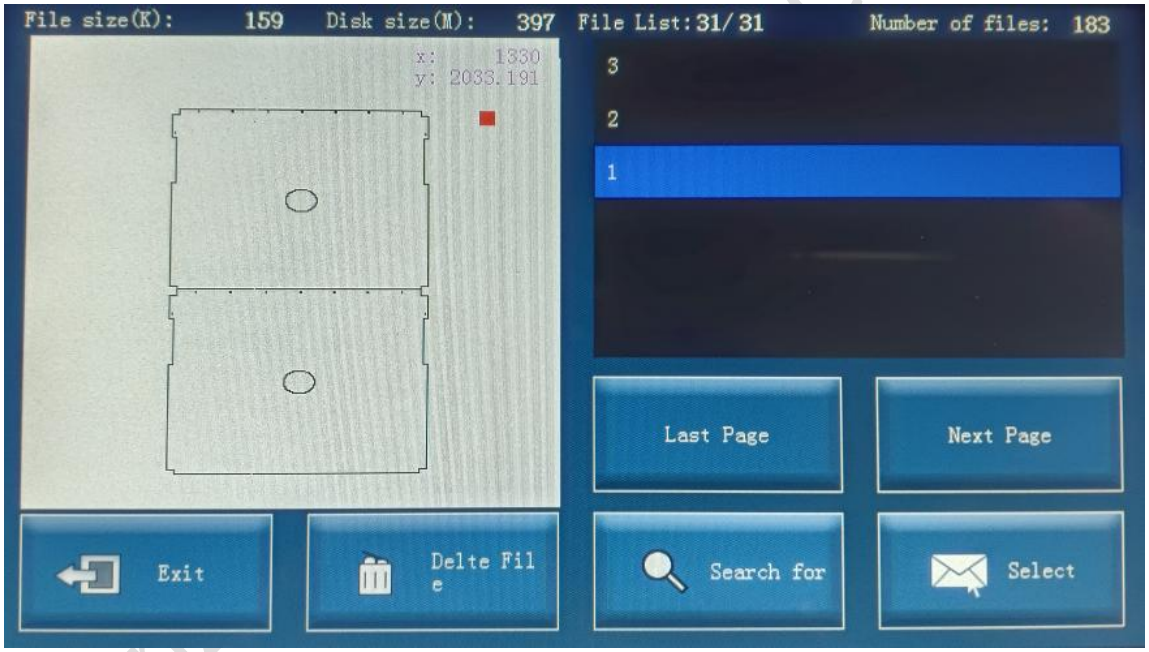
Other	unit	Function Description
Brush offset X	Mm	Brush offset X coordinate
Brush offset Y	Mm	Brush offset Y coordinate
Writing time	Ms (milliseconds)	The time for the brush drop action
Pen time	Ms (milliseconds)	Brush lifting action time

Power off storage	nothing	Yes: indicates that the power-off save function is turned on. No: Indicates that the power-off save function is turned off. After opening the power-off save, if there is a power outage during the machining process, the next successful power-off reset will continue machining at the previous breakpoint position.
Glue spraying frequency	Hz	Set the glue spraying frequency.
Spray distance	Mm	Set the distance between glue spraying points.
Glue spraying duty ratio	percentage	Spray frequency duty cycle.
Lifting time of feeding cylinder	Ms (milliseconds)	Set the lifting time of the feeding cylinder.
Feeding time of feeding	Ms (milliseconds)	Set the pressing time of the feeding cylinder.

cylinder		
Hardware limit	Mm	Yes/No, if yes, the limit signal is detected during the moving and processing process, otherwise the moving and processing will ignore the limit signal

3.3 Files (Local Files)

The local file interface functions are shown in the following figure:



Local files	unit	Function Description
file list	page	Select a file for display.
Last page	page	Flip up the file list.
next page	page	Flip down the file list.
select	nothing	Set the selected file as the current machining file,

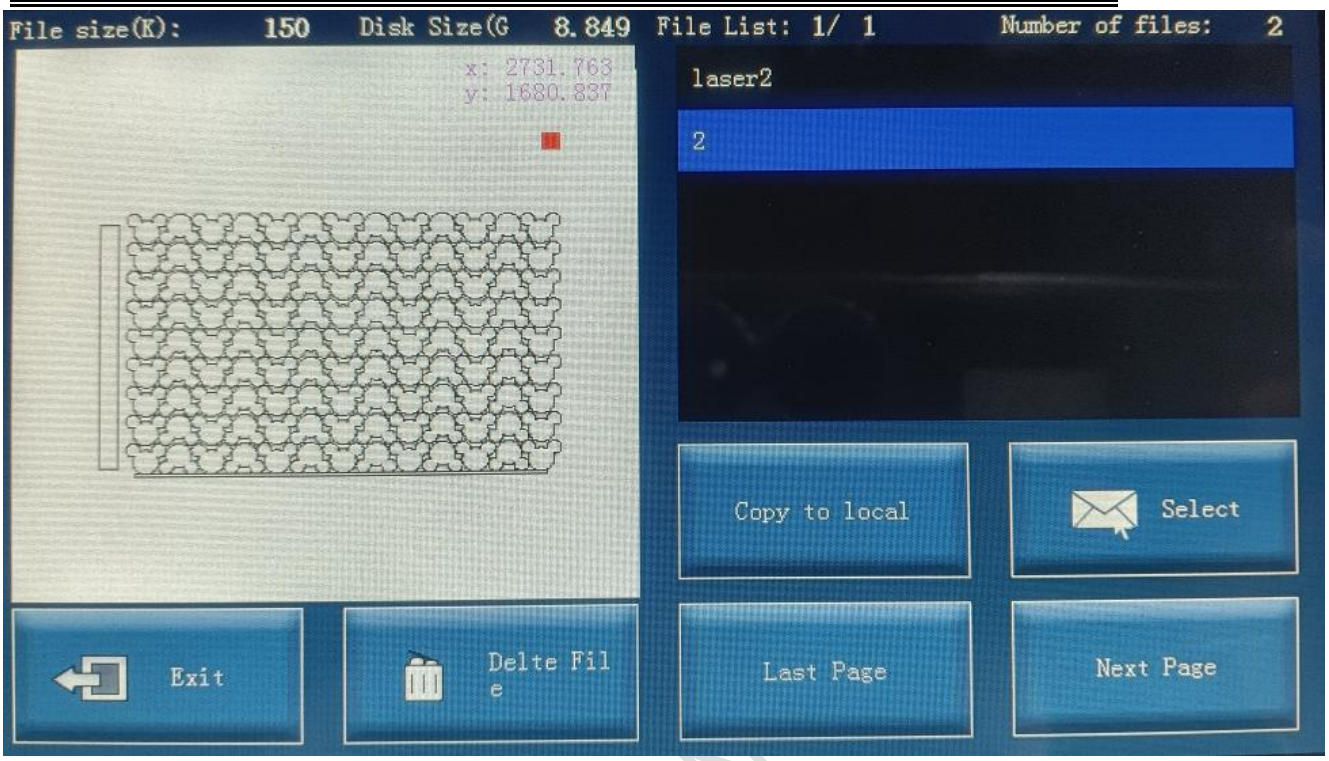
Delete files	nothing	Delete the currently selected file.
Exit	nothing	Exit the current page and return to the main page.

Search function: Enter the letter or number of the file name you want to find, and all files containing that letter or number will be displayed below. Find and select OK, and the file will be displayed. The operation is as follows:

Click [Select], then click [Search] to enter the search interface, as shown in the figure:

3.4 USB flash drive

The files on a USB drive are similar to local files, but the difference is that they display the files on the USB drive. The specific functions are shown in the following figure:

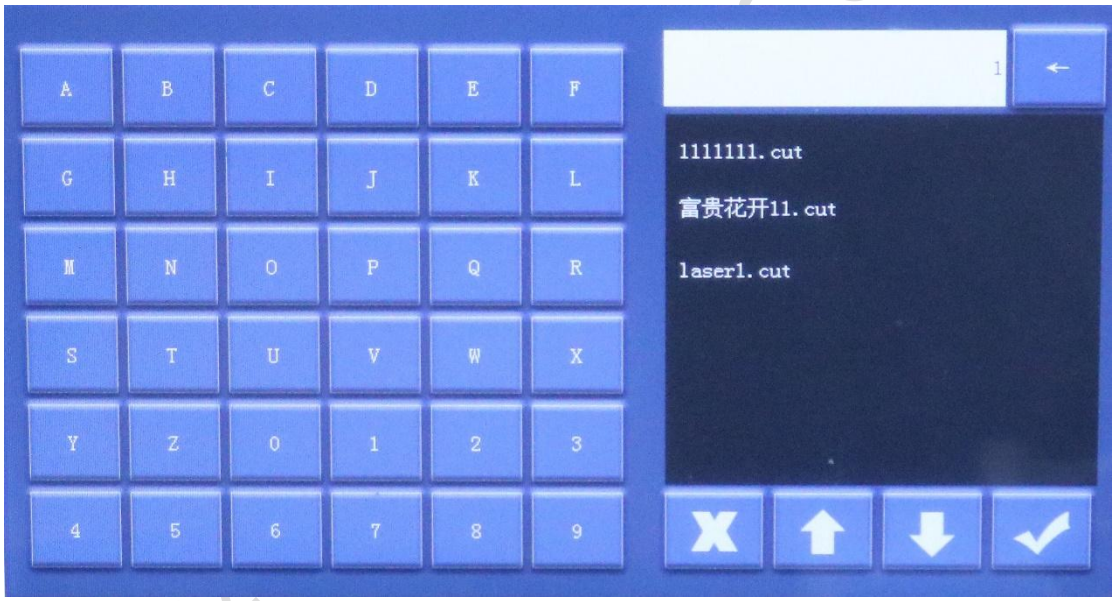


U disk	unit	Function Description
File List	page	Select a file for display.
Last page	page	Flip up the file list.
next page	page	Flip down the file list.
Copy to Local	nothing	Copy the selected file to the local disk
Select	nothing	Provides the ability to copy files and delete all files.
Delete file	individual	Delete the currently selected file.
Exit	nothing	Exit the current page and return to the main page.
File preview	nothing	Display the selected file image.

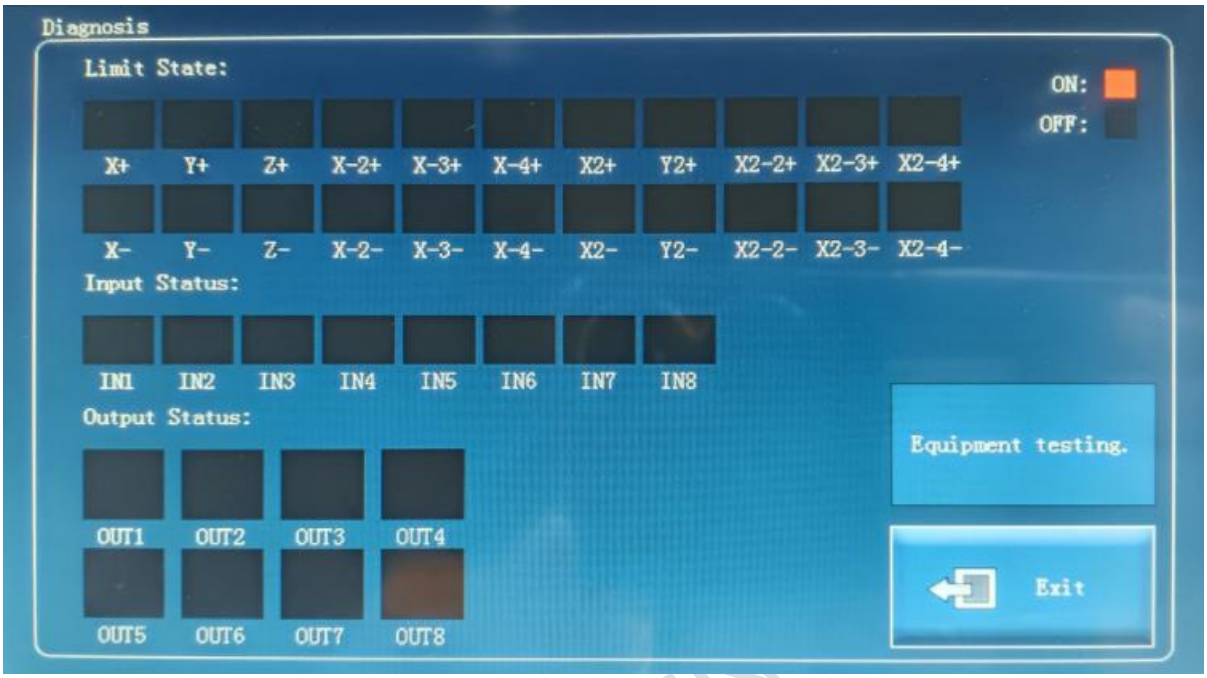
area		

Search function: Enter the letter or number of the file name you want to find, and all files containing that letter or number will be displayed below. Find and select OK, and the file will be displayed. The operation is as follows:

Click [Select], then click [Search] to enter the search interface, as shown in the figure:

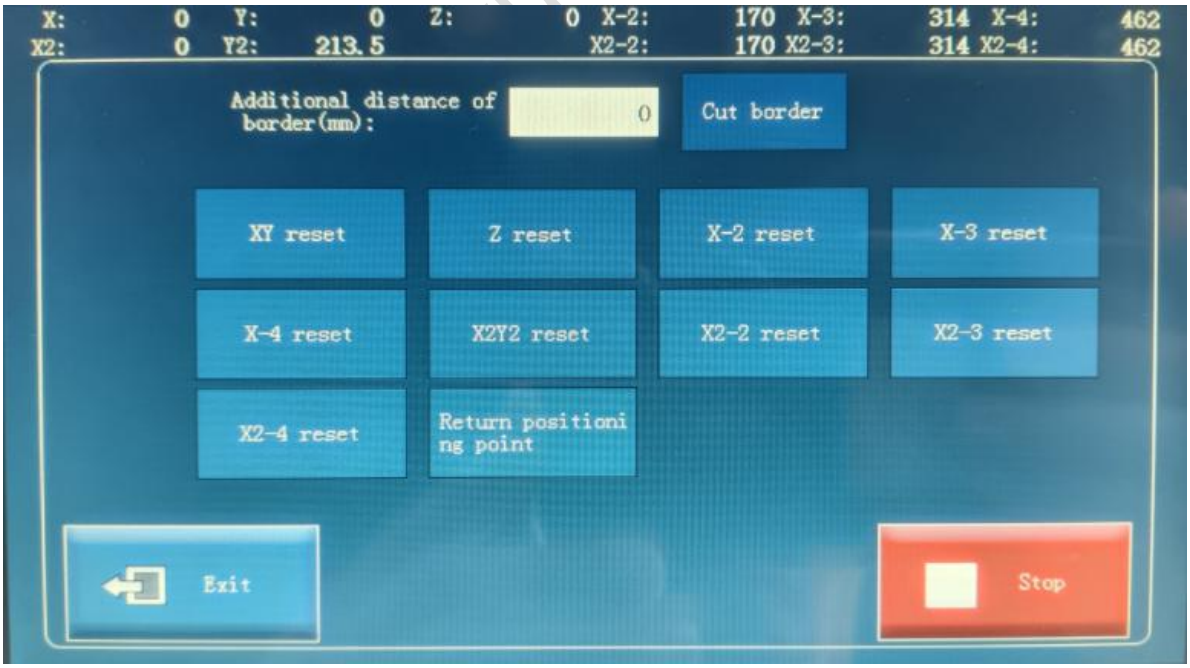


3.5 Diagnosis



diagnosis	unit	Function Description
Input Status	nothing	Display whether the input signal is valid
Output status	nothing	Display whether the output signal is valid, click to change the output port status
Limit state	nothing	Is the display axis limit signal valid
Equipment testing	nothing	For production testing
quit	nothing	Exit this page

3.6 Other

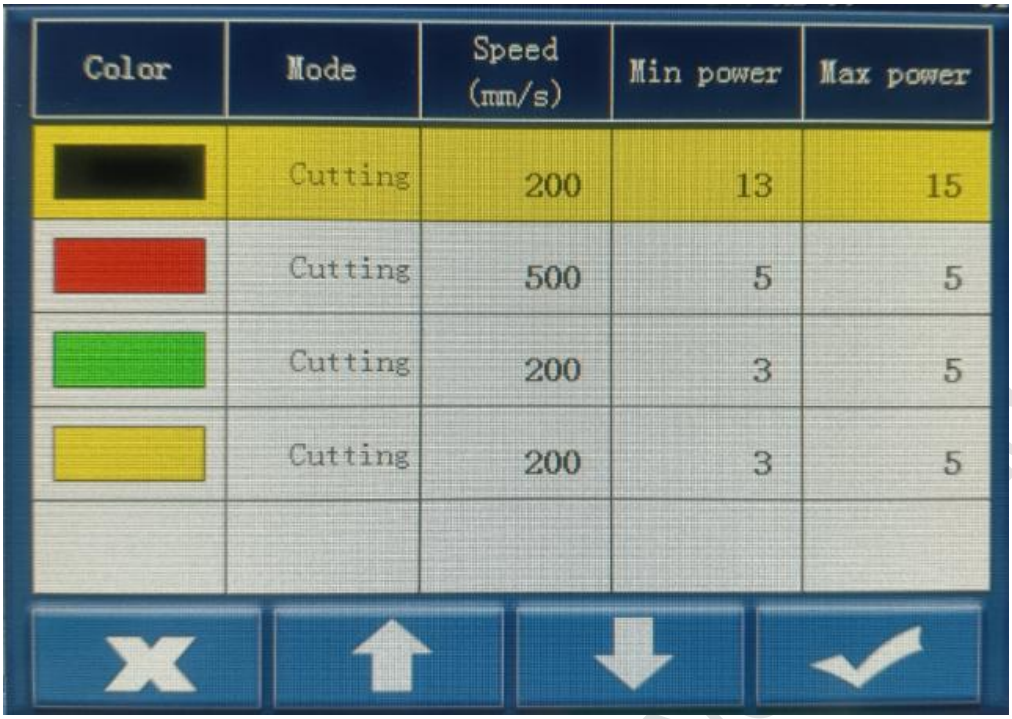


other	unit	Function Description
Cut outer	nothing	Cut off the entire shape of the outer frame, or

frame		expand the outer frame a bit and adjust the distance between the outer frames.
XY reset	nothing	Only the XY axis is reset.
Z reset	nothing	Only Z-axis reset.
X-2 reset	nothing	Only X-2 axis reset.
X-3 reset	nothing	Only X-3 axis reset.
X-4 reset	nothing	Only X-4 axis reset.
X2-2 reset	nothing	Only X2-2 axis reset.
X2-3 reset	nothing	Only X2-3 axis reset.
X2-4 reset	nothing	Only X2-4 axis reset.
Return to the positioning point	nothing	Return to the positioning point
quit	nothing	Exit the current page and return to the main interface.
cease	nothing	Axis stop.

4. Layer

Click on "Layer" on the main interface, and a layer modification interface will pop up, as shown in the following figure:

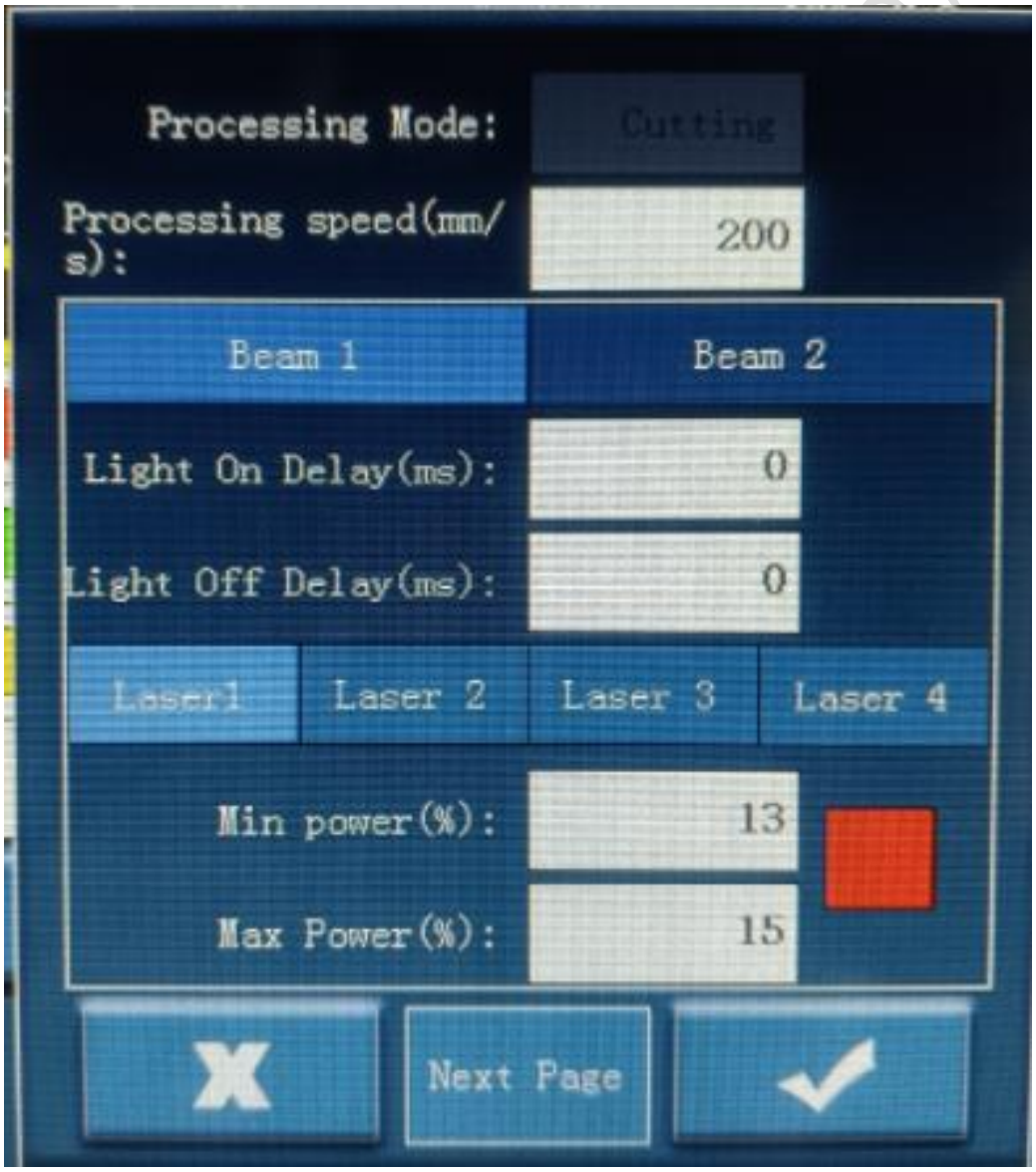


List each layer. Click to select and modify parameters such as layer speed, minimum power, and maximum power in the pop-up layer parameter modification interface. As shown in the above figure.

Layer parameters	**unit**	**Function Description**
Processing mode	nothing	Indicates the mode of the layer. This mode is modified by the upper computer.
Processing speed	Mm/s	Indicates the processing speed when processing the layer. Set the appropriate speed range based on the material being cut and the relevant speed requirements. Each layer can have different speeds set.

(layer velocity)	percentage	Indicates the minimum output power of the laser.
Minimum power	percentage	Indicates the maximum output power of the laser.
maximum power	nothing	layer color

Click on the corresponding layer, and the following interface will pop up:

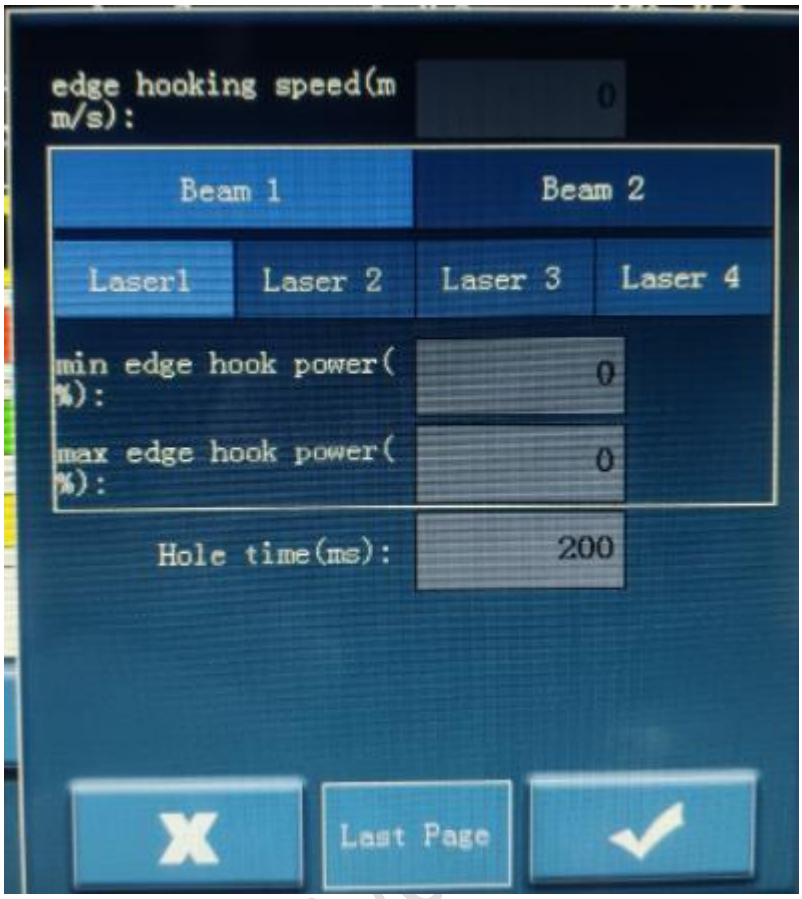


The parameter meanings of the layer are explained as follows:

Layer parameters	**unit**	**Function Description**
Processing mode	nothing	Indicates the mode of the layer. This mode is modified by the upper computer.
Processing speed	Mm/s	Indicates the processing speed when processing the layer. Set the appropriate speed range based on the material being cut and the relevant speed requirements. Each layer can have different speeds set.
Opening delay	Ms	The waiting time after the light is emitted is mainly to solve the problem of delayed response when some laser tubes first emit light.
Off light delay	(milliseconds)	Wait for a period of time after turning off the light.
Minimum power	Ms	Indicates the minimum output power of the laser.
maximum power	(milliseconds)	Indicates the maximum output power of the laser.
Laser selection	percentage	Laser head 1-4

Are all lasers following laser 1 to emit light	percentage	Yes, all lasers maintain the same maximum and minimum power as Laser 1,

Click on the next page to enter the other parameter settings of the layer



Layer parameters	unit	Function Description
Hook speed	Mm/s	Hook edge processing speed.
Minimum power of hook edge	percentage	Hook edge output minimum power;
Maximum power of hook edge	percentage	Hook to output maximum power.
Punching	Ms	The punching signal output time is used to

time		ensure the normal completion of the punching action. This parameter is only used when the layer is processed in drilling mode.

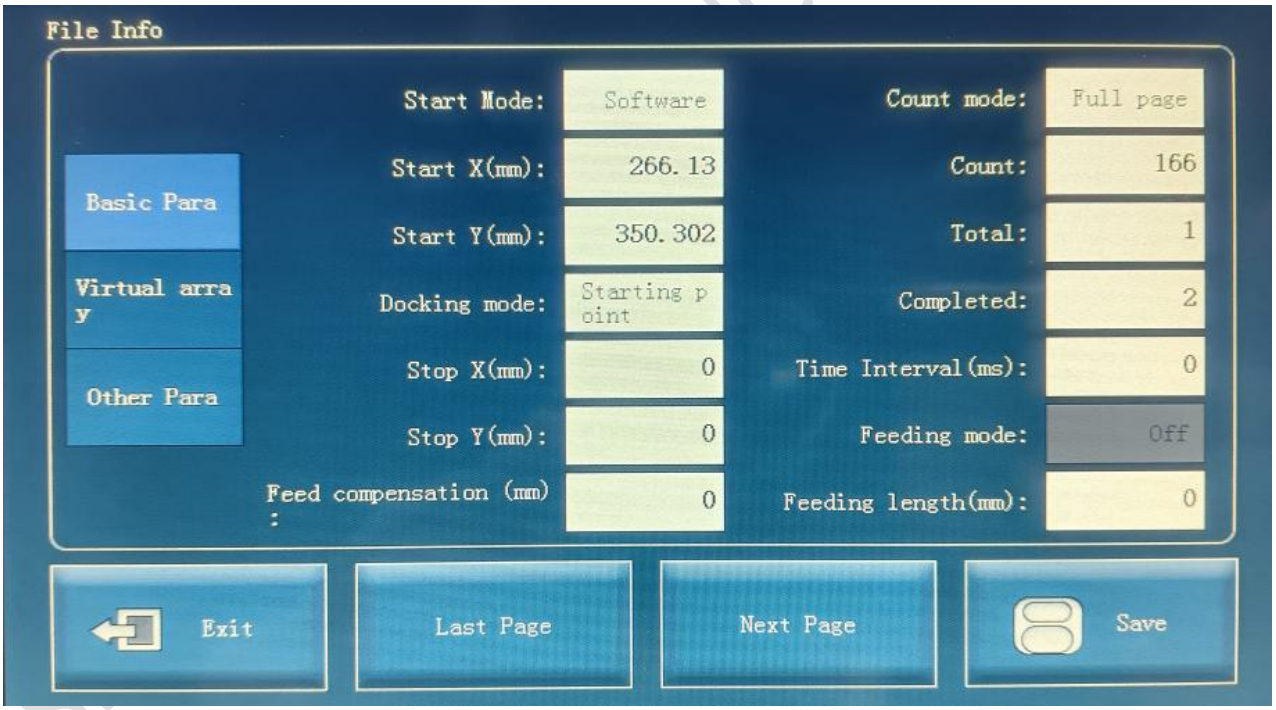
5. Follow the outer frame

Click the "Move Outline" button, and the device will move through the graphic outline to roughly observe whether the cut range is appropriate.

6. File information

The file information is divided into three parts: basic parameters, virtual arrays, and other parameters.

6.1 Basic parameters



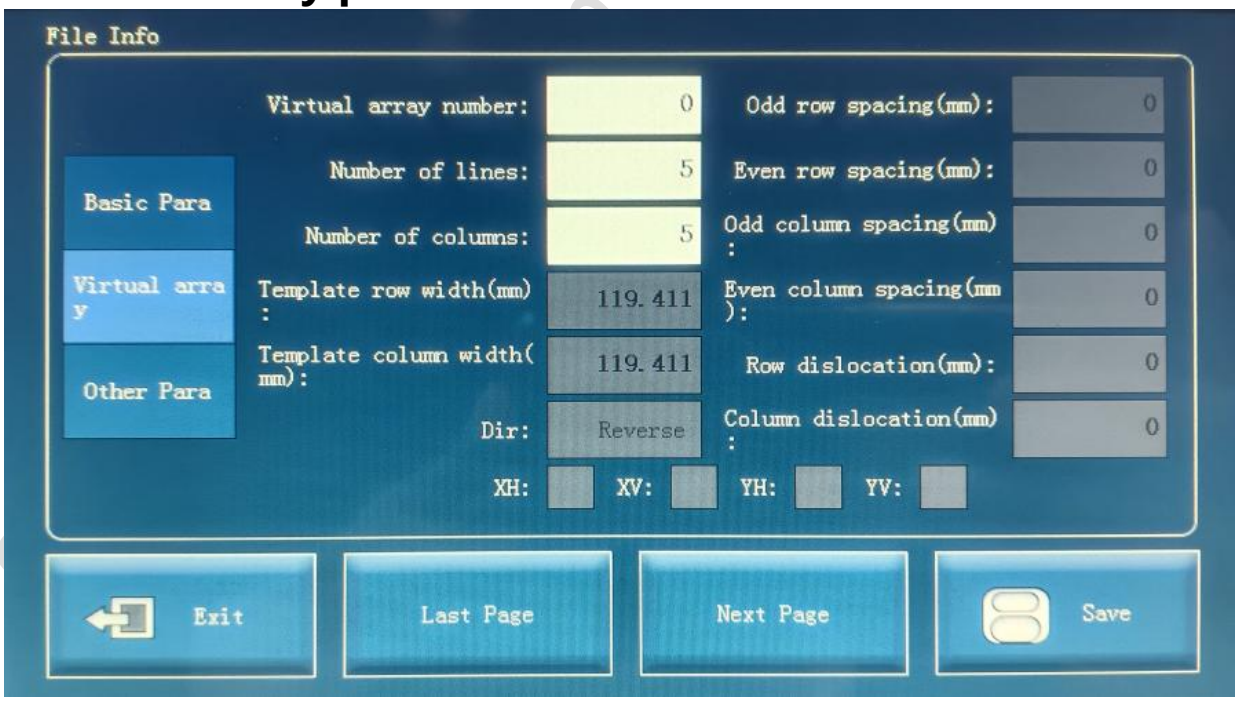
The basic parameters of file information are explained as follows:

Basic parameters of the file	unit	Function Description
Start Mode	nothing	Set processing start mode (immediate,

		fixed-point, software, custom)
Starting X	Mm	Set the starting point X coordinate in custom mode
Starting Y	Mm	Set the Y coordinate of the starting point in custom mode
Docking mode	nothing	Set machining stop mode (start, origin, custom)
Stop X	Mm	Set the X-coordinate of the docking point in custom mode
Stop Y	Mm	Set the Y-coordinate of the docking point in custom mode
Count mode	nothing	Set the counting mode (counting by whole page or by individual)
Count	individual	Record how many virtual array entities have been processed currently
Total	second	Set the number of required machining, stop machining when the number is reached
Completed	second	Record how many complete versions have been processed, indicating the number of complete versions
time interval	Ms	How long does it take to process the

		next time after the current processing is completed
Feeding mode	(milliseconds)	Set the feeding mode (feed before processing, feed after processing, feed before pushing the plate),
Feeding length	nothing	Pushing the board and delivering it synchronously)
Feed compensation	Mm	Set the final feeding length for the last version

6.2 Virtual array parameters

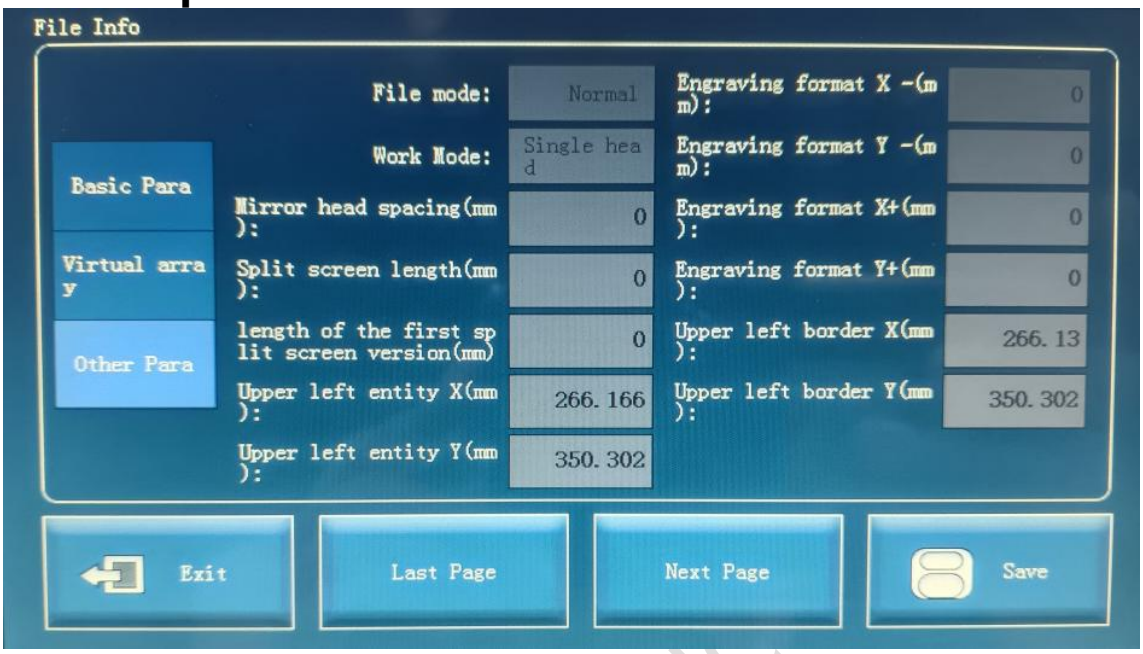


Virtual array parameters	unit	Function Description

for file information		
Virtual array number	nothing	Used to select the virtual array that needs to be modified
Number of lines	nothing	Set the number of rows corresponding to the virtual array
Number of columns	nothing	Set the number of columns corresponding to the virtual array
Template row width	nothing	Display layout entity row width
Template column width	nothing	Display layout entity column width
Dir	nothing	Display layout direction
Odd row spacing	nothing	Display layout odd row spacing
Even row spacing	nothing	Display even row spacing in layout
Odd column spacing	nothing	Display layout odd column spacing
Even column	nothing	Display even column spacing in layout

spacing		
Row	nothing	Display layout line misalignment
Column	nothing	Display layout column misalignment
XH	nothing	Display whether the horizontal direction of the row is mirrored
XV	nothing	Display whether the vertical direction of the row is mirrored
YH	nothing	Whether the horizontal direction of the display column is mirrored
YV	nothing	Whether the vertical direction of the display column is mirrored

6.3 Other parameters



The other parameters under the file information are explained as follows:

Other parameters of file information	unit	Function Description
File Mode	nothing	Display file mode (normal cutting, continuous cutting)
Work mode	nothing	Display processing split mode (single head working mode, intelligent split mode, manual split mode, mirrored)
Mirror head spacing	mm	Display the distance between the two ends of mirror cutting in the case of mirror cutting
Split screen	mm	Display split screen length in continuous cutting

length		mode
length of the first split screen version	mm	Display the first version length in continuous cutting mode
Upper left entity X	mm	Display the upper left X-coordinate of the bounding box formed by all entities
Upper left entity Y	mm	Display the upper left Y coordinate of all entities forming the bounding box
Engraving format X-	mm	Display the running distance that needs to be reserved at the starting point of the outer X of the frame when including carving processing
Engraving format Y-	mm	Display the running distance that needs to be reserved for the Y-starting point position outside the outer frame when including carving processing
Engraving format X+	mm	Display the running distance that needs to be reserved for the X endpoint position outside the outer frame during engraving processing
Engraving format Y+	mm	Display the running distance that needs to be reserved for the Y-end position outside the outer frame when including engraving

		processing
Outer frame top left X	mm	Display the top left X coordinate of the running bounding box
Outer frame upper left Y	mm	Display the upper left Y coordinate of the running bounding box

7. Control interface:

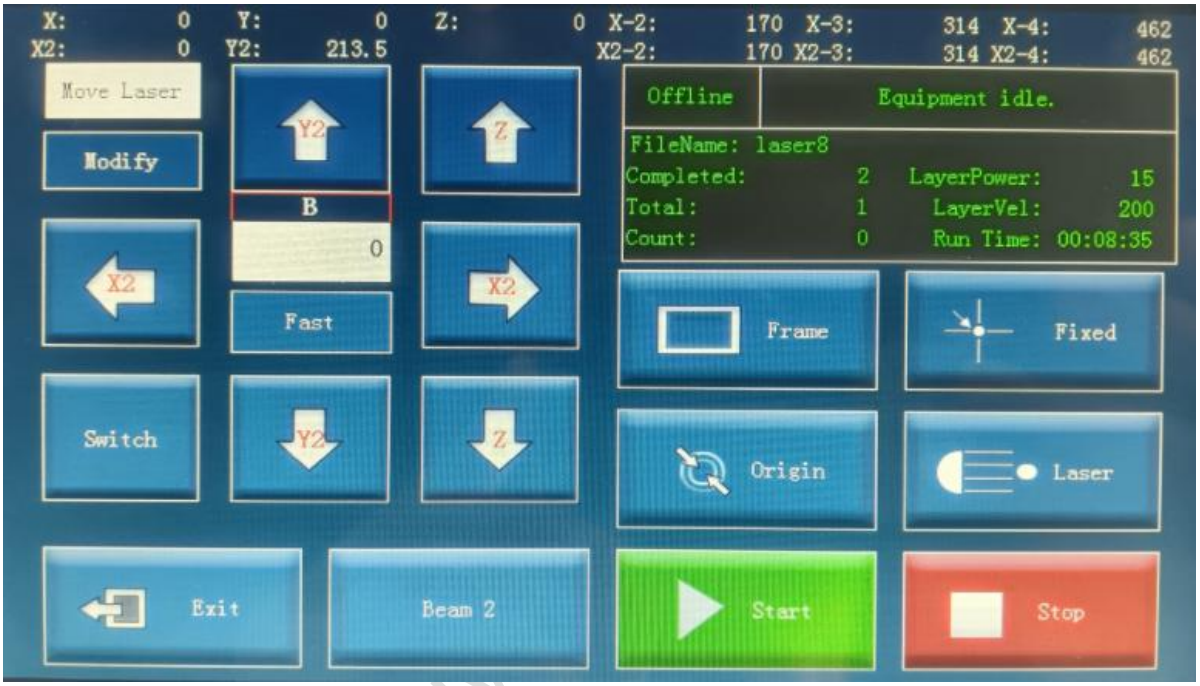
If you click [Switch], you can also switch to X1-2, X1-3, and X1-4 axis control, as shown in the following figure.

The other parameters of the button interface are explained as follows:

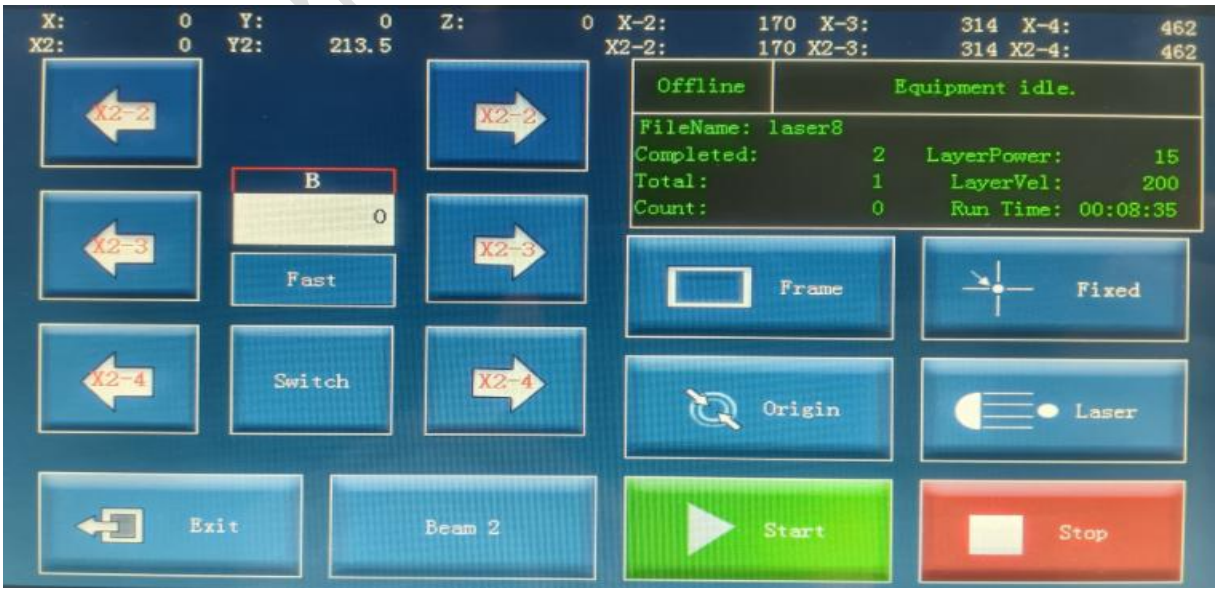
Key	功能说明
Frame	After clicking, the device will follow the starting mode to move the graphic outline. Effective in the presence of graphics.
Fixed	Set the current position to a fixed point and set it to fixed point mode,
Origin	Return to zero
Laser	Click once to emit the laser once, for machine adjustment and other purposes.
Switch	Button switching
Exit	Exit button menu
Start	Start and pause reuse buttons.
Stop	Stop the running device and keep it idle
Move laser	Light will come out when moving when opened
X	X-axis left and right movement
Y	Y-axis up and down movement
Z	Z-axis movement
X1-2	Two heads of a crossbeam move
X1-3	Three heads of a crossbeam move

X1-4	Four heads of a crossbeam move

The instructions for switching to beam 2 are as follows:



If you click [Switch], you can also switch to X2-2, X2-3, and X2-4 axis control, as shown in the following figure.



Key	Function Description
Frame	After clicking, the device will follow the starting mode to move the graphic outline. Effective in the presence of graphics.
Fixed	Set the current position to a fixed point and set it to fixed point mode,
Origin	Starting machining from this fixed point in fixed-point mode
Laser	Click once to emit the laser once, for machine adjustment and other purposes.
Beam2	Switch 1/2 crossbeam
Switch	Switch Control Axis
Exit	Exit button menu
Start	Start and pause reuse buttons.
Stop	Stop the running device and keep it idle
X2	X2 axis moves left and right
X2-2	Two ends of the crossbeam move
X2-3	Moving three heads of the second crossbeam
X2-4	Moving four heads of the second crossbeam

Chapter 5: System wiring diagram

Chapter 6: System electrical parameters

Board and panel related parameters			
Control card	Full load working current	full load current	no-load current
	600mA	500mA	300mA
	working voltage	Maximum current	maximum power
	24.4V	600mA	15W
operation panel	Working current	working voltage	power
	100mA	24.4V	2.44W

Output port	Output maximum current
Axis PUL	50mA
Axis DIR	50mA
Output port OUT	500mA
Laser port TTL	50mA
Laser PWM	50mA
Laser AOUT	50mA

Input Port	Effective voltage range

Origin switch HOME	0~2V
Limit switch	0~2V
Input port IN	0~2V